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FINAL
AMENDMENT 10 TO THE FISHERY MANAGEMENT PLAN FOR SPINY LOBSTER IN THE GULF OF MEXICO AND SOUTH ATLANTIC
Including Final Environmental Impact Statement, Regulatory Impact Review, and Regulatory Flexibility Act Analysis

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Gulf of Mexico Fishery Management Council
2203 North Lois Avenue
Suite 1100
Tampa, FL 33607
813-348-1630 Phone
813-348-1711 Fax
www.gulfcouncil.org

South Atlantic Fishery Management Council
4055 Faber Place Drive
Suite 201
North Charleston, SC 29405
843-571-4366 Phone
843-769-4520 Fax
www.safmc.net

National Oceanic & Atmospheric Administration
National Marine Fisheries Service
Southeast Regional Office
263 13th Avenue South
St. Petersburg, Florida 33701
727-824-5305 Phone
727-824-5308 Fax
http://sero.nmfs.noaa.gov

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ABBREVIATIONS USED IN THIS DOCUMENT

ABC	acceptable biological catch
ACL	annual catch limit
ACT	annual catch target
AM	accountability measure
APA	Administrative Procedure Act
B	Biomass
B_{MSY}	Biomass at MSY
CEA	Cumulative Effects Analysis
CEQ	Council on Environmental Quality
CFMC	Caribbean Fishery Management Council
CFR	Code of Federal Regulations
Councils	Gulf of Mexico Fishery and South Atlantic Management Councils
CPUE	catch per unit effort
CWA	Clean Water Act
CZMA	Coastal Zone Management Act
DQA	Data Quality Act
EEZ	Exclusive Economic Zone
EFH	Essential Fish Habitat
EIS	Environmental Impact Statement
EJ	Environmental Justice
EO	Executive Order
EPA	Environmental Protection Agency
ESA	Endangered Species Act
F	instantaneous fishing mortality rate
FAC	Florida Administrative Code
FAO	Food and Agriculture Organization (United Nations)
FIS	Fishery Impact Statement
FKNMS	Florida Keys National Marine Sanctuary
FMP	fishery management plan
F_{MSY}	Fishing Mortality Rate Yielding MSY
FMU	fishery management unit
FWC	Florida Fish and Wildlife Conservation Commission
FWRI	Fish and Wildlife Research Institute
FWS	United States Fish and Wildlife Service
GC	general counsel
GMFMC	Gulf of Mexico Fishery Management Council
Gulf	Gulf of Mexico
IRFA	initial regulatory flexibility analysis
M	instantaneous natural mortality rate
Magnuson-Stevens Act	Magnuson-Stevens Fishery Conservation and Management Act
MBTA	Migratory Bird Treaty Act
MFMT	Maximum Fishing Mortality Threshold
MMPA	Marine Mammal Protection Act
mp	million pounds
MPA	Marine Protected Area
MRFSS	Marine Recreational Fishery Statistics Survey

MRIP	Marine Recreational Information Program
MSST	Minimum Stock Size Threshold
MSY	maximum sustainable yield
NEPA	National Environmental Policy Act
NMFS	National Marine Fisheries Service
NOAA	National Oceanic and Atmospheric Administration
NOAA Fisheries	Same as NMFS
OFL	overfishing limit
OMB	Office of Management and Budget
OY	optimum yield
PRA	Paperwork Reduction Act
RA	Regional Administrator of NMFS
RFA	Regulatory Flexibility Act
RIR	regulatory impact review
RSE	restricted species endorsement
SAFMC	South Atlantic Fishery Management Council
SBA	Small Business Administration
Secretary	Secretary of Commerce
SEDAR	Southeast Data Assessment Review (stock assessment
SEFSC	Southeast Fisheries Science Center of NMFS
SFA	Sustainable Fisheries Act
SoVI	Social Vulnerability Index
SPL	saltwater products license (FL)
SPR	spawning potential ratio
SRCL	Special Recreational Crawfish License
SSB	spawning stock biomass
SSBR	spawning stock biomass per recruit
SSC	Scientific and Statistical Committee
TED	turtle excluder device
TCP	trap certification program
USCG	United States Coast Guard
VEC	valued environmental component
ww	whole weight

AMENDMENT 10 TO THE FISHERY MANAGEMENT PLAN FOR SPINY LOBSTER IN THE GULF OF MEXICO AND SOUTH ATLANTIC REGIONS

INCLUDING A FINAL ENVIRONMENTAL IMPACT STATEMENT (FEIS), REGULATORY IMPACT REVIEW (RIR), REGULATORY FLEXIBILITY ACT ANALYSIS (RFA)

Proposed actions:	Establish annual catch limits and accountability measures for Caribbean spiny lobster; remove several other species of lobster from the FMP; redefine biological reference points; update the framework process; and establish or modify other management measures.
Lead agency:	FMP Amendment – Gulf of Mexico and South Atlantic Fishery Management Councils EIS - NOAA Fisheries Service
For Further Information Contact:	Stephen A. Bortone, Ph.D. Gulf of Mexico Fishery Management Council 2203 N. Lois Avenue, Suite 1100 Tampa, FL 33607 (813) 348-1630 (Phone) (888) 833-1844 (Toll Free) steve.bortone@gulfcouncil.org Website: www.gulfcouncil.org Robert K. Mahood South Atlantic Fishery Management Council 4055 Faber Place, Suite 201 North Charleston, SC 29405 (866) SAFMC-10 Robert.mahood@safmc.net Website: www.safmc.net Roy E. Crabtree, Ph.D. NOAA Fisheries, Southeast Region 263 13th Avenue South St. Petersburg, FL 33701 (727) 824-5301 Roy.crabtree@noaa.gov Website: www.nmfs.noaa.gov
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Abstract

Revisions to the Magnuson-Stevens Fishery Management and Conservation Act in 2006 require that fishery management plans contain annual catch limits and accountability measures for all managed species to prevent overfishing. Annual catch limits must be set at levels that prevent overfishing and do not exceed the recommendations of the respective Councils' Scientific and Statistical Committees for acceptable biological catch. Species in a fishery management plan not subject to overfishing should have annual catch limits and accountability measures effective in 2011. No species in the spiny lobster fishery management unit are known to be undergoing overfishing. Amendment 10 to the Fishery Management Plan for Spiny Lobster in the Gulf of Mexico and South Atlantic contains the following actions by the Gulf of Mexico Fishery Management Council and the South Atlantic Fishery Management Council: Removing species from the fishery management plan (i.e., smoothtail spiny lobster, spotted spiny lobster, Spanish slipper lobster, and ridged slipper lobster); defining or modifying biological reference points (i.e., maximum sustainable yield, overfishing, and overfished thresholds); considering sector allocations; specifying an acceptable biological catch control rule; setting annual catch limits and annual catch targets; establishing accountability measures; updating the framework procedure and protocol for enhanced cooperative management; modifying or removing the allowance of undersized lobsters as bait in commercial traps; modifying or removing tailing permit regulations; and determining authority to remove derelict or abandoned spiny lobster traps from federal waters off Florida. This amendment also explored two additional actions pertaining to protected resources: one was limiting fishing areas to protect threatened staghorn and elkhorn corals (*Acropora* spp.) and the other was trap line marking requirements for the commercial sector. The Councils decided to take no action in this amendment, and will address them in a separate amendment to allow more time for stakeholder input.

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LIST OF PREFERRED ALTERNATIVES

Action 1: Other species in the Spiny Lobster Fishery Management Plan (FMP)

Alternative 4: Remove the following species from the FMP: **Option a:** smoothtail spiny lobster, *Panulirus laevicauda*; **Option b:** spotted spiny lobster, *Panulirus guttatus*; **Option c:** Spanish slipper lobster, *Scyllarides aequinoctialis*; and **Option d:** ridged slipper lobster, *Scyllarides nodifer*.

Action 2: Modify the Current Definitions of Maximum Sustainable Yield, Overfishing Threshold, and Overfished Threshold for Caribbean Spiny Lobster

Action 2-1: Maximum Sustainable Yield (MSY)

Alternative 4: The MSY proxy will be the overfishing limit (OFL) recommended by the Gulf SSC at 7.90 million pounds.

Action 2-2: Overfishing Threshold (Maximum Fishing Mortality Threshold)

Alternative 3: Specify the MFMT as the OFL defined by the Gulf SSC at 7.90 million pounds.

Action 2-3: Overfished Threshold (Minimum Stock Size Threshold)

Alternative 3: MSST = (1-M) x B_{MSY}. Definitions: M = instantaneous natural mortality and B_{MSY} = biomass at maximum sustainable yield or the appropriate proxy.

Action 3: Establish Sector Allocations for Caribbean Spiny Lobster in State and Federal Waters from North Carolina through Texas

Alternative 1: No action – Do not establish sector allocations.

Action 4: Acceptable Biological Catch (ABC) Control Rule, ABC Level(s), Annual Catch Limits, and Annual Catch Targets for Caribbean Spiny Lobster

Action 4-1: Acceptable Biological Catch (ABC) Control Rule

Alternative 2: Adopt the following ABC Control rule: **Option b**: the Gulf Council's ABC control rule.

Action 4-2: Set Annual Catch Limits (ACLs) for Caribbean Spiny Lobster

Alternative 2: Set an ACL for the entire stock based on the ABC: **Option a:** ACL = ABC = (7.32 million pounds).

Action 4-3: Set Annual Catch Targets (ACTs) for Caribbean Spiny Lobster

Alternative 2: Set an ACT for the entire stock. **Option a:** ACT = OY = 90% of ACL (6.59 million pounds).

Action 5: Accountability Measures (AMs) by Sector

Alternative 4: Establish the ACT as the accountability measure for Caribbean spiny lobster (ACT = 6.59 million pounds).

Action 6: Develop or Update a Framework Procedure and Protocol for Enhanced Cooperative Management for Spiny Lobster

Alternative 2: Update the current Protocol for Enhanced Cooperative Management.

Alternative 4: Revise the current Regulatory Amendment Procedures to create an expanded Framework Procedure: **Option a:** Adopt the base Framework Procedure

Action 7: Modify Regulations Regarding Possession and Handling of Short Caribbean Spiny Lobsters as "Undersized Attractants"

Alternative 4: Allow undersized spiny lobster not exceeding 50 per boat and 1 per trap aboard each boat if used exclusively for luring, decoying or otherwise attracting non-captive spiny lobsters into the trap

Action 8: Modify Tailing Requirements for Caribbean Spiny Lobster for Vessels that Obtain a Tailing Permit

Alternative 3: Revise the current regulations to clearly state that all vessels must have either 1) a valid federal spiny lobster permit or 2) a valid Florida Restricted Species Endorsement and a valid Crawfish Endorsement associated with a valid Florida Saltwater Products License to obtain a tailing permit.

Alternative 4: All Caribbean spiny lobster landed must either be landed all "whole" or all "tailed".

Action 9: Limit Spiny Lobster Fishing in Certain Areas in the EEZ off Florida to Protect Threatened Staghorn and Elkhorn Corals (*Acropora* spp.)

Alternative 1: No Action – Do not limit spiny lobster fishing in certain areas in the EEZ off Florida to address ESA concerns for *Acropora* spp.

Action 10: Require Gear Markings so all Spiny Lobster Trap Lines in the EEZ off Florida are Identifiable

Alternative 1: No Action – Do not require gear marking measures for spiny lobster trap lines.

Action 11: Authority to Remove Derelict or Abandoned Spiny Lobster Traps Found in the EEZ off Florida

Alternative 6: Delegate authority to regulate the removal of derelict or abandoned spiny lobster traps occurring in the EEZ off Florida to FWC.

EXECUTIVE SUMMARY of SPINY LOBSTER AMENDMENT 10

EXECUTIVE SUMMARY

The Gulf of Mexico and South Atlantic Fishery Management Councils (Councils) are developing regulations to bring the spiny lobster fishery management plan into compliance with new requirements of the Magnuson-Stevens Fishery Conservation and Management Act (Magnuson-Stevens Act) and to meet requirements of the Endangered Species Act. The Spiny Lobster fishery management plan is jointly managed by the Councils. The regulations are expected to be implemented in 2012.

This document is intended to serve as a SUMMARY for all the actions and alternatives in Spiny Lobster Amendment 10/Environmental Impact Statement. It outlines the alternatives with a focus on the preferred alternatives. It also provides background information and includes a summary of the expected biological and socio-economic effects from the management measures.

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BACKGROUND

What Actions Are Being Proposed?

The Councils are specifying, where applicable, the following for many managed species:

- changes to the species composition of the fishery management plan;
- control rules for acceptable biological catch;
- annual catch limits;
- annual catch targets;
- allocations; and,
- accountability measures

Who is Proposing the Action?

Councils are proposing the actions. The Councils develop the amendments and submit them to NOAA Fisheries Service who ultimately approves, disapproves, or partially approves the actions in the amendment on behalf of the Secretary of Commerce (Secretary). NOAA Fisheries Service is an agency in the National Oceanic and Atmospheric Administration.

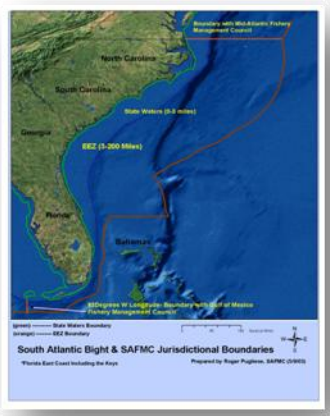
Gulf of Mexico & South Atlantic Fishery Management Councils

- Responsible for conservation and management of fish stocks
- Consist of 13-17 voting members who are appointed by the Secretary of Commerce
- Management area is from 3 to 200 miles off the coasts of North Carolina through Texas; 9-200 miles off Florida West Coast & Texas.
- Responsible for developing fishery management plans and recommends regulations to NOAA Fisheries Service for implementation

Where is the Project Located?

Management of the federal spiny lobster fishery located in the South Atlantic and Gulf of Mexico in the 3-200 nautical mile (nm) (9-200 nm off Florida West Coast & Texas) U.S. Exclusive Economic Zone (EEZ) is conducted under the Fishery Management Plan (FMP) for the Spiny Lobster Fishery in the Gulf of Mexico and South Atlantic Regions (GMFMC/SAFMC 1982) (**Figure 1-1**).

Figure 1-1. Jurisdictional boundary of the South Atlantic Fishery Management Council.



Why are the Councils Considering Action?

The Magnuson-Stevens Act requires the Regional Fishery Management Councils and NOAA Fisheries Service to prevent overfishing while achieving optimum yield from each fishery. When it is determined a stock is undergoing overfishing, measures must be implemented to end overfishing. In cases where stocks are overfished, the Councils and NOAA Fisheries Service must implement rebuilding plans. Revisions to the Magnuson-Stevens Act in 2006 require that in 2010, FMPs for fisheries determined by the Secretary to be subject to overfishing establish a mechanism for specifying annual catch limits (ACLs) at a level that prevents overfishing and does not exceed the recommendations of the respective Council's Scientific and Statistical Committee (SSC) or other established peer review processes. These FMPs must also establish, within this timeframe, measures to ensure accountability. ACLs and measures to ensure accountability must be implemented in 2011 for most other fisheries. The Councils are addressing the lobster species in this amendment.

Which Species Will Be Affected ?

These actions would apply to the following species:

- Caribbean spiny lobster, *Panulirus argus*
- smoothtail spiny lobster**,** *Panulirus laevicauda*
- spotted spiny lobster, *Panulirus guttatus*
- Spanish slipper lobster, *Scyllarides aequinoctialis*
- ridged slipper lobster, *Scyllarides nodifer*

CATEGORIES OF ACTIONS

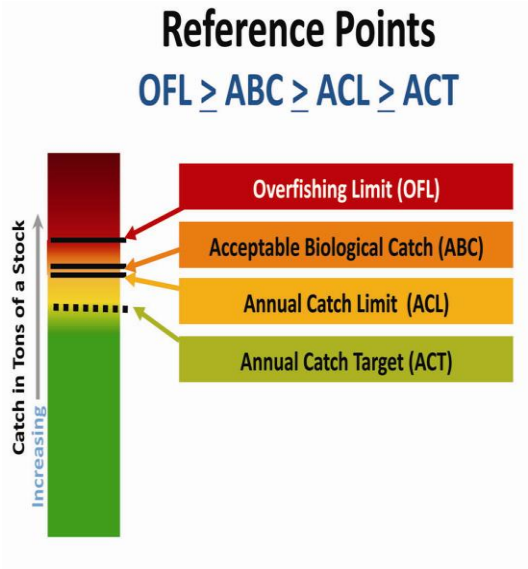
There are six categories of actions in Spiny Lobster Amendment 10.

Changes to the Species Composition of the Fishery Management Plan

The Council is considering removing species from the Spiny Lobster Fishery Management Plan.

Control Rules for Acceptable Biological Catch

Acceptable Biological Catch (ABC) is the range of estimated allowable catch for a species of species group. *ABC Control Rule* is a policy for establishing a limit or target fishing level that is based on the best available scientific information and is established by fishery managers in consultation with fisheries scientists. Control rules should be designed so that management actions become more conservative as biomass estimates, or other proxies, for a stock or stock complex decline, and as science and management uncertainty increases.



Annual Catch Limits

Annual catch limit (ACL) is the level of catch that triggers accountability measures. It is expressed either in pounds or numbers of fish. The level may not exceed the ABC.

Annual Catch Targets

Annual catch target (ACT) is an amount of annual catch of a stock or stock complex that is the management target of the fishery, and accounts for management uncertainty in controlling the actual catch at or below the ACL. Annual catch targets are recommended in the system of accountability measures so that ACL is not exceeded.

Sector Allocations

Allocation is distribution of the opportunity to fish among user groups or individuals. The share a user group gets is sometimes based on historic harvest amounts.

Accountability Measures

Accountability measure (AM) is an action taken to keep catch below or to avoid exceeding an identified catch level (usually the ACL). The following are four AMs: specification of an ACT, in-season regulations changes, post-season regulation changes, and specification of management measures (e.g., bag limits).

Purpose and need of the proposed action

The *purpose* of Amendment 10 is to:

- bring the Spiny Lobster FMP into compliance with Magnuson-Stevens Act requirements for ACLs and AMs to prevent overfishing;
- update biological reference points, policies, and procedures; and
- consider adjustment of management measures to aid law enforcement and comply with measures to protect endangered species.

The *need* for the action is to keep the Caribbean spiny lobster stock at a level that will produce optimum yield. Optimum yield, the ultimate goal of any fishery, is the level of harvest that provides the greatest economic, social, and ecological benefit to the nation.

List of Management Actions

There are 11 *actions* in Amendment 10 that will address the purpose and need.

Action 1: Other species in the Spiny Lobster FMP
Action 2: Modify the current definitions of Maximum Sustainable Yield, Overfishing Threshold, and Overfished Threshold for Caribbean Spiny Lobster
  Action 2-1: Maximum Sustainable Yield (MSY)
  Action 2-2: Overfishing Threshold (MFMT)
  Action 2-3: Overfished Threshold (MSST)
Action 3: Establish sector allocations for Caribbean Spiny Lobster in State & Federal waters from North Carolina through Texas
Action 4: Acceptable Biological Catch Control Rule, ABC Level(s), Annual Catch Limits, and Annual Catch Targets for Caribbean Spiny Lobster
  Action 4-1: Acceptable Biological Catch (ABC) Control Rule
  Action 4-2: Set Annual Catch Limits (ACLs) for Caribbean Spiny Lobster
  Action 4-3: Set Annual Catch Targets (ACTs) for Caribbean Spiny Lobster
Action 5: Accountability Measures (AMs) by Sector
Action 6: Develop or Update a Framework Procedure and Protocol for enhanced cooperative management for Spiny Lobster
Action 7: Modify regulations regarding possession and handling of short Caribbean Spiny Lobsters as "Undersized Attractants"
Action 8: Modify tailing requirements for Caribbean Spiny Lobster for vessels that obtain a tailing permit

The following Actions address Endangered Species Act considerations:

Action 9: Limit Spiny Lobster fishing in certain areas in the EEZ off Florida to protect threatened Staghorn and Elkhorn corals (*Acropora* spp.)
Action 10: Require gear markings so all spiny lobster trap lines in the EEZ off Florida are identifiable
Action 11: Authority to remove derelict or abandoned spiny lobster traps found in the EEZ off Florida

Spiny Lobster Distribution

From left to right: Caribbean spiny lobster, smoothtail spiny lobster, and spotted spiny lobster.

The Caribbean spiny lobster is widely distributed throughout the western Atlantic Ocean as far north as North Carolina to as far south as Brazil including Bermuda, the Bahamas, Caribbean, and Central America. DNA analyses indicate a single stock throughout its range. This species inhabits shallow waters, occasionally as deep as 295 ft (90 m), possibly even deeper. They live among rocks, on reefs, in grass beds or in any habitat that provides protection. The species is gregarious and migratory. Maximum total body length recorded is 18 inches, but the average total body length is 8 inches. Distribution and dispersal is determined by the long free-floating larval phase (up to 9 months) until they settle to the bottom.

ACTIONS IN THE SPINY LOBSTER FISHERY MANAGEMENT PLAN

1. Removing Species from FMP

Action 1 (Species in Unit) Alternatives
Alternative 1: No Action – Retain the following species: smoothtail spiny lobster**,** *Panulirus laevicauda,* spotted spiny lobster, *Panulirus guttatus,* Spanish slipper lobster, *Scyllarides aequinoctialis,* in the Fishery Management Plan for data collection purposes only, but do not add them to the Fishery Management Unit.
Alternative 2: Set annual catch limits and accountability measures using historical landings for Spanish slipper lobster *Scyllarides aequinoctialis,* after adding them to the Fishery Management Unit and for ridged slipper lobster, *Scyllarides nodifer*, currently in the Fishery Management Unit.
Alternative 3: List species as ecosystem component species: **Option a:** smoothtail spiny lobster**,** *Panulirus laevicauda* **Option b:** spotted spiny lobster, *Panulirus guttatus* **Option c:** Spanish slipper lobster, *Scyllarides aequinoctialis* **Option d:** ridged slipper lobster, *Scyllarides nodifer*
Preferred Alternative 4: Remove the following species from the Joint Spiny Lobster FMP: **Preferred Option a:** smoothtail spiny lobster**,** *Panulirus laevicauda* **Preferred Option b:** spotted spiny lobster, *Panulirus guttatus* **Preferred Option c:** Spanish slipper lobster, *Scyllarides aequinoctialis* **Preferred Option d:** ridged slipper lobster, *Scyllarides nodifer*

The preferred alternative would remove species based on the following criteria:

(1) Low landings
(2) Not heavily targeted; some landed as bycatch in shrimp fishery
(3) Under State of Florida Regulations – more conservative than federal

Five species are in the Spiny Lobster FMP, but only two species (Caribbean spiny lobster and ridged slipper lobster) currently have regulations and are within the fishery management unit. After many discussions the Councils determined that federal management of these four lobster species was no longer necessary. The Councils felt that the State of Florida could provide adequate if not better protection for these species compared to the current federal management plan. The Councils are also concerned that the requirement for ACLs and AMs for some species will create a significant administrative burden to science and the administrative environment as landings are minimial and variable over time. In addition, little biological or landings data are available for many of these species causing problems specifying ACLs.

Removal

Common Name	Scientific Name
Caribbean spiny lobster	*Panulirus argus*
Smoothtail spiny lobster	*Panulirus laevicauda*
Spotted spiny lobster	*Panulirus guttatus*
Spanish slipper lobster	*Scyllarides aequinoctialis*
Ridged slipper lobster	*Scyllarides nodifer*

Impacts from Action 1 (Species in the FMP)

Biological

Alternative 1 would not meet the National Standard 1 guidelines and would have the same impacts to the physical or biological environments as currently exist. **Alternative 2** would be expected to have positive impacts on the physical and biological environments if catch is constrained below current levels. **Alternative 3** impacts would be the same as currently exist, unless new data collection programs are developed. **Preferred Alternative 4** would remove all of the lobster species other than Caribbean spiny lobster from the FMP. If other agencies, such as the individual states, took over management, positive physical and biological impacts could occur. In particular, Florida regulations concerning the taking of egg-bearing females, or stripping or removing eggs, are more conservative than federal regulations for most of these species.

Economic

Under **Alternative 1,** all status quo management conditions and related operation of the fishery, and associated economic benefits, would remain unchanged. The economic benefit for **Alternative 2** is estimated by the ex-vessel value of $24,232 which could be reduced to zero under **Alternatives 1, 3** or **4.** Among the options for **Alternative 3**, the ex-vessel value of landings of Scyllarid lobsters could decline by as much as $24,232 per year. This amount represents the estimated economic impact of **Alternative 3, Option c** and **Option d** together, when compared with **Alternative 1**. The economic impact of **Alternative 3, Option a,** or **Alternative 3, Option b**, is not known, but assumed to be less. It assumed that the economic impacts of **Alternatives 3-4** are essentially the same.

Social

Alternative 1 would have little impact on the social environment but likely require ACLs and AMs for all species in the plan. Setting ACLs and AMs in **Alternative 2** would likely have an impact on the social environment depending upon the thresholds selected and the measures that were implemented to account for any overages for little used species. Listing species as ecosystem components as in **Alternative 3** or removing species from the FMP as in **Preferred Alternative 4** would likely have few social impacts unless one or more of the **Preferred Options a-d** were not selected. Leaving any species in the FMP would require ACLs and AMs be set. Because landing information on these species is imprecise, setting an ACL and subsequent AMs would be problematic and could cause some social disruption and changes in fishing behavior if thresholds were set at such a level that would affect current harvesting patterns or linked to harvest of other species.

Administrative

Alternative 1 would not meet the requirements of the Magnuson-Stevens Act, and could leave NOAA Fisheries Service and the Councils subject to litigation, which would result in a significant administrative burden. Specifying an ACL alone (**Alternative 2**) would not increase the administrative burden over the status-quo. However, the monitoring and documentation needed to track the ACL could result in a need for additional cost and personnel resources because a monitoring mechanism is not already in place. After the ACL is specified, the administrative burden associated with monitoring and enforcement, implementing management measures, and accountability measures would increase. **Alternative 3** would eliminate the administrative burden associated with establishing ACLs and AMs for those species. **Preferred Alternative 4** would remove species from the FMP, resulting in less administrative burden with regards to establishing ACLs and AMs.

2. Modify Maximum Sustainable Yield, Overfishing, and Overfished

The Councils are considering separate alternatives for these 3 actions.

Action 2-1 (Maximum Sustainable Yield) Alternatives

Alternative 1: No Action- Use the current definitions of MSY as a proxy. The Gulf of Mexico approved definition**:** MSY is estimated as 12.7 million pounds annually for the maximum yield per recruit size of 3.5 inch carapace length. The South Atlantic approved definition: MSY is defined as a harvest strategy that results in at least a 20% static SPR (spawning potential ratio).

Alternative 2: Modify the Gulf of Mexico definition to mirror the South Atlantic definition of MSY proxy, defined as 20% static SPR.

Alternative 3: the MSY equals the yield produced by fishing mortality at maximum sustainable yield (F_{MSY}) or proxy for F_{MSY}. Maximum sustainable yield will be defined by the most recent SEDAR and joint Scientific and Statistical Committee processes.

Preferred Alternative 4: the MSY proxy will be the Overfishing Limit (OFL) recommended by the Gulf of Mexico Scientific and Statistical Committee at 7.90 million pounds.

Action 2-2 (Overfishing Threshold) Alternatives

Alternative 1: No Action - Use the current definitions of overfishing thresholds. The Gulf and South Atlantic approved definition: overfishing level as a fishing mortality rate (F) in excess of the fishing mortality rate at 20% static SPR ($F_{20\%}$ static SPR).

Alternative 2: Specify the Maximum Fishing Mortality Threshold (MFMT) as F_{MSY} or F_{MSY} proxy. The most recent SEDAR and joint Scientific and Statistical Committees will define F_{MSY} or F_{MSY} proxy. This should equal the Overfishing Limit (OFL) provided by the Scientific and Statistical Committees (SSCs). The Councils will compare the most recent value for the current fishing mortality rate (F) from the SEDAR/SSC process to the level of fishing mortality that would result in overfishing (MFMT) and if the current F is greater than the MFMT, overfishing is occurring. Comparing these two numbers:

- $F_{CURRENT}$/MFMT = X.XXX

*This comparison is referred to as the **overfishing ratio**. If the ratio is greater than 1, then overfishing is occurring.

Preferred Alternative 3: Specify the Maximum Fishing Mortality Threshold (MFMT**)** as the Overfishing Limit (OFL) defined by the Gulf of Mexico Scientific and Statistical Committee at 7.90 million pounds.

Action 2-3 (Overfished Threshold) Alternatives

Alternative 1: No Action – Do not establish an overfished threshold. The Gulf Council does not have an approved definition of the overfished threshold. The South Atlantic Council approved definition is a framework procedure to add a biomass based component to the overfished definition, due to no biomass levels and/or proxies being available.

Alternative 2: The MSST is defined by the most recent SEDAR and joint Scientific and Statistical Committees process. The Councils will compare the current spawning stock biomass (SSB) from the SEDAR and Scientific and Statistical Committees process to the level of spawning stock biomass that could be rebuilt to the level to produce the MSY in 10 years. Comparing these two numbers:

- $SSB_{CURRENT}$/MSST = Y.YYY

This comparison is referred to as the **overfished ratio**. If the ratio is less than 1, then the stock is overfished.

Preferred Alternative 3: The MSST = (1-M) x B_{MSY}.

Maximum Sustainable Yield (MSY)

Largest long-term average catch or yield that can be taken from a stock or stock complex under prevailing ecological and environmental conditions.

- The Councils must specify MSY or MSY proxy.
- MSY for Caribbean spiny lobster cannot be calculated until a Caribbean-wide assessment is conducted. Therefore, a proxy must be used.
- A proxy is a placeholder until sufficient data become available to estimate MSY.
- Preferred MSY proxy = 7.90 million pounds

Overfishing

- None now
- Overfishing is occurring if landings exceed 7.90 million pounds

Impacts from Action 2 (Modify Maximum Sustainble Yield, Overfishing, and Overfished)

Biological

Alternative 1 under all actions could have negative impacts to the physical and biological/ecological environment, due to the biological reference points being inconsistent between the two Councils. Due to the Caribbean spiny lobster fishery being a jointly managed species, now may be the best time for the Councils to adopt the same biological reference points in this full amendment. The Councils currently have an approved definition for the overfishing threshold (**Action 2-2**). Consistency between Councils when establishing biological reference points would be more beneficial for the physical and biological environments. **Alternative 3** under Action 2-1 (MSY) and **Alternatives 2** under Action 2-2 (Overfishing Threshold) and Action 2-3 (Overfished Threshold) would modify all biological determination criteria from the current definitions to those from the most recent SEDAR and SSC processes. However, because the most recent stock assessment was not accepted due to external recruitment from other Caribbean populations, these alternatives may not provide the best protection to the resource. **Preferred Alternative 4** (Action 2-1) provides the best protection of the resource because the 2010 update assessment was rejected. **Preferred Alternative 3** under Action 2-2 (MFMT) is based on Caribbean spiny lobster landings and may provide the best protection of the resource and thereby the biological and ecological environments. However, without a clear estimate of Caribbean spiny lobster biomass, it is unknown if **Alternatives 2** or **3** under Action 2-3 (Overfished Threshold) would provide the best protection for the resource and various subsequent negative and positive impacts to the biological and ecological environments.

Economic

Defining the MSY, MFMT, and MSST of a species does not alter the current harvest or use of the resource. Since there would be no direct effects on resource harvest or use, there would be no direct effects on fishery participants, associated industries, or communities.

Social

The setting of MSY for Caribbean spiny lobster is primarily a biological threshold that may impact the social environment depending upon where the threshold is set. **Alternative 1** would likely have few impacts as it uses the present definition. **Alternative 2** and **Alternative 3** could have impacts if the threshold is well below current landing levels, although it is likely that **Alternative 2** would not change that threshold substantially. The **Preferred Alternative 4**, which uses the MSY proxy recommended by the SSC, may have few negative social effects if the threshold is above the mean landings and not substantially reduced by other management action.

Administrative

There could be additional administrative burdens, if the biological reference points are not modified for consistency. Changing these biological reference points is required under the Magnuson-Stevens Act, and if not done, could leave NOAA Fisheries Service and the Councils subject to litigation, which would result in a significant administrative burden.

3. Sector Allocations

The Councils are evaluating allocating the Annual Catch Limit (ACL) by recreational and commercial sectors. This can be helpful in preventing the total ACL from being exceeded.

Action 3 (Sector Allocation) Alternatives
Preferred Alternative 1: No action – Do not establish sector allocations.
Alternative 2: Allocate the spiny lobster ACL by the following sector allocations: 80% commercial and 20% recreational.
Alternative 3: Allocate the spiny lobster ACL by the following sector allocations: 74% commercial and 26% recreational.
Alternative 4: Allocate the spiny lobster ACL by the following sector allocations: 78% commercial and 22% recreational.
Alternative 5: Allocate the spiny lobster ACL by the following sector allocations: 77% commercial and 23% recreational.
Alternative 6: Allocate the spiny lobster ACL by the following sector allocations: 76% commercial and 24% recreational.

Impacts from Action 3 (Sector Allocations)

Biological

Allocating the ACL between the recreational and commercial sectors would have no direct effect on the physical and biological/ecological environments.

Economic

The sector allocations under Action 3 have no application in Amendment 10 apart from ACL and ACT alternatives under Action 4 and that is where they are analyzed.

Social

By establishing sector allocations there would likely be some changes in fishing behavior and impacts to the social environment. The mere act of separating the ACL into two sector ACLs has the perception of creating scarcity in that limits have been imposed on each individual sector. **Preferred Alternative 1** provides an overall ACL which would allow for harvest to freely flow between the commercial and recreational sectors as it has in the past so would have few if any negative social effects. **Alternatives 2** and **4** would provide an increase in allocation to the commercial sector and subsequent reduction to the recreational, while **Alternative 3** would provide an increase to the recreational sector.

Alternatives 5 and **Alternative 6** both provide increases to the recreational sector, although smaller than previous alternatives. So, in all cases, it would be expected that there may be negative social effects to whichever sector receives less than their current allocation and those effects would correspond to the amount of reduction.

Administrative

Sector allocations (**Alternatives 2-6)** would increase the burden on the administrative environment because two ACLs or ACTs would need to be monitored rather than one, as in **Preferred Alternative 1**. There are no administrative impacts from allocating among the commercial and recreational sectors other than preparation of the amendment document and notices.

Why the preferred alternative would not establish sector ACLs:

1) ACL expected to be below recent landings
2) No data system for recreational sector
3) Commercial landings are not tracked in timely fashion for in–season quota monitoring

4. ABC Control Rule/ABC, ACLs, & ACTs

The Councils are considering separate alternatives for these requirements.

Action 4-1 (Allowable Biological Catch Control Rule) Alternatives
Alternative 1: No Action – Do not establish an ABC Control Rule for spiny lobster.
Preferred Alternative 2: Adopt the following ABC Control rule: **Option a**: the South Atlantic Council's ABC control rule. **Preferred Option b**: the Gulf Council's ABC control rule (7.32 million pounds).
Alternative 3: Establish an ABC Control Rule where ABC equals OFL.
Alternative 4: Specify ABC as equal to the mean of the last 10 years landings.
Alternative 5: Specify ABC as equal to the high of the last 10 years landings.
Alternative 6: Specify ABC as equal to the low of the last 10 years landings.

Action 4-2 (Annual Catch Limits) Alternatives
Alternative 1: No Action – Do not set Annual Catch Limits.
Preferred Alternative 2: Set an Annual Catch Limit for the entire stock based on the Acceptable Biological Catch: **Preferred Option a:** Annual Catch Limit = Acceptable Biological Catch (7.32 mp). **Option b:** Annual Catch Limit = 90% of Acceptable Biological Catch (6.59 mp). **Option c:** Annual Catch Limit = 80% of Acceptable Biological Catch (5.86 mp).
Alternative 3: Set Annual Catch Limits for each sector based on allocations determined in Action 3: **Option a:** Annual Catch Limit = (sector allocation x Acceptable Biological Catch). **Option b:** Annual Catch Limit = 80% or 90% of (sector allocation x Acceptable Biological Catch). **Option c:** Annual Catch Limit = sector allocation x (80% or 90% x% of Acceptable Biological Catch).

Action 4-3 (Annual Catch Target) Alternatives
Alternative 1: No Action – Do not set Annual Catch Targets.
Preferred Alternative 2: Set an Annual Catch Target for the entire stock. **Preferred Option a:** Annual Catch Target = OY = 90% of ACL (6.59 mp). **Option b:** Annual Catch Target = OY = ACL (7.32 mp). **Option c**: Annual Catch Target = 6.0 million pounds.
Alternative 3: Set Annual Catch Targets for each sector based on allocations from Action 3. **Option a:** Annual Catch Target = OY = (sector allocation x Annual Catch Limit). **Option b:** Annual Catch Target = OY = 90% of (sector allocation x Annual Catch Limit). **Option c:** Annual Catch Target = OY = sector allocation x (90% of Annual Catch Limit).

Preferred Alternatives

Allowable Biological Catch (ABC) Control Rule & ABC

- OFL = 10-year mean + 2 standard deviations = 7.90 million pounds
- ABC = 10-year mean + 1.5 standard deviations = 7.32 million pounds

Annual Catch Limit (ACL)

- ACL = ABC = 7.32 million pounds

Annual Catch Target (ACT)

- ACT = 90% ACL = 6.59 million pounds

Impacts from Action 4 (ABC Control Rule/ABC, ACLs, and ACTs)

Biological

Setting an ABC control rule, ACL, or ACT could affect the physical environment if harvest changes from current levels. An ACL equal to the ABC would allow a higher level of landings than an ACL lower than the ABC. Likewise, not setting an ACT would allow a higher level of landings than setting an ACT. If the ACL is separated by sectors, accountability measures would be triggered as each sector reaches its limit. This level of control would be expected to result in greater positive impacts on the biological environment because catch would be more restricted. The preferred alternatives set an ACL and ACT higher than the recent 10-year average; therefore, no biological impacts would be expected.

Economic

Under **Alternative 1**, status quo management conditions and related operation of the fishery, and associated economic benefits, would remain unchanged, with some caveats. Given the alternatives specified in Amendment 10, however, the more traditional output-control regulations for the commercial sector (to limit landings, impose trips limits and shorten seasons) of Actions 4 and 5 may be seen as having differing, if not conflicting objectives, in that they would introduce a move away from a private market mechanism for allocating harvesting rights. The regulations for recreational fishing of Actions 4 and 5 as well as state regulations are more harmonious, if not market oriented. Regardless, the impact on economic activity associated recreational fishing of lower bag limits, early season closures, and/or shorter seasons are more difficult to quantify than are counterparts for commercial fishing.

Social

Setting an ABC Control rule, ACL or ACT can have indirect effects on the social environment, although it is difficult to know what those effects will be until a definitive number has been assigned which translates into harvest levels. Certainly, setting thresholds that adequately assess biological risk through harvest levels on stocks that are vulnerable can help stabilize landings and thereby provide long-term benefits to the fishery which should translate into positive social benefits over time. It is the short-term costs involved that often drive perceptions of negative impacts. These impacts can translate into real costs that have significant impacts to both the commercial and recreational sectors. The ABC and ACLs that have been selected through preferred alternatives in this amendment should not impose negative short term social effects and provide positive benefits over the long term as a sustainable stock should result.

Administrative

With establishment of an ACL or ACT, commercial landings may need to be included in the Southeast Fisheries Science Center's Quota Monitoring System. This system requires dealers to report landings, usually on a biweekly basis. If ACLs or ACTs are set by sector or gear, separate entries would be needed in the system.

5. Accountability Measures (AMs)

More than one alternative, option, sub-option, or combinations may be chosen as preferred.

Action 5 (Accountability Measures) Alternatives

Alternative 1: No Action – Do not set accountability measures. Currently there are no management measures in place that could be considered AMs.

Alternative 2: Establish commercial in-season accountability measures**:**

- **Option a**: close the commercial fishery when the ACL is projected to be met.
- **Option b**: implement a commercial trip limit when 75% of the commercial ACL is projected to be met.

Alternative 3: Establish post-season accountability measures:

- **Option a**: Commercial
  - **Sub-option i**: ACL payback in the fishing season following a previous years ACL overage.
  - **Sub-option ii**: Adjust the length of the fishing season following an ACL overage.
  - **Sub-option iii**: Implement a trip limit.
- **Option b**: Recreational
  - **Sub-option i**: ACL payback in the fishing season following an ACL overage. To estimate the overage, compare the recreational ACL with recreational landings over a range of years. For 2011, use only 2011 landings. For 2012, use the average landings of 2011 and 2012. For 2013 and beyond, use the most recent three-year running average.
  - **Sub-option ii**: Adjust the length of the fishing season following an ACL overage. To estimate the overage, compare recreational ACL with recreational landings over a range of years. For 2011, use only 2011 landings. For 2012, use the average landings of 2011 and 2012. For 2013 and beyond, use the most recent three-year running average.
  - **Sub-option iii**: Adjust bag limit for the fishing season following a previous seasons ACL overage.
- **Option c**: Recreational and commercial combined accountability measures
  - **Sub-option i**: Adjust season length for both recreational and commercial harvest of spiny lobster in the fishing season following an ACL overage
  - **Sub-option ii**: Recreational and commercial ACL payback in the fishing season following a previous years ACL overage (if a combined ACL is chosen).

Preferred Alternative 4: Establish the ACT as the accountability measure for Caribbean spiny lobster (6.59 million pounds).

If the ACT is exceeded the Councils will convene a review panel to determine if corrective action is necessary to prevent the ACL from being exceeded. Furthermore, if the catch exceeds the ACL more than once in the last four consecutive years, the entire system of ACLs and AMs would be re-evaluated as required by the National Standard 1 guidelines.

Prefered Alternative

Accountability Measures (AMs)

- AM = ACT = 6.59 million pounds
- If landings > 6.59 million pounds, Councils will convene a scientific review panel to determine if regulations need to change
- Framework will be used to implement changes
- NOAA Fisheries Service will work with Florida on any regulatory changes

ACT compared to Landings

- Last 10 years only exceeded in 2000/01 (7.5 mp) and 2002/03 (6.9 mp)
- Last 5 years below 6.59 mp (Table 2.4.1)
- Effort controls in place to limit catch
- Commercial = trap reduction program
- Recreational = season & bag limits
- No further regulations needed at this time
- Fishery seems to be in a period of lower landings as compared to earlier years
- If fishery productivity returns to earlier levels, and no overfishing is evident, the Councils would re-evaluate the ACT

Impacts from Action 5 (Accountability Measures)

Biological

Alternative 1 is not considered a viable option because it would specify no AM and therefore, would not limit harvest to the ACL or correct for an ACL overage if one were to occur. The Magnuson-Stevens Act requires that mechanisms of accountability be established for all federally managed species. **Alternative 2** would attempt to limit commercial harvest to levels at or below the ACL or ACT by reducing and/or closing harvest once a particular landings threshold is met for the commercial sector. The most biologically beneficial in-season AM would be a combination of **Option a** and **Option b**. **Alternative 3** includes a large suite of possible sector-specific post-season AMs that would be triggered in the event of an ACL overage. A combination of recreational and commercial AMs (**Options a** and **b**), would yield similar biological benefits when compared to **Option c**, which builds in a combination sector AMs. **Option b** alone would be the least biologically beneficial post-season AM because it does not compensate for any overages created by the commercial fishery. The biological impacts of **Preferred Alternative 4** would likely be similar to the status quo unless landings increase over recent years.

Economic

Under **Preferred Alternative 4**, the ACT of 6.59 mp exceeds the recent average landings of 5.039 mp, and would not be expected to have any economic impact, providing that sporadic instances of landings exceeding the ACL do not result in a fishery closure. This specification for the AM appears to minimize the potential for economic impact on small entities within the context of alternatives considered by the Councils for specifying sector allocations, ABC, ACL, ACT, and AM.

Social

The setting of AMs can have significant direct and indirect effects on the social environment as they usually impose some restriction on harvest. The long term effects should be beneficial as they provide protection from further negative impacts on the stock. While the negative effects are usually short term, they may at times induce other indirect effects through changes in fishing behavior.

Administrative

Alternative 1 would not produce near-term administrative impacts. However, this alternative would not comply with Magnuson-Stevens Act requirements and therefore, may trigger some type of legal action for not doing so. **Alternative 2** would result in some additional administrative cost and time burdens associated with tracking commercial landings in-season. **Alternative 3** could potentially produce a significant negative impact on the administrative environment regardless of the choice of options and sub-options. Under each of the sub-options spiny lobster would need to be added to the list of species tracked via MRFSS/MRIP, and through the quota management system. Implementing these ACL/AM tracking mechanisms is not a trivial undertaking and could result in significant administrative cost and time in the near-term and long-term. **Preferred Alternative 4** could result in moderate administrative impacts in the form of evaluations of actual harvest compared the ACT and ACL. If the ACT is exceeded or if the ACL is exceeded more than once within a four year time period, the burden on the administrative environment would likely increase if a regulatory amendment is needed to modify management measures or harvest limits for Caribbean spiny lobster.

6. Framework Procedure & Protocol

More than one alternative may be chosen as preferred.

Action 6 (Framework Procedure & Protocol) Alternatives
Alternative 1: No Action – Do not update the Protocol for Enhanced Cooperative Management or the Regulatory Amendment Procedure. **Preferred Alternative 2:** Update the current Protocol for Enhanced Cooperative Management. **Alternative 3:** Update the current Regulatory Amendment Procedures to develop a Framework Procedure to modify ACLs and AMs. **Preferred Alternative 4:** Revise the current Regulatory Amendment Procedures to create an expanded Framework Procedure: **Preferred Option a:** Adopt the base Framework Procedure **Option b:** Adopt the more broad Framework Procedure **Option c:** Adopt the more narrow Framework Procedure

Allows managers to respond more quickly to changes in the fishery and outlines how Florida, Councils, and NOAA Fisheries Service work cooperatively to manage the Caribbean Spiny Lobster fishery.

Framework

- Allows more rapid change in regulations
- Needs to be updated to add new requirements (adjustments to ABC, ACL, and ACT)
- Needs to be updated with new terminology

Cooperative Management

- Protocol outlines how federal and state managers work together
- Much of management is governed by Florida
- Needs to be update to add new names of organizations and update the steps

Impacts from Action 6 (Framework Procedure & Protocol)

Biological

Alternative 1 would maintain the Regional Administrator's current ability to adjust total allowable catch, quotas, trip limits, bag limits, size limits, seasonal closures, and area closures; however, no means would exist to make needed adjustments to the National Standard 1 harvest parameters in a timely manner. Such a scenario could be biologically detrimental because excessive levels of fishing mortality, or even overfishing, could persist until the appropriate harvest limitations could be put in place through amendment action. The impacts on the physical environment would not change under this alternative. **Preferred Alternative 2** would have no impact on the physical or biological environment because its only purpose is to update the protocol. **Alternatives 3** and **4** would likely be biologically beneficial for spiny lobster.

Economic

Action 6 is primarily administrative in intent. Implementation of Amendment 10 depends on cooperative management. There may be differences of opinion about economic impacts among respective legislative bodies, regulatory bodies and courts. Any differences in regulation between Florida and the Councils would have the most economic impact. This is because practically all of the landings of Caribbean spiny lobster occur in Florida, which has its own regulations for this species. Furthermore, Florida landings occur largely in Monroe County (approximately 90% for commercial landings and 67% for recreational landings. Hence, economic impacts under Amendment 10 would occur primarily in Florida and largely in Monroe County.

Social

The development of a framework procedure would have beneficial impacts on the social environment as management can react to changes in the stock status or fishery in a timelier manner. **Alternative 1** would not allow for these types of changes and could, over time, have negative indirect effects. However, framework actions that are done rapidly do not always provide for as much public input and comment on the actions as other regulatory processes. The benefits of timely action often outweigh the diminished timeframe for comment though. **Preferred Alternative 2** would provide consistency in language with regulatory changes and have few effects on the social environment. **Alternatives 3** and **4** provide options for implementing a framework procedure that becomes less restrictive in terms of timing and public input going from **Preferred Alternative 4, Option a** to **Option c**. As mentioned earlier, timing and public input become the parameters that are constrained by these options. While public input and participation by advisory panels can be beneficial, it is time consuming and can slow the process. Yet, that participation can provide a more acceptable regulation which may lead to better compliance.

Administrative

Alternative 1 would be the most administratively burdensome of the alternatives being considered, because all modifications to ACLs, ACTs, and AMs would need to be implemented through an FMP amendment, which is a more laborious and time consuming process than a framework action. **Preferred Alternative 2** would have no impact on the administrative environment. **Alternatives 3** would incur less of an administrative burden than **Alternative 1** because several steps in the lengthy amendment process would be eliminated. **Preferred Alternative 4** would incur even less of an administrative burden because other management measures could also be adjusted through framework actions. **Alternative 4, Option b** would be the least burdensome because it would allow the widest range of actions to take place under the framework procedure.

7. Use of Shorts as "Attractants"

Action 7 (Use of Shorts as "Attractants") Alternatives
Alternative 1: No Action – Allow the possession of no more than 50 undersized Caribbean spiny lobsters, or one per trap aboard the vessel, whichever is greater, for use as attractants. **Alternative 2:** Prohibit the possession and use of undersized Caribbean spiny lobsters as attractants. **Alternative 3:** Allow undersized Caribbean spiny lobsters, but modify the number of allowable undersized lobsters, regardless of the number of traps fished: **Option a:** allow 50 undersized lobsters **Option b:** allow 35 undersized lobsters **Preferred Alternative 4:** Allow undersized spiny lobster not exceeding 50 per boat and 1 per trap aboard each boat if used exclusively for luring, decoying or otherwise attracting non-captive spiny lobsters into the trap**.**

Preferred Alternative 4 tracks Florida regulations and would make law enforcement more effective.

Shorts as Attractants

- Traps are more efficient with attractants
- Mortality is estimated at 10% which is less than the release mortality in many other fisheries
- Live wells are required to reduce mortality
- If traps are less efficient, bycatch of other species could increase

Impacts from Action 7 (Use of Shorts as "Attractants")

Biological

Alternative 1 would produce the second highest rate of spiny lobster mortality associated with use as attractants relative to **Alternatives 2**, **3b,** and **Preferred Alternative 4**. **Alternative 2** would be the most biologically conservative alternative under this action since, theoretically, all mortality associated with using undersized lobsters as attractants would cease. **Alternative 3** could help to reduce fishing mortality attributable to use of undersized lobsters for baiting purposes. **Alternative 3** is not as precautionary as **Alternative 2**, and depending upon the option chosen, may only yield negligible biological benefits over the status quo. **Preferred Alternative 4** is the least biologically conservative for spiny lobster of all the alternatives considered because it would increase the number of undersized lobsters able to be maintained onboard a vessel for use as attractants. However, bycatch of other species may be reduced because traps will be left in the water a shorter period of time due to increased efficiency.

Economic

Alternative 1 would not result in any change in the use of undersized spiny lobsters in lobster traps as attractants. As a result, all status quo operation of the fishery, and associated economic benefits, would remain unchanged. **Alternative 2** would in practice require the use of more purchased bait, hence increase trip costs on average for commercial fishing for spiny lobster as a whole. This would reduce producer surplus for this activity. **Alternative 3** should reduce the fishing mortality associated with the use undersized Caribbean spiny lobster as attractants, more so for **Option b** than for **Option a,** when compared with **Alternative 1.** The economic impact of **Alternative 3** would be less than that of **Alternative 2,** and require the use of less purchased bait, hence less increase in trip costs for commercial fishing for spiny lobster as a whole. It would reduce producer surplus less than **Alternative 2,** when both are compared with **Alternative 1. Preferred Alternative 4** would not have an economic impact, is consistent with Florida regulations, and could bolster fishing in federal waters relative to fishing in state waters.

Social

The use of undersized lobster as attractants has been acceptable practice in the spiny lobster fishery for some time. **Alternative 1** would continue the difficulty that law enforcement faces with prosecuting undersized lobster violations because of inconsistency with state regulations. **Alternative 2** could solve the law enforcement issue, but may impose a hardship on lobster fishermen who utilize "shorts" as attractants, if their harvest is reduced as a result. The two options under **Alternative 3** would reduce the number allowed on board; however the difficulty for law enforcement would remain. With **Preferred Alternative 4** there is consistency with state regulation which would benefit law enforcement.

Administrative

Alternative 2 would create the lowest impact on the administrative environment since it would remove the need for enforcement personnel to check vessels for specific numbers of undersized lobsters. **Options a** and **b** under **Alternative 3** would not increase the administrative burden over the status quo since numbers of undersized lobsters would still need to be documented, just at a lower number. However, **Alternative 1, Alternative 3,** and **Preferred Alternative 4,** would not address the current enforcement concerns regarding the use of undersized lobster, and difficulty in prosecuting related violations would persist. Because **Preferred Alternative 4** is consistent with current state regulations in Florida, it would ease the burden on enforcement to track compliance across the state/federal jurisdictional boundary.

8. Modify "Tailing" Permits

More than one alternative may be chosen as preferred.

Action 8 (Modify "Tailing" Permit) Alternatives
Alternative 1: No Action – Possession of a separated Caribbean spiny lobster tail in or from the EEZ is allowed only when the possession is incidental to fishing exclusively in the EEZ on a trip of 48 hours or more, and a federal tailing permit is issued to and on board the vessel. **Alternative 2:** Eliminate the Tail-Separation Permit for all vessels fishing for Caribbean spiny lobster in Gulf and South Atlantic waters of the EEZ. **Preferred Alternative 3:** Revise the current regulations to clearly state that all vessels must have either 1) a valid federal spiny lobster permit or 2) a valid Florida Restricted Species Endorsements and a valid Crawfish Endorsement associated with a VALID Florida Saltwater Products License to obtain a tailing permit. **Preferred Alternative 4:** All Caribbean spiny lobster landed must either be landed all "whole" or all "tailed".

Modify "Tailing" Permits

- On long trips, product quality is better if tails are separated and iced or frozen
- Original intent for only commercial fishery
- Improves enforcement

Preferred Alternative 4 tracks recommendations by the commercial industry and will assist law enforcement.

Impacts from Action 8 (Modify "Tailing" Permits)

Biological

No biological benefit would be realized under **Alternative 1**. **Alternative 2** would be the most biologically conservative of all the alternatives being considered under this action. Removing the ability for fishermen to land any Caribbean spiny lobster tailed would increase the probability that most lobster landed would be of legal size since they could easily be measured. **Preferred Alternative 3** would result in negligible biological impacts because it is thought that there are very few recreational fishermen who have in their possession a Tail-Separation Permit. If **Preferred Alternative 3** were implemented in combination with **Preferred Alternative 4**, the issue of recreational fishermen obtaining Tail-Separation Permits would be addressed, and could; therefore, result in greater biological benefit than if **Preferred Alternative 4** were chosen alone.

Economic

Alternative 2 would reverse the long-standing Councils decision that provided an economic incentive to engage in multi-day, deep-water fishing for spiny lobster in the EEZ. **Alternative 2** would have an economic impact exclusively on the commercial sector when compared with **Alternative 1. Preferred Alternative 3** may affect some for-hire vessels by specifying that all vessels wanting federal tail-separation for the EEZ must have requisite permits for commercial fishing. Among the 1,330 vessels licensed to engage in for-hire fishing for spiny lobster in Florida in state and federal waters, none are reported to have permits for commercial fishing, although some may have heretofore acquired federal tail-separation permits. These for-hire vessels could continue to engage in for-hire fishing for lobster in the EEZ, but they could not possess or land lobster tails, and they might have to add ice-chest capacity to keep the more cumbersome whole lobsters fresh for paying customers. **Preferred Alternative 4** could have an economic impact on vessels engaged in deep-water, multi-day commercial fishing for spiny lobster. These vessels have landed whole and tailed lobsters on the same trip.

Social

Alternative 1 would provide no solution as no action would be taken. While **Alternative 2** would solve most of the law enforcement issues, it would not provide the benefits of the original intent which allows for fishermen who take longer fishing trips to accommodate space issues with whole lobsters. By requiring recreational fishermen to obtain state commercial permits to obtain a tailing permit under **Preferred Alternative 3** would remove some of the uncertainty for law enforcement, yet still impose some ambiguity in the regulations making it difficult to regulate harvest of undersized lobster. **Preferred Alternative 4** would remove some of the difficulty in prosecuting the harvest of undersized lobster and in conjunction with **Preferred Alternative 3** may be the best solution to a difficult problem while continuing to provide for fishermen's concerns of space on long trips.

Administrative

Under **Alternative 1**, the current level of administrative time and cost burdens would be maintained. Enforcement concerns related to the harvest of undersized lobsters would persist and recreational fishermen may continue to acquire Tail Separation Permits, which was an unintended consequence of previously implemented regulations. **Alternative 2** would have a positive impact on the administrative and law enforcement environments since the Tail-Separation Permit would no longer exist and the practice of tailing lobsters would be prohibited. **Preferred Alternative 3** would create a very small administrative burden when compared to the status quo because some updates to the current regulatory text would be necessary. **Preferred Alternative 4** would also require a modification to the regulations; however, the administrative burden would be very low.

9. Limit Fishing Areas to Protect Threatened Staghorn and Elkhorn Corals

Action 9 (Limit Fishing Area) Alternatives

Preferred Alternative 1: No Action – Do not limit spiny lobster fishing in certain areas in the EEZ off Florida to address ESA concerns for *Acropora* spp.

Alternative 2: Prohibit spiny lobster trapping on all known hardbottom in the EEZ off Florida in water depths less than 30 meters.

Alternative 3: Expand existing and/or create new closed areas to prohibit spiny lobster trapping in the EEZ off Florida.

- **Option a:** Create 24 —large closed areas to protect threatened *Acropora* spp. corals.
- **Option b:** Create 37 —medium closed areas to protect threatened *Acropora* spp. corals.
- **Option c:** Create 52 —small closed areas to protect threatened *Acropora* spp. corals.

Alternative 4: Expand existing and/or create new closed areas to prohibit all spiny lobster fishing in the EEZ off Florida.

- **Option a:** Create 24 —large closed areas to protect threatened *Acropora* spp. corals.
- **Option b:** Create 37 —medium closed areas to protect threatened *Acropora* spp. corals.
- **Option c:** Create 52 —small closed areas to protect threatened *Acropora* spp. corals.

Limit Fishing Areas

- NMFS Protected Resources staff is working with the commercial fishing industry to develop closed areas
- This action will be revisited in Amendment 11 to the FMP after further input from stakeholders
- Traps are generally not set on coral or hardbottom
- Traps are set on seagrass, rubble, or sandy habitats because these areas are less likely to damage traps
- The movement of traps during storms poses the greatest threat
- Areas were chosen to protect colonies with high conservation value and areas of high coral density

The Endangered Species Act (ESA) requires analyses to determine whether or not fishing operations impact threatened species including threatened and endangered staghorn and elkhorn corals (*Acropora* spp.). The ESA Biological Opinion specifies certain actions that must be taken to

Impacts from Action 9 (Limit Fishing Areas)

Biological

Preferred Alternative 1 would have the least biological benefit to *Acropora* spp. and would perpetuate the existing level of risk of interaction between these species and the fishery. Although this alternative would not meet the requirement established under the Biological Opinion, the Councils chose it as their preferred alternative to allow more time for stakeholder input on areas of important habitat to protect *Acropora* spp. coral. The Councils intend to quickly develop the new amendment and put measures into place that would provide protection for *Acropora* spp.. **Alternative 2** would provide the greatest biological benefit to *Acropora* spp. and other hardbottom/coral resources. **Alternative 3, Options a-c** would reduce the risk of trap damage to *Acropora* spp. by prohibiting the use of traps near areas of high *Acropora* spp. density or near colonies with high conservation value. **Alternative 3, Option a** would likely provide the greatest biological benefit and **Alternative 3, Option b** and **c** would likely have decreasing biological benefits. **Alternative 4** and the associated options would provide slightly more biological benefit to *Acropora* spp. colonies than **Alternative 3** and the associated options because it would prohibit all fishing for spiny lobster in the proposed closed areas.

Economic

Compared with **Preferred Alternative 1**, **Alternative 2** could preclude 1,441 trips per year in the EEZ off the Keys for 195 vessels, referring to trips with reported depths of less than 100
ft. **Alternative 2** would have the greatest economic impact. Under **Alternative 3**, 25 large areas, 32 medium areas, or 52 small areas would be closed, gross revenue would be 18.6%, 11.2% and 5.6% of $2.9 million, respectively. **Alternative 4** differs from **Alternative 3** in that it covers all fishing for spiny lobster, not just trap fishing.

Social

Preferred Alternative 1 would not meet the requirement in the Biological Opinion, although with the Councils' intent to address this issue in another amendment there should be positive social benefits. The most restrictive, **Alternative 2,** would have direct negative impacts on the social environment through harvest restrictions. **Alternatives 3** and **4** offer a broad array of options which provide less negative social impacts than **Alterative 2**, but may introduce other inefficiencies with regard to enforcement and compliance. Choosing smaller closed areas, as in **Alternative 3 Option b** and **c** may provide more flexibility for trap fishermen, but may make it more difficult to monitor and enforce compliance. **Alternative 4, Options b** and **c** would have similar social effects but for both commercial and recreational fishermen. Larger closed areas, like those in **Alternative 3, Option a** and **Alternative 4, Option a** may enhance enforcement, but could have more negative social effects on fishermen as they find less area to fish which could reduce harvests and force them to increase travel time to fishing grounds. Closed areas to traps could also create crowding as fishermen move more traps into areas where others are already placing traps or as recreational divers are also forced into areas that become congested.

Administrative

Preferred Alternative 1 would not meet the requirements of the Biological Opinion and requires the Councils to develop a new amendment that will address this requirement. Alternatives that create new closed areas will increase the administrative burden over the current level due to changes in maps, outreach and education, and greater enforcement needs. **Alternative 2** would require enforcement over the largest area. **Alternatives 3** and **4** are similar except **Alternative 3** applies to trap fishing only, and **Alternative 4** applies to all lobster fishing. **Alternative 4** would be easier to enforce because any boat in a closed area with lobster on board would be in violation of regulations. **Option a** would create less administrative and enforcement burden than **Option b** or **c**.

10. Require Gear Markings on Trap Lines

Action 10 (Gear Markings on Trap Line) Alternatives
Preferred Alternative 1: No Action – Do not require gear marking measures for spiny lobster trap lines. **Alternative 2:** Require all spiny lobster trap lines in the EEZ off Florida to be COLOR, or have a COLOR marking along its entire length. All gear must comply with marking requirements no later than August 2014. **Alternative 3:** Require all spiny lobster trap lines in the EEZ off Florida to have a permanently affixed 4-inch COLOR marking every 15 ft along the buoy line or at the midpoint if less than 15 ft. All gear must comply with marking requirements no later than August 2014.

Gear Markings on Trap Lines

- This action will be revisited in Amendment 11 to the FMP after further input from stakeholders
- Delayed implementation would minimize economic impacts from new line requirement
- Councils want public input to determine color that should be used
- Need to be able to identify endangered species interactions to a specific fishery

The Endangered Species Act (ESA) requires analyses to determine whether or not fishing operations impact threatened species including threatened staghorn and elkhorn corals (*Acropora* spp.). The ESA Biological Opinion specifies certain actions that must be taken to minimize the impacts from the federal spiny lobster fishery.

Impacts from Action 10 (Gear Markings on Trap Lines)

Biological

Preferred Alternative 1 would have no biological benefit for protected species. The Councils selected this alternative so that this action could be addressed in separate amendment after further input from stakeholders. **Alternative 2** would likely have slightly more biological benefit than **Alternative 3.** Requiring gear markings along the entire length of trap lines would minimize the likelihood that a portion of a spiny lobster trap line is recovered without an identifiable mark. **Alternative 3** would provide greater biological benefit than **Preferred Alternative 1** but the benefits would likely be less than **Alternative 2** for the reason described above. The trap marking requirements under **Alternatives 2** and **Alternative 3** would provide indirect benefits to sea turtles and smalltooth sawfish. Trap marking requirements would provide better understanding of the frequency of interactions between these species and the fishery. These requirements could also help rule out the spiny lobster fishery as a potential source of entanglement with protected species.

Economic

Lobster trap line replacement outside of the normal schedule and at a quicker pace implies an economic impact for **Alternatives 2 and 3**. Including all commercial vessels in the sector, the economic impact is less than it would have been in the past, because the number of traps fished in Florida has declined, along with the number of vessels, trips, and hours fished.

Social

Marking trap lines could have significant effects on the social environment as it may impose substantial costs to modify the gear according to testimony during public hearings. The **Preferred Alternative 1** would allow the Councils more time to address this issue and develop other alternatives in another amendment to the FMP that may assist in alleviating any of the hardships imposed by this requirement and still address concerns over interactions with protected species. **Alternatives 2** and **3** would require some type of marking on trap lines which are required in other fisheries and could resolve any future problems with identification of trap lines being associated with interactions with protected species yet may impose substantial costs to the industry. **Alternative 2** may allow for more efficient marking of lines as fishermen would not have measure each line marking pattern and therefore save time and money.

Administrative

Preferred Alternative 1 would not meet the requirements of the Biological Opinion and requires the Councils to develop a new amendment that will address this requirement. **Alternatives 2-4** would increase the need for enforcement to check if trap lines are properly colored or marked. On the other hand, the ability to identify lines entangled with endangered species would reduce the difficulty in determining assignment of incidental take to a particular fishery by NOAA Fisheries Service Protected Resources Division. In general, none of these alternatives would be more or less burdensome than any other.

11. Authority to Remove Derelict or Abandoned Spiny Lobster Traps in the EEZ off Florida

Action 11 (Removal of Derelict or Abandoned Trap) Alternatives

Alternative 1: No Action – Do not allow the public to remove any derelict or abandoned spiny lobster trap found in the EEZ off Florida.

Alternative 2: Allow the public to completely remove from the water any derelict or abandoned spiny lobster trap found in the EEZ off Florida from the end of lobster season trap removal period (usually April 5) until the beginning of the next season's trap deployment period (August 1).

Alternative 3: Allow the public to completely remove from the water any derelict or abandoned spiny lobster trap found in the EEZ off Florida during the closed seasons for both spiny lobster and stone crab (May 20-July 31).

Alternative 4: Allow the public to remove spiny lobster trap lines, buoys, and/or throats, but otherwise leave in place, any trap found in the EEZ off Florida from the end of season trap removal period (usually April 5) until the beginning of the next season's trap deployment period (August 1).

Alternative 5: Allow the public to remove spiny lobster trap lines, buoys, and/or throats, but otherwise leave in place, any trap found in the EEZ off Florida during the closed seasons for both spiny lobster and stone crab (May 20-July 31).

Preferred Alternative 6: Delegate authority to regulate the removal of derelict or abandoned spiny lobster traps occurring in the EEZ off Florida to FWC.

Removal of Derelict or Abandoned Spiny Lobster Traps in the EEZ off Florida

- Florida has a program to remove traps in state waters
- Industry has concerns about the public removing traps
- Under the Florida program, the public could participate in trap removal after an approval of the plan by FWC.

The Endangered Species Act (ESA) requires analyses to determine whether or not fishing operations impact threatened species including Threatened staghorn and elkhorn Corals (*Acropora* spp.). The ESA Biological Opinion specifies certain actions that must be taken to minimize the impacts from the federal spiny lobster fishery.

Impacts from Action 11 (Authority to Remove Derelict or Abandoned Spiny Lobster Traps in the EEZ off Florida)

Biological

Alternative 1 would have no biological benefit for protected species or benthic habitat and would perpetuate the existing level of risk for interactions between these protected species and lost trap gear. **Alternative 2** would likely have the greatest biological benefits. **Alternative 3** would also allow for the complete removal of derelict or abandoned trap gear, but for a shorter period. As a result, the biological benefit of **Alternative 3** may be less than **Alternative 2**. **Alternatives 4** and **5** would likely have less biological benefit than **Alternatives 2** and **3**. Allowing the public to remove trap line, buoys, and throats, would help reduce the potential impacts from ghost fishing and entanglement. However, traps remaining in the environment still have the potential to cause damage to benthic habitat. **Alternative 4** would allow more time for the public to remove trap line, buoys, and throats from derelict or abandoned traps, potentially increasing the biological benefit. Compared to **Alternatives 2-4**, **Alternative 5** would likely have the least biological benefit. It is currently unclear what type of biological impact **Preferred Alternative 6** would have.

Economic

Although none of these five alternatives would affect ongoing commercial fishing activity during the open season, fishermen's perception about any trap removal can impact their economic activity, wellbeing, and willingness to support regulations. Thus, **Preferred Alternative 6** may have the least economic impact. Federal and/or state outreach programs could change fishermen's perceptions over time, but change in attitudes may be a long time in coming.

Social

Alternative 1 may be the most desirable for some trap fishermen. Trap molestation is always a concern for trap fishermen and if the public is provided with an opportunity to clear derelict traps during the closed season, there may be a perception that their duty extends to other times and areas. **Alternative 2** would allow for a more lengthy time period for the public to participate than **Alternative 3** which is limited to the closed season for spiny lobster and stone crab. The negative effects of allowing the public to participate are that there is no guarantee that legal traps might be removed by someone unfamiliar with the regulations. **Alternatives 4** and **5** would remedy some of the above concerns by allowing for removal of only parts of the trap, but there are still concerns about the public's knowledge and familiarity with the regulations. **Preferred Alternative 6** would allow the FWC to develop a program for trap removal that might address the concerns mentioned with previous alternatives and would likely have the fewest negative social effects.

Administrative

Alternative 1 would have no impacts on the administrative environment. **Alternatives 2** and **3** may create enforcement problems because someone with a trap aboard their vessel may have been removing it from the water because they found it abandoned or because they were illegal fishing. **Alternatives 4** and **5** would only allow the public to disable traps and would not allow them to retain the traps on board; thus enforcement would be easier. **Preferred Alternative 6** would have no impacts on the administrative environment for the federal government, but would increase the burden on the state government.

1.0 INTRODUCTION

This Final Environmental Impact Statement (FEIS) for Amendment 10 to the Fishery Management Plan for Spiny Lobster in the Gulf of Mexico and South Atlantic (Spiny Lobster FMP) will bring the FMP into compliance with Magnuson-Stevens Fishery Conservation and Management Act (Magnuson-Stevens Act) requirements. The Spiny Lobster FMP is jointly managed by the Gulf of Mexico and South Atlantic Fishery Management Councils (Councils).

1.1 Background

In 2006, the Magnuson-Stevens Act was re-authorized and included a number of changes to improve conservation of managed fishery resources. The goals require that conservation and management measures "shall prevent overfishing while achieving, on a continuing basis, the optimum yield from each fishery for the United States fishing industry." Included in these changes are requirements that the Regional Councils must establish both a mechanism for specifying annual catch limits (ACLs) at a level such that overfishing does not occur in the fishery, and accountability measures (AMs) to ensure the ACLs are not exceeded and to correct if overages occur. Accountability measures are management controls to prevent the ACLs from being exceeded and to correct by either in-season or post-season measures if they do occur.

The ACL is set by the Councils, but begins with specifying an overfishing limit (OFL), which is the yield above which overfishing occurs. After an OFL is specified, an acceptable biological catch (ABC) is recommended by the Councils' Scientific and Statistical Committees. The ABC is based on the OFL and takes into consideration scientific uncertainty. An annual catch target (ACT) can also be set. An ACT is not required, but if used should be set at a level that takes into account management uncertainty and provides a low probability of the ACL being exceeded. These measures must be implemented in 2010 for all stocks experiencing overfishing, and 2011 for all other stocks.

There are some exceptions for the development of ACLs; for example, when a species can be considered an ecosystem component species or has an annual life cycle. Stocks listed in the fishery management unit are classified as either ''in the fishery'' or as an ''ecosystem component.'' By default, stocks are considered to be "in the fishery" unless declared ecosystem component species. Ecosystem component species are exempt from the requirement for ACLs. In addition, ecosystem component species may, but are not required to be, included in a FMP for any of the following reasons: data collection purposes, ecosystem considerations related to specification of optimum yield for the associated fishery, as considerations in the development of conservation and management measures for the associated fishery, and/or to address other ecosystem issues.

The original Spiny Lobster FMP included the Caribbean spiny lobster, *Panulirus argus*, and other incidental species of lobster (spotted spiny lobster, *Panulirus guttatus*; smoothtail spiny lobster, *Panulirus laevicauda*; Spanish slipper lobster, *Scyllarides aequinoctialis*, and ridged slipper lobster, *Scyllarides nodifer*) which inhabit or migrate through coastal waters and the fishery conservation zone now named the exclusive economic zone (EEZ) of the Gulf of Mexico and the South Atlantic (GMFMC and SAFMC 1982). All five species of lobster are in the

fishery, but only two species, the Caribbean spiny lobster and ridged slipper lobster, are listed under the fishery management unit (GMFMC and SAFMC 1986).

Of the four species other than the Caribbean spiny lobster in the Spiny Lobster FMP, only the ridged slipper lobster is specified in the regulations; the other species are in the FMP for data collection purposes only. Official landings information is not available on the smoothtail and spotted spiny lobsters. Low numbers of these species may be landed and recorded as Caribbean spiny lobster in either the commercial or recreational sector, but no records are available at this time. Spanish and ridged slipper lobsters occur in federal waters along the west coast of Florida and are primarily landed as bycatch in shrimp trawls. Because landings information is scarce and incomplete, setting ACLs would be very difficult for these species. The Councils could list these four species as ecosystem components or remove them from the FMP; in either case, ACLs and AMs would not be required. If these species are left in the FMP and considered to be in the fishery, ACLs and AMs must be set.

An ACL for a given stock or stock complex can be established in several ways: either a single ACL for the entire fishery divided into sector ACLs (i.e., recreational and commercial sectors) or divided into sector and gear types (i.e., recreational, commercial diving, bully netting, and commercial trapping). In any of these cases, the sum of the ACLs cannot exceed the ABC. Under the reauthorized Magnuson-Stevens Act and the 2008 amended guidelines for National Standard 1 (74 FR 3178, January 16, 2009), ACLs and, if selected by the Council, ACTs should be adjusted in the future by framework action. Revision of the current framework procedure would allow such adjustments.

Current regulations on the Caribbean spiny lobster off the Gulf of Mexico and South Atlantic are summarized in Table 1.1.1 and defined in 50 CFR part 640. *Scyllarides nodifer* is the other species currently in the Fishery Management Unit and managed by the regulations. The common name Slipper (Spanish) lobster as *Scyllarides nodifer* in the regulations (i.e., 50 CFR 640.2) is not the correct common name according to American Fisheries Society book of Common and Scientific Names of Aquatic Invertebrates (2005) and FAO Fisheries Synopsis (1991) authorities on the correct common names of invertebrate species; the correct common name is ridged slipper lobster. For the purposes of this document, the ridged slipper lobster will be used throughout the rest of the document. The regulations specified for ridged slipper lobster discuss conservation and management [50 CFR 640.1(b)], define slipper lobster by genus and species [50 CFR 640.2], prohibit harvest of a berried (egg-bearing) lobsters [50 CFR 640.21(a)], and prohibit the use of poisons and explosives to take slipper lobster in the exclusive economic zone [50 CFR 640.22(a)(3)].

Table 1.1.1. Current commercial and recreational Caribbean spiny lobster regulations for federal waters of the South Atlantic and the Gulf of Mexico.

	Permits required	Size Limits	Bag/Possession Limits	Closed areas	Closed Season	Gear Restrictions	Other Prohibitions
Commercial	Federal spiny lobster vessel permit except if fishing in federal waters off FL. FL commercial harvester permit required in EEZ off FL. Tailing permit if tailing lobster.	Carapace must be greater than 3", separated tails must be at least 5.5"	Off of NC, SC, and GA: 2 per person. Off FL and other Gulf states: 6 per person per day.*	None	FL and other Gulf states: April 1 through August 5. NC, SC, or GA: No closed season.	No spear, hooks, piercing devices, explosives, or poisons. Degradable panel required on non-wooden traps.	No trap tending at night. No taking of spiny lobster with eggs.
Recreational	State endorsement to the fishing license required.	Carapace must be more than 3" (measured in the water).	Off of NC, SC, and GA: 2 per person. Off FL and other Gulf states: 6 per person per day.	None	FL and other Gulf states: April 1 through August 5. Exception off FL: 2-day non-trap mini-season last Wed and Thurs in July** Off other Gulf states: 2-day non-trap mini-season last Sat and Sun in July	No spear, hooks, piercing devices, or explosives. Degradable panel required on non-wooden traps.	No taking of spiny lobster with eggs.

* A person is exempt from the bag/possession limits off Florida if the harvest of Caribbean spiny lobster is by diving or by use of bully net, hoop net, or spiny lobster trap; and the vessel has on board the required commercial Florida state licenses.
**During the two-day mini-season off Florida, the bag limit is 12 Caribbean spiny lobsters per person per day, in or from the EEZ, other than off Monroe County. Off Monroe County the bag limit is six Caribbean spiny lobsters per person per day.

Two current federal regulations may be causing detrimental impacts to the resource as well as creating enforcement problems. First, under certain situations and with a federal tailing permit, Caribbean spiny lobster tails may be separated from the body onboard a fishing vessel. This allowance creates difficulties for law enforcement in determining if hooks and spears were used to harvest the resource. Second, up to 50 Caribbean spiny lobsters under the minimum size limit or one per trap, whichever is greater, may be retained aboard a vessel provided they are held in a live well. When in a trap, such juveniles or "short" lobsters are used to attract other lobsters for harvest. Federal regulations are not consistent with Florida regulations, which allow retention of

up to 50 Caribbean spiny lobsters under the minimum size limit and one per trap. The Councils considered modifying or repealing these two regulations.

Consultation under the Endangered Species Act

The Endangered Species Act (ESA) of 1973 (16 U.S.C. Section 1531 et seq.) requires that federal agencies ensure actions they authorize, fund, or carry out are not likely to jeopardize the continued existence of threatened or endangered species or the habitat designated as critical to their survival and recovery. The ESA requires NOAA Fisheries Service to consult with the appropriate administrative agency (itself for most marine species and the U.S. Fish and Wildlife Service for all remaining species) when proposing an action that may affect threatened or endangered species or adversely modify critical habitat. Consultations are necessary to determine the potential impacts of the proposed action. Formal consultations, resulting in a Biological Opinion, are required when proposed actions may affect and are "likely to adversely affect" threatened or endangered species or adversely modify designated critical habitat.

To satisfy the ESA consultation requirements, NOAA Fisheries Service completed a formal consultation, and resulting Biological Opinion, on the continued authorization of the Gulf of Mexico and South Atlantic spiny lobster fishery in 2009. When making determinations on FMP actions, not only are the effects of the specific proposed actions analyzed, but also the effects of all discretionary fishing activity under the affected FMPs. Thus, the Biological Opinion analyzed the potential impacts to ESA-listed species from the continued authorization of the federal spiny lobster fishery. The opinion stated the fishery was not likely to adversely affect ESA-listed marine mammals, Gulf sturgeon, or designated critical habitat for elkhorn and staghorn corals. However, the opinion determined that the spiny lobster fishery would adversely affect sea turtles, smalltooth sawfish, and elkhorn and staghorn corals, but would not jeopardize their continued existence. An incidental take statement was issued for green, hawksbill, Kemp's ridley, leatherback, and loggerhead sea turtles, smalltooth sawfish, and both species of coral. Reasonable and prudent measures to minimize the impact of these incidental takes were specified, along with terms and conditions to implement them. Specific terms and conditions required to implement the prescribed reasonable and prudent measures include, but are not limited to: creating new or expanding existing closed areas to protect coral, implementing trap line-marking requirements, and consideration of allowing the public to remove trap-related marine debris. The Councils considered alternatives to meet these requirements; however, they chose to take no action on the actions to require area closures and gear markings to allow for additional stakeholder input. The Councils intend to quickly develop Amendment 11 to put these measures into place as required by the Biological Opinion. Because the decision to address these issues in Amendment 11 was made late in the development process for Amendment 10 and the analysis of the suite of alternatives was completed, the Council felt the actions and associated impacts analysis should remain in this document in addition to being incorporated in Amendment 11.

1.2 Purpose Statement

The purpose of this amendment is to bring the Spiny Lobster FMP into compliance with Magnuson-Stevens Act requirements for ACLs and AMs to prevent overfishing; update biological reference points, policies, and procedures; and consider adjustment of management measures to aid law enforcement and comply with measures to protect endangered species established under a Biological Opinion.[1]

1.3 Need for the Proposed Action

Revisions to the Magnuson-Stevens Act in 2006 require FMPs contain ACLs for all managed species. Annual catch limits must be set at a level that prevents overfishing and does not exceed the recommendations of the respective Councils' Scientific and Statistical Committees for ABC. Fisheries Management Plans are also required to establish AMs, which are management controls that ensure ACLs are not exceeded or provide corrective measures if overages occur. For stocks determined by the Secretary of Commerce to be subject to overfishing, ACLs and AMs must be effective in 2010; for all other stocks managed under an FMP, except species with annual life cycles and ecosystem component species, ACLs and AMs must be effective in 2011. No species in the Spiny Lobster FMP is known to be undergoing overfishing. The Councils intend to meet the 2011 deadline through Amendment 10 to the Spiny Lobster FMP.

Current definitions of maximum sustainable yield, overfishing, and overfished were set for Caribbean spiny lobster in Amendment 6. Currently, the Councils have different definitions for some criterion. The Councils may modify these definitions based on recommendations of the Scientific and Statistical Committees. A single definition for each biological reference point would simplify management.

The implementation process for a plan amendment can take over a year from initial scoping to final implementation. Framework procedures provide a mechanism for timelier implementation of routine actions such as setting ACLs, and a guideline for implementing such actions in a consistent manner. The framework procedure in the Spiny Lobster FMP was set in Amendment 2 and allows changes to be made to gear and harvest restrictions (GMFMC and SAFMC 1989). Revisions would allow additional actions to be implemented through the framework procedure. Amendment 2 also contains a process for the Florida to propose modifications to regulations. This process is now outdated and needs to be updated.

The Councils are considering modifying or repealing two current federal regulations regarding tailing permits and use of undersized lobsters as attractants may be causing detrimental impacts to the resource as well as creating enforcement problems. In addition, the Councils are considering alternatives to meet the requirements of the 2009 Biological Opinion.

[1] Note that the Councils determined some of the measures to protect endangered species as required by the Biological Opinion are now being addressed in a subsequent amendment to allow more time for stakeholder input.

1.4 Management History

Fishery Management Plan for Spiny Lobster in the Gulf of Mexico and the South Atlantic (1982)
The Spiny Lobster FMP largely extended Florida's rules regulating the fishery to the EEZ throughout the range of the fishery, i.e., North Carolina to Texas. The FMP regulations were effective on July 2, 1982 (47 FR 29203). Major items are as follows:

- Maximum sustainable yield is estimated as 12.7 million pounds (mp) annually for the maximum yield per recruit size of 3.5 in carapace length.
- Optimum yield is specified to be all lobster more than 3 in carapace length or not less than 5.5 in tail length that can be harvested by commercial and recreational fishermen given existing technology and prevailing economic conditions.
- A minimum harvestable size limit of more than 3 in carapace length or not less than 5.5 in tail length shall be established.
- A closed season from April 1 through July 25 shall be established. During this closed season there shall be a five-day "soak period" from July 21-25 and a five-day grace period for removal of traps from April 1-5.
- All spiny lobster traps shall have a degradable surface of sufficient size so as to allow escapement of lobsters from lost traps.
- All spiny lobster taken below the legal size limit shall be immediately returned to the water unharmed except undersized or "short" lobsters which may be carried on the boat/vessel provided they are: for use as lures or attractants in traps and kept in a shaded "bait" box while being transported between traps. No more than three live "shorts" per trap (traps carried on the boat) or 200 live "shorts", whichever is greater, may be carried at any one time.
- A special two-day recreational non-trap season shall be established.
- The retention on boat boats or vessels or possession on land of "berried" female spiny lobsters shall be prohibited. Stripping or otherwise molesting female lobsters to remove the eggs shall be prohibited. "Berried" female lobsters taken in traps or with other gear must be immediately returned to the water alive and unharmed.

Table 1.4.1. GMFMC/SAFMC FMP Amendments affecting spiny lobster.

Description of Action	FMP/Amendment	Effective Date
Updated the FMP rules to be more compatible with that of FL. Management measures: limited attractants to 100 per vessel, required live wells, required a commercial vessel permit, provided for a recreational permit, limited recreational fishermen to possession of 6 lobsters per day, modified the special 2-day recreational season, modified the duration of the closed commercial season (April 1-August 5, preseason soak period beginning August 1), provided a 10-day trap retrieval period, prohibited possession of egg-bearing lobster, specified the minimum size limit for tails, provided for a tail separation permit, and prohibited possession of egg-bearing slipper lobster.	Amendment 1 (1987)	July 15, 1987 (52 FR 22659) with certain rules deferred and implemented on May 16, 1988 (53 FR 17 196) and on July 30, 1990 (55 FR 26448).
Modified the problems/issues and objectives of the fishery management plan; modified the statement of optimum yield (specified to be all spiny lobster more than 3" carapace length or not less than 5.5" tail length that can be legally harvested by commercial and recreational fishermen given existing technology and prevailing economic conditions); established a protocol and procedure for an enhanced cooperative state/council management system for instituting future compatible state and federal rules without amending the FMP; and added to the vessel safety and habitat sections of the FMP.	Amendment 2 (1989)	October 27, 1989 (54 FR 48059)
Contained provisions for adding a scientifically measurable definition of overfishing (overfishing exists when the eggs per recruit ratio of the exploited population to the unexploited population is reduced below 5% and recruitment of small lobsters into the fishery has declined for 3 consecutive fishing years. Overfishing will be avoided when the eggs per recruit ratio of exploited to unexploited populations is maintained above 5%), an action plan to prevent overfishing, should it occur, and the requirement for collection of fees for the administrative cost of issuing permits.	Amendment 3 (1990)	March 25, 1991 (5 6 FR 12357)

Table 1.4.1. GMFMC/SAFMC FMP Amendments affecting spiny lobster. (continued)

Description of Action	FMP/Amendment	Effective Date
Included extension of the Florida spiny lobster trap certificate system for reducing the number of traps in the commercial fishery to the EEZ off FL; revision of the FMP commercial permitting requirements; limitation of the number of live undersized lobster used as attractants; specification of gear allowed for commercial fishing in the EEZ off FL, specification of the possession limit of spiny lobsters by persons diving at night; requirement of lobsters harvested by divers be measured without removing from the water; and specification of uniform trap and buoy numbers for the EEZ off FL.	Regulatory Amendment 1 (1992)	
Included a change in the days for the special recreational season in the EEZ off Florida; a prohibition on night-time harvest off Monroe County during that season; specification of allowable gear during that season; and different bag limits during that season off the Florida Keys and the EEZ off other areas of Florida.	Regulatory Amendment 2 (1993)	
Allowed the harvest of 2 lobsters per person per day for all fishermen all year long but only north of the FL/GA border. This measure was added to the framework procedure so that future potential changes to the limit do not require a plan amendment. [Developed by the SAFMC]	Amendment 4 (1994)	September 15, 1995 (60 FR 41 828)
Identified Essential Fish Habitat (EFH) and EFH-Habitat Areas of Particular Concern for spiny lobster. [Developed by the SAFMC]	Amendment 5 (1998)	July 14, 2000
The Council reviewed alternatives and concluded the best available data supports using 20% static SPR as a proxy for MSY. OY for the spiny lobster fishery is the amount of harvest that can be taken by U.S. fishermen while maintaining the SPR at or above 30% Static SPR. Overfishing for species in the Spiny Lobster FMP can only be defined in terms of the fishing mortality component given the data-poor status of these species. Based on the written guidance from NMFS, the Council is setting the overfishing level as a fishing mortality rate (F) in excess of the fishing mortality rate at 20% Static SPR (F20% Static SPR). [Developed by the SAFMC]	Amendment 6 (1998)	December 2, 1999

Table 1.4.1. GMFMC/SAFMC FMP Amendments affecting spiny lobster. (continued)

Description of Action	FMP/Amendment	Effective Date
Identified EFH, described the distribution and relative abundance of juvenile and adult spiny lobster for offshore, near-shore, and estuarine habitats of the Gulf. [Developed by the GMFMC]	Generic Amendment (1998) (no Spiny Lobster amendment number)	Partially approved February 8, 1999 64 FR 13363
Proposed revision to biological thresholds. MSY, OY, and MSST were disapproved because they were based on transitional spawning stock biomass per recruit. Updated the description of the spiny lobster fisheries and provided fishing community assessment information for Monroe County. [Developed by the GMFMC]	Generic SFA Amendment (1999) (no Spiny Lobster amendment number)	Partially approved December 2, 1999 64 FR 59126
Created two no-use marine reserves. Tortugas South in the GMFMC EEZ to encompass a spawning aggregation site for mutton snapper. Tortugas North included part of the fishery jurisdiction of the FKNMS, Dry Tortugas National Monument, GMFMC, and Florida, and was cooperatively implemented by these agencies. [Developed by the GMFMC]	Generic Tortugas Marine Amendment/ Spiny Lobster Amendment 7	August 19,2002 67 FR 47467
Specified that the holder of a valid crawfish license or trap number, lobster trap certificate and state saltwater products license issued by Florida may harvest and possess, while in the EEZ off Florida, undersized lobster not exceeding 50 per boat and 1 per trap aboard each boat, if used exclusively for luring, decoying or otherwise attracting non-captive lobster into traps.	Regulatory Amendment 3 (2002)	
Set minimum size limit for importation of spiny lobster; and disallowed importation of spiny lobster tail meat which is not in whole tail form with the exoskeleton attached and the importation of spiny lobster with eggs attached or importation of spiny lobster where the eggs, swimmerets, or pleopods have been removed or stripped.	Amendment 8 (2008)	February 11, 2009 (74 FR 1148)
Provides spatial information for EFH and EFH-Habitat Areas of Particular Concern designations for species in the Spiny Lobster FMP.	Amendment 9 (2009)	July 22, 2010 (75 FR 35330)

2.0 MANAGEMENT ALTERNATIVES

2.1 Action 1: Other species in the Spiny Lobster Fishery Management Plan (FMP)

*Note: More than one alternative may be chosen as a preferred.

Alternative 1: No Action – Retain the following species: smoothtail spiny lobster**,** *Panulirus laevicauda*, spotted spiny lobster, *Panulirus guttatus*, Spanish slipper lobster, *Scyllarides aequinoctialis*, in the FMP for data collection purposes only, but do not add them to the Fishery Management Unit.

Alternative 2: Set annual catch limits and accountability measures using historical landings for Spanish slipper lobster *Scyllarides aequinoctialis*, after adding them to the Fishery Management Unit and for ridged slipper lobster, *Scyllarides nodifer*, currently in the Fishery Management Unit.

Alternative 3: List species as ecosystem component species:

Option a: smoothtail spiny lobster**,** *Panulirus laevicauda*
Option b: spotted spiny lobster, *Panulirus guttatus*
Option c: Spanish slipper lobster, *Scyllarides aequinoctialis*
Option d: ridged slipper lobster, *Scyllarides nodifer*

Preferred Alternative 4: Remove the following species from the FMP:

Preferred Option a: smoothtail spiny lobster**,** *Panulirus laevicauda*
Preferred Option b: spotted spiny lobster, *Panulirus guttatus*
Preferred Option c: Spanish slipper lobster, *Scyllarides aequinoctialis*
Preferred Option d: ridged slipper lobster, *Scyllarides nodifer*

Comparison of Alternatives: Landings and regulations are established for two species of lobster within the fishery management unit, the Caribbean spiny lobster and the ridged slipper lobster (GMFMC and SAFMC 1982). In order to establish regulations for the other species (i.e., smoothtail spiny lobster, spotted spiny lobster, and Spanish slipper lobster) they would also need to be placed within the fishery management unit. The Gulf of Mexico and South Atlantic Councils (Councils) would have to complete this type of action through a full plan amendment. The species other than Caribbean spiny lobster were placed into the fishery management plan for data collection purposes.

Landings of lobster species by the recreational sector are not documented by the Marine Recreational Fisheries Statistics Survey (MRFSS); only finfish data are collected. The Florida Fish and Wildlife Conservation Commission (FWC) documents recreational catch of Caribbean spiny lobster landings through a survey. FWC documents commercial landings of Caribbean spiny lobster and slipper lobsters by family, meaning the landings could be either Spanish or ridged slipper lobster.

No landings or bycatch information have been documented for smoothtail or spotted spiny lobster species. Because these species are found mostly inshore and are relatively small, neither commercial nor recreational fishers in the Florida Keys generally target these species in U.S. federal waters (W. Kelly, Florida Keys Commercial Fishermen's Association, pers. comm.). Outside of Brazil, the smoothtail spiny lobster is considered to be of minor importance (FAO 2007). In the commercial Caribbean spiny lobster fishery, spotted spiny lobsters are only captured in traps set directly on the reef (Sharp et al. 1997). Spotted spiny lobsters rarely occupy the same dens as Caribbean spiny lobsters (Sharp et al. 1997), so they are unlikely to be taken incidentally by divers.

Even though slipper lobster are not always identified to species level when documented, the slipper lobster catch is believed to be primarily composed of ridged slipper lobster, because it is the only species commonly occurring along the west coast of Florida north of the Florida Keys that attains a size sufficient to be exploited for the industry (Sharp et al. 2007). Table 2.1.1 shows a decrease in slipper lobster landings, number of vessels, and trips. However, catch per unit effort (CPUE, pounds per trip) may have actually increased in recent years. The change in landings seems to be the result of a change in commercial shrimp effort. Major declines in commercial shrimp effort when slipper lobsters were caught occurred 1998/1999-1999/2000 and 2003/2004-2004/2005 (Table 2.1.1).

Table 2.1.1. Number of trips when slipper lobster were caught by vessels with a shrimp permit, plus landings and value of those slipper lobsters in the Gulf and South Atlantic.

Fishing year	Trips	Pounds	CPUE (lbs per trip)	2008$
97/98	335	30,900	92	$131,100
98/99	225	13,100	58	$56,900
99/00	146	7,200	49	$33,500
00/01	145	8,800	60	$49,200
01/02	179	8,600	48	$51,100
02/03	130	10,000	77	$58,200
03/04	132	17,000	129	$98,800
04/05	72	5,000	69	$23,500
05/06	63	4,300	68	$22,100
06/07	56	6,100	108	$30,900
07/08	23	6,400	280	$36,900
08/09	22	1,900	86	$7,700

Source: SEFSC, FTT (Mar. 19, 2010) data

Sharp et al. (2007) suggested decreased landings of slipper lobsters are related to the decreased number of commercial shrimping trips, because much of the slipper lobster landings are incidental catch in shrimp trawls. Gulf commercial shrimping effort was down 77% for 2009 from the base years of 2001-2003 (J. Nance, Southeast Fisheries Science Center, unpublished data). Effort (trips) of slipper lobster for 2009 was down 85% from the base-years average. Over the most recent three years (2006-2009), average slipper lobster landings were down 77%. So, decreases in landings for slipper lobster could be the result of decreased shrimp effort. We have also seen decreased effort in other fisheries due to economic issues such as increased fuel

prices. The possibility still exists that effort has decreased because of decreases in the resource, but the stable-to-increasing CPUEs indicate otherwise.

In contrast to the total average commercial trap Caribbean spiny lobsters landings, slipper lobster landings are low and constitute less than 1% of the total average landings in both federal and state waters of the South Atlantic and Gulf of Mexico (Gulf; Table 2.1.2). One commercial fisherman stated of 2,200 traps fished each year he averages about three slipper lobsters per year (K. Lassard, commercial fisherman, pers. comm.).

Table 2.1.2. Average commercial trap landings, number of trips, and value of slipper lobsters (Slipper) versus Caribbean spiny lobster (Spiny) from 1999 through 2008 for Gulf federal waters, South Atlantic federal waters, and state of Florida landings (combined for both coasts). Average pounds landed are live whole animal weight.

Average	Gulf federal		Atlantic federal		Florida state waters	
	Slipper	Spiny	Slipper	Spiny	Slipper	Spiny
Pounds	6,527	164,912	996	998,218	1,594	3,419,293
# Trips	69	413	26	2,976	21	17,805
$ Value	$26,580	$828,149	$4,080	$4,878,155	$6,074	$17,655,979

Source: FWC, Marine Fisheries Information System, 2009. Note: Only one space is available on trip tickets for waters fished. Fishers could fish in both state and federal waters within one day, based on the season and other fishing behaviors. This table should be viewed with some caution, because additional unaccounted variability could exist due to the way the data is recorded and analyzed.

In addition to commercial trap landings data on the ridged and Spanish slipper lobsters, bycatch information is also available from observer coverage of the Gulf and South Atlantic shrimp fishery (Scott-Denton 2004). During these studies, observers did not always specify whether the species was a ridged or Spanish slipper lobster, so often only the family was recorded. An additional species from this family was recorded as bycatch, the Chace slipper lobster (*Scyllarus chacei*). This species is not currently in the Spiny Lobster FMP and bycatch of this species was the lowest of all three species characterized to the species level.

Observer bycatch of all the slipper lobster species was low for both the Gulf and South Atlantic waters (Table 2.1.3). Catch during the 2001-2002 time period was 0.22 slipper lobster (all species) per characterized tow in the Gulf and 0.07 slipper lobster per characterized tow in the South Atlantic. A majority of the observer data from the family Scyllaridae was documented off the west coast of Florida and some off the Louisiana/Texas coast (Figure 2.1.1). Ridged slipper lobster was documented more often than Spanish slipper lobster in the Gulf, similar to Alabama and Florida documented landings. Low bycatch of the family Scyllaridae was also documented off the east coast of Florida (Figure 2.1.1).

Table 2.1.3. Current and historical bycatch of lobster species documented by observer coverage of the Gulf and South Atlantic shrimp fishery.

Lobster species	Gulf (2001-2002)	Atlantic (2001-2007)	Gulf (1992-1996)	Atlantic (1992-1995)
Caribbean spiny lobster (*Panulirus argus)*	19	0	6	0
Ridged slipper Lobster (*Scyllarides nodifer*)	101	1	103	0
Spanish slipper lobster (*Scyllarides aequinoctialis*)	16	1	41	0
Family Scyllaridae (slipper lobsters: ridged, Spanish or Chace)	68	45	0	0
Characterized Tows (Sum)	839	649	1,438	301

Source: E. Scott-Denton, NMFS Galveston Laboratory.

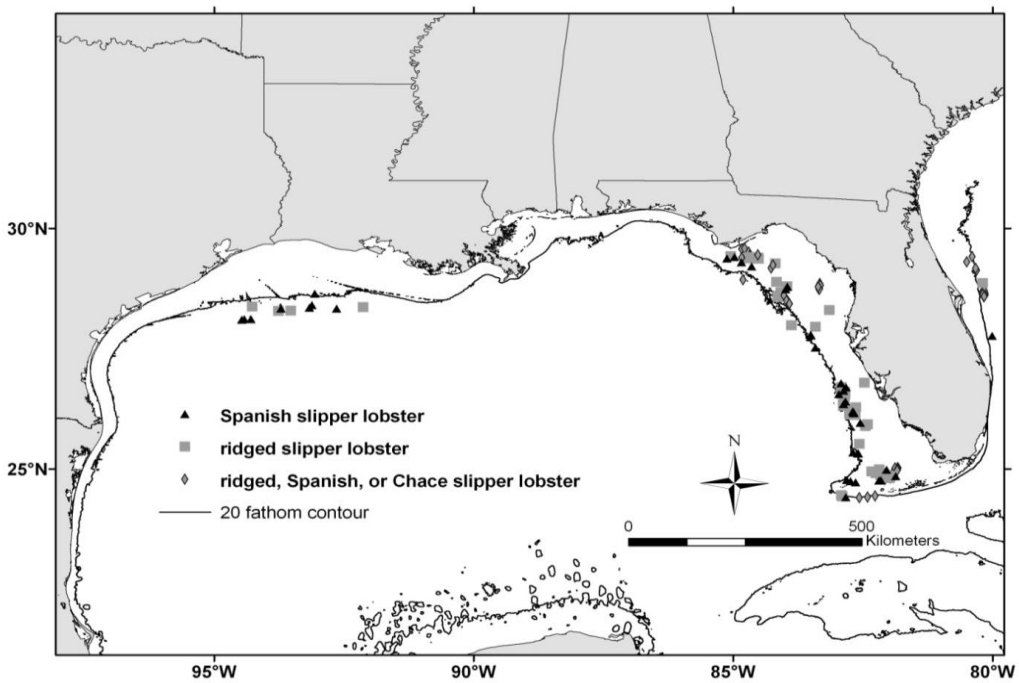


Figure 2.1.1. Location of bycatch documented from the observer shrimp trawl coverage of the Gulf and South Atlantic coast.

Source: E. Scott-Denton, NMFS Galveston Laboratory. Map created by J. Froeschke, Gulf Council Staff

Recreational landings for slipper lobsters are not recorded by the FWC survey, only Caribbean spiny lobster landings. However, due to the intense recreational fishery for Caribbean spiny lobster, some fishers may harvest slipper lobster species if observed (Sharp et al. 2007). Some recreational fishing tournaments may target slipper lobsters, as noted by a Panama City, Florida fishing website (http://www.schooners.com/events/lobsterfestival.htm#results). However,

examination of intensive creel surveys of the recreational spiny lobster fishery in the Florida Keys, which were conducted during the special two-day sport season and the first two weeks of the regular season, indicated slipper lobsters are not as targeted by recreational fishers in the Keys. There is evidence that they are targeted to some degree by recreational divers in the northern Gulf (W. Sharp, pers. comm.); however, because of their cryptic nature, it is unlikely a substantial recreational fishery will develop (Sharp et al. 2007). Also, due to the lack of data on slipper lobster species life history, growth rates, and reproductive biology, conducting an effective stock assessment would be difficult (Sharp et al. 2007).

Alternative 1 would retain all species currently in the FMP for data collection purposes only, without adding them to the fishery management unit (FMU). After 28 years, the Councils have not seen the need to add these stocks to the FMU to manage them. However, the Magnuson-Stevens Fishery Conservation and Management Act (Magnuson-Stevens Act) requires annual catch limits (ACLs) and accountability measures (AMs) for all species in the FMP except ecosystem component species, so this alternative would not comply with legal requirements.

Alternative 2 would set ACLs and AMs using historical commercial landings for Spanish slipper lobster after adding them to the FMU, and for ridged slipper lobster, currently in the FMU. The ACLs and AMs would need to be set for both species combined because commercial landings are recorded by family, meaning catch could be composed of Spanish slipper lobster, ridged slipper lobster, or both. Positive biological benefits may be expected from setting ACLs and AMs; however, landings of these two species combined are low so the effect may be small. Due to a lack of monitoring and data collection sources for these two species, ACLs may be very difficult to track and AMs may need to be less restrictive to account for limited landings information and potential large fluctuations. The status of this stock is completely unknown, and further life history information is needed before an effective assessment can be undertaken, especially regarding recruitment dynamics, growth rates, behavior, and reproductive biology. Setting ACLs and AMs for the two slipper lobsters combined may not provide the desired positive benefits to the ecological and biological environment because little is known about these two species and currently there are not adequate monitoring programs in place.

Alternative 3 would place any of the four species in the FMU and list them as ecosystem component species (**Options a-d**). The option to use ecosystem component status is intended to encourage the incorporation of ecosystem considerations into FMPs (see Figure 2.1.2 as a guide). Species can be defined as ecosystem component species for reasons such as for ecosystem considerations related to specification of optimum yield for the associated fishery, as considerations in the development of conservation and management measures for the associated fishery, or to address other ecosystem issues.

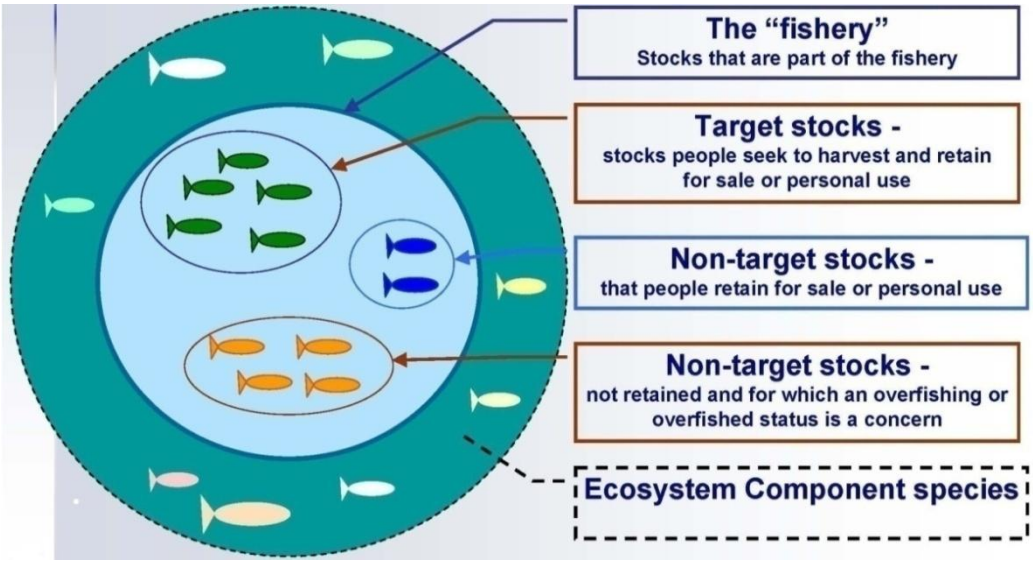


Figure 2.1.2. A conceptual model of stocks in the fishery and ecosystem component stocks.
Source: National Standard 1 guidelines.

Alternative 3, Options a and **b,** would place smoothtail and spotted spiny lobsters in the FMU and list them as ecosystem component species. The smoothtail and spotted spiny lobsters meet all of the ecosystem component criteria, because they are non-targeted, not subject to overfishing or overfished, nor likely to become subject to overfishing or overfished (Table 2.1.4). The National Standard 1 final guidelines add new language in 50 CFR 600.310(d)(5)(i)(D) —''not generally retained for sale or personal use''— in lieu of ''*de minimis* levels of catch'' and clarify that occasional retention of a species would not, in itself, preclude consideration of a species in the ecosystem component classification.

Table 2.1.4. Ecosystem component criteria for stocks in the Gulf and South Atlantic. Average landings were calculated by combining Gulf and South Atlantic commercial landings.

			National Standard 1 Guidelines Criteria			
Species	**Average shrimp trawl landings (pounds) 1997-2009**	**Average trap landings (pounds) 1999-2008**	**Non-target**	**Not overfished or overfishing?**	**Not likely to become overfished or overfishing**	**Not generally retained for sale or personal use**
smoothtail spiny lobster	0	0	X	Unknown	Unknown	X
spotted spiny lobster	0	0	X	Unknown	Unknown	X
Spanish slipper lobster	9,942	11,120	X	Unknown	Unknown	
ridged slipper lobster				Unknown	Unknown	

Source: FWC, Marine Fisheries Information System, 2009 and SEFSC, FTT (19Mar10) data. Note: An "X" indicates the National Standard 1 criteria apply to that species.

Commercial trap landings of the Spanish and ridged slipper lobsters (**Options c** and **d**) are low and averaged 11,120 lbs whole animal weight per year during 1999-2008. The average landings from commercial vessels with a shrimp permit are also low and average 9,942 lbs whole animal weight per year during 1997-2009. The commercial shrimp trawl fishery appeared to target slipper lobsters in the 1980s; landings peaked in 1985, and then decreased greatly until the 1990s (Sharp et al. 2007). This drop in slipper lobster landings by the commercial shrimp fleet might be related to regulatory changes implemented during 1987 that prohibited both the possession of egg-bearing females of the ridged slipper lobster and the removal of eggs by clipping their pleopods. Additionally, commercial shrimp trawls were required to have turtle-excluding devices (TEDS) in the early 1990s which may have also reduced the efficiency with which the gear captured slipper lobsters (Sharp et al. 2007).

Both Spanish and ridged slipper lobster may be targeted at times and are generally retained for sale or personal use; therefore, these species may not meet all the National Standard 1 guidelines for ecosystem component species. Placing species in the ecosystem component classification would allow them to remain in the FMP for data collection, but not require setting ACLs. There are other benefits to designating species as ecosystem component species, other than not establishing management measures. One of the benefits is that those species could be used for ecosystem-based management if the Councils chose to do so. There are also disadvantages for designating them as ecosystem component species and leaving them in the FMP for data collection purposes alone. The primary disadvantage is that designation in itself would not improve the current data collection system. Instead, the current data collection system would have to be modified considerably, because the federal recreational data collection system does not include invertebrates only finfish. There could be positive biological and ecological benefits for these species if regulatory action was needed at a later date because these species would already be in the FMP. However, in order to establish regulations species have to be within the FMU which requires the Councils to take this action through a full plan amendment. Therefore, maintaining species in the FMP and designating them as ecosystem component species with the current monitoring programs may negate any potential positive benefits to the resource.

Preferred Alternative 4 would remove all four species from the Spiny Lobster FMP. If species are removed from federal management, states can manage harvest of the species within federal waters adjacent to state waters for vessels registered to the state or landing catch in the state. Currently, Florida regulations prohibit possession or harvest of egg-bearing females of any spiny or slipper lobster species; thus some of these species would receive greater protection under state management than under current federal management. Representatives of FWC have indicated the state would likely extend their regulations into federal waters if these species are removed from the federal FMP.

Preferred Options a and **b** for smoothtail and spotted spiny lobsters, respectively would remove these species from the FMP. Smoothtail and spotted spiny lobsters have no landings information available. Based on the current data collection programs if these species were removed from the FMP, but landed and sold to a federal dealer, landings data would still be recorded for these species. This would negate any reason to designate them as ecosystem component species for data collection purposes alone. Further if the Councils chose to establish regulations for these

species then they would have to be listed within the FMU which requires a full plan amendment to do so. If any of the species are removed from the FMP without another agency taking over management, the potential for negative impacts to the physical and biological environments may occur if fishing effort for these species increased. However, as stated above, these species would be afforded greater protection under Florida regulations than if they were retained in the FMP.

Preferred Options c and **d** for Spanish and ridged slipper lobsters, respectively would remove these species from the FMP. Currently, ridged slipper lobster is within the FMU and because of this, federal regulations have been established for this species. Based on the current data collection programs if these species were removed from the FMP, but landed and sold to a federal dealer, landings data would still be recorded for these species. This would negate any reason to designate them as ecosystem component species for data collection purposes alone. If these species were removed from the FMP, the federal regulations for ridged slipper lobster would no longer apply. However, the state of Florida could manage the fishery in the exclusive economic zone (EEZ) off state waters, and Florida state regulations are more conservative than federal regulations in that they prohibit the harvest of egg-bearing females for all species of slipper lobster. As stated above, commercial landings of slipper lobster are low and have been decreasing over the years. Most data indicate these species are only incidentally caught, primarily by the commercial shrimp fishery and incidentally in Caribbean spiny lobster traps. Slipper lobster landings have decreased concurrent with decreased effort in the commercial shrimp fishery. No recreational landings data are available, but creel surveys of the recreational spiny lobster fishery in the Florida Keys conducted during the special two-day sport season and the first two weeks of the regular season indicated slipper lobsters are not targeted by recreational fishers in the Keys. Although there is some evidence slipper lobsters are targeted to some degree by recreational divers in the northern Gulf, because of their cryptic nature, behavior, and size, they are unlikely to support a substantial recreational fishery.

2.2 Action 2: Modify the Current Definitions of Maximum Sustainable Yield, Overfishing Threshold, and Overfished Threshold for Caribbean Spiny Lobster

2.2.1 Action 2-1: Maximum Sustainable Yield (MSY)

Alternative 1: No Action- Use the current definitions of MSY as a proxy. The Gulf approved definition**:** MSY is estimated as 12.7 million pounds annually for the maximum yield per recruit size of 3.5 inch carapace length. The South Atlantic approved definition: MSY is defined as a harvest strategy that results in at least a 20% static SPR (spawning potential ratio).

Alternative 2: Modify the Gulf definition to mirror the South Atlantic definition of MSY proxy, defined as 20% static SPR.

Alternative 3: The MSY equals the yield produced by fishing mortality at maximum sustainable yield (F_{MSY}) or proxy for F_{MSY}. Maximum sustainable yield will be defined by the most recent
Southeast Data Assessment and Review (SEDAR) and joint Scientific and Statistical Committee (SSC) processes.

<u>Preferred Alternative 4</u>: The MSY proxy will be the overfishing limit (OFL) recommended by the Gulf SSC at 7.90 million pounds.

2.2.2 Action 2-2: Overfishing Threshold (Maximum Fishing Mortality Threshold)

Alternative 1: No Action - Use the current definitions of overfishing thresholds. The Gulf and South Atlantic approved definition: overfishing level as a fishing mortality rate (F) in excess of the fishing mortality rate at 20% static SPR ($F_{20\%}$ static SPR).

Alternative 2: Specify the Maximum Fishing Mortality Threshold (MFMT) as F_{MSY} or F_{MSY} proxy. The most recent SEDAR and SSCs will define F_{MSY} or F_{MSY} proxy. This should equal the OFL provided by the SSCs. The Councils will compare the most recent value for the current fishing mortality rate (F) from the SEDAR/SSC process to the level of fishing mortality that would result in MFMT and if the current F is greater than the MFMT, overfishing is occurring. Comparing these two numbers:

- $F_{CURRENT}$/MFMT = X.XXX

*This comparison is referred to as the **overfishing ratio**. If the ratio is greater than 1, then overfishing is occurring.

<u>Preferred Alternative 3</u>: Specify the MFMT as the OFL defined by the Gulf SSC at 7.90 million pounds.

2.2.3 Action 2-3: Overfished Threshold (Minimum Stock Size Threshold)

Alternative 1: No Action – Do not establish an overfished threshold. The Gulf Council does not have an approved definition of the overfished threshold. The South Atlantic Council approved definition is a framework procedure to add a biomass based component to the overfished definition, due to no biomass levels and/or proxies being available.

Alternative 2: The Minimum Stock Size Threshold (MSST) is defined by the most recent SEDAR and SSC process. The Councils will compare the current spawning stock biomass (SSB) from the SEDAR and SSC process to the level of spawning stock biomass that could be rebuilt to the level to produce the MSY in 10 years. Comparing these two numbers:

- $SSB_{CURRENT}$/MSST = Y.YYY

This comparison is referred to as the **overfished ratio**. If the ratio is less than 1, then the stock is overfished.

<u>Preferred Alternative 3</u>: MSST = (1-M) x B_{MSY}. Definitions: M = instantaneous natural mortality and B_{MSY} = biomass at maximum sustainable yield or the appropriate proxy.

<u>Comparison of Alternatives</u>: There are three sub-actions for modification of the current definition for each of the following biological reference points: MSY, MFMT, and MSST. The optimum yield (OY) definition is addressed under Action 4-2.

Currently the Councils have different approved definitions for two of three biological reference points (Actions 2-1 and 2-3). The Gulf Council does not currently have an approved MSST definition and the South Atlantic Council's approved definition is a framework procedure (GMFMC and SAFMC 1982; GMFMC and SAFMC 1990; GMFMC 1999; SAFMC 1998; SEDAR 8 2005). The Gulf Council definitions submitted to NOAA Fisheries Service in their Generic Sustainable Fisheries Act (SFA) Amendment were partially approved (NOAA Fisheries Service letter to the Gulf Council received November 17, 1999; log file number 5153). The letter states that SPR is not biomass-based and is not an acceptable proxy for MSY or MSST. In addition, the letter goes on to state that transitional SPR is not an appropriate proxy for the MFMT for spiny lobster, because it is affected by past fishing mortality. However, static SPR is the appropriate proxy for MFMT. After modification the Gulf Council's definition was approved.

Transitional SPR versus static SPR was used for the unapproved definitions of MSY and MSST by the Gulf Council. As the name suggests, SPR ratio expresses spawning per recruit as a ratio in a fished condition relative to the maximum theoretical amount of spawning per recruit that occurs when there is no fishing (Slipke and Maceina 2000; MRAG Americas 2001). Due to increased fishing effort reducing the potential reproductive output, the denominator in the spawning potential ratio is always greater than or equal to the numerator, so the resulting values will range between 0 and 1 (MRAG Americas 2001).

The benchmark assessment for Caribbean spiny lobster (SEDAR 8 2005) found that the biomass of the stock could not be estimated. Therefore MSY, biomass at MSY, and MSST were not estimated (Table 2.2.3.1). An updated assessment on Caribbean spiny lobster was completed in 2010. The Review Panel was made up of members of both Councils' SSCs. After careful consideration, the Review Panel concluded there is sufficient concern with the performance of the two assessment models to reject the results, and that the stock status of Caribbean spiny lobster in the southeastern U.S. was unknown. This was primarily based on new genetic evidence presented by Mike Tringali from FWC indicating the southeastern U.S. Caribbean spiny lobster stock largely depends on external recruitment from upstream Caribbean populations (Hunt and Tringali 2011). Due to this new genetic information, the Review Panel concluded that the U.S. Caribbean spiny lobster stock cannot be assessed in isolation and the assessment was not conducted on the appropriate geographical and biological scale needed to capture population-wide dynamics. The Gulf SSC went on to request in a motion that monitoring and research be supported to produce a pan-Caribbean population-wide assessment. The South Atlantic SSC reviewed the update assessment for spiny lobster at their meeting in April 2011. The South Atlantic SSC agreed with the SEDAR Review Panel recommendations and the Gulf SSC that stock status could not be determined due to strong evidence of external recruitment and no indication of a separate U.S. stock.

Alternative 1 under Actions 2-1 and 2-3 would use the current approved definitions of MSY and MSST, separately for each Council. Due to the Caribbean spiny lobster fishery being a jointly managed species, now may be the best time for the Councils to adopt the same biological reference points in this full amendment. However, under Action 2-2, the Councils have the same approved definitions for the overfishing threshold, but may select a different alternative based on new scientific information from the 2010 update stock assessment and SSC Review Processes.

The MSY is currently unknown for the U.S. stock of Caribbean spiny lobster because biomass estimates are unreliable due to outside recruitment from the pan-Caribbean population. Therefore, the biomass estimates were not accepted from the 2010 Update Assessment. **Alternative 2** under Action 2-1 would modify the definition of MSY to mirror the South Atlantic Council's definition, which is a harvest strategy resulting in 20% static SPR, versus using landings estimates which is currently the approved Gulf Council definition (**Alternative 1**). A non-landings based definition of MSY (i.e., 20% transitional SPR) was developed by the Gulf Council in 1998 in their Generic Sustainble Fisheries Act Amendment, but was disapproved because it was not biomass-based and was not considered an acceptable proxy for MSY (log file number 5153). Although the South Atlantic Council's definition was not biomass based, it was approved in Amendment 6, 1998 and became effective December 2, 1999 (i.e., 20% static SPR).

Justification for using static SPR is based on projected yield streams at equilibrium, versus the current dynamic measure (transitional SPR), which may change in future years from the current estimate. This could make the projections less reliable than using equilibrium recruitment and mortality conditions (static SPR). Since stock assessments are not usually completed on an annual basis, static SPR may be a better index to use for yield projections. Further, static SPR does not require constant recruitment, because it is expressed on a "per recruit" basis and is useful as a measure of overfishing (MRAG Americas 2001).

Alternative 3 under Action 2-1 and **Alternatives 2** under Action 2-2 and Action 2-3 would modify all biological determination criteria from the current definitions to those established under the most recent SEDAR and SSC process. This alternative would provide the best available science in the update assessment and modify the separate Council definitions into one biological reference point for MSY, overfishing, and overfished threshold. However, the 2010 update assessment for spiny lobster was not accepted by the Review Panel or by the Gulf SSC, based on new evidence indicating the southeastern U.S. stock largely depends on external recruitment from upstream Caribbean populations. It was determined that this finding precluded reliable estimation of management reference points.

Due to the MSY being currently unknown, the Gulf Council proposed using the Gulf SSC recommendations for the overfishing limit (OFL). The MSY proxy also designed as the OFL recommended by the Gulf SSC was derived in the following manner: Using Tier 3a of the Gulf ABC Control Rule, the Gulf SSC recommended an OFL be set as the mean of the most recent landings in the last 10 years (i.e., fishing years 2000/2001-2009/2010; Table 2.4.1) plus two standard deviations from the mean. The Gulf ABC Control Rule is discussed in greater detail under Action 4-1. The Councils' SSCs used the data set from the 2010 Update Assessment that excluded attractants, which is consistent with finfish assessment excluding dead discards. (Note: an attractant is an "undersized lobster" used in a trap to draw other legal sized lobsters into the traps due to their gregarious behavior, 2010 Update Assessment Report. Section 2.7 addresses the use of "undersized lobsters" as attractants).

Because biomass estimates are unreliable for Caribbean spiny lobster and the 2010 update stock assessment was rejected, the Councils selected **Preferred Alternative 4** for Action 2-1. This alternative will establish the MSY proxy as the OFL recommended by the Gulf SSC at 7.90 million pounds (mp). The unaccepted MSY estimate calculated in the 2010 update assessment for Caribbean spiny lobster was the yield at $F_{20\%SPR}$ = 7.95 mp (Update Assessment Review Workshop Report 2010). This unaccepted value is nearly the same value as the current **Preferred Alternative 4** for Action 2-1 calculated by the Gulf Council SSC from the ABC Control Rule. It is fortunate that these numbers worked out to be so close because Tier 3a of the ABC Control Rule is based on landings and the stock assessment is based on the best available science estimate of an OFL based on the MSY proxy of $F_{20\%SPR}$.

In addition to the MSY level being unknown, the MFMT is also unknown due to biomass estimates for Caribbean spiny lobster being unreliable. Therefore the Gulf Council requested that the MFMT be defined by the Gulf SSC OFL at 7.90 mp, as reflected in the current Action 2-2 **Preferred Alternative 3**.

The proxy of $F_{20\%SPR}$ for F_{MSY} was used to estimate this value in both the update and benchmark assessments (Table 2.2.3.1). The value estimated from the update assessment for MFMT was 0.45 per year which is very close to the estimate calculated from the benchmark assessment at 0.49 per year. These estimates are based on a fishing mortality rate at MSY or in the case of Caribbean spiny lobster a proxy for F_{MSY} defined as $F_{20\%SPR}$. The Councils felt using the landings-based estimate was more appropriate for the MFMT rather than using the fishing mortality proxy. Since the MSY proxy was the OFL=7.90 mp (**Preferred Alternative 4**),

specifying the overfishing threshold at a rate that exceeds 7.90 mp is appropriate (**Preferred Alternative 3** under **Action 2-2**).

Based on the unestimated biomass of Caribbean spiny lobster in the southeastern U.S. due to external recruitment from pan-Caribbean populations, the MSST is also unknown. Under the current **Preferred Alternative 3** for Action 2-3**,** the MSST will be equal to (1-M) x B_{MSY}. (Definitions: M = instantaneous natural mortality and B_{MSY} = biomass at maximum sustainable yield or the appropriate proxy.) The instantaneous natural mortality number used for both the SEDAR 8 benchmark assessment and 2010 update assessment was M = 0.34 per year. However, due to the biomass of the southeastern U.S. Caribbean spiny lobster stock remaining unknown, MSST cannot be calculated. Nevertheless, it was estimated in the 2010 update assessment at 1.150 x 10^{12} eggs (Table 2.2.3.1).

Table 2.2.3.1. Management benchmarks for Caribbean spiny lobster in the southeastern United States.

Criterion	Description	Definition	Unaccepted Values 2010 Update Assessment	Accepted Values from SEDAR 8 2005
MSY	Maximum Sustainable Yield	Yield@$F_{20\%SPR}$	7.95 mp	Not estimated
MFMT	Maximum Fishing Mortality Threshold	F_{MSY} =$F_{20\%SPR}$	0.45 per year	0.49 per year
B_{MSY}	Biomass at MSY	Biomass@$F_{20\%SPR}$	1.743 x 10^{12} eggs	Not estimated
MSST	Minimum Spawning Stock Threshold	B_{MSY} x (1-M)	1.150 x 10^{12} eggs	Not estimated

Source: Update Assessment Review Workshop Report 2010 (unaccepted assessment values) and SEDAR 8 Benchmark Assessment 2005.

The values in the SEDAR-based alternatives for MSY (Action 2-1, **Alternative 3**), Overfishing Threshold (Action 2-2, **Alternative 2**), and Overfished Threshold (Action 2-3, **Alternative 2**) were not accepted by the Review Panel or the Gulf SSC. Therefore as currently written, **Actions 2-1**, **Alternatives 2** and **3** are the same. However, the Councils felt it was necessary to leave these alternatives in the document because a more reliable Caribbean-wide estimate of biomass may be produced. At that time these alternatives may provide the best protection for the resource. Until another benchmark assessment can be completed for Caribbean spiny lobster with additional information on the pan-Caribbean stock Action 2-1, **Alternative 4** and Action 2-2, **Alternative 3** provide the best protection for the resource. The overfished threshold **(**Action 2-3, **Alternative 3)** is currently unknown but would provide the same biological reference point for both Councils. Therefore, when the biomass is able to be estimated for Caribbean spiny lobster, Action 2-3, **Alternative 3** would provide adequate protection for the resource. However, without a clear estimate of Caribbean spiny lobster biomass, it is unknown if **Alternatives 2** or **3** under Action 2-3 would provide the best protection for the resource.

2.3 Action 3: Establish Sector Allocations for Caribbean Spiny Lobster in State and Federal Waters from North Carolina through Texas

Preferred Alternative 1: No action – Do not establish sector allocations.

Alternative 2: Allocate the spiny lobster ACL by the following sector allocations: 80% commercial and 20% recreational.

Alternative 3: Allocate the spiny lobster ACL by the following sector allocations: 74% commercial and 26% recreational.

Alternative 4: Allocate the spiny lobster ACL by the following sector allocations: 78% commercial and 22% recreational.

Alternative 5: Allocate the spiny lobster ACL by the following sector allocations: 77% commercial and 23% recreational.

Alternative 6: Allocate the spiny lobster ACL by the following sector allocations: 76% commercial and 24% recreational.

Comparison of Alternatives: Preferred Alternative 1 would not establish sector ACLs. Allocations would be necessary if sector ACLs or ACTs were set. However, the Councils chose to set a single stock ACL and ACT. The Councils recognize the competition between commercial diving and commercial trapping but the existing quota monitoring programs do not provide the ability to track these separate commercial quotas. The Councils chose to not designate sector allocations to minimize the administrative burden, and also because the ACL will likely not be exceeded under the current fishery conditions. The Councils will review the decision for sector allocations if landings increase in the future.

For all alternatives, the Councils are including all gear types for the commercial sector into one allocation. **Alternative 2** is based on the "better year" defined by the Florida Spiny Lobster Advisory Board (Advisory Board), which was the 1998/99 fishing season when the trap fishery had the highest proportion of total landings. This alternative was supported by 10 of the 14 members of the Advisory Board present at the May 23-24, 2006 meeting. **Alternative 3** is based on using 1993/1994 landings for allocations and was supported by 3 of the 14 members of the Advisory Board. **Alternative 4** is the average of **Alternatives 2** and old Alternative 3 (see Appendix A) and was supported by 11 of the 14 members of the Advisory Board present. This is the consensus recommendation of the Advisory Board for spiny lobster allocations. **Alternative 5** uses catches from fishing years/seasons 1991/1992 through 2009/2010 (Table 2.4.1.2). **Alternative 6** bases 50% of the allocation on the most recent 10 years (2000/2001-2009/2010) and 50% on the most recent three years (2007/2008-2009/2010).

By way of comparison with recent landings, the recreational sector harvested 21% in 2009/2010. **Alternative 2** would represent a reduction of 1% to the recreational sector, **Alternative 3** would represent an increase of 5%, **Alternative 4** would represent an increase of 1%, **Alternative 5** would represent an increase of 2%, and **Alternative 6** would represent an increase of 3%. Using the same base year (2009/2010), the commercial sector would see an increase of 1% under **Alternative 2**, a decrease of 5% under **Alternative 3**, a decrease of 1% under **Alternative 4**, a decrease of 2% under **Alternative 5**, and a decrease of 3% under **Alternative 6**. **Preferred Alternative 1** would allow both sectors to operate as they have in the past, and the Councils will monitor the level of harvest and take action if necessary through the framework procedure.

2.4 Action 4: Acceptable Biological Catch (ABC) Control Rule, ABC Level(s), Annual Catch Limits, and Annual Catch Targets for Caribbean Spiny Lobster

2.4.1 Action 4-1: Acceptable Biological Catch (ABC) Control Rule

Alternative 1: No Action – Do not establish an ABC Control Rule for spiny lobster.

Preferred Alternative 2: Adopt the following ABC Control rule:
Option a: the South Atlantic Council's ABC control rule.
Preferred Option b: the Gulf Council's ABC control rule.

Alternative 3: Establish an ABC Control Rule where ABC equals OFL.

Alternative 4: Specify ABC as equal to the mean of the last 10 years landings.

Alternative 5: Specify ABC as equal to the high of the last 10 years landings.

Alternative 6: Specify ABC as equal to the low of the last 10 years landings.

Comparison of Alternatives: Alternative 1 does not specify an ABC control rule. The SSC would set ABC for each stock using their best judgment. The National Standard 1 guidelines require that fishery management plans contain an ABC control rule, defined as "a specified approach to setting the ABC for a stock or stock complex as a function of the scientific uncertainty in the estimate of OFL and any other scientific uncertainty" (600.310(f)(2)(iii)). Because this alternative does not provide a specified approach, it is not viable under the guidelines.

Alternative 2, Option a would use the South Atlantic Council's ABC control rule, which is still under development. The rule provides a hierarchy of dimensions and tiers within dimensions used to characterize uncertainty associated with stock assessments in the South Atlantic. Dimension one for assessed stocks is complete; an interim approach is available for unassessed stocks. However, at their April 2011 meeting, the South Atlantic Council's SSC chose not to use this method for Caribbean spiny lobster.

Preferred Alternative 2, Option b uses the ABC control rule developed by the Gulf Council's SSC (Table 2.4.1.1) to set ABC for Caribbean spiny lobster. In January, the Gulf SSC met and reviewed the spiny lobster stock assessment update. They agreed with the review panel's decision to reject the update, and proceeded to set ABC using Tier 3a of the control rule. At the December 2010 South Atlantic Council meeting, the South Atlantic Council directed their SSC to consider the Gulf Council ABC control rule. The South Atlantic Council's SSC met in April 2011 and accepted the Gulf Council's ABC control rule for Caribbean spiny lobster.

The Gulf Council ABC control rule determines the appropriate level of risk and/or buffer to set between the OFL and ABC. The ABC control rule offers three tiers of guidance for setting ABC based on the amount of information for a given stock. Stocks with less information have greater scientific uncertainty, and therefore, the buffer between the OFL and ABC should be greater.

Table 2.4.1.1. Gulf Council Acceptable Biological Catch Control Rule (March 2011).

Tier 1 Acceptable Biological Catch Control Rule	
Condition for Use	A quantitative assessment provides both an estimate of overfishing limit based on MSY or its proxy and a probability density function of overfishing limit that reflects scientific uncertainty. Specific components of scientific uncertainty can be evaluated through a risk determination table.
OFL	OFL = yield resulting from applying F_{MSY} or its proxy to estimated biomass.
ABC	The Council with advice from the SSC will set an appropriate level of risk (P*) using a risk determination table that calculates a P* based on the level of information and uncertainty in the stock assessment. ABC = yield at P*.
Tier 2 Acceptable Biological Catch Control Rule	
Condition for Use*	An assessment exists but does not provide an estimate of MSY or its proxy. Instead, the assessment provides a measure of overfishing limit based on alternative methodology. Additionally, a probability density function can be calculated to estimate scientific uncertainty in the model-derived overfishing limit measure. This density function can be used to approximate the probability of exceeding the overfishing limit, thus providing a buffer between the overfishing limit and acceptable biological catch.
OFL	An overfishing limit measure is available from alternative methodology.
ABC	Calculate a probability density function around the overfishing limit measure that accounts for scientific uncertainty. The buffer between the overfishing limit and acceptable biological catch will be based on that probability density function and the level of risk of exceeding the overfishing limit selected by the Council. a. Risk of exceeding OFL = 50% b. Risk of exceeding OFL = 40% c. Risk of exceeding OFL = 30% (default) d. Set ABC = OFL – buffer at risk of exceeding OFL
Tier 3a Acceptable Biological Catch Control Rule	
Condition for Use*	No assessment is available, but landings data exist. The probability of exceeding the overfishing limit in a given year can be approximated from the variance about the mean of recent landings to produce a buffer between the overfishing limit and acceptable biological catch. Based on expert evaluation of the best scientific information available, recent historical landings are without trend, landings are small relative to stock biomass, or the stock is unlikely to undergo overfishing if future landings are equal to or moderately higher than the mean of recent landings. For stock complexes, the determination of whether a stock complex is in Tier 3a or 3b will be made using all the information available, including stock specific catch trends.
OFL	Set the overfishing limit equal to the mean of recent landings plus two standard deviations. A time series of at least ten years is recommended to compute the mean of recent landings, but a different number of years may be used to attain a representative level of variance in the landings.
ABC	Set acceptable biological catch using a buffer from the overfishing limit that represents an acceptable level of risk due to scientific uncertainty. The buffer will be predetermined for each stock or stock complex by the Council with advice from the SSC as:

	a. ABC = mean of the landings plus 1.5 * standard deviation (risk of exceeding OFL = 31%) b. ABC = mean of the landings plus 1.0 * standard deviation (default)(risk of exceeding OFL = 16%) c. ABC = mean of the landings plus 0.5 * standard deviation (risk of exceeding OFL = 7%) d. ABC = mean of the landings (risk of exceeding OFL = 2.3%)
Tier 3b Acceptable Biological Catch Control Rule	
Condition for Use*	No assessment is available, but landings data exist. Based on expert evaluation of the best scientific information available, recent landings may be unsustainable.
OFL	Set the overfishing limit equal to the mean of landings. A time series of at least ten years is recommended to compute the mean of recent landings, but a different number of years may be used to attain a representative level of variance in the landings.
ABC	Set acceptable biological catch using a buffer from the overfishing limit that represents an acceptable level of risk due to scientific uncertainty. The buffer will be predetermined for each stock or stock complex by the Council with advice from its SSC as: e. ABC = 100% of OFL f. ABC = 85% of OFL g. ABC = 75% of OFL (default) h. ABC = 65% of OFL

Note 1: Changes in the trend of a stock's landings or a stock complex's landings in three consecutive years shall trigger a reevaluation of their acceptable biological catch control rule determination under Tiers 2, 3a, or 3b.
Note 2: There may be situations in which reliable landings estimates do not exist for a given data-poor stock. The approach and methodology for setting OFL and ABC will be determined on a case-by-case basis, based on expert opinion and the best scientific information available.

Tier 1 is for stocks that have undergone a quantitative assessment that has produced an estimate of MSY and a probability distribution around the estimate (See the Gulf Councils Generic ACL/AM Control Rule for the P-star table). Tier 2 is for stocks that have not had a quantitative assessment that produces an estimate of MSY or MSY proxy. Tier 3a is for stocks that have not been assessed, but are stable over time or, in the judgment of the SSC, the stock or stock complex is unlikely to undergo overfishing at current average levels or at levels moderately higher than current average levels. Tier 3b is for stocks that do not meet the requirements of either Tier 1 or Tier 2 and, in the judgment of the SSC the current fishing levels may not be sustainable over time.

Tier 3a was determined to be appropriate for Caribbean spiny lobster because the Review Panel rejected the SEDAR update assessment, but landings data are available. Further, because of the almost complete recruitment from outside the U.S., the stock is not at risk of undergoing overfishing. Under this tier, OFL was set at mean landings (recent 10 years) plus two standard deviations (7.9 mp). The ABC was set using a buffer from OFL that represents an acceptable level of risk due to scientific uncertainty. The Gulf Council's SSC recommended using mean landings plus 1.5 standard deviations (7.32 mp) because, based on population genetics and physical transport data presented, juvenile spiny lobster that settle in south Florida have a high

probability of recruiting from several spawning populations throughout the greater Caribbean and are not locally self-recruited. Therefore, landings in south Florida are unlikely to have a substantial effect on future recruitment there.

Table 2.4.1.2 shows values for each alternative using the recent 10-year average landings. **Alternative 3** would set ABC equal to OFL; however, some method would be needed for setting the OFL if the current control rules are not used. **Alternatives 4-6** cover the range of values under consideration by the Councils.

Table 2.4.1.2. Caribbean spiny lobster landings.

Fishing Season	Com. Total	%Com	Rec. Total	%Rec	Com. & Rec. Total
91/92	6,836,015	79%	1,815,791	21%	8,651,806
92/93	5,368,188	80%	1,352,443	20%	6,720,631
93/94	5,309,790	74%	1,883,114	26%	7,192,904
94/95	7,181,641	79%	1,905,995	21%	9,087,636
95/96	7,017,134	78%	1,930,718	22%	8,947,852
96/97	7,744,104	80%	1,922,596	20%	9,666,700
97/98	7,640,177	77%	2,304,186	23%	9,944,363
98/99	5,447,533	81%	1,302,677	19%	6,750,210
99/00	7,669,207	76%	2,461,981	24%	10,131,188
00/01	5,568,707	74%	1,949,033	26%	7,517,740
01/02	3,079,263	71%	1,251,081	29%	4,330,343
02/03	4,577,392	76%	1,455,298	24%	6,032,690
03/04	4,161,589	75%	1,411,509	25%	5,573,097
04/05	5,472,994	76%	1,657,535	24%	6,906,397
05/06	2,963,160	72%	1,131,014	28%	4,094,174
06/07	4,799,493	79%	1,304,511	21%	6,104,004
07/08	3,778,037	76%	1,215,069	24%	4,993,105
08/09	3,269,397	72%	1,263,509	28%	4,532,906
09/10	4,343,305	79%	1,126,714	21%	5,470,019
All years	5,380,375	77%	1,601,086	23%	6,981,461
Recent 10-year values					
Mean					5,584,939
Median					5,521,558
Minimum					4,094,174
Maximum					7,517,740
Mean + 1.5Std.					7,323,117
Mean + 2.0Std.					7,902,510

Source: Landings from FWC as of June 24, 2010. Recreational landings are estimated landings through Labor Day of each season only. The recreational landings from 2000 onward reflect the retrospective analysis done to include additional recreational permit holders that were not incorporated into the original landings models. Total landings for the 02004/2005 season were not provided because the recreational surveys were not conducted that season due to storms; previous estimates only included the 2-day season landings and substantially underestimated total recreational landings for the combined 2-day season and the first month of the regular season. Recreational 2004/2005 landings were estimated based on the average percent of recreational landings in the preceding years.

2.4.2 Action 4-2: Set Annual Catch Limits (ACLs) for Caribbean Spiny Lobster

Alternative 1: No Action – Do not set ACLs.

Preferred Alternative 2: Set an ACL for the entire stock based on the ABC:
Preferred Option a: ACL = ABC = (7.32 million pounds).
Option b: ACL = 90% of ABC (6.59 million pounds).
Option c: ACL = 80% of ABC (5.86 million pounds).

Alternative 3: Set ACLs for each sector based on allocations determined in Action 3:
Option a: ACL = (sector allocation x ABC).
Option b: ACL = 80% or 90% of (sector allocation x ABC).
Option c: ACL = sector allocation x (80% or 90% of ABC).

Comparison of Alternatives: ACLs are set by the Councils and should take into account management uncertainty. Management uncertainty may occur because sufficient catch information is lacking, and may include late catch reporting, misreporting, and underreporting of catches. Management uncertainty is affected by the ability to control actual catch in the fishery. For example, a fishery with in-season catch data and in-season closure authority has better management control than a fishery without these features. Annual catch limits, in coordination with AMs, must prevent overfishing.

The Caribbean spiny lobster stock was previously assessed in 2005 (SEDAR 8). This assessment determined the stock was not undergoing overfishing based on a static spawning potential ratio of 20% ($F_{20\%}$) as set in Amendment 6. However, because the spawning stock includes the entire Caribbean region, spawning biomass at MSY (B_{MSY}) or the MSST could not be determined; therefore, the assessment could not determine if the stock is overfished. A stock assessment update was completed in November 2010. The base run of the model determined the stock is not overfished or undergoing overfishing. The Review Panel reviewed the SEDAR 8 Update and suggested using values based on the assumed maturity schedule. The new values still indicated no overfishing ($F_{current}/F_{20\%SPR} = 0.47$) and not overfished ($SSB_{current}/SSB\ F_{20\%SPR} = 1.29$). However, the Review Panel rejected the assessment update and stated they had no confidence in the reference points.

Alternative 1 would not specify an ACL for spiny lobster. Currently, there are no quotas in place that could serve as ACLs for either the commercial or recreational sector. Therefore, **Alternative 1** would not meet the requirements specified in the Magnuson-Stevens Act.

An ACL for a given stock can be established as either a single ACL for the entire fishery, or separate ACLs for various sectors. One ACL for the entire stock (**Preferred Alternative 2**) may be appropriate if sector allocations are not set (Action 3). The ACL cannot exceed the ABC. If a Council recommends an ACL which equals ABC (**Preferred Alternative 2, Option a**), and the ABC is equal to the OFL, the Council must provide sufficient analysis and justification for the approach or the Secretary of Commerce may presume overfishing will not be prevented. However, the Gulf Council's SSC set OFL at 7.9 mp which is higher than the recommended ABC of 7.32 mp. The ACL can also be reduced from the ABC to account for management uncertainty. Under the Gulf Council's ABC control rule, **Alternative 2, Options b** and **c** would equal 6.59 mp and 5.86 mp, respectively.

Sector ACLs (**Alternative 3**) may be appropriate if allocations are set, or if based on landings data. Recreational landings data in Florida are slightly less complete than commercial landings for the same time period. If more than one ACL is set, the sum of the ACLs can equal (**Alternative 3, Option a**), but not exceed, the ABC. The ABC could be separated using the sector allocations chosen in Action 3, in which case each ACL could be reduced for management uncertainty particular to that sector (**Alternative 3, Option b**). Alternately, the ABC could be reduced for overall management uncertainty first, then the resulting amount divided into separate sector ACLs (**Alternative 3, Option c**). The actual pounds for each option would depend on the allocation set in Action 3 (see Table 4.4.2.2 for the full range of allocations associated with each option).

2.4.3 Action 4-3: Set Annual Catch Targets (ACTs) for Caribbean Spiny Lobster

Alternative 1: No Action – Do not set ACTs.

Preferred Alternative 2: Set an ACT for the entire stock.
- **Preferred Option a:** ACT = OY = 90% of ACL (6.59 million pounds).
- **Option b:** ACT = OY = ACL (7.32 million pounds).
- **Option c:** ACT = OY = 6.0 million pounds.

Alternative 3: Set ACTs for each sector based on allocations from Action 3.
- **Option a:** ACT = OY = (sector allocation x ACL).
- **Option b:** ACT = OY = 90% of (sector allocation x ACL).
- **Option c:** ACT = OY = sector allocation x (90% of ACL).

Comparison of Alternatives: The ACT is the amount of annual catch of a stock that is the management target of the fishery, and accounts for further management uncertainty in controlling the actual catch at or below the ACL. An ACT set less than the ACL provides a buffer so the risk of exceeding the ACL is reduced and, therefore, the likelihood of triggering AMs is reduced. An ACT lowers the allowed catch below the ACL, but provides stability for fisheries that are apt to fluctuate around a target catch rate. The ACT equals OY, because the ACT is the management target and the stock should be managed to achieve OY.

Alternative 1 would not set an ACT for Caribbean spiny lobster. The National Standard 1 Guidelines do not require ACTs be established, but provide that ACTs may be used as part of a system of AMs. Accountability measures are required regardless of whether ACTs are established. If no ACT is set, the AMs would be based on the ACL.

One ACT could be set for the entire Caribbean spiny lobster stock (**Preferred Alternative 2**) if a single ACL is set for the stock (Action 4-2 Preferred Alternative 2). A single ACT would apply to all sectors and any AMs would be triggered simultaneously. Currently, no quotas constrain harvest of Caribbean spiny lobster. If the Councils were to set the ACT equal to the ACL (**Alternative 2, Option b**), no buffer would be in place. An ACT less than the ACL (**Preferred Option a** and **Option c**) creates a buffer which would be an AM to alert the Councils and NOAA Fisheries Service that landings are nearing the ACL (see Action 5).

A recent genetic study indicates the majority of Caribbean spiny lobster recruits come from outside the management area (Hunt and Tringali 2011). Therefore, any biological benefits to the population within the subject management area as a result of reducing the ACT below the ACL are likely to be negligible. A 10% buffer (**Preferred Alternative 2, Option a**) would set the ACT at 6.59 mp. The level set in **Option c** is slightly lower than the highest landings in the recent five years (2005/2006-2009/2010).

Sector ACTs **(Alternative 3)** could be set if separate sector ACLs are set **(**Action 4-2, Alternative 4**)** or if a single ACL is set for the stock **(**Action 4-2, Alternative 2**)**. In the second case, the AMs could be based on the stock ACL allowing one or more of the separate ACTs to be exceeded without severe consequences. This separation might be useful if one group consistently has landings below their allocation and can "absorb" any overage from another group. If separate ACTs are set, the sum of the ACTs can equal the ACL (**Alternative 3, Option a**). The ACL could be separated using the sector allocations chosen in Action 3, then each ACT could be reduced for management uncertainty particular to that sector (**Alternative 3, Option b**). Alternately, the ACL could be reduced for overall management uncertainty first, then the resulting amount divided into separate sector ACTs (**Alternative 3, Option c**). Again, a 10% buffer may be adequate for **Options b** and **c** because overfishing is unlikely. However, the Councils' preferred alternative for Action 3 is to not set sector allocations.

2.5 Action 5: Accountability Measures (AMs) by Sector

*Note: More than one alternative, option, sub-option, or combinations thereof, may be chosen as preferred.

Alternative 1: No Action – Do not set AMs. Currently there are no management measures in place that could be considered AMs.

Alternative 2: Establish commercial in-season AMs**:**

Option a: Close the commercial fishery when the ACL is projected to be met.

Option b: Implement a commercial trip limit when 75% of the commercial ACL is projected to be met.

Alternative 3: Establish post-season AMs:

Option a: Commercial

Sub-option i: ACL payback in the fishing season following a previous years ACL overage.

Sub-option ii: Adjust the length of the fishing season following an ACL overage.

Sub-option iii: Implement a trip limit.

Option b: Recreational

Sub-option i: ACL payback in the fishing season following an ACL overage. To estimate the overage, compare the recreational ACL with recreational landings over a range of years. For 2011, use only 2011 landings. For 2012, use the average landings of 2011 and 2012. For 2013 and beyond, use the most recent three-year running average.

Sub-option ii: Adjust the length of the fishing season following an ACL overage. To estimate the overage, compare recreational ACL with recreational landings over a range of years. For 2011, use only 2011 landings. For 2012, use the average landings of 2011 and 2012. For 2013 and beyond, use the most recent three-year running average.

Sub-option iii: Adjust bag limit for the fishing season following a previous season's ACL overage.

Option c: Recreational and commercial combined accountability measures

Sub-option i: Adjust season length for both recreational and commercial harvest of spiny lobster in the fishing season following an ACL overage.

Sub-option ii: Recreational and commercial ACL payback in the fishing season following a previous season's ACL overage (if a combined ACL is chosen).

Preferred Alternative 4: Establish the ACT as the accountability measure for Caribbean spiny lobster (ACT = 6.59 million pounds).

Comparison of Alternatives: Accountability measures are designed to provoke an action once either the ACL or ACT is reached during the course of a fishing season to reduce the risk overfishing will occur. However, depending on how timely the data are, it might not be realized that either the ACL and/or ACT has been reached until after a season has ended.

There are several types of AMs that may be applied in the Caribbean spiny lobster fishery. In-season AMs are those that are triggered during the fishing season and are typically implemented before an ACL is exceeded. Some examples of in-season AMs include quota closures, trip or

bag limit reductions, gear restrictions, or catch shares. Post-season AMs would be triggered if the ACL is exceeded and would typically be implemented the following fishing season. Post-season AMs could include seasonal closures, reduced trip limits, bag limits, and quotas, or shortening of the fishing season.

Alternative 1 would not establish AMs for the spiny lobster fishery. The Magnuson-Stevens Act requires that ACLs and AMs be established in 2011 for all managed species; therefore, if **Alternative 1** were chosen as a preferred alternative, the FMP would not be in compliance with those requirements.

Under **Alternative 2,** commercial in-season AMs would be triggered in order to prevent the ACL from being exceeded. Once the ACL is projected to be met, the Regional Administrator (RA) would publish a notice notifying the fishery of the closing date for the season. After that date all harvest and possession, and purchase and sale, of spiny lobster would be prohibited for those holding commercial spiny lobster permits. If the commercial ACL or ACT is caught quickly, there is a chance the ACL could be met or exceeded before the fishery could be notified of a quota closure. If the ACL is exceeded more than once within a four-year period the entire system of ACLs and AMs must be re-examined for effectiveness.

Under **Alternative 3,** post-season AMs would be implemented in the fishing season following the season when an ACL is exceeded. Post-season AMs would allow all landings for a particular season to be reported before any additional harvest restricting measures would take effect, and is thus associated with less uncertainty than in-season monitoring. This method of accountability alone may correct for one year's or several years' overages. Implementing post-season AMs for the recreational sector may be more pragmatic than in-season AMs because MRFSS and MRIP do not collect landings information on crustaceans, and Florida's data survey method would be the primary means of tracking recreational landings, unless some other method of recreational data collection is implemented. The Councils may choose a combination of in-season and post-season AMs. This would be the most administratively burdensome scenario; however, if an ACL overage were to occur after an in-season AM has been implemented, the Regional Administrator could use a post-season AM as a means to correct an overage and prevent overfishing.

Preferred Alternative 4 would use the ACT of 6.59 mp as the AM. At their June joint meeting, the Councils changed their preferred alternative from 6.0 mp to a value that is 90% of the ACL or 6.59 mp. The ACL is 7.32 mp and is equal to the ABC, which is derived using the ABC control rule adopted by the Gulf Council. The Councils felt an ACT that is 10% lower than the ACL would provide an adequate buffer between the target level of harvest and the annual limit on harvest. An exceedence of the ACT would automatically trigger an AM whereby the Councils would convene a review panel to assess whether or not corrective action is needed to prevent the ACL from being exceeded. It is unlikely the ACL would be exceeded under the current ACL preferred alternative based on landings history; however, the updated framework procedure contained within this amendment would facilitate timely adjustments to the National Standard 1 harvest parameters and management measures if needed in the future. The ability to expeditiously implement modifications to the ACL, ACT, AMs, and management measures for Caribbean spiny lobster would limit any negative biological impact that could result from continued ACT or ACL overages.

The biological impacts of **Preferred Alternative 4** would likely be similar to that of status quo since the combined recreational/commercial average landings for the last 10 fishing seasons do not exceed the preferred ACT. Additionally, a recent study using microsatellite DNA analysis to identify sources of recruitment among Caribbean spiny lobsters indicates the majority of recruits come from areas outside the management area (Hunt and Tringali 2011). Therefore, any true biological benefits that may accrue in the Caribbean spiny lobster population found within the subject management area, as a result of implementing any one of the AMs considered, are likely to be negligible. Under **Preferred Alternative 4**, variations in year-to-year harvest would be accounted for by evaluating what percentage of the ACT is caught over several years, rather than on a single season basis. It is unlikely the ACL would be exceeded repeatedly under the current ACL preferred alternative based on landings history; however, the updated framework procedure contained within this amendment would facilitate timely adjustments to the National Standard 1 harvest parameters if needed in the future. The ability to expeditiously implement modifications to the ACL, ACT, and AMs for Caribbean spiny lobster would limit any negative biological impact that could result from continued ACT or ACL overages.

2.6 Action 6: Develop or Update a Framework Procedure and Protocol for Enhanced Cooperative Management for Spiny Lobster

*Note: more than one alternative may be chosen as a preferred.

Alternative 1: No Action – Do not update the Protocol for Enhanced Cooperative Management or the Regulatory Amendment Procedure.

Preferred Alternative 2: Update the current Protocol for Enhanced Cooperative Management.

Alternative 3: Update the current Regulatory Amendment Procedures to develop a Framework Procedure to modify ACLs and AMs.

Preferred Alternative 4: Revise the current Regulatory Amendment Procedures to create an expanded Framework Procedure:

Preferred Option a: Adopt the base Framework Procedure
Option b: Adopt the more broad Framework Procedure
Option c: Adopt the more narrow Framework Procedure

Comparison of Alternatives: The current Protocol for Enhanced Cooperative Management in the FMP outlines the roles of federal and Florida agencies in managing Caribbean spiny lobster. The current Regulatory Amendment Procedure outlines the actions that can be implemented through framework actions, such as gear and harvest restrictions. The current protocol and procedure were developed through Amendment 2 (GMFMC and SAFMC 1989). This action proposes to modify and update the *protocol* to include relevant agency names and authorities. The framework *procedure* would also be updated to include relevant terms and adjustments to ACLs, ACTs, and AMs. (Note: The Regulatory Amendment Procedure and the Framework Procedure are the same thing, and the Councils will now refer to this procedure in the FMP as the Framework Procedure.)

Alternative 1 would not modify the current protocols or procedures to include modern terminology and adjustments to ACLs, ACTs, and AMs. The RA would maintain his/her current ability to adjust trip limits, bag limits, size limits, seasonal closures, and gear restrictions, but no means would exist of making needed adjustments to the National Standard 1 harvest parameters or management measures in a timely manner.

Preferred Alternative 2 would retain the current agreement with Florida, but update the language to be consistent with changes in agency names and terminology since 1989. This alternative could be chosen in conjunction with either **Alternative 3** or **4**.

Proposed Language for the Updated Protocol

Protocol for Roles of Federal and State of Florida Agencies for the Management of Gulf and South Atlantic Spiny Lobster

1. The Gulf of Mexico and South Atlantic Fishery Management Councils (Councils) and NOAA Fisheries Service acknowledge that the fishery is largely a State of Florida (State) fishery, which extends into the exclusive economic zone (EEZ), in terms of current participants in the directed fishery, major nursery, fishing, landing areas, and historical regulation of the fishery. As such, this fishery requires cooperative state/federal efforts for effective management through the Fishery Management Plan for the Spiny Lobster Fishery of the Gulf of Mexico and South Atlantic (Spiny Lobster FMP).

2. The Councils and NOAA Fisheries Service acknowledge that the State is managing and will continue to manage the resource to protect and increase the long-term yields and prevent depletion of lobster stocks and that the State Administrative Procedure Act and rule implementation procedures, including final approval of the rules by Governor and Cabinet, provide ample and fair opportunity for all persons to participate in the rulemaking procedure.

3. The Florida Fish and Wildlife Conservation Commission (FWC) acknowledges that rules proposed for implementation under any fishery management plan amendment, regulatory or otherwise, must be consistent with the management objectives of the Spiny Lobster FMP, the National Standards, the Magnuson-Stevens Fishery Conservation and Management Act, and other applicable law. Federal rules will be implemented in accordance with the Administrative Procedure Act.

4. The Councils and NOAA Fisheries Service agree that, for any rules defined within an amendment to the Spiny Lobster FMP, the State may propose the rule directly to NOAA Fisheries Service, concurrently informing the Councils of the nature of the rule, and that NOAA Fisheries Service will implement the rule within the EEZ provided it is consistent under paragraph three. If either of the Councils informs NOAA Fisheries Service of their concern over the rule's inconsistency with paragraph three, NOAA Fisheries Service will not implement the rule until the Councils, FWC, and NOAA Fisheries Service resolve the issue.

5. The State will have the responsibility for collecting and developing the information upon which to base the fishing rules, with assistance as needed by NOAA Fisheries Service, and cooperatively share the responsibility for enforcement with federal agencies.

6. Florida FWC will provide to NOAA Fisheries Service and the Councils written explanations of its decisions related to each of the rules; summaries of public comments; biological, economic and social analysis of the impacts of the proposed rule and alternatives; and such other relevant information.

7. The rules will apply to the EEZ for the management area of North Carolina through Texas, unless the Regional Administrator (RA) determines those rules may adversely impact other state and federal fisheries. In that event, the RA may limit the application of the rule, as necessary, to address the problem.

8. NOAA Fisheries Service and the Councils agree that their staffs will prepare the proposed and final rules and the associated National Environmental Policy Act documentation and other documents required to support the rule.

Under **Alternatives 3** and **4**, adjustments to ACLs, ACTs, AMs, and other management measures could be made relatively quickly as new fishery and stock abundance information becomes available. The alternatives that would update or revise the current procedure would likely be biologically beneficial for spiny lobster because they would allow periodic adjustments to National Standard 1 guideline harvest parameters, and management measures could be altered in a timely manner in response to stock assessment or survey results. Framework actions are initiated by the Councils and implemented by the RA, and require less time when compared to the lengthy amendment process. The majority of public participation and comment on framework issues typically takes place when the framework procedure is initially drafted during the regular amendment process, as in this action. **Alternative 3** and **4** would be expected to increase the efficiency and effectiveness of management change, potentially allowing less severe corrective action when necessary, or the quicker receipt of social and economic benefits associated with less restrictive management. In the long term, positive social and economic effects, relative to the status quo, would be expected from more timely management adjustments.

Alternative 3 would update language and formatting, as well as allow adjustments to ACLs, ACTs, and accountability measures. When the procedure was originally developed, these parameters were not in use. The updates would streamline the process for making these changes if a new stock assessment indicates their necessity. However, the procedure remains fairly restrictive both substantively and procedurally. The potential changes are summarized in Table 2.6.1. The full text of the updated framework procedure follows.

Table 2.6.1. Proposed framework modifications under Alternative 3.

Items retained from current framework	Items modified from current framework	Items added to current framework
Adjustments to or implementation of trip limits, bag limits (including zero bag limits), minimum sizes, gear restrictions, and seasonal/area closures	Change the term "Regional Director" to "Regional Administrator"	Use of SEDAR reports or other documentation the Councils or FWC deem appropriate to provide biological analyses
Adjustment to or implementation of time frames for recovery of an overfished species	Change the term "FMFC" to "Florida Fish and Wildlife Conservation Commission (FWC)"	The SSC prepares a written report to the Councils and FWC specifying OFL and a range of ABCs for species in need of catch reductions to achieve OY
Initial specification and subsequent adjustments of biomass levels and age structured analysis		The SEDAR report or SSC will recommend rebuilding periods
Inclusion of public input in the framework adjustment process		Adjustments to ABCs, ACLs, and/or sector ACLs
		Adjustment to or implementation of ACTs and AMs
		Adjustments to or establishment of MSY
		Adjustments to or implementation of quotas, including closing any commercial fishery when the quota is filled

Proposed Language for Updated Framework Procedure

Joint Fishery Management Plan for the Spiny Lobster Fishery of the Gulf of Mexico (Gulf) and South Atlantic Framework Procedure for Specification of Annual Catch Limits, Annual Catch Targets, Overfishing Limits, Acceptable Biological Catch, Accountability Measures, and annual adjustments:

1. At times determined by NOAA Fisheries Service Southeast Regional Office and Florida Fish and Wildlife Conservation Commission (FWC), the Gulf of Mexico and South Atlantic Councils (Councils), and the Southeast Data, Assessment, and Review (SEDAR) steering committee, stock assessments or assessment updates for spiny lobster in the Gulf and South Atlantic will be conducted under the SEDAR process. Each SEDAR stock assessment or assessment update will: 1) assess, to the extent possible, the current biomass (B), biomass proxy, or spawning potential ratio (SPR) levels for each stock; 2) estimate fishing mortality (F) in relation to F_{MSY} (maximum

fishing mortality threshold [MFMT]) and F_{OY}); 3) determine the overfishing limit (OFL); 4) estimate other population parameters deemed appropriate; 5) summarize statistics on the fishery; 6) specify the geographical variations in stock abundance, mortality, recruitment, and age of entry into the fishery for each stock or stock complex; and 7) develop estimates of B_{MSY}.

2. The Councils and the FWC will consider SEDAR stock assessments, or other documentation deemed appropriate, to provide the biological analysis and data listed above in paragraph 1. Either the Southeast Fisheries Science Center or the stock assessment branch of a State agency may serve as the lead in conducting the analysis, as determined by the SEDAR Steering Committee. The joint Gulf and South Atlantic Scientific and Statistical Committees (SSCs) or some subgroup thereof, will prepare a written report specifying an OFL to the Councils and FWC and may recommend a range of acceptable biological catch (ABC) for attaining or maintaining optimum yield (OY). The OFL is the annual harvest level corresponding to fishing at MFMT (F_{MSY}). The ABC range is intended to provide ABC range. In addition, the joint SSC sub-group will examine information provided by the social scientists and economists from the Councils' staffs and from the Southeast Regional Office analyzing social and economic impacts of any specification demanding adjustments of allocations, annual catch limits (ACLs), annual catch targets (ACTs), accountability measures (AMs), quotas, bag limits, or other fishing restrictions. The joint SSC sub-group will use the ABC control rule to set ABC at or below the OFL, taking in account scientific uncertainty. If the joint SSC sub-group set ABC equal to OFL, they will provide rational why they believe that level of fishing will not exceed MFMT.

4. The Councils and FWC may conduct a public hearing on the reports and the joint SSCs' ABC recommendation at, or prior to, the time it is considered by the Councils for action. Other public hearings also may be held. The Councils and FWC may convene their Spiny Lobster Advisory Panels, and optionally their socioeconomic panels, to review the report before taking action.

5. If necessary, the Councils and FWC will utilize the following criteria in selecting an ACL, ACT, AM, and a stock restoration time period, in addition to taking into consideration the recommendations and information provided in paragraphs 1-4:

> **a.** Set ACL at or below the ABC specified by the joint SSC sub-group or set a series of annual ACLs at or below the projected ABCs to account for management uncertainty. If the Councils and FWC set the ACL equal to ABC, and ABC has been set equal to OFL, the Councils and FWC will provide rationale why they believe that level of fishing will not exceed MFMT.
> **b.** Optionally, subdivide the ACLs into commercial, for-hire, and private recreational sector ACLs or gear specific ACLs that maximize the net benefits of the fishery to the nation. The sector ACLs will be based on allocations determined by criteria established by the Councils and FWC, and specified by the Councils through a plan amendment. If spiny lobster is overfished, and harvest in any year exceeds the ACL or sector ACL, management measure and catch levels for that sector will be adjusted in accordance with the AMs established for that stock.
> **c.** Optionally, set ACTs or sector ACTs at or below ACLs and in accordance with the provision of the AMs for spiny lobster. The ACT is the management target that accounts for management uncertainty in controlling the actual catch at or below the ACL. If an ACL is exceeded repeatedly, the Councils and FWC have the option to establish an ACT if one does not already exist for a particular stock, and to adjust or establish AMs for that stock as well.

6. The Councils will provide to the RA: 1) the joint SSC sub-group specification of OFL and recommendation of ABCs, ACLs, sector ACLs, ACTs, sector ACTs, AMs, sector AMs; 2) stock restoration target dates for each stock or stock complex; 3) estimates of B_{MSY} and MSST; 4) estimates of MFMT, and; 5) the quotas, bag limits, trip limits, size limits, closed seasons, and gear restrictions necessary to avoid exceeding the ACL or sector ACLs. The Councils will also provide the joint SSC subgroup reports, a regulatory impact review, proper National Environmental Policy Act documentation, and the proposed regulations within a predetermined time as agreed upon by the Councils, FWC and RA. The Councils and FWC may also recommend new levels or statements for MSY (or proxy) and OY.

7. The RA will review the Councils' recommendations and supporting information; if he/she concurs the recommendations are consistent with the objectives of the Spiny Lobster FMP, the National Standards, and other applicable law, he/she shall prepare a framework action and forward notice of proposed rules to the Assistant Administrator for publication (providing appropriate time for additional public comment). The RA will consider all public comment and information received and will forward a final rule for publication in the Federal Register within 30 days of the close of the public comment period, or such other time as agreed upon by the Councils and RA.

8. Appropriate regulatory changes that may be implemented by final rule in the Federal Register include:

- **a.** ACLs or sector ACLs, or a series of annual ACLs or sector ACLs.
- **b.** ACTs or sector ACTs, or a series of annual ACTs or sector ACTs, and establishment of ACTs for stocks which do not have an ACT.
- **c**. AMs, or sector AMs.
- **d**. Bag limits, size limits, vessel trip limits, closed seasons or areas, gear restrictions, and quotas designed to achieve OY and keep harvest levels from exceeding the ACL or sector ACL.
- **e.** New levels or statements of MSY (or proxy) and OY for any stock.
- **f**. Fishing season/year adjustments.

9. The RA is authorized, through notice action, to conduct the following activities.

- **a.** Close the commercial fishery for spiny lobster at such time as projected to be necessary to prevent the commercial sector from exceeding the commercial sector ACL or ACT for the remainder of the fishing year or sub-quota season.
- **b.** Close the recreational fishery for spiny lobster at such time as projected to be necessary to prevent recreational sector ACLs or ACTs from being exceeded.
- **c.** Reopen a commercial or recreational season that had been prematurely closed if needed to assure that a sector ACL or ACT can be reached.

10. If NOAA Fisheries Service decides not to publish the proposed rule of the recommended management measures, or to otherwise hold the measures in abeyance, then the RA must notify the Councils and FWC with the reasons for concern along with suggested changes to the proposed management measures that would alleviate the concerns. Such notice shall specify: 1) The applicable law with which the amendment is inconsistent; 2) the nature of such inconsistencies; and 3) recommendations concerning the action that could be taken by the Councils to conform the amendment to the requirements of applicable law.

The options in **Preferred Alternative 4** would increase the flexibility of the Councils and NOAA Fisheries Service by identifying additional measures that could be changed under the procedure. In addition, these framework options would clarify the appropriate process needed for each type of change. The major differences among the options are highlighted in Table 2.6.2. The full text of the revised framework procedure for each option follows.

Table 2.6.2. Comparison of Alternative 4 options for a framework procedure.

	Preferred Option a (Base)	Option b (Broad)	Option c (Narrow)
Types of framework processes	Open abbreviated Open standard Closed	Open Closed	Open Closed
When open framework can be used	New stock assessment New information or circumstances Changes are required to comply with applicable law or a court order	In response to any new information or changed circumstances	Only when there is a new stock assessment
Actions that can be taken	Abbreviated Open framework can be used for actions that are considered minor and insignificant Standard Open framework used for all others *Lists of actions that can be taken under Abbreviated and Standard Open framework are given.* Closed framework can be used for a specific list of actions	Open framework can be used for a representative list of actions, plus other measures deemed appropriate by the Councils Closed framework can be used for a specific list of actions, plus any other immediate action specified in the regulations	Open framework can only be used for specific listed actions Closed framework can only be used for a specific list of actions
Public input	Requires public discussion at one meeting for each Council	Requires public discussion at one meeting for each Council	Requires public discussion during at least three meetings for each Council, and discussion at separate public hearings within the areas most affected by the proposed measures.
AP/SSC participation	Each Council may convene their SSC, SEP, or AP, as appropriate	Convening the SSC, SEP, or AP, prior to final action is not required	Each Council shall convene their SSC, SEP, and AP
How a request of action is made	Abbreviated requires a letter or memo from the Councils with supporting analyses Standard requires a completed framework document with supporting analyses	Via letter, memo, or the completed framework document with supporting analyses.	Via letter, memo, or completed framework document with supporting analyses.

Option a (Base)
This framework procedure provides standardized procedures for implementing management changes pursuant to the provisions of the Spiny Lobster Fishery Management Plan (FMP) managed jointly between the Gulf of Mexico and South Atlantic Fishery Management Councils (Councils). Two basic processes are included: the open framework process and the closed framework process. The open framework addresses issues where more policy discretion exists in selecting among various management options developed to address an identified management issue, such as changing a size limit to reduce harvest. The closed framework addresses much more specific factual circumstances, where the FMP and implementing regulations identify specific action to be taken in the event of specific facts occurring, such as closing a sector of a fishery when the quota is or is projected to be harvested.

Open Framework:

1. Situations under which the open framework procedure may be used to implement management changes include the following:
    a. A new stock assessment results in changes to the overfishing limit, acceptable biological catch, or other associated management parameters.
    In such instances the Councils may, as part of a proposed framework action, propose an annual catch limit (ACL) or series of ACLs and optionally an annual catch target (ACT) or series of ACTs, as well as any corresponding adjustments to maximum sustainable yield (MSY), optimum yield (OY), and related management parameters.
    b. New information becomes available or circumstances change.
    The Councils will, as part of a proposed framework action, identify the new information and provide rationale why this new information indicates management measures should be changed.
    c. Changes are required to comply with applicable law such as the Magnuson-Stevens Act, Endangered Species Act, Marine Mammal Protection Act, or are required as a result of a court order.
    In such instances the Regional Administrator (RA) will notify the Councils in writing of the issue and that action is required. If there is a legal deadline for taking action, the deadline will be included in the notification.
2. Open framework actions may be implemented in either of two ways: abbreviated documentation or standard documentation process.
    a. Abbreviated documentation process. Regulatory changes that may be categorized as routine or insignificant may be proposed in the form of a letter or memo from the Councils to the RA containing the proposed action, and the relevant biological, social, and economic information to support the action. Either Council may initiate the letter or memo, but both Councils must approve it. If multiple actions are proposed, a finding that the actions are also routine or insignificant must also be included. If the RA concurs with the determination and approves the proposed action, the action will be implemented through publication of appropriate notification in the Federal Register. Changes that may be viewed as routine or insignificant include, among others:

        i. Reporting and monitoring requirements,
        ii. Permitting requirements,
        iii. Gear marking requirements,

iv. Vessel marking requirements,
v. Restrictions relating to the use of undersized attractants,
vi. Restrictions relating to tailing,
vii. Bag and possession limit changes of not more than one lobster,
viii. Size limit changes of not more than 10% of the prior size limit,
ix. Vessel trip limit changes of not more than 10% of the prior trip limit,
x. Closed seasons of not more than 10% of the overall open fishing season,
xi. Restricted areas (seasonal or year-round) affecting no more than a total of 100 nautical square miles,
xii. Respecification of ACL, ACT, or quotas that were previously approved as part of a series of ACLs, ACTs or quotas,
xiii. Specification of MSY proxy, OY, and associated management parameters (such as overfished and overfishing definitions) where new values are calculated based on previously approved specifications,
xiv. Gear restrictions, except those that result in significant changes in the fishery, such as complete prohibitions on gear types,
xv. Quota changes of not more than 10%, or retention of portion of an annual quota in anticipation of future regulatory changes during the same fishing year.

b. Standard documentation process. Regulatory changes that do not qualify as routine or insignificant may be proposed in the form of a framework document with supporting analyses. Non-routine or significant changes that may be implemented under a framework action include:
    i. Specification of ACTs or sector ACTs,
    ii. Specification of ABC and ABC control rule,
    iii. Creation of rebuilding plans and revisions to approved rebuilding plans,
    iv. Changes specified in section 2(a) that exceed the established thresholds.

3. Either Council may initiate the open framework process to inform the public of the issues and develop potential alternatives to address the issues. The framework process will include the development of documentation and public discussion during at least one meeting for each Council.
4. Prior to taking final action on the proposed framework action, each Council may convene their SSC, SEP, or AP, as appropriate, to provide recommendations on the proposed actions.
5. For all framework actions, the initiating Council will provide the letter, memo, or the completed framework document along with proposed regulations to the RA in a timely manner following final action by both Councils.
6. For all framework action requests, the RA will review the Councils' recommendations and supporting information and notify the Councils of the determinations, in accordance with the Magnuson-Stevens Act (Section 304) and other applicable law.

Closed Framework:

Consistent with existing requirements in the FMP and implementing regulations, the RA is authorized to conduct the following framework actions through appropriate notification in the Federal Register:

a. Close or adjust harvest in any sector of the fishery for a species, sub-species, or species group that has a quota or sub-quota at such time as projected to be necessary to prevent the sector from exceeding its sector-quota for the remainder of the fishing year or sub-quota season,
b. Reopen any sector of the fishery that had been prematurely closed,
c. Implement an in-season accountability measure for a sector that has reached or is projected to reach, or is approaching or is projected to approach its ACL, or implement a post-season accountability measure for a sector that exceeded its ACL in the current year.

Option b (Broad)
This framework procedure provides standardized procedures for implementing management changes pursuant to the provisions of the Spiny Lobster Fishery Management Plan (FMP) managed jointly between the Gulf of Mexico and South Atlantic Fishery Management Councils (Councils). Two basic processes are included: the open framework process and the closed framework process. The open framework addresses issues where more policy discretion exists in selecting among various management options developed to address an identified management issue, such as changing a size limit to reduce harvest. The closed framework addresses much more specific factual circumstances, where the FMP and implementing regulations identify specific action to be taken in the event of specific facts occurring, such as closing a sector of a fishery when the quota is or is projected to be harvested.

Open Framework:

1. The Councils may utilize this framework procedure to implement management changes in response to any additional information or changed circumstances. The Councils will, as part of a proposed framework action, identify the new information and provide rationale why this new information requires management measures be adjusted.
2. Open framework actions may be implemented at any time based on information supporting the need for adjustment of management measures or management parameters:
   Changes that may be implemented via the open framework procedure include:
   a. Reporting and monitoring requirements,
   b. Permitting requirements,
   c. Gear marking requirements,
   d. Vessel marking requirements,
   e. Restrictions relating to the use of undersized attractants,
   f. Restrictions relating to tailing,
   g. Bag and possession limits,
   h. Size limits,
   i. Vessel trip limits,
   j. Closed seasons,
   k. Restricted areas (seasonal or year-round),
   l. Re-specification of annual catch limits (ACLs), annual catch targets (ACTs), or quotas that were previously approved as part of a series of ACLs, ACTs or quotas,
   m. Specification of maximum sustainable yield (MSY) proxy, optimum yield (OY), and associated management parameters (such as overfished and overfishing definitions) where new values are calculated based on previously approved specifications,

n. Gear restrictions, except those that result in significant changes in the fishery, such as complete prohibitions on gear types,
o. Quota,
p. Specification of ACTs or sector ACTs,
q. Creation of rebuilding plans and revisions to approved rebuilding plans,
r. Any other measures deemed appropriate by the Council.

3. Either Council may initiate the open framework process to inform the public of the issue and develop potential alternatives to address the issue. The framework process will include the development of documentation and public discussion during one meeting for each Council.
4. For all framework actions, the initiating Council will provide the letter, memo, or the completed framework document along with proposed regulations to the Regional Administrator (RA) following final action by both Councils.
5. For all framework action requests, the RA will review the Councils' recommendations and supporting information and notify the Councils of the determinations, in accordance with the Magnuson-Stevens Act (Section 304) and other applicable law.

Closed Framework:

Consistent with existing requirements in the FMP and implementing regulations, the RA is authorized to conduct the following framework actions through appropriate notification in the Federal Register:

a. Close or adjust harvest in any sector of the fishery for a species, sub-species, or species group that has a quota or sub-quota at such time as projected to be necessary to prevent the sector from exceeding its sector-quota for the remainder of the fishing year or sub-quota season,
b. Reopen any sector of the fishery that was prematurely closed,
c. Implement an in-season accountability measure for a sector that has reached or is projected to reach, or is approaching or is projected to approach its ACL, or implement a post-season accountability measure for a sector that exceeded its ACL in the current year,
d. Take any other immediate action specified in the regulations.

Option c (Narrow)

This framework procedure provides standardized procedures for implementing management changes pursuant to the provisions of the Spiny Lobster Fishery Management Plan (FMP) managed jointly between the Gulf of Mexico and South Atlantic Fishery Management Councils (Councils). Two basic processes are included: the open framework process and the closed framework process. The open framework addresses issues where more policy discretion exists in selecting among various management options developed to address an identified management issue, such as changing a size limit to reduce harvest. The closed framework addresses much more specific factual circumstances, where the FMP and implementing regulations identify specific action to be taken in the event of specific facts occurring, such as closing a sector of a fishery when the quota is or is projected to be harvested.

Open Framework:

1. The open framework procedure may be used to implement management changes only when a new stock assessment results in changes to the overfishing limit, acceptable biological catch, or other associated management parameters. In such instances the

Councils may, as part of a proposed framework action, propose an annual catch limit (ACL) or series of ACLs and optionally an annual catch target (ACT) or series of ACTs, as well as any corresponding adjustments to maximum sustainable yield (MSY), optimum yield (OY), and related management parameters.

2. Actions that may be implemented via the framework procedure include:
   a. Reporting and monitoring requirements,
   b. Bag and possession limits,
   c. Size limits,
   d. Closed seasons,
   e. Restricted areas (seasonal or year-round),
   f. Quotas.
3. Either Council may initiate the open framework process to inform the public of the issue and develop potential alternatives to address the issue. The framework process will include the development of documentation and public discussion during at least three meetings for each Council, and shall be discussed at separate public hearings within the areas most affected by the proposed measures.
4. Prior to taking final action on the proposed framework action, each Council shall convene its SSC, SEP, and AP to provide recommendations on the proposed actions.
5. For all framework actions, the initiating Council will provide the letter, memo, or the completed framework document, and all supporting analyses, along with proposed regulations to the RA in a timely manner following final action by both Councils.
6. For all framework action requests, the RA will review the Councils' recommendations and supporting information and notify the Councils of the determinations, in accordance with the Magnuson-Stevens Act (Section 304) and other applicable law. The RA will provide the Councils weekly updates on the status of the proposed measures.

Closed Framework:

Consistent with existing requirements in the FMP and implementing regulations, the RA is authorized to conduct the following framework actions through appropriate notification in the Federal Register:

a. Close or adjust harvest in any sector of the fishery for a species, sub-species, or species group that has a quota or sub-quota at such time as projected to be necessary to prevent the sector from exceeding its sector-quota for the remainder of the fishing year or sub-quota season,
b. Reopen any sector of the fishery that was prematurely closed,
c. Implement an in-season accountability measure for a sector that has reached or is projected to reach, or is approaching or is projected to approach its ACL, or implement a post-season accountability measure for a sector that exceeded its ACL in the current year.

2.7 Action 7: Modify Regulations Regarding Possession and Handling of Short Caribbean Spiny Lobsters as "Undersized Attractants"

Alternative 1: No Action – Allow the possession of no more than 50 undersized Caribbean spiny lobsters, or one per trap aboard the vessel, whichever is greater, for use as attractants.

Alternative 2: Prohibit the possession and use of undersized Caribbean spiny lobsters as attractants.

Alternative 3: Allow undersized Caribbean spiny lobsters, but modify the number of allowable undersized lobsters, regardless of the number of traps fished:

Option a: Allow 50 undersized lobsters
Option b: Allow 35 undersized lobsters

Preferred Alternative 4: Allow undersized spiny lobster not exceeding 50 per boat and 1 per trap aboard each boat if used exclusively for luring, decoying or otherwise attracting non-captive spiny lobsters into the trap**.**

Comparison of Alternatives: Alternative 1 would not change the regulations concerning the use of undersized lobsters as attractants. Currently, federal regulations at 50 CFR 640.21(c) state the following:

> *A live spiny lobster under the minimum size limit specified in paragraph (b)(1) of this section that is harvested in the EEZ by a trap may be retained aboard the harvesting vessel for future use as an attractant in a trap provided it is held in a live well aboard the vessel. No more than fifty undersized spiny lobsters, or one per trap aboard the vessel, whichever is greater, may be retained aboard for use as attractants. The live well must provide a minimum of ¾ gallons (1.7 liters) of seawater per spiny lobster. An undersized spiny lobster so retained must be released alive and unharmed immediately upon leaving the trap lines and prior to one hour after official sunset each day.*

Florida allows not only 50 undersized lobsters to be maintained onboard licensed vessels, but also one undersized lobster per trap, which is not consistent with current federal regulations. **Alternative 1** would perpetuate this discrepancy and continue the resulting difficulty for law enforcement officials.

Alternative 2 would eliminate the difficulties law enforcement officials currently experience in prosecuting undersized spiny lobster cases, and any negative biological impacts attributable to undersized lobster as attractants. Prohibiting the use of undersized spiny lobster as attractants may, therefore, lead to a reduced risk of exceeding the ACL in any given year and hedge against future overfishing. The enforcement and biological benefits under **Alternative 2** are likely to be negligible given recent data that suggests the majority of Caribbean spiny lobster recruits come from outside management area (Hunt and Tringali 2011), and confinement mortality of undersized Caribbean spiny lobsters is estimated to be low (10%)(SEDAR 8, 2005). However, the socioeconomic impacts of prohibiting the use of undersized spiny lobster as attractants could be significant given a large portion of commercial fishermen fishing for spiny lobster use undersized lobsters as attractants. Subsequent to the allowance for the use of undersized spiny

lobsters as attractants in state regulations in 1977, Amendment 1 to the Spiny Lobster FMP (1987) stated as a major issue:

> *The illegal market in undersize lobsters, on board handling and exposure of undersize lobsters and their confinement in traps as attractants are significant sources of undersize lobster mortality that are preventing the fishery from harvesting optimum yield. Although undersize lobsters are an effective attractant, the mortality associated with their use as attractants, in combination with increasing number of traps being fished, are contributing to the fishery's inability to achieve optimum yield….*

Enforcement issues still exist today despite the implementation of the "50 Short" rule and the requirement to use live wells to maintain undersized spiny lobsters onboard fishing vessels. The most recent SEDAR assessment for spiny lobster assumed a 10% mortality rate of undersized spiny lobsters used as attractants. Though this mortality rate is relatively low, eliminating the use of undersized lobsters may increase the number of juveniles that are allowed to fully mature and reach harvestable sizes. **Alternative 3** would not improve law enforcement efforts in the fishery; however, it could potentially increase the number of Caribbean spiny lobsters allowed to grow to harvestable sizes without incurring the same magnitude of socioeconomic impacts that would accrue under **Alternative 2**. The options under **Alternative 3** are intended to limit the number of undersized spiny lobsters used as attractants to a level lower than the status quo without prohibiting the practice altogether.

Preferred Alternative 4 is very similar to **Alternative 1** in that it would allow spiny lobsters to be kept onboard for use as attractants; however, it would change the provision to allow 50 spiny lobsters *plus* one per trap, rather than 50 spiny lobsters *or* one per trap, and it would remove the "whichever is greater" portion of the provision. As Section 4.7.2 of this document states, the number of traps fished on a trip can be estimated for **Alternative 1**, when this number is interpreted to mean the number of traps hauled to remove lobsters. This is not necessarily an indication of the number traps on a vessel, which may be 30-35 at any one time during fishing operations. Allowing 50 undersized lobsters to be used as attractants plus one per trap ensures that fishermen have an adequate supply of bait lobsters on board as the traps are hauled and re-deployed. Furthermore, biological impacts of the use of attractants likely decreases as the fishing season progresses since the total number of traps fished on all trips declines by month on average as the season goes on, along with total pounds landed, and the median number of traps fished per trip.

Preferred Alternative 4 would mirror Florida's state regulations, and ease some enforcement concerns related to inconsistent regulations across the state /federal jurisdictional boundary. **Preferred Alternative 4** would provide the least opportunity for juvenile Caribbean spiny lobsters to grow to harvestable size of all the alternatives considered because it would increase the number of spiny lobsters able to be maintained onboard a vessel, and could thus result in increased confinement mortalities. However, under other alternatives total bycatch may actually increase because traps with alternate types of bait would need to soak longer to achieve the same catch as traps with undersized attractants. Although mortality of shorts may result in some foregone yield, a prohibition on the use of shorts could result in increased bycatch of other species and decreased economic benefits. Additionally, a recent study conducted by Hunt and Tringali (2011), used DNA analysis to identify sources of recruitment for Caribbean spiny lobster. The study found the majority of recruits do not come from within the management area,

suggesting that the use of undersized Caribbean spiny lobsters and other management measures for the Caribbean spiny lobster fishery would have negligible biological impacts on the population within the management area. Based on the findings of this study, it is unlikely that the continued use of undersized Caribbean spiny lobsters as attractants would have significant adverse effects on the biological environment.

2.8 Action 8: Modify Tailing Requirements for Caribbean Spiny Lobster for Vessels that Obtain a Tailing Permit

*Note: more than one alternative may be chosen as a preferred alternative.

Alternative 1: No Action – Possession of a separated Caribbean spiny lobster tail in or from the EEZ is allowed only when the possession is incidental to fishing exclusively in the EEZ on a trip of 48 hours or more, and a federal tailing permit is issued to and on board the vessel.

Alternative 2: Eliminate the Tail-Separation Permit for all vessels fishing for Caribbean spiny lobster in Gulf and South Atlantic waters of the EEZ.

Preferred Alternative 3: Revise the current regulations to clearly state that all vessels must have either 1) a valid federal spiny lobster permit or 2) a valid Florida Restricted Species Endorsement and a valid Crawfish Endorsement associated with a valid Florida Saltwater Products License to obtain a tailing permit.

Preferred Alternative 4: All Caribbean spiny lobster landed must either be landed all "whole" or all "tailed".

Comparison of Alternatives: Alternative 1 would not modify the current Tail-Separation Permit regulations for Caribbean spiny lobster. A Tail-Separation Permit would still be required to possess spiny lobsters that have been tailed, and the trips would still be required to be 48 hours or longer in duration. The ability to tail spiny lobsters is important to fishermen who do not have the storage capacity to hold large amounts of whole spiny lobster onboard over long trip durations. Tailing allows such fishermen to safely store more products in coolers without compromising quality, thus maximizing the profitability of each trip. However, anecdotal information indicates some fishermen (commercial and recreational) may be tailing lobsters in an effort to conceal the fact that they may be undersized. For this reason fishery participants requested that the Councils address the issue in an FMP amendment.

Alternative 2 would be the most biologically beneficial of the alternatives because it would slow the speed of harvest. Removing the ability for fishermen to tail any Caribbean spiny lobster before landing would increase the probability that most lobsters landed would be of legal size because they could easily be measured. Also, **Alternative 2** would be consistent with Florida state regulations, and therefore, beneficial for law enforcement efforts.

Preferred Alternative 3 alone would address the issue of recreational fishermen obtaining Tail-Separation Permits, which was not the original intent of the Councils, but it would not address the issue of commercial fishermen landing undersized lobster by tailing them. **Preferred Alternative 3** would provide minimal biological benefits since it is thought that there are very few recreational fishermen who have in their possession a Tail-Separation Permit. It would, however, prevent any more recreational fishermen from obtaining the permit.

One major challenge reported by NOAA Fisheries Service law enforcement officials is commercially permitted lobster divers who spear and tail spiny lobster, which removes evidence of the illegal act of spearing a spiny lobster. If tailing were to continue, this type of illegal activity could persist. **Preferred Alternative 4** would address the issue of some fishermen landing part of their catch whole and part tailed a practice that has been reported anecdotally. It

has also been reported that some fishery participants may engage in this practice in order to land sub-legal spiny lobsters for profit. If under **Preferred Alternative 4** most fishermen choose to land the majority of their Caribbean spiny lobster harvest whole, the rate at which Caribbean spiny lobsters are commercially harvested would likely decrease due to storage capacity issues of whole lobster on participating vessels.

2.9 Action 9: Limit Spiny Lobster Fishing in Certain Areas in the EEZ off Florida to Protect Threatened Staghorn and Elkhorn Corals (*Acropora* spp.)

Preferred Alternative 1: No Action – Do not limit spiny lobster fishing in certain areas in the EEZ off Florida to address ESA concerns for *Acropora* spp.

Alternative 2: Prohibit spiny lobster trapping on all known hardbottom in the EEZ off Florida in water depths less than 30 meters.

Alternative 3: Expand existing and/or create new closed areas to prohibit spiny lobster trapping in the EEZ off Florida.

Option a: Create 24 —large closed areas to protect threatened *Acropora* spp. corals.
Option b: Create 37 —medium closed areas to protect threatened *Acropora* spp. corals.
Option c: Create 52 —small closed areas to protect threatened *Acropora* spp. corals.

Alternative 4: Expand existing and/or create new closed areas to prohibit all spiny lobster fishing in the EEZ off Florida.

Option a: Create 24 —large closed areas to protect threatened *Acropora* spp. corals.
Option b: Create 37 —medium closed areas to protect threatened *Acropora* spp. corals.
Option c: Create 52 —small closed areas to protect threatened *Acropora* spp. corals.

Comparison of Alternatives: The Biological Opinion on the spiny lobster fishery (August 27, 2009, Appendix I) requires NOAA Fisheries Service and the Councils to work together to protect areas of staghorn and elkhorn coral (*Acropora* spp.) by expanding existing or creating new closed areas for lobster fishing where *Acropora* spp. are present. See Appendix H for the locations of proposed and existing areas closed to trapping from west to east.

The Florida Keys National Marine Sanctuary (FKNMS) has designated 15 special use or sanctuary preservation areas in federal waters where trap fishing is prohibited [15 CFR 922.164(d)(iii)]. *Acropora* spp. occur at relatively high densities in many of these areas. However, colonies of high conservation value and additional areas of high *Acropora* spp. density exist outside these closed areas. Creating new closed areas or expanding existing closed areas to include these areas of high *Acropora* spp. density would help reduce the likelihood of interactions between spiny lobster traps and coral colonies.

The current alternatives propose closed areas of varying sizes. The primary challenge with selecting closed areas is balancing impacts to the fishery and benefits to the environment. Larger areas are more easily enforced, fewer in number, and more likely to provide protection to corals. Larger areas encompass multiple reefs/hardbottom areas where *Acropora* spp.colonies are found. However, they also include (and would prohibit trapping on) sand/rubble habitats where fishers prefer to set traps. As the closed areas get smaller, the amount of sand/rubble habitat that would be closed to fishing also decreases. However, as areas get smaller their overall number increases and problems with enforcement also increase.

The proposed closed areas were selected for several reasons. Colonial size data were used to identify *Acropora* spp. colonies of varying sizes and maturities. The largest "super colonies" have been designated as the highest conservation priority because of their importance to sexual reproduction. *Acropora* spp. are generally considered sexually mature when the surface area of live tissue exceeds 100 cm^2. Elkhorn corals with a living tissue surface area of 1,000 cm^2 could

be considered "super colonies." A similar distinction could be made for staghorn corals with a living tissue surface area of 500 cm^2. Colonies of this size have exponentially higher reproductive potential compared to other sexually mature colonies, and represent essential sources of gamete production. Colonies of this size are also exceedingly rare. Sampling at over 1,000 locations throughout the Florida Keys and the Dry Tortugas identified only 17 super colonies (6 staghorn colonies and 9 elkhorn colonies). The same level of sampling has also identified 62 sexually mature colonies (32 staghorn colonies and 30 elkhorn colonies) and 61 non-sexually mature colonies (58 staghorn colonies and 3 elkhorn colonies).

Additional data indicating the location of *Acropora* spp. colonies were also used to develop the proposed areas. These data points simply reflect whether *Acropora* spp. colonies were present at the time of sampling and do not include colonial size information. Since no size information is available for these colonies, conservation priorities could not be assigned. It is important to remember that locations without assigned conservation priorities are not of low conservation value; rather they are areas with minimal data. In all likelihood, areas of high *Acropora* spp. occurrence provide significant conservation benefits and should be viewed as areas requiring special attention and protection.

The boundaries of all the closed areas run along lines of latitude and longitude, and only form right angles. No angled boundaries are proposed to improve compliance and support enforcement. In general, the "large" areas span whole minutes of lat./long. (e.g., 24°34'0" to 24°33'0"), and the "medium" areas span 30 second intervals of lat./long. (e.g., 24°33'30" to 24°33'0"). "Small" areas do not follow any particular sizing pattern.

Preferred Alternative 1 would have the least biological benefit to *Acropora* spp., and would perpetuate the existing level of risk of interaction between these species and the fishery because it would provide no additional protections. Existing closed areas would remain in place (see maps in Appendix H). **Preferred Alternative 1** would not meet the requirement established under the Biological Opinion. However, the Councils chose it as their preferred alternative to allow more time for members of the public, along with NOAA Fisheries Service and Marine Sanctuary representatives to work together to define areas of important habitat to protect *Acropora* spp. This action will be included in Amendment 11 to the Spiny Lobster FMP. The Councils intend to quickly develop the new amendment and put measures into place that would provide protection for *Acropora* spp. as required by the Biological Opinion.

Alternative 2 would provide the greatest biological benefit to *Acropora* spp. and other hardbottom/coral resources. **Alternative 2** would prohibit trapping on all hardbottom in the Florida EEZ, which support *Acropora* spp. This would reduce the likelihood of interactions between spiny lobster trap gear in the EEZ and *Acropora* spp. to almost zero. The vast majority of *Acropora* spp. colonies in the Florida EEZ occur in waters under the South Atlantic Council's jurisdiction. While areas of hardbottom habitat in the Florida EEZ fall under the jurisdiction of the Gulf Council, the water quality in these areas is generally too poor to sustain *Acropora* spp. colonies. However, if water quality improves these areas would likely support *Acropora* spp. Prohibiting trapping on all hardbottom areas would close approximately 73 mi^2 of the EEZ off Florida to trapping. The negative social and economic impacts of **Alternative 2** are likely to be significant. Closing all hardbottom areas to trapping would significantly reduce the area available to trapping and may make trapping all together impractical.

Relative to **Alternative 2**, **Alternatives 3** and **4** would be less biologically beneficial to *Acropora* spp. colonies located outside the closed areas. **Alternative 3, Options a-c** would reduce the risk of trap damage to *Acropora* spp. by prohibiting the use of traps near areas of high *Acropora* spp. density or near colonies with high conservation value. **Alternative 3, Option a** would likely provide the greatest biological benefit because it closes approximately 14 mi^2 of hardbottom habitat to trapping. **Alternative 3, Option b** and **c** would likely have decreasing biological benefits, closing approximately 8 mi^2 and 4 mi^2 of hardbottom habitat to trapping, respectively. As proposed closed areas get smaller, traps are more likely to be accidentally dropped upon colonies. Larger closed areas also provide larger buffers between their boundaries and colonies. Non-tropical storm systems can move traps 100 ft from their original locations. However, stronger storms (i.e., tropical systems) can move traps many times further. **Alternative 3, Option a** would provide the largest buffer providing additional protection to colonies in the event a stronger storm moves traps longer distances. As the proposed areas get smaller, (i.e., **Alternative 3, Option b** and **c**) the additional protection against trap movement during stronger storms would be reduced. Likewise, as closed areas get smaller the potential for interactions between trap gear and corals increase. If one of **Alternative 3, Options a-c** were chosen, the negative social and economic impacts would likely be reduced as the size of the closed areas gets smaller. However, the burden of enforcing closed areas would increase as closed areas get smaller.

Alternative 4 and the associated options would provide slightly more biological benefit to *Acropora* colonies than **Alternative 3** and the associated options because it would prohibit all fishing for spiny lobster in the proposed closed areas. Although the impacts to *Acropora* spp. from diving for spiny lobster are unknown, other types of diving and the associated anchoring are known to adversely affect *Acropora* spp. **Alternative 4** would provide additional benefits because it would reduce the likelihood that adverse effects known from diving and anchoring could occur. The overall size of the proposed closed areas is less relevant when discussing the impacts from diving because divers must be in very close proximity to colonies to impact them. Thus, simply prohibiting the practice of diving for spiny lobster inside the proposed closed areas would likely help minimize any potential threat. Thus, **Alternative 4**, **Option a** would likely have the greatest biological benefit because it would create the largest buffer against trap impacts, while also reducing potential impacts from diving. **Alternative 4**, **Option b** and **c** are likely to have diminished biological benefits relative **Alternative 4**, **Option a** with respect to reduce trap impacts; however, the alternatives are likely to have same biological benefit as **Alternative 4**, **Option a** relative to diving and anchoring impacts. **Alternative 4, Options a-c** would likely have additional social and economic impacts than **Alternative 3** since it would apply to both the commercial and recreational sectors. However, requirements for both sectors may be viewed as more equitable.

2.10 Action 10: Require Gear Markings so all Spiny Lobster Trap Lines in the EEZ off Florida are Identifiable

Preferred Alternative 1: No Action – Do not require gear marking measures for spiny lobster trap lines.

Alternative 2: Require all spiny lobster trap lines in the EEZ off Florida to be COLOR, or have a COLOR marking along its entire length. All gear must comply with marking requirements no later than August 2014.

Alternative 3: Require all spiny lobster trap lines in the EEZ off Florida to have a permanently affixed 4-inch COLOR marking every 15 ft along the buoy line or at the midpoint if less than 15 ft. All gear must comply with marking requirements no later than August 2014.

Comparison of Alternatives: The biological opinion on the spiny lobster fishery (Appendix I) mandates the establishment of trap line marking requirements no later than August 2014 to improve the monitoring of incidentally taken protected species. The federal spiny lobster fishery has three management areas: the EEZ off Gulf states other than Florida, the EEZ off Florida, and the EEZ off southern Atlantic states other than Florida. Because there is essentially no spiny lobster trap fishing outside Florida, the biological opinion did not considered trap impacts to protected species anywhere else. Therefore, all measures required under the biological opinion only apply to spiny lobster trap fishing occurring in the Florida EEZ.

Currently, all spiny lobster traps fished in the EEZ off Florida must follow the gear marking requirements established by the State of Florida at 68B-24 in the Florida Administrative Code (FAC). Those regulations require a buoy or a time-release buoy to be attached to each spiny lobster trap or at each end of a weighted trap trotline. Each buoy must be a minimum of six inches in diameter and constructed of Styrofoam, cork, molded polyvinyl chloride, or molded polystyrene [FAC 68B-24.006(3)]. Additionally, each trap and buoy used must have the fishers' current lobster license or trap number permanently affixed in legible figures. On each buoy, the affixed lobster license or trap number shall be at least two inches high [FAC 68B-24.006(4)].

Lines are consistently found as marine debris and most frequently recovered without the buoys or traps still attached. Miller et al. (2008) reported lost pot/trap gear was the second most prevalent type of marine debris in the Florida Keys and the most damaging to benthic habitat. In all cases, lines were without buoys. While current gear marking regulations require buoys and traps to be marked, buoys are frequently dislodged from lines and the lines used in the spiny lobster fishery are also used in other fisheries and for other purposes. These conditions make it extremely difficult to determine if line found in the environment, or entangling protected species, originated from the spiny lobster fishery. A lack of uniquely identifiable markings also makes monitoring incidental take in the fishery difficult. Trap line marking requirements would allow for greater accuracy in identifying fishery interaction impacts to benthic habitats and protected species leading to more targeted measures to reduce the level and severity of those impacts.

Trap line marking requirements are currently in place for other fisheries in other regions. Under the Atlantic Large Whale Take Reduction Plan trap/pot fisheries in the Northeast and Mid-

Atlantic regions must use red, orange, or black markings on their gear depending on the fishery. When the line in use is the same color as the required gear marking color scheme, those lines are marked with a white line.

Preferred Alternative 1 would have no biological benefit for protected species and would not satisfy the trap line marking requirements of the Biological Opinion. This alternative is unlikely to have any social or economic impact. The Councils chose **Preferred Alternative 1** to allow more time for input from stakeholders on the most appropriate and cost-effective ways to mark lines. This action will be included in Amendment 11, which is under development. NOAA Fisheries Service is considering modifying the terms and conditions from the biological opinion to allow more time for implementation of this measure.

Because color marking schemes using red, orange, and black are currently in use, those colors were not considered here. Spiny lobster industry members requested that only colors that were not likely to attract sea turtle be considered for gear marking requirements. Most sea turtles appear to have at least some color vision and most are able to see a color spectrum similar to what humans observe (Liebman and Granda 1971; Granda and O'Shea 1972; Liebman and Granda 1975; Levenson et al. 2004; Mäthger et al. 2007). Limited research has not yet identified any particular color that would be less likely to attract sea turtles. However, anecdotal evidence from sea turtle rehabilitation suggests that bright colors such as pinks, yellows, and bright greens can capture their attention (S. Schaf, FWC, pers. comm.). Given this information, the color will be selected for the gear marking requirement in **Alternative 2** because it is not currently in use elsewhere and less likely to attract sea turtles. Requiring a specific color trap line or a color tracer in the line (Figure 2.10.1) as under **Alternative 2** would meet the requirements of the biological opinion.

Figure 2.10.1. Example of a color tracer line (orange) woven along the entire length of a black trap line. In the image, the trap line is coiled.

Three methods for marking gear were tested and found to work satisfactorily in the Northeast Region under normal conditions. At the top of Figure 2.10.2, colored twine is seized around the line and woven between the strands. In the center, the line was spray-painted; this method requires that the line be dry. At the bottom, colored electrical tape was wrapped in one direction and then back over itself to form two layers. Similar marking techniques would likely be sufficient for the spiny lobster fishery under **Alternative 3**.

Figure 2.10.2. Examples of satisfactory gear markings for trap lines in the Northeast Region.

Marine debris surveys conducted in the Florida Keys documented that 21% of trap lines found were less than 15 ft long and approximately 53% were between 15 and 45 ft in length with the remainder being longer than 50 ft (Miller et al. 2008). The average length of line encountered was approximately 35 ft (Miller et al. 2008). Requiring gear marks along the entire length of the line or at least every 15 ft (**Alternative 3**) improves the likelihood that line found in the environment can be identified properly.

Florida could greatly improve the efficacy of gear marking requirements for spiny lobster gear fished in the EEZ off Florida by creating compatible gear marking requirements for spiny lobster trap gear in state waters. The selection of a gear marking scheme does not preclude non-spiny lobster fishers from using the same color. Florida could further improve the efficacy of gear marking requirements proposed under this action by instituting gear marking requirements for other state water trap fisheries (blue crab and stone crab).

Alternative 2 would likely have slightly more biological benefits than **Alternative 3.** Requiring gear markings along the entire length of trap lines would minimize the likelihood that a portion of a spiny lobster trap line is recovered without an identifiable mark. **Alternative 3** would provide greater biological benefit than **Preferred Alternative 1** but the benefits would likely be less than **Alternative 2** for the reason described above. The social and economic impacts from **Alternatives 2** and **3** would likely be similar. Additional costs would be incurred to replace existing trap lines with trap lines of specific color (**Alternative 2**). However, trap lines are generally replaced after several years due to wear and the phase-in provision of this action should allow fishers to begin using lines that meet the gear marking requirements as they replace old lines. The materials needed to meet the requirements of **Alternative 3** would likely cost less than those required in **Alternative 2.** However, the time commitment needed to properly mark all lines as proposed in **Alternative 3** may be greater than the time required to switch out old lines.

2.11 Action 11: Authority to Remove Derelict or Abandoned Spiny Lobster Traps Found in the EEZ off Florida

Alternative 1: No Action – Do not allow the public to remove any derelict or abandoned spiny lobster trap found in the EEZ off Florida.

Alternative 2: Allow the public to completely remove from the water any derelict or abandoned spiny lobster trap found in the EEZ off Florida from the end of lobster season trap removal period (usually April 5) until the beginning of the next season's trap deployment period (August 1).

Alternative 3: Allow the public to completely remove from the water any derelict or abandoned spiny lobster trap found in the EEZ off Florida during the closed seasons for both spiny lobster and stone crab (May 20-July 31).

Alternative 4: Allow the public to remove spiny lobster trap lines, buoys, and/or throats, but otherwise leave in place, any trap found in the EEZ off Florida from the end of season trap removal period (usually April 5) until the beginning of the next season's trap deployment period (August 1).

Alternative 5: Allow the public to remove spiny lobster trap lines, buoys, and/or throats, but otherwise leave in place, any trap found in the EEZ off Florida during the closed seasons for both spiny lobster and stone crab (May 20-July 31).

Preferred Alternative 6: Delegate authority to regulate the removal of derelict or abandoned spiny lobster traps occurring in the EEZ off Florida to FWC.

Comparison of Alternatives: The biological opinion (Appendix I) on the spiny lobster fishery requires NOAA Fisheries Service and the Councils explore allowing the public to remove derelict trap gear from the EEZ off Florida. The federal spiny lobster fishery has three management areas: the EEZ off Gulf states other than Florida, the EEZ off Florida, and the EEZ off southern Atlantic states other than Florida. Because there is essentially no spiny lobster trap fishing outside Florida the biological opinion did not considered trap impacts to protected species anywhere else. Therefore, all measures required under the biological opinion only apply to spiny lobster trap fishing occurring in the Florida EEZ.

Current federal regulations state that any trap, buoy, or rope found in the EEZ of Florida and any other Gulf state outside of this authorized period is considered unclaimed or abandoned property and may be disposed of in any manner considered appropriate by the Assistant Administrator or authorized officer [50 CFR 640.20(b)(3)(iii)]. Those regulations also state that pulling or tending another person's spiny lobster trap, without prior authorization is prohibited.

Florida regulations allow spiny lobster traps to be deployed beginning August 1 of each year and require all traps be removed from the water by April 5 (with the opportunity for an extension under certain circumstances). Florida considers traps remaining in the environment outside of the authorized fishing season to be derelict [FAC 68B-55.004]. At any time, local, state, or

federal government personnel may remove trap debris and derelict traps from areas of state waters permanently closed to trapping without prior authorization from FWC [FAC 68B-55.002 and 68B-55.004]. During the spiny lobster season, FWC employees, local, state, or federal personnel may retrieve derelict traps at any time deemed appropriate by FWC. Members of a fishery participant organization may also remove derelict traps from state waters at any time deemed appropriate by FWC during the season, if they have a FWC-approved trap retrieval plan. During the closed season for spiny lobster, and after any authorized trap retrieval period together with any extensions, nonprofit nongovernmental organizations, fishery participant organizations, or other community or citizens groups may retrieve derelict traps as part of coastal cleanup events authorized by FWC [FAC 68B-55.004].

Trap debris may be removed at any time from shoreline areas shoreward of mean low water, and from mangroves or other shoreline vegetation by nonprofit nongovernmental organizations, fishery participant organizations, or other community or citizen groups when they organize, promote, and participate in coastal cleanup events for the purpose of removing marine debris. Prior authorization from FWC is required for any coastal clean-up events that remove trap debris occurring in state waters seaward of mean low water [FAC 68B-55.002].

Lost traps pose multiple threats to the environment and protected species. Lost traps can "ghost" fish for a year or more (FWC unpublished data; Lewis et al. 2009), and trailing trap lines can become entangled on the reef, damaging corals and sponges (Chiappone et al. 2005). Marine mammals and ESA-listed sea turtles and marine fish can also become entangled in trailing ropes (Guillory et al. 2001; Seitz and Poulakis 2006; Lewis et al. 2009). Wooden traps eventually degrade after many months, but plastic trap throats and polystyrene buoys persist indefinitely in the marine environment. Seagrass meadows can be damaged when traps are lost or left for periods longer than six weeks (Uhrin et al. 2005). Thousands of lost and abandoned traps can have a significant effect on the reef environment and benthic habitats.

Unlike nearshore areas where traps can be located during aerial surveys or by boats during low tides, traps lost in federal waters are more difficult to identify. Traps identified in the nearshore environment are also more conducive to trap clean-up events because of their proximity to boat ramps and areas where recovered traps can be off loaded. Organized clean ups for the sole purpose of removing derelict trap gear in federal waters is generally expensive and difficult to conduct. Allowing the public to remove derelict trap gear (**Alternatives 2** and **3**) would promote many individual contributions, which could have a large cumulative effect.

Arguments against allowing the public to remove derelict or abandoned traps cite concerns that legally fishing traps may be removed by someone other than the traps' owners, either intentionally or by accident. However, some industry members did recognize the potential environmental impacts of lost traps and suggested their own alternative that would allow the public to make traps unfishable (**Alternatives 4** and **5**). Specifically, they recommended authorizing the removal of buoys, trap lines, and throats from derelict spiny lobster traps in the EEZ. They stated that these actions would render the trap unlikely to ghost fish, and would reduce a traps' likelihood of moving during storm events. This proposal also ensures that only the owner of the trap would be authorized to remove the trap from the water.

Another argument against allowing the public to pull derelict traps is a concern over confusion between similar looking traps. For example, some industry members voiced concerns that legally fishing stone crab traps would be confused for derelict spiny lobster traps by the public and pulled. **Alternatives 3** and **5** would only allow the public to remove derelict traps during the closed seasons for both spiny lobster and stone crabs. Limiting the removal of traps to the closed seasons for both species ensures that only truly derelict traps are removed.

Alternative 1 would have no biological benefit for protected species or benthic habitat and would perpetuate the existing level of risk for interactions between these protected species and lost trap gear. No negative social or economic impacts are anticipated under this alternative. **Alternative 2** would likely have the greatest biological benefits. This alternative would allow for the complete removal of all derelict or abandoned traps and authorize that removal for the longest period of time, likely increasing the number of derelict or abandoned traps removed. **Alternative 3** would also allow for the complete removal of derelict or abandoned trap gear, but for a shorter period. As a result, the biological benefit of **Alternative 3** may be less than **Alternative 2**. The potential social and economic impacts from **Alternative 2** include the accidental or intentional removal of legally fishing traps. Well meaning members of the public may accidentally remove a legally fishing lobster trap from the water. Likewise, well meaning members of the public may accidentally remove similar looking traps (i.e., stone crab traps). The potential social and economic impacts from **Alternative 3** would likely be similar those expected from **Alternative 2**; however, the likelihood of the accidental removal of legally fished, similar looking traps may be reduced. Since fines may be levied for derelict traps recovered by law enforcement or during FWC-contracted trap removal programs, allowing the public to remove traps may have positive economic impacts in the form of avoided fines. **Alternatives 4** and **5** would likely have less biological benefit than **Alternatives 2** and **3**. Allowing the public to remove trap line, buoys, and throats would help reduce the potential impacts from ghost fishing and entanglement. However, traps remaining in the environment still have the potential to cause damage to benthic habitat. **Alternative 4** would allow more time for the public to remove trap line, buoys, and throats from derelict or abandoned traps, potentially increasing the biological benefit. Compared to **Alternatives 2-4**, **Alternative 5** would likely have the least biological benefit. The social and economic impacts of **Alternatives 4** and **5** would likely be similar to **Alternatives 2** and **3**. Removal of lines and throats from a legally fishing trap would likely result in the same economic impacts to fishers as the complete removal of a trap from the water. It is unclear if the owner of a recovered derelict trap that had previously had its trap lines, buoys, and/or throats removed would still be subject to fines or civil penalties. If so, the potential economic benefits from **Alternatives 2** and **3** may not be realized with **Alternatives 4** and **5**. It is currently unclear what type of biological impact **Preferred Alternative 6** would have. If the delegation of authority to the FWC leads to the removal of more derelicts traps and trap debris, the biological benefits from the alternative would likely be within the range anticipated from **Alternatives 2-5**. If **Preferred Alternative 6** ultimately results in no change or fewer derelict traps and trap debris being removed, then its biological benefit would likely be similar to the effect anticipated under **Alternative 1**. The social and economic impacts of **Preferred Alternative 6** are unclear.

3.0 AFFECTED ENVIRONMENT

3.1 Description of the Fishery

3.1.1 Caribbean Spiny Lobster – Commercial Fishery

Introduction

Florida landings of Caribbean spiny lobster began to increase in the late 1940s to levels ranging 4.0-7.0 million pounds (mp) whole weight (ww) in the 1970s-1990s, and then fell to 3.5-5.0 mp in 2001 onward (Figure 3.1.1.1). This excludes landings from international waters, an estimated 1.0-5.7 mp in 1964-1975 (Vondruska 2010b). Landings occur predominantly in the Florida Keys (Monroe County) and elsewhere in south Florida. Relatively small amounts have been reported for other states since 1977.

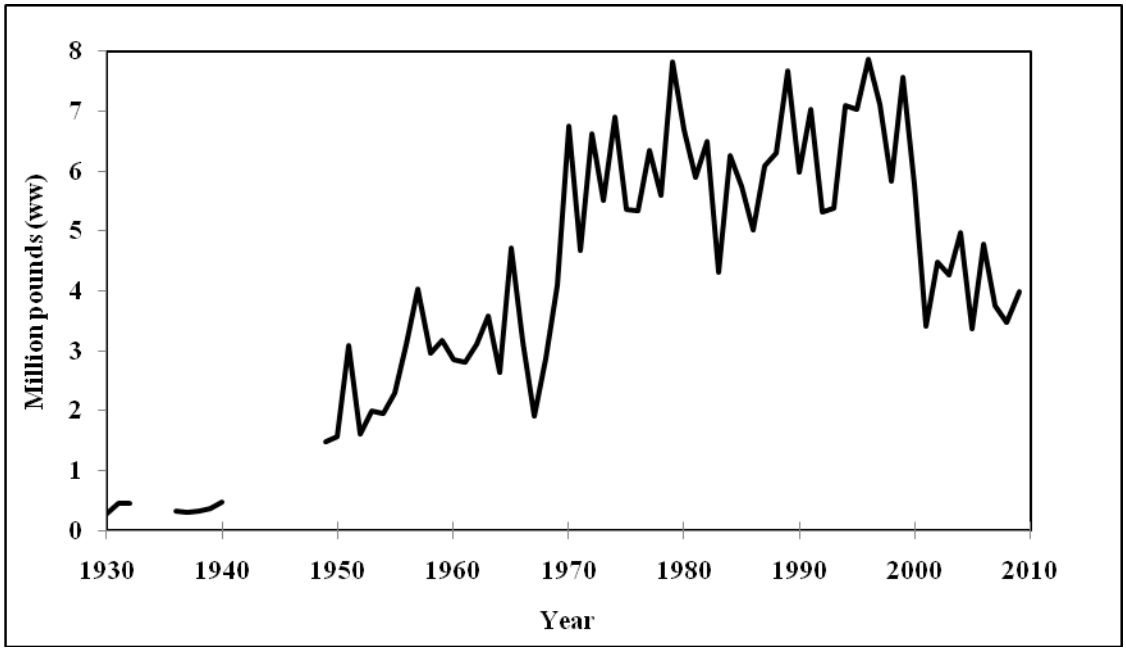


Figure 3.1.1.1. Florida commercial landings of Caribbean spiny lobster, 1930-2009.
Note: Excludes estimated landings from international waters in 64-76 (Vondruska 2010b).

The Caribbean spiny lobster in the U.S. Exclusive Economic Zone (EEZ) of the Atlantic Ocean and Gulf of Mexico (Gulf) is jointly managed by the South Atlantic and Gulf of Mexico Fishery Management Councils (Councils) through the Fishery Management Plan for Spiny Lobster (FMP) in the Gulf and South Atlantic. In the U.S. EEZ of the Caribbean Sea surrounding Puerto Rico and the U.S. Virgin Islands, the resource is managed by the Caribbean Fishery Management Council through a separate FMP. In the Gulf and South Atlantic, the commercial fishery, and to a large extent the recreational fishery, occurs off South Florida, primarily in the Florida Keys. To streamline a management process that involves both state and federal jurisdictions, the FMP basically extends the Florida Fish and Wildlife Conservation Commission (FWC) rules regulating the state fishery to the southeastern U.S. EEZ from North Carolina to Texas.

Currently, harvest or possession of Caribbean spiny lobsters in the U.S. Gulf and South Atlantic EEZ is regulated in the Code of Federal Regulations (CFR). According to 50 CFR 640.4, anyone who sells, trades, or barters or attempts to sell, trade, or barter Caribbean spiny lobster harvested or possessed in the EEZ off Florida, or harvested in the EEZ other than off Florida and landed in Florida must have licenses and certificates specified to be a commercial harvester, as defined in the Florida Administrative Code (FAC). Similarly, any person who sells, trades, or barters or attempts to sell, trade, or barter a Caribbean spiny lobster harvested in the EEZ other than off Florida, a federal vessel permit must be issued and on board the harvesting vessel [50 CFR 640.4(a)(1)(ii)]. In 2010, the state of Florida issued 1,286 commercial spiny lobster permits and 293 commercial dive permits. As of March 25, 2011, NOAA Fisheries Service listed 199 valid federal spiny lobster permits.

The commercial and recreational fishing season for spiny lobster in the EEZ off Florida and the Gulf States other than Florida, begins on August 6 and ends March 31 [50 CFR 640.20(b)]. Lobster traps may be worked during daylight hours only and no Caribbean spiny lobster can be harvested in excess of the bag limit by diving at night. Specifications for traps and buoys, identification requirements, and prohibited gear are detailed in FAC 68B-24.006.

No person may possess a Caribbean spiny lobster in or from the Gulf or South Atlantic EEZ with a carapace length of 3.0 in (7.62 cm) or less or a separated tail with a length less than 5.5 in (13.97 cm) [50 CFR 640.21(b)], except under particular circumstances. The holder of a valid crawfish license, lobster trap certificates, and a valid Saltwater Products License (SPL) may harvest and possess, while on the water, undersized spiny lobsters to use as attractants. Florida regulations allow for 50 such undersized attractants <u>plus</u> one per trap aboard each vessel, but Federal regulations allow for 50 <u>or</u> one per trap. Both sets of regulations require the use of live wells for undersized lobsters that follow specific guidelines. The possession aboard a fishing vessel of a separated Caribbean spiny lobster tail is allowed only during trips of 48 hours or more if a federal tail-separation permit has been issued to that vessel. As of March 25, 2011, NOAA Fisheries Service listed 355 valid federal tailing permits.

Current regulations prohibit the possession of a Caribbean spiny lobster or parts thereof in or from the Gulf and South Atlantic EEZ from which the eggs, swimmerettes or pleopods have been removed [50 CFR 640.21(a)]; and requires any egg-bearing Caribbean spiny lobster to be returned immediately to the water [50 CFR 640.7(g)].

3.1.2 Other Federal Laws and Regulations that Protect Spiny Lobster

Lacey Act

The Lacey Act, as amended in 1981 (16 USC §§ 3372 et seq.) prohibits any person from importing, exporting, transporting, selling, receiving, acquiring, or purchasing in interstate or foreign commerce any fish or wildlife taken, possessed, transported, or sold in violation of any law or regulation of any state or in violation of any foreign law. For example, it is a violation of the Lacey Act to import Caribbean spiny lobster that is in violation of the exporting country's minimum harvest-size standard. Many of the countries that harvest Caribbean spiny lobster have minimum harvest size standards.

Florida Keys National Marine Sanctuary and Protection Act
In November 1990, Congress passed the Florida Keys National Marine Sanctuary and Protection Act that established the Florida Keys National Marine Sanctuary (FKNMS).[2] The FKNMS is comprised of 9,660 km^2 (about 2,900 nm^2) of coastal waters off the Florida Keys. It extends approximately 220 mi southwest of the southern tip of the Florida peninsula and includes the world's third largest coral barrier reef. Within the Sanctuary are 24 no-take zones. Fifty-eight percent of the Sanctuary resides in Florida waters and 42% is in federal waters. Both NOAA and Florida manage the Sanctuary. The waters of the FKNMS are within the jurisdiction of both Councils.

Biscayne Bay National Park
Originally established as a national monument by Congress in 1968, Biscayne Bay National Park was re-designated as a national park in 1980. The Park's purpose is to preserve and protect its rare combination of terrestrial and aquatic natural resources. The park includes approximately 173,000 acres in Miami-Dade County, and is about 22 mi long. The park extends from shore about 14 mi to the 60-ft contour and contains about 72,000 acres of coral reefs. Under existing Supervisor's rules for the park, several areas are closed year-round to public entry to protect sensitive resources and wildlife. This also means no take of Caribbean spiny lobster in those areas.

Dry Tortugas National Park
The Dry Tortugas National Park was established by Congress in 1992. Possession of Caribbean spiny lobster is prohibited within boundaries of the park unless the individual took the lobster outside the park waters and the person in possession has proper state/federal licenses and permits [36 CFR 7.27(b)(4)(i)]. The presence of lobster aboard a vessel in park waters, while one or more persons from such vessel are overboard, constitutes prima facie evidence that the lobsters were harvested from park waters in violation of the above regulation.

State Spiny Lobster Laws and Fisheries Histories
Descriptions and discussions of the development of the spiny lobster fishery in Florida are provided in Labisky et al. (1980), Moe (1991), Florida Marine Fisheries Commission (1991), Prochaska and Baarda (1975), and Williams (1976). Significant events or facts about the development of the fishery include the fishery being primarily a bait fishery up until the twentieth century (Labisky et al. 1980); construction of the Overseas Railroad in 1912 and a large ice-making and cold-storage facility in Key West by the 1920s, allowing shipment to distant markets; the implementation of size limits in 1929 (Prochaska and Baarda 1975); the development of freeze processing, enabling the expansion of the retail market in the 1940s; the development of SCUBA, hydraulic systems to haul traps, and the use of shorts (Moe 1991); the first gear restrictions imposed in 1965 (trap regulations; Prochaska and Baarda 1975; Williams 1976); the enactment of the special two-day sport season in 1975; the development of the state fishery management plan in 1987; the creation in 1991 of the recreational spiny lobster license

[2] The National Marine Sanctuary System was created in 1972. Two areas in the Florida Keys were designated as sanctuaries, the first in 1975 and the second in 1981. These areas were included in the Florida Keys National Marine Sanctuary in November 1990.

and initiation of annual surveys to estimate recreational harvests and a commercial trap certificate program.

The estimated number of traps used for commercial fishing for Caribbean spiny lobster in Florida approximately doubled every 10 years during 1950-1990, reached nearly a million traps in the early 1990s, and was reduced to less than a half million traps by the late 2000s (Shivlani 2009). The state first issued commercial lobster permits in 1954/1955; imposed a fee of $50 per permit starting in 1971; and in 1987/1988 limited the numbers of traps per permit holder to 2,000 and initiated a permit moratorium, among other things, all with the expectation of reducing landings (Milon et al. 1998; 1999). In 1991, the Florida Legislature passed a law creating the Trap Certificate Reduction Program (TCP) to "stabilize the lobster fishery by reducing the total number of traps" (Florida Statutes 370.142(1), as quoted in Shivlani 2009). "It is the goal of the Commission [which administers the program] to substantially reduce mortality of undersized spiny lobster in the fishery, by reducing the number of traps used in the fishery to the lowest number which will maintain or increase overall catch levels, promote economic efficiency in the fishery, and conserve natural resources" [FAC 68B-24.001]. Quoting Larkin and Milon (2000):

> The state of Florida has managed the commercial spiny lobster trap fishery using a tradable effort permit program since 1992. Under this input control program, individuals own shares of a restricted input, but output is unregulated. This type of program can be contrasted with an output control program, such as individual transferable quotas (ITQs) where individuals own shares of a restricted output. The commonality between these programs is that they both allow shares to be bought or sold. The transfer of shares essentially generates a private market for effort or harvest rights, which can allow for efficiency and profitability gains in the fishery (Squires et al. 1995).

While many studies focused on the fishery as a whole, Shivlani et al. (2004) analyzed the impact of the TCP on fishing communities and economic viability of individual fishermen. Based on survey responses for the 2001/2002 fishing season, it appears that 1,232 is the minimum average number of trap certificates needed for economic viability at the vessel (fishing business) level (Shivlani et al. 2004; Shivlani 2009). According to this study, the initial allocation of certificates among fishermen under the TCP had created two groups of fishermen. Apparently, those initially awarded more than 1,500 certificates viewed the TCP as a means of reducing the size of their operations, and those initially awarded fewer than 1,500 certificates were forced for the most part to purchase certificates from other fishermen to remain competitive (Shivlani 2009). As part of their analysis of the TCP, Milon et al. (1999) include a summary of initial eligibility rules and certificate allocations under the TCP, along with data on certificate purchases and sales, leasing, prices and other matters. When landings were at their peak in the mid-1990s, the purchase prices for certificates were upward of $60 and a leasing system developed (Shivlani 2009).

Given the financial barriers to entry into trap fishing, commercial dive fishing for Caribbean spiny lobster emerged and expanded in the wake of the TCP. Commercial divers were not subject to controls on effort and entry until 2004, and this weakened the effectiveness of the TCP

as a limited access program for the fishery as a whole (Shivlani 2009).[3] Compared with traps, landings from diving increased rapidly in the first decade of the TCP, from 0.098 mp in 1991/1992 to a peak of 0.582 mp in 1999/2000, and then declined to 0.152 mp by2009/2010 (Table 3.1.2.1). In south Florida, there is a daily diving-vessel trip limit of 250 lobsters [FAC 68B-24.0055]. Owners of trap certificates cannot own a commercial diving permit [FAC 68B-24.0055(1)]. There is a moratorium on issuing new licenses (permits) for commercial dive fishing; they had declined from 405 in 2004/2005 to 293 in 2009/2010 (Table 3.1.2.1).

The Special Recreational Crawfish License (SRCL) allows the harvest, but not the sale of a special daily bag limit of lobsters. The SRCLs were first issued for the 1994/1995 lobster fishing season. The SRCLs were implemented for persons who held SPLs and spiny lobster/crawfish endorsements in 1993/1994, but did not meet the income requirements for a Restricted Species Endorsement (RSE) that allows the sale of spiny lobster. The SRCL special bag limit was 50 lobsters in 2003/2004 and it will have been reduced to 10 lobsters by 2011/2012 [FAC 68B-24.004]. The number of SRCLs declined from 515 in 1994/1995 (with landings of 74,980 lbs for 22,267 person days of effort) to 168 by 2008/2009 (with landings of 10,727 lbs for 3,594 person days of effort) (Table 3.1.2.1 and SEDAR 8, 2010 update, Table 2.1.2). To maintain an SRLC, a recreational lobster permit is required and a RSE for Caribbean spiny lobster is prohibited. The SRCLs will not be issued or renewed after 2012/2013 [FAC 68B-24.0035].

[3]With some exceptions related to age or other factors, commercial vessel operators, vessels (fishing firms), and crew members must sell $5,000 of products or have earned income of $2,500 per year from sales to licensed Florida dealers to qualify for a restricted species endorsement (FAC 68B-24.0035; FS 379.355(5); FS 379.361 (2) on SPLs; FWC, Restricted Species Endorsement Application).

Table 3.1.2.1. Number of licenses (permits) and landings (thousands of pounds, ww).

Fishing year	Crawfish/lobster trap permits		Commercial dive permits		Special recreational crawfish		Restricted species licenses	Stone crab trap permits
	Permits	Landings	Permits	Landings	Permits	Landings		
90/91	4,245	5,899		98			7,092	4,719
91/92	3,869	6,602		192			7,891	4,914
92/93	3,498	5,125		223			7,921	5,044
93/94	3,199	5,109		176			8,329	5,515
94/95	2,283	6,895		253	515	75	9,361	6,066
95/96	2,312	6,682		308	430	67	9,813	4,954
96/97	2,513	7,363		334	398	55	9,904	4,347
97/98	2,415	7,185		394	365	50	9,874	3,851
98/99	2,424	5,003		351	363	49	9,531	3,491
99/00	2,298	7,024		582	318	61	9,207	3,216
00/01	2,282	4,934		569	301	38	9,881	2,863
01/02	1,965	2,606		442	273	32	9,916	1,492
02/03	1,853	3,988		547	291	44	9,969	1,658
03/04	1,801	3,727		392	280	39	9,739	1,533
04/05	1,601	5,096	405	305	9	34	9,488	1,433
05/06	1,444	2,644	380	259	23	26	8,912	1,348
06/07	1,346	4,495	352	243	14	27	8,537	1,273
07/08	1,302	3,449	334	286	81	21	8,470	1,251
08/09	1,268	2,988	322	241	168	17	8,210	1,202
09/10	1,286	4,084	293	152				

Permits: FWC website data for annual summaries of licenses and/ or permits. Data for 09/10 obtained separately.
Landings: SEDAR 8 Update 2010. Recreational landings are estimated for 85/86-91/92, using regression analysis and commercial landings by region in August, and they are estimated for 04/05 based on averages 03/04 and 05/06 (SEDAR 8; J. Munyandorero and R. Muller, FWC, pers. comm.). SRLC landings are reported quarterly by the license/permit holders [FAC 68B-24.0035].

Currently, Florida law requires anyone who commercially harvests or sells spiny lobster to have a SPL. An SPL may be issued in the name of an individual or a valid vessel registration number issued in the name of the licensed applicant. Florida also requires anyone who sells spiny lobster to have an RSE and Crawfish Endorsement.

Caribbean spiny lobster harvested in Florida waters must remain in a whole condition while on or below state waters and the practice of separating the tail from the body is prohibited [FAC 68B-24.003(4)]. Possession of Caribbean spiny lobster tails that have been separated on or below state waters is prohibited unless the Caribbean spiny lobster is being imported pursuant to FAC 68B-24.0045, or were harvested outside state waters and the separation was pursuant to a federal permit allowing such separation. If tails are separated from the body, tails must be at

least 5.5 in length, otherwise, if whole, the carapace must be greater than 3 in long [FAC 68B-24.003(1)].

In Florida, the harvest or possession of egg-bearing Caribbean spiny lobster is prohibited and any egg-bearing lobster found in traps must be immediately returned to the water free, alive and unharmed [FAC 68B-24.007]. The practice of stripping or otherwise molesting egg-bearing Caribbean spiny lobster to remove the eggs is prohibited and the possession of Caribbean spiny lobster or spiny lobster tails from which the eggs, swimmerets or pleopods have been removed or stripped is prohibited [FAC 68B-24.007].

Possession of undersized Caribbean spiny lobster is prohibited, except in the lobster trap fishery, where fishermen use undersized lobsters to attract legal-sized ones. Allowable gear types are traps, hand-held net, hoop net (diameter no larger than 10 ft), bully net (diameter no larger than 3 ft), and by diving. The vessel limit for harvest with a bully net is 250 lobsters per vessel per day, for the trap fishery there is no bag or trip limit, and limits for the dive fishery are regional. Additional restrictions and requirements depend on the method of harvest.

For those in the lobster trap fishery, trap certificates and tags are required for all traps. A tag must be securely attached to each trap; Caribbean spiny lobster trap specifications and trap, buoy, and vessel marking requirements apply; and traps, buoys, and vessels must display the Crawfish Endorsement number. Traps must be constructed of wood or plastic and be no larger than 3 ft by 2 ft or the volumetric equivalent (12 ft^3) with the entrance located on top of the trap. Each plastic trap must have a degradable panel. Traps may be baited and placed in the water beginning August 1. Traps may be worked during daylight hours only. Traps may not be placed within 100 ft of the Intracoastal Waterway or any bridge or seawall. Traps must be removed from the water by April 5 each year. Harvest is prohibited in designated areas of John Pennekamp Coral Reef State Park. Florida law authorizes FWC to retrieve traps left in the water after the close of the season and fines the traps' owners to cover the costs of retrieving the traps.

All vessels used by persons commercially harvesting lobster by diving, scuba, or snorkel must display the Commercial Dive Permit on the vessel SPL. A person with a Commercial Dive Permit cannot own trap certificates. After January 1, 2005, no diver permits were issued, renewed or replaced except those that were active in 2004/2005. Dive permits that are not renewed by September 30 of each year are forfeited. A 250-lobster daily vessel limit applies in Broward, Dade, Monroe, Collier, and Lee counties and adjoining federal waters.

The commercial and regular recreational Caribbean spiny lobster seasons start August 6 and end March 31 [FAC 68B-24.005(1)]. No person can harvest, attempt to harvest, or have in his possession, regardless of where taken, any spiny lobster during the closed season of April 1 through August 5 of each year, except during the two-day sport season, for storage and distribution of lawfully possessed inventory stocks or by special permit issued by the FWC [FAC 68B-24.005(1)]. During the two-day sport season no person can harvest spiny lobster by any means other than by diving or with the use of a bully net or hoop net.

A Wholesale Dealer License is required for any person, firm or corporation that sells spiny lobster to any person, firm, or corporation except to the consumer and who may buy spiny

lobster from any person pursuant to section 370.06(2) of the Florida Statutes or any licensed wholesale dealer.

Zoning laws have indirectly affected the spiny lobster fishery in south Florida. In August 1986, Monroe County changed its zoning laws by implementing the Monroe County Land Use Plan (Plan). Under the Plan, commercial fishers must store, build, repair, and dip traps in industrial or commercially zoned areas, within areas designated as commercial fishing villages or in areas termed specific fishing districts (Johnson and Orbach 1990).[4] Prior to the zoning change, fishers could store and work on traps on residential property. Under Article V, Section 9.5 – 143(f) of the Monroe County Ordinances, where a nonconforming use of land or structure is discontinued or abandoned for six months or one year in the case of stored lobster traps, then such use may not be reestablished or resumed, and subsequent use must conform to provisions detailed in the chapter of the ordinances.

3.1.3 Caribbean Spiny Lobster – Recreational Fishery

The Florida recreational Caribbean spiny lobster fishing season has two parts: a two-day sport season that occurs before commercial spiny lobster fishers place their traps in the water and a regular season that coincides with the commercial fishing season. The two-day sport season has been and remains popular as illustrated by a July 28, 1991, article in the *St. Petersburg Times* that concerns "lobstermania" and a July 30, 2009, *Miami Herald* article with the title, "Lobster hunters turn out in droves for Florida mini-season." Recreational spiny lobster fishers individually spend hundreds of dollars for fuel, ramp fees, food, beverages, scuba, snorkeling and hooking equipment and licenses annually. At the same time, however, there have been and continue to be residents and business and commercial interests in the Keys who favor abolishing the sport season. Processors are among those who are critical of the sport season. Shivlani et al. (2004) reported that 11% of the processors that they interviewed blamed the sport season for declining commercial landings.

Florida has a variety of permits that will allow recreational fishers to take spiny lobster. In 2010, the state issued 129,865 annual or five-year crawfish permits; in addition, they issued 36,030 other permits, such as Sportsman Gold or Saltwater Lifetime permit, that also allow holders to take spiny lobster. NOAA Fisheries Service does not require a permit for recreational fishing in the EEZ.

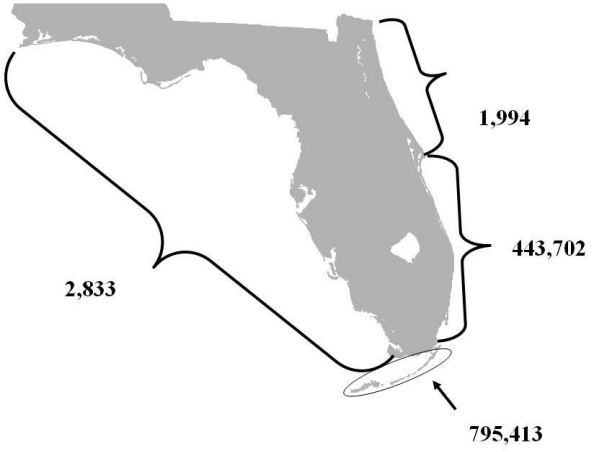
Beginning with a pilot study in 1991 and continuing through 2007, the FWC has surveyed these permit holders regarding their lobster fishing activities using mail surveys to estimate landings and fishing effort. In 2007, the FWC conducted its first e-mail survey of these permit holders, and since 2008 has used e-mail surveys exclusively to conduct the surveys. These surveys provide an estimate of recreational landings and fishing effort during two specific time periods during the recreational fishing season – the special two-day sport season and the first month of the regular lobster fishing season (August 6 through Labor Day). Although the regular lobster fishing season in Florida does not close until April 1, the FWC surveys have only incorporated those two time periods because anecdotal observations, which were subsequently confirmed by

[4] Traps used to be dipped in recycled oil to protect them from the marine environment. However, that practice was prohibited beginning in 1995. Now fishermen soak traps in a brine solution to extend the life of their traps.

these surveys and an additional small season-ending survey, indicated that the largest proportion of recreational lobster fishing effort occurs during those two periods and consequently provided the best opportunity to accurately monitor long-term trends in the fishery using mail surveys. Additional mail surveys throughout the fishing season would have been cost and labor prohibitive. However, the recently developed e-mail survey now makes it more feasible to survey permit holders about their late season fishing activities. The FWC is developing surveys designed to provide estimates of recreational landings from Labor Day to the end of the fishing season.

Like the commercial fishery, the recreational fishery is concentrated along the Florida Keys. The survey conducted in 2008, for example, estimated that approximately 64% of the 1,247,000 lbs of lobsters that were harvested during the two-day sport season and first month of the regular season were harvested in the Keys, and approximately 36% (443,702) were harvested in the southeast coast of the state (Figure 3.1.3.1). Less than 1% as harvested elsewhere in the state. Typically, approximately 60% of the statewide fishing effort occurs in the Florida Keys (Sharp et al. 2005).

Figure 3.1.3.1. Estimated recreational lobster landings (lbs) during the 2008 Special Two-Day Sport Season and first month of the regular lobster fishing season.
Source: FWC.



The large majority of recreational landings are taken by divers who tend to target Caribbean spiny lobster in similar areas as commercial divers. Little fishing effort occurs north of Monroe County on the Gulf side. The recreational fishery is largely conducted from docks, boats, residential properties, and numerous other places along the Florida Keys and southernmost counties where a diver can get into the water from shore or from boats or platforms where an individual can use a bully or hoop net. The geographic variability has made the inclusion of spiny lobster in the Marine Recreational Fisheries Statistics Survey (MRFSS) cost prohibitive. There has been and continues to be no evidence of subsistence fishing for Caribbean spiny lobster (GMFMC and SAFMC 1982).

Recreational Landings and Catch per Unit Effort (CPUE)
Estimated recreational landings, fishing effort, and CPUE for Caribbean spiny lobster in Florida during the two-day sport season and the first month of the regular lobster fishing season were mostly lower from 2001/2002 onward than in the 1990s (Figures 3.1.3.2 and 3.1.3.3). In the last five years, they averaged 1.208 mp (ww), 406,166 person days, and 2.70 lobsters per person day. Compared with the respective totals, 30% of the landings and 24% of the effort occurred in the special two-day season (last five-year averages of 94,574 person days for 0.342 mp for the special season; 298,065 person days for the first month of the regular season for 0.846 mp; and 392,638 person days overall for 1.208 mp; W. Sharp, FWC, pers. comm.).

The effects of weakened national economic conditions in the last two to three years may largely explain reduced landings, effort, and a fall off in the number of recreational licensed purchased (Table 3.4.2.1). Previously, in the mid-2000s, at least three hurricanes had occurred when recreational fishing would otherwise be expected to be seasonally high, including Charley (2004), Dennis (2005) and Katrina (2005). By virtue of their timing during the season, some hurricanes affected commercial fishing primarily, including most recently, George in 1998, and Katrina, Rita and Wilma in 2005, both years involving the damage or destruction of large proportions of the traps (Shivlani 2009).

Weakened economic conditions in the last two-to three years, hurricanes in 2004-2005, and other factors may help explain the lower recreational landings, effort and catch per unit effort in 2001/2002 onward compared with 1990s (Figures 3.1.3.2 and 3.1.3.3). In contrast with declining effort and increased productivity for commercial fishing (Figures 3.4.1.2 and 3.4.1.3), however, recreational fishing effort has remained relatively flat during the last twenty years, along with productivity (lobsters landed per person day in Figure 3.1.3.3). Effort has been reduced and productivity has increased for commercial fishing under the TCP, thereby achieving purposes of that program, but the state's recreational fishing permit program imposes no limit on the number of permits issued.

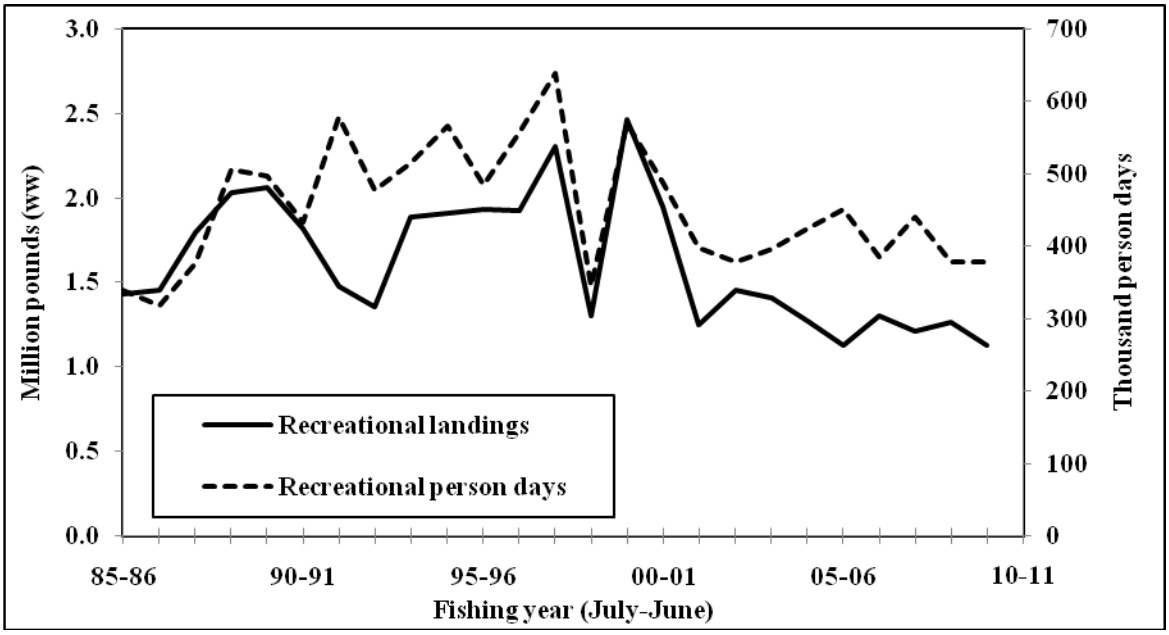


Figure 3.1.3.2. Florida recreational landings and fishing effort.
Source: SEDAR-8, 2010 update.

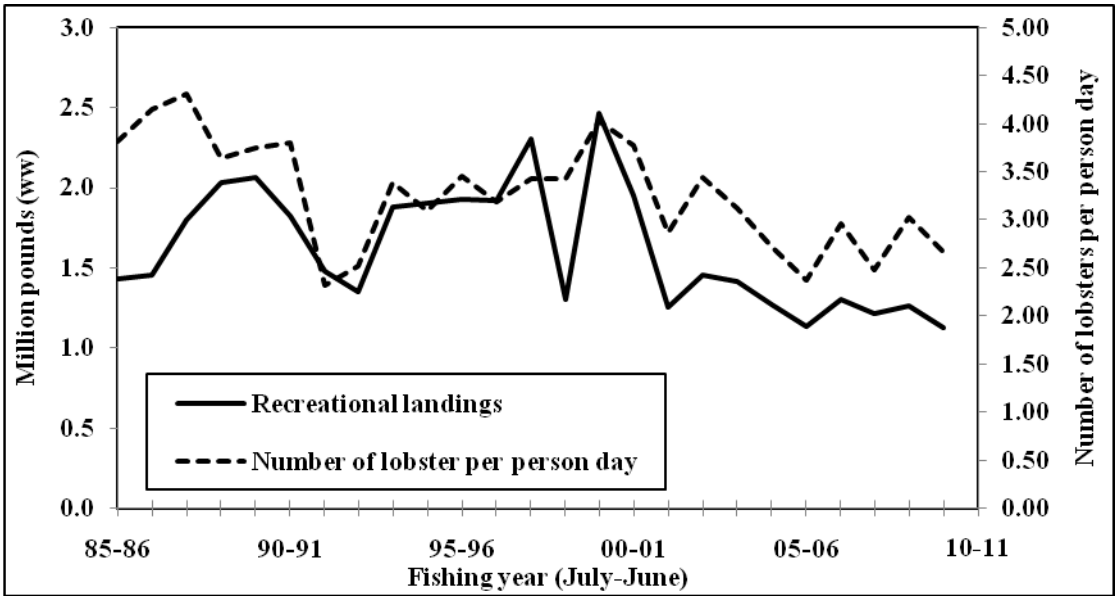


Figure 3.1.3.3. Florida recreational landings and catch per person.
Source: SEDAR-8, 2010 update

Gear Types Used

Recreational fishers are not allowed to use traps to capture lobster. Bully nets and diving (breath-hold, SCUBA, or hookah) are the only legal recreational fishing methods. Harvest from artificial habitat is prohibited. Divers must possess a carapace-measuring device and measure lobster in the water. The use of bleach or chemical solutions or simultaneous possession of spiny

lobster and any plastic container capable of ejecting such liquid is prohibited. Most recreational diving occurs in the Florida Keys and in moderately shallow waters.

A survey of recreational divers in the mid-1970s found that 95% of the free divers dove no deeper than 30 ft, while 81% of those who used SCUBA gear dove no deeper than 40 ft. None of the sampled divers reported diving deeper than 80 ft (GMFMC and SAFMC 1982). Some Caribbean spiny lobsters were caught on shallow flats by recreational fishers using bully nets, but they represented only a small portion of the recreational catch.

Hookah fishing involves diving from a boat for lobster using an air compressor that supplies air for the diver through a long hose. Multiple divers can be connected to the same compressor. The use of a hookah system has become increasingly popular because one can use it without becoming certified in scuba diving. Anyone can purchase a hookah system, although hookah diving shares many of the same risks as scuba diving such as decompression sickness and air embolism. Novice divers can stay under for longer periods of time than scuba divers, although there is always the risk of the hose breaking or dislodging from the compressor.

According to the FWC (2006a), the large proportion of recreational divers is highly active only at the start of the fishing season when the lobsters are most abundant. As the recreational lobster fishing season continues, the number of dive trips and number of lobsters recreational divers land declines rapidly. Also, there are many divers with a license are not active during the lobster fishing season.

Some divers, generally those from outside southern Florida, will use charter or party boats. Charter boats typically are hired by diving clubs while party boats operate out of dive shops along the Florida Keys (GMFMC and SAFMC 1982). These boats can hold from 30 to 50 divers and have commercial lobster licenses. In Florida, patrons aboard a fishing charter are not required to possess a recreational saltwater fishing permit because they are covered under the fishing license of the charter boat.

Those who use bully nets perch on bows of boats at night, shine bright lights into the shallows and use a long-handled net to bag spiny lobsters that move out into the open (Cocking 2009). Spears, wire snares, hooks or any gear/device that could penetrate, puncture or crush the shell of a lobster is prohibited. Divers typically use a “tickle stick” to coerce lobsters from their dens into a hand-held net.

3.1.4 Other spiny lobster species

The spotted spiny lobster and smoothtail spiny lobster are found generally in 15-20 ft of water and are considered obligate reef dwellers (Sharp et al. 1997). Further, individuals are relatively small compared to Caribbean spiny lobsters. For these reasons, commercial fishers in the Florida Keys generally do not target these species in U.S. federal waters (W. Kelley pers. comm.). A “luxury” fishery exists in Bermuda and parts of the Caribbean for the spotted spiny lobster (Evans and Lockwood 1995). The smoothtail spiny lobster supports a fishery in Brazil concurrent with a Caribbean spiny lobster fishery; this species is considered to be of minor importance elsewhere (FAO 2007).

Federal regulations prohibit the possession of egg-bearing Caribbean spiny lobster and the removal of eggs, swimmerettes or pleopods; Florida regulations prohibit the same for any species of Family Palinuridae (spiny lobsters). No commercial or recreational landings data are available for either of these species, although some may be reported as Caribbean spiny lobster.

3.1.5 Slipper lobster species

The commercial fishery for slipper lobsters is mainly for the ridged slipper lobster, but landings data are recorded by family only and not by species (Table 3.1.5.1). The following information is taken from Sharp et al. (2007) and Spanier and Lavalli (2006). The slipper lobster fishery is basically a trawl fishery by shrimpers, who harvest slipper lobsters as bycatch. In the Florida Keys, they are harvested by divers for the aquarium trade and are also bycatch in spiny lobster traps. The vast majority of landings are along the Florida west coast. A targeted fishery developed during the 1980's by trawlers during the off-season for shrimp (spring and summer). This is also the spawning season for slipper lobsters, and their migration into shallower water at this time likely contributed to their catchability. In 1987, Florida implemented regulations prohibiting the harvest of egg-bearing female or the removal of eggs by stripping or clipping the pleopods. Around this time, landings declined dramatically. Landings increased somewhat during the 1990s, then declined again and remained low since 1999. The number of shrimp trips also declined beginning in 1999 (Sharp et al. 2007).

Table 3.1.5.1. Commercial effort, landings, and CPUE (pounds/trip) of slipper lobsters in the Gulf and South Atlantic.

Year	Trips	Pounds (x1000)	Lbs/trip
86/87	535	28,097	53
87/88	487	19,952	41
88/89	558	40,736	73
89/90	334	14,793	44
90/91	465	27,282	59
91/92	653	48,728	75
92/93	584	48,708	83
93/94	655	60,230	92
94/95	411	33,531	82
95/96	362	26,843	74
96/97	437	43,565	100
97/98	335	30,872	92
98/99	225	13,139	58
99/00	146	7,196	49
00/01	145	8,766	60
01/02	179	8,582	48
02/03	130	9,951	77
03/04	132	17,012	129
04/05	72	5,000	69
05/06	63	4,291	68
06/07	56	6,060	108
07/08	23	6,443	280
08/09	22	1,889	86
04/05-08/09 Average	47	5.0	24
99/00-08/09 Average	97	7.5	41.2

Source: SEFSC, FTT (Mar 19, 2010) data

The majority of the commercial landings for both the Spanish and ridged slipper lobsters, occur in federal waters off the Gulf coast (Figure 3.1.5.1). The gear types used to harvest these species by trips were 56% by trawl, 23% by diving, and 19% by traps, which was fairly consistent over the 10-year period. Low landings of slipper lobsters were also documented in federal South Atlantic waters and Florida state waters for the combined coasts. In the Florida Keys, slipper lobster species are bycatch in traps for Caribbean spiny lobster (Sharp et al. 2007).

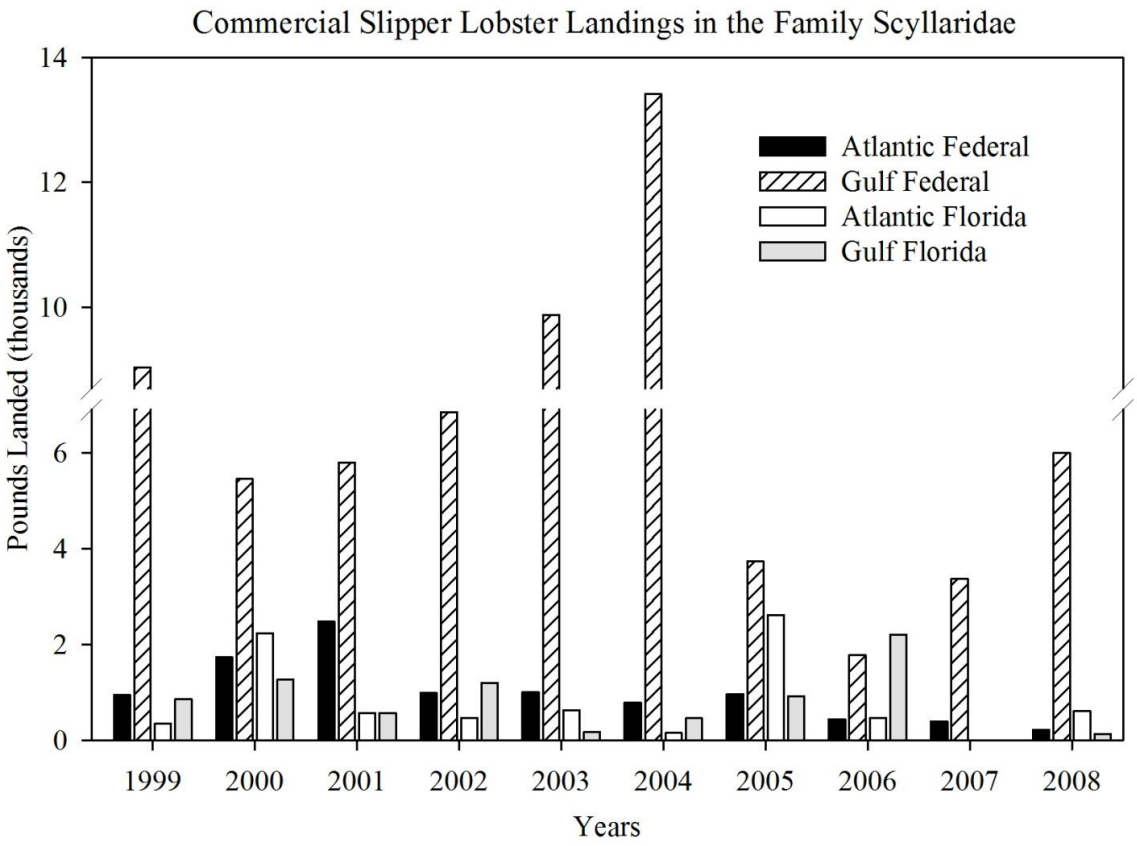


Figure 3.1.5.1. Commercial landings for the family Scyllaridae from 1999 through 2008. by coast. in federal and Florida waters.
Source: FWC, Marine Fisheries Information System 2009. Note: These data are based on the trip ticket program. There is only one space available for waters fished. Fishers could fish in both state and federal waters within one day, based on the season and other fishing behaviors. This figure should be viewed with some caution, because there could be additional unaccounted variability, due to the way the data is recorded and analyzed.

Other Gulf States also had some information on slipper lobster landings. Alabama reported total commercial landings of 10,000 lbs or less whole animal weight of slipper lobsters during 1999-2008. Landings records indicate that these species were incidentally caught from shrimp trawls fishing in federal waters off the west coast of Florida (C. Denson, Alabama Marine Resources Division, Alabama Department of Conservation and Natural Resources, pers. comm.). There were no reported landings for Mississippi, Louisiana, and Texas for slipper lobster species (Source: http://www.st.nmfs.noaa.gov/st1/commercial/landings/annual_landings.html).

From the South Atlantic states, Georgia had no reported commercial landings of slipper lobster species in either state or federal waters for 1999-2008 (J. Califf, Commercial Fisheries Statistics Coordinator, Coastal Resources Division, Georgia Department of Natural Resources, pers. comm.). In South Carolina, there were no recorded landings of slipper lobster species in state or federal waters (G. Steele, Biological Statistician, South Carolina Department of Natural Resources, pers. comm.). In the state waters of North Carolina there were no recorded landings of slipper lobsters; however, during the years 1999, 2000, 2002, and 2005 commercial landings for slipper or spiny lobster were not recorded by the North Carolina Division of Marine Fisheries

(A. Bianchi, Trip Ticket Coordinator, North Carolina Division of Marine Fisheries, pers. comm.).

Little information exists on harvest of slipper lobsters by the recreational sector. MRFSS does not survey lobster, and the Florida recreational survey does not collect information on any species except the Caribbean spiny lobster. A creel survey of Caribbean spiny lobster fishermen conducted in the Florida Keys during the special two-day sport season and the first two weeks of the regular season indicated slipper lobsters are not targeted by these fishers in the Keys. There is some evidence that they may be targeted to some degree by divers in the northern Gulf. However, these species are both cryptic and nocturnal, rendering them difficult to find by recreational divers. For this reason, they are unlikely to support a large recreational fishery (Sharp et al 2007).

Federal regulations prohibit the possession of a slipper lobster, defined as *Scyllarides nodifer* only, with eggs or from which the eggs, swimmerettes, or pleopods have been removed; Florida regulations prohibit the same for all species of Family Scyllaridae (slipper lobsters). Poisons and explosives may not be used to take slipper lobster in the EEZ.

3.2 Physical Environment

Detailed descriptions of the physical environments related to the spiny lobster fishery are provided in the Final EIS for the Gulf Council's Generic Essential Fish Habitat Amendment (GMFMC 2004) and in the South Atlantic Council's Fishery Ecosystem Plan (SAFMC 2009), and are incorporated by reference herein.

The Gulf has a total area of approximately 600,000 mi^2 (1.5 million km^2), including state waters (Gore 1992). It is a semi-enclosed, oceanic basin connected to the Atlantic Ocean by the Straits of Florida and to the Caribbean Sea by the Yucatan Channel. Oceanic conditions are primarily affected by the Loop Current, the discharge of freshwater into the Northern Gulf, and a semi-permanent, anticyclonic gyre in the western Gulf. Gulf surface water temperatures range 12-29° C (54-84° F) depending on time of year and depth of water.

The Deepwater Horizon MC252 oil spill in 2010 affected more than one-third of the Gulf area from western Louisiana east to the panhandle of Florida and south to the Campeche Bank in Mexico. The impacts of the oil spill on the physical environment are expected to be significant and may be long-term. However, the oil remained outside most of the area where this species is abundant. Oil was dispersed on the surface, and because of the heavy use of dispersants, oil was also documented as being suspended within the water column, some even deeper than the location of the broken well head. Floating and suspended oil washed onto shore in several areas of the Gulf as well as non-floating tar balls. Whereas suspended and floating oil degrades over time, tar balls are persistent in the environment and can be transported hundreds of miles. Oil on the surface of the water could restrict the normal process of atmospheric oxygen mixing into and replenishing oxygen concentrations in the water column. In addition, microbes in the water that break down oil and dispersant also consume oxygen; this could lead to further oxygen depletion. It is also possible that zooplankton that feed on algae could be negatively impacted, thus allowing more of the hypoxia-fueling algae to grow.

The South Atlantic continental shelf off the southeastern U.S., extending from the Dry Tortugas to Cape Hatteras, encompasses an area in excess of 100,000 km^2 (Menzel 1993). Based on physical oceanography and geomorphology, this environment can be divided into two regions: Dry Tortugas to Cape Canaveral and Cape Canaveral to Cape Hatteras. The break between these two regions is not precise and ranges from West Palm Beach to the Florida-Georgia border depending on the specific data considered. The shelf from the Dry Tortugas to Miami is approximately 25 km wide and narrows to approximately 5 km off Palm Beach. The shelf then broadens to approximately 120 km off of Georgia and South Carolina before narrowing to 30 km off Cape Hatteras. The Florida Current/Gulf Stream flows along the shelf edge throughout the region. In the southern region, this boundary current dominates the physics of the entire shelf (Lee et al. 1994).

Spatial and temporal variation in the position of the western boundary current has dramatic affects on water column habitats. Variation in the path of the Florida Current near the Dry Tortugas induces formation of the Tortugas Gyre (Lee et al. 1994). This cyclonic eddy has horizontal dimensions on the order of 100 km and may persist in the vicinity of the Florida Keys for several months. The Pourtales Gyre, which has been found to the east, is formed when the Tortugas Gyres moves eastward along the shelf. Upwelling occurs in the center of these gyres, thereby adding nutrients to the near surface (<100 m) water column.

Given the large to near total dependence on larval recruitment from the Caribbean, it is appropriate to include the Caribbean area in the description of the physical environment. A detailed description of the physical environment in the Caribbean related to the spiny lobster fishery is provided in Amendment 8 to the FMP (CFMS, GMFMC, and SAFMC 2008) and is incorporated by reference herein.

The Caribbean Sea is an interior sea formed by a series of basins lying to the east of Central America and separated from the North American Basin of the Atlantic by an island arc 2,500 nm long which joins the Florida Peninsula to the north coast of Venezuela. This arc is demarcated by the Greater Antilles (Cuba, Jamaica, Hispaniola, and Puerto Rico) and the Lesser Antilles (the Virgin Islands, Guadeloupe, Martinique, St. Lucia, Barbados, and Trinidad). As a seismic and volcanic region, the Caribbean has a complex topography and has numerous openings into the North American Basin. The Jamaican Ridge, running from Cape Gracias a Dios to Jamaica and Hispaniola, divides the Caribbean into two sections: one in the northwest, the other southeast, communicating across a 1500 m sill which is 20 nm wide at 100 m depth. The northwest basin is itself divided in two by the Cayman Ridge, which from the southwest point of Cuba runs toward, without reaching it, the Gulf of Honduras. Between the Gulf of Mexico and the Cayman Ridge lies the Yucatan Basin, of which the central part is 4,700 m deep. At its western extremity it communicates freely at depth of more than 5,000 m with the second basin, the Cayman Basin. In the eastern part of the Cayman Basin, between the southwest point of Cuba and against the Cayman Ridge lies a narrow trench 7,680 m deep.

The Caribbean Basin is entirely in the tropical Atlantic. The mean annual temperature is near 25° C and seasonal variations are small. The winds, the eastern sector predominating, are tied to the trade wind system of the Northern Hemisphere.

3.3 Biological Environment

3.3.1 Lobster species

Family Palinuridae (Figure 3.3.1.1)

Figure 3.3.1.1. Photograph of the following lobster species from left to right: Caribbean spiny lobster, smoothtail spiny lobster, spotted spiny lobster.
Source: Photograph from FWC website.

<u>Caribbean spiny lobster</u>
This species is widely distributed throughout the western Atlantic Ocean as far north as North Carolina to as far south as Brazil including Bermuda, the Bahamas, Caribbean, and Central America (Herrnkind 1980; Figure 3.3.1.2). Analyses of DNA indicate a single stock structure for the Caribbean spiny lobster throughout its range (Lipcius and Cobb 1994; Silberman and Walsh 1994; Hunt et al. 2009). This species inhabits shallow waters, occasionally as deep as 295 ft (90 m), possibly even deeper. Caribbean spiny lobster can be found among rocks, on reefs, in grass beds or in any habitat that provides protection. The species is gregarious and migratory. Maximum total body length recorded is 18 in (45 cm), but the average total body length for this species is 8 in (20 cm; FAO Fisheries Synopsis 1991).

Figure 3.3.1.2. Distribution of Caribbean spiny lobster.
Source: FAO Fisheries Synopsis 1991; Joint CFMC-GMFMC-SAFMC Amendment 8 2008.

Distribution and dispersal of Caribbean spiny lobster is determined by the long planktonic larval phase, called the puerulus, during which time the infant lobsters are carried by the currents until they become large enough to settle to the bottom (Davis and Dodrill 1989). As the lobsters begin metamorphosis from puerulus to the juvenile form, the ability to swim increases and they move into shallow, nearshore environments to grow and develop.

Young benthic stages of Caribbean spiny lobster will typically inhabit branched clumps of red algae (*Laurencia sp*.), mangrove roots, seagrass banks, or sponges where they feed on invertebrates found within the microhabitat. In contrast to the social behavior of their older counterparts, the juvenile lobsters are solitary and show aggressive behavior to ensure they remain solitary. The inhabitation of macroalgae by the juvenile lobsters provides protection to the vulnerable individuals from predators while providing easy access to food sources (Marx and Hernkind 1985).

Individuals two to four years of age show nomadic behavior, emigrating out of the shallows and moving to deeper, offshore reef environments. Once in the adult phase, Caribbean spiny lobsters are thigmotactic and tend to enter social living arrangements aggregating in enclosed dens. Shelter environments may include natural holes in a reef, rocky outcrops, or artificially created environments (Lipcius and Cobb 1994).

Given the wide distribution of this species from Bermuda to Brazil, it is hard to determine a definitive stock structure for this species. There are a multitude of currents and other factors that influence the movement of water throughout their range. The long duration that lobsters spend in the larval stage, traveling by the currents leads scientists to expect recruits in the U.S. come from many other areas (Hunt et al. 2009).

Silberman et al. (1994) and Hunt et al. (2009) concluded Caribbean spiny lobster is a single stock from Brazil to Bermuda, and throughout the Caribbean. More recent genetic studies have shown almost all recruits in U.S. waters are from elsewhere in the Caribbean. However, studies have shown that the presence of local gyres or loop currents in certain locations could influence the

retention of locally spawned larvae. In addition, benthic structures such as coral reef may disturb the flow of water and lead to the settlement of larvae in a particular location (Lee et al. 1994).

The general anatomy of Caribbean spiny lobster conforms to the typical decapod body plan consisting of five cephalic and eight thoracic segments fused together to form the cephalothorax (Figure 3.3.1.3). The carapace, a hard shield-like structure, protects this portion of the body and is often the part of the lobster measured and used as a standard to determine organism length. All the segments bear paired appendages that serve in locomotion, sensory, or both (Phillips et al. 1980). There are five pairs of walking legs called pereiopods (walking legs) and a six-segmented tail. The antennae function primarily to obtain sensory information by chemoreception, as do the dactyls of the walking legs and the mouthparts involved in handling food. Lobsters have great visual ability, achieved through the use of their paired, lateral compound eyes. In addition, highly distributed superficial hairs detect water movements (Ache and Macmillan 1980).

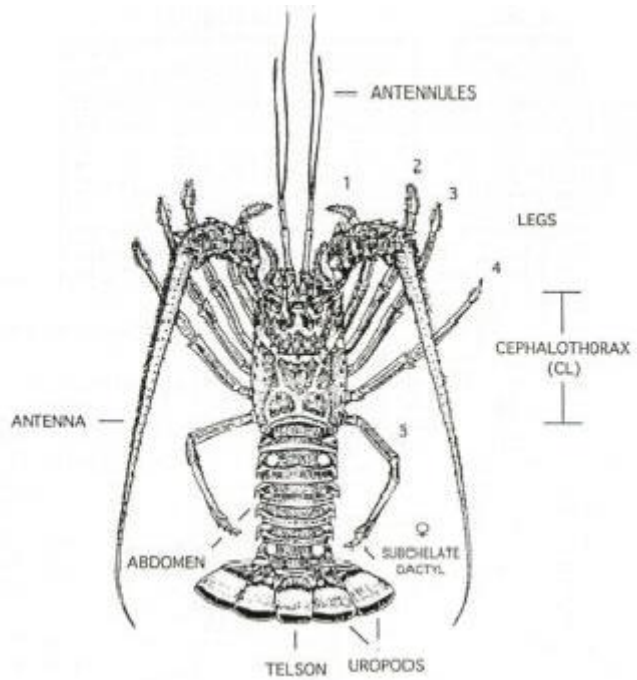


Figure 3.3.1.3. Morphology of Caribbean spiny lobsters.
Source: Lipcius and Cobb (1994).

Gills are the main organs used by lobsters for respiration. The rate of oxygen consumption is dependent upon the temperature, the degree of crowding within the den, feeding and size of the lobster; oxygen consumption is not determined by the concentration of the oxygen in the water as some studies show that oxygen uptake remained the same in both hypoxic and aerated water (Phillips et al. 1980).

Food Habits

After Caribbean spiny lobster settle from the planktonic phase to the benthic habitat they enter seagrass and macroalgae nursery habitat. Their diet consists of small gastropod mollusks, isopods, amphipods and ostracods, most of which can be found in or within close proximity to

the lobster's algal shelter. Studies suggest that as the abundance of food declines in and around their algae habitat, lobsters forage more frequently and thus have more frequent contact with conspecifics. Aggressive behavior in the juvenile lobsters, which at this time live solitarily, has been observed as a means of enforcing territoriality. The consequence of increased aggressive interactions as well as a declining food source is thought to induce the nomadic emigration from the algal nursery environment to off shore reef environments (Marx and Herrnkind 1985).

During the adult and juvenile phases, the Caribbean spiny lobster will rest in shelters during daylight hours and emerge in the evening to forage for food. Adult lobsters are key predators in many benthic habitats with their diets consisting of slow-moving or stationary bottom-dwelling invertebrates including sea urchins, mussels, gastropods, clams and snails (Lipcius and Cobb 1994). Juvenile lobsters also forage at night and will eat a similar diet of invertebrates, only smaller individual prey. During feeding, prey organisms are seized and maneuvered using the anterior periopods or maxillipeds, while the mandibles carry out mechanical digestion and are capable of crushing hard mollusk shell (Herrnkind et al. 1975). Little is known about the dietary requirements of the larval phase.

Larger animals such as sharks and finfish frequently prey upon adult Caribbean spiny lobsters. Studies indicate that Caribbean spiny lobsters are highly selective of the dens they choose to live in and the location of these crevices. Their evening movements away from and subsequent return to their dens illustrates the spatial orientation they have to their immediate habitats (Herrnkind 1980).

Reproduction

Reproduction in the Caribbean spiny lobster occurs almost exclusively in the deep reef environment once mature individuals have made the permanent transition from the shallow seagrass nursery to the ocean coral reef system. Spawning season is in the spring and summer; however, autumnal reproduction has been known to occur in some situations (Kanciruk and Herrnkind 1976). Studies have found that the initiation of spawning is related to water temperature with an optimal water temperature for mating of 24°C (Lyons et al. 1981). The gestation period for eggs is about a month.

Reproductive fecundity is dependent upon the size of the individual as well as the geographic area in which the lobster lives. Reproductive efficiency for a given size in a given area can be determined using the relationship between fecundity and carapace length. A study conducted in South Florida found that differences exist between the fecundity/carapace length relationships of individuals living in the Dry Tortugas from individuals living in the Upper and Middle Florida Keys (Maxwell et al. 2009).

Choice of mate is determined by the female as well as inter-male aggression, where larger males will prevent a smaller male from courting a female (Lipcius and Cobb 1994). Females mate only once during a season, while males can fertilize multiple females. During mating, the male will flick his antennules over the anterior of the female and scrape at her with the third walking legs. The male follows the female around continually trying to lift the female up and embrace her. This pattern continues until the female acquiesces and they each stand on their walking legs while the male deposits the spermatophore mass on the female sternum (Atema and Cobb 1980).

Females bearing eggs will usually live in solitary dens and infrequently forage for food (Lyons et. al. 1981). Large adult females will produce more broods, as well as spawn eggs earlier in the reproductive period than younger females since younger individuals molt earlier in the reproductive period.

Growth and Molting

The life cycle of the Caribbean spiny lobster provides larvae with the potential to travel long distances for periods ranging from a few months to almost two years (Figure 3.3.1.4). During this time, the larval lobsters remain near the surface of the water. Maximum potential dispersal distances differ from one region to another and are primarily dependent on the currents in the area. A gyre in an area where lobster eggs have hatched may keep the larva in the same geographic area, however most of the time the larva are transported out of the area, sometimes hundreds of miles (Lee et al. 1994). Once the planktonic lobsters reach about 1.4 in (35 mm) they are large enough to settle down as post-larval pueruli in shallow benthic environments to grow. Growth in juveniles is rapid, with most reaching a carapace length of 2.4-2.8 in (60-70 mm) within about two years (Hernkind 1980). Once they reach about 2.8 in (70 mm) and begin to sexually mature, the young Caribbean spiny lobsters emigrate from the nursery to deeper offshore reef environments.

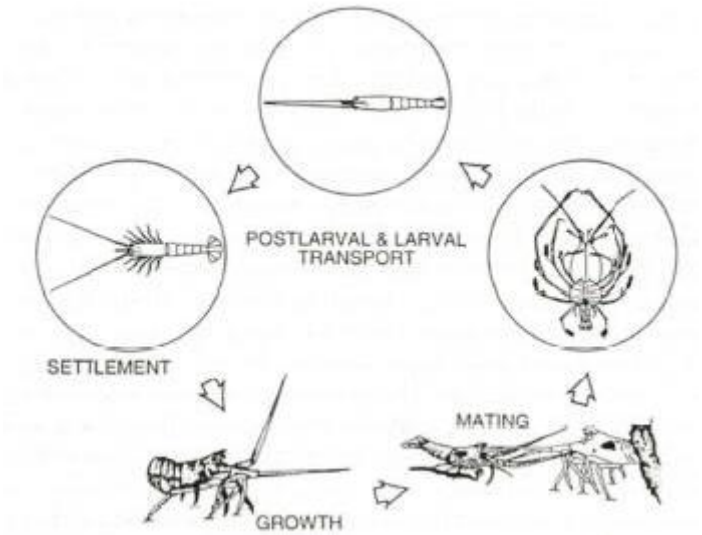


Figure 3.3.1.4. The life cycle of the Caribbean spiny lobster.
Source: Lipcius and Cobb (1994).

Physical growth of lobsters is achieved through molting (Figure 3.3.1.4). A thorough understanding of the molt cycle of the Caribbean spiny lobster is an important component to the management of this fishery because the catchability and captive behavior of crustaceans is directly related to the animal's proximity to molting. The molt cycle begins with the inter-molt period, the time when a new cuticle is being created, tissue growth is rapid and the lobster actively forages. This period of time culminates in ecdysis, which is shedding the old cuticle or molting (Lipcius and Hernkind 1982).

Molting occurs primarily at night. Possible reasons for nocturnal ecdysis include decreasing the risk of cannibalism by other members of this gregarious species, and decreasing diurnal

predation risks. Once molted, the lobster seeks immediate shelter, as they are especially vulnerable until their new cuticle becomes hardened (Lipcius and Hernkind 1982). Adult lobsters molt on average about two and a half times each year. The entire molting event takes approximately ten minutes. The new exoskeleton will take about 12 days from the start of the molt to harden such that it cannot be dented; however the shell is not completely formed until the 28th day (Williams 1984).

Studies found that feeding rates significantly increase in the time preceding a molt to accommodate the increasing metabolic needs associated with new cuticle formation. About a week before ecdysis, daily food intake for the Caribbean spiny lobster decreases rapidly, in correlation with a reduction in demanding activities such as locomotion and foraging. In the few days before and the time during ecdysis, feeding ceases altogether and the lobster becomes socially reclusive. Within a week of the molting event Caribbean spiny lobster will display maximal feeding, foraging and locomotor activity rates to accommodate for the active tissue growth that occurs (Lipcius and Hernkind 1982). The dramatic swings in feeding and foraging behavior associated with the molting cycle influences the success of fishermen when capturing this species. The highest catchability of spiny lobster is expected immediately following molting because lobsters are actively foraging at this time and are therefore more likely to accept bait. Conversely, the lowest catchability of spiny lobster is expected before molting when foraging decreases and the lobster becomes less mobile (Lipcius and Hernkind 1982).

Growth and Mortality Rates

Despite the wide body of literature on this species, limited information is available on the growth and aging of the Caribbean spiny lobster due in part to the molting habits of lobsters interfering with tagging efforts. However, the 2010 Update Assessment for Spiny Lobster SEDAR 8, estimated growth from two sources: tag returns and rate of accumulation of eye stalk lipofuscin (Maxwell et al. 2007). The lipofuscin technique has potential to provide ages, but in this case the aging was based on 51 laboratory-raised spiny lobsters that spanned only four years. In addition the sources of variability in lipofuscin concentrations may differ based on sex and habitat type of spiny lobsters. For example, female lobsters had lower lipofuscin concentrations than did males of the same age, and animals from the Dry Tortugas had lower concentrations than did lobsters from the Florida Keys. Natural mortality rates for Caribbean spiny lobster populations have been difficult to isolate from fished rates of mortality. In the 2010 Update Assessment, natural morality was modeled at 0.34 per year, which was between the Data Workshop and Assessment Workshop conclusions ranging between 0.3 and 0.4 per year. There currently is no information available on natural mortality on post-larvae (2010 Update Assessment).

Locomotion and Migration

The Caribbean spiny lobster achieves locomotion by using the five pairs of walking legs attached to the cephalothorax and can swim (backward) for brief periods using its tail for propulsion (Lipcius and Cobb 1994). Caribbean spiny lobster patterns of movement fall into the following categories: homing, nomadism, and migration. Throughout most of their life, Caribbean spiny lobster is a shelter-dweller during the day and forager at night. Evening movements within the home range are directed; lobsters are aware of their location and can find the way back to the den of origin even if detours are caused by predators or divers. Nomadism is the movement that occurs in juvenile lobsters away from the nursery habitat and to the offshore reefs. Migration is

the direct movement of an entire population or sub-population over a long distance for a given period of time (Herrnkind 1980).

Mass movements (2-60 individuals) of Caribbean spiny lobsters occur annually throughout the geographic range of the species and are dependent on latitude and climactic factors. Observed locations for the migration include Bermuda in October, the Bahamas and Florida in late October and early November, and the Yucatan and Belize in December (Herrnkind 1985). This mass migratory behavior is thought to have evolved in response to deteriorating conditions that resulted from the periods of glaciations that occurred over the past several 100,000 years. Thus, the migration and queuing behavior became specialized by the natural selection on individuals of the harsh winters during periods of glaciations. Gonads are inactive during the migration in the fall, and don't begin to mature until the late winter (Herrnkind 1985).

The first autumn storm in the tropics usually brings a drop in water temperature of about 5°C, as well as high northerly winds of up to 40 km/h and large sea swells. The shallow regions that the lobsters exploit during the summer months become turbid and cold, initiating the diurnal migration of thousands of lobsters to evade these conditions. The Caribbean spiny lobster is highly susceptible to severe winter cooling and will exhibit reduced feeding and locomotion at temperatures 54-57 ºF (12-14 ºC); molting individuals usually perish under these conditions. According to Herrnkind (1985), the behavioral changes observed in Caribbean spiny lobster as well as the known biological information about the species lends credence to the idea that individuals migrate to evade the stresses of the cold and turbidity in the winter. Biologically, the queuing behavior is an important hydrodynamic drag-reduction technique for the migration of individuals over long distances (Bill and Herrnkind 1976). Studies done by tagging individuals found that during the migration, individuals tended to move distances of 19-31 statute miles (30-50 km; Herrnkind 1985).

Migratory movement lasts for variable periods of time and is believed to be dependent on the total number of migratory lobsters. One study in the Bahamas in 1971 found the migration to take six hours while another study in the same location in 1969 found the migration to take five days. It is thought that the more lobsters present, the longer the migration will last to avoid overcrowding of shelters at their final destination (Kanciruk and Herrnkind 1978). After individuals reach sheltered habitats located in deeper water, such as a deep reef site, the migratory queuing behavior ends and the lobsters disperse.

Other Species in the Family Palinuridae

The spotted spiny lobster range includes the western Atlantic, Bermuda, Bahamas, South Florida, Belize, Panama, and Venezuela, as well as the Caribbean from Cuba to Trinidad, Curacao, and Bonaire (Figure 3.3.1.5). This species prefers shallow water and inhabits rocky areas, mainly in crevices. Maximum total body length recorded is 8 in (20 cm), but the average total body length for this species is 6 in (15 cm; FAO Fisheries Synopsis 1991). This species is occasionally caught in traps typically set for other species, such as the Caribbean spiny lobster (FAO Fisheries Synopsis 1991).

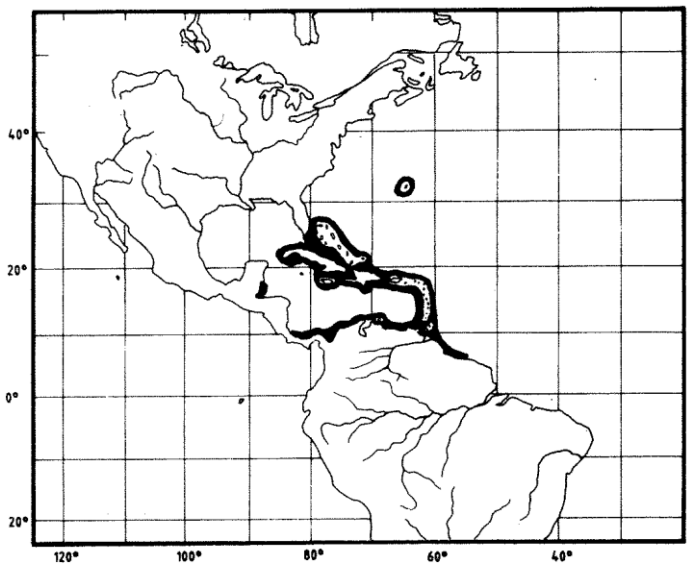


Figure 3.3.1.5. Distribution of spotted spiny lobster.
Source: FAO Fisheries Synopsis (1991).

The smoothtail spiny lobster range includes the western Atlantic, Bermuda, South Florida, down into Brazil, as well as Central America, and the Caribbean (Figure 3.3.1.6). This species is found in coastal waters, as deep as 164 ft (50 m) and prefers rock or coral reef substrate as habitat. Maximum total body length recorded is 12 in (31 cm), but the average total body length for this species is 8 in (20 cm). Sometimes smoothtail spiny lobsters are taken together with Caribbean spiny lobster. The largest yield for this species is in Brazil (FAO Fisheries Synopsis 1991).

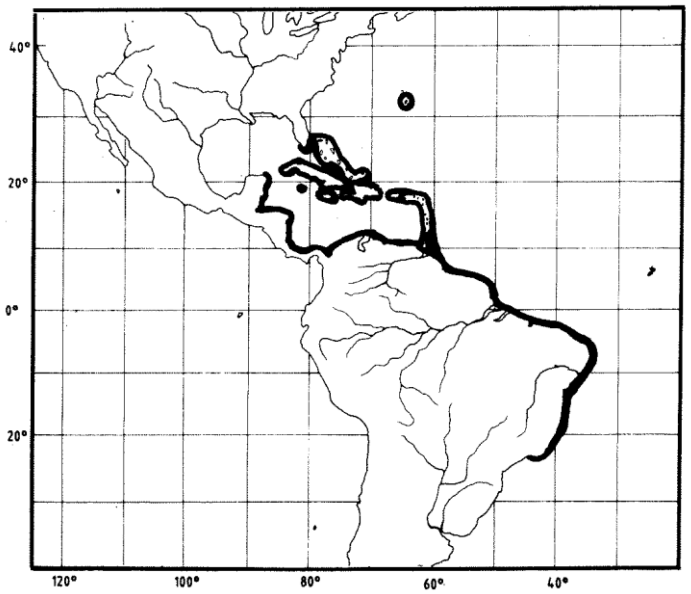


Figure 3.3.1.6. Distribution of smoothtail spiny lobster.
Source: FAO Fisheries Synopsis (1991).

Family Scyllaridae

Spanish slipper lobsters are distributed in the western Atlantic Ocean, as far north as South Carolina down to Brazil including Bermuda, the Gulf of Mexico, and the Caribbean (Figure 3.3.1.7). This species depth distribution ranges from 2 to 591 ft (0.6 to 180 m), usually between 2 to 210 ft (0.6 and 64 m). This species preferred habitat is sand or rocks, often on high-relief coral reefs in crevices (FAO Fisheries Synopsis 1991; Sharp et al. 2007). The animals are sluggish and nocturnal and feed on algae and detritus. They bury themselves in the sand. Maximum total body length recorded is 12 in (31 cm), but average carapace length is 5 in (12 cm; FAO Fisheries Synopsis 1991; Sharp et al. 2007).

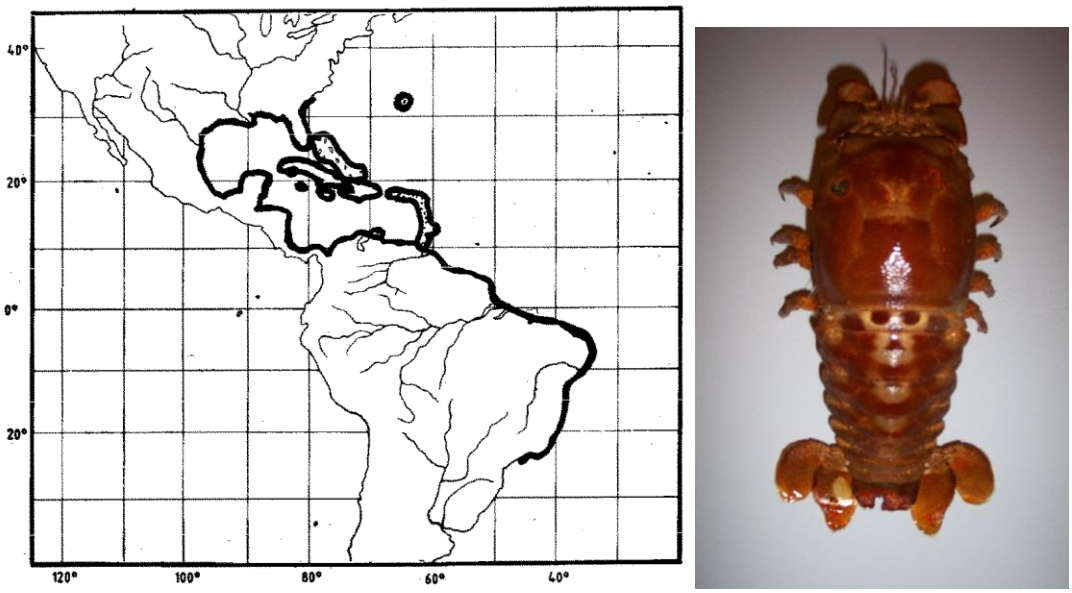


Figure 3.3.1.7. Distribution and photograph of Spanish slipper lobsters.
Source: FAO Fisheries Synopsis (1991); Photograph by J. Hunt (2009).

Ridged slipper lobsters are distributed throughout the western Atlantic Ocean, south of Cape Lookout, North Carolina, Bermuda, and the entire Gulf of Mexico (Figure 3.3.1.8). This species is typically found in the Florida Keys and Dry Tortugas (FAO Fisheries Synopsis 1991). Ridged slipper lobster depth distribution ranges between 6.5 to 299 ft (2 and 91 m) and they prefer sandy substrate, sometimes mixed with mud, shell, or corals. They are often found on low-relief coral reefs and bury themselves in sediments during daylight hours (Sharp et al. 2007). Maximum total body length recorded is 14 in (35 cm), but average carapace length is 4.3 in (11 cm; FAO Fisheries Synopsis 1991; Sharp et al. 2007).

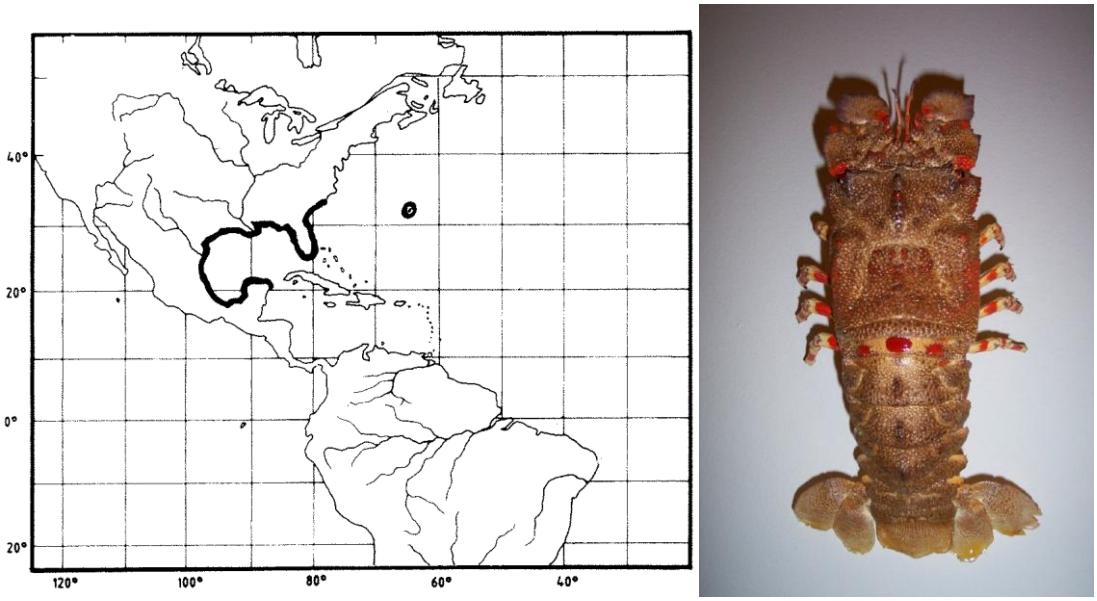


Figure 3.3.1.8. Distribution and photograph of ridged slipper lobster.
Source: FAO Fisheries Synopsis (1991); Photograph by J. Hunt (2009).

3.3.2 Protected Species

There are 32 different species of marine mammals that may occur in the EEZ of the Gulf of Mexico, South Atlantic, and Caribbean. All 32 species are protected under the Marine Mammals Protection Act (MMPA) and six are also listed as endangered under the Endangered Species Act (ESA) (i.e., sperm, sei, fin, blue, humpback and North Atlantic right whales). From 2002-2009, two bottlenose dolphins were entangled in what was likely Caribbean spiny lobster trap gear. During that period, an additional eight bottlenose dolphins in Florida were discovered with entangling trap/pot. The type of gear could not be definitively linked to a target species or specific fishery. No direct interactions between ESA-listed marine mammals and the Caribbean spiny lobster fishery have ever been documented.

Other species protected under the ESA occurring in the Gulf, South Atlantic, and Caribbean include five species of sea turtle (green, hawksbill, Kemp's ridley, leatherback, and loggerhead); the smalltooth sawfish, and two *Acropora* coral species (elkhorn [*Acropora palmata*] and staghorn [*A. cervicornis*]). A discussion of these species is below. Designated critical habitat for the North Atlantic right whale also occurs within the South Atlantic region.

ESA-Listed Sea Turtles
The following sections are a brief overview of the general life history characteristics of the sea turtles found in the Gulf and South Atlantic region. Several volumes exist that cover more thoroughly the biology and ecology of these species (i.e., Lutz and Musick 1997; Lutz et al. 2002).

Green sea turtle hatchlings are thought to occupy pelagic areas of the open ocean and are often associated with *Sargassum* rafts (Carr 1987; Walker 1994). Pelagic stage green sea turtles are

thought to be carnivorous. Stomach samples of these animals found ctenophores and pelagic snails (Frick 1976; Hughes 1974). At approximately 20 to 25 cm carapace length, juveniles migrate from pelagic habitats to benthic foraging areas (Bjorndal 1997). As juveniles move into benthic foraging areas a diet shift towards herbivory occurs. They consume primarily seagrasses and algae, but are also know to consume jellyfish, salps, and sponges (Bjorndal 1980, 1997; Paredes 1969; Mortimer 1981, 1982). The diving abilities of all sea turtles species vary by their life stages. The maximum diving range of green sea turtles is estimated at 110 m (360 ft) (Frick 1976), but they are most frequently making dives of less than 20 m (65 ft.) (Walker 1994). The time of these dives also varies by life stage. The maximum dive length is estimated at 66 minutes with most dives lasting from 9 to 23 minutes (Walker 1994).

The hawksbill's pelagic stage lasts from the time they leave the nesting beach as hatchlings until they are approximately 22-25 cm in straight carapace length (Meylan 1988; Meylan and Donnelly 1999). The pelagic stage is followed by residency in developmental habitats (foraging areas where juveniles reside and grow) in coastal waters. Little is known about the diet of pelagic stage hawksbills. Adult foraging typically occurs over coral reefs, although other hard-bottom communities and mangrove-fringed areas are occupied occasionally. Hawksbills show fidelity to their foraging areas over several years (van Dam and Diéz 1998). The hawksbill's diet is highly specialized and consists primarily of sponges (Meylan 1988). Gravid females have been noted ingesting coralline substrate (Meylan 1984) and calcerous algae (Anderes Alvarez and Uchida 1994), which are believed to be possible sources of calcium to aid in eggshell production. The maximum diving depths of these animals are not known, but the maximum length of dives is estimated at 73.5 minutes. More routinely dives last about 56 minutes (Hughes 1974).

Kemp's ridley hatchlings are also pelagic during the early stages of life and feed in surface waters (Carr 1987, Ogren 1989). Once the juveniles reach approximately 20 cm carapace length they move to relatively shallow (less than 50m) benthic foraging habitat over unconsolidated substrates (Márquez-M. 1994). They have also been observed transiting long distances between foraging habitats (Ogren 1989). Kemp's ridleys feeding in these nearshore areas primarily prey on crabs, though they are also known to ingest mollusks, fish, marine vegetation, and shrimp (Shaver 1991). The fish and shrimp Kemp's ridleys ingest are not thought to be a primary prey item but instead may be scavenged opportunistically from bycatch discards or from discarded bait (Shaver 1991). Given their predilection for shallower water, Kemp's ridleys most routinely make dives of 50 m or less (Soma 1985; Byles 1988). Their maximum diving range is unknown. Depending on the life stage a Kemp's ridleys may be able to stay submerged anywhere from 167 minutes to 300 minutes, though dives of 12.7 minutes to 16.7 minutes are much more common (Soma 1985; Mendonca and Pritchard 1986; Byles 1988). Kemp's ridleys may also spend as much as 96% of their time underwater (Soma 1985; Byles 1988).

Leatherbacks are the most pelagic of all ESA-listed sea turtles and spend most of their time in the open ocean. However, they will enter coastal waters and are seen over the continental shelf on a seasonal basis to feed in areas where jellyfish are concentrated. Leatherbacks feed primarily on cnidarians (medusae, siphonophores) and tunicates. Unlike other sea turtles, leatherbacks' diets do not shift during their life cycles. Because leatherbacks' ability to capture and eat jellyfish is not constrained by size or age, they continue to feed on these species regardless of life

stage (Bjorndal 1997). Leatherbacks are the deepest diving of all sea turtles. It is estimated that these species can dive in excess of 1000 m (Eckert et al. 1989) but more frequently dive to depths of 50 m to 84 m (Eckert et al. 1986). Dive times range from a maximum of 37 minutes to more routines dives of 4 to 14.5 minutes (Standora et al. 1984; Eckert et al. 1986; Eckert et al. 1989; Keinath and Musick 1993). Leatherbacks may spend 74% to 91% of their time submerged (Standora et al. 1984).

Loggerhead hatchlings forage in the open ocean and are often associated with Sargassum rafts (Hughes 1974; Carr 1987; Walker 1994; Bolten and Balazs 1995). The pelagic stage of these sea turtles are known to eat a wide range of things including salps, jellyfish, amphipods, crabs, fish, squid, and pelagic snails (Brongersma 1972). Stranding records indicate that when pelagic immature loggerheads reach 40-60 cm straight-line carapace length they begin to live in coastal inshore and nearshore waters of the continental shelf throughout the U.S. Atlantic (Witzell 2002). Here they forage over hard- and soft-bottom habitats (Carr 1986). Benthic foraging loggerheads eat a variety of invertebrates with crabs and mollusks being an important prey source (Burke et al. 1993). Estimates of the maximum diving depths of loggerheads ranges from 692-764 ft (211 to 233 m; Thayer et al. 1984; Limpus and Nichols 1988). The lengths of loggerhead dives are frequently between 17 and 30 minutes (Thayer et al. 1984; Limpus and Nichols 1988; Limpus and Nichols 1994; Lanyan et al. 1989) and they may spend anywhere from 80 to 94% of their time submerged (Limpus and Nichols 1994; Lanyan et al. 1989).

ESA-Listed Marine Fish

The historical range of the smalltooth sawfish in the U.S. was from New York to the Mexico border. Their current range is poorly understood but believed to have contracted from these historical areas. In the South Atlantic region, they are most commonly found in Florida, primarily off the Florida Keys (Simpfendorfer and Wiley 2004). Only two smalltooth sawfish have been recorded north of Florida since 1963. Historical accounts and recent encounter data suggest that immature individuals are most common in shallow coastal waters less than 25 m (Bigelow and Schroeder 1953, Adams and Wilson 1995), while mature animals occur in waters in excess of 100 m (Simpfendorfer pers. comm.). Smalltooth sawfish feed primarily on fish. Mullet, jacks, and ladyfish are believed to be their primary food resources (Simpfendorfer 2001). Smalltooth sawfish also prey on crustaceans (mostly shrimp and crabs) by disturbing bottom sediment with their saw (Norman and Fraser 1938; Bigelow and Schroeder 1953).

ESA-Listed Marine Invertebrates

Acropora spp. (Figure 3.3.2.1) coral were listed as threatened under the ESA on May 9, 2006. The Atlantic *Acropora* Status Review (*Acropora* Biological Review Team 2005) presents a summary of published literature and other currently available scientific information regarding the biology and status of both these species.

A B

Figure 3.3.2.1 *Acropora* species. A. Elkhorn Coral (*Acropora palmata*). B. Staghorn Coral (*A. cervicornis*).
Photo Credit: W. Jaap

Elkhorn and staghorn corals are two of the major reef-building corals in the wider Caribbean. In the Gulf, South Atlantic, and Caribbean they are found most commonly in the Florida Keys and U.S. Virgin Islands, though colonies exist in Puerto Rico and Flower Gardens National Marine Sanctuary in the Gulf. The depth range for these species is from less than 1 m to 60 m. The optimal depth range for elkhorn is considered to be 1 to 5 m depth (Goreau and Wells 1967), while staghorn corals are found slightly deeper, 5 to 15 m (Goreau and Goreau 1973).

All Atlantic *Acropora* spp. species (including elkhorn and staghorn coral) are considered to be environmentally sensitive, requiring relatively clear, well-circulated water (Jaap et al. 1989). Optimal water temperatures for elkhorn and staghorn coral range from 25-29°C (Ghiold and Smith 1990; Williams and Bunkley-Williams 1990). Both species are almost entirely dependent upon sunlight for nourishment, contrasting the massive, boulder-shaped species in the region (Porter 1976; Lewis 1977) that are more dependent on zooplankton. Thus, Atlantic *Acropora* spp. are much more susceptible to increases in water turbidity than some other coral species.

Fertilization and development of *Acropora* spp. is exclusively external. Embryonic development culminates with the development of planktonic larvae called planulae (Bak et al. 1977; Sammarco 1980; Rylaarsdam 1983). Unlike most other coral larvae, *Acropora* spp. planulae appear to prefer to settle on upper, exposed surfaces, rather than in dark or cryptic ones (Szmant and Miller 2006), at least in a laboratory setting. Studies of *Acropora* spp. indicated that larger colonies of both species[5] had higher fertility rates than smaller colonies (Soong and Lang 1992).

[5] As measured by surface area of the live colony

3.4 Economic Environment

3.4.1 Commercial Fishery

Commercial fishing for Caribbean spiny lobster in Florida has been affected by sharply lower prices in the last two years and by landings that have been the lowest since the early 1960's (Figure 3.4.1.1, Table 3.4.1.1; Vondruska 2010a). Decreased landings are likely due to the increased cost of fuel and decreased prices are likely due to the depressed economy in recent years. Ex-vessel prices decreased sharply to $3.30/lb (ww) in 2009/2010, compared with the 22-year high of $7.94/lb for two years earlier. Based on five-year averages for 1987/1988-1991/1992 and 2005/2006-2009/2010, fishing effort is now much lower than it was (Table 3.4.1.1; Figure 3.4.2.2; Vondruska 2010a):

1) The number of vessels declined from 2,175 to 781 per year.
2) The number of trips declined from 39,086 to 15,568 per year.
3) The number of hours fished declined from 493,211 to 234,292 per year.
4) The number of traps fished on all trips declined from 8.65 to 4.24 million (including duplication, because individual traps are usually fished on more than one trip, unless lost or damaged).
5) Vessel-based estimates for the number of "traps that could be fished" declined from 704,580 to 368,106 traps (excluding duplication attributable to the use of individual traps on multiple trips). The number of traps that could be fished is a proxy for the number of traps licensed to fish for spiny lobster. The number peaked in 1991/1992 at 814,864 traps.

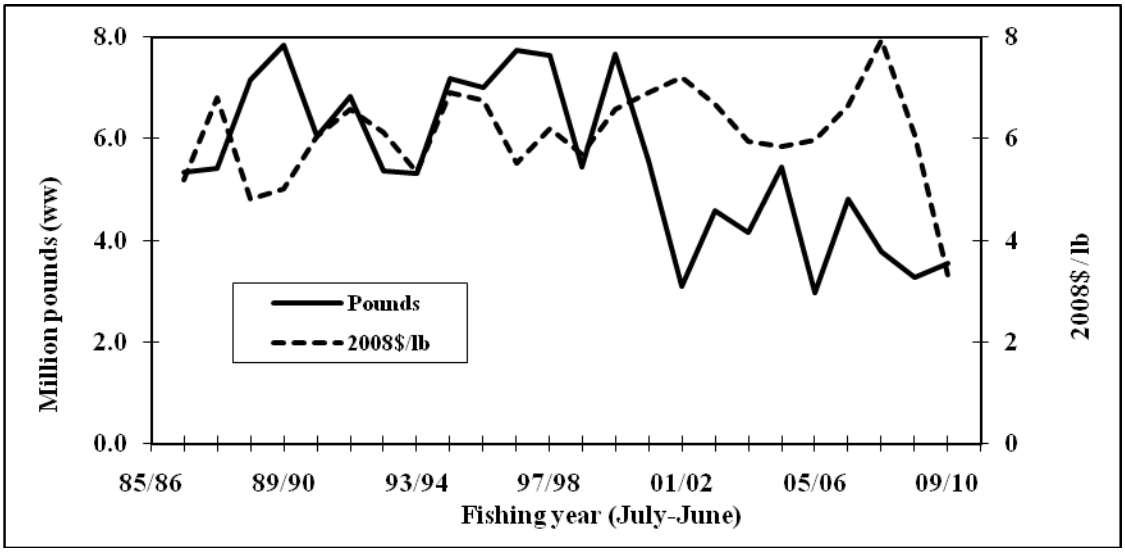


Figure 3.4.1.1 Commercial Florida landings and ex-vessel prices for Caribbean spiny lobster.
Source: FTT data as of Mar 19, 2010 (Vondruska 2010a).

Economic conditions would have been worse without long-term reductions in fishing effort and consequent increases in vessel and trip productivity. Average vessel and trip landings have exhibited flat to upward trends since the early-1990s (Figure 3.4.1.3; Table 3.4.1.1).

Initially, the number of trap certificates was reduced in steps, from 944,000 in 1992 to 543,000 by 1999. Given a decade or so of fisher experience with the program, Shivlani et al. (2004) conducted a survey of fishers and analyzed the economic and social conditions at the fisher level and fisher attitudes about the program. Today, reductions in the total number of certificates occur routinely if certificates are transferred and/or revert to the state because the owner does not pay requisite annual fees for three years. Besides the TCP, other factors have affected commercial fishing for spiny lobster in Florida, such as gentrification, state and local regulations on the storage of traps, and availability and access to docks and dealers.

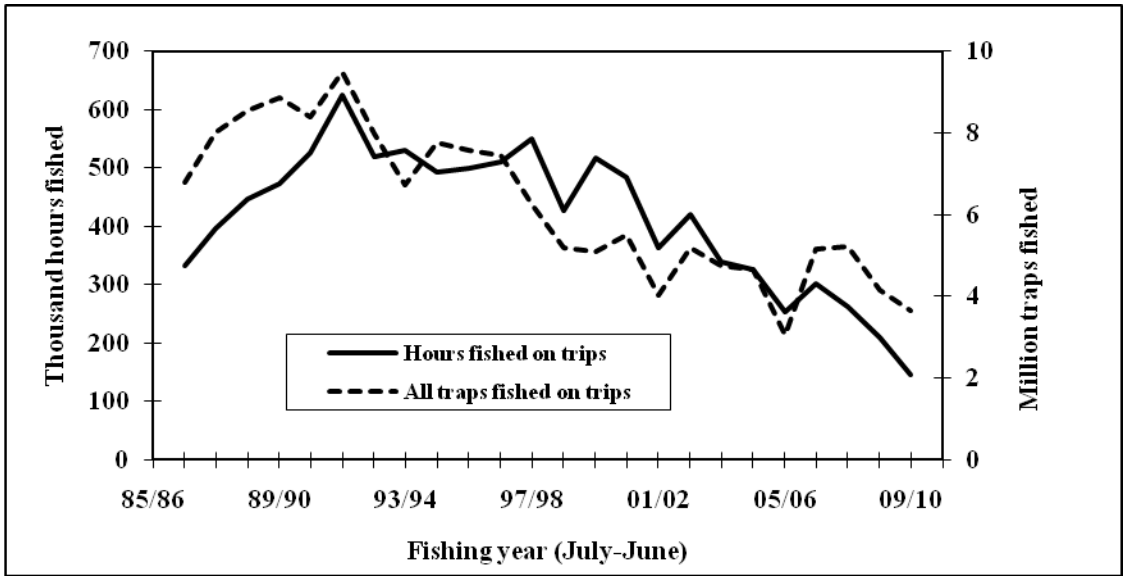


Figure 3.4.1.2 Commercial fishing for Caribbean spiny lobster in Florida, hours and traps fished.

Source: FTT data as of Mar 19, 2010 (Vondruska 2010a).

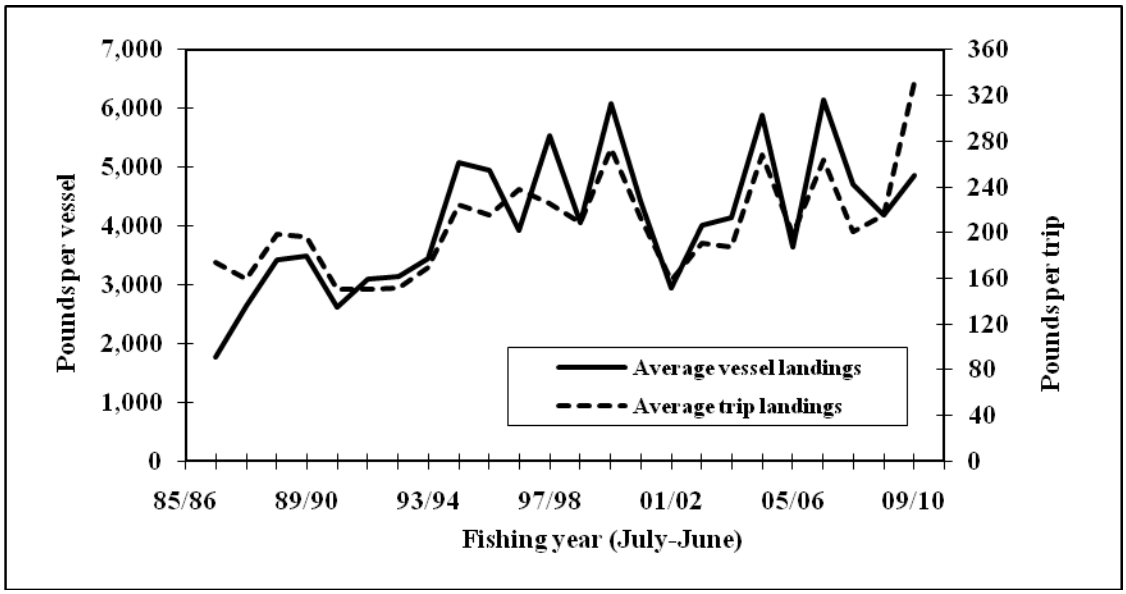


Figure 3.4.1.3 Commercial fishing for Caribbean spiny lobster in Florida, vessel and trip landings.

Source: FTT data as of Mar 19, 2010 (Vondruska 2010a).

Table 3.4.1.1. Florida commercial fishing statistics for Caribbean spiny lobster.

Fishing year (July-June)	Landings (ww), Caribbean spiny lobster						
	Thousand pounds	Thousand 2008$	2008$ /lb	Vessels	Lbs / vessel	Trips	Lbs / trip
86/87	5,351	$27,786	$5.19		1,762	30,696	174
87/88	5,417	$36,833	$6.80	2,045	2,649	34,005	159
88/89	7,154	$34,327	$4.80	2,086	3,430	36,021	199
89/90	7,830	$39,229	$5.01	2,244	3,489	39,935	196
90/91	6,044	$36,523	$6.04	2,300	2,628	40,194	150
91/92	6,834	$45,018	$6.59	2,200	3,106	45,276	151
92/93	5,367	$32,804	$6.11	1,702	3,153	35,387	152
93/94	5,309	$28,362	$5.34	1,536	3,457	31,283	170
94/95	7,181	$49,553	$6.90	1,411	5,090	32,093	224
95/96	7,017	$47,295	$6.74	1,419	4,945	32,546	216
96/97	7,748	$42,675	$5.51	1,968	3,937	32,591	238
97/98	7,641	$47,373	$6.20	1,382	5,529	33,906	225
98/99	5,448	$30,980	$5.69	1,342	4,060	26,012	209
99/00	7,669	$50,402	$6.57	1,260	6,086	27,947	274
00/01	5,570	$38,391	$6.89	1,259	4,424	26,111	213
01/02	3,081	$22,186	$7.20	1,047	2,943	19,528	158
02/03	4,574	$30,529	$6.68	1,140	4,012	23,960	191
03/04	4,161	$24,773	$5.95	1,003	4,149	22,088	188
04/05	5,445	$31,799	$5.84	926	5,880	20,295	268
05/06	2,964	$17,666	$5.96	814	3,642	14,901	199
06/07	4,799	$31,913	$6.65	780	6,152	18,184	264
07/08	3,782	$30,025	$7.94	803	4,710	18,858	201
08/09	3,271	$19,836	$6.06	780	4,194	15,238	215
09/10	3,541	$11,695	$3.30	727	4,870	10,660	332
5-yr aver							
87/88-91/92	6,656	$38,386	$5.85	2,175	3,060	39,086	171
05/06-09/10	3,671	$22,227	$5.98	781	4,714	15,568	242

Source: FTT data as of Mar 19, 2010 (Vondruska 2010a).

Economic Impacts

Descriptions of the commercial fishery for Caribbean spiny lobster are contained in Vondruska (2010a), Vondruska (2010b), and CFMC (2008) and are incorporated herein by reference. Select summary statistics for the commercial fishery are provided in Table 3.4.1.2, and estimates of economic impacts (economic activity) are provided in Table 3.4.1.3.

Estimates of the average annual economic activity associated with the commercial Caribbean spiny lobster fishery were derived using the model developed for and applied in NMFS (2009) and are provided in Table 3.4.1.3. Business activity for the commercial sector is characterized in the form of full-time equivalent (FTE) jobs, income impacts (wages, salaries, and self-employed income), and output (sales) impacts (gross business sales). Income impacts should not be added to output (sales) impacts because this would result in double counting.

Table 3.4.1.2. Five-year average performance statistics for the commercial sector of the Caribbean spiny lobster fishery.

	Vessels	Total Lobster Ex-vessel Value[2] (millions)	Total All Species Ex-vessel Value[2] (millions)	Average Ex-vessel Value per Vessel
2005-2010 Average[1]	781	$22,227	$23,399	$29,960

[1]Fishing-year (2005/2006, 2006/2007, 2009/2010).
[2]2008 dollars.
Source: Florida Trip Ticket System and NMFS SEFSC Accumulated Landings System.

Table 3.4.1.3. Average annual economic activity associated with the Caribbean spiny lobster fishery.

Species	Average Ex-vessel Value[1] (millions)	Total Jobs	Harvester Jobs	Output (Sales) Impacts (millions)	Income Impacts (millions)
Spiny Lobster	$22.23	4,223	580	$293,188	$125,382
- All Species[2]	$23.40	4,445	611	$308,647	$131,993

[1]2008 dollars.
[2]Ex-vessel revenues and economic activity associated with the harvests of all species harvested by vessels that harvested spiny lobster.

As noted in Table 3.4.1.3, the annual period refers to the fishing year, as appropriate to the management of the species. The estimates of economic activity include the direct effects (effects in the sector where an expenditure is actually made), indirect effects (effects in sectors providing goods and services to directly affected sectors), and induced effects (effects induced by the personal consumption expenditures of employees in the direct and indirectly affected sectors). Estimates are provided for the economic activity associated with the ex-vessel revenues from Caribbean spiny lobster as well as the revenues from all species harvested by these same vessels.

Permits

There are two kinds of federal commercial permits for fishing for spiny lobster in the EEZ, one of which allows possessing and landing whole lobster, while the other allows possessing and landing tails. The number of vessels with federal spiny lobster permits averaged 200 in the last five calendar years, while the number of vessels with federal tailing permits averaged 454, with most having home ports in Florida. The distribution of permitted vessels by “home-port” state in Table 3.4.1.4 differs from what might be expected based on commercial landings and effort data.

Table 3.4.1.4 Number of federal permits for fishing for Caribbean spiny lobster in the EEZ.
LC=federal lobster permits, LT=federal lobster tailing permits.

	Spiny lobster (LC permits)						Spiny lobster tailing (LT permits)					
State	2005	2006	2007	2008	2009	Total	2005	2006	2007	2008	2009	Total
AL	1	2	7	9	10	29	8	7	11	12	12	50
FL	153	139	151	179	195	817	407	390	385	381	376	1,939
GA	2	2	5	6	6	21	5	5	7	7	9	33
LA	3	1		1	1	6	2	1	1	2	1	7
MA	5	5	3	3	3	19	3	3	3	4	4	17
MS					1	1			1	1	2	4
NC	6	6	9	17	29	67	10	16	24	31	39	120
NJ	1	2	2	3	3	11	3	4	4	4	4	19
NY			1	1	1	3	1	1	1	1	2	6
PA							1	1	1	1	1	5
SC				1	2	3	4	4	1	5	13	27
TX		1	1	1	2	5	11	11	3	2	2	29
VA	1	1	5	5	5	17	1	1	5	4	5	16
Total	172	159	184	226	258	999	456	444	447	455	470	2,272

Source: NMFS, SERO, Permits Office, Feb, 3, 2011. State refers to a vessel's home port state, which is not necessarily the state in which its landings may occur.

Virtually all commercial landings of Caribbean spiny lobster occur in Florida, with landings in other states being relatively low since 1977 (see Section 3.1). During the last five fishing years, an average of 781 vessels commercially landed 3.671 mp (ww) per year in Florida, including 3.282 mp in Monroe County, and 0.670 mp from the EEZ (Tables 3.4.1.1 and 4.9.2.1). It is estimated that an annual average of 34.8 vessels in the last five years landed 0.025 mp (ww) of Carribean spiny lobster tails in Florida, with landings of 0.057 mp (ww) for whole lobster and tails for the same trips (Table 4.8.2.1, see footnote on methodology).

The estimated number of vessels with landings of tails, 34.8 vessels, is much lower than the number with permits to do so, 454 vessels (388 vessels in Florida) (Tables 4.8.2.1 and 3.1.3.3). The reasons are not known. Perhaps commercial fishing vessel operators obtain tailing permits along with other federal permits as a low-cost precaution, should the happen to need to retain tails onboard. Perhaps, a loophole in federal and state regulations may have allowed an unknown number of tailing permits be held by for-hire fishing vessels, other for-hire vessels, and/or private recreational vessels. This loophole would be removed under Action 8, Preferred Alternative 3. Current FWC methods for collecting data on recreational landings of spiny lobster do not provide data on the effort, catch, and landings of tailed spiny lobsters (R. Muller, FWC, pers. comm.). It is noted that for Monroe County, the number of recreational vessels registered increased from 4,000 in 1971 to 23,340 in 2000, and to 25,370 in 2007 and that the number of commercial fishing vessels declined by 17.3% to 2,653 between 2007 and 2008 (Shivlani 2009). Not all for-hire fishing vessels, other for-hire vessels, and private recreational vessels engage in fishing, but those that do could account for some federal spiny lobster tailing permits for fishing in the EEZ.

3.4.2 Recreational Fishery

Number and Description of Recreational Fishers

From the 1990/1991 to 1994/1995 seasons, an average of 110,000 persons purchased a Florida crawfish permit. Sharp et al. (2005) estimated that the number of permit holders that fished during the special two-day sport season from 1993 through 2002 ranged from approximately 32,500 to approximately 57,000 and that the number permit holders that fished at some time during the first month of the regular season ranged from approximately 49,000 to 78,000 over those same years.

The FWC included a socioeconomic component in its 1992 recreational lobster survey. Recreational fishers were asked how much they would be willing to pay to avoid a decrease in the bag limits and how much they would be willing to pay to have an increase in the bag limits. The least they were willing to pay to avoid the bag limits was $0.94 per lobster (in 1992 dollars) and to increase the bag limits was $0.37 per lobster (in 1992 dollars).

Because fewer people actually fish than have saltwater fishing licenses and permits to do so, the numbers of permits in Table 3.4.2.1 provide upper-end approximations for the potential number of recreational fishers for spiny lobster from 1995/1996 through 2009/2010. The number of permits may suggest an upward trend in recreational fishing activity, at least through 2007/2008, but landings and effort have been mostly lower in 2001/2002 onward than in the 1990s (landings, effort and CPUE in Figures 3.1.3.3 and 3.13.4; numbers of permits in Table 3.4.2.1). These indicators reflect weakened national economic conditions in the last two to three years. The status, numbers, and landings for SRCLs are discussed in Section 3.1.2 and Table 3.1.2.1.

Presently, the cost of a resident Florida saltwater fishing license is $17.00, which is valid for one year but does not include lobster fishing privileges ($79 for a five-year permit), and the cost of a resident lobster (crawfish) permit is $5.00 ($25.00 for a five-year permit; see http://myfwc.com/license/licpermit_swfishing.htm). The recreational lobster permit is required of all fishers 16 years and older, but not Florida residents who are 65 years or older. A permit is not required for recreational fishing in the EEZ.

Table 3.4.2.1. Number of valid Florida recreational fishing licenses/permits by fishing year.

Fishing year	Annual & 5-year Crawfish Permits	Sportsman Gold (Annual)	Military Gold (Annual)	Lifetime Sportsman	Lifetime Saltwater
95/96	112,627			1,772	654
96/97	120,651			1,838	824
97/98	139,553			939	1,012
98/99	130,812			1,096	1,237
99/00	135,146			1,253	1,493
00/01	137,219			1,417	1,735
01-02	128,256			1,597	2,000
02/03	123,003	8,370		1,826	2,319
03/04	136,163	15,007		2,097	2,626
04/05	130,358	17,874		2,352	2,962
05/06	136,888	20,075	6,556	2,708	3,320
06/07	143,362	21,643	7,425	3,049	3,784
07/08	146,988	20,597	8,849	3,158	4,258
08/09	141,876	19,384	10,996	3,530	5,010
09/10	129,865	15,283	10,805	3,941	6,001

*Data for 09/10, as of July 2010. Note: Annual data for those licenses that give the owner recreational lobster fishing privileges under lifetime and five-year permits are cumulative. The Lifetime Sportsman and Lifetime Saltwater Permit values do not include those older than 64 or younger than 16 years of age.
Source: W. Sharp, FWC, pers. comm.

Charter-fishing vessels may take 25-30 divers per trip, with perhaps three trips per day (R. Muller, FWC, pers. comm.). Charter-fishing vessel fulfill Florida requirements for paying passengers who fish for lobster, but without their own licenses and permits.

Economic Impacts

The recreational spiny lobster fishery is very important to Monroe County. In 2001, additional socio-economic questions were added on to the annual survey. Almost 230 thousand (229,395) person-days of recreational lobster fishing occurred that year in Monroe County. Of those person-days, approximately 75% (171,127) were during the regular season, and the remaining 58,268 person-days (25%) were during the two-day sport season. Approximately 79% of those person-days (180,123) were attributed to visitors of Monroe County and the remaining 21% (49,272 person-days) to residents (Table 3.4.2.2).

Table 3.4.2.2. Average Expenditures per Person-Day in 2001.

Season	Person Days		Ave. Exp. Per Person-Day		Total Expenditures (2001 Dollars)		
	Resident	Visitor	Resident	Visitor	Resident	Visitor	Total
Two-Day	12,306	45,962	$33.99	$129.41	418,281	5,947,942	6,366,223
Regular	36,966	134,161	$42.83	$122.35	1,583,254	16,414,598	17,997,852
Total	49,272	180,123	$40.61	$124.15	2,000,936	22,362,270	24,363,206

Source: Sharp et al. 2005.

Visitors spend substantially more per person-day than residents of Monroe County, and visitors spend slightly more during the two-day sport season than regular season (Table 3.4.2.2). Sharp et al. (2005) estimate approximately $24 million was spent on recreational lobster fishing in the Florida Keys from the opening of the recreational season through the first Monday in September in 2001. Fishers who resided outside the Keys accounted for about $22 million (92%) of the total monies spent on recreational lobster fishing in the Keys.

3.5 Social Environment

The demographic description of the social environment is presented primarily at the county level for south Florida counties and will include a brief discussion of the communities within in those counties that are most reliant upon spiny lobster, both commercially and recreationally. The focus on south Florida is due to the nature of the fishery which is prosecuted primarily in Miami-Dade and Monroe Counties. Communities chosen for more detailed description were chosen based upon their ranking within what is called their "regional quota" (rq) the proportion of landings and value of community landings out of total landings for the region. Those communities where their "rq" was very low were not considered for further description. This excluded communities from other states as their landings were well below the top fifteen communities which is further evidence of a highly localized fishery.

Utilizing demographic data at the county level will allow for updated statistics from the Census Bureau, which produces estimates for geographies (counties; minor civil divisions; census designated places, etc.) that are larger than 20,000 prior to the decennial census.[6] Estimates for smaller geographies were not available at this time. Because employment opportunities often occur within a wider geographic boundary than just the community level, a discussion of various demographics within the county is appropriate and will be used to address environmental justice concerns. A more detailed description of environmental justice concerns will be at the end of this section. The county descriptions will correspond with recent research that was also conducted at the county level concerning social vulnerability and is described below.

The county-level description will focus primarily on the demographic character while fishing activity at the community level will be described where needed. A brief discussion of coastal growth and development that seems to affect many coastal communities, especially those with

[6] American Community Survey estimates are based on data collected over a three year time period. The estimates represent the average characteristics of population and housing between January 2006 and December 2008 and do not represent a single point in time. Because these data are collected over three years, they include estimates for geographic areas with populations of 20,000 or more.

either or both commercial and recreational working waterfronts that might be reflected in those demographic statistics is also included. This is especially true for Monroe County which has very limited land area and has seen a steady rise in land values. Recent research on the Key's communities (Shivalani 2010) has described the problem of increasing land values and disappearance of working waterfronts, especially for communities like Key West. The rapid disappearance of these types of waterfronts has important implications as the disruption of various types of fishing-related businesses and employment affect fisheries overall. The process of "gentrification," which tends to push those of a lower socio-economic class out of traditional communities as property values and taxes rise, has become common along coastal areas of the U.S. and around the world. Working waterfronts tend to be displaced with development that is often stated as the "highest and best" use of waterfront property, but often is not associated with water-dependent occupations. However, with the continued removal of these types of businesses over time, the local economy becomes less diverse and more reliant on the service sector and recreational tourism. As home values increase, people within lower socio-economic strata find it difficult to live within these communities and eventually must move. Consequently they spend more time and expense commuting to work, if jobs continue to be available. Newer residents often have no association with the water-dependent employment and may see that type of work and its associated infrastructure as unappealing. They often do not see the linkage between those occupations and the aesthetics of the community that produced the initial appeal for many migrants. The demographic trends within counties can provide some indication as to whether these types of coastal change may be occurring if an unusually high rate of growth or change in the demographic character of the population is present. A rise in education levels, property values, fewer owner occupied properties and an increase in the median age can at times indicate a growing process of gentrification.

Although the most recent estimates of census data have been used here, many of the statistics related to the economic condition of counties or communities do not capture the recent downturn in the economy which may have significant impacts on current employment opportunities and business operations. Therefore, in the descriptions of both counties and communities, it should be understood that in terms of unemployment, the current conditions could be worse than indicated by the estimates used here. To be consistent, census data are used for the various demographic characteristics and as noted earlier are limited to the most recent estimates which are an average for 2006-2008. Other aspects of trade and market forces as a result of the economic downturn could also affect the business operations of vessels, dealers, wholesalers and retail seafood businesses for the commercial sector and charter services and other support services for the recreational fishery. These may not be reflected in the demographic profile provided here.

Marine Related Employment

Other county level tables provide summaries of marine related employment within the coastal counties of South Florida. These estimates provide the number of sole proprietors (# Prop) and the number of employed persons (# Emp) for various sectors associated with employment in the marine environment. These categories were chosen because the occupations that are represented within each sector often include fishing related activities or fishing related support activities. For instance, the sector entitled Scenic Water includes charter fishermen within the estimate. The sector Shipping includes various shipping containers that would be used by fish houses and

others to handle seafood. While these estimates do not encompass all employment related to fishing and its support activities, it does provide some estimate of the amount of activity associated with employment related to both recreational and commercial fishing.

Social Vulnerability

In the map below, the counties in South Florida are shown with fishing communities identified in each. Each county has also been geocoded with regard to social vulnerability as measured by Social Vulnerability Index (SoVI). Those counties most vulnerable are shaded with light and darker red tones while those least vulnerable are shaded in lighter and darker blue tones. The yellow shading represents medium vulnerability. The Index was created by the Hazards Research Lab at the University of South Carolina (Cutter et al. 2003) to understand how places that are susceptible to coastal hazards might also exhibit vulnerabilities to social change or disruptions. These vulnerabilities may come in the form of high unemployment, high poverty rates, low education and other demographic characteristics. In fact, the SoVI is an index that consists of 32 different variables combined into one comprehensive index to measure social vulnerability. Although the SoVI was created to understand social vulnerability to coastal environmental hazards, it can also be interpreted as a general measure of vulnerability to other social disruptions, such as adverse regulatory change or manmade hazards. This does not mean that there will be adverse effects, only that there may be a potential for adverse effects under the right circumstances. Fishing communities in these vulnerable counties may have more difficulty adjusting to regulatory changes if those impacts affect employment or other critical social capital. At present, a social vulnerability index is being created for fishing communities in the Southeast region with more timely data (the SoVI uses 2000 census data). Until that index is completed, the SoVI will substitute at the county level for a measure of vulnerability for those communities that are within the boundaries of a particular coastal county. This concept is closely tied to environmental justice and the thresholds associated with that are addressed below.

Fishing Communities

The communities displayed in Figure 3.5.1 below represent a categorization of communities based upon their overall value of local commercial landings divided by the overall value of commercial landings. These data were assembled from the accumulated landings system which includes all species from both state and federal waters landed in 2008. All communities were ranked on this "regional quotient" and divided by those who were above the mean and those below. Those above the mean were then divided into thirds with the top tier classified as Primarily Involved in fishing; the second tier classified as Secondarily Involved; and the third classified as being Tangentially Involved. The communities included within the map were only those communities that were categorized as primarily or secondarily involved. This breakdown of fisheries involvement is similar to the how communities were categorized in the community profiling of South Atlantic fishing communities (Jepson et al. 2005). However, the categorization within the community profiles included other aspects associated with fishing such as infrastructure and other measures to determine a community's status with regard to reliance upon fishing. While these communities represent all fishing, communities those that are more involved in the spiny lobster fishery are represented in more depth within their respective county description.

A further breakdown of community landings is provided for those communities which have substantial landings of spiny lobster as evidenced by their local quotient (lq) which is the amount of landings and value out of the total landings for the community. This provides an indication of how reliant a community may be on a particular species.

Although it is difficult to place recreational landings within a community, a table is provided below with recreational fishing communities that have been identified by their ranking on a number of criteria including number of charter permits per thousand population and recreational fishing infrastructure as listed under the Marine Recreational Information Program (MRIP) survey identified within each community. Because the recreational lobster fishery is such an important part of the Florida Keys economy, most every Keys community might be considered a recreational fishing community. This list of recreational fishing communities is not exhaustive and should be considered a guide to where substantial recreational fishing activity may take place.

Southern Florida Counties

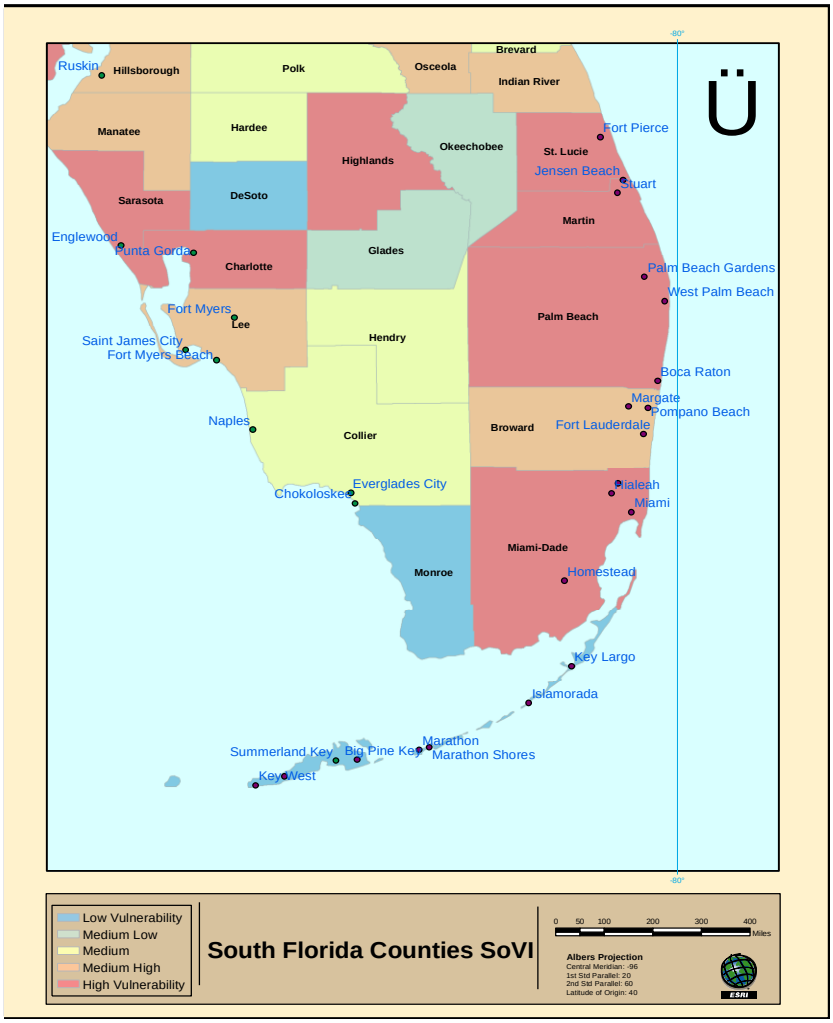


Figure 3.5.1. The Social Vulnerability Index applied to South Florida Counties.
Source: http://webra.cas.sc.edu/hvri/products/sovi.aspx#.

Table 3.5.1. Marine Related Employment for 2007 in South Florida Coastal Counties.

Florida County	Broward		Miami-Dade		Monroe		Palm Beach		Collier	
Sector	# Prop	# Emp	# Prop	# Emp	# Prop	# Emp	# Prop	# Emp	# Prop	# Emp
Boat Dealers	253	.	108	.	23	.	108	.	26	
Seafood Dealers	.	406	.	.	.	112	.	46		38
Seafood Harvesters	228	.	396	.	934	.	287	.	176	
Seafood Retail	28	291	79	.	7	7	18	57		14
Marinas	.	707	34	.	.	191	10	887		204
Processors	0	142	.	.	0	.	.	176		
Scenic Water	.	313	.	.	.	315	.	94		97
Ship Boat Builders	.	776	.	.	.	17	.	100		
Shipping Support	.	1557	.	.	.	67	.	756		7
Shipping		995	.	.	.	35		69		5

Source: Census Bureau 2010

Gulf Counties

Of those commuities in the Gulf with landings of Caribbean spiny lobster, Key West leads with over 50% of the pounds and close to 50% of the value of total Gulf landings or regional quota (rq) (Figure 3.5.2). Marathon is second with over 30% of both landings and value in the Gulf.

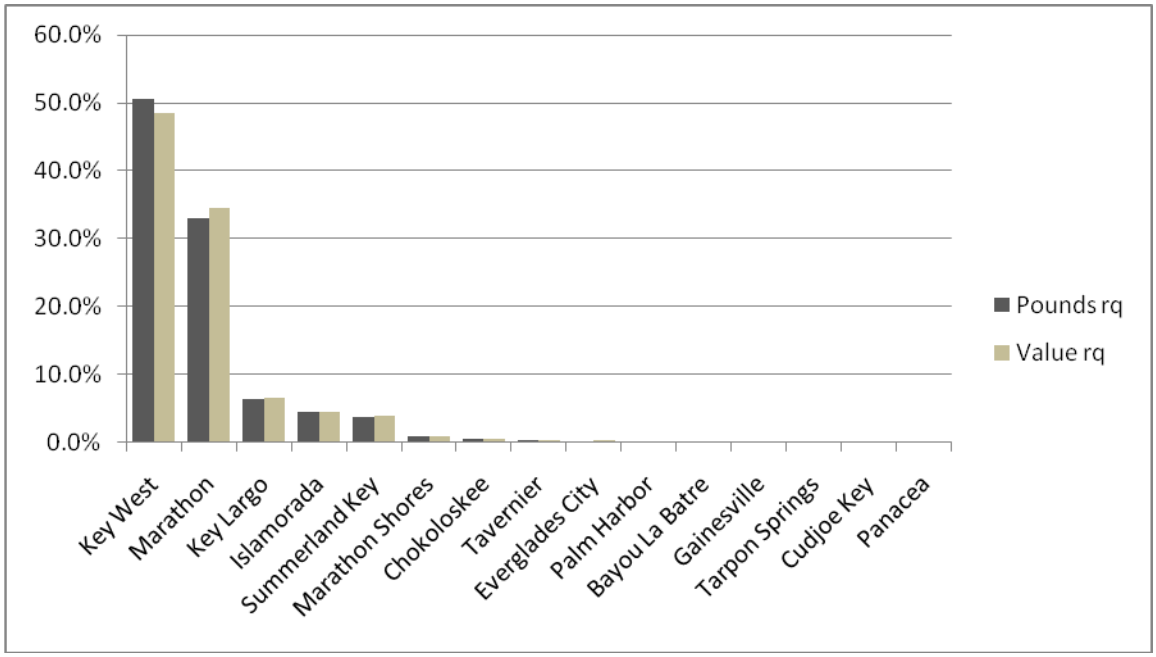


Figure 3.5.2. Proportion of spiny lobster commercial landings and value by total spiny lobster landings and value for Gulf Coast Communities.

Source: ALS 2008.

The next four communities have less than 10% each and are: Key Largo, Islamorada, Summerland Key and Marathon Shores. Chokoloskee and Everglades City in Collier County are the two highest landing communities on the mainland, both with less than 1% of the Gulf total. These communities are featured under their respective county descriptions.

Monroe County

Monroe County had a total population of 79,589 in 2000 that is estimated to have fallen to 74,397 by 2007. The majority of residents was identified as White (92.0%) in 2000 and was estimated to have dropped slightly to 90.4% in 2007. The Hispanic population has grown from 16.0 % in 2000 to 18.0% in 2007. Florida as a state had an estimated 77.8% White population and Hispanics made up 20.5% of its total population. The White alone population for the state was estimated to be 60.7% in 2007. The median age for residents of Monroe County was estimated to have been 47.2, which is slightly higher than it was in 2000 when it was 43.0. The median age for Florida was 38.7 in 2000 and was estimated to have increased to 40.1 by 2007 so Monroe County's median age is considerably older than the state as a whole. There was an estimated 2.8% of the population in the civilian force that was estimated to be unemployed in Monroe County, which was quite a bit lower than the state's unemployment rate of 6.4%. The percentage of persons below the poverty level was estimated at 10.1% which was below the 12.6% for the state as a whole during 2007. Monroe County had a slightly higher owner-occupied housing rate than the state with slightly over 71.2% of owner occupied housing to the state's 70.3% estimated for 2007 (U.S. Census Bureau).

Of the Monroe County communities, Key West is by far the leader in Caribbean spiny lobster landings as shown in Figure 3.5.2. Caribbean spiny lobster landings have by far more value than any other fishery or component fishery making up over 50% of total landings value for the community (Figure 3.5.3). Pink shrimp is second in value, but first in terms of pounds landed within the community.

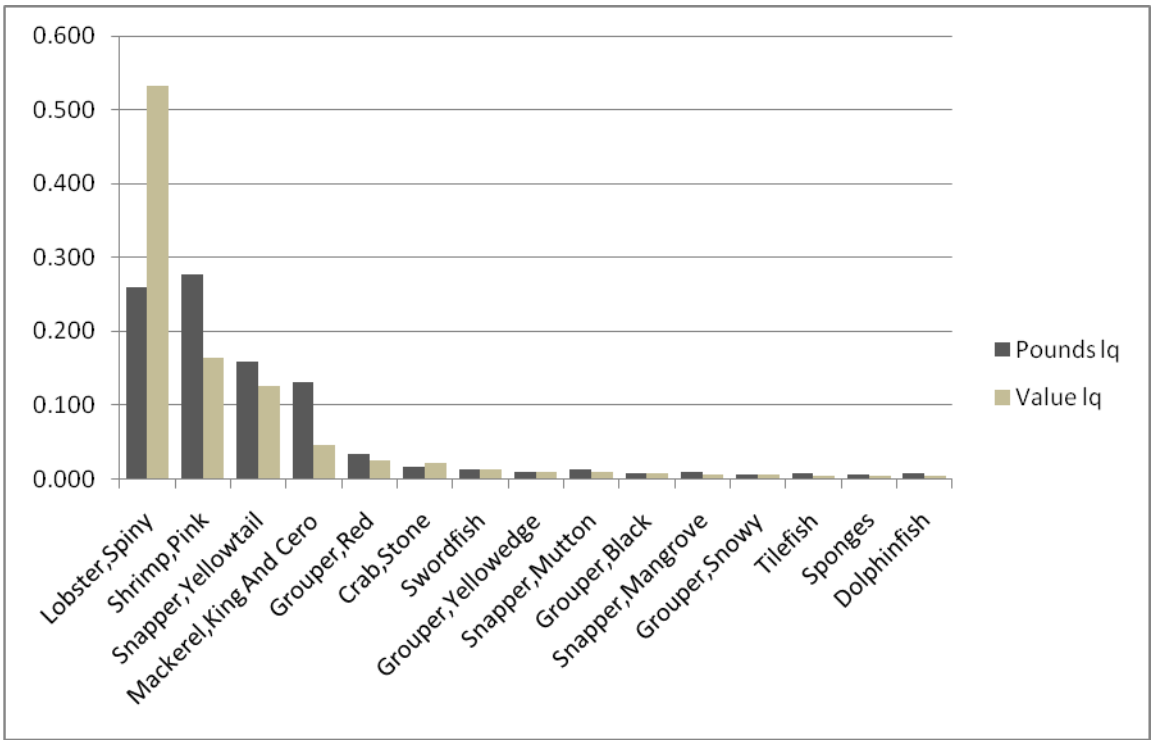


Figure 3.5.3. Proportion (lq) of landings and value for top fifteen species out of total landings and value for Key West, Florida.
Source: ALS 2008.

The community of Marathon has a significant amount of local quotient value derived from spiny lobster with over 60% of total landings value coming from Caribbean spiny lobster and 40% of landings in 2008 (Figure 3.5.4). Stone crab landing are almost equal to lobster, but value is far greater for spiny lobster.

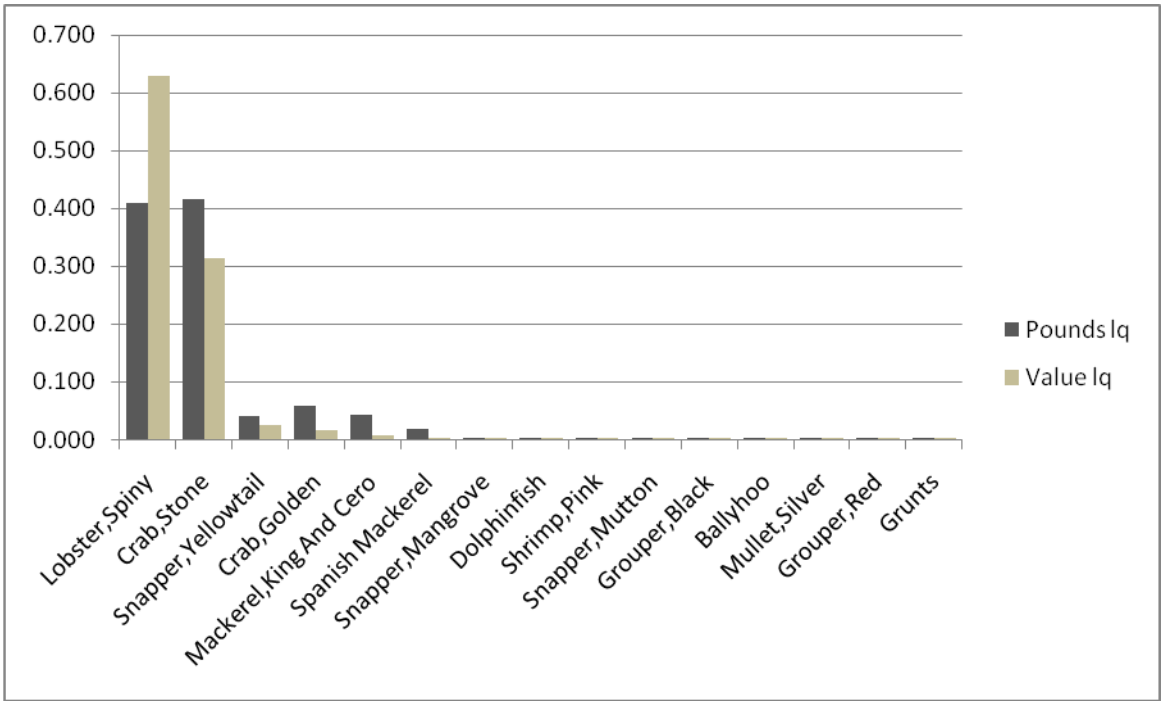


Figure 3.5.4. Proportion (lq) of landings and value for top fifteen species out of total landings and value for Marathon, Florida.
Source: ALS 2008.

The community of Key Largo also recieves considerable value from Caribbean spiny lobster with over 50% of the value from all landings coming from that species which comprises less than 20% of all landings (Figure 3.5.5).

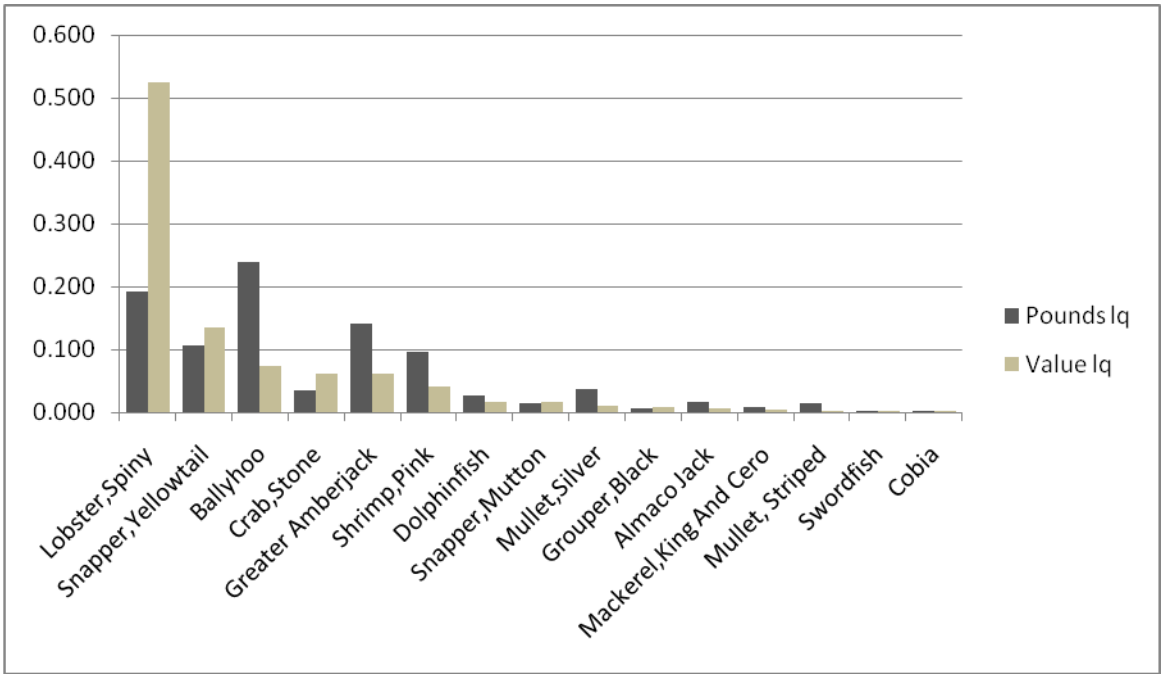


Figure 3.5.5. Proportion (lq) of landings and value for top fifteen species out of total landings and value for Key Largo, Florida.
Source: ALS 2008.

Islamorada also derives over 50% of all value from Caribbean spiny lobster landings while constituting only 20% of total landings for the community (Figure 3.5.6).

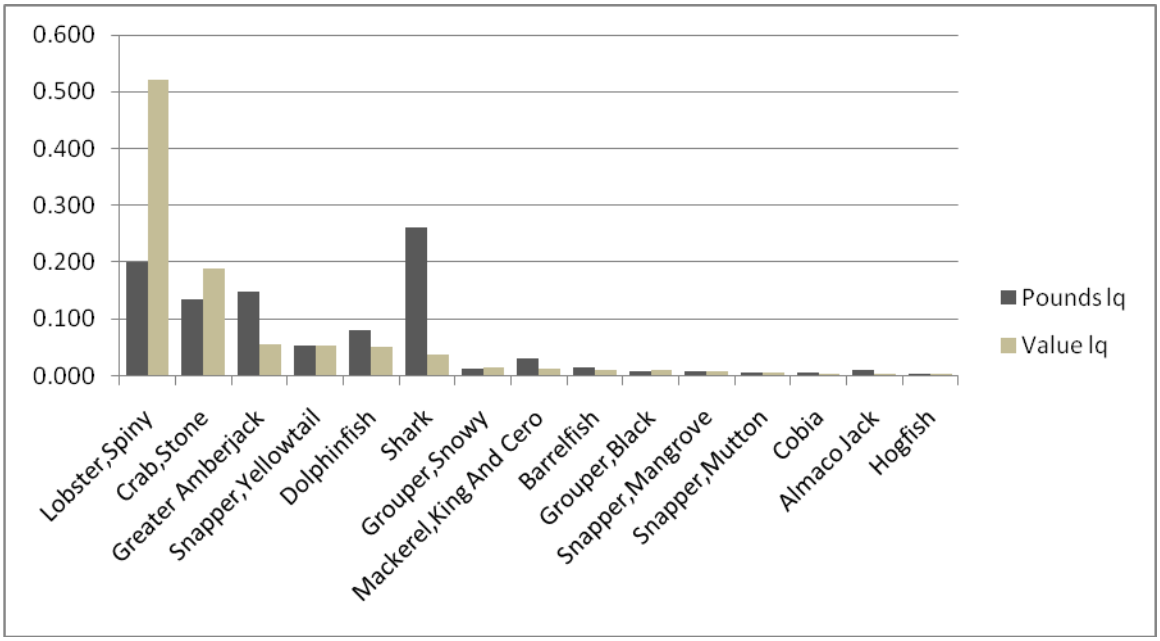


Figure 3.5.6. Proportion (lq) of landings and value for top fifteen species out of total landings and value for Islamorada, Florida.
Source: ALS 2008.

Summerland Key, also in Monroe County, has substantial landings and value from Caribbean spiny lobster. As depicted in Figure 3.5.7, spiny lobster accounts for over 60% of all landed value for the community and 40% of all landings. The next closest species is yellowtail snapper with just 10% of value and just under 20% of landings.

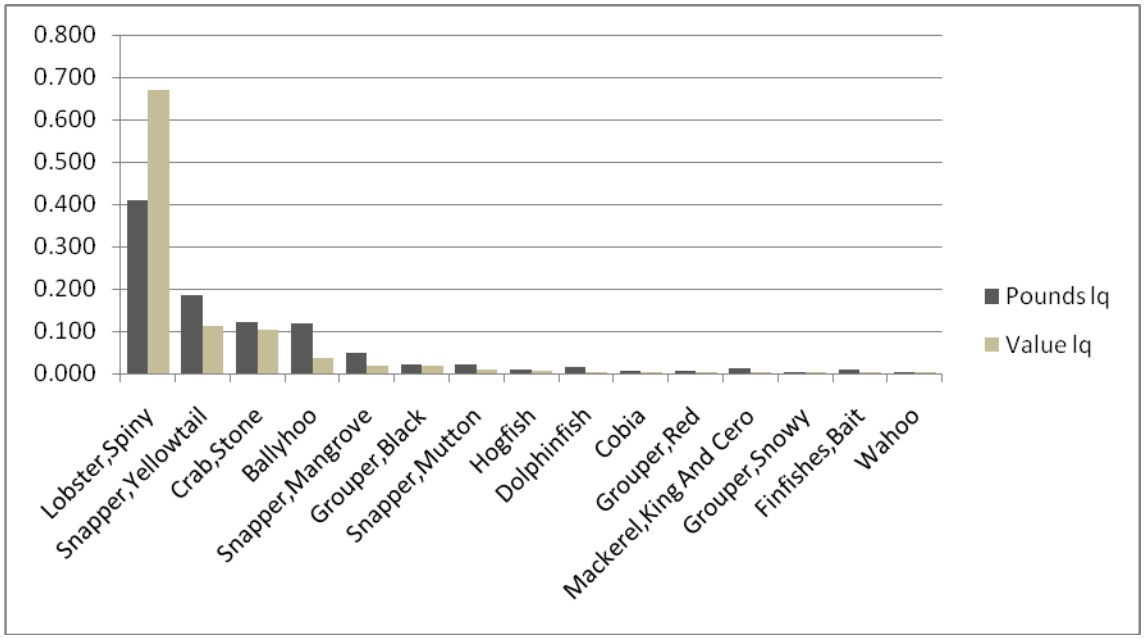


Figure 3.5.7. Proportion (lq) of landings and value for top fifteen species out of total landings and value for Summerland Key, Florida.
Source: ALS 2008.

Collier County

Collier County had a total population of 251,377 in 2000 that is estimated to have grown to 315,839 by 2007. The majority of residents (87.2%) were identified as White in 2007 and the Hispanic population was 25.1% in 2007, while Florida as a state had an estimated 77.8% White population and Hispanics made up 20.5% of its total population. The median age for residents of Collier County was estimated to have been 44.3 while the median age for Florida was 40.1 by 2007 so Collier County's median age is higher than the state as a whole. There was an estimated 5.3% of the population in the civilian force that was estimated to be unemployed in Collier County, which was slightly below the state's unemployment rate of 6.4%. The percentage of persons below the poverty level was estimated at 10.2% which was below the 12.6% for the state as a whole during 2007. Collier County had a higher owner occupied housing rate than the state with over 76.3% of owner occupied housing to the state's 70.3% estimated for 2007 (U.S. Census Bureau)

Of the communities in Collier County that have Caribbean spiny lobster landings, the two most active are Chokoloskee and Everglades City (Figures 3.5.8 and 3.5.9). Neither community derives substantial landings or value from spiny lobster, yet it is third in value for both communities. Landings and value in both communities is dominated by stone crab.

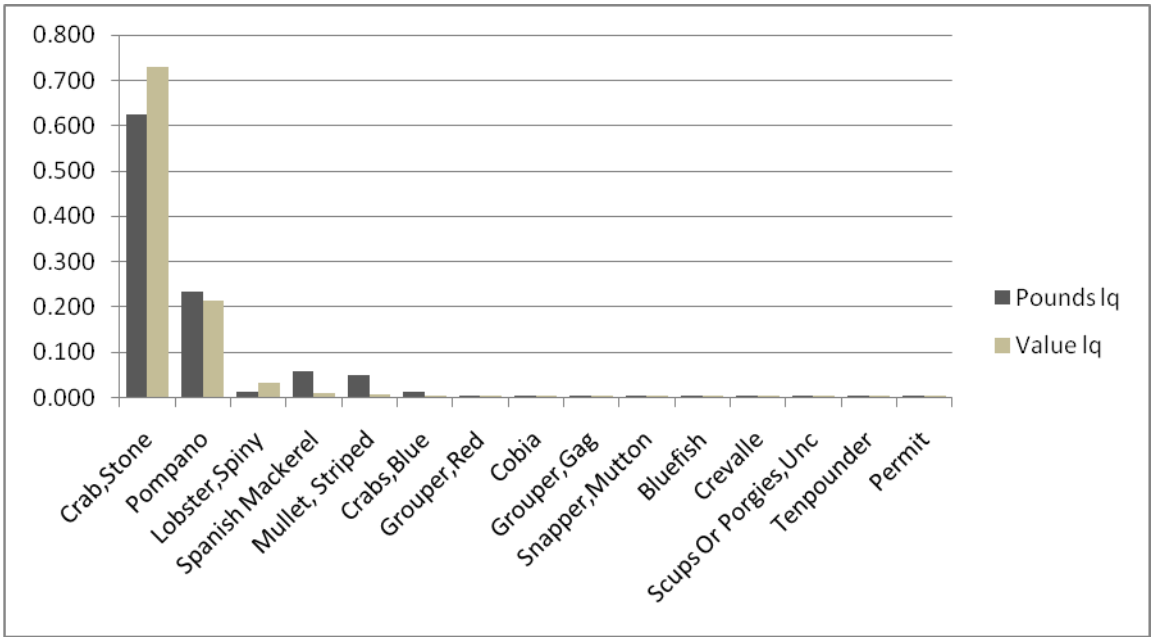


Figure 3.5.8. Proportion (lq) of landings and value for top fifteen species out of total landings and value for Everglades City, Florida.
Source: ALS 2008.

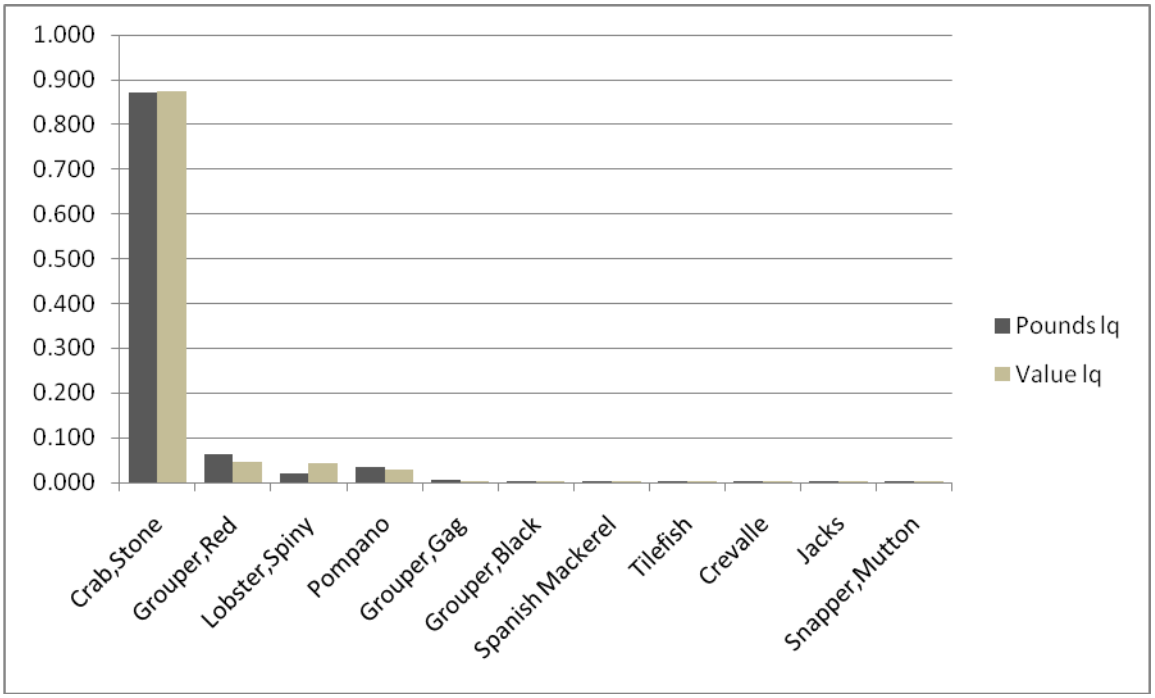


Figure 3.5.9. Proportion (lq) of landings and value for top fifteen species out of total landings and value for Chokoloskee, Florida.
Source: ALS 2008.

South Atlantic Counties

Of those commuities in the South Atlantic with landings of Caribbean spiny lobster, Miami has by far the most with over 75% of the pounds and value of total South Alantic landings (the Keys communities were included in the Gulf landings) (Figure 3.5.10). The next four communities have less than 10% each and are: Fort Lauderdale, North Miami, Palm Beach Gardens and Hialeah. These five communities are featured under their respective county descriptions.

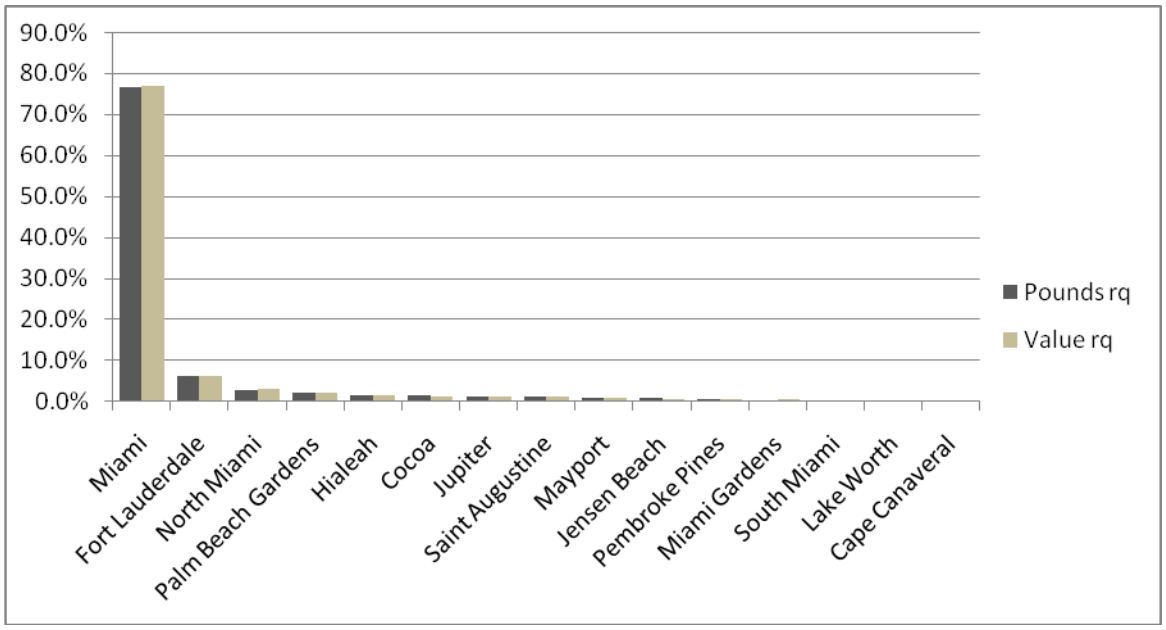


Figure 3.5.10. Proportion (rq) of spiny lobster commercial landings and value by total spiny lobster landings and value for South Atlantic communities.
Source: ALS 2008.

Palm Beach County

Palm Beach County had a total population of 1,131,191 in 2000 that is estimated to have grown to 1,754,846 by 2007. The majority of residents (75.6%) were identified as White in 2007 and the Hispanic population was 17.3% in 2007, while Florida as a state had an estimated 77.8% White population and Hispanics made up 20.5% of its total population. The median age for residents of Palm Beach County was estimated to have been 43.0 while the median age for Florida was 40.1 by 2007 so Palm Beach County's median age is higher than the state as a whole. There was an estimated 6.3% of the population in the civilian force that was estimated to be unemployed in Palm Beach County, which was almost the same as the state's unemployment rate of 6.4%. The percentage of persons below the poverty level was estimated at 11.5% which was below the 12.6% for the state as a whole during 2007. Palm Beach County had a higher owner occupied housing rate than the state with over 74.3% of owner occupied housing to the state's 70.3% estimated for 2007 (U.S. Census Bureau).

Value of Caribbean spiny lobster for Palm Beach Gardens is just below 5% of total landings and around 2% of landings overall. Five other species rank ahead of spiny lobster in terms of value, with swordfish by far the most valuable for the community (Figure 3.5.11).

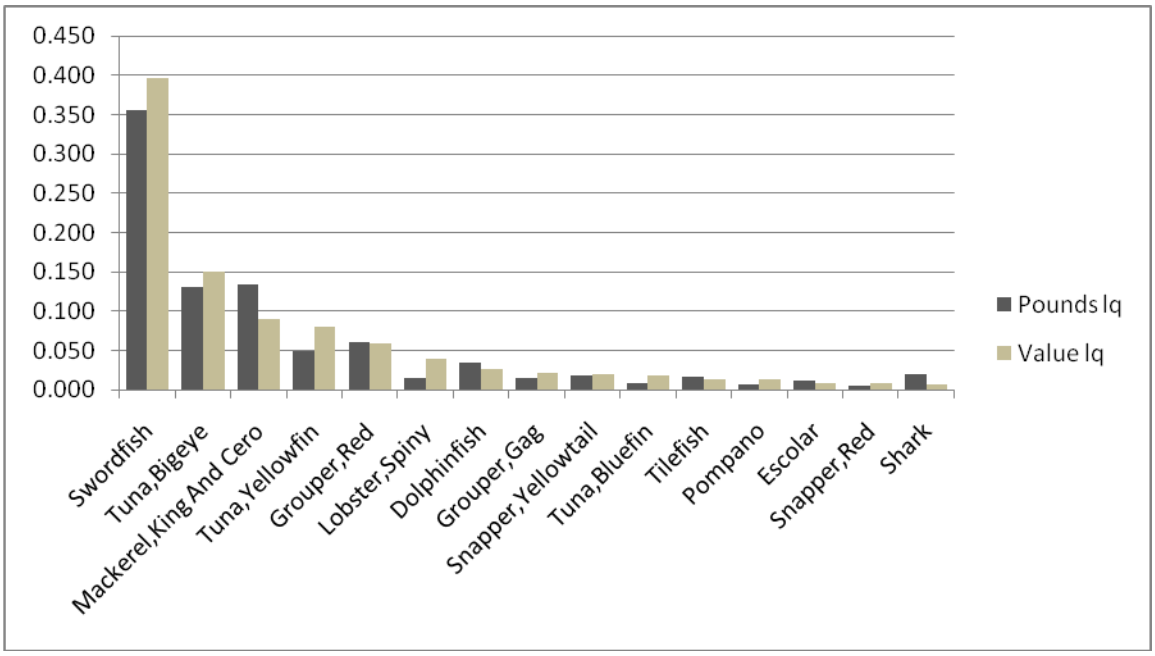


Figure 3.5.11. Proportion (lq) of landings and value for top fifteen species out of total landings and value for Palm Beach Gardens, Florida.
Source: ALS 2008.

Miami-Dade County

Miami-Dade County had a total population of 2,253,779 in 2000 that is estimated to have grown to 2,387,170 by 2007. The majority of residents were identified as White (74.4%) in 2007 and the Hispanic population was 61.7%, the largest in the state. Florida as a state had an estimated 77.8% White population and Hispanics made up 20.5% of its total population. The median age for residents of Miami-Dade County was estimated to have been 38.7 while the median age for Florida was 40.1.7 by 2007 so Miami-Dade County's median age is slightly younger than the state as a whole. There was an estimated 5.9% of the population in the civilian force that was estimated to be unemployed in Miami-Dade County, which was somewhat lower than the state's unemployment rate of 6.4%. The percentage of persons below the poverty level was estimated at 16.1% which was above the 12.6% for the state as a whole during 2007. Miami-Dade County had a lower owner occupied housing rate than the state with over 60.1% of owner occupied housing to the state's 70.3% estimated for 2007 (U.S. Census Bureau).

Caribbean spiny lobster is by far the most valuable species landed in Miami with over 60% of the value of total landings and just over 30% of landings (Figure 3.5.12).

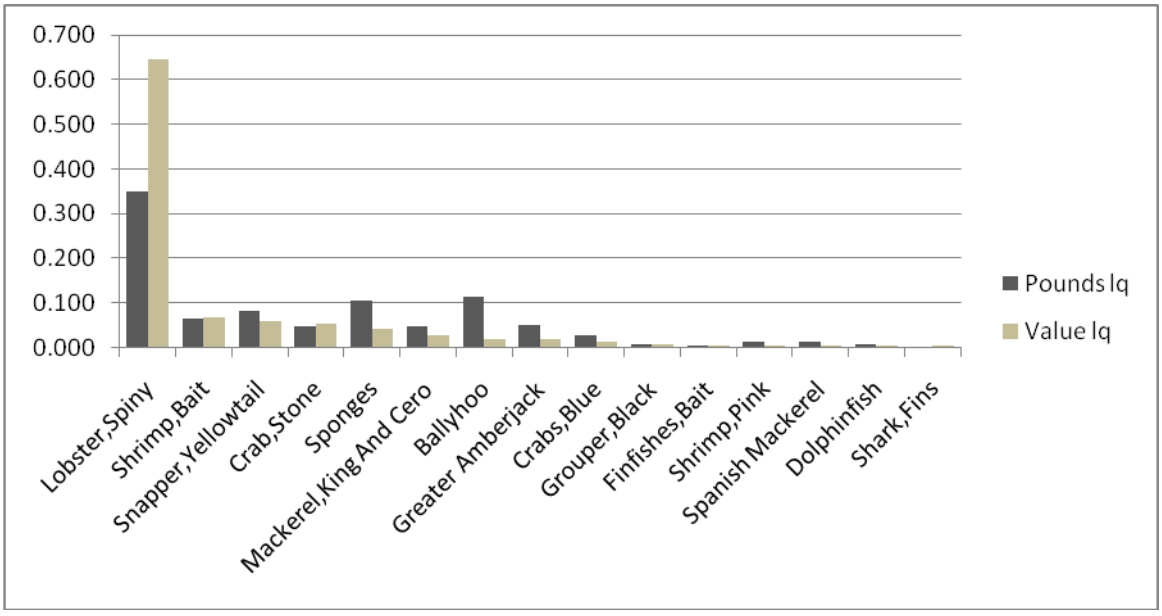


Figure 3.5.12. Proportion (lq) of landings and value for top fifteen species out of total landings and value for Miami, Florida.
Source: ALS 2008.

North Miami landings and value are completely dominated by Caribbean spiny lobster with over 90% of the value and 80% of total landings attributed to that species (Figure 3.5.13). All other species make up less than 3% each.

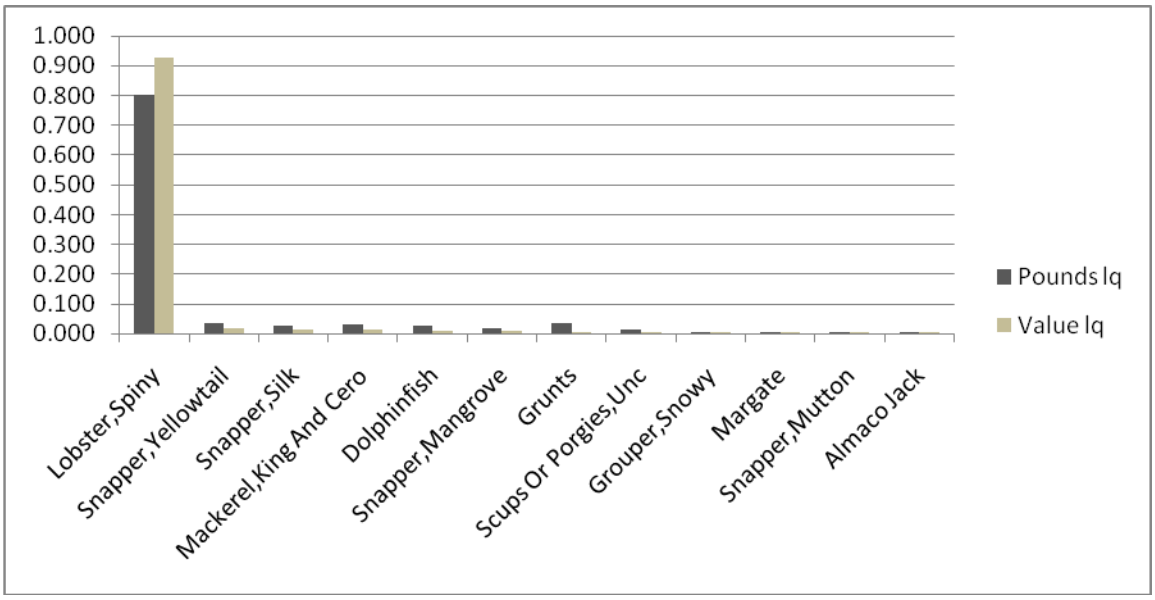


Figure 3.5.13. Proportion (lq) of landings and value for top fifteen species out of total landings and value for North Miami, Florida.
Source: ALS 2008.

Hialeah derives almost 40% of value from all landings in Caribbean spiny lobster while it represents only 15% of landings (Figure 3.5.14). In contrast, king mackerel represents over 50% of landings and only slightly less than 40% of value.

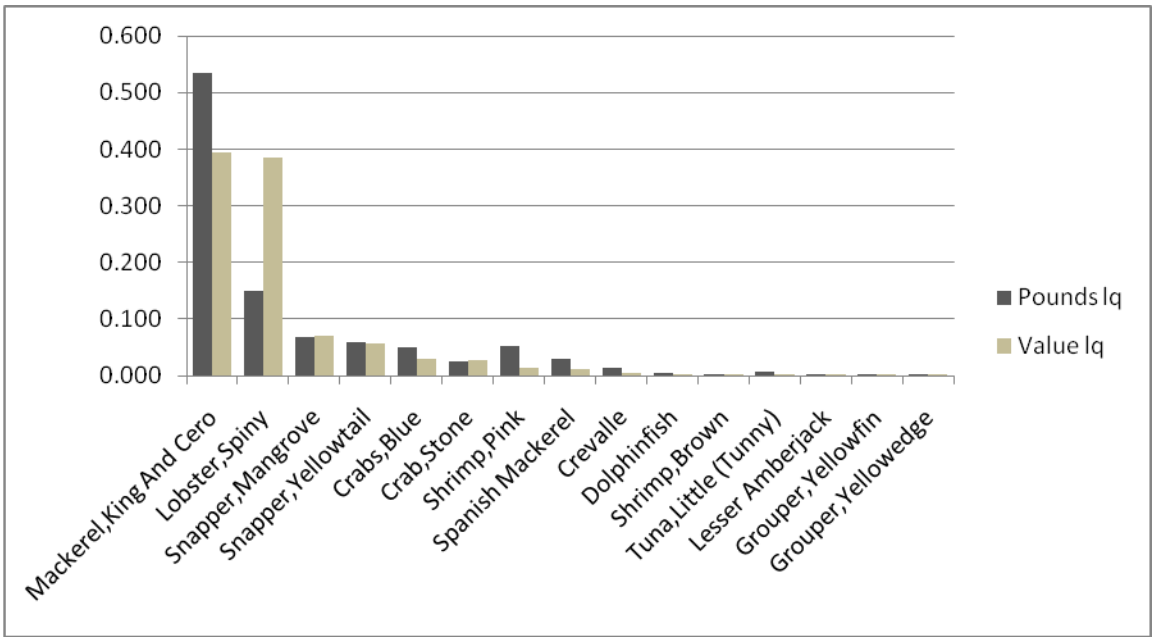


Figure 3.5.14. Proportion (lq) of landings and value for top fifteen species out of total landings and value for Hialeah, Florida.
Source: ALS 2008.

Recreational Fishing

As mentioned earlier, recreational fishing for Caribbean spiny lobster is an important fishery for the Keys and surrounding counties. Table 3.5.2 lists recreational fishing communities along Florida's Atlantic coast, including the Keys.

Table 3.5.2. Recreational Fishing Commuinties along Florida's East Coast.

Rank	Community
1	Islamorada
2	Cudjoe Key
3	Key West
4	Tavernier
5	Little Torch Key
6	Ponce Inlet
7	Marathon
8	Sugarloaf Key
9	Palm Beach Shores
10	Big Pine Key
11	Saint Augustine
12	Key Largo
13	Summerland Key
14	Sebastian
15	Cape Canaveral

The ranking is based upon serveral criteria as mentioned earlier which include the number of charter permits per thousand population and the number of recreational fishing infratstructure attributed to the community as listed under the MRIP survey. As seen in Table 3.5.2, the Keys communities rank high in terms of reliance upon recreational fishing.

In Figure 3.5.15, the distribution of recreational spiny lobster permits is presented by community and suggests a wide dispersion around the state. By far the largest concentration of permits are in the lower east coast communities and the Keys, with Miami having the largest concentration of permits overall. Sharp et al. (2005) found that many recreational lobster fishermen travel to the Keys, especially during the two day season. The influx of so many people in such a short time period has caused concern among many Key's residents as there is considerable overcrowding during the event. Unfortunately, management alternatives have been ineffecitve in alleviating the problem. While recreational lobster fishing brings an important economic boost to the Keys economy, there are externalities for which costs are not always apparent, but evident through social impacts.

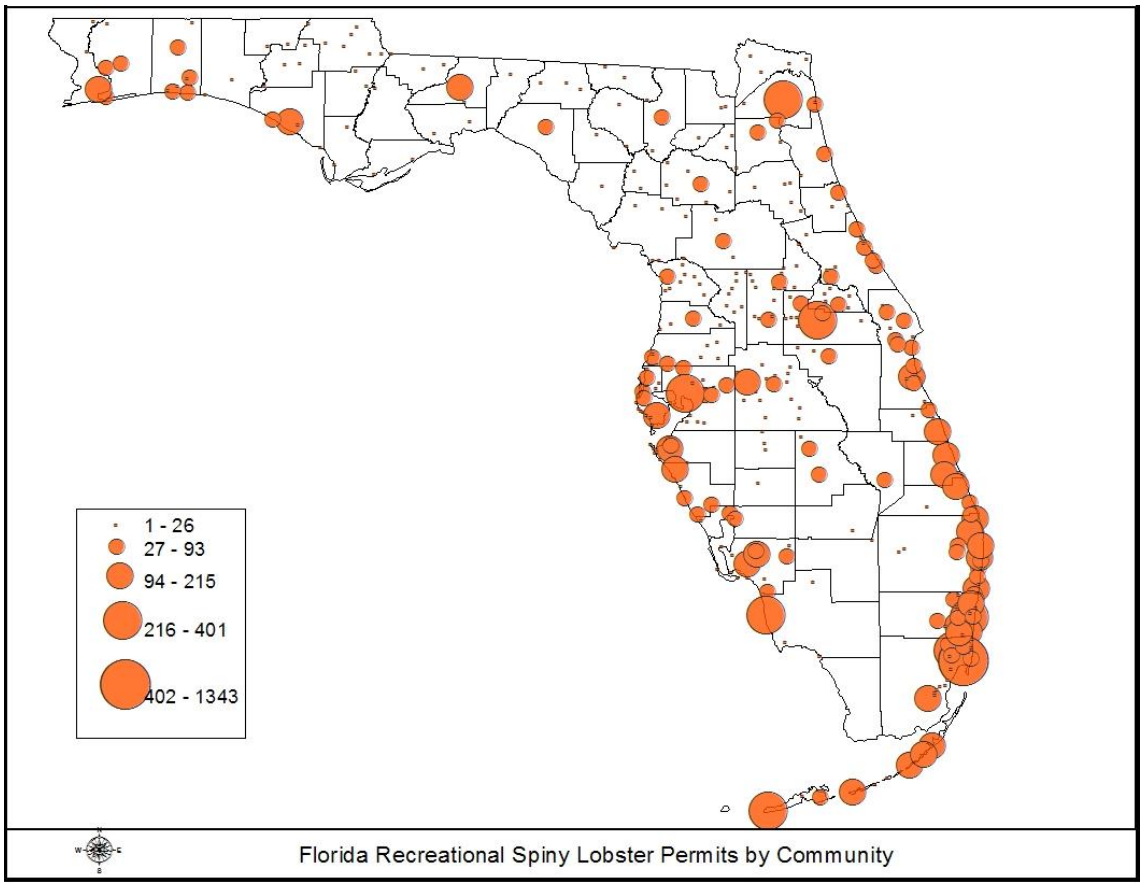


Figure 3.5.15 Florida recreational spiny lobster permits for 2010 by community of permit holder
Source: FWC 2010.

3.5.1 Environmental Justice (EJ)

Executive Order 12898 requires federal agencies to identify and address, as appropriate, disproportionately high and adverse human health or environmental effects of its programs, policies, and activities on minority populations and low-income populations. As mentioned, EJ is related to the idea of social vulnerability; however, there are no thresholds with regard to social vulnerability as there are with EJ. Thresholds for poverty and number of minorities have been established for EJ and those areas that exceed such thresholds are identified.

Although it is anticipated that the impacts of this amendment may affect communities with EJ concerns, because the impacts should not discriminate against any group, this action should not trigger any EJ concerns. In reviewing the thresholds for minorities among the coastal counties involved, Miami-Dade and Broward in Florida exceed the threshold for minorities, while only Miami-Dade County exceeds the poverty threshold. Again, as illustrated by the SoVI, EJ is closely tied to social vulnerability as most of the counties that do not meet these thresholds are also considered medium high or highly vulnerable. It is anticipated that the impacts from the following management actions may impact minorities and the poor, but not through discriminatory application of these regulations. However, it is also noted that while Monroe County does not exceed any of the EJ thresholds, nor is it classified as being vulnerable in terms of social vulnerability, there are processes that affect working waterfronts and therefore commercial and charter fishermen through the process of gentrification. While the regulatory actions within this amendment in and of themselves may not precipitate social change or disruptions, in combination with these and other outside factors, working waterfronts may be negatively affected.

3.6 Administrative Environment

3.6.1 Federal Fishery Management

Federal fishery management is conducted under the authority of the Magnuson-Stevens Fishery Conservation and Management Act (Magnuson-Stevens Act), originally enacted in 1976. The Magnuson-Stevens Act claims sovereign rights and exclusive fishery management authority over most fishery resources within the EEZ, an area extending 200 nautical miles from the seaward boundary of each of the coastal states, and authority over US anadromous species and continental shelf resources that occur beyond the EEZ.

Responsibility for federal fishery management decision-making is divided between the Secretary of Commerce (Secretary) and eight regional fishery management councils that represent the expertise and interests of constituent states. Regional councils are responsible for preparing, monitoring, and revising management plans for fisheries needing management within their jurisdiction. The Secretary is responsible for promulgating regulations to implement proposed plans and amendments after ensuring management measures are consistent with the Magnuson-Stevens Act and with other applicable laws summarized in Section 10. In most cases, the Secretary has delegated this authority to NOAA Fisheries Service.

The Councils are responsible for fishery resources in federal waters of their respective regions. These waters extend to 200 nautical miles offshore from the nine-mile seaward boundary of the states of Florida and Texas, and the three-mile seaward boundary of the Atlantic side of Florida and the states of Alabama, Georgia, Louisiana, Mississippi, North Carolina, and South Carolina.

The Councils consist of voting members: public members appointed by the Secretary; one each from the fishery agencies of the state or territory, and one from NOAA Fisheries Service. The public is also involved in the fishery management process through participation on advisory panels and through council meetings that, with few exceptions for discussing personnel matters and litigation, are open to the public. The regulatory process is also in accordance with the Administrative Procedures Act, in the form of "notice and comment" rulemaking, which provides extensive opportunity for public scrutiny and comment, and requires consideration of and response to those comments.

Regulations contained within FMPs are enforced through actions of the NOAA's Office for Law Enforcement, the U.S. Coast Guard, and various state authorities. To better coordinate enforcement activities, federal and state enforcement agencies have developed cooperative agreements to enforce the Magnuson-Stevens Act.

3.6.2 State Fishery Management

The purpose of state representation at the council level is to ensure state participation in federal fishery management decision-making and to promote the development of compatible regulations in state and federal waters. The state governments have the authority to manage their respective state fisheries. Each of the states exercises legislative and regulatory authority over their state's natural resources through discrete administrative units. Although each agency is the primary administrative body with respect to the state's natural resources, all states cooperate with numerous state and federal regulatory agencies when managing marine resources.

4.0 ENVIRONMENTAL CONSEQUENCES

4.1 Action 1: Other species in the Spiny Lobster Fishery Management Plan (FMP)

*Note: More than one alternative may be chosen as a preferred.

Alternative 1: No Action – Retain the following species: smoothtail spiny lobster**,** *Panulirus laevicauda*, spotted spiny lobster, *Panulirus guttatus*, Spanish slipper lobster, *Scyllarides aequinoctialis*, in the FMP for data collection purposes only, but do not add them to the Fishery Management Unit.

Alternative 2: Set annual catch limits and accountability measures using historical landings for Spanish slipper lobster *Scyllarides aequinoctialis*, after adding them to the Fishery Management Unit and for ridged slipper lobster, *Scyllarides nodifer*, currently in the Fishery Management Unit.

Alternative 3: List species as ecosystem component species:

Option a: smoothtail spiny lobster**,** *Panulirus laevicauda*
Option b: spotted spiny lobster, *Panulirus guttatus*
Option c: Spanish slipper lobster, *Scyllarides aequinoctialis*
Option d: ridged slipper lobster, *Scyllarides nodifer*

Preferred Alternative 4: Remove the following species from the FMP:

Preferred Option a: smoothtail spiny lobster**,** *Panulirus laevicauda*
Preferred Option b: spotted spiny lobster, *Panulirus guttatus*
Preferred Option c: Spanish slipper lobster, *Scyllarides aequinoctialis*
Preferred Option d: ridged slipper lobster, *Scyllarides nodifer*

4.1.1 Direct and Indirect Effect on the Physical and Biological/Ecological Environments

Alternative 1 would not meet the National Standard 1 guidelines and would have the same impacts to the physical or biological environments as currently exist.

Alternative 2 would set annual catch limits (ACLs) and accountability measures (AMs) for slipper lobsters. This alternative would be expected to have positive impacts on the physical and biological environments if catch is constrained below current levels. However, setting an appropriate ACL would be difficult, because no data on life history, growth rates, and reproductive biology are available to conduct an effective stock assessment. The two species of slipper lobsters, Spanish and ridged, have some commercial landings information, but are considered species landed as bycatch in the commercial shrimp trawl and Caribbean lobster trap fisheries. In the early 1980s vessels with state commercial shrimp trawl permits targeted slipper lobsters in the western Gulf of Mexico (Gulf) (Sharp et al. 2007). However, average landings of slipper lobster are low and constitute less than 1% of the total average landings in both federal and state waters of the South Atlantic and Gulf (Table 2.1.2). Positive physical, ecological, and biological impacts may result from better monitoring and record keeping of the resource, and

implementing AMs, when and if the ACLs are exceeded. However, monitoring systems would need to be established for both species of slipper lobsters to obtain these projected positive benefits.

Alternative 3 would designate all four species as ecosystem component species. Impacts would be the same as currently exist, unless new data collection programs are developed. Leaving the species in the FMP may offer the benefit of collecting data in the future that could be used in the development of conservation and management measures, and positive impacts to the physical and biological environments would be expected at a later date. However, no data collection programs are currently in place for any of these species. Ridged slipper lobsters do not meet all the ecosystem component criteria outlined in the National Standard 1 guidelines, because they are sometimes targeted and are generally retained for sale or personal use.

Preferred Alternative 4 would remove all four species from the FMP. If these species were removed from the FMP, but landed and sold to a federal dealer, landings data could still be recorded for these species. If other agencies, such as the individual states, took over management after they are removed from the FMP, then positive physical and biological impacts could occur. In particular, Florida regulations concerning the taking of egg-bearing females, or stripping or removing eggs, are more conservative than federal regulations for most of these species. If another agency did not take over management of other lobster species, and overfishing occurred negative physical and biological impacts would be expected. Because of the lack of landings and data on life history, growth rates, and reproductive biology, completing a stock assessment would probably not be possible, even for the ridged slipper lobster (Sharp et al. 2007).

Preferred Options a and **b** have no landings information available, so management by any agency would be difficult. These species are not targeted by either commercial or recreational fishermen, and may not be in need of federal management.

Florida Fish and Wildlife Conservation Commission (FWC) estimated that in the last nine years, 23% of the landings of slipper lobsters (**Preferred Options c** and **d**) have been by commercial divers. If the FWC trap limitation program proceeds and the commercial dive fishery increases, more of these species may be landed. However, little data exist to suggest commercial divers are targeting them. Instead, commercial divers are landing them coincidently with Caribbean spiny lobsters. Further, FWC intensive creel surveys, which were conducted for Caribbean spiny lobster in the Florida Keys during the special two-day sport season and the first two weeks of the regular season, indicated slipper lobsters are not targeted by recreational fishers in the Keys. Due to their cryptic nature, slipper lobsters are unlikely to support a substantial recreational fishery (Sharp et al. 2007). The commercial shrimp trawl fishery currently lands slipper lobster species as incidental catch. In the 1980s, commercial shrimpers are believed to have targeted slipper lobsters in the northeastern Gulf; however, after implementation of various regulations such as the prohibition of egg-bearing females and the turtle-excluder devices (TEDs) slipper lobster landings have been greatly reduced. As commercial shrimp trawl effort in the Gulf declined so have slipper lobster landings (Sharp et al. 2007; see Section 2.1 and 4.1.2).

4.1.2 Direct and Indirect Effect on the Economic Environment

Data on commercial fishing for slipper lobsters (ridged and Spanish) are collected and managed inseparably, and the data are summarized for Florida in Section 2.1 and Tables 4.1.2.1 - 4.1.2.2. Today, the landings and effort are well below what they were previously. Landings in Florida averaged 4,737 pounds per year in the last five years, compared with 39,948 lbs per year in 1989/1990–1993/1994 (Table 4.1.2.1). The number of vessels with landings fell from 192 to 23 and the number of trips fell from 538 to 47. In the last five years, the ex-vessel value (paid to fishermen by first buyers) averaged $24,232 per year in 2008$ and this is a small part of the total for trip gross, $304,989, approximately two-thirds of which is for shrimp (Table 4.1.2.1). Although landing of slipper lobsters declined markedly in the last two decades, annual average trip landings were relatively stable at 100 lbs per trip for the last five years, 70 lbs per trip in the preceding five years, and 55 lbs per trip from 1986/1987 – 1990/1991 (Table 4.1.2.2).

Table 4.1.2.1. Florida commercial fishing statistics for slipper lobsters.

Period	Vessels	Trips	Landings, lbs	2008$	2008 $ /lb	Trip gross, 2008$	Shrimp in trip gross, 2008$	Vessel gross, 2008$
Trips for which landings of slipper lobster >= 1 lb								
89/90-93/94	192	538	39,948	152,479	3.82	2,503,041	2,095,000	2,503,041
04/05-08/09	23	47	4,737	24,232	5.12	304,989	216,000	304,989
Trips for which landings of slipper lobster >= 1 lb and slipper lobster is the top species in trip value.								
89/90-93/94	78	137	27,173	106,037	3.90	120,604		120,604
04/05-08/09	8.6	15.8	3,476	18,546	5.34	19,606		19,606

Source: NMFS, SEFSC, FTT (19Mar10), methods as for spiny lobster in Vondruska (2010). In ranking species (or groups of species) by dollar value on individual trips, all shrimp are counted as one species, and the same is true for groupers, snappers other than yellowtail snapper, tuna, and stone crab.

During the past 20 years or so, slipper lobsters landed in Florida have been caught at greater depths, approximately 80-110 ft, compared with 30-45 ft for Caribbean spiny lobster, and 40-70 ft for shrimp. The median monthly time in hours away from port for trips for slipper lobsters was more variable than for shrimp (shrimp, approximately 8 hours), more seasonal, and typically, much longer, often 70 hours to 200 hours or more per trip. These data on depth of capture and time away from port for trips are consistent with results of a two-year study of populations of several species of lobster, including the ridged slipper lobster (Sharp et al. 2007). Slipper lobsters reside in dens during the day and may feed on unconsolidated bottoms at night. Sharp et al. (2007) indicate that in the early 1980s, shrimp fishermen had directed fishing effort toward the ridged slipper lobster on the west coast of Florida in the spring and summer, and that such effort declined from the late 1980s onward. Indeed, for most, but not all vessels with landings, slipper lobsters accounted for a relatively small part of vessel gross revenue, with shrimp accounting for perhaps two-thirds (Table 4.1.2.1, top part; data for 1986/1987-2008/2009 in Table 4.1.2.2).

However, slipper lobsters cannot be viewed strictly as an incidental or bycatch species when fishing for shrimp, because a relatively small number of vessels account for well over half of the landings. In the last five years, slipper lobsters were the top species in dollar value for an annual average of 16 trips (8.6 vessels) out of 47 trips (23 vessels) with slipper lobster landings, and these 16 trips accounted for much of the total landings (3,476 lbs out of 4,737 lbs landed (Table 4.1.2.1). In 1989/1990 – 1993/1994, an annual average of 137 trips (78 vessels) accounted for 27,173 lbs out of the total of 39,948 lbs landed (on 538 trips and 192 vessels).

Table 4.1.2.2. Florida commercial fishing statistics for slipper lobsters.

Fishing year	Slipper (Scyllaridae family) lobster				Trip gross, all species landed	Value of shrimp in trip gross	Slipper lobster
	Vessels	Trips	Lbs	2008$	2008$	2008$	Lbs / trip
86/87	145	535	28,097	$139,737	$3,164,506	$2,847,000	53
87/88	131	487	19,952	$77,776	$3,368,151	$3,094,000	41
88/89	198	558	40,736	$127,040	$3,462,936	$3,145,000	73
89/90	149	334	14,793	$46,590	$1,911,348	$1,699,000	44
90/91	187	465	27,282	$100,244	$2,005,785	$1,757,000	59
91/92	213	653	48,728	$190,484	$2,041,960	$1,586,000	75
92/93	193	584	48,708	$201,406	$2,909,027	$2,326,000	83
93/94	220	655	60,230	$223,671	$3,647,087	$3,107,000	92
94/95	130	411	33,531	$117,551	$2,425,114	$1,789,000	82
95/96	148	362	26,843	$109,467	$1,741,169	$1,258,000	74
96/97	193	437	43,565	$194,740	$2,755,427	$2,467,000	100
97/98	122	335	30,872	$131,100	$2,589,996	$2,287,000	92
98/99	101	225	13,139	$56,937	$967,323	$662,000	58
99/00	71	146	7,196	$33,469	$1,300,163	$839,000	49
00/01	88	145	8,766	$49,169	$1,321,361	$983,000	60
01/02	81	179	8,582	$51,109	$1,767,823	$1,245,000	48
02/03	59	130	9,951	$58,195	$857,261	$637,000	77
03/04	58	132	17,012	$98,764	$671,789	$429,000	129
04/05	36	72	5,000	$23,537	$532,271	$430,000	69
05/06	30	63	4,291	$22,078	$496,995	$411,000	68
06/07	26	56	6,060	$30,933	$185,422	$26,000	108
07/08	10	23	6,443	$36,865	$159,716	$116,000	280
08/09	14	22	1,889	$7,747	$150,541	$97,000	86
Averages for rows above, excepting last column (see footnote)							
86/87-90/91	162	476	26,172	$98,277	$2,782,545	$2,508,400	55
99/00-03/04	71	146	10,301	$58,141	$1,183,679	$826,600	70
04/05-08/09	23	47	4,737	$24,232	$304,989	$216,000	100

Source: NMFS, SEFSC, FTT (Mar 19, 2010). All shrimp are counted as one species. Data are for trips with landings of at least one pound of slipper lobsters for July-June fishing years. Multi-year averages for pounds per trip were obtained from data in this table as pounds/trips, e.g., for 04/05-08/09 (100 lbs/trip=4,737 lb/47 trips).

Slipper lobsters have been landed in states from South Carolina through Mississippi according to data for 1977-2010, notably Florida and Alabama (NMFS, SEFSC). However, the landings for some years, states and gear, including landings in Alabama and Florida by coast, may be relatively small and/or confidential because of reporting by fewer than three dealers. On a calendar year basis, landings in the southeast (SC-MS only) peaked in 1985 at 113,440 lbs, and they were 1,283 lbs in 2009, and 1,921 lbs in 2010 (data for 2010 is preliminary and may not cover 12 months). During 1997-2009, shrimp trawls accounted for 85.2% of the landings by gear for the southeast (SC-MS only), followed by spiny lobster traps at 9.2%, and diving at 5.0%, with smaller amounts for other gear. Florida's east coast accounted for most of the landings by diving, where diving was the leading gear (approximately, 9,000 out of 14,000 lbs, 1997-2010 all-year totals).

The long-term decline in landings of slipper lobsters depicted in Table 4.1.2.2 may be partly explained by several factors: requiring the use of TEDs in shrimp trawls in waters off Florida (1990); prohibiting the molestation and possession of berried female lobsters in Florida (1987); and a decline in effort in the shrimp fishery (Sharp et al. 2007). Given the significance of fuel in trip costs, fuel prices could have been a factor in 2004-2008.[7]

Alternative 1 would not result in any change in the species contained in the fishery management unit (FMU), species retained for data collection, or species listed as ecosystem components. As a result, all status quo management conditions and related operation of the fishery, and associated economic benefits, would remain unchanged. If any or all of the species considered by this action require more detailed management and protection, they would need to be placed within the FMU. The Gulf of Mexico and South Atlantic Councils (Councils) would have to complete this type of action through a full plan amendment.

Alternative 2 would set ACLs and AMs using historical landings for Spanish slipper lobster, after adding to the FMU, and for ridged slipper lobster, currently in the FMU. If current or future resource decline were to occur under **Alternatives 1, 3** or **4,** but not under **Alternative 2**, the economic benefit for **Alternative 2** is represented by the ex-vessel value of $24,232 in 2008$ for Scyllarid lobsters, which could be reduced to zero under **Alternatives 1, 3** or **4.** There are some caveats. If current or future resource declines were to occur under **Alternatives 1, 3,** or **4,** but not under **Alternative 2**, the loss under **Alternatives 1, 3,** or **4** refers to slipper lobster only. This assumes that the vessel owners (operators) could pursue other fishing opportunities and not be driven out of commercial fishing.

Among the options for **Alternative 3**, data on commercial fishing are not available for any of the four species separately. Sharp et al. (2007) describe the ecology for some of these species, and describe commercial fishing for Scyllaridae family lobsters as a whole, meaning the two slipper

[7]Diesel fuel rose sharply in 2007-2008, peaked in July 2008, and declined by half in late 2008 to levels of late 2006. Note: An index of producer-level prices for diesel fuel averaged 100.5 in 2003, peaked at 431.9 in July 2008 and fell to 168.0 in December 2008 (U.S. Bureau of Labor Statistics, 1982 base of 100).

lobster species combined. Data on commercial fishing in Florida for slipper lobsters are summarized in Section 2.1, with additional information in Tables 4.1.2.1 - 4.1.2.2.

Should such resource decline occur under **Alternative 3**, **Option c** and **Option d** together, it is estimated that the ex-vessel value of landings of slipper lobsters could decline by as much as $24,232 per year (Table 4.1.2.1). That is, this amount represents the estimated economic impact of **Alternative 3, Option c** and **Option d** together, when compared with **Alternative 1**. The economic impact of **Alternative 3, Option a,** or **Alternative 3, Option b**, is not known, but is assumed to be less. It is assumed that the economic impacts of **Alternatives 3-4** are essentially the same.

4.1.3 Direct and Indirect Effect on the Social Environment

The effects on the social environment from removing or not removing other species from the FMP would likely accrue from the implementation of new ACLs and AMs on those species. **Alternative 1** would have little impact on the social environment, yet may not be feasible if these species remain in the FMP as National Standard 1 will not be met. Setting ACLs and AMs in **Alternative 2** would likely have an impact on the social environment depending upon the thresholds selected and the measures that were implemented to account for any overages. Listing species as ecosystem components as in **Alternative 3** or removing species from the FMP as in **Preferred Alternative 4** would likely have few social impacts unless one or more of the **Options a-d** were not selected. Leaving any species in the FMP would require ACLs and AMs be set. Because landing information on these species is imprecise, setting an ACL and subsequent AMs would be problematic and could cause some social disruption and changes in fishing behavior if thresholds were set too low. These species tend to be bycatch in other fisheries which makes monitoring difficult. While removing them from the FMP may preclude any federal monitoring of status of these species, continuing to manage them with ACLs and AMs may be costly and impractical.

4.1.4 Direct and Indirect Effect on the Administrative Environment

Alternative 1 would not meet the requirements of the Magnuson-Stevens Fishery Conservation and Management Act (Magnuson-Stevens Act), and could leave NOAA Fisheries Service subject to litigation, which would result in a significant administrative burden. Specifying an ACL alone (**Alternative 2**) would not increase the administrative burden over the status-quo. However, the monitoring and documentation needed to track the ACL could result in a need for additional cost and personnel resources because a monitoring mechanism is not already in place. After the ACL is specified, the administrative burden associated with monitoring and enforcement, implementing management measures, and AMs would increase. **Alternative 3** would designate species as ecosystem component species which would eliminate the administrative burden associated with establishing ACLs and AMs for those species. **Preferred Alternative 4** would remove species from the FMP, resulting in less administrative burden with regards to establishing ACLs and AMs.

4.1.5 Council Conclusions

After many discussions, the Councils determined that federal management of these four lobster species was no longer necessary. Therefore they selected **Preferred Alternative 4** (**Options a-d**) to remove all four species from the FMP. The Councils felt that Florida could provide adequate if not better protection for these four species compared to current federal management which only protects ridged slipper lobster, *Scyllarides nodifer*. Ridged slipper lobster is the only species within the FMU and at the time the original Spiny Lobster FMP was implemented in 1982 which needed federal regulations. The other species were placed into the FMP for data collection purposes. The Councils also discussed designating these species as ecosystem component species with the idea that data collection may improve for these species if left in the FMP; however, the current federal data collection programs would need to be modified to include invertebrates. Currently, MRFSS only collects information on finfish so the federal data collection system relies primarily on the states and in particular Florida to collect information on invertebrates. By designating these species as ecosystem component species it was thought if regulations were needed they could be established at a later date for these species. However, only one lobster species is currently within the FMU and a full plan amendment would be needed to move the other species into the FMU and create the new regulations, which is timely and would not necessarily improve data collection or protection of these resources.

4.2 Action 2: Modify the Current Definitions of Maximum Sustainable Yield, Overfishing Threshold, and Overfished Threshold for Caribbean Spiny Lobster

Action 2-1: Maximum Sustainable Yield (MSY)

Alternative 1: No Action- Use the current definitions of MSY as a proxy. The Gulf approved definition**:** MSY is estimated as 12.7 million pounds annually for the maximum yield per recruit size of 3.5 inch carapace length. The South Atlantic approved definition: MSY is defined as a harvest strategy that results in at least a 20% static SPR (spawning potential ratio).

Alternative 2: Modify the Gulf definition to mirror the South Atlantic definition of MSY proxy, defined as 20% static SPR.

Alternative 3: The MSY equals the yield produced by fishing mortality at maximum sustainable yield (F_{MSY}) or proxy for F_{MSY}. Maximum sustainable yield will be defined by the most recent SEDAR and joint Scientific and Statistical Committee (SSC) processes.

Preferred Alternative 4: The MSY proxy will be the overfishing limit (OFL) recommended by the Gulf SSC at 7.90 million pounds.

Action 2-2: Overfishing Threshold (Maximum Fishing Mortality Threshold)

Alternative 1: No Action - Use the current definitions of overfishing thresholds. The Gulf and South Atlantic approved definition: overfishing level as a fishing mortality rate (F) in excess of the fishing mortality rate at 20% static SPR ($F_{20\%}$ static SPR).

Alternative 2: Specify the Maximum Fishing Mortality Threshold (MFMT) as F_{MSY} or F_{MSY} proxy. The most recent SEDAR and SSCs will define F_{MSY} or F_{MSY} proxy. This should equal the OFL provided by the SSCs. The Councils will compare the most recent value for the current fishing mortality rate (F) from the SEDAR/SSC process to the level of fishing mortality that would result in MFMT and if the current F is greater than the MFMT, overfishing is occurring. Comparing these two numbers:

- $F_{CURRENT}$/MFMT = X.XXX

*This comparison is referred to as the **overfishing ratio**. If the ratio is greater than 1, then overfishing is occurring.

<u>Preferred Alternative 3</u>: Specify the MFMT as the OFL defined by the Gulf SSC at 7.90 million pounds.

Action 2-3: Overfished Threshold (Minimum Stock Size Threshold)

Alternative 1: No Action – Do not establish an overfished threshold. The Gulf Council does not have an approved definition of the overfished threshold. The South Atlantic Council approved definition is a framework procedure to add a biomass based component to the overfished definition, due to no biomass levels and/or proxies being available.

Alternative 2: The Minimum Stock Size Threshold (MSST) is defined by the most recent SEDAR and SSC process. The Councils will compare the current spawning stock biomass (SSB) from the SEDAR and SSC process to the level of spawning stock biomass that could be rebuilt to the level to produce the MSY in 10 years. Comparing these two numbers:

- $SSB_{CURRENT}$/MSST = Y.YYY

This comparison is referred to as the **overfished ratio**. If the ratio is less than 1, then the stock is overfished.

<u>Preferred Alternative 3</u>: MSST = (1-M) x B_{MSY}. Definitions: M = instantaneous natural mortality and B_{MSY} = biomass at maximum sustainable yield or the appropriate proxy.

4.2.1 Direct and Indirect Effect on the Physical and Biological/Ecological Environments

There are three sub-actions for modification of the current definition of each of the following biological reference points: MSY, MFMT, and MSST. **Alternative 1,** under all actions could have negative impacts to the physical and biological/ecological environment, due to the biological reference points for MSY and MSST being inconsistent between the two Councils. In addition, the South Atlantic Council's approved definition of MSY is a proxy based on spawning potential ratio and is not a biomass-based proxy. The Gulf Council has an approved MSY definition that is based on Caribbean spiny lobster landings. However, in 1998 during the same time period the South Atlantic Council was developing their Generic Sustainable Fisheries Act Amendment the Gulf Council was also developing theirs with an updated definition of MSY (i.e., 20% transitional SPR). The Gulf Council's definition was not approved meaning the MSY

definition for the Gulf then reverted back their previous definition based on landings (i.e., 12.7 mp).

The South Atlantic Council currently uses static SPR as a proxy and **Alternative 2**, under **Actions 2-1** would modify the Gulf Council's definition to static SPR. This would make the overfished definitions consistent between the Councils and static SPR is a better proxy for yield projections, because it uses equilibrium changes in recruitment and mortality. Consistency between Councils when establishing biological reference points would be more beneficial for the physical and biological environments. Using the same proxies reduces confusion for assessments and provides guidance for analysts. Further, based on the information available on Caribbean spiny lobster, static SPR is a more appropriate proxy to use. Transitional SPR proxies should be estimated on an annual basis and are not beneficial for long term yield projections (MRAG Americas 2001). Caribbean spiny lobster were not undergoing overfishing based on the MFMT proxy definition of $F_{20\%}$ static SPR in either the benchmark or update assessments, and the overfished status could not be evaluated without a pan-Caribbean wide stock assessment (SEDAR 8 2005; 2010 Update Assessment).

Alternative 3 under Action 2-1 and **Alternatives 2** under Action 2-2 and Action 2-3 would modify the current definitions to the biological reference points established during the Southeast Data Assessment and Review (SEDAR) and Scientific and Statistical Committee (SSC) processes. These would be based on the best available science and reviewed by experts; therefore, this alternative if selected as preferred could provide the most benefits to the physical and biological environments. The biological reference points would be consistent between Councils and based on the most recent data. However, because the most recent results from the SEDAR and SSC processes for Caribbean spiny lobster in the southeastern U.S. were not accepted due to external recruitment from other Caribbean populations, these alternatives may not provide the best protection to the resource.

Preferred Alternative 4 (Action 2-1) would set the MSY proxy as the OFL = 7.90 million pounds (mp) recommended by the Gulf Council's SSC using landings data and Tier 3a of the Gulf Acceptable Biological Catch (ABC) Control Rule. Currently this preferred alternative provides the best protection of the resource because the 2010 update assessment was rejected. This alternative would also establish the MSY proxy 4.8 mp lower than **Alternative 1** (MSY=12.7 mp, annually). Similarly, **Preferred Alternative 3** under Action 2-2 is based on Caribbean spiny lobster landings and may provide the best protection of the resource and thereby the biological and ecological environments. However, without a clear estimate of Caribbean spiny lobster biomass it is unknown if **Alternatives 2** or **3** under Action 2-3 would provide the best protection for the resource and various subsequent negative and positive impacts to the biological and ecological environments.

4.2.2 Direct and Indirect Effect on the Economic Environment

Defining the MSY, MFMT, and MSST of a species does not alter the current harvest or use of the resource. Specification of these measures merely establishes benchmarks for fishery and resource evaluation from which additional management actions for the species would be based, should comparison of the fishery and resource with the benchmarks indicate that management

adjustments are necessary. The impacts of these management adjustments will be evaluated at the time they are proposed. As benchmarks, these parameters would not limit how, when, where, or with what frequency participants in the fishery engage the resource. This includes participants who directly utilize the resource (principally, commercial vessels, for-hire operations, and recreational anglers), as well as participants associated with peripheral and support industries. All entities could continue normal and customary activities under any of the alternative specifications. Participation rates and harvest levels could continue unchanged.

Because there would be no direct effects on resource harvest or use, there would be no direct effects on fishery participants, associated industries or communities. Direct effects only accrue to actions that alter harvest or other use of the resource. Specifying MSY, MFMT, and MSST, however, establishes the platform for future management, specifically from the perspective of bounding allowable harvest levels. The relationship between and implications of the harvests levels implied by the MSY and OY alternatives relative to the status quo are discussed in Section 4.4.2.2.

Administrative costs of fishery management accrue to the time and labor involved in developing new regulations, permitting systems, or other management actions. To the extent that each of the MSY and OY alternatives provides fishery scientists and managers with specific objective and measurable criteria to use in assessing the status and performance of the fishery, the impacts of the various alternatives on administrative costs are indistinguishable. However, the more conservative (lower) the equivalent allowable harvest level, the greater the potential for harvest overages, necessitating additional management action, with associated administrative costs.

In addition to the trigger to subsequent management that MSY and OY may provide, the MSST identifies the stock level below which a resource is determined overfished. Should the evaluation of the resource relative to the benchmark result in said designation, harvest and/or effort controls are mandated as part of a recovery plan. These harvest and effort controls would directly impact the individuals, social networks, and associated industries associated with the resource or fishery, inducing short-term adverse economic impacts until the resource is rebuilt and less restrictive management is allowable.

4.2.3 Direct and Indirect Effect on the Social Environment

The setting of MSY in Action 2-1 for Caribbean spiny lobster is primarily a biological threshold that may impact the social environment depending upon where the threshold is set. These thresholds are determined through the assessments by several scientific panels and are entirely determined on the biology of the spiny lobster. Therefore, any indirect effect on the social environment would depend upon the level determined for each threshold and how it relates to current landings by both commercial and recreational sectors. The setting of this threshold becomes even more critical if sector allocation is chosen and at what level each sector allocation is set. Certainly if this threshold is set below current landing levels, there will be changes to the social environment and setting sector allocation will become controversial. **Alternative 1** would likely have few impacts as it uses the present definitions and would not change current thresholds. **Alternative 2** and **Alternative 3** could have impacts if the threshold is well below current landing levels, although it is likely that **Alternative 2** would not change that threshold

substantially. The **Preferred Alternative 4**, which uses the MSY proxy recommended by the SSC, may have few negative social effects since the threshold is above the mean landings and if not substantially reduced by other management action.

The setting of the overfishing and overfished threshold in Actions 2-2 and 2-3, for Caribbean spiny lobster are also primarily biological thresholds that may impact the social environment depending upon where the threshold is set and when that threshold is reached. With all thresholds it is assumed that the long-term effect will ensure a stable stock and should have positive social benefits. But as mentioned earlier, there can be short term negative social effects if the thresholds impose levels that reduce the current levels of harvest. These thresholds are determined through the assessments by several scientific panels and are entirely determined on the biology of the spiny lobster. Therefore, the effect on the social environment would depend upon the level determined for the overfishing and overfished threshold and how they relate to current landings by both commercial and recreational sectors. Like the other alternatives, the setting of these thresholds becomes important if sector allocation is chosen and at what level each sector allocation is set. Certainly if these thresholds are set below current landing levels, there will be changes to the social environment and setting sector allocation will become controversial. For Action 2-2, **Alternative 1** would likely have few impacts as it uses the present definition, although if this threshold is too high then long term problems with stock viability could accrue. **Alternative 2** could have impacts if the threshold is well below current landing levels. **Preferred Alternative 3** should not impose short term negative social impacts as the level should allow for current harvesting levels to continue. The same is true for Action 2-3 and it is anticipated with its **Preferred Alternative 3** that any social effects will accrue once the threshold is exceeded as management action will need to impose restrictions to harvest.

4.2.4 Direct and Indirect Effect on the Administrative Environment

There could be additional administrative burdens, if these biological reference points are not modified for consistency. Changing these biological reference points is required under the requirements of the Magnuson-Stevens Act, and if not done, could leave NOAA Fisheries Service subject to litigation, which would result in a significant administrative burden.

4.2.5 Council Conclusions

For Action 2-1 the Councils selected **Preferred Alternative 4** to establish the MSY proxy as the OFL recommended by the Gulf SSC at 7.90 mp. The Councils selected this alternative as preferred because the 2010 Update Assessment for Caribbean Spiny Lobster was not accepted. Instead the assessment and review panel concluded that a pan-Caribbean assessment was necessary to estimate Caribbean spiny lobster biomass, which genetic studies determined to be largely reliant on recruitment from Caribbean Countries. Until a pan-Caribbean assessment can be completed landings history was used to estimate MSY. The Gulf Council SSC used their ABC Control Rule and the last 10 years of Caribbean spiny lobster landings plus two standard deviations from the mean to estimate the OFL at 7.90 mp. The Councils selected this alternative as their MSY proxy until the biomass of the U.S. Caribbean spiny lobster stock can be better estimated.

For Action 2-2 the Councils selected **Preferred Alternative 3** which was to specify the MFMT as the OFL defined by the Gulf SSC at 7.90 mp. The Councils selected this alternative as preferred because the biomass of the U.S. Caribbean spiny lobster stock is unknown and largely reliant on outside recruitment from other Caribbean countries; therefore the MFMT is also unknown for Caribbean spiny lobster. The Councils decided to use the OFL estimate from landings until the biomass of the U.S. Caribbean spiny lobster stock can be estimated.

For Action 2-3 the Councils selected **Preferred Alternative 3** MSST = (1-M) x $B_{MSY.}$ The Councils selected this alternative as preferred with the understanding that MSST cannot be estimated currently. However, as stock assessments improve to include information on parent stocks throughout the Caribbean and therefore better estimates of the southeastern U.S. Caribbean spiny lobster biomass then the MSST will be estimated using this equation.

4.3 Action 3: Establish Sector Allocations for Caribbean Spiny Lobster in State and Federal Waters from North Carolina through Texas

Preferred Alternative 1: No action – Do not establish sector allocations.

Alternative 2: Allocate the spiny lobster ACL by the following sector allocations: 80% commercial and 20% recreational.

Alternative 3: Allocate the spiny lobster ACL by the following sector allocations: 74% commercial and 26% recreational.

Alternative 4: Allocate the spiny lobster ACL by the following sector allocations: 78% commercial and 22% recreational.

Alternative 5: Allocate the spiny lobster ACL by the following sector allocations: 77% commercial and 23% recreational.

Alternative 6: Allocate the spiny lobster ACL by the following sector allocations: 76% commercial and 24% recreational.

4.3.1 Direct and Indirect Effect on the Physical and Biological/Ecological Environments

The FWC invited representatives of stakeholder groups participating in Florida's lobster fishery to serve as members of the Spiny Lobster Ad Hoc Advisory Board (Advisory Board). The Advisory Board was made up of five commercial trappers, three commercial divers, three recreational fishers, two wholesale dealers, two environmental groups, and one FWC representative. The Advisory Board was designed to bring together a group of stakeholder representatives from around the state who represent the diversity of the lobster fishery community. The goal was to provide constructive comments and guidance to the FWC in the form of proposed refinements to the management of Florida's spiny lobster fishery. Over a period of sixteen months the Advisory Board met approximately eight times for approximately

two days each to focus on reviewing and discussing lobster fishery issues and proposals for refinements to Florida's spiny lobster fishery.

The Advisory Board examined landings records for all sectors of the spiny lobster fishery from 1993/1994 through 2003/2004. These data have been updated and are included in detail in Table 4.3.1.1. The Advisory Board ignored landings from unknown and other gear categories. The Advisory Board alternatives were developed by splitting the landings into four sectors (commercial trap, commercial diving, commercial bully nets, and recreational). During that time, the allocation of the lobster harvest among the different sectors changed. During the initial years of trap reductions, annual landings were generally higher than they had been in a decade. Landings by commercial divers increased, but because landings were so high, the progressive shift in the landings allocation toward that group appeared subtle. However, a period of lower landings beginning with the 2000/2001 season underscored this shift toward the commercial dive fishery and the recreational fishery as well. Regulations limiting harvest of commercial divers were enacted beginning with the 2003/2004 season. The effects of these rules can be seen by comparing allocations in the 2002/2003 and 2003/2004 seasons. Landings were essentially the same for both seasons, but the harvest share of commercial divers was reduced because of trip limits and the prohibition of harvest from artificial habitat. It appears that in high landing years, trappers have a larger harvest share because lobsters are available to be captured later in the season when there is little diving activity. Harvest from casitas is most effective early in the season. (Note: Harvest by casitas was prohibited in 2003). In low landings years, these early landings make up a larger harvest share than in high landing years. There is a need to understand current allocations in the spiny lobster fishery, how those allocations have shifted over time, and how rule changes have likely impacted allocation. The Councils have collapsed the commercial sub-allocations by gear into one commercial allocation for the alternatives being considered.

Table 4.3.1.1. Florida landings of spiny lobster, by sector (thousand pounds, ww).

Fishing year	Directed commercial					Bait	Recreational		Total
	Traps	Diving	Other	Total	% of total		Pounds	% of total	
91/92	6,602	192	43	6,836	79%	427	1,816	21%	8,652
92/93	5,125	223	20	5,368	80%	352	1,352	20%	6,721
93/94	5,109	176	24	5,310	74%	237	1,883	26%	7,193
94/95	6,808	254	119	7,182	79%	310	1,906	21%	9,088
95/96	6,638	308	72	7,017	78%	306	1,931	22%	8,948
96/97	7,319	338	88	7,744	80%	360	1,923	20%	9,667
97/98	7,148	397	96	7,640	77%	405	2,304	23%	9,944
98/99	5,037	352	58	5,448	81%	188	1,303	19%	6,750
99/00	6,996	588	85	7,669	76%	368	2,462	24%	10,131
00/01	4,856	635	77	5,569	74%	288	1,949	26%	7,518
01/02	2,610	447	22	3,079	71%	234	1,251	29%	4,330
02/03	3,992	560	25	4,577	76%	259	1,455	24%	6,033
03/04	3,727	392	42	4,162	75%	231	1,412	25%	5,573
04/05	5,126	312	35	5,473	76%	244	1,658	23%	7,201
05/06	2,680	267	17	2,963	72%	147	1,131	28%	4,094
06/07	4,517	252	31	4,799	79%	160	1,305	21%	6,104
07/08	3,468	289	21	3,778	76%	185	1,215	24%	4,993
08/09	3,006	244	20	3,269	72%	98	1,264	28%	4,533
09/10	4,149	152	42	4,343	79%	139	1,127	21%	5,470
10 yr ave	3,813	355	33	4,201	75%	198	1,377	25%	5,585
5 yr ave	3,564	241	26	3,831	76%	146	1,208	24%	5,039

Sources: The Gulf Council's Standing and Special Spiny Lobster SSC estimated the recreational landings for 04/05. Otherwise, the data source for 91/92-09/10 sector totals, grand total, and commercial sector breakouts for traps and diving for 94/95-09/10 is from FWC (W. Sharp, pers. comm., Nov. 7, 2010, including updates as of June 24, 2010). Data source for commercial sector breakouts for traps and diving, 86/8-93/94 and estimated fishing mortality associated with the use of under-sized lobsters as bait (attractants) in traps for all years is SEDAR 8 update 2010 (01Dec10). Landings for "other" commercial gear estimated from unrounded data used in this table. Recreational landings from 92/93 are estimated using surveys of recreational lobster permit holders and represent combined landings during the special 2-day sport season and from opening day of the regular season (Aug. 6) through Labor Day. Grand total excludes estimated fishing mortality for bait. Underlying data may differ among sources.

So, why does increasing harvest from one sector have the effect of reducing the harvest of another sector? It is because the total lobster harvest each year is largely dependent upon the number of lobster available to be harvested that year and not by the amount of fishing effort expended to catch those lobsters, except in those unusual circumstances where effort is curtailed by extraordinary events such as hurricanes. Across the range of effort in the fishery since approximately 1975, landings and effort have not been related. Good fishing years have occurred with high and low effort, as have poor fishing years. For example, the best year on record for the commercial fishery was 1979 when nearly 7.9 mp were landed using about 600,000 traps. In contrast, 1983 was a poor fishing season with a harvest of 4.5 mp, again from about 600,000 traps. Similar observations can be made in recent years when landings estimates for all fishing groups were available. During 1999, the fishery (recreational and commercial) harvested 10.1 mp from 534,000 traps, 4,377 commercial fishing dive days, and 555,000

recreational fishing days. In contrast, the 2001 harvest of 4.3 mp was caught from the same number of traps, 4,538 commercial dive days, and 366,000 recreational fishing days. Furthermore, the size-structure of the lobsters landed by the fishery has remained constant since 1987, as has the average size. The average size has consistently been 3 ¼-in carapace length, just barely above the minimum legal size. This indicates that the fishery is heavily reliant on a single year class of lobsters each season – those that have just grown to legal size. Fluctuations in harvest are related to fluctuations in the numbers of new recruits to the fishery and not the number of traps, diver-days or recreational fishing days. Put another way, the size of the 'lobster pie' each year is determined by the number of lobsters attaining legal size. A change in fishing effort by any one sector simply alters that sector's piece of the pie.

The Councils used the alternatives and the administrative record developed by the FWC as the basis for developing allocation alternatives given that the majority of the harvest occurs off Florida and given that the Councils have delegated much of the management to Florida through a protocol established in Spiny Lobster Amendment 2 in 1989. The consensus recommendations of the Advisory Board, including all options evaluated, are presented in a document dated May 2007. The alternatives and rational are taken from the Facilitator's Summary Report of the May 23-24, 2006 Meeting. These documents and other materials related to the Spiny Lobster Advisory Committee are available at: http://consensus.fsu.edu/FWC/LAB.html

Allocating the ACL between the recreational and commercial sectors will have no direct effect on the physical and biological/ecological environments. The range of commercial allocations (74-80%) is not sufficient to affect the number of lobster traps used so there would be no change in the impacts from lobster traps. A discussion of the impacts of each sector on target and non-target species can be found in the Bycatch Practicability Analysis (Appendix D).

4.3.2 Direct and Indirect Effect on the Economic Environment

The sector allocations under Action 3 have no application in Amendment 10 apart from ACL and ACT alternatives under Action 4 wherein they are incorporated. In this context, their effects are discussed in Section 4.4.2. Sector allocations and ACTs are not mandated under the Magnuson-Stevens Act, whereas ACLs and AMs are. Any economic impacts of Amendment 10 would occur largely in Monroe County. That is, even though the FMP applies to all southeastern coastal states (North Carolina through Texas), practically all of the landings of Caribbean spiny lobster occur in Florida, largely in Monroe County, which accounts for 90% for Florida's commercial landings and 67% of Florida's recreational landings (averages for 2005/06-2009/10).[8]

Recreational and commercial landings and fishing effort for Caribbean spiny lobster in Florida have been volatile, and mostly lower from 2001/2002 onward than in the 1990s (Figures 4.3.2.1 and 4.3.2.2).

[8] Relatively small amounts have been reported for other states since 1977, in most instances for fewer than three dealers, in which case the data are confidential (unpublished analysis of NMFS, SEFSC, ALS data as of Aug. 31, 2010). The percentages of landings for Monroe County are based on 04/05-09/10 averages for data from J. Munyandorero and R. Muller (FWC, pers. comm.).

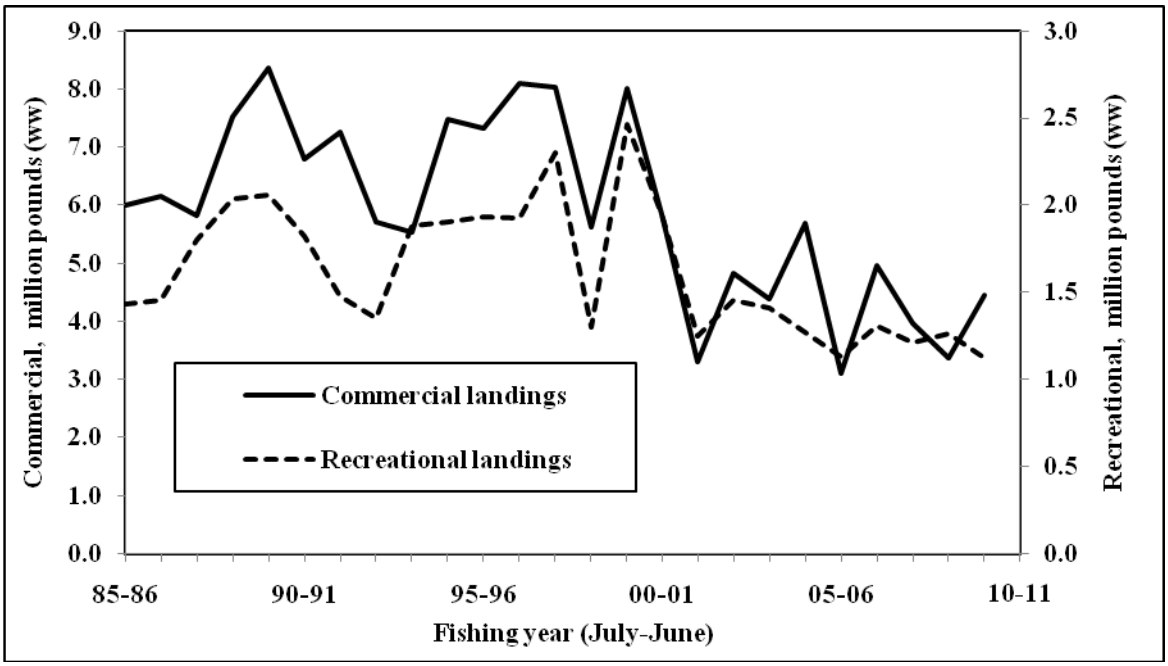


Figure 4.3.2.1. Florida commercial and recreational landings.
Source: SEDAR-8, 2010 update.

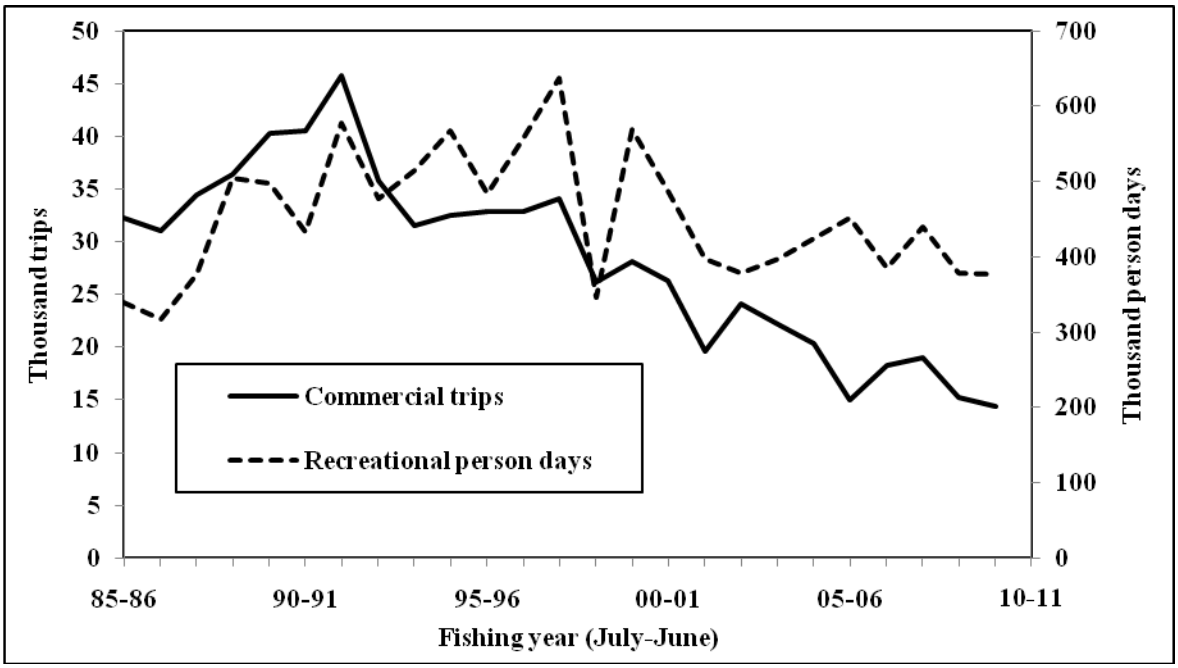


Figure 4.3.2.2. Florida commercial and recreational fishing effort.
Source: SEDAR-8, 2010 update.

Since 1991, regulation of recreational landings of Caribbean spiny lobster in Florida has been achieved through a system of state and federal bag limits, which vary by area fished and time of year. In addition, there are mandatory licenses and permits, as described in Sections 3.1.3 and

3.4.2. In contrast with commercial fishing for spiny lobster, however, participation and entry to the recreational sector are not limited (Shivlani 2009). Data on recreational landings, effort, and numbers of permits, and lower ex-vessel prices in the commercial sector all reflect weakened national economic conditions in the last few years (see figures in Sections 3.1.3 and 3.1.4).

Commercial fishing effort for Caribbean spiny lobster in Florida has been reduced substantially under the State's Trap Certificate Program. The number of vessel and trips with landings are far less than what they were in the early 1990s, along with the number of hours fished and the estimated number of traps fished (Vondruska 2010a). Despite lower landings in the 2000s (Figure 4.3.2.1), trends in productivity continued to increase in terms of landings per trip and landings per vessel, albeit at a slower pace than in the past (Section 3.4.1). Recreational landings were also lower in the 2000s, but fishing effort appears to be relatively flat compared with commercial fishing effort (Figures 4.3.2.1 and 4.3.2.2), and recreational CPUE has remained relatively flat compared with commercial fishing CPUE (Figures 3.4.1.3 and 3.1.3.4).

4.3.3 Direct and Indirect Effect on the Social Environment

By establishing sector allocations there would likely be some changes in fishing behavior and impacts to the social environment. The mere act of separating the ACL into two sector ACLs has the perception of creating scarcity in that limits have been imposed on each individual sector. The setting of an ACL has the same impact but on the overall fishery. Each subsequent division will drive perceptions of scarcity and likely change the fishing behavior of those within a particular sector. The commercial lobster fishery has been under a trap reduction program since the early 1990s and has seen a gradual reduction in the number of traps being fished. This was the goal of the trap reduction program. However, recently the active trap reduction portion of the program has stopped and only passive trap reduction continues. This was requested by the industry which did not seem to believe the trap reduction program was producing the economic efficiency that was one of the goals of the program. Over the past decade, there has been a gradual increase in the portion of overall landings being taken by the recreational sector. As mentioned above, the Caribbean spiny lobster stock is dependent upon annual recruitment, so harvest is highly dependent upon the effort with either sector. Whether the trap reduction program is partly responsible for this shift is unknown. While traps have been reduced there has not been a parallel reduction in commercial landings. Recreational trips have declined also, so it may not be merely an increase in recreational effort either. It is likely that a complex set of factors are contributing to the shift in landings. Changes in regulation both to commercial diving and recreational diving and the use of casitas along with illegal activity have all likely had an impact on the shifting effort and harvest.

By not establishing separate sector allocations, the **Preferred Alternative 1** would allow for harvest to freely flow between the commercial and recreational sectors as it has in the past; although, if harvest exceeds the overall ACL then both sectors could be closed. This would likely become more an issue for the commercial sector than the recreational, because commercial fishermen continue to fish later in the year when lobsters become scarcer. **Alternatives 2** and **4** would provide an increase in allocation to the commercial sector and subsequent reduction to the recreational; while **Alternative 3** would provide an increase to the recreational sector. Of all the different scenarios, **Alternative 4** seems to have some support as it was selected by the Advisory

Board as the most favorable of the options. **Alternatives 5** and **6** both provide increases to the recreational sector, although smaller than previous alternatives. So, in all cases where sector allocations are imposed, it would be expected that there may be negative social effects to whichever sector receives less than their current allocation and those effects would correspond to the amount of reduction.

4.3.4 Direct and Indirect Effect on the Administrative Environment

Sector allocations (**Alternatives 2-6)** would increase the burden on the administrative environment because two ACLs or ACTs would need to be monitored rather than one, as in **Preferred Alternative 1**. There are no other administrative impacts from allocating among the commercial and recreational sectors other than preparation of the amendment document and notices.

4.3.5 Council Conclusions

The Councils moved the options that would have allocated the ACL by gear within the commercial sectors to Appendix A: Alternatives Considered but Eliminated from Detailed Consideration because some of the quotas were too small to track given the existing quota monitoring programs (e.g., 1% to the commercial bully net fishery). The Councils recognize the competition between commercial diving and commercial trapping but the existing quota monitoring programs do not provide the ability to track these separate commercial quotas. After the Councils chose to combine all gear types when determining allocations for each sector, alternatives were moved to Appendix A that were identical or very similar to alternatives retained under the action. The Councils chose to not designate sector allocations to minimize the administrative burden, and also because the ACL will likely not be exceeded under the current fishery conditions. The Councils will review the decision for sector allocations if landings increase in the future.

4.4 Action 4: Acceptable Biological Catch (ABC) Control Rule, ABC Level(s), Annual Catch Limits, and Annual Catch Targets for Caribbean Spiny Lobster

Action 4-1: Acceptable Biological Catch (ABC) Control Rule

Alternative 1: No Action – Do not establish an ABC Control Rule for spiny lobster.

Preferred Alternative 2: Adopt the following ABC Control rule:
Option a: the South Atlantic Council's ABC control rule.
Preferred Option b: the Gulf Council's ABC control rule.

Alternative 3: Establish an ABC Control Rule where ABC equals OFL.

Alternative 4: Specify ABC as equal to the mean of the last 10 years landings.

Alternative 5: Specify ABC as equal to the high of the last 10 years landings.

Alternative 6: Specify ABC as equal to the low of the last 10 years landings.

Action 4-2: Set Annual Catch Limits (ACLs) for Caribbean Spiny Lobster

Alternative 1: No Action – Do not set ACLs.

Preferred Alternative 2: Set an ACL for the entire stock based on the ABC:
Preferred Option a: ACL = ABC = (7.32 million pounds).
Option b: ACL = 90% of ABC (6.59 million pounds).
Option c: ACL = 80% of ABC (5.86 million pounds).

Alternative 3: Set ACLs for each sector based on allocations determined in Action 3:
Option a: ACL = (sector allocation x ABC).
Option b: ACL = 80% or 90% of (sector allocation x ABC).
Option c: ACL = sector allocation x (80% or 90% of ABC).

Action 4-3: Set Annual Catch Targets (ACTs) for Caribbean Spiny Lobster

Alternative 1: No Action – Do not set ACTs.

Preferred Alternative 2: Set an ACT for the entire stock.
Preferred Option a: ACT = OY = 90% of ACL (6.59 million pounds).
Option b: ACT = OY = ACL (7.32 million pounds).
Option c: ACT = OY = 6.0 million pounds.

Alternative 3: Set ACTs for each sector based on allocations from Action 3.

Option a: ACT = OY = (sector allocation x ACL).

Option b: ACT = OY = 90% of (sector allocation x ACL).

Option c: ACT = OY = sector allocation x (90% of ACL).

4.4.1 Direct and Indirect Effects on the Physical and Biological/Ecological Environments

Setting an ABC control rule (Action 4-1) would not affect the physical or biological environments. Setting an ACL or ACT (Actions 4-2 and 4-3) could affect the physical environment if harvest changes from current levels. Lobster fishing, particularly when traps are used, can have negative impacts on the bottom as described in Section 4.9.1. Commercial trap fishing for Caribbean spiny lobster is not managed by landings but by restricting the number of trap tags issued by Florida. Therefore, unless the state increases the number of trap tags it distributes, the number of traps could not increase even if more landings were allowed. If harvest is restricted under an ACL or ACT, fishing effort could be reduced through AMs such as a shortened season, and negative impacts to the resource might be decreased.

Setting an ACL or ACT (Action 4-2 and 4-3) potentially will have an impact on the biological environment if harvest changes from current levels, and AMs are triggered when the ACL or ACT are met or exceeded. An ACL equal to the ABC would allow a higher level of landings than an ACL lower than the ABC. Likewise, not setting an ACT may allow a higher level of landings than setting an ACT below the ACL. **Preferred Alternative 2, Option a** for Action 4-3 sets an ACT higher than the recent 10-year average and has only been exceeded once in the past 10 years. Even the most restrictive ACT (**Option c**) is higher than the recent 10-year average. Therefore, no biological impacts would be expected from setting ACL and ABC.

Traps impact species other than lobsters. Fish, crabs, and other invertebrates may be captured as bycatch. Marine mammals and sea turtles can become entangled in trap line. These negative biological impacts could increase or decrease if effort changes; however, effort is not expected to increase. Current effort is limited by the number of trap tags issued by Florida, commercial and recreational bag limits, and the length of the fishing season. Although fishers could fish more often and fish during a longer part of the season to increase effort, they presumably are already fishing at the level they desire because regulations do not prohibit such increased effort.

The more divided the ACL or ACT is, the more accountability each division will have. With a single ACL or ACT for the stock (**Preferred Alternative 2,** Actions 4-3 and 4-3), one sector could exceed its allocation without triggering AMs, as long as the stock ACL is not exceeded. If the ACL or ACT is separated by sectors (**Preferred Alternative 3,** Actions 4-3 and 4-3), AMs would be triggered as each sector reaches its limit, provided adequate monitoring could be in place. This level of control would be expected to result in greater positive impacts on the biological environment because catch would be more restricted. Further, with separate ACLs or ACTs, different types of AMs could be triggered that are more suited to the particular sector, and therefore, be more effective in constraining harvest within the ACL.

4.4.2 Direct and Indirect Effect on the Economic Environment

The ABCs for **Alternatives 2-6** of Action 4-1 are shown in Table 4.4.2.1. These ABCs are transferred to Table 4.4.2.2, which provides a basis for comparing the effects of sector allocations, ABCs, and ACLs. There are 108 single or paired-set ACLs possible. For example, consider the ACL in the upper left corner of Table 4.4.2.2, 5.522 mp, which is for **Preferred Alternative 2, Option a** of Action 4-2 (ACL = 100% of ABC) and **Alternative 2, Option a** of Action 4-1 (ABC = 10-year median landings). For purposes of comparison, it is assumed that landings under **Alternative 1** are as shown in Table 4.4.2.1.

Table 4.4.2.1 Caribbean spiny lobster off Florida status quo landings & ABCs in million pounds (ww)

ABC alternative	5-yr means	ABC control rule	ABC
Alt. 1 (status quo), total landings	5.039		
Commercial landings	3.831		
Recreational landings	1.208		
Alt. 2a: SAFMC ABC control rule		10-year median	5.522
Alt. 2b: GMFMC ABC control rule		10-year mean + 1.5 sd	7.320
Alt. 3: GMFMC OFL (ABC = OFL)		10-year mean + 2.0 sd	7.900
Alt. 4		10-year mean	5.585
Alt. 5		10-year high	7.518
Alt. 6		10-year low	4.094

Landings for Alternative 1 and the ABC values for Alternatives 2-6 are based on data in Table 2.4.1. The Gulf Council's Standing and Special Spiny Lobster SSC recommended spiny lobster be considered as a special case fishery for purposes of setting OFL and ABC in accord with Tier 3a (draft committee-report summary for the SSC meeting in Tampa, Florida, Jan. 18-21, 2011). They estimated recreational landings for 04/05, which were not available. Data source: FWC (W. Sharp, pers. comm.).

Table 4.4.2.2 Caribbean spiny lobster off Florida. ABC control rules and ACLs in million pounds (ww)

Action 3, sector allocation alternatives	ACL: % of ABC	Sector %	Action 4.1 ABC Alternatives based on 00/01-09/10 data					
			2a: 10-yr median	2b: 10-yr mean + 1.5 sd	3: 10-yr mean + 2.0 sd	4: 10-yr mean	5: 10-yr high	6: 10-yr low
Action 4-2, Alternative 2, specify overall ACL and OY based on a percentage of ABC								
Alt 2a: ACL = % of ABC	100	na	5.522	7.320	7.900	5.585	7.518	**4.094**
Alt 2b: ACL = % of ABC	90	na	**4.969**	6.588	7.110	5.026	6.766	**3.685**
Alt 2c: ACL = % of ABC	80	na	**4.417**	5.856	6.320	4.468	6.014	**3.275**
Action 4-2, Alternative 3a: Sector ACL = Sector OY = (Sector Allocation % * 100% of ABC)								
Com ACL, Act 3, Alt 2	100	80	4.417	5.856	6.320	4.468	6.014	**3.275**
Rec ACL, Act 3, Alt 2	100	20	**1.104**	1.464	1.580	**1.117**	1.504	**0.819**
Com ACL, Act 3, Alt 3	100	74	4.086	5.417	5.846	4.133	5.563	**3.030**
Rec ACL, Act 3, Alt 3	100	26	1.436	1.903	2.054	1.452	1.955	**1.064**
Com ACL, Act 3, Alt 4	100	78	4.307	5.710	6.162	4.356	5.864	**3.193**
Rec ACL, Act 3, Alt 4	100	22	1.215	1.610	1.738	1.229	1.654	**0.901**
Com ACL, Act 3, Alt 5	100	77	4.252	5.636	6.083	4.300	5.789	**3.153**
Rec ACL, Act 3, Alt 5	100	23	1.684	1.684	1.817	1.285	1.729	**0.942**
Com ACL, Act 3, Alt 6	100	76	4.196	5.563	6.004	4.245	5.713	**3.112**
Rec ACL, Act 3, Alt 6	100	24	1.325	1.757	1.896	1.340	1.804	**0.983**
Action 4-2, Alternative 3b: Sector ACL = Sector OY = (Sector Allocation % * 90% of ABC)								
Com ACL, Act 3, Alt 2	90	80	3.976	5.270	5.688	4.021	5.413	**2.948**
Rec ACL, Act 3, Alt 2	90	20	**0.994**	1.318	1.422	**1.005**	1.353	**0.737**
Com ACL, Act 3, Alt 3	90	74	**3.677**	4.875	5.261	**3.720**	5.007	**2.727**
Rec ACL, Act 3, Alt 3	90	26	1.292	1.713	1.849	1.307	1.759	**0.958**
Com ACL, Act 3, Alt 4	90	78	3.876	5.139	5.546	3.921	5.277	**2.874**
Rec ACL, Act 3, Alt 4	90	22	**1.093**	1.449	1.564	**1.106**	1.489	**0.811**
Com ACL, Act 3, Alt 5	90	77	**3.826**	5.073	5.475	**3.870**	5.210	**2.837**
Rec ACL, Act 3, Alt 5	90	23	**1.143**	1.515	1.635	**1.156**	1.556	**0.847**
Com ACL, Act 3, Alt 6	90	76	**3.777**	5.007	5.404	**3.820**	5.142	**2.800**
Rec ACL, Act 3, Alt 6	90	24	**1.193**	1.581	1.706	**1.206**	1.624	**0.884**
Action 4-2, Alternative 3c: Sector ACL = Sector OY = (Sector Allocation % * 80% of ABC)								
Com ACL, Act 3, Alt 2	80	80	**3.534**	4.685	5.056	**3.574**	4.811	**2.620**
Rec ACL, Act 3, Alt 2	80	20	**0.883**	**1.171**	1.264	**0.894**	**1.203**	**0.655**
Com ACL, Act 3, Alt 3	80	74	**3.269**	4.333	4.677	**3.306**	4.451	**2.424**
Rec ACL, Act 3, Alt 3	80	26	**1.148**	1.523	1.643	**1.162**	1.564	**0.852**
Com ACL, Act 3, Alt 4	80	78	**3.445**	4.568	4.930	**3.485**	4.691	**2.555**
Rec ACL, Act 3, Alt 4	80	22	**0.972**	1.288	1.390	**0.983**	1.323	**0.721**
Com ACL, Act 3, Alt 5	80	77	**3.401**	4.509	4.866	**3.440**	4.631	**2.522**
Rec ACL, Act 3, Alt 5	80	23	**1.016**	1.347	1.454	**1.028**	1.383	**0.753**
Com ACL, Act 3, Alt 6	80	76	**3.357**	4.451	4.803	**3.396**	4.571	**2.489**
Rec ACL, Act 3, Alt 6	80	24	**1.060**	1.405	1.517	**1.072**	1.443	**0.786**

Source: ABCs in Table 4.4.2.1

Sector allocations may be perceived as a conservation measure, but they could restrict total catch well below ABC if activity in one sector is curtailed because that sector's ACL is reached and the ACL for the other sector is not reached. This could result in triggering AMs for one sector while the other sector would not be affected, and total landings would remain below the overall limit.

Under **Alternative 1**, management conditions and related operation of the fishery, and associated economic benefits, would remain unchanged, with some caveats. The choice of **Alternative 1** for Actions 4-1 and 4-2 would lead a decision by the Secretary of Commerce to not approve Amendment 10, and involve the additional work and cost of redoing and resubmitting the amendment, either by NOAA Fisheries Service or the Councils. This could affect constituent perceptions about the ability of fishery managers to comply with the requirements of the Magnuson-Stevens Act to specify ACLs and AMs, thereby introducing elements of uncertainty about future business conditions and fishery regulations. While the extent of any change in economic behavior of fishery participants is not known, uncertainty about business conditions and regulations may be seen as adversely affecting various sectors of the economy, including commercial and recreational fishing. If increased protection were needed, such as might occur with a lower ACLs, then **Alternative 1** could preclude such protection from occurring, thereby increasing the likelihood of current or future resource decline, with associated reduction in economic benefits.

On the other hand, some of the 108 single or paired-set ACLs in Table 4.4.2.2 could require substantial reductions in landings. The ACLs with commercial, recreational, or total landings below those for Action 4-2 **Alternative 1** are shown in bold type, referring to **Alternative 1** commercial landings of 3.831 mp, recreational landings of 1.208 mp, and total landings of 5.039 mp**.** Arguably, economic activity could have been reduced under the more traditional output-control AMs of Action 5, and/or via further adjustments to Florida market-oriented input-control regulations for the commercial sector.[9] Given the alternatives specified in Amendment 10, however, the more traditional output-control regulations for the commercial sector (to limit landings, impose trips limits and shorten seasons) of Actions 4 and 5 may be seen as having differing, if not conflicting objectives, in that they would introduce a move away from a private market mechanism for allocating harvesting rights (Larkin and Milon 2000, quoted in Section 3.1.2).

The regulations for recreational fishing of Actions 4 and 5 and state regulations are more harmonious, if not market oriented. Florida has used area-specific bag limits and seasons to regulate recreational fishing and has not limited or reduced the relatively large number of recreational licenses and permits that may be issued (Table 3.4.2.1; Sections 3.1.3 and 3.4.2). The prospects for implementing market mechanisms under state or federal auspices to allocate

[9]Since the early 1990s, the State's Trap Certificate Program has been quite successful in meeting the objectives of substantially reducing commercial fishing effort, thereby improving productivity and economic conditions for remaining fishermen (Table 3.1.2.1; Sections 3.1.2 and 3.4.1). Much smaller landings, numbers of permits, and effort have been reduced by the State for commercial divers, as well as for recreational divers with Special Recreational Crawfish Licenses (Table 3.1.2.1).

recreational harvesting rights for spiny lobster would seem remote at best, though such mechanisms have been employed in recreational hunting and fishing.

Regardless, the impact on economic activity associated recreational fishing of lower bag limits, early season closures, and/or shorter seasons are more difficult to quantify than are counterparts for commercial fishing. This is because the demand for recreational fishing activity relates in part to other dimensions of trips than the amount of fish or shellfish caught. It is possible that bag limit analyses could be conducted using data collected by the FWC. One might expect a considerable range in the number of lobsters per person per trip, ranging from zero to beyond the bag limit. If so, one would expect that a reduced bag limit would affect some trips, but not all. Still, the dollar amount per lobster in terms of willingness to pay is much higher for decreases in bag limits than for increases in bag limits (FWC survey of recreational lobster fishing of 1992; see Section 3.4.2).

Data on participants in recreational fishing in Florida has been collected annually via two mail-in surveys sent to persons with lobster licenses/permits (Section 3.4.2). The mail-in surveys would not include data for spiny lobster caught by passengers aboard for-hire fishing vessels when individual participants do not have Florida licenses and permits (see Section 3.4.2, last paragraph under "Number and Description of Recreational Fishers"). Furthermore, data on economic activity specifically for for-hire vessels engaged in trips for spiny lobster does not appear to be available.

4.4.3 Direct and Indirect Effect on the Social Environment

That ABC can have important social effects as it is in many ways the determination of stock status and all decisions of allowable harvest level are derived from that threshold. For Action 4-1, **Alternative 1** seems to be untenable, since some level needs to be set, unless as in **Alternative 3** the threshold is equal to the OFL which would likely impose few negative social effects, but could risk a volatile stock status. **Preferred Alternative 2** offers **Option a** and **Preferred Option b** corresponding to each Council's SSC control rule which would vary depending upon the threshold levels that are calculated. The Gulf Council SSC's ABC calculations are above the most recent landing levels. With **Alternative 4** using the mean of the last 10 years, there would be a reduction from the most recent years landings and certainly **Alternative 6,** which uses the lowest landing level of the past 10 years, would have negative social effects as it would reduce harvest from current levels. **Alternative 5** would have few negative social effects in the short term as there would be no reduction in harvest, but may have long term effects if the catch limits are too high and jeopardize stock status.

Setting thresholds that adequately assess biological risk through harvest levels on stocks that are vulnerable can help stabilize landings and thereby provide long-term benefits to the fishery which should translate into positive social benefits over time. It is the short-term costs involved that often drive perceptions of negative impacts. These impacts can translate into real costs that have significant impacts to both the commercial and recreational sectors. For Action 4-2, **Alternative 1** would not set ACLs and in that case harvest levels would likely revert to some other threshold, like ABC. This would likely have fewer negative social effects than a more restrictive ACL like those in **Alternative 2, Options b** and **c**. **Preferred Alternative 2, Option**

a would not impose a more restrictive catch limit. **Alternative 3, Option a** would be similar except that it incorporates sector allocations as do **Alternative 3, Options b and c**.

It is the setting of ACTs where social and economic considerations might enter the equation as management uncertainty is evaluated. Setting of ACTs is utilized in fisheries where there may be management uncertainty that adds risk to reaching target harvest levels beyond the biological risks. It usually entails a further reduction in harvest levels to ensure catch remains at or below the ACL and does not wildly fluctuate. For fisheries where information is scarce and management is uncertain, it becomes a real possibility that there can be negative short-term impacts that may not have been necessary if thresholds are too restrictive. In other fisheries which have more certainty in management and monitoring of catch, a more precise harvest level can be set with certainty and reduce volatility in the fishery. The spiny lobster fishery does not seem to be overfished and has not experienced large fluctuations in landings, although, there are many avenues for changes in stock status that are attributed to factors outside of manager's purview, i.e. disease, hurricanes, or habitat degradation. Management has imposed restrictions on catch that over the years has imposed some certainty, yet the recreational fishery does not have the timely monitoring that can be imposed on the commercial fishery. The spiny lobster fishery seems to be stable and would not require an ACT if managers felt a level of certainty in the present management regime. Therefore for Action 4-3, **Alternative 1** would not impose further negative social effects. **Alternatives 2** and **3** could impose further reductions in harvest and could have short-term negative effects depending upon the reduction of harvest from present levels. It is assumed that if alternatives were chosen that do reduce current harvest levels it would be for the long-term benefits of increasing stock status which may have positive social benefits in the long term, but is entirely dependent upon the severity of the short-term negative social effects. **Preferred Alternative 2, Option a** would be above the most recent landing levels, although in the past landings have exceeded that threshold. Because it does have a buffer from the ACL, exceeding the ACT should not jeopardize the stock.

4.4.4 Direct and Indirect Effects on the Administrative Environment

Alternative 1 for Actions 4-1 and 4-2 would not meet the requirements in the Magnuson-Stevens Act and the Code of Federal Regulations, and could be subject to litigation, which would result in a significant administrative burden on the agency. Specifying an ABC control rule would not increase the administrative burden over the status-quo. With establishment of an ACL or ACT (Actions 4-2 and 4-3, **Preferred Alternative 2** and **Alternative 3**), commercial landings would need to be included in the Southeast Fisheries Science Center's Quota Monitoring System. This system requires dealers to report landings, usually on a biweekly basis. Currently, commercial fishermen report their catch through state trip tickets, which are compiled over several months before totals are available for federal management. Recreational catch is estimated based on telephone, email, and dockside surveys. Recreational landings are not collected by the Marine Recreational Information Program (MRIP).

For Actions 4-2 and 4-3, **Alternative 3** provides options related to the allocation of the quota between the commercial and recreational sectors. Options to track the ACL or ACT by sector would have a greater administrative impact than single stock ACL or ACT (**Preferred**

Alternative 2) because landings would need to be monitored in relation to the commercial and recreational separately.

4.4.5 Council Conclusions

For Action 4-1, the Councils chose **Preferred Alternative 2, Option b** to be consistent with decisions made for other species and to provide a statistically based way of setting ABC, even if a new stock assessment changed the status of the stock. In that case, the same control rule could be used, but the SSC could choose a different tier, based on the best scientific information. **Alternative 1** would not meet the Magnuson-Stevens Act requirements and **Alternatives 3-6** would not allow for changes to the ABC based on subsequent stock assessments.

For Action 4-2, the Councils chose to set an ACL equal to the ABC (**Preferred Alternative 2, Option a**) because total landings of Caribbean spiny lobster have been below that level for many years. The stock is not believed to be overfished or undergoing overfishing, so further reductions in catch (**Options b-c**) are not necessary. The Council did not choose **Alternative 3** because no sector allocations currently exist and implementing AMs separately would impose an unnecessary burden. **Alternative 1** would not meet the Magnuson-Stevens Act requirements.

For Action 4-3, the Councils chose **Preferred Alternative 2** because an ACT would provide a reference point if landings increased over recent average levels. **Preferred Option a** sets a buffer from the ACL, which means if the ACT is exceeded due to increasing landings, new measures could be implemented before the ACL is reached. **Option b** would not establish a buffer, and **Option c** would not allow the ACT to change if the ACL changed. The Councils did not choose sector ACTs (**Alternative 3**) for the same reasons they did not choose sector ACLs.

4.5 Action 5: Accountability Measures (AMs) by Sector

*Note: More than one alternative, option, sub-option, or combinations thereof, may be chosen as preferred.

Alternative 1: No Action – Do not set AMs. Currently there are no management measures in place that could be considered AMs.

Alternative 2: Establish commercial in-season AMs**:**

- **Option a**: Close the commercial fishery when the ACL is projected to be met.
- **Option b**: Implement a commercial trip limit when 75% of the commercial ACL is projected to be met.

Alternative 3: Establish post-season AMs:

- **Option a**: Commercial
  - **Sub-option i**: ACL payback in the fishing season following a previous years ACL overage.
  - **Sub-option ii**: Adjust the length of the fishing season following an ACL overage.

Sub-option iii: Implement a trip limit.

Option b: Recreational

Sub-option i: ACL payback in the fishing season following an ACL overage. To estimate the overage, compare the recreational ACL with recreational landings over a range of years. For 2011, use only 2011 landings. For 2012, use the average landings of 2011 and 2012. For 2013 and beyond, use the most recent three-year running average.

Sub-option ii: Adjust the length of the fishing season following an ACL overage. To estimate the overage, compare recreational ACL with recreational landings over a range of years. For 2011, use only 2011 landings. For 2012, use the average landings of 2011 and 2012. For 2013 and beyond, use the most recent three-year running average.

Sub-option iii: Adjust bag limit for the fishing season following a previous season's ACL overage.

Option c: Recreational and commercial combined accountability measures

Sub-option i: Adjust season length for both recreational and commercial harvest of spiny lobster in the fishing season following an ACL overage.

Sub-option ii: Recreational and commercial ACL payback in the fishing season following a previous season's ACL overage (if a combined ACL is chosen).

Preferred Alternative 4: Establish the ACT as the accountability measure for Caribbean spiny lobster (ACT = 6.59 million pounds).

4.5.1 Direct and Indirect Effect on the Physical and Biological/Ecological Environments

Alternative 1 is not considered a viable option since it would specify no AMs and therefore, would not limit harvest to the ACL or correct for an ACL overage if one were to occur. The Magnuson-Stevens Act requires that mechanisms of accountability be established for all federally managed species, with exceptions for ecosystem component species and species with annual life cycles. **Alternative 1** would not comply with this mandate, and would provide no biological benefit to the species.

Before proceeding with the discussion of AMs it is important to note that a recent study using microsatellite DNA analysis to identify sources of recruitment among Caribbean spiny lobsters indicates the majority of recruits come from areas outside the management area (Hunt and Tringali 2011). Therefore, any true biological benefits that may accrue in the Caribbean spiny lobster population found within the subject management area, as a result of implementing any one of the AMs considered, are likely to be negligible. What is more likely to significantly impact the local population of spiny lobster is an environmental event on a more regional scale that could potentially disrupt current larval dispersion patterns into and out of the management area, or alter the habitat in such a way as to prevent the settling post-larvae Caribbean spiny lobster in southeastern U.S. waters.

The Councils considered in-season AMs for the recreational sector of the spiny lobster fishery; however, difficulties in accurately tracking recreational harvest of spiny lobster in-season

precluded further consideration of those alternatives (See Appendix A for Considered but Rejected Alternatives). The newly implemented MRIP does not collect landings information on crustaceans, so in-season tracking of spiny lobster landings in the recreational fishery would depend on Florida's limited recreational data survey program. Therefore, the implementation of in-season AMs is not practical for the recreational sector of the spiny lobster fishery.

Alternative 2 would attempt to limit commercial harvest to levels at or below the ACL by reducing and/or prohibiting harvest once the ACL or a portion of the ACL is projected to be met. Tracking recreational landings of spiny lobster in-season would be very difficult because spiny lobster landings are not currently collected under MRIP. Thus, **Alternative 2** would be considered a sector AM for the commercial sector only. However, the current preferred alternatives for the actions to establish ACL and ACT use a single ACL equal to OY which is equal to the ABC, and a single ACT for the commercial and recreational sectors equal to 6.59 mp. In this case, there may be no need to establish separate commercial and recreational AMs for the spiny lobster fishery.

The most biologically beneficial in-season commercial sector AM would be a combination of **Alternative 2, Option a** and **Option b**. The combination of these options would help to hedge against an ACL overage by reducing the trip limit when 75% of the commercial ACL is projected to be met, and then close the commercial sector when the quota is projected to be met. Closing the commercial fishery once the ACL is projected to be met would remove the incentive to harvest spiny lobster because purchase and sale would also be prohibited.

Alternative 3 includes a large suite of possible sector-specific post-season AMs that would be triggered in the event of an ACL overage. As noted previously, the current single ACL and ACT preferred alternatives eliminate the need for separate post-season AMs for the commercial and recreational sectors.

The post-season AM options are designed to compensate or correct for the magnitude of an overage during the following fishing year. In doing so, harvest levels would return to their baseline ACL over the course of two fishing years, the year of the overage and the year of the overage correction. Biologically, the ideal scenario is not to allow the ACL to be exceeded, then no post-season AM would be required and the stock would realize the biological benefits of sustainable harvest conditions into perpetuity. Unfortunately, management and scientific uncertainty, and numerous other variables including economic and unforeseen biologic and weather events, play a major role in annual spiny lobster landings, which may fall above or below any number of harvest parameters. The advantage of implementing post-season AMs is that the landings data for any given year can be examined in totality before the AM is actually triggered, as opposed to in-season AMs that would rely largely on projections of harvest that may or may not have a high degree of uncertainty. Using actual landings data to calculate the precise magnitude of an overage is typically biologically beneficial in that it ensures an adequate level of payback is implemented.

A combination of recreational and commercial AMs (**Alternative 3, Options a** and **b**), would yield similar biological benefits when compared to **Option c**, which combines sector AMs. **Option b** alone would be the least biologically beneficial post-season AM because it does not

compensate for any overages created by the commercial fishery. The variability in recreational landings data should be taken into account when considering **Option b** under **Alternative 3**.

Currently, the Florida, where the majority of recreational fishing for spiny lobster takes place, tracks recreational landings through two separate annual surveys sent to fishermen holding recreational lobster permits. The surveys are distributed via e-mail to collect landings information on harvest during the Special Two-Day Season, and from the opening day of the regular season through the first Monday in September (when the majority of spiny lobster fishing effort occurs) (Sharp et al. 2005). Because Florida is the only state to track recreational landings of spiny lobster and no recreational landings data are collected by NOAA Fisheries Service, a new recreational ACL monitoring program would need to be developed that would incorporate a mechanism to collect recreational and commercial landings information to track ACLs. A commercial ACL monitoring program for spiny lobster could potentially be dealer-based through the establishment of a dealer permit and reporting program specifically designed for spiny lobster. However, a federal dealer permit for spiny lobster does not currently exist. Additionally, spiny lobster could be added to the list of species for which recreational landings data is captured through MRIP, though doing so may not address the issue of time lags between the time of harvest and the time when the data are available to fisheries managers. Any supplemental or improved data collection efforts for spiny lobster could improve our understanding of the stock's population dynamics and harvest trends through time.

Because recreational landings data are known to be highly variable and MRIP does not currently collect information on spiny lobster harvest, using a three-year running average of estimated recreational landings compared to the recreational ACL could reduce, to some extent, variability caused by anomalous spikes or declines in landings. Sudden spikes or reductions in harvest could greatly influence post-season AMs in the recreational sector if they are only considered on a year-by-year basis. Averaging recreational spiny lobster harvest over several years would minimize the influence any one exceptionally poor or exceptionally good year could have on the magnitude of the pay-back or season length reduction. **Alternative 3, Option a** is a more biologically conservative alternative than **Option b** because the commercial component of the fishery is larger than the recreational component; however, it does not account for any overages in the recreational sector. The most precautionary post-season AM is **Option c**, which includes AMs for the commercial and recreational sectors, and would therefore be expected to adequately compensate for overages in one or both sectors. Reducing the length of the fishing season by the amount needed to pay back the overage in addition to shortening the season length to prevent a future overage would provide an additional safeguard when compared to only reducing the length of the fishing season.

Preferred Alternative 4 would use the ACT (6.59 mp) as the AM, which is based on 90% of the specified ACL value (7.32 mp). The ACL is equal to the ABC, which is derived using the ABC control rule adopted by the Gulf Council. The Councils felt an ACT that is 10% lower than the ACL would provide an adequate buffer between the target level of harvest and the annual limit on harvest. The level of harvest would be compared to the ACT and evaluated on an ongoing basis. An exceedence of the ACT would automatically trigger an AM whereby the Councils will convene a review panel to assess whether or not corrective action is needed to prevent the ACL from being exceeded. If the review panel determines corrective action is needed the Council's

may request an emergency rule or framework amendment to implement management measures intended to limit harvest below the ACL such as bag limits, seasonal closures, and trip limits.

As part of the performance standard, if the catch exceeds the ACL more than once in the last four consecutive years, the entire system of ACLs and AMs would be re-evaluated as required by the National Standard 1 guidelines. If the subject evaluation reveals that some modification to the current National Standard 1 harvest parameters for Caribbean spiny lobster is needed in order to prevent ACL overages, such changes could be made expeditiously through a framework action based on the updated framework procedure for Caribbean spiny lobster. Regulatory amendments require less time to prepare; therefore, they are often the regulatory instrument of choice when a management measure or harvest level requires an adjustment.

The final rule implementing National Standard 1 guidelines states: "For fisheries without in-season management control to prevent the ACL from being exceeded, AMs should utilize ACTs that are set below ACLs so that catches do not exceed the ACL" (74 FR 3178). The current preferred alternative for ACL is to set the ACL equal to the ABC which would be 7.32 mp according to the Gulf Council's preferred ABC. Therefore, using an ACT of 6.59 mp as the AM for Caribbean spiny lobster is consistent with the National Standard 1 guidelines. Additionally, in-season tracking of landings of Caribbean spiny lobster may be associated with a high degree of uncertainty, especially for landings made by the recreational sector. The difficulty associated with tracking in-season landings of Caribbean spiny lobster, the Council's specification of an ACT below the preferred ACL value, and the ability to readily adjust management measures through framework amendments, makes the use of an ACT a reasonable AM alternative for Caribbean spiny lobster.

The biological impacts of **Preferred Alternative 4** would likely be similar to the status quo since the combined recreational/commercial average landings for the last 10 fishing seasons does not exceed the proposed ACT, and the maximum landings over the past three years falls slightly below the proposed ACT. Variations in year-to-year harvest would be accounted for by evaluating what percentage of the ACT is caught over several years, rather than on a single season basis. It is unlikely the ACL would be exceeded under the current ACL preferred alternative based on landings history; however, the updated framework procedure contained within this amendment would facilitate timely adjustments to the National Standard 1 harvest parameters and management measures if needed in the future. The ability to expeditiously implement modifications to the ACL, ACT, AMs, and management measures for Caribbean spiny lobster would limit any negative biological impact that could result from continued ACT or ACL overages.

Alternative 1 would perpetuate the existing level of risk for interactions between Endangered Species Act (ESA)-listed species and the fishery. Establishing AMs is unlikely to alter fishing behavior in a way that would cause new adverse effects to *Acropora* corals. The potential impacts of **Alternatives 2- 4,** and the associated options, on sea turtles and smalltooth sawfish are unclear. If they perpetuate the existing amount of fishing effort, but cause effort redistribution, any potential effort shift is unlikely to change the level of interaction between sea turtles and smalltooth sawfish and the fishery as a whole. If these alternatives reduce the overall

amount of fishing effort in the fishery, the risk of interaction between sea turtles and smalltooth sawfish will likely decrease.

4.5.2 Direct and Indirect Effect on the Economic Environment

Some alternatives and options under Action 5 could have differential economic impacts by sector, adding to those that have accrued over time in part under existing Florida regulations. Under Florida regulations, participation and entry are not limited for recreational fishing, but they are clearly limited for commercial fishing (Shivlani 2009). Some options under Action 5 may have a negative economic impact on commercial fishing via limits on landings, trips, and season length, but have no impact on recreation fishing. Other alternatives and options under Action 5 could impact both sectors, or they could impact recreational fishing, but not commercial fishing.

In retrospect, economic activity associated with commercial fishing for spiny lobster in Florida could have been reduced, if necessary, via further adjustments to Florida market-oriented input-control regulations for the commercial sector.[10] It is noted that the guidelines for NS1 of the Magnuson-Stevens Act do allow "reductions in effort," or other measures besides output controls [50 CFR § 610.310 (g) accountability measures]. However, the alternatives specified under Action 5 may be seen as having differing, if not conflicting objectives, in that they bring a move away from an innovative private market mechanism for allocating harvesting rights (Larkin and Milon 2000, quoted in Section 3.1.2). Commercial fishing effort for Caribbean spiny lobster in Florida has been reduced substantially under the state's trap certificate reduction program, and it continues to be reduced, albeit at a slower rate (see Section 4.3.3). In other words, the number of commercial vessels and trips with landings are far below what they were in the early 1990s, along with the number of hours fished and the number of traps fished (Vondruska 2010a). Without these reductions, economic conditions amidst the lower landings of 2001 onward would have been much worse.

Under Action 5, **Preferred Alternative 4** establishes the ACT as the accountability measure for Caribbean spiny lobster, wherein ACT = 6.59 mp, which is less than the ACL of 7.32 mp. The AM is specified as being less than the ACL in accord NS1 of the Magnuson-Stevens Act. The ACT of 6.59 mp exceeds the recent average landings of 5.039 mp, and would not be expected to have any economic impact, assuming that catch in excess of ACT is allowed occasionally.

4.5.3 Direct and Indirect Effect on the Social Environment

The setting of AMs can have significant direct and indirect effects on the social environment as they usually impose some restriction on harvest. The long-term effects should be beneficial as they provide protection from further negative impacts on the stock. While the negative effects

[10]Since the early 1990s, the State's Trap Certificate Program has been quite successful in meeting the objectives of substantially reducing commercial fishing effort, thereby improving productivity and economic conditions for remaining fishermen (Table 3.1.2.1; Sections 3.1.2 and 3.4.1). Much smaller landings, numbers of permits, and effort have been reduced by the State for commercial divers, as well as for recreational divers with Special Recreational Crawfish Licenses (Table 3.1.2.1).

are usually short term, they may at times induce other indirect effects through changes in fishing behavior.

Alternative 1 would put no AMs in place and would risk damage to the stock if the ACL were exceeded. This would avoid short-term negative social impacts, but may incur longer term impacts if stock status were jeopardized.

The implementation of in-season AMs in **Alternative 2** would require projection of the harvest in the commercial fishery to ensure no overages. This type of quota monitoring is not as precise as post-season and cannot be accomplished with the recreational fishery as in-season monitoring is not feasible. In-season monitoring might contain the overage and lessen the chance of exceeding the ACL if monitoring precision is adequate. **Alternative 2, Option a** would provide immediate protection for the stock by closing the commercial fishery when the ACL is met and depending upon AMs chosen, could provide for accountability if payback is provided. **Alternative 2, Option b** could exceed the ACL by season's end depending upon the trip limit chosen.

The many options under **Alternative 3**, post-season monitoring and accountability can be more precise in both determining the size of the overage, but also the payback necessary. It does however, increase the risk of exceeding an ACL. **Alternative 3, Option a** and its suboptions offer several alternatives for payback for the commercial fishery. **Suboption i** would impose a reduction in next year's ACL to correspond to the overage, while **Suboptions ii** and **iii** offer other avenues for payback to constrain harvest the next year which may be preferable to a straight reduction in harvest levels. **Alternative 3, Option b** offers various suboptions for the AMs for the recreational sector that are similar to the commercial alternatives although the calculations for the harvest level are different. As with the commercial options, **Alternative 3, Option b, Suboption i** would impose an immediate reduction on the next year's harvest, whereas **Suboptions ii** and **iii** offer alternatives that may have fewer negative social impacts that accrue to the recreational sector. **Alternative 3, Option c, Suboptions i** and **ii** offer similar AMs for both sectors combined.

Preferred Alternative 4 would establish the ACT as an AM and would likely have few negative social effects. What impacts are derived from either in-season or post-season AMs would depend upon the volatility of the fishery and the perceived risks of exceeding the ACL. In spiny lobster, it would seem there would be few risks as the fishery seems to be fairly stable and post-season AMs may be adequate. However, as discussed earlier, fishing behaviors can change depending upon management measures chosen and the perception of scarcity. If ACLs begin to be exceeded and AMs are implemented which close the fishery, effort may be directed elsewhere. The ability to redirect fishing effort is becoming more difficult as limited entry management is becoming more common. Therefore, if there are fewer choices for redirecting effort, whether it is changing fisheries or choosing temporary work outside the fishery, the indirect effects on the social environment may extend beyond the lobster fishery. As mentioned in the discussion of Section 3.5, there are outside factors that are affecting fishermen in South Florida. Continued social disruption may be confounded by these other factors that have gradually pushed fishermen and their associated businesses from the waterfront. On the other

hand, if AMs are adopted that keep stock status viable and productive, the effects on the social environment may have negative short term effects, but longer term benefits.

4.5.4 Direct and Indirect Effect on the Administrative Environment

Alternative 1 would not produce near-term administrative impacts. However, this alternative would not comply with Magnuson-Stevens Act requirements and therefore, may trigger some type of legal action for not doing so. If this scenario were to occur, the burden on the administrative environment would be great in the future. **Alternative 2** would result in some additional administrative cost and time burdens associated with tracking commercial landings in-season. Florida already has a mechanism in place to track commercial landings of spiny lobster; however, a tracking mechanism would need to be developed to account for spiny lobster landings off other states. **Alternative 3** could potentially produce a significant negative impact on the administrative environment regardless of the choice of options and sub-options. Under each of the sub-options spiny lobster would need to be added to the list of species tracked via MRIP, and through the quota management system. Implementing these ACL tracking mechanisms is not a trivial undertaking and could result in significant administrative cost and time in the near-term and long-term. Additionally, each of the sub-options would require a notice to be drafted and disseminated to fishery participants notifying them of the previous year's overages, and how much the next year's catch limit and/or bag limit would be reduced, or season shortened. **Preferred Alternative 4** could result in moderate administrative impacts in the form of multi-year evaluations of actual harvest compared the ACT and ACL. If the ACT is exceeded the Councils' review panel would need to be convened to determine whether or not corrective action is needed to prevent the ACL from being exceeded. Because corrective actions are not built into this AM, implementation of additional harvest restrictions would require an emergency rule or framework amendments, which can significantly burden the administrative environment. Additionally, if the ACL is exceeded more than once within a four year time period, the burden on the administrative environment would likely increase if a regulatory amendment is needed to modify management measures or harvest limits for Caribbean spiny lobster.

4.5.5 Council Conclusions

The reauthorized Magnuson-Stevens Act requires that AMs be established for all species not subject to overfishing in 2011. Therefore, the Councils must approve some type of AM for the Caribbean spiny lobster fishery. If the Councils failed to chose an AM for implementation, the Spiny Lobster FMP would not be in compliance with the Magnuson-Stevens Act mandate. After considering the suite of AM alternatives presented and analyzed, the Councils chose to use the ACT of 6.59 mp as the harvest level that would trigger an AM. The ACT is based on 90% of the ACL, which is 7.32 mp. The ACL is equal to the ABC, which is derived using the ABC control rule adopted by the Gulf Council. The Councils felt an ACT that is 10% lower than the ACL would provide an adequate buffer between the target level of harvest and the annual limit on harvest. Additionally, the Councils considered new scientific information that indicates the majority of recruits come from areas outside the management area (Hunt and Tringali 2011), meaning any true biological benefits that may accrue in the Caribbean spiny lobster population found within the subject management area, as a result of implementing any one of the AMs considered, are likely to be negligible. The preferred alternative would result in the least

socioeconomic impacts on the fishing community, while establishing the system of accountability required under the Magnuson-Stevens Act to ensure that overfishing does not occur. Under the preferred alternative, the level of harvest would be compared to the ACT and evaluated on an ongoing basis. An exceedence of the ACT would automatically trigger an AM whereby the Councils will convene a review panel to assess whether or not corrective action is needed to prevent the ACL from being exceeded. If corrective action is needed management measures could be modified expeditiously via framework action or emergency rule.

4.6 Action 6: Develop or Update a Framework Procedure and Protocol for Enhanced Cooperative Management for Spiny Lobster

*Note: more than one alternative may be chosen as a preferred.

Alternative 1: No Action – Do not update the Protocol for Enhanced Cooperative Management or the Regulatory Amendment Procedure.

Preferred Alternative 2: Update the current Protocol for Enhanced Cooperative Management.

Alternative 3: Update the current Regulatory Amendment Procedures to develop a Framework Procedure to modify ACLs and AMs.

Preferred Alternative 4: Revise the current Regulatory Amendment Procedures to create an expanded Framework Procedure:

Preferred Option a: Adopt the base Framework Procedure
Option b: Adopt the more broad Framework Procedure
Option c: Adopt the more narrow Framework Procedure

4.6.1 Direct and Indirect Effect on the Physical and Biological/Ecological Environments

Alternative 1 would maintain the Regional Administrator's current ability to adjust total allowable catch, quotas, trip limits, bag limits, size limits, seasonal closures, and area closures; however, no means would exist to make needed adjustments to the National Standard 1 harvest parameters in a timely manner. Often, when a harvest reduction is needed, corrective action is required quickly. Not allowing ACLs, ACTs, and AMs to be adjusted through a framework procedure would most likely lead to extended delays in implementing harvest reductions and/or associated AMs. Such a scenario could be biologically detrimental because excessive levels of fishing mortality, or even overfishing, could persist until the appropriate harvest limitations could be put in place through amendment action. Alternately, if new data shows a stock is doing better than previous assessments indicated, unnecessary restrictions could prevent the fishery from harvesting its optimum yield. The impacts on the physical environment would not change under this alternative.

Preferred Alternative 2 would have no impact on the physical or biological environment because its only purpose is to update the protocol, which defines the roles of federal and Florida

agencies in managing spiny lobster. The updates would include relevant agency names and authorities. Regardless of how the current framework procedures or protocols are modified, those changes will have no immediate effect because those changes will not cause immediate changes in harvest objectives.

Alternatives 3 and **4** would likely be biologically beneficial for spiny lobster. Under **Alternative 3,** adjustments to ACLs, ACTs, and AMs could be made relatively quickly as new fishery and stock abundance information becomes available. Under **Preferred Alternative 4**, adjustments to other management measures would also be simplified. By changing the current framework procedure to allow for periodic adjustments to National Standard 1 harvest parameters, management measures could be altered in a timely manner to implement harvest level changes or AMs in response to stock assessment or survey results. Allowing ACL and other adjustments to be made through framework actions could eliminate the need to prepare and analyze individual amendments or amendment actions for each adjustment needed. Eliminating these time-consuming factors would enable harvest modifications to be expedited when they are most needed. The physical environment would be indirectly impacted because changes in harvest levels would change effort levels, either increasing or decreasing the impact of traps on the bottom. A quicker change to the regulations would result in a quicker change in the physical impacts of the fishery.

4.6.2 Direct and Indirect Effect on the Economic Environment

Action 6 is primarily administrative in intent. Implementation of Amendment 10 depends on cooperative management. However, Amendment 10 is complicated, with large numbers of possible combinations for alternatives and options. There may be differences of opinion about economic impacts among respective legislative bodies, regulatory bodies and courts. Any differences in regulation between Florida and the Councils would have the most economic impact. This is because practically all of the landings of Caribbean spiny lobster occur in Florida, which has its own regulations for this species. Furthermore, Florida landings occur largely in Monroe County (approximately 90% for commercial landings and 67% for recreational landings, see Table 4.3.1.1). Hence, economic impacts under this action would occur primarily in Florida and largely in Monroe County.

4.6.3 Direct and Indirect Effect on the Social Environment

The development of a framework procedure would have beneficial impacts on the social environment as management can react to changes in the stock status or fishery in a more timely manner. **Alternative 1** would not allow for these types of changes and could, over time, have negative indirect effects. However, framework actions that are done rapidly do not always provide for as much public input and comment on the actions as other regulatory processes. In these situations, the benefits of timely action should outweigh the diminished time frame for comment though. **Preferred Alternative 2** would provide consistency in language with regulatory changes and have few effects on the social environment. **Alternatives 3** would simply update the current the framework to allow for setting of ACLs and AMs and likely have few social effects. **Alternative 4** provide options for implementing a framework procedure that becomes less restrictive in terms of timing and public input going from **Preferred Alternative 4,**

Preferred Option a to **Option c**. As mentioned earlier, timing and public input become the parameters that are constrained by these options. While public input and participation by advisory panels can be beneficial, it is time consuming and can slow the process. Yet, that participation can provide a more acceptable regulation which may lead to better compliance.

4.6.4 Direct and Indirect Effect on the Administrative Environment

Alternative 1 would be the most administratively burdensome of the alternatives being considered, because all modifications to ACLs, ACTs, and AMs would need to be implemented through an FMP amendment, which is a more laborious and time consuming process than a framework action. **Preferred Alternative 2** would have no impact on the administrative environment. **Alternatives 3** would incur less of an administrative burden than **Alternative 1** because several steps in the lengthy amendment process would be eliminated if the Regional Administrator were given the latitude to adjust ACLs, ACTs, and AMs through framework actions. **Preferred Alternative 4** would incur even less of an administrative burden because other management measures could also be adjusted through framework actions. **Alternative 4, Option b** would be the least burdensome because it would allow the widest range of actions to take place under the framework procedure.

The Gulf Council is considering alternatives to the framework procedures of all Gulf FMPs that are similar to the options in **Alternative 4**. If the Councils choose the same basic framework for the Spiny Lobster FMP as for other Gulf FMPs, the process of implementing framework actions may be more streamlined in the Gulf region.

4.6.5 Council Conclusions

The Councils chose **Preferred Alternative 2** to be consistent with Florida terminology and **Preferred Alternative 4, Option a** to have flexibility in making management change while providing both substantive and procedural guidelines. The protocol and framework procedure under **Alternative 1** are out of date and not consistent with current assessment and management methods. The framework under **Alternative 3** would be up-to-date, but would remain restrictive in the items that could be changed and unspecific about procedure. **Options b** and **c** for **Alternative 4** give the Councils and NOAA Fisheries Service too much and too little authority, respectively, to change management outside of the plan amendment process.

4.7 Action 7: Modify Regulations Regarding Possession and Handling of Short Caribbean Spiny Lobsters as "Undersized Attractants"

Alternative 1: No Action – Allow the possession of no more than 50 undersized Caribbean spiny lobsters, or one per trap aboard the vessel, whichever is greater, for use as attractants.

Alternative 2: Prohibit the possession and use of undersized Caribbean spiny lobsters as attractants.

Alternative 3: Allow undersized Caribbean spiny lobsters, but modify the number of allowable undersized lobsters, regardless of the number of traps fished:

Option a: Allow 50 undersized lobsters
Option b: Allow 35 undersized lobsters

Preferred Alternative 4: Allow undersized spiny lobster not exceeding 50 per boat and 1 per trap aboard each boat if used exclusively for luring, decoying or otherwise attracting non-captive spiny lobsters into the trap.

4.7.1 Direct and Indirect Effect on the Physical and Biological/Ecological Environments

This action is being considered to address law enforcement concerns related to allowing vessels to maintain undersized spiny lobsters onboard fishing vessels. The number and storage requirements for undersized spiny lobsters allowed to be retained have been modified several times since the original Spiny Lobster FMP was implemented. In 1982, the Spiny Lobster FMP included the first provisions for keeping undersized spiny lobsters for use as attractants. At that time, no more than three live undersized lobsters could be placed in each trap or no more than 200 undersized lobsters could be maintained on board a vessel, whichever was greater. The July 1987 final rule implementing Amendment 1 changed the number of undersized lobsters that could be kept on board to 100. In May 1988, a second final rule implementing Amendment 1 was published and included a requirement that all undersized lobsters are to be maintained in a live well. A regulatory amendment was developed in 1992, which further revised the provisions regarding keeping undersized spiny lobsters for use as attractants. The final rule for this regulatory amendment was published in November 1992, and reduced the number of undersized lobsters allowed to be kept from 100 to 50, and maintained the live well requirement. The 1992 regulations are still in place today.

Currently, regulations at 50 CFR 640.21(c) state the following:

> *A live spiny lobster under the minimum size limit specified in paragraph (b)(1) of this section that is harvested in the EEZ by a trap may be retained aboard the harvesting vessel for future use as an attractant in a trap provided it is held in a live well aboard the vessel. No more than fifty undersized spiny lobsters, or one per trap aboard the vessel, whichever is greater, may be retained aboard for use as attractants. The live well must provide a minimum of ¾ gallons (1.7 liters) of seawater per spiny lobster.*

> *An undersized spiny lobster so retained must be released alive and unharmed immediately upon leaving the trap lines and prior to one hour after official sunset each day.*

Therefore, each vessel is not necessarily limited to only 50 undersized lobsters, but one lobster per trap. In the commercial spiny lobster fishery, it is common for a vessel to fish more than 100 traps on any one trip (Vondruska 2010a), but only 30-35 traps are on board the vessel at any one time. Traditionally, fishermen have realized great success using live lobster as bait in lobster traps. Experiments have shown that traps baited with short lobsters catch approximately three times more lobster than traps baited with any other method (Heatwole et al. 1988; Moe 1991).

Allowing possession of undersized lobsters on board any permitted spiny lobster vessel within the EEZ makes it difficult for law enforcement officials to discern whether those undersized lobsters are truly being maintained for use as attractants, or for illegal purposes. If a vessel is stopped by a law enforcement official with undersized lobsters onboard in transit toward port with the intention to sell or keep those lobsters, prosecution is made more difficult by the fact that regulations allow undersized spiny lobsters to be kept under certain conditions. Furthermore, Florida has implemented their own requirements for the number of undersized lobsters allowed to be kept onboard for use as attractants, which are slightly different from current implemented federal regulations. Florida regulations state:

> *The holder of a valid crawfish license or trap number, lobster trap certificates, and a valid saltwater products license issued by the FWC may harvest and possess, while on the water, undersized spiny lobster not exceeding 50 per boat and one per trap aboard each boat if used exclusively for luring, decoying, or otherwise attracting noncaptive spiny lobster into traps.*

Florida allows not only 50 undersized lobsters to be maintained onboard licensed vessels, but also one undersized lobster per trap, which is not consistent with current federal regulations.

In addition to law enforcement concerns, there may be negative biological impacts of allowing 50 or more undersized spiny lobsters to be maintained in a live well. If undersized spiny lobsters continue to be sold illegally, and transported under the guise of being used as attractants, those lobsters are not returned to the water and thus are not able to contribute reproductively to the overall biomass. Secondly, trauma incurred during holding in live wells, caused by crowding, duration of confinement during transport, relocation to a different environment, or exposure to the PaV1 virus, may also contribute to undersized spiny lobsters mortality, and ultimately reduce the number of adults available for harvest. It should be noted that about one percent of undersized lobsters escape per night from traps (J. Hunt and W. Sharp, pers. comm.). Hunt et al. (1986) indicated an exposure and confinement mortality rate of 26.3% for lobsters exposed to air and confined in traps for four weeks. Lobsters that were then held in live wells and confined for the same amount of time showed a mortality rate of 10.1%. A study conducted by Matthews (2001) indicated similar reductions in the mortality rates of spiny lobster kept for use as attractants based on observation of commercial lobster traps, due to the implementation of the

live well requirement. Additionally, the Matthews study showed commercial and recreational harvest of spiny lobster increased notably as a result of decreased mortality of undersized lobsters maintained in live wells (Matthews 2001). These mortality rates were reviewed and utilized in SEDAR 8 (2005). Although live wells reduce the risk of mortality due to air exposure, some lobsters may perish as a result of predation or starvation when confined to a trap. Furthermore, the continued practice of using sub-legal size lobsters as bait has been shown to increase injuries caused by handling and to reduce the growth rate, causing females to mature at smaller sizes (Maxwell et al. 2009). Smaller females carry fewer eggs then larger females, and thus are considered less fecund than females that reach sexual maturity at larger sizes (Maxwell et al. 2009).

If undersized spiny lobsters continue to be sold illegally, and transported under the guise of being used as attractants, those lobsters are not returned to the water, and therefore, would not have the opportunity to grow to harvestable sizes. Secondly, trauma incurred during holding in live wells, caused by crowding, duration of confinement during transport or relocation to a different environment may also contribute to undersized spiny lobster mortality, which may negatively impact the population.

Through time, the Caribbean spiny lobster population has fluctuated substantially (Figure 4.7.1.1). The total biomass ranged from 15,000 mt in 1985-86 to 20,200 mt in 1995-96 and was 19,200 mt at the beginning of 2003-04. Spawning biomass increased from 3,300 mt in 1985-86 to 5,700 mt in 2003-04 (SEDAR 8 2005) indicating undersized spiny lobsters benefit from use of live wells in the form of decreased mortality rates. The SEDAR 8 (2005) used an estimated 10% confinement mortality rate for undersized Caribbean spiny lobsters kept for use as attractants; however, the time of the season and soak times can cause confinement mortality rates to fluctuate. It is difficult to know the precise number of undersized Caribbean spiny lobsters used as attractants in any given year; however, it is understood to be a very common practice in the commercial sector and SEDAR 8 (2005) indicates the total fishing mortality rate in 2003-2004 fishing year was 0.85 per year with the bait mortality portion of that fishing mortality rate being 0.05 per year. Figure 4.7.1.1 illustrates fishing related mortality attributable to each sector and use of undersized lobsters as attractants through history.

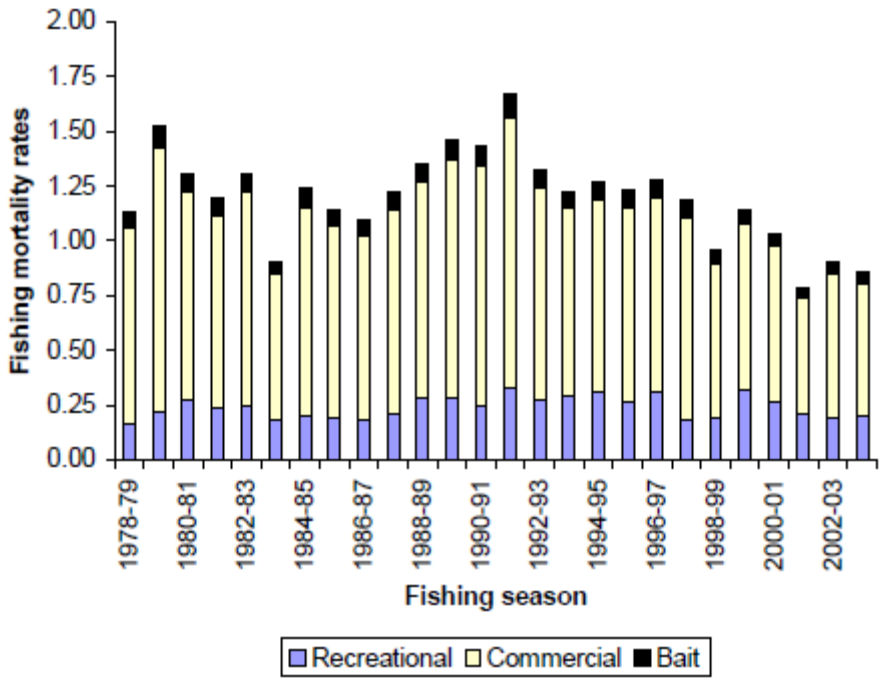


Figure 4.7.1.1. Fishing mortality per year by fishing year for the recreational fishery (purple bars), commercial fishery (yellow bars), and bait fishery (black bars).
Source: SEDAR 8, 2005

Alternative 1 is the second least biologically conservative of the three alternatives under consideration. **Alternative 1** produces the second highest rate of spiny lobster mortality associated with use as attractants relative to **Alternative 2**, **Alternative 3, Option b,** and **Preferred Alternative 4**. Additionally, **Alternative 1** does not address the previously referenced enforcement concerns.

Alternative 2 would be the most biologically conservative alternative under this action since, theoretically, all mortality associated with using undersized lobsters as attractants would cease. Under **Alternative 2** there would be an approximate decrease in confinement mortality of 10% (SEDAR8 2005). Prohibiting the use of undersized Caribbean spiny lobsters as attractants may also reduce the risk of potential ACL overages and hedge against future overfishing. Additionally, **Alternative 2** would address enforcement issues related to undersized Caribbean spiny lobster since there would no longer be a legal reason for any vessel to have undersized Caribbean spiny lobsters onboard. Alternately, prohibiting the use of undersized lobsters for use as attractants may not be a practicable management measure for the fishery since it would likely result in a substantial decrease in harvest (Moe 1991; Heatwole et al. 1988), could reduce opportunities for the fishery to achieve optimum yield, and increase bycatch of other species.

Alternative 3 would not address the issues raised by the Office for Law Enforcement; however, it could help to reduce fishing mortality attributable to use of undersized lobsters for baiting purposes. **Alternative 3** is not as precautionary as **Alternative 2**, and depending upon the option chosen, may only yield negligible biological benefits over the status quo. Limiting the number of undersized lobsters that could be used as attractants to 35 (**Option b**) could potentially reduce

the current level of confinement mortality by about half, which would likely increase the number of Caribbean spiny lobsters that have the opportunity to grow to harvestable sizes. Additionally, allowing only 35 undersized lobsters to be used as bait, and removing the provision that allows one undersized lobster per trap (whichever is greater), could hedge against overfishing, but not to the same degree as **Alternative 2**. **Alternative 3, Option a** is less precautionary than **Option b** because it deviates less from the status quo. **Option a** would retain the allowance for 50 undersized Caribbean spiny lobsters, but would remove the one lobster per trap provision. In doing so, vessels would be limited to 50 undersized lobsters regardless of the number of traps they are carrying onboard. **Alternative 3** is intended to limit the biological impacts of using undersized spiny lobsters as attractants by limiting their use to a level below the status quo without prohibiting the practice altogether. There may be some biological benefit in terms of increasing the number of lobsters allowed to grow to harvestable sizes under this option; however, the degree to which those benefits would impact the environment would depend on the number of fishermen who traditionally carry more than 50 traps and keep more than 50 undersized lobsters for use as attractants.

Preferred Alternative 4 is very similar to **Alternative 1** in that it would allow spiny lobsters to be kept onboard for use as attractants; however, it would change the provision to allow 50 spiny lobsters *plus* one per trap, rather than 50 spiny lobster *or* one per trap, and it would remove the "whichever is greater" portion of the provision. This alternative is the least biologically conservative for spiny lobster of all the alternatives considered because it would increase the number of undersized lobsters able to be maintained onboard a vessel for use as attractants. Changing the current use of "shorts" provision under **Preferred Alternative 4** would make the federal regulations compatible with Florida's state regulations, which may aid enforcement efforts at the state/federal water boundary. The purpose of keeping 50 spiny lobsters onboard is to ensure there is an adequate supply of attractants during the baiting process for each trap, i.e., some traps will be onboard being baited while others would be in the water needing new bait. As Section 4.7.2 of this document states, the number of traps fished on a trip can be estimated for **Alternative 1**, when this number is interpreted to mean the number of traps hauled to remove lobsters. This is not necessarily an indication of the number traps on a vessel, which may be 30-35 at any one time during fishing operations. Allowing 50 undersized lobsters to be used as attractants plus one per trap ensures that fishermen have an adequate supply of bait lobsters on board as the traps are hauled and re-deployed. Furthermore, biological impacts of the use of attractants likely decreases as the fishing season progresses since the total number of traps fished on all trips declines by month on average as the season goes on, along with total pounds landed, and the median number of traps fished per trip.

Most commercial spiny lobster fishermen do not consider keeping undersized lobsters for use as attractants a form of bycatch because in their view, they are "borrowing" from the resource with the intent to release the lobsters back into the environment alive. A small percentage (10%) of lobsters kept to be used as attractants die as a result of such use (SEDAR 8 2005). A recent study conducted by Hunt and Tringali (2011), used DNA analysis to identify sources of recruitment for Caribbean spiny lobster. The study found the majority of recruits do not come from within the management area, suggesting that the use of undersized Caribbean spiny lobsters and other management measures for the Caribbean spiny lobster fishery would have negligible biological impacts on the population within the management area. Based on the findings of this

study, it is unlikely that the continued use of undersized Caribbean spiny lobsters as attractants would adversely affect the biological environment.

Although undersized attractants are technically bycatch under the Magnuson-Stevens Act, their use may actually decrease the total level of bycatch by the lobster fishery. Experiments have shown that traps baited with shorts caught approximately three times more lobster than traps baited with any other method (Heatwole et al. 1988). Further, traps using non-lobster bait caught fewer lobsters than unbaited traps, probably because the bait attracted stone crabs, which lobsters avoid. Traps using non-lobster bait or no bait would thus take two to three times longer to harvest the same amount of lobsters as traps using lobster bait. Increased soak times of traps would increase bycatch of other species, such as juvenile and adult fish, crabs, and mollusks.

There is concern that allowing spiny lobsters to be kept onboard, even at the status-quo level, could perpetuate the spread of the PaV1 virus, which typically affects juvenile spiny lobsters and causes general lethargy. The virus can be transmitted via prolonged contact and ingestion. Spiny lobsters infected with the PaV1 virus are typically avoided by healthy, normally social, conspecifics (Behringer et al. 2008). A study conducted by Behringer and Butle (2010), found that healthy spiny lobsters were less likely to cohabitate with lobsters infected with PaV1, which could leave them vulnerable to predation if they were to choose a less safe shelter to avoid contact with the infected lobster. Therefore, the higher the number of spiny lobsters allowed to be maintained in live wells, the higher the risk of perpetuating the spread of the PaV1 virus, especially amongst young spiny lobsters that are more susceptible to acquiring the virus.

Alternative 1 would perpetuate the existing level of risk for interactions between ESA-listed species and the fishery. Modifying or removing the 50-shorts rule is unlikely to alter fishing behavior in a way that would cause new adverse effects to *Acropora* spp. The impacts from **Alternative 2**, **Alternative 3, Option b,** and **Preferred Alternative 4,** and the associated options, on sea turtles and smalltooth sawfish are unclear. If they perpetuate the existing amount of fishing effort, but cause effort redistribution, any potential effort shift is unlikely to change the level of interaction between sea turtles and smalltooth sawfish and the fishery as a whole. If these alternatives reduce the overall amount of fishing effort in the fishery, the risk of interaction between sea turtles and smalltooth sawfish will likely decrease.

4.7.2 Direct and Indirect Effect on the Economic Environment

The estimated mortality associated with the use of undersized lobsters as bait is shown along with commercial landings and recreational landings in Figure 4.7.2.1. It has been declining and averaged 189,091 pounds per year in 2004/2005-2009/2010 compared with 541,000 lbs in 1985/1986-1989/1990.

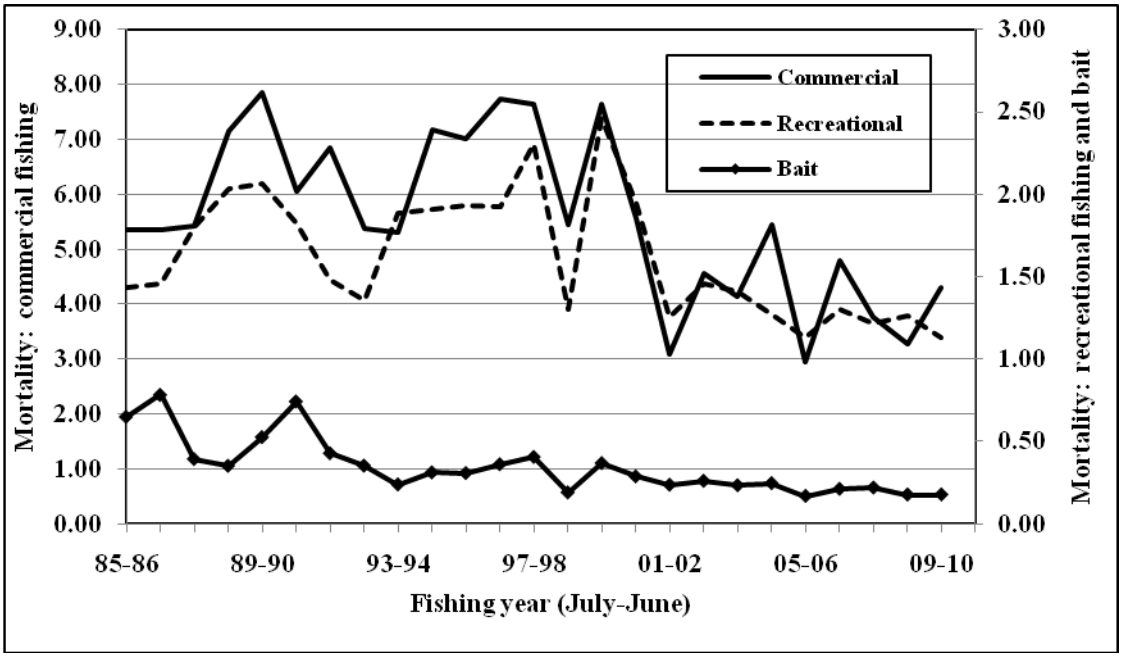


Figure 4.7.2.1 Fishing mortality: commercial and recreational fishing, and bait
Source: SEDAR 8, 2010 update, Table 2.1.1

Many commercial trap fishermen may already purchase bait, based on fishermen's perceptions on how to best attract lobsters (Shivlani et al. 2004). Those who reported more use of undersized lobsters as attractants had much lower average trip costs for bait compared with those who used purchased bait (such as cowhide), and they had shorter trips, and lower average trip costs for other major items as well. Average trips costs for bait were in the range of $12.72 (Middle Keys) to $133.24 (Key West), with the average trip costs for bait costs of $60.90 for the whole sample (data in current dollars for 2001/2002, not adjusted to 2008 dollars).

Alternative 1 would not result in any change in the use of undersized spiny lobsters in lobster traps as attractants. As a result, all status quo operation of the fishery, and associated economic benefits, would remain unchanged. However, if **Alternative 2** would reduce the risk of exceeding the ACL when compared with **Alternative 1**, then **Alternative 1** would increase the likelihood of shortened fishing seasons, trip limits, bag limits, or whatever the Councils choose as a means to regulate fishing when landings exceed or are expected to exceed the ACL.

Compared with **Alternative 1**, **Alternative 2** could reduce the likelihood of incurring shortened fishing seasons, trip limits, bag limits, or whatever the Councils choose as a means to regulate fishing when landings exceed or are expected to exceed the ACL. It is assumed here that what is counted as "bait" for stock assessment purposes represents the estimated fishing mortality associated with the use of undersized Caribbean spiny lobster as attractants, as shown in Figure 4.7.2.1. Under **Alternative 2**, fishing mortality would be reduced by 189,091 lbs, the estimated bait-associated mortality under **Alternative 1**. At least some, if not most the undersized Caribbean spiny lobster used as attractants are kept alive on board a vessel and returned to the water alive, as required. **Alternative 2** would in practice require the use of more purchased bait, hence increase trip costs on average for commercial fishing for spiny lobster as a whole. This would reduce producer surplus for this activity.

Alternative 3 should reduce the fishing mortality associated with the use undersized Caribbean spiny lobster as attractants, more so for **Option b** than for **Option a,** when compared with **Alternative 1**, for which the assumed bait mortality is 189,000 lbs per year (Table 4.3.1.1). The economic impact of **Alternative 3** would be less than that of **Alternative 2,** and require the use of less purchased bait, hence less increase in trip costs for commercial fishing for spiny lobster as a whole. It would reduce producer surplus less than **Alternative 2**, when both are compared with **Alternative 1**. Compared with **Alternative 1**, **Alternative 3** would require the use of more purchased bait, hence an increase in trip costs for commercial fishing for spiny lobster as a whole. It would reduce producer surplus from that for **Alternative 1**.

Preferred Alternative 4 would reduce fishing mortality associated with the use undersized Caribbean spiny lobster as attractants far less than **Alternative 2,** and require the use of less purchased bait, hence less increase in trip costs for commercial fishing for spiny lobster as a whole. It would reduce producer surplus less than **Alternative 2**, when both are compared with **Alternative 1**.

It is estimated that **Preferred Alternative 4** could allow perhaps 50-80 attractants on board vessel during fishing operations (50 per vessel plus 1 per trap on board, perhaps 30-35 on average) when estimated as described below. This compares with having a maximum 50 on board under **Alternative 1**, assuming the averages estimated below are indicative (a maximum of either 50 per vessel or 30-35 per vessel based on the average number of traps on board during fishing operations).

The number of traps fished on a trip can be estimated for **Alternative 1**, when this number is interpreted to mean the number of traps hauled to remove lobsters. This is not necessarily an indication of the number traps on a vessel, which may be 30-35 at any one time during fishing operations. In the last five years, the average number of traps hauled per trip was mostly in the range of 200-280 traps on trips of 14-17 hours (hours away from port), with 7-8 sets per trip, which is interpreted to mean trap lines hauled and returned to the water per trip) (underlying data as used in Vondruska 2010a). The total number of traps fished on all trips declines by month on average as the season goes on, along with total pounds landed, and the median number of traps fished per trip.

4.7.3 Direct and Indirect Effect on the Social Environment

The use of undersized lobster as attractants has been acceptable practice in the spiny lobster fishery for some time. It complicates law enforcement as the size limits on harvested lobster can make determination of the lobster's disposition as bait or product questionable. **Alternative 1** would continue the difficulty that law enforcement faces with prosecuting undersized lobster violations. **Alternative 2** could solve the law enforcement issue, but may impose a hardship on lobster fishermen who utilize "shorts" as attractants, if their harvest is reduced as a result. The two options under **Alternative 3** would continue to allow undersized lobster for attractants, but would reduce the number allowed on board and not resolve the inconsistencies with current state regulations. In either case, the difficulty for law enforcement would remain. With **Preferred Alternative 4** there is consistency with state regulation which would benefit law enforcement

but still does not address the difficulty with the ability to determine undersize harvest. There does not seem to be an alternative that solves all the issues involved with the use of "shorts" as an attractant in the spiny lobster fishery.

4.7.4 Direct and Indirect Effect on the Administrative Environment

Alternative 2 would create the lowest impact on the administrative environment since it would remove the need for enforcement personnel to check vessels for specific numbers of undersized Caribbean spiny lobsters. Enforcement officers would simply check for the absence or presence of undersized lobsters. Additionally, the task of gathering prosecutorial evidence to prove a violation would be made simpler because the vessel operator would not be able to circumvent the undersized lobster prohibition by claiming they were in transit, or had several more traps in the water. **Options a** and **b** under **Alternative 3** would not increase the administrative burden over the status quo since numbers of undersized lobsters would still need to be documented, just at a lower number. However, **Alternative 1, Alternative 3,** and **Preferred Alternative 4,** would not address the current enforcement concerns regarding the retention of undersized Caribbean spiny lobster, and difficulty in prosecuting related violations would persist. **Preferred Alternative 4** is consistent with current state regulations in Florida, and therefore, would ease the burden on enforcement to track compliance across the state/federal jurisdictional boundary.

4.7.5 Council Conclusions

The original intent of this action was to address concerns raised by the law enforcement community, which felt that prohibiting the use of undersized Caribbean spiny lobsters as attractants would mitigate difficulties associated prosecuting undersized spiny lobster cases. The preferred alternative would not rectify this issue; however, it would bring federal regulations for the use of undersized Caribbean spiny lobsters as attractants into line with state regulations, which will ease enforcement of the provision along the state/federal jurisdictional boundary. Additionally, the use of undersized spiny lobsters as attractants is an extremely important practice of fishery participants in terms of overall yield. Therefore, the Councils felt that prohibiting the use of undersized lobsters was not practicable and would incur unnecessary negative socioeconomic impacts with negligible biological benefits based on new scientific evidence showing that the most spiny lobster recruits come from outside the management area (Hunt and Tringali 2011). The purpose of allowing 50 spiny lobsters plus one per trap onboard is to ensure there is an adequate supply of attractants during the baiting process for each trap, i.e., some traps will be onboard being baited while others would be in the water needing new bait. Furthermore, allowing the use of undersized lobsters as attractants could indirectly decrease bycatch in the fishery since using non-lobster bait or no bait would require soak times to at least double in order to harvest the same amount of lobsters as traps using lobster bait. Subsequently, increased soak times of traps would increase bycatch of other species, such as juvenile and adult fish, crabs, and molluscs. Although the preferred alternative would not directly benefit the biological environment, biological impacts of the use of attractants are likely to decrease as the fishing season progresses since the total number of traps fished on all trips declines by month on average as the season goes on. For these reasons the Councils chose **Alternative 4** as their preferred alternative under Action 7.

4.8 Action 8: Modify Tailing Requirements for Caribbean Spiny Lobster for Vessels that Obtain a Tailing Permit

*Note: more than one alternative may be chosen as a preferred alternative.

Alternative 1: No Action – Possession of a separated Caribbean spiny lobster tail in or from the EEZ is allowed only when the possession is incidental to fishing exclusively in the EEZ on a trip of 48 hours or more, and a federal tailing permit is issued to and on board the vessel.

Alternative 2: Eliminate the Tail-Separation Permit for all vessels fishing for Caribbean spiny lobster in Gulf and South Atlantic waters of the EEZ.

Preferred Alternative 3: Revise the current regulations to clearly state that all vessels must have either 1) a valid federal spiny lobster permit or 2) a valid Florida Restricted Species Endorsement and a valid Crawfish Endorsement associated with a valid Florida Saltwater Products License to obtain a tailing permit.

Preferred Alternative 4: All Caribbean spiny lobster landed must either be landed all "whole" or all "tailed".

4.8.1 Direct and Indirect Effect on the Physical and Biological/Ecological Environments

Currently, a valid Tail-Separation Permit is required for any vessel that wishes to land spiny lobster with tails detached for storage purposes on trips longer than 48 hours in duration. As of March 18, 2011, 353 vessels have active Tail-Separation Permits. Regulations at 50 CFR 640.21(d) do not require that a vessel fishing for spiny lobster in the EEZ first have a federal or state permit/license/endorsement before they may obtain a federal Tail-Separation Permit. However, any vessel owner wishing to legally sell Caribbean spiny lobster must have the requisite permit/license/endorsement.

Florida state regulations require that a valid Crawfish Endorsement must be obtained to sell or harvest Caribbean spiny lobster in excess of the bag limits. Crawfish Endorsements can only be issued to a person, firm, or corporation that possesses a valid Saltwater Products License (SPL) with a Restricted Species Endorsement [FAC 68B-24.0055]. Furthermore, in the 2004/2005 fishing season, a Commercial Diver Permit was required to harvest Caribbean spiny lobster in excess of the bag limit if harvested by diving. Commercial diver permits could be obtained by applicants who did not already possess one or more lobster trap certificates. However, from January 2005 – July 1, 2015, no new Commercial Diver Permits will be issued or renewed, except for those that were active during the 2004/2005 fishing season.

Current regulations do not explicitly state that a vessel must be associated with a valid SPL and also possess a valid Florida Restricted Species Endorsement and a valid Crawfish Endorsement, or possess a valid federal Spiny Lobster Permit to obtain a Tail-Separation Permit. This leaves open the possibility for a non-commercially permitted vessel to obtain a tailing permit, which may affect enforcement of the minimum size requirements, the spear fishing prohibition, and

illegal sales. Action 11 of Amendment 1 to the Spiny Lobster FMP (1987) clearly states the Council's initial intent for issuance of tailing permits:

> *The separation of lobster carapace and tail at sea shall be prohibited except by species permit. To be eligible for a tail separation permit, the fishing craft must have been assigned a commercial lobster permit, and must be operated for lobster fishing in the EEZ for two or more days from port. Furthermore, a signed statement that his fishing activity necessitates a tail separation permit.*

However, regulations regarding tailing permit requirements have changed several times since the inception of the permit. In 1990, a final rule implementing Amendment 1 prohibited tailing of spiny lobster harvested from the EEZ except by special permit, and required that a vessel must be associated with a valid federal commercial spiny lobster permit to obtain a Tail-Separation Permit. In 1992, the Council opted to make the Tail-Separation Permit an endorsement to the federal Spiny Lobster Permit through a regulatory amendment. At that time, it was also determined that federal Spiny Lobster Permit issuance would discontinue when Florida's trap certificate and identification program was implemented and when Florida designated spiny lobster as a restricted species, thus limiting the sellers of Caribbean spiny lobster to individuals who have valid Restricted Species Endorsements on their SPL. The Florida trap certificate and identification program was implemented through a final rule published in 1993. Therefore, as stated in the 1992 regulatory amendment, a federal Spiny Lobster Permit was no longer required for vessels fishing for spiny lobster in state or federal waters off Florida. However, the regulations stated that only vessels with federal Spiny Lobster Permits could obtain a Tail-Separation Endorsement. To allow vessels participating in Florida's trap certificate program without a federal Spiny Lobster Permit, to obtain a Tail-Separation Endorsement, the regulations were modified to change the "Tail-Separation Endorsement" to a "Tail-Separation Permit", and removed the requirement for a federal Spiny Lobster Permit, as outlined in the 1992 regulatory amendment. The regulations currently state:

> *The possession aboard a fishing vessel of a separated spiny lobster tail in or from the EEZ is authorized only when the possession is incidental to fishing exclusively in the EEZ on a trip of 48 hours or more and a federal Tail-Separation Permit specified in 50 CFR 640.4(a)(2).*

50 CFR 640.4(a)(2) states:

> *For a person to possess aboard a fishing vessel a separated spiny lobster tail in or from the EEZ, a Tail-Separation Permit must be issued to the vessel and must be on board.*

The intent of allowing fishermen to tail Caribbean spiny lobster was to promote ease of storage and transport of harvested lobster on long commercial trips. Tail-Separation Permits were not intended for use by non-commercially permitted vessels. However, because the regulations do not explicitly state that a valid federal Spiny Lobster Permit or a valid SPL with a Restricted Species Endorsement are required in order to obtain a Tail-Separation Permit, some recreational fishermen have obtained Tail-Separation Permits for their own purposes. Tail-Separation Permits enable commercial vessels (and unintentionally some recreational vessels) to fish more efficiently for spiny lobster than those vessels without the permit. Whole lobsters tend to maintain their quality better than tailed lobsters; however, they also utilize more storage space than tails. Vessels that are associated with a Tail-Separation Permit are able to store much more product than vessels required to store the lobster whole. Space limitations such as cooler capacity onboard fishing vessels can also affect product quality. Therefore, fishermen that are allowed to tail their harvested lobster may not only store more product onboard during long trips, they may do so without having to compromise its quality. Greater efficiency means those vessels with Tail-Separation Permits are able to take longer trips without returning to port to offload their catch. Therefore, eliminating the Tail-Separation Permit and prohibiting all tailing of Caribbean spiny lobsters could potentially reduce the probability that the commercial ACL would be met or exceeded in any given season as well as aid law enforcement efforts, which is the original intent of this action. At the very least, a prohibition on tailing would slow the pace at which Caribbean spiny lobsters are harvested due to storage capacity issues onboard participating vessels.

Several fishery participants who attended the scoping meetings were in favor of requiring all Caribbean spiny lobster be either landed all whole or landed all tailed. The rationale for proposing this alternative is that requiring spiny lobster to be landed all whole or all tailed would prevent the anecdotally reported practice of tailing select lobsters in order to conceal their undersized status. Not all fishery participants and dealers noted this as a significant problem, and some did support maintaining the current tailing provisions. The magnitude of illegal tailing is not known, and it is important to note that the ability to tail Caribbean spiny lobsters is a very important contributor to the viability of fishing operations conducted on board vessels with limited storage capacity on long trips. However, requiring that all Caribbean spiny lobsters be landed tailed or whole would close the regulatory loophole for those who attempt to circumvent the three-inch carapace length minimum size requirement, while not prohibiting the practice all together for those who rely on the tailing provision to make profitable trips. Additionally, a major challenge that NOAA Fisheries Service law enforcement officials are presented with is commercially permitted lobster divers who spear and tail spiny lobster, which removes evidence of the illegal act of spearing a spiny lobster. To continue to allow tailing will continue to facilitate this type of illegal activity.

Under **Alternative 1** the problem of some recreational fishermen obtaining Tail-Separation Permits, and some commercial and recreational fishermen tailing only undersized lobsters and keeping the legal sized lobsters whole for landing would persist. There would be no biological benefit realized under **Alternative 1**. The average Caribbean spiny lobster fishing trip is eight hours (Vondruska 2010a), so the number of individuals utilizing this provision is unknown.

Alternative 2 would be the most biologically conservative of all the alternatives being considered under this action. Removing the ability for fishermen to land any tailed Caribbean spiny lobster would increase the probability that most lobster landed would be of legal size since they could easily be measured. According to Witham et al. (1968), spiny lobsters reach sexual maturity at lengths of approximately 2.8-3.2 inches. Legal-sized lobsters are likely to have reached their reproductive potential and are able to contribute to the overall stock abundance. Therefore, ensuring that spiny lobsters are able to mature enough to reproductively contribute to the population by making it more difficult for fishermen to profit off an undersized harvest would remove the incentive for the practice to continue.

Preferred Alternative 3 alone would address the issue of recreational fishermen obtaining Tail-Separation Permits, but it would not address the issue of commercial fishermen landing undersized lobster by tailing them. Clarifying the regulations now would prevent even more recreational fishermen from trying to obtain the Tail-Separation Permit in the future, which would reduce the risk that undersized lobster could be kept onboard in a tailed condition.

Preferred Alternative 4 would address the issues associated with some fishermen landing part of their catch whole and part of it tailed. Presuming anecdotal information is correct, several of those engaging in the practice do so in order to land sub-legal spiny lobsters for profit or to hide evidence of spearing. If vessels were to consistently land all Caribbean spiny lobster tailed rather than whole, the chance that a portion of that harvest is sub-legal is higher than if fishermen chose to land their entire harvest whole. However, whole lobster may be more desirable in the market, and therefore, this measure may reduce the incentive to land all spiny lobster tailed even though it may result in storage issues on long trips. If under **Preferred Alternative 4** most fishermen choose to land all of their Caribbean spiny lobster harvest whole, the action would be expected to benefit the biological environment by slowing the rate of harvest and potentially reducing the probability of ACL overages. If the majority of fishermen choose to land their harvest tailed, there is an increased risk that more undersized lobsters would be taken. Additionally, **Preferred Alternative 4** alone does not address the issue of recreational fishermen obtaining Tail-Separation Permits. However, if **Preferred Alternative 3** were implemented in combination with **Preferred Alternative 4**, the issue of recreational fishermen obtaining Tail-Separation Permits would be addressed and could therefore result in greater biological benefit than if **Preferred Alternative 4** were chosen alone.

Alternative 1 would perpetuate the existing level of risk for interactions between ESA-listed species and the fishery. Requiring that all Caribbean spiny lobster be landed whole or all spiny lobster be landed tailed is unlikely to alter fishing behavior in a way that would cause new adverse effects to *Acropora* spp. The impacts from **Alternatives 2-4,** on sea turtles and smalltooth sawfish are unclear. If they perpetuate the existing amount of fishing effort, but cause effort redistribution, any potential effort shift or increase in fishing effort is unlikely to change the level of interaction between sea turtles and smalltooth sawfish and the fishery as a whole. If these alternatives reduce the overall amount of fishing effort in the fishery, the risk of interaction between sea turtles and smalltooth sawfish will likely decrease.

4.8.2 Direct and Indirect Effect on the Economic Environment

Preferred Alternative 3 would close an unintended loophole in regulations. Compared with **Alternative 1**, **Preferred Alternative 3** would disallow an unknown number of instances wherein individual recreational fishers and/or charter-boat operators reportedly obtained federal tailing permits and could thereby legally possess and land, but not sell, recreationally-caught lobster tails.

Alternative 2 would reverse the long-standing Councils decision that provided an economic incentive to engage in multi-day, deep-water fishing for spiny lobster in the EEZ. **Alternative 2** would have an economic impact exclusively on the commercial sector when compared with **Alternative 1**, because lobster tails could not be held onboard fishing vessels in the EEZ, thereby ending what is now a much reduced economic activity (Figure 4.8.2.1).

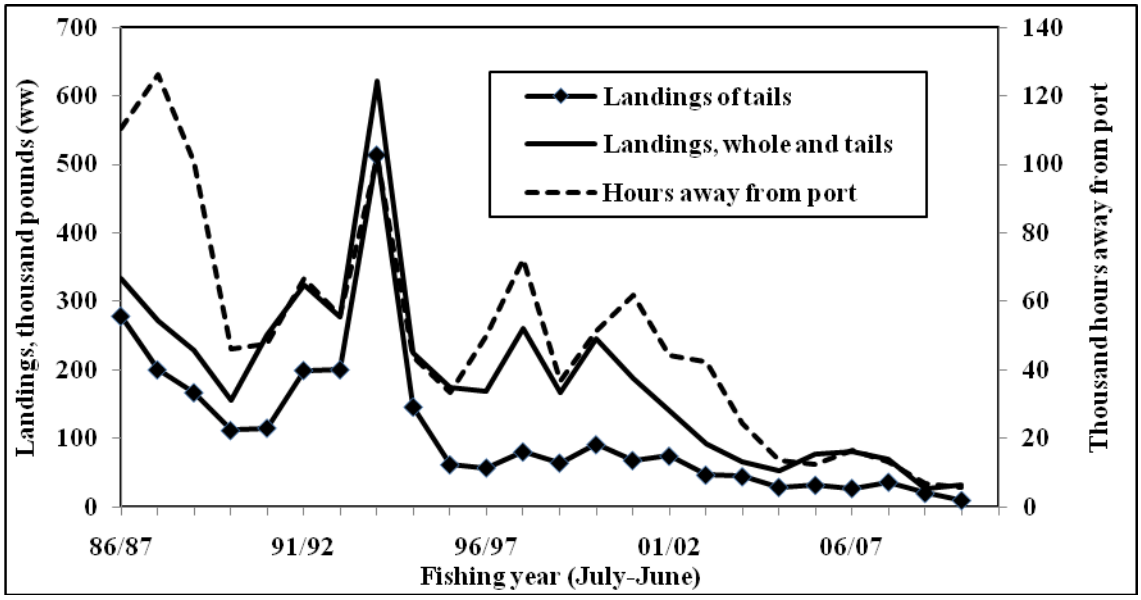


Figure 4.8.2.1. Spiny lobster tail trips, landings and fishing effort in Florida
Source: NMFS, SEFSC, FTT (Mar. 19, 2010), data and methods as in Vondruska 2010a.

The long-term decline in multi-day, deep-water fishing for spiny lobster may be attributed to several factors, many of which have increased the cost of fishing.[11] Comparisons of gross revenue and costs using available data suggest that fishermen are even less likely to cover their costs for multi-day, deep-water fishing for spiny lobster than for other fishing for spiny lobster (see last paragraph under "Survey Data" in this section).

[11]The long-term decline in multi-day, deep-water fishing for spiny lobster may be attributed to such factors as the expansion of no-take areas, "gentrification" of the Florida Keys, land-use regulations (such as respecting trap storage), reduced access to waterfront land and higher docking fees, a decline in the number of dealers (who provide docking and other services to fishermen), the cost of living in the Florida Keys, especially in Key West, and high vessel-operating and trip costs (Shivlani et al. 2004; Shivlani 2009).

Table 4.8.2.1. Florida spiny lobster, landings and effort indicators

Data shown represent annual averages for fishing years 2005/06 - 2009/10	Florida, all trips	Florida, trips landing whole lobster	Florida, trips landing lobster tails	
			Landings of tails	All lobster landings
	1	2	3	4
Total landings of spiny lobster, pounds (ww)	3,671,381	3,646,331	25,050	57,210
Total ex-vessel value of lobster, 2008$	$22,226,899	$22,081,439	$145,458	$333,682
Vessel gross, all FTT-reported landings, 2008$	$23,532,683			$542,636
Trips	15,568	15,470	129.8	na
Spiny lobster, pounds (ww) / trip	242.2	241.8	189.4	433.2
Spiny lobster, 2008$ / trip	$1,386	$1,386	$1,073	$2,386
Trip gross, all species landed, 2008$ / trip	$1,468	$1,457	na	$4,098
Vessels	780.8	769.4	34.8	na
Trips per year	19.94	20.11	3.73	na
Spiny lobster, pounds (ww) / vessel	4713.6	4752.4	711.2	1593.8
2008$ / vessel for spiny lobster	$28,305	$28,564	$4,063	$8,921
Vessel gross, 2008$ / vessel	$29,960	$30,027	na	$15,384
Traps hauled / trip	275.6	276.0	na	421.4
Time away from port, average hours / trip	15.2	14.4	na	82.4
Median--50th percentile--hours / trip	8.0	8.0	na	57.6
90th percentile, hours / trip	22.0	21.6	na	192.0
Gear soaktime, hours / trip	241.4	241.2	na	496.8
Trap lines set per trip	8.0	8.0	na	34.8
Depth fished in feet, average for trips	33.4	33.4	na	84.8
90th percentile, depth fished	148.0	139.0	na	150.0

Source: NMFS, SEFSC, FTT (Mar. 19, 2010), data and methods as in Vondruska 2010a. Data for landings and ex-vessel value of lobster tails and whole lobster are separated into two data sets based on FTT data record fields for whole weight, landed weight and conversion factors (columns 2 and 3). Categorical variables in the data set for lobster tails (column 3; month, year, vessel id and trip ticket number) are used to select data records (from data set for column 1) so as to create another data set with landings of both lobster tails and whole lobster (column 4). There are some caveats; e.g., vessel and trip totals in columns 2 and 3 are not mutually exclusive, i.e., their sums exceed the respective totals in column 1 because some vessels and trips land whole lobsters and tails.

Preferred Alternative 4 may seem at first glance to have a less onerous economic impact on commercial fishing than **Alternative 2,** but either could affect the economic viability of remnant multi-day, deep-water fishing for spiny lobster tails in the EEZ, notably fishing in Monroe County (Figure 4.8.2.1, Table 4.8.2.1). **Alternative 2** and **Preferred Alternative 4** would, respectively, disallow or restrict fishermen's choices in vessel-based, market-oriented production of spiny lobsters in accord with changing economic and global-market conditions. Shore-based production of tails from whole lobsters would occur, and this would transfer the associated economic value added (net income) away from fishermen. It is estimated that a significant proportion of Florida's spiny lobsters are exported (Vondruska 2010b). U.S. exports include frozen, shell-on tails, as for the U.S. market, but market preferences mean that relatively more live, fresh whole, and frozen whole spiny lobsters are imported by other countries. U.S. exports of spiny lobster go to Canada, France, Japan, China and many other countries in Asia, Europe and the Western Hemisphere.

Estimated commercial landings of spiny lobster tails and the associated fishing effort in Florida have declined substantially since the late 1980s and early 1990s (Figure 4.8.2.1). Landings of tails are relatively low, an estimated 0.025 mp (ww) on average in the last five years compared with 3.646 mp for whole lobsters (Table 4.8.2.1, columns 2 and 3). Strictly speaking, the associated fishing effort is not for lobster tails alone. More whole lobsters were landed on the trips with landings of lobster tails in the last five years, though the proportions have varied over time (Figure 4.8.2.1; see methodological note in Table 4.8.2.1).

According to several indicators, average effort on trips with landings of spiny lobster tails is higher (compare column 4 with columns 1 and 2, Table 4.8.2.1). For example, hours away from port are greater (82 hours per trip versus 14-15 hours); depth fished is greater (85 ft versus 33 ft); more traps are hauled (421 traps per versus 275-276 traps); gear soaktime is greater (497 hours versus 241 hours); and the number of trap lines set is higher (34.8 versus 8.0). Also, trip landings, the ex-vessel value of spiny lobster landed, and trip gross are higher, along with the share of other species in trip gross. If FTT-reported data represents all of their fishing activity, then vessel gross is lower (i.e., assuming no landings are reported in other states).

The characteristics of multi-day, deep-water fishing trips in the EEZ depicted in Table 4.8.2.1 and the implied trip costs most closely fit sample data for Key West and the Lower Keys, two of five sampling areas for a cost-and-returns survey covering the 2001/2002 season (Shivlani et al. 2004). According to the survey, the average number of traps hauled per trip is highest for Key West (410 traps), and this is close to what is shown in Table 4.8.2.1 (421 traps). For two of the five areas, Key West and Lower Keys, trip costs are higher, notably because of purchases of fuel/oil, ice, bait, and food. The Key West fishermen's trip costs averaged $459, compared with $242 per trip for all fishermen in the survey (data include crew shares; data are not adjusted to 2008$). Most of the higher trip costs for Key West relate to trip length. Higher costs for purchased bait for Key West relate to fishermen's perceptions about the efficacy of different bait. Bait costs were much lower elsewhere, because "shorts" tended to be used more in the Middle Keys, Upper Keys and Miami River (Shivlani et al. 2004).

Other survey results for the 2001/2002 season (Shivlani et al. 2004) indicate that commercial fishermen operating in the Keys tended to have long tenure (mostly more than 20 years), to be full-time operators, to derive 83% of their personal income from commercial fishing, and to have considerable investment in vessels and traps. For example, the average cost of vessels exceeded $107,000 ($131,000 for Key West) and an average of 1,142 traps was worth more than $29,000 (vessel operating costs).[12] Vessels were slightly longer in Key West and tended to have more powerful engines. Docking costs were highest for Key West, $5,951 versus a survey average of $3,316, as were the number of traps built each year, 492 traps versus a survey average of 434 traps, given the differences in trap life span (4.11 years versus a survey average of 3.31 years). Trip length affected how crew members were paid, and vessels that engaged in multi-day trips

[12]Shivlani et al. (2004) state: "Key West, from where most multiple-day trips are taken and which is closest to the fishing grounds of the Dry Tortugas and eastern Gulf of Mexico, requires a longer distance fleet, and the higher average vessel value may reflect that."

were more likely to use shareholder arrangements, wherein crew members take on more responsibilities and risks, and they are paid accordingly.

Cost and revenue comparisons suggest that fishermen on average are more likely to cover trip costs than they are to cover vessel-operating costs for multi-day, deep-water fishing for spiny lobster in the EEZ. Significant statistical variability among observations in the 2001/2002 survey implies that some fishermen are more likely to cover trip and vessel-operating costs than others. Fishermen are not likely to make a trip if they expect trip revenue to fall short of trip costs. If they cannot also cover annual vessel-operating costs with what remains of gross revenue after covering trip costs, there is an economic disincentive to continue fishing. A few may be able to cover fishing costs with income from other sources, but this seems unlikely for most, because surveyed vessel owners derived 83% of their personal income from commercial fishing, and 86.5% claimed to be full-time fishery participants (Shivlani et al. 2004).

Comparing annual average trip costs ($459) and trip gross ($4,049) suggests an economic incentive to make trips with landings of lobster tails in Florida (Table 4.8.2.1, column 4, data in 2008$; Shivlani et al. 2004, Key West sample, data in 2001/2002 dollars). The same is not true for vessels, because the vessel gross ($15,384 in 2008$) falls well short of estimated vessel-operating costs (approximately $38,000 per year in 2001/2002 dollars, not counting trip costs for a vessel, perhaps $1,700 per year) (Table 4.8.2.1, column 4; Shivlani et al. 2004, Key West sample). On average, trip gross for all trips with landings of spiny lobster in Florida ($1,468) exceeds estimated trip costs ($242), but vessel gross ($29,960) falls short of vessel-operating costs (approximately $42,000, not counting trip costs for a vessel, perhaps $4,800; Table 4.8.2.1, column 1; Shivlani et al. 2004, data for whole sample).

Any excess of fish costs over gross revenue would help explain the decline in the number of vessels engaged in landing lobster tails in Florida (Figure 4.8.2.2). An average of 315 vessels per year engaged in this activity 1986/1987–1990/1991 and 35 did so in 2005/2006–2009/2010. Over the same period of time, the average number trips per year declined from 931trips to 130. Among the factors affecting trip costs since the 2001/2002 survey was completed by Shivlani et al. (2004), it is noted that fuel prices increased sharply in the mid to late 2000s and then declined. However, it now appears that they may reach new highs as the 2011/2012 commercial lobster season gets underway in August 2011. Fuel costs could have contributed to the decline in effort since the mid to late 2000s (Figures 4.8.2.1 and 4.8.2.2).

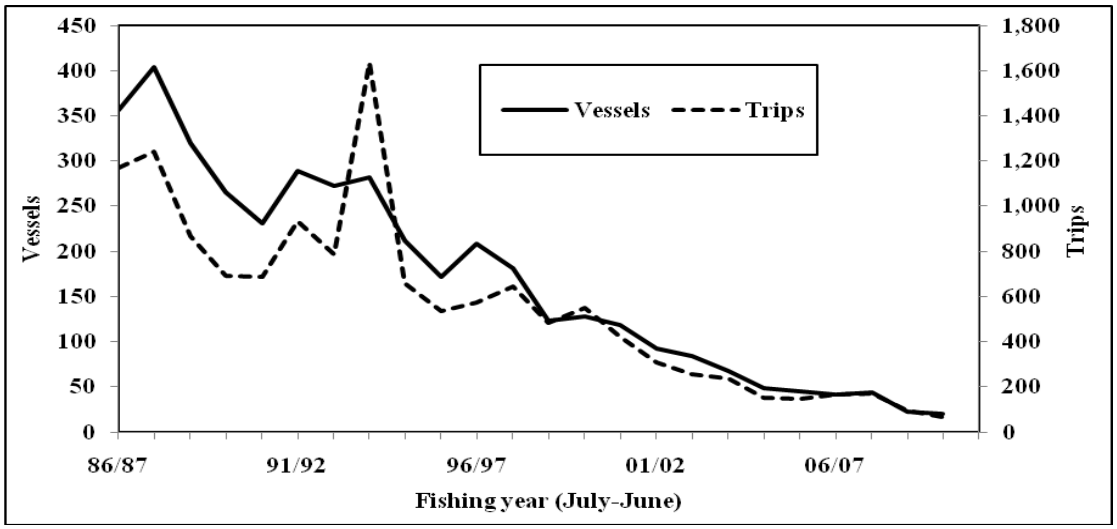


Figure 4.8.2.2. Spiny lobster tail trips and vessels.

Alternative 2 or **Preferred Alternative 4** would reverse a long-standing Council decision that provided an economic incentive to engage in commercial multi-day, deep-water fishing for spiny lobster in the EEZ. Even with the Councils approved incentive, other factors have greatly reduced the number of vessels landing lobster tails commercially to an average of 35 per year in 2005/2006–2009/2010 (Table 4.8.2.1 and Figure 4.8.2.2). There are more vessels with landings of spiny lobster in Florida, 2,175 on average in 1987/1988–1991/1992 and 781 vessels in 2005/2006–2009/2010 (Table 3.4.1.1).

4.8.3 Direct and Indirect Effect on the Social Environment

Modifying the tailing requirements can certainly benefit the social environment; yet, the alternatives do not provide a complete solution to the problem. **Alternative 1** would provide no solution as no action would be taken. While **Alternative 2** would solve most of the law enforcement issues, it would not provide the benefits of the original intent which allows for fishermen who take longer fishing trips to accommodate space issues with whole lobsters. By requiring all fishermen to obtain state commercial permits to obtain a tailing permit under **Preferred Alternative 3** would remove some of the uncertainty for law enforcement, yet still impose some ambiguity in the regulations making it difficult to regulate harvest of undersized lobster. By requiring fishermen to either land all tailed or whole product, **Preferred Alternative 4** would remove some of the difficulty in prosecuting the harvest of undersized lobster, and in conjunction with **Preferred Alternative 3,** may be the best solution to a difficult problem while continuing to provide for fishermen's concerns of space on long trips.

4.8.4 Direct and Indirect Effect on the Administrative Environment

Under **Alternative 1**, the current level of administrative time and cost burdens would be maintained. Enforcement concerns related to the harvest of undersized Caribbean spiny lobsters would persist and recreational fishermen may continue to acquire Tail Separation Permits, which was an unintended consequence of previously implemented regulations. **Alternative 2** would have a positive impact on the administrative and law enforcement environments since the Tail-Separation Permit would no longer exist and the practice of tailing Caribbean spiny lobsters would be prohibited. **Preferred Alternative 3** would create a very small administrative burden when compared to the status quo because some updates to the current regulatory text would be necessary. **Preferred Alternative 4** would also require a modification to the regulations; however, the administrative burden would be very low. If the majority of fishermen chose to land their harvest whole the burden on law enforcement officers would be reduced for those trips. Law enforcement issues may still exist for those fishermen who may choose to land their entire harvest tailed under **Preferred Alternative 4**.

4.8.5 Council Conclusions

Preferred Alternative 3 addresses the issue of recreational fishermen obtaining Tail-Separation Permits, which was not the intended use of the Tail Separation Permit. Clarifying the regulations now would prevent even more recreational fishermen from trying to obtain the Tail-Separation Permit in the future. Based on anecdotal information from fishery participants indicating that some spiny lobster fishermen land part of their catch tailed in order to conceal harvest of

undersized spiny lobsters, the Councils determined some action to prevent the practices was necessary to ease enforcement burdens and protect the stock. Therefore, in addition to choosing **Alternative 3** as a preferred alternative, the Councils also chose **Alternative 4** as a preferred alternative. It is likely that requiring harvested spiny lobsters to be landed either all whole or all tailed will curtail the practice of concealing illegally harvested undersized spiny lobsters without incurring significant socioeconomic impacts.

4.9 Action 9: Limit Spiny Lobster Fishing in Certain Areas in the EEZ off Florida to Protect Threatened Staghorn and Elkhorn Corals (*Acropora* spp.)

Preferred Alternative 1: No Action – Do not limit spiny lobster fishing in certain areas in the EEZ off Florida to address ESA concerns for *Acropora* spp.

Alternative 2: Prohibit spiny lobster trapping on all known hardbottom in the EEZ off Florida in water depths less than 30 meters.

Alternative 3: Expand existing and/or create new closed areas to prohibit spiny lobster trapping in the EEZ off Florida.

Option a: Create 24 —large closed areas to protect threatened *Acropora* spp. corals.
Option b: Create 37 —medium closed areas to protect threatened *Acropora* spp. corals.
Option c: Create 52 —small closed areas to protect threatened *Acropora* spp. corals.

Alternative 4: Expand existing and/or create new closed areas to prohibit all spiny lobster fishing in the EEZ off Florida.

Option a: Create 24 —large closed areas to protect threatened *Acropora* spp. corals.
Option b: Create 37 —medium closed areas to protect threatened *Acropora* spp. corals.
Option c: Create 52 —small closed areas to protect threatened *Acropora* spp. corals.

4.9.1 Direct and Indirect Effect on the Physical and Biological/Ecological Environments

Spiny lobster traps are generally not deployed on coral or hardbottom (Lewis et al. 2009), and most fishers appear to drop traps on seagrass, rubble, or sandy habitats because these areas are less likely to damage traps (Hill et al. 2003). Traps also appear to move less on these substrates (Uhrin et al. 2005). However, the relatively poor water quality in the Lower and Middle Keys may cause fishers to accidentally deploy traps on habitats that could support elkhorn and staghorn corals (*Acropora* spp.). The biological opinion determined that the deployment and retrieval of traps during normal fishing operations had little impact to *Acropora* spp. relative to traps moved from their original locations during storms.

Lewis et al. (2009) analyzed the impacts to benthic habitat in the Florida Keys of trap movement during storms. The study documented the distance traps moved during non-tropical storm events. Buoyed traps moved an average of 15 ft during each storm and as much as 98 ft from their original location (Lewis et al. 2009). The movement of buoyed spiny lobster traps following a tropical storm or hurricane has never been measured during a trap impact study, largely because those traps move so far from their original locations that they are rarely, if ever,

recovered. However, anecdotal evidence indicates that fishermen have found traps several miles from their original location after tropical storms or hurricanes (FWC unpublished data).

The movement of traps during storms poses the greatest threat to *Acropora* spp. Because of *Acropora* spp. branching morphology, colonies of any size are susceptible to fragmentation/breakage and abrasion from traps and trap lines. Even traps initially placed by fishermen in locations devoid of *Acropora* spp. colonies can be moved by storms into reef habitats and cause damage. Creating closed areas would reduce the likelihood of traps contacting colonies even if they are moved by storms by creating buffers between the closest traps and *Acropora* spp. colonies. Closed areas approximately 200 ft or more across would likely be sufficient to protect *Acropora* spp. colonies from trap movements occurring during typical non-tropical storm conditions.

Alternatives 2, 3, and **4** were developed primarily to protect colonies with high conservation value and areas of high *Acropora* spp. density. The largest "super colonies" were designated as the highest conservation priority because of their importance to sexual reproduction. *Acropora* spp. corals are generally considered sexually mature when the surface area of live tissue exceeds 100 cm^2. Elkhorn corals with a living tissue surface area of 1,000 cm^2 could be considered "super colonies." A similar distinction could be made for staghorn corals with a living tissue surface area of 500 cm^2. Colonies of this size have exponentially higher reproductive potential compared to other sexually mature colonies, and represent essential sources of gamete production. Colonies of this size are also exceedingly rare. Sampling at over 1,000 locations throughout the Florida Keys and the Dry Tortugas identified only 17 super colonies (6 staghorn colonies and 9 elkhorn colonies). The same level of sampling has also identified 62 sexually mature colonies (32 staghorn colonies and 30 elkhorn colonies) and 61 non-sexually mature colonies (58 staghorn colonies and 3 elkhorn colonies).

Preferred Alternative 1 would have the least biological benefit to *Acropora* spp., and would perpetuate the existing level of risk of interaction between these species and the fishery. **Preferred Alternative 1** would not meet the requirement established under the biological opinion; however, the Councils have initiated Amendment 11 to the Spiny Lobster FMP to address this requirement after allowing more time for stakeholder input. The Councils intend to quickly develop the new amendment and put measures into place that would provide protection for *Acropora* spp. as required by the biological opinion.

Alternative 2 would provide the greatest biological benefit to *Acropora* spp. and other hardbottom/coral resources. **Alternative 2** would prohibit trapping on all hardbottom in the Florida EEZ, which support *Acropora* spp. This would reduce the likelihood of interactions between spiny lobster trap gear in the EEZ and *Acropora* spp. to almost zero. The vast majority of *Acropora* spp. colonies in the Florida EEZ occur in waters under the South Atlantic Council's jurisdiction. While areas of hardbottom habitat in the Florida EEZ fall under the jurisdiction of the Gulf Council, the water quality in these areas is generally too poor to sustain *Acropora* spp. colonies. However, if water quality improves these areas would likely support *Acropora* spp.

Relative to **Alternative 2**, **Alternatives 3** and **4** would be less biologically beneficial to *Acropora* spp. colonies located outside the closed areas. **Alternative 3, Options a-c** would

reduce the risk of trap damage to *Acropora* spp. by prohibiting the use of traps near areas of high *Acropora* spp. density or near colonies with high conservation value. **Alternative 3, Option a** would likely provide the greatest biological benefit because it closes approximately 14 mi^2 of hardbottom habitat to trapping. **Alternative 3, Option b and c** would likely have decreasing biological benefits, closing approximately 8 and 4 mi^2 of hardbottom habitat to trapping, respectively. As proposed closed areas get smaller, traps are more likely to be accidentally dropped upon colonies. Larger closed areas also provide larger buffers between their boundaries and colonies. Non-tropical storm systems can move traps 100 ft from their original locations. However, stronger storms (i.e., tropical systems) can move traps many times further. **Alternative 3, Option a** would provide the largest buffer providing additional protection to colonies in the event a stronger storm moves traps longer distances. As the proposed areas get smaller, (i.e., **Alternative 3, Option b** and **c**) the additional protection against trap movement during stronger storms would be reduced. Likewise, as closed areas get smaller the potential for interactions between trap gear and corals increase.

Alternative 4 and the associated options would provide slightly more biological benefit to *Acropora* spp. colonies than **Alternative 3** and the associated options because it would prohibit all fishing for spiny lobster in the proposed closed areas. Although the effects to *Acropora* spp. from diving for spiny lobster are unknown, other types of diving and the associated anchoring are known to adversely affect *Acropora* spp.. **Alternative 4** would provide additional benefits because it would reduce the likelihood that adverse effects known from diving and anchoring could occur. The overall size of the proposed closed areas is less relevant when discussing the impacts from diving since divers must be in very close proximity to colonies to impact them. Thus, simply prohibiting the practice of diving for spiny lobster inside the proposed closed areas would likely help minimize any potential threat. Thus, **Alternative 4**, **Option a** would likely have the greatest biological benefit because it would create the largest buffer against trap impacts, while also reducing potential impacts from diving. **Alternative 4**, **Option b** and **c** are likely to have diminished biological benefits relative **Alternative 4**, **Option a** with respect to reduce trap impacts; however, the alternatives are likely to have same biological benefit as **Alternative 4**, **Option a** relative to diving and anchoring impacts. Maps of the proposed closed areas are in Appendix H.

Preferred Alternative 1 would perpetuate the existing level of risk for interactions between other ESA-listed species and the fishery. The impacts from **Alternatives 2-4** and their associated options on sea turtles and smalltooth sawfish are unclear. If these closed areas perpetuate the existing amount of fishing effort, but cause effort redistribution, any potential effort shift is unlikely to change the level of interaction between sea turtles and smalltooth sawfish and the fishery as a whole. If these alternatives reduce the overall amount of fishing effort in the fishery, the risk of interaction between sea turtles and smalltooth sawfish would likely decrease.

4.9.2 Direct and Indirect Effect on the Economic Environment

In terms of assessing economic impacts, the extent of lobster fishing in the proposed closed areas must be estimated. Survey-based studies by Murray (2005) and (Shivlani et al. 2004) suggest

similar economic characteristics of the fishermen and experience-based knowledge of the areas they fish. Fishermen have provided information used to assess the alternatives.

Compared with **Preferred Alternative 1**, it is estimated that **Alternative 2** could preclude 1,441 trips per year in the EEZ in the Keys area for 195 vessels, referring to trips with reported depths of less than 100 ft (Table 4.9.2.1, last row and footnote). These trips have relatively high average landings, and if they do not occur, the landings of Caribbean spiny lobster would be reduced by 0.486 mp ($2.7 million in 2008$) (Table 4.9.2.1). Assuming the trips do not occur, the total for trip and vessel gross revenue for all species landed would be reduced by $2.9 million, 12% of the total for Florida and 14% of the total for Monroe County, and 75% of the total for the Keys EEZ.

Table 4.9.2.1. Caribbean spiny lobster landings, Florida and Keys, all and EEZ

Area	Caribbean spiny lobster					Trip gross		
	Trips	Thousand pounds	Lbs / trip	Thousand 2008$	2008$ / trip	Thousand 2008$	%, Florida	%, Monroe
Florida	15,568	3,671	236	$22,227	$1,428	$23,533	100%	
Florida, *EEZ*	1,977	670	339	$3,795	$1,919	$4,351	18%	
Monroe	13,237	3,282	248	$19,761	$1,493	$20,724	88%	100%
Keys, EEZ	1,664	630	379	$3,556	$2,137	$3,830	16%	18%
Keys, EEZ, <100 ft	1,441	486	337	$2,723	$1,889	$2,908	12%	14%

Source: NMFS, SEFSC, FTT (Mar. 19, 2010), data and methods as in Vondruska 2010a, annual averages for fishing years 04/05-09/10. The trip averages may differ from those in other tables. A depth of 30 m is approximately 100 ft (98 feet = 30 meters * 39.37 inches / 12 inches per foot; 16.39 fathoms = 30 meters / 1.83). Selected vessel averages for gross revenue are as follows: $29,532 (781 vessels, Florida), and $18,056 (212 vessels, landings from the Keys EEZ), and $14,829, (195 vessels, landings from the Keys EEZ in depths less than 100 feet).

There would be 25 large closed areas in the EEZ off Florida under **Alternative 3, Option a**. This includes a small part of the federal waters in the EEZ to about Key Biscayne which total 1,134 sq miles out to a depth of 200 ft, referring to waters under South Atlantic Council's jurisdiction (A. Herndon, personal communication). Most fishermen appear to deploy traps out to a depth of about 100 ft, and close to, but not intentionally on, hard-bottom areas. This includes an estimated 73 mi^2 of hard-bottom, of which 13.6 mi^2 (or 18.6%) are in the 25 large closed areas. Reportedly, lobsters reside in hard-bottom areas (primarily reef and reef-like habit), but traps that fall unintentionally on hard-bottom areas can get caught and then be damaged when fishermen attempt to retrieve them.

If 25 large areas of hard-bottom were closed to trap fishing under **Alternative 3, Option a** (18.6% of the specified hard-bottom area of 73 mi^2 that is less that 100 ft deep), then an estimated 18.6% of the landings of 0.486 lbs ($0.506 million in 2008$) of spiny lobster for 1,441 trips and 195 vessels would be precluded (Table 4.9.2.1). Including the value of other species landed by the trips and vessels, and assuming the trips do not occur, the associated dollar loss in vessel and trip would be nearly $0.55 million (approximately 18.6% of trip and vessel gross of $2.908 million).

If 37 medium areas were to be closed to trap fishing under **Alternative 3, Option b**, then 11.2% of the specified hard-bottom area (of 73 mi^2 that is less that 100 ft deep) could not be used for lobster traps. This would affect an estimated 11.2% of the landings and ex-vessel value of spiny lobster, and assuming the trips do not occur, it would result in a loss in trip and vessel gross of nearly $0.33 million (Table 4.9.2.1; 11.2% of 0.486 lbs; and approximately 11.2% of trip and vessel gross of $2.908 million).

If 52 small areas were to be closed to trap fishing via **Alternative 3, Option c**, then 5.6% of the specified hard-bottom area (of 73 mi^2 that is less that 100 ft deep) could not be used for lobster traps. This would affect an estimated 5.6% of the landings of spiny lobster, and assuming the trips do not occur, it would result in a loss of nearly $0.16 million in associated trip and vessel gross (Table 4.9.2.1; 5.6% of 0.486 lbs, and approximately 5.6% of trip and vessel gross of $2.908 million, or a reduction of $0.16 million).

4.9.3 Direct and Indirect Effect on the Social Environment

Closure of fishing areas is always a controversial management strategy and can have numerous direct and indirect effects to the social environment. Yet, to meet the mandates of the biological opinion, closed areas may be the most viable solution. The proposed options for closed areas attest to the difficulty in balancing the impact to the fishery and impacts to the endangered species. **Preferred Alternative 1** would not meet the requirement established under the biological opinion; however, the Councils have initiated Amendment 11 to the Spiny Lobster FMP to address this requirement after allowing more time for stakeholder input. The Councils intend to quickly develop the new amendment and put measures into place that would provide protection for *Acropora* spp. as required by the Biological Opinion.

The most restrictive alternative, **Alternative 2,** would prohibit traps on all hard bottom in the EEZ and likely have the most direct impacts on the social environment. **Alternatives 3** and **4** offer a broad array of options which provide less negative social impacts than **Alterative 2**, but may introduce other inefficiencies with regard to enforcement and compliance. Choosing smaller closed areas, as in **Alternative 3 Options b** and **c** may provide more flexibility for trap fishermen, but may make it more difficult to monitor and enforce compliance. **Alternative 4, Options b** and **c** would have similar social effects but for both commercial and recreational fishermen. Larger closed areas, like those in **Alternative 3, Option a** and **Alternative 4, Option a** may enhance enforcement, but could have more negative social effects on fishermen as they find less area to fish which could reduce harvests. Closed areas to fish could also create crowding as fishermen move more traps into areas closer to where others are already placing traps or as recreational divers are also forced into areas that become congested. At this time there are no data on trap placement with sufficient detail to analyze such effects. The impacts will be better known once fishermen have had an opportunity to examine the proposed closures and how they may be affected.

4.9.4 Direct and Indirect Effect on the Administrative Environment

Preferred Alternative 1 would not meet the requirements of the Biological Opinion and requires the Councils to develop a new amendment that will address this requirement. The

Councils intend to quickly develop the new amendment and put measures into place that would provide protection for *Acropora* spp. as required by the Biological Opinion.

Any alternative that creates new closed areas would increase the administrative burden over the current level due to changes in maps, outreach, and education of the public, and greater enforcement needs. **Alternative 2** would be the most inclusive and require enforcement over the largest area. **Alternatives 3** and **4** are similar except **Alternative 3** applies to trap fishing only, and **Alternative 4** applies to all lobster fishing. **Alternative 4** would be easier to enforce because any boat in a closed area with lobster on board would be in violation of regulations. Larger areas could incorporate multiple colonies and thereby reduce the actual number of closed areas. Thus, the expectation is **Option a** would result in fewer, larger closed areas; **Option c** would result in more, small areas; and **Option b** would be between the two. Therefore, **Option a** would create less administrative and enforcement burden than **Option b** or **c**.

4.9.5 Council Conclusions

The Councils chose **Preferred Alternative 1** to allow more time for industry representatives, along with NMFS/NOAA and Marine Sanctuary representatives to work together to define areas of important habitat to protect *Acropora* spp. coral. This action will be included in Amendment 11. The Councils did not choose any of the other alternatives because they wanted to be sure the areas closed were the most appropriate for protecting *Acropora* spp.

4.10 Action 10: Require Gear Markings so All Spiny Lobster Trap Lines in the EEZ off Florida are Identifiable

Preferred Alternative 1: No Action – Do not require gear marking measures for spiny lobster trap lines.

Alternative 2: Require all spiny lobster trap lines in the EEZ off Florida to be COLOR, or have a COLOR marking along its entire length. All gear must comply with marking requirements no later than August 2014.

Alternative 3: Require all spiny lobster trap lines in the EEZ off Florida to have a permanently affixed 4-inch COLOR marking every 15 ft along the buoy line or at the midpoint if less than 15 ft. All gear must comply with marking requirements no later than August 2014.

4.10.1 Direct and Indirect Effect on the Physical and Biological/Ecological Environments

Trap lines are consistently found as marine debris and most frequently without buoys or traps still attached. These conditions make it extremely difficult to determine if line found in the environment, or entangling protected species, originated from the spiny lobster fishery. A lack of uniquely identifiable markings also makes monitoring incidental take by the fishery difficult. Trap line marking requirements would allow for greater accuracy in identifying fishery interactions with protected species, leading to more targeted measures to reduce the level and severity of those impacts. Trap line marking requirements would allow for greater accuracy in determining, or ruling out, fishery-based sources of marine debris.

Preferred Alternative 1 would not meet the requirement established under the biological opinion; however, the Councils have initiated Amendment 11 to the Spiny Lobster FMP to address this requirement after allowing more time for stakeholder input. The Councils intend to quickly develop the new amendment and put measures into place that would provide protection for *Acropora* spp. as required by the biological opinion.

Alternative 2 would likely have slightly more biological benefit than **Alternative 3.** Requiring gear markings along the entire length of trap lines would minimize the likelihood that a portion of a spiny lobster trap line is recovered without an identifiable mark. **Alternative 3** would provide greater biological benefit than **Preferred Alternative 1,** but the benefits would likely be less than **Alternative 2** for the reason described above. **Alternatives 2** and **3** would fulfill the requirements of the biological opinion. The trap marking requirements under **Alternatives 2** and **3** would provide indirect benefits to sea turtles and smalltooth sawfish. Trap marking requirements would provide better understanding of the frequency of interactions between these species and the fishery. These requirements could also help rule out the spiny lobster fishery as a potential source of entanglement with protected species. By better understanding which fisheries are interacting with sea turtles and smalltooth sawfish, ways to reduce those interactions can be developed.

4.10.2 Direct and Indirect Effect on the Economic Environment

Lobster trap line replacement outside of the normal schedule and at a quicker pace implies an economic impact for **Alternatives 2** and **3**. Recognizing that the number of traps, trap line length, wear and replacement schedule, and other factors may vary, an industry source estimated the cost of replacing trap lines at $20,000 per vessel,[13] and this exceeds the average annual gross revenue (for all landings, $15,866) for the 274 vessels with landings of spiny lobster in Florida from the EEZ, though it is less than the average gross for the 781 vessels with landings of spiny lobster in Florida ($29,960, data from Table 4.9.2.1, footnote; also, see Table 3.4.1.1). There are far fewer traps than in the past, and the number fished declines as the season progresses.[14]

4.10.3 Direct and Indirect Effect on the Social Environment

Marking trap lines could have significant effects on the social environment as it may impose substantial costs to modify the gear, according to testimony during public hearings. **Preferred Alternative 1** would allow the Councils more time to address this issue and develop other alternatives in another amendment to the FMP that may assist in alleviating any of the hardships imposed by this requirement and still address concerns over interactions with protected species. **Alternatives 2** and **3** would require some type of marking on trap lines which are required in other fisheries and could resolve any future problems with identification of trap lines being associated with interactions with protected species, yet may impose substantial costs to the industry. **Alternative 2** may allow for more efficient marking of lines as fishermen would not have measure each line marking pattern and therefore save time and money, although it is unclear as to what the costs would be to industry. Having more time to consider other options will allow for both protection of protected species and take into consideration industry concerns over increased costs that could have negative social effects if profit margins in this fishery are small.

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[13]According to personal communication, 09Feb 11, Florida Keys Commercial Fishermen's Association, P.O. Box 501404, Marathon, FL 33050, the cost per trap for a line of 90 ft in the Florida Keys would be $26.10 (90 ft @ $0.29 / ft for 3/8" standard black polypropylene line); i.e., approximately $20,000 per vessel (750 traps more or less @ $26.10 per trap), or $12.685 million (for 485,000 traps). The estimate excludes labor to remove and replace lines, the cost of disposal of the old lines, the cost of purchasing lines with color, shorter replacement schedules for lines that are not black, and the use of heavier and longer lines by some fishermen.

[14]The number of traps used to fish for spiny lobster in Florida has declined, along with the number of vessels, trips, and hours fished (Section 3.4.1, with the number of traps "that could be fished" fell from an estimated 704,580 in 1987/88 – 1991/92 to 368,106 in 2005/06 – 2009/10; Vondruska 2010a). The number of traps fished declines seasonally, mostly it appears because of the seasonal decline in number of trips; i.e., the median number of traps fished per trip remains relatively stable through December and then declines more sharply (Vondruska 2010a). The cost of replacement per vessel depends on the number owned, which would be expected to exceed the number hauled on most trips. Based on statistical analysis of FTT data (1986-2009, as of 19Mar10, as used in Vondruska 2010a) and the last 5 years of data for June-July fishing years, the "maximum" number of traps hauled per vessel (based on each vessel's high-trap trip) averaged 400-500 traps per year per vessel (400-500 traps at the 75th percentile, and 600-1200 traps per vessel at the 90th percentile). For the Florida EEZ, approximately 10% of the trips have reported depths of more 112 ft, and for the trips with landings of tails, approximately 25% of the trips have reported depths of more than 136 feet.

4.10.4 Direct and Indirect Effect on the Administrative Environment

Preferred Alternative 1 would not meet the requirements of the biological opinion; however, the Councils and NOAA Fisheries Service have already initiated Amendment 11 to the Spiny Lobster FMP to set trap line requirements. The Councils took this action to allow more time for stakeholder input on the methods for marking trap lines. **Alternatives 2-4** would increase the need for enforcement to check if trap lines are properly colored or marked. On the other hand, the ability to identify lines entangled with endangered species would reduce the difficulty in determining assignment of incidental take to a particular fishery by NOAA Fisheries Service Protected Resources Division. In general, none of the alternatives to mark lines would be more or less burdensome than the other.

4.10.5 Council Conclusions

The Councils chose **Preferred Alternative 1** to allow more time for industry representatives, along with NMFS/NOAA and Marine Sanctuary representatives to work together to determine appropriate and cost-effective ways to mark lines. This action will be included in Amendment 11. The Councils did not choose any of the other alternatives because they wanted to be sure the line marking requirements were not overly burdensome on fishermen.

4.11 Action 11: Authority to Remove Derelict or Abandoned Spiny Lobster Traps Found in the EEZ off Florida

Alternative 1: No Action – Do not allow the public to remove any derelict or abandoned spiny lobster trap found in the EEZ off Florida.

Alternative 2: Allow the public to completely remove from the water any derelict or abandoned spiny lobster trap found in the EEZ off Florida from the end of lobster season trap removal period (usually April 5) until the beginning of the next season‘s trap deployment period (August 1).

Alternative 3: Allow the public to completely remove from the water any derelict or abandoned spiny lobster trap found in the EEZ off Florida during the closed seasons for both spiny lobster and stone crab (May 20-July 31).

Alternative 4: Allow the public to remove spiny lobster trap lines, buoys, and/or throats, but otherwise leave in place, any trap found in the EEZ off Florida from the end of season trap removal period (usually April 5) until the beginning of the next season‘s trap deployment period (August 1).

Alternative 5: Allow the public to remove spiny lobster trap lines, buoys, and/or throats, but otherwise leave in place, any trap found in the EEZ off Florida during the closed seasons for both spiny lobster and stone crab (May 20-July 31).

Preferred Alternative 6: Delegate authority to regulate the removal of derelict or abandoned spiny lobster traps occurring in the EEZ off Florida to the Florida FWC.

4.11.1 Direct and Indirect Effect on the Physical and Biological/Ecological Environments

The biological opinion on the spiny lobster fishery requires NOAA Fisheries Service to explore allowing the public to remove derelict trap gear from the EEZ off Florida. Lost traps pose multiple threats to the environment and protected species. Lost traps can “ghost” fish for a year or more (FWC unpublished data; Lewis et al. 2009). Trailing trap lines can become entangled in the reef, damaging corals and sponges (Chiappone et al. 2005). Marine mammals and ESA-listed sea turtles and marine fish can become entangled in trailing ropes (Guillory et al. 2001; Seitz and Poulakis 2006; Lewis et al. 2009). Derelict traps and trap lines can also cause fragmentation/breakage and abrasion of *Acropora* spp. colonies, particularly when derelict traps are moved during storms. Wooden traps eventually degrade after many months, but plastic trap throats and polystyrene buoys persist indefinitely in the marine environment. Seagrass meadows can be damaged when traps are lost or left for periods longer than six weeks (Uhrin et al. 2005). Thousands of lost and abandoned traps can have a significant effect on the reef environment and benthic habitats.

Alternative 1 would have no biological benefit for protected species or benthic habitat and would perpetuate the existing level of risk for interactions between these protected species and

lost trap gear. **Alternative 2** would likely have the greatest biological benefits. This alternative would allow for the complete removal of all derelict or abandoned traps for the longest period of time, potentially increasing the number of derelict or abandoned traps removed. **Alternative 3** would also allow for the complete removal of derelict or abandoned trap gear, but for a shorter period. As a result, the biological benefit of **Alternative 3** may be less than **Alternative 2**. **Alternatives 4** and **5** would likely have less biological benefit than **Alternatives 2** and **3**. Allowing the public to remove trap line, buoys, and throats, would help reduce the potential impacts from ghost fishing and entanglement. However, traps remaining in the environment still have the potential to cause damage to benthic habitat. **Alternative 4** would allow more time for the public to remove trap line, buoys, and throats from derelict or abandoned traps, potentially increasing the biological benefit. Compared to **Alternatives 2-4**, **Alternative 5** would likely have the least biological benefit.

It is currently unclear what type of biological impact **Preferred Alternative 6** would have. Florida currently removes a limited number of derelict traps in the EEZ under certain situations. Given the difficulty of identifying derelict traps in the deeper waters of the EEZ, as well as the additional costs and time associated with transporting recovered derelict traps from the EEZ to disposal sites on shore, it is unlikely that the number of traps removed under this alternative will substantially increase. Thus, the biological benefit of **Preferred Alternative 6** is likely to be similar to the benefit anticipated under **Alternative 1**.

4.11.2 Direct and Indirect Effect on the Economic Environment

High proportions of the licensed traps were lost during the 2005/2006 season because of hurricanes, far more than normally lost. Apparently only a small proportion the traps lost, 10-20%, is ever recovered, meaning that the rest, 80-90%, become derelict. Retrieval of derelict traps by FWC employees and other government employees is allowed at times specified by the FWC.

Alternatives 2-5 would allow the public to remove derelict traps during different portions of the closed season for commercial fishing. **Preferred Alternative 6** would delegate authority for removal the EEZ to the FWC, as now occurs in waters under state jurisdiction.

Though none of these alternatives would affect ongoing commercial fishing activity during the open season, fishermen's perception about any trap removal can impact their economic activity, wellbeing, and willingness to support regulations. Thus, **Preferred Alternative 6** may have the least economic impact. Federal and/or state outreach programs could change fishermen's perceptions over time, but change in attitudes may be a long time in coming and not as supportive as fishery managers may hope, as for the Florida Trap Certificate Program (Shivlani et al. 2004).

4.11.3 Direct and Indirect Effect on the Social Environment

Allowing the public to remove spiny lobster traps, lines or buoys could have indirect effects on the social environment. Trap fishermen are often very protective of their traps. Indeed, there are federal regulations involving the disturbance and molestation of traps while in season. Yet, the

number of derelict traps does pose problems of both biological impacts and public perception. Because derelict traps degrade the habitat and can continue to ghost fish, the removal of derelict traps can have positive social benefits. Fishermen are supportive of trap removal programs but are often suspect of having the general public involved. **Alternative 1** may be the most desirable for some trap fishermen. Trap molestation is always a concern for trap fishermen and if the public is provided with an opportunity to clear derelict traps during the closed season, there may be a perception that they may conclude that their duty extends to other times and areas. Yet, public involvement in trap cleanup can be very effective as it increases the number of individuals who can remove traps. **Alternative 2** would allow for a more lengthy time period for the public to participate than **Alternative 3** which is limited to the closed season for spiny lobster and stone crab. The negative effects of allowing the public to participate are that there is no guarantee that legal traps might be removed by someone unfamiliar with the regulations. **Alternatives 4** and **5** would remedy some of the above concerns by allowing for removal of only parts of the trap, but there are still concerns about the public's knowledge and familiarity with the regulations. **Preferred Alternative 6** would allow the FWC to develop a program for trap removal that might address the concerns mentioned with previous alternatives and would likely have the fewest negative social effects.

4.11.4 Direct and Indirect Effect on the Administrative Environment

Alternative 1 would have no impacts on the administrative environment. **Alternatives 2** and **3** would allow members of the public to remove derelict traps from the water. These alternatives may create enforcement problems because someone with a trap aboard their vessel may have been removing it from the water because they found it abandoned or because they were illegal fishing. **Alternatives 4** and **5** would only allow the public to disable traps and would not allow them to retain the traps on board; thus enforcement would be easier. **Alternatives 2** and **4** would allow removal or disabling of traps during the closed season for lobster. Enforcement would need to be vigilant during this time to ensure the public did not unintentionally remove other traps, such as stone crab traps, which may be legally fishing. **Alternatives 3** and **5** would allow removal or disabling of traps only when both lobster and stone crab seasons are closed. These alternatives would create a much lower burden on enforcement because all similar traps would be prohibited during this time and could be considered derelict if in the water. **Preferred Alternative 6** would allow Florida to administer the clean-up of derelict traps in the EEZ off Florida. Florida currently has a program to remove abandoned traps in state waters. This alternative would have no impacts on the administrative environment for the federal government, but would increase the burden on the state government.

4.11.5 Council Conclusions

The Councils chose **Preferred Alternative 6** because Florida has a trap retrieval program in place that could be extended to include federal waters. This program is funded by $25 from every trap tag sold. In addition, nonprofit nongovernmental organizations, fishery participant organizations, or other community or citizens groups may retrieve derelict traps as part of coastal cleanup events authorized by FWC. The Councils did not choose **Alternative 1** because lost traps pose multiple threats to the environment and protected species, such as ghost fishing and entanglement of lines on reefs. **Alternatives 2-5** were not chosen because trap fishermen are

protective of their traps and state regulations prohibit the disturbance and molestation of traps while in season. Well meaning members of the public might remove a legally fishing lobster trap from the water if they are not familiar with the regulations. Likewise, well meaning members of the public might remove similar looking traps, such as stone crab traps. Under the preferred alternative, the public would still be able to participate in cleanup activities.

4.12 Cumulative Effects Analysis (CEA)

As directed by the National Environmental Policy Act (NEPA), federal agencies are mandated to assess not only the indirect and direct impacts, but cumulative impacts of actions as well. The NEPA defines a cumulative impact as "the impact on the environment which results from the incremental impact of the action when added to other past, present, and reasonably foreseeable future actions regardless of what agency (Federal or non-Federal) or person undertakes such other actions. Cumulative impacts can result from individually minor but collectively significant actions taking place over a period of time" (40 CFR 1508.7). Cumulative effects can either be additive or synergistic. A synergistic effect occurs when the combined effects are greater than the sum of the individual effects.

This section uses an approach for assessing cumulative effects based upon guidance offered by the CEQ publication "Considering Cumulative Effects" (1997). The report outlines 11 items for consideration in drafting a CEA for a proposed action.

1. Identify the significant cumulative effects issues associated with the proposed action and define the assessment goals.
2. Establish the geographic scope of the analysis.
3. Establish the timeframe for the analysis.
4. Identify the other actions affecting the resources, ecosystems, and human communities of concern.
5. Characterize the resources, ecosystems, and human communities identified in scoping in terms of their response to change and capacity to withstand stress.
6. Characterize the stresses affecting these resources, ecosystems, and human communities and their relation to regulatory thresholds.
7. Define a baseline condition for the resources, ecosystems, and human communities.
8. Identify the important cause-and-effect relationships between human activities and resources, ecosystems, and human communities.
9. Determine the magnitude and significance of cumulative effects.
10. Modify or add alternatives to avoid, minimize, or mitigate significant cumulative effects.
11. Monitor the cumulative effects of the selected alternative and adapt management.

Cumulative effects on the biophysical environment, socio-economic environment, and administrative environments are analyzed below.

1. Identify the significant cumulative effects issues associated with the proposed action and define the assessment goals.

The CEQ cumulative effects guidance states this step is accomplished through three activities as follows:

I. The direct and indirect effects of the proposed actions (Section 4.1-4.11);
II. Which resources, ecosystems, and human communities are affected (Section 3); and

III. Which effects are important from a cumulative effects perspective (information revealed in this CEA)

Valued ecosystem components (VECs) are "any part of the environment that is considered important by the proponent, public, scientists and government involved in the assessment process. Importance may be determined on the basis of cultural values or scientific concern" (CEAA 1999). The important VECs for this analysis are as follows:

1. Managed Resource
2. Habitat
3. Protected Resources
4. Human Communities

2. Establish the geographic scope of the analysis.

The immediate areas affected by this action and analyzed in this CEA are the federal waters of the Gulf and South Atlantic. These waters extend from the seaward side of the state waters of Texas, Louisiana, Mississippi, Alabama, Florida, Georgia, South Carolina, and North Carolina to 200 miles. In practice, the waters off south Florida are the primary area where this species is fished in the U.S. and that will be affected by actions in this amendment. Other affected VECs including non-target species, habitat, and protected species are also within this geographic scope. The human community includes the fishing community which coincides with the managed species' geographic range, as well as the areas where processing, importing, and shipping of lobster tails takes place.

3. Establish the timeframe for the analysis

The temporal scope of impacts of past and present actions for managed resources, non-target species, habitat, and human communities is primarily focused on actions that have occurred after FMP implementation (1982). The most recent spiny lobster stock benchmark assessment was SEDAR 8 (2005). An update to that assessment was conducted in 2010; however, the Review Panel rejected that assessment. The update included data for analysis of stock status from the 1985/1986 season to the 2009/2010 season for commercial and recreational landings. The next SEDAR benchmark assessment is scheduled for 2014.

Council action was deferred on two actions from this amendment until Amendment 11 to the Spiny Lobster FMP to allow more time for stakeholder input. This amendment is expected to be completed before the beginning of the 2012 fishing season.

4. Identify the other actions affecting the resources, ecosystems, and human communities of concern.

a. Past federal actions affecting the spiny lobster fishery are summarized in Section 1.4. The following list identifies more recent actions.

- The Tortugas South marine reserve (60 square nautical miles) was sited in the Gulf EEZ to encompass a spawning aggregation site for mutton snapper. The Tortugas North marine reserve (120 square nautical miles) included part of the fishery jurisdiction of the

FKNMS, Dry Tortugas National Monument, Gulf EEZ, and Florida, and was cooperatively implemented by these agencies. Both of these marine reserves encompass spiny lobster habitat.

- Regulatory amendment 3 specified that the holder of a valid crawfish license or trap number, lobster trap certificate, and state saltwater products license issued by the FWC may harvest and possess, while in the EEZ off Florida, undersized lobster not exceeding 50 per boat or1 per trap aboard each boat, if used exclusively for luring, decoying or otherwise attracting non-captive lobster into traps. This action is being reconsidered in this amendment.
- Amendment 8 set a minimum size limit for importation of spiny lobster, disallowed importation of spiny lobster tail meat which is not in whole tail form with the exoskeleton attached, and disallowed the importation of spiny lobster with eggs attached or importation of spiny lobster where the eggs, swimmerets, or pleopods have been removed or stripped.
- Amendment 9 (CEBA-1) provided a presentation of spatial information for EFH and EFH-Habitat Areas of Particular Concern designations for species in the Spiny Lobster FMP.

b. The following are recent Florida actions important to the spiny lobster fishery.

- In 2001, the FWC set the target number of spiny lobster traps at 400,000 and implemented a 4% annual reduction in traps. The FWC suspended the annual trap reduction in 2003; nonetheless, the program resulted in a significant reduction in the annual numbers of traps set. In 2010, new regulations became effective that reduce the number of certificates by 10% if sold to a non-family member. This reduction will continue until the number of certificates is reduced to 400,000.
- As of January 1, 2005, and until July 1, 2015, no new commercial dive permits will be issued and no commercial dive permit will be renewed or replaced except those that were active during the 2004/2005 fishing season.
- In 2010, new regulations were enacted to remove latent trap certificates. Prior to the 2010/2011 season, any certificate for which the fee was not paid for three years shall be considered abandoned, revert to the state, and become permanently unavailable. Beginning with the 2010/2011 season, reversion will occur if the fee is not paid for two consecutive years.

c. The following are non-FMP actions which can influence the spiny lobster fishery.

- A naturally occurring, pathogenic virus, PaV1, infects juvenile Caribbean spiny lobsters. This virus is lethal to lobsters. Infection is highest in smaller juveniles; mortality occurs after larval settlement but before recruitment to the fishery. PaV1 was first detected in the U.S. spiny lobster population around 1996. No evidence shows PaV1 has increased in prevalence or virulence since around 2000, so mortality from PaV1 may explain why landings declined beginning about that time while the post-larval recruitment index remained steady.
- The Deepwater Horizon MC252 oil spill has affected more than one-third of the Gulf from western Louisiana east to the panhandle of Florida and south to the Campeche

Bank in Mexico. The impacts of the oil spill on the physical and biological environment are expected to be significant and may be long-term. However, the oil remained outside most of the area where spiny lobsters are abundant. Oil on the surface has largely evaporated or been removed. Heavy use of dispersants resulted in oil suspended within the water column, in some cases even deeper than the location of the broken well head. Floating and suspended oil has washed onto shore in several areas of the Gulf as non-floating tar balls. Whereas suspended and floating oil degrade over time relatively quickly, tar balls are more persistent in the environment and can be transported hundreds of miles. Information on the effects of the oil on the spiny lobster fishery is incomplete and unavailable at this time.

- The hurricane season is from June 1 to November 30, and accounts for 97% of all tropical activity affecting the Atlantic Basin (NOAA 2007). These storms, although unpredictable in their annual occurrence, can devastate areas when they occur. Direct losses to the fishing industry and businesses supporting fishing activities included: loss of vessels, loss of revenue due to cancelled fishing trips, and destruction of marinas and other fishery infrastructure (Walker et al. 2006). However, while these effects may be temporary, those fishing-related businesses whose profitability is marginal may go out of business if a hurricane strikes.
- Because of the continuing rise in the cost of fishing, including increases in the cost of fuel and insurance, along with other increases in operating costs, more fishermen are having difficulty making a living fishing. For example, fuel prices have increased more than 2.2 times since January 2000 according to the U.S. Department of Energy. Communities that are dependent on jobs that support the spiny lobster fishery could also be negatively impacted. If an ACL is set below current catch levels, accountability measures may curtail the fishery. This in turn may impact businesses dependent on commercial and recreational spiny lobster fishing because of fewer days to sell charter services, ice, fuel, tackle, hotel rooms, and other services to people participating in the fishery.
- How global climate changes will affect Gulf and South Atlantic fisheries is unclear. Climate change can impact marine ecosystems through ocean warming by increased thermal stratification, reduced upwelling, sea level rise; and through increases in wave height and frequency, loss of sea ice, and increased risk of diseases in marine biota. Decreases in surface ocean pH due to absorption of anthropogenic CO2 emissions may impact a wide range of organisms and ecosystems, particularly organism that absorb calcium from surface waters, such as corals and crustaceans (IPCC 2007, and references therein).

5. Characterize the resources, ecosystems, and human communities identified in scoping in terms of their response to change and capacity to withstand stress.

This step should identify the trends, existing conditions, and the ability to withstand stresses of the environmental components. According to the CEQ guidance describing stress factors, two types of information are needed: the socioeconomic driving variables identifying the types, distribution, and intensity of key social and economic activities within the region; and the indicators of stress on specific resources, ecosystems, and communities.

Caribbean Spiny Lobster

Trends in landings and the status of Caribbean spiny lobster are summarized in Section 3.1 and 3.3. Caribbean spiny lobster is not considered to be undergoing overfishing and the overfished status is unknown. This amendment would redefine the overfished and overfishing thresholds, so both Councils would use the same definition. Under any of the proposed definitions, including that under the preferred alternative, the stock likely would not be considered in an overfished condition. SEDAR 8 (2005) and the rejected 2010 update defined the overfishing level as fishing mortality (F) at 20% SPR. For SEDAR 8, that level was 0.49 per year and for the update was 0.45 per year. Only once since 2005/2006 season did the full F exceed either level. The mean F for 2007-2009 is 0.21 per year. However, the assessment analysts for the update cautioned that F may be underestimated for recent years.

Ecosystem

Changes in the spiny lobster fishery are not likely to create additional stress on the environment. Traps and trap lines can damage habitat through snagging or entanglement; however, these impacts are generally minimal. Changes in the population size structure as a result of shifting spiny lobster fishing selectivity and changes in stock abundance could lead to changes in the abundance of other species that compete with spiny lobster for shelter and food. Predators of spiny lobster could increase if spiny lobster abundance increased, and species competing for similar resources as spiny lobster could potentially decrease in abundance if less food and/or shelter are available. If spiny lobster abundance decreased, the opposite effects would take place. Efforts to model these interactions are still in their development stages, and so predicting possible stresses on the ecosystem in a meaningful way is not possible at this time.

Spiny Lobster Fishery

Florida trip ticket data used to monitor commercial spiny lobster effort include the number of vessels with landings, the number of trips taken, and trip duration. Trends are described in Sections 3.1, 3.4, and briefly summarized here.

Florida commercial landings of Caribbean spiny lobster increased from the late 1940s then fell from 2001 onward (Figure 3.1.1.1). The estimated number of traps used for commercial fishing for Caribbean spiny lobster in Florida approximately doubled every 10 years during 1950-1990, reached nearly a million traps in the early 1990s, and was reduced to less than a half million traps by the late 2000s. These declines can largely be credited to the trap limitation program which began in 1993. Commercial diving landings increased rapidly in the first decade of the trap limitation program and then declined thereafter (see landings by gear in Table 4.3.1.1). Estimated recreational landings of Caribbean spiny lobster and fishing effort in Florida (based on surveys of recreational permit holders) were more consistently low from 2001/2002 onward than in the 1990s (Figure 3.1.3.3).

Other reasons for the decline in effort include increases in fishing costs, increases in harvesting efficiency, and even improvements in the stock status. However, data currently are inadequate to determine which of these factors may have contributed to the decline in fishing effort.

6. Characterize the stresses affecting these resources, ecosystems, and human communities and their relation to regulatory thresholds.

This section examines whether resources, ecosystems, and human communities are approaching conditions where additional stresses could have an important cumulative effect beyond any current plan, regulatory, or sustainability threshold (CEQ 1997). Sustainability thresholds, which are levels of impact beyond which the resources cannot be sustained in a stable state, can be identified for some resources. Other thresholds are established through numerical standards, qualitative standards, or management goals. The CEA should address whether thresholds could be exceeded because of the contribution of the proposed action to other cumulative activities affecting resources.

Caribbean Spiny Lobster

Currently, the Councils have different definitions for biological reference points, and the South Atlantic Council does not have an overfished threshold definition (GMFMC 1999; SAFMC 1998; SEDAR 8 2005). Transitional SPR is used for the definitions of MSY, OY, overfishing, and overfished threshold by the Gulf Council. Generally, static SPR is more frequently used than transitional SPR. The SEDAR 8 (2005) benchmark assessment terms of reference suggest static SPR was used as in the South Atlantic Fishery Management Council's Spiny Lobster Amendment 6 (SAFMC 1998).

MSY is unknown but the landings data from 1991/1992 through 2009/2010 fishing years (Table 2.4.1.1) can be used to provide an indication of the productivity of the portion of the stock within the area of the Spiny Lobster FMP. Total landings provide an index of MSY and have ranged from a high of 10.1 mp in 1999/2000 to a low of 4.1 mp in 2005/2006, with an average of 7.0 mp.

Caribbean spiny lobster was not undergoing overfishing based on the SEDAR 8 (2005) benchmark assessment. The 2010 assessment update reached the same conclusion; however, the assessment update was rejected by the Review Panel. Because of the long planktonic larval stage for this species and hydrodynamic characteristics of the Gulf, South Atlantic, and Caribbean basins, Caribbean spiny lobsters in the U.S. fishery are believed to originate from spawning stocks outside of the U.S. Thus stressors on the population include fishing and other human activities outside the jurisdiction of the U.S. If the majority of recruitment is from areas outside of NOAA Fisheries Service authority, then fishing levels in this country may have no effect on stock biomass.

Ecosystems

In the biological opinion, NOAA Fisheries Service determined the spiny lobster trap fishery as it currently operates (e.g., number of traps, fishing techniques, gear types, etc.) may adversely affect the green, hawksbill, Kemp's ridley, leatherback, or loggerhead sea turtles, *Acropora* spp., or smalltooth sawfish, but is not likely to jeopardize their continued existence. The current cap on the number of traps available to the fishery is extremely unlikely to increase over the next three years [FAC. 68B-24.009(1)]. Additionally, an action to increase the number of traps available in the fishery would represent a modification to the fishery regulations and an ESA

section 7 consultation may need to be reinitiated to evaluate any new risks to protected species not previously considered.

The biological opinion stated it is reasonable to assume the level of take estimated to have occurred over the last three years (2004/2005-2006/2007 fishing seasons) is likely to continue into the future. Therefore, the biological opinion anticipated that over any consecutive three-year period, spiny lobster trap fishing would incidentally take up to three loggerhead, three green sea turtles, and one hawksbill, Kemp's ridley, or leatherback sea turtle; two smalltooth sawfish (non-lethal); and 482.09 m^2 of *A. cervicornis* and 7.41 m^2 of *A. palmata*.

7. Define a baseline condition for the resources, ecosystems, and human communities.

The purpose of defining a baseline condition for the resource and ecosystems in the area of the proposed action is to establish a point of reference for evaluating the extent and significance of expected cumulative effects.

Although the 2010 stock assessment update was rejected by the Review Panel, the assessment report shows trends in biomass and fishing mortality dating to the 1985/1986 fishing season. Within this timeframe, spiny lobster has not been considered to have been undergoing overfishing. Because spawning stock biomass cannot be determined without a Caribbean-wide assessment, the overfished condition could not be determined. These results are consistent with SEDAR 8 (2005).

The spiny lobster fishery was primarily a bait fishery (Labisky et al. 1980), until the development of freeze processing enabled the expansion of the retail market in the 1940's. The development of SCUBA further expanded the commercial fishery as well as the recreational fishery in the 1960's. Baseline information is lacking on the social environment of these fisheries, although some economic data are available. Ex-vessel revenues and numbers of traps in the water are available dating to the early 1960s. For further details on the history of the spiny lobster fishery, please see Section 3.0.

8. Identify the important cause-and-effect relationships between human activities and resources, ecosystems, and human communities.

Cause-and–effect relationships are presented in Table 4.12.1.

Table 4.12.1. The cause and effect relationship of fishing and regulatory actions for Caribbean spiny lobster within the time period of the CEA.

Time period	Cause	Observed and/or expected effects
1975	Florida enacted legislation creating the Special Two-Day Sport Season	Increased/concentrated recreational effort; "lobstermania"
1970's-80's	Increased number of traps in the water	Increased user conflicts on the water, excessive mortality of shorts, declining yield per trap
1988	Requirement and specification of live wells for holding undersized attractants	Reduced mortality of undersized attractants from 26% to 10%
1993	Florida implemented the spiny lobster Trap Certificate Program	Reduction from 750,326 traps in 1993 to 492,253 traps in 2010
1993	Florida implemented the restricted species endorsement	Reduced the adverse impacts caused by the two-day sport season by restricting recreational fishers to the bag limit

9. Determine the magnitude and significance of cumulative effects.

The objectives of this amendment and associated EIS are to: bring the Spiny Lobster FMP into compliance with Magnuson-Stevens Act requirements for ACLs and AMs to prevent overfishing (Actions 1, 3-5); update biological reference points (Action 2), and policies and procedures (Action 6); consider adjustment of management measures to aid law enforcement (Actions 7-8); and consider measures to protect threatened and endangered species established under a Biological Opinion (Action 9-11). The short- and long-term direct and indirect effects of each these actions are provided in Section 4.

To examine the magnitude and significance of the cumulative effects, important VECs were identified for the overall action to be taken with this amendment. For purposes of this analysis, four categories of VECs were identified (Table 4.12.2), and the consequences of each alternative proposed in this amendment on each VEC were evaluated. Some of these VECs were combined because the impacts of many of the past and current actions were similar.

Table 4.12.2. Evaluated VECs considered for further analysis and VECs consolidated for analysis.

VECs considered for further evaluation	VECs consolidated for further evaluation
Managed resource Adult Caribbean spiny lobsters Sub-legal Caribbean spiny lobsters	
Habitat	Hard bottom EFH
Protected resources *Acropora* spp. Endangered/threatened species	Marine mammals Sea turtles Sawfish
Human communities	Commercial harvesters Recreational harvesters Dealers Fishing communities

The following discussion refers to the effects of past and present actions on the various VECs.

Managed Resources

Adult Caribbean Spiny Lobsters

SEDAR 8 (2005) found the Caribbean spiny lobster stock was not undergoing overfishing, but the overfished status could not be determined. However, much evidence exists that recruitment is almost entirely from outside of the U.S. To obtain a true estimate of spawning stock biomass, a Caribbean-wide assessment is needed. Further, management and harvest practices in other countries may have a substantial impact on recruitment to the U.S. fishery. The import size restrictions may increase the size of the spawning stock in countries that previously harvested lobsters at or below reproductive size.

Non-fishing activities are likely to adversely affect spiny lobster stocks. Products from the Deepwater Horizon MC252 oil spill could potentially make their way into spiny lobster habitat in the Florida Keys. Effects could be minimal because of weathering, or effects could be more detrimental, especially impacting reproductive output and larval survival. These impacts may or may not influence the Caribbean spiny lobster stock, as most of the larvae produced in the Keys are believed to be lost to the population. Global warming could also have a detrimental effect on spiny lobsters; however, those effects cannot be quantified at this time.

Sub-legal Caribbean Spiny Lobsters

The practice of using undersized attractants in traps may facilitate the spread of PaV1 by moving infected juveniles into new areas. In addition, although lobsters are generally gregarious, they avoid infected lobsters (Behringer et al. 2008). By putting potentially infected lobsters in traps as bait, fishermen may artificially create a condition that increases the infection rate of PaV1.

Habitat

EFH is defined in the Gulf Council's Generic Essential Fish Habitat Amendment (GMFMC 2004) and in the South Atlantic Council's Fishery Ecosystem Plan (SAFMC 2009). Sections 3.2

and 3.3 of this amendment describe the physical environment inhabited by Caribbean spiny lobsters. In general, Caribbean spiny lobster can be found among rocks, on reefs, in grass beds or in any habitat that provides protection. A planktonic larval stage lives in the water column for six to seven months and feeds on zooplankton and phytoplankton. Young benthic stages of Caribbean spiny lobster will typically inhabit branched clumps of red algae (*Laurencia sp*.), mangrove roots, seagrass banks, or sponges where they feed on invertebrates found within the microhabitat. Individuals two to four years show nomadic behavior, emigrating out of the shallows and moving to deeper, offshore reef environments.

From fishing, the most detrimental effects to the environment are caused by traps. Deployment of traps and movement of traps can damage both soft and hard bottom habitats. The development of marine reserves around the Dry Tortugas and the Florida Keys National Marine Sanctuary has helped protect some critical habitat. Florida's trap limitation program reduced the number of traps by about 50% during the 10 years of implementation. Derelict traps may also impact habitat. Florida has a trap clean-up program in state waters that would be extended to federal waters in this amendment through Action 11. Hurricanes are not uncommon in the Florida Keys where most of the lobster population lives. Storms can move both active and derelict traps over sensitive habitat even more than under normal conditions.

Although impacts to habitat are less for fishermen using gears other than traps, damage can still be done. Boats carrying recreational or commercial divers may drive through sea grass beds creating the ubiquitous prop scars visible in the Keys. Boats are sometimes anchored over hard bottom, and inexperienced divers sometimes stand on or grab bottom structures with living organisms. The illegal use by commercial divers of casitas, artificial dens to attract lobsters, can damage or alter bottom structure.

Damage caused by spiny lobster fishing is associated with the level of fishing effort. Therefore, actions reducing levels of effort would result in greater benefits to the physical environment because fishing related interactions with habitat would be reduced. Thus, if actions in this amendment to set ACLs and AMs result in decreased effort, the impacts on habitat would be beneficial. However, the Council chose an ACL and an ACT that are higher than average recent landings, so effort would not be expected to change.

The 2009 Biological Opinion determined the spiny lobster fishery is not likely to adversely affect *Acropora* spp. critical habitat. The physical feature essential to the conservation of *Acropora* spp. critical habitat (typically referred to as the essential feature(s)) is substrate of suitable quality and availability to support larval settlement and recruitment, as well as reattachment and recruitment of asexual fragments. Effects to the essential feature identified for *Acropora* spp. critical habitat from bully netting and diving for spiny lobster either do not occur or occur so rarely that any affect on the essential feature is discountable. Commercial trapping may affect *Acropora* spp. critical habitat, but any affects will be temporary and insignificant. Traps do not cause consolidated hardbottom to become unconsolidated, nor do they cause growth of macroalgae or increased sedimentation.

EFH, particularly coral reefs, sea grasses, and algae, are susceptible to non-fishing activities. Anything that suspends sediments, such as tropical storms, can block sunlight and decrease

photosynthesis. Dramatic climate change in the future could alter temperatures to an extent to exceed the viable range for the organisms that make up these habitats.

Protected Resources

Acropora spp.

Commercial and recreational bully net use is not likely to adversely affect *Acropora* spp., based on the low likelihood of interactions between these species and this gear type. The reliance upon visual contact with a target species reduces the potential for fragmentation or abrasion of *Acropora* spp. caused by bully nets. *Acropora* spp. are extremely unlikely to occur on the seagrass and mud flats where the vast majority of bully nets are used.

Commercial and recreational diving for spiny lobster is not likely to adversely affect *Acropora* spp. *Acropora* spp. occur only rarely and in discrete locations within the Gulf and South Atlantic regions, and is not found in the Gulf portion of the Florida Keys. Where they do occur, fisheries could cause fragmentation or abrasion resulting from: 1) fishing gear/marine debris, 2) damaging fishing practices, 3) vessel groundings, 4) anchoring, and 5) diver/snorkeler interactions (*Acropora* BRT 2005).

Traps may affect *Acropora* spp. via fragmentation and abrasion if they become mobilized during storm events and collide with colonies. The deployment of spiny lobster traps may adversely affect *Acropora* spp. as traps drop toward the sea floor or when traps are retrieved and pulled to the surface. Abrasion may occur when traps or trap lines contact *Acropora* spp. during storm events or normal fishing activities. However, *Acropora* spp. are only rarely, if ever, observed in the Gulf off south Florida where the majority of trap fishing occurs because of relatively poor water quality. For this reason, any adverse affects from abrasion/fragmentation due to interactions with commercial spiny lobster trap gear are only likely to occur in the South Atlantic waters off south Florida. The Florida trap limitation program, although suspended at this time, reduced the number of traps by Florida fishermen by about 34%. Fewer traps in the water reduce the likelihood of *Acropora* spp. suffering adverse impacts.

Localized adverse affects on *Acropora* spp. in the action area have resulted from many of the same stressors affecting *Acropora* spp. throughout its range, namely anthropogenic breakage, disease, and intense weather events (i.e., hurricanes and extreme cold-water disturbances). These stressors have led to declines of *Acropora* spp. in the action area commensurate with declines seen elsewhere in the species' range (*Acropora* BRT 2005). Stresses associated with climate change have been documented worldwide and are expected to increase. For example, increased temperatures can lead to bleaching (loss of algal symbionts). Researchers predict bleaching threshold temperatures will be exceeded at least once per year on the majority of the world's coral reefs by 2030-2050 (IPCC 2007).

Increases in atmospheric carbon dioxide leading to ocean acidification are also of concern for *Acropora*. As atmospheric CO_2 is dissolved in surface seawater, seawater becomes more acidic shifting the balance of inorganic carbon away from CO_2 and carbonate (CO_3^{-2}) toward bicarbonate (HCO_3^{-1}). This shift decreases the ability of corals to calcify because corals are believed to use CO_3^{-2} as the source of carbonate to build their aragonite ($CaCO_3$) skeletons (*Acropora* BRT 2005).

Sea Turtles and Smalltooth Sawfish
Commercial and recreational bully net use is not likely to adversely affect sea turtles or smalltooth sawfish based on the low likelihood of interactions between these species and this gear type. Bully nets require an active fishing technique that is only effective when target prey can be seen and the net is tended constantly. Thus, sea turtles or smalltooth sawfish are extremely unlikely to become entangled in these gears.

The distribution of spiny lobster diving effort overlaps spatially with areas known to be inhabited by sea turtles and smalltooth sawfish. However, divers only occasionally encounter sea turtles and rarely encounter smalltooth sawfish, if at all.

Sub-adult and adult loggerhead sea turtles are primarily coastal dwelling and typically prey on benthic invertebrates such as mollusks and decapod crustaceans in hardbottom habitats. As such, loggerhead sea turtles may be attracted to spiny lobster traps when lobsters are inside. They are also known to feed on epibionts growing on traps, trap lines, and floats and may be attracted to spiny lobster traps for this reason as well (NMFS and USFWS 1991). Commercial lobster traps may adversely affect sea turtles via entanglement and forced submergence. Sea turtles released alive may later succumb to injuries sustained at the time of capture. Of the entangled sea turtles that do not die from their wounds, some may suffer impaired swimming or foraging abilities, altered migratory behavior, or altered breeding or reproductive patterns. Smalltooth sawfish feed primarily on fish, such as mullet, jacks, and ladyfish (Simpfendorfer 2001). There is currently no data available on the attraction of smalltooth sawfish to spiny lobster trap gear.

The biological opinion requires NOAA Fisheries Service to work with the Councils to minimize impacts of spiny lobster traps on *Acropora* spp. and other protected species. Actions 9-11 address the reasonable and prudent measures outlined in the opinion. However, Actions 9 and 10 were deferred to Amendment 11, which should be completed before the beginning of the 2012 fishing year.

Human Communities
Adverse or beneficial effects of actions to vessel owners, captains, crew, and associated shoreside businesses are tied to the ability of individuals to earn income and pursue traditional and culturally significant livelihoods. In commercial fisheries, income benefits are usually derived in terms of shares awarded after fishing expenses are accounted for. The greater the difference between expenses and payment for caught fish, the more revenue is generated by the fishing vessel. For the for-hire sector, revenues are generated by the number of trips sold for charter businesses, and by the number of paying passengers for headboat businesses.

Fishing communities include the infrastructure, which refers to fishing-related businesses and includes marinas, rentals, snorkel and dive shops, boat dockage and repair facilities, tackle and bait shops, fish houses, and lodgings related to recreational fisheries industry. This infrastructure is tied to the commercial and recreational fisheries and can be affected by adverse and beneficial economic conditions in those fisheries. Therefore, the effects of past and present actions on communities should reflect responses by the fisheries to these actions.

Current management measures have had a negative, short-term impact on the commercial fishery. The trap limitation program and the moratorium on commercial dive permits both

restricted access to this fishery. On the other hand, Amendment 8 establishes a minimum size limit for imported spiny lobster that should, in the long run, improve the status of the domestic and foreign stocks and the associated economic benefits. The restrictions are expected to affect people who had been damaged economically by the illegal importation of Caribbean spiny lobster, particularly in Florida, Puerto Rico, and the U.S. Virgin Islands.

Non-management stressors can have large effects on fishing communities. Although the Deepwater Horizon MC252 oil spill did not directly impact south Florida, fishermen and dealers may have experienced hardship from reduced consumer confidence in seafood from the region. Because of the continuing rise in the cost of fishing, including increases in the cost of fuel and insurance, many fishermen are having a more difficult time making a living fishing.

Tropical storms can have both positive and negative economic impacts on spiny lobster fishermen, especially those that use traps. The beneficial impact is that a storm can cause lobsters to move and enter traps, which increases landings. However, the negative impacts include damages to and losses of traps, other gear, and vessels and associated losses of landings and revenues. One of the worst hurricane seasons on record was the 2005 season. Of those that hit the coast of Florida, the four of Dennis (July), Katrina (August), Rita (September), and Wilma (October) had a significant adverse impact on spiny lobster trap fishers. In the Florida Keys, one-fourth to one-half of all commercial spiny lobster traps were estimated as tangled or destroyed by the passage of Katrina alone (Buck 2005). According to an article at *keysnews.com*, Florida Keys lobster trap fishermen "reported losing up to 70 percent of their traps in the four hurricanes that skirted the Keys in 2005. Officials have estimated that the hurricanes cost lobster fishermen $35 million in lost traps and catch" (O'Hara, May 1, 2006).

10. Modify or add alternatives to avoid, minimize, or mitigate significant cumulative effects.

The cumulative effects of the actions in this amendment on the biological/ecological, physical, social, and economic environments are positive because they will ultimately maintain the stocks at a level that will protect the resource and allow the maximum benefits in yield and fishing opportunities to be achieved. However, short-term negative impacts on the social and economic environment may occur to the fishery if accountability measures are triggered. The chance of triggering these measures is minimized by the size limits, season closures, and effort control programs that are already in use. Further, modification of the framework procedure (Action 6) will allow more timely response if those management measures need to be changed. If significant effects are identified after this document is completed, an additional amendment could be developed under this framework procedure to achieve the goals in the purpose and need if they are not achieved through this amendment, or as new information becomes available.

11. Monitor the cumulative effects of the selected alternatives and modify management as necessary.

The effects of the proposed actions are, and will continue to be, monitored through stock assessments and stock assessment updates, life history studies, economic and social analyses, and other scientific observations.

NOAA Fisheries Service will need to develop programs to monitor recreational and commercial landings of spiny lobster to determine if landings are approaching, meeting, or exceeding the specified ACT and ACL. Currently, commercial landings are monitored through state trip tickets, which may take up to six months to be complete and available. Recreational landings are estimated through a Florida survey that does not include the entire fishing year; currently MRIP does not collect data on crustacean species. All other species managed under a federal FMP also require ACLs by the end of 2011. For the Southeast region, the number of ACLs is still to be determined based on actions from the Councils; current amendments addressing ACLs contain 38 ACLs for the Gulf Council, 42 ACLs for the South Atlantic Council, and 17 ACLs for the Caribbean Council. Some of these species may additionally have separate ACLs for the commercial and recreational sectors. The immense burden of monitoring all these ACLs will be borne by NOAA Fisheries Service. Although a monitoring plan is being planned while the associated FMP amendments are being developed, limited resources could strain NOAA Fisheries Service's ability to implement the program.

Monitoring and tracking the level of take of protected species by the spiny lobster fishery is imperative. NOAA Fisheries Service must ensure that measures to monitor and report any sea turtle or smalltooth sawfish encounters, or any *Acropora* spp. interactions: 1) detect any adverse effects resulting from the spiny lobster fishery; 2) assess the actual level of incidental take in comparison with the anticipated incidental take; and 3) detect when the level of anticipated take is exceeded.

4.13 Other Effects

4.13.1 Unavoidable Adverse Effects

Setting an ACL and ACT for the spiny lobster fishery may result in negative short-term effects on the social and economic environments if those limits constrain catch below recent levels. This fishery has never been controlled by limits on landings; rather, the commercial fishery has been managed for effort through trap limitation programs. These potential effects are unavoidable because the Magnuson-Stevens Act requires setting ACLs and AMs for all federally managed species.

The continued prosecution of the Caribbean spiny lobster fishery is not likely to jeopardize the continued existence of any protected species. The three-year anticipated take of protected species is as follows: sea turtles (9), small-tooth sawfish (2), and *Acropora* spp. (489.5 m^2).

Undersized lobsters ("shorts") are used widely throughout the trapping component of the fishery as attractants for legal-sized lobster because Caribbean spiny lobsters are gregarious by nature. About 10% of shorts die despite requirements for live wells to keep them healthy. Thus the larger the number of shorts allowed per vessel, the higher the mortality would be. Conversely, disallowing the use of shorts would create a hardship for commercial fishermen because other baits are more costly and less effective.

Merely refining the requirements for tailing permits would not impact commercial fishermen who are fishing legally. However, eliminating the federal tailing permit may have negative impacts for some commercial fishermen. The ability to tail spiny lobsters is important to fishermen who do not have the storage capacity to hold large amounts of whole spiny lobster onboard over long trip durations. Tailing allows such fishermen to safely store more product without compromising quality, thus maximizing the profitability of each trip.

Limiting spiny lobster fishing in area to protect *Acropora* spp. corals would necessarily reduce the open fishing area. Large closed areas may better protect corals but would close more area to fishing. The requirement to mark trap lines would incur costs to fishermen, although NOAA Fisheries Service staff have worked closely with industry representatives to choose methods that would be less expensive. Fishermen would have until August 2014 to comply, before which time many trap lines would need to be replaced anyway. Both of these actions are required by the biological opinion and are therefore unavoidable. Although the Council deferred action on these two requirements, Amendment 11 is expected to implement them before the beginning of the 2012 fishing year.

Actions considered in this amendment should not adversely affect public health or safety because these measures should not alter fishing practices in a substantial way. Unique characteristics of the geographic area are highlighted in Section 3.2. Adverse effects of fishing activities on the physical environment are described in detail in Sections 4.1-4.13. These sections conclude little adverse impact on the physical environment should occur from actions proposed in this document. Uncertainty and risk associated with the measures, as assumptions underlying the analyses, are described in detail in the same sections as well.

4.13.2 Relationship Between Short-Term Uses and Long-Term Productivity

The objectives of this amendment are to bring the Spiny Lobster FMP into compliance with Magnuson-Stevens Act requirements for ACLs and AMs to prevent overfishing; update biological reference points, policies, and procedures; and consider adjustment of management measures to aid law enforcement and consider measures to protect endangered species established under a biological opinion. In achieving these objectives, the fishery may encounter short-term economic impacts, such as reduced catch or increased equipment costs, but experience long-term economic productivity due to protection of the resources, as discussed in previous sections.

The process of managing the spiny lobster stock is expected to have a negative short-term effect on the social and economic environment, and will create a burden on the administrative environment. No alternatives are being considered that would avoid these negative effects because they are a necessary cost associated with managing this stock. The ranges of alternatives have varying degrees of economic costs and administrative burdens. Some alternatives have relatively small short-term economic costs and administrative burdens, but would also provide smaller and more delayed long-term benefits. Other alternatives have greater short-term costs, but provide larger and more immediate long-term benefits. Therefore, mitigating these measures would be difficult, and managers must balance the costs and benefits when choosing management alternatives for the fishery.

4.13.3 Mitigation, Monitoring, and Enforcement Measures

Available data do not allow the determination if the characteristics of affected fishery participants trigger environmental justice considerations and the need for special mitigation measures to respond to environmental justice concerns. Nevertheless, the proposed actions would apply equally to all fishery participants regardless of minority or income status, and no information has been identified that would indicate differential costs on or benefits to minority or low income persons distinct from those expected to accrue to other constituencies involved in the fishery. Therefore, no environmental justice issues have been identified and no mitigation measures in response to environmental justice issues have been considered.

If the ACT is exceeded, the Councils will convene a review panel to evaluate the ACL, ACT, and AMs. National Standard 1 guidelines state that if catch exceeds the ACL for a given stock or stock complex more than once in the last four years, the system of ACLs and AMs should be re-evaluated, and modified if necessary, to improve its performance and effectiveness. Additionally, NOAA Fisheries Service annually reports on the status of stocks in its Report to Congress.

To ensure the spiny lobster stock is managed for OY, periodic reviews of stock status are needed. These reviews are designed to incorporate new information and to address unanticipated developments in the respective fisheries, and would be used to make appropriate adjustments in regulations should harvest not achieve OY objectives. Reviews would be based on periodic stock assessments. These assessments would be requested as needed by the SEDAR Steering Committee. A SEDAR assessment update conducted in 2010 was rejected by the Review Panel. No baseline assessment is scheduled for spiny lobster; however, the both the assessment panel and the Review Panel for the update recommended a baseline assessment for this species in the near future. This assessment would benefit from use of a more appropriate model and updated landings information through state and federal fishery monitoring programs. Depending on the outcome of assessments, the Councils may determine further management action should be taken. Actions the Councils could employ to further restrict harvest include, but would not be limited to, changes in size limits, bag limits, seasonal closures, or area closures.

The Councils have four options for implementing these measures. The first is to amend the Spiny Lobster FMP to include new information and management actions. Recent plan amendments put forth by the Councils have taken between two and three years from conception to implementation. The second method is a regulatory amendment based on the framework established in Action 6 of this amendment. Recent regulatory amendments have taken between nine months and two years from conception to implementation. NOAA Fisheries Service may take management actions through emergency or an interim measures. Emergency actions and interim measures only remain in effect for 180 days after the date of publication of the rule and may be extended by publication in the Federal Register for not more than 186 days provided the public has had an opportunity to comment on the measures. The Magnuson-Stevens Act further states when a Council requests that an emergency action and interim measure, the Councils should be actively preparing plan amendments or regulations that address the emergency on a permanent basis.

The type of rule making vehicle NOAA Fisheries Service or the Councils determine is needed is difficult to predict. Actions would be dictated by the severity of overages in harvest and by the time frame needed to implement a regulatory change. If the overage is severe, the Councils could ask for an emergency action or interim rule that would severely restrict or halt the harvest of spiny lobster while the Councils explore management measures to bring the harvest to levels consistent with the management objectives of the FMP.

The jeopardy analyses for sea turtles, smalltooth sawfish, and *Acropora* spp. are based on the assumption that the frequency and magnitude of adverse effects that occurred in the past will continue into the future. If estimates regarding the frequency and magnitude of incidental take prove to be underestimates, the potential adverse effects to the sea turtles, smalltooth sawfish, and *Acropora* spp. may be greater than previously thought. Thus, monitoring and tracking the level of take specific to the spiny lobster trap fishery is imperative. NOAA Fisheries Service developed Reasonable and Prudent Measures (RPMs), and implementing Terms and Conditions (T/Cs), to not only help monitor future incidental takes, but help minimize the impacts of those takes. The RPMs and T/Cs ensure NOAA Fisheries can: 1) detect any adverse effects resulting from the spiny lobster fishery; 2) assess the actual level of incidental take in comparison with the anticipated incidental take documented in the opinion; and 3) detect when the level of anticipated take is exceeded. See Sections 9.3 and 9.4 of Appendix I for the specific RPMs and T/Cs. NOAA Fisheries Service and other government agencies also support research on this species by federal, state, academic, and private research entities.

Current spiny lobster regulations can be labor intensive for law enforcement officials. NOAA Fisheries Service law enforcement officials work cooperatively with other federal and state agencies to keep illegal activity to a minimum. Violators are penalized, and for commercial operators, permits required to operate in their respective fisheries can be sanctioned.

4.13.4 Irreversible and Irretrievable Commitments of Resources

No irreversible or irretrievable commitments of agency resources are proposed herein. The actions to set ACLs, AMs, and other management measures in the spiny lobster fishery are readily changeable by the Councils in the future. There may be some loss of immediate income (irretrievable in the context of an individual not being able to benefit from compounded value over time) to some sectors from the potential limitation of harvest due to accountability measures. No irreversible or irretrievable commitment of natural resources is anticipated.

4.14 Any Other Disclosures

CEQ guidance on environmental consequences [40 CFR 1502.16] indicates the following elements should be considered for the scientific and analytic basis for comparisons of alternatives. These are:

a) Direct effects and their significance.
b) Indirect effects and their significance.

c) Possible conflicts between the proposed action and the objectives of federal, regional, state, and local (and in the case of a reservation, Indian tribe) land use plans, policies and controls for the area concerned.
d) The environmental effects of alternatives including the proposed action.
e) Energy requirements and conservation potential of various alternatives and mitigation measures.
f) Natural or depletable resource requirements and conservation potential of various alternatives and mitigation measures.
g) Urban quality, historic and cultural resources, and the design of the built environment, including the reuse and conservation potential of various alternatives and mitigation measures.
h) Means to mitigate adverse environmental impacts.

Items a, b, d, e, f, and h are addressed in Sections 2, 3, and 4. Items a, b, and d are directly discussed in Sections 2 and 4. Item e is discussed in the economic analyses. Alternatives that encourage fewer fishing trips would result in energy conservation. Item f is discussed throughout the document as spiny lobster stocks are a natural and depletable resource. A goal of this amendment is to make these stocks sustainable resources for the nation. Mitigations measures are discussed in Section 4.13.3. Because this amendment concerns the management of spiny lobster stocks, it is not in conflict with the objectives of federal, regional, state, or local land use plans, policies, and controls (Item c).

Urban quality and the design of the built environment, including the reuse and conservation potential of various alternatives and mitigation measures (Item g), are not a factor in this amendment. The actions taken in this amendment will affect a marine stock and its fishery, and should not affect land-based, urban environments. The proposed actions are not expected to result in substantial impacts to unique or ecologically critical areas.

In the South Atlantic, several notable shipwrecks can be found along the southeast coast in federal and state waters including Lofthus (eastern Florida), SS Copenhagen (southeast Florida), Half Moon (southeast Florida), Hebe (Myrtle Beach), Georgiana (Charleston), Monitor (Cape Hatteras), Huron (Nags Head), and Metropolis (Carolla). In the Gulf, the U.S.S. Hatteras isolated in federal waters off Texas and is listed in the National Register of Historic Places. Shipwrecks in the Florida Keys and Dry Tortugas include USCG Cutter Duane, USS Alligator, San Pedro, Windjammer, and Bird Key. Fishing activity already occurs in the vicinity of these sites; but actions within this amendment would have no additional impacts on the above listed historic resources, nor would they alter any regulations intended to protect them.

With respect to the ESA, fishing activities pursuant to the spiny lobster fishery should not affect endangered and threatened species or critical habitat in any manner not considered in prior consultations on this fishery. The most recent biological opinion on the spiny lobster fishery was completed on August 27, 2009. The opinion stated the fishery was not likely to adversely affect ESA-listed marine mammals, Gulf sturgeon, or designated critical habitat for elkhorn and staghorn corals. However, the opinion determined the spiny lobster fishery would adversely affect sea turtles, smalltooth sawfish, and elkhorn and staghorn corals, but would not jeopardize their continued existence. An incidental take statement was issued for green, hawksbill, Kemp's

ridley, leatherback, and loggerhead sea turtles, smalltooth sawfish, and both species of coral. Reasonable and prudent measures to minimize the impact of these incidental takes were specified, along with terms and conditions to implement them.

With respect to the Marine Mammal Protection Act (MMPA), fishing activities conducted under the Spiny Lobster FMP should have no adverse impact on marine mammals. The 2011 List of Fisheries (75 FR 68468; November 8, 2010) lists the Florida Spiny Lobster Trap/Pot fishery as a Category III Fishery under the MMPA. This classification indicates the annual mortality and serious injury of a marine mammal stock resulting from any fishery is less than or equal to 1 percent of the maximum number of animals, not including natural mortalities, that may be removed from a marine mammal stock, while allowing that stock to reach or maintain its optimum sustainable population. The proposed actions are not expected to alter existing fishing practices in such a way as to alter the interactions with marine mammals.

Because the proposed actions are directed towards the management of naturally occurring species, the introduction or spread of nonindigenous species should not occur.

5.0 FISHERY IMPACT STATEMENT (FIS)

The Magnuson-Stevens Act requires a FIS be prepared for all amendments to Fishery Management Plans (FMPs). The FIS contains an assessment of the likely biological and socioeconomic effects of the conservation and management measures on: 1) fishery participants and their communities; 2) participants in the fisheries conducted in adjacent areas under the authority of another Council; and 3) the safety of human life at sea.

5.1 Actions Contained in Amendment 10 to the Spiny Lobster FMP

Amendment 10 to the Spiny Lobster FMP would bring the Spiny Lobster FMP into compliance with Magnuson-Stevens Fishery Conservation and Management Act (Magnuson-Stevens Act) requirements for Annual Catch Limits (ACLs) and Accountability Measures (AMs); update biological reference points, policies, and procedures for managing spiny lobster; modify management measures, and consider requirements from the biological opinion. Specifically, Amendment 10 would:

- Remove smoothtail spiny lobster, spotted spiny lobster, Spanish slipper lobster, and ridged slipper lobster from the Spiny Lobster FMP.
- Specify the overfishing limit (OFL) as the proxy for maximum sustainable yield (MSY), which is 7.90 million pounds.
- Specify the overfishing threshold (MFMT) as the OFL recommended by the Gulf of Mexico Fishery Management Council's (Gulf Council) Scientific and Statistical Committee.
- Specify the overfished threshold (MSST) as (1-M) x $B_{MSY.}$
- Adopt the Gulf Council's acceptable biological catch (ABC) control rule.
- Specify the ACL as equal to the optimum yield (OY) and the ABC, currently 7.32 million pounds (mp).
- Specify an annual catch target (ACT) equal to 90% of ACL., currently 6.59 mp.
- Establish the ACT as the AM.
- Revise the framework procedure and protocol for managing spiny lobster to include the National Standard 1 harvest parameters.
- Allow use of undersized spiny lobster as attractants in numbers not exceeding 50 per boat and 1 per trap.
- Revise tailing permit regulations to state that all vessels must have either a federal spiny lobster permit or a Florida Restricted Species Endorsement and a Crawfish Endorsement associated with a Florida Saltwater Products License to obtain a tailing permit, and require all spiny lobster to be landed all tailed or all whole.
- Delegate authority to regulate the removal of derelict or abandoned spiny lobster traps occurring in the EEZ off Florida to the Florida Fish and Wildlife Conservation Commission (FWC).

Two actions were considered by the Councils but deferred to another amendment to allow more time for stakeholder input:

- Require all spiny lobster trap lines in the EEZ off Florida to be color, or have a color marking, all gear must comply with marking requirements by August 2014.
- Delegate authority to regulate the removal of derelict or abandoned spiny lobster traps occurring in the EEZ off Florida to the Florida Fish and Wildlife Conservation Commission.

5.2 Assessment of Biological Effects

Removal of any of the lobster species from the Spiny Lobster FMP is expected to have little impact on the biological environment. Very little information is available about life history attributes of these species and landings data are only available for two species in the FMP (ridged slipper lobster and Spanish slipper lobster). If other agencies, such as FWC assume management then these lesser landed species may have better management protection than what is currently listed under the federal fishery management plan (e.g., prohibition of egg–bearing females, stripping, or removing eggs). If another agency does not take over management of the other lobster species and overfishing occurs then negative biological impacts would be expected.

The three sub-actions for modifying MSY, MFMT, and MSST for Caribbean spiny lobster are expected to have positive biological impacts to the environment. The Councils currently have different reference points for MSY and MSST, so modifying these definitions would provide consistency between the two Councils. The definitions selected by the Councils are based on the most recent stock assessment and the best available scientific information reviewed by both Councils' Scientific and Statistical Committees, thereby suggesting the best protection for the resource.

The ABC, ACL, and ACT levels set are above recent landings and are likely to have biological impacts only if harvest changes from current levels. Additionally, the biological impacts of using the ACT as the AM would likely be similar to the status quo since the combined recreational/commercial average landings for the last 10 fishing seasons do not exceed the preferred ACT. A recent study using microsatellite DNA analysis to identify sources of recruitment among Caribbean spiny lobsters indicates the majority of recruits come from areas outside the management area (Hunt and Tringali 2011). Therefore, any true biological benefits that may accrue in the Caribbean spiny lobster population found within the joint Council's management area are likely to be negligible.

Updating the protocol, which defines the roles of federal and Florida agencies in managing spiny lobster, and the framework, which outlines the actions that can be implemented through framework actions, would have no impact on the biological environment except to enable harvest modifications to be expedited when they are most needed.

Using undersized lobster as attractants reduces the opportunity for juvenile spiny lobsters to grow to harvestable size due to confinement mortality. However, total bycatch may actually increase undersized spiny lobsters are not used because traps with other baits would need to soak longer to achieve the same catch as traps with undersized attractants. Revising the tailing permit regulations would provide a minimal biological benefit since it is thought that there are very few recreational fishermen who have in their possession a Tail-Separation Permit. Requiring that all spiny lobster must be landed all whole or all tailed would address the issue of some fishermen landing part of their catch whole and part tailed a practice that may be an attempt to land sub-legal spiny lobsters for profit, as has been reported anecdotally. If most fishermen choose to land the majority of their Caribbean spiny lobster harvest whole, the rate at which Caribbean spiny

lobsters are harvested would likely decrease due to storage capacity issues of whole lobster tails on participating vessels.

The biological opinion requires NOAA Fisheries Service and the Councils to explore allowing the public to remove derelict trap gear from the EEZ off Florida. Commercial fishermen's primary concerns about allowing the public to remove derelict or abandoned traps are that legally fishing traps may be removed by someone other than the fishermen, either intentionally or by accident, due to confusion between similar looking traps. If the delegation of trap removal authority to the FWC leads to the elimination of more derelict traps and trap debris, positive biological benefits would be realized.

Prohibiting the use of traps in identified areas would reduce the risk of trap damage to *Acropora* spp. in areas of high density or near colonies with high conservation value. Movement of traps during storms poses the greatest threat to *Acropora* spp. because the branching morphology makes them susceptible to fragmentation/breakage and abrasion from traps and trap lines. Trap line markings are required by the biological opinion because each fishery has an incidental take statement estimating the number of protected species taken by that fishery. Requiring markings along the entire length of trap lines would allow managers to identify takes attributable to the spiny lobster fishery. In addition, by better understanding which fisheries are interacting with sea turtles and smalltooth sawfish, better ways to reduce those interactions can be developed. These actions will be considered in Amendment 11 to the Spiny Lobster FMP.

5.3 Assessment of Economic Effects

The AM and ACT are specified as being less than the ACL and would not be expected to have any economic effects, assuming that catch in excess of ACT is allowed occasionally, as discussed in Section 4.5.1.

The requirement that all spiny lobster from the EEZ must be landed all whole or all tails on a trip is expected to have a direct economic impact on a small number of commercial fishing vessels (35 vessels) that engaged in deep-water, multi-day fishing trips for spiny lobster in the EEZ. They land both whole and tailed lobsters on the same trips. This deep-water fishing activity has declined relatively more than all fishing for lobsters in Florida. There is an expected economic impact for the closure of some areas of the EEZ to protect corals, but it affects a larger proportion of the vessels (274 vessels, including the 35 vessels above) that operate mostly in waters less than 100 ft deep.

Under the proposed rule, regulations are to be re-written to more clearly state that vessels using tailing permits must have requisite Florida permits/licenses for commercial fishing for lobster in the Florida EEZ, or must have federal permits for lobster fishing in the EEZ for states other than Florida. This is not likely to have any economic impact on commercial and for-hire fishing for spiny lobster. Available data and methods allow only approximations of the number of affected vessels in different categories. In the last 5 years, there were perhaps 275-388 vessels with tailing permits in Florida and they could encompass the 274 vessels with documented commercial landings of lobster from the Florida EEZ. Approximately 50-80 vessels of the 388 vessels possess at least one federal for-hire permit for finfish fishing in the EEZ, and something

between 50-80 vessels and 388 vessels falls short of the number, 1,330 vessels, with Florida permits/licenses for for-hire fishing for lobster in state and federal waters off Florida. In turn, the 1,330 for-hire vessels appear to account for only a fraction of the 140,000 permits for recreational fishing for lobster in Florida, recognizing that some customers may have their own permits onboard. In Monroe County (the Florida Keys) alone, there may be some 25,000 registered recreational vessels. Perhaps some of the 1,330 for-hire vessels and an unknown number of "private," recreational vessels ("private" vessels refers to vessels without earned income from fishing) could have acquired tailing permits. Finally, an unknown number of commercial and for-hire fishing vessels may have purchased "open-access" lobster tail-separation permits as a low-cost ($10) precaution, should incidental catch of lobster tails occur under bag-limit rules. Any such incidental catch of lobster tails represents non-monetary compensation to captains and crews, and, loosely speaking, it may be called "recreational catch" of lobster because it is governed by bag-limit rules.

Closing hardbottom areas in the EEZ off Florida to protect corals would have an economic impact on the commercial trap fishery. The Councils will revisit this action in Amendment 11 after additional input from stakeholders on the appropriate areas to close to provide the greatest protection to *Acropora* spp..

The time between implementation of Amendment 10 and the date for compliance, August 2014 is growing shorter and is already less than the normal, 5-7 year replacement schedule for trap lines. NOAA Fisheries Service is reviewing the biological opinion to determine if more time can be allowed for compliance with this requirement. The Councils will address this action in Amendment 11 after additional input from stakeholders on the best way to mark trap lines.

Although no alternative to allow the removal of abandoned or derelict lobster traps found in the EEZ purportedly during the closed season would affect commercial fishing activity during the open season, fishermen's perception about any trap removal can impact their economic activity, wellbeing, and willingness to support regulations (Shivlani et al. 2004). The proposed action may have the least perceived economic impact among fishermen.

5.4 Assessment of the Social Effects

The combined impacts of the amendment are from a number actions and alternatives affecting harvest levels, sector allocation, closed areas and gear modifications. The effects are described below in summary fashion for all alternatives.

Removing species from the management unit would likely have positive social effects as it would streamline management. Requiring federal agencies to maintain ACLs and AMs on species that are landed infrequently may pose some difficulty in monitoring because landings data are sparse or non-existent. Furthermore, it could impose further regulatory burdens on fishermen if harvest levels are reduced because of uncertainty and their incidental harvest is somehow tied to fishing for other species. The preferred alternative, which removes most species that are often a bycatch species, should have positive social effects for both the administration of fishery and for fishermen who may encounter these species on occasion.

Overfishing limits and other biological thresholds are determined through stock assessment and deliberation of the SSC from which ACLs and ACTs are derived. The ACT is the final threshold from which the Councils choose to manage harvest levels through a series of decisions about uncertainty with stock status and management. The preferred option at this time sets an ACT threshold that is slightly above recent landings, however, it has been exceeded in the past. It is likely that there would be few negative social effects from an ACT set at a level of 6.59 million pounds. By setting the ACT as the AM, any overages will be reviewed over time to consider whether changes need to be made. Overall, these actions should have positive social effects as there are no severe reductions to harvest and timely monitoring should allow for accountability over time which should maintain some stability within the fishery. These positive social effects would also be reflected in the action to establish a framework procedure that would allow for timely management of this species to address not only biological changes, but socioeconomic issues.

The action which allows for short or undersized lobster to be used for bait would establish federal regulations compatible with current state regulations which should have positive social effects as it removes the possibility of conflicting regulations regarding this practice. This places fewer burdens on law enforcement and provides consistent management for fishermen. The allowance for the landing of lobster tails should have positive social effects for those fishermen who make longer trips and need extra hold space for their catch, but may continue to make law enforcement difficult. By requiring a federal permit or state restricted species endorsement to land tails separated from the body would be more consistent for all harvester requirements, although it may still be difficult for law enforcement to determine whether the lobster are of legal size.

The selection of no action with regard to creating and expand closed harvest areas should have positive social effects. By choosing no action, the Councils can consider the impacts of such a closure with more refined information once the public and other agencies have had more time to consider this action. With some alternatives, lobster fishermen may see substantial fishing bottom closed to trapping. If smaller closed areas are sufficient to reduce damage and satisfy the biological opinion requirements, there may be fewer negative social effects and still address the issue of damaged coral. By requiring the marking of all lobster trap lines to comply with federal regulation of protected species, enforcement will be better able to identify any interactions of the lobster fishery with protected species. However, fishermen could incur substantial costs to replace trap lines depending upon their operation and labor costs. By choosing the no action alternative again, the Councils can allow for a more substantial analysis of the effects that were described during public comment. Finally, by delegating the FWC to regulate trap removal in the EEZ and state waters, management is somewhat more streamlined and ensures that trap removal is scrutinized by a regulatory authority alleviating some fears by commercial fishermen that a possibly uniformed public may be entrusted with removal privileges. Because Florida has a trap removal program already in place, there should be few if any negative social effects from this action.

The overall social effects from actions within this amendment should be beneficial considering the mandate to impose these biological and management thresholds. Other actions included should enhance both the stock status and fishermen's ability to harvest a sustainable stock.

5.5 Assessment of Effects on Safety at Sea

Expanding and/or creating new closed areas within which use of spiny lobster traps would be prohibited could result in increased safety at sea concerns for vessels having to traverse around a closed area if they have traps and spiny lobster onboard. However, a transit provision could allow vessels with legally harvested spiny lobster and spiny lobster traps onboard to transit directly through a closed area in order to reach shore in as little time as possible when foul weather situations arise. This transit allowance would mitigate any safety at sea issues that would otherwise be present for vessels required to travel around a closed area and will be considered in Amendment 11.

6.0 LIST OF PREPARERS

PREPARERS

Name	Discipline/Expertise	Role in EIS Preparation
Gregg Waugh, SAFMC	Fishery Biologist	Biological Environment and Impacts
Carrie Simmons, Ph.D. GMFMC	Fishery Biologist	Biological Environment and Impacts
Susan Gerhart, NMFS	Fishery Biologist	Biological Environment and Impacts
Kate Michie, NMFS/SF	Fishery Biologist	Biological Environment and Impacts
Andrew Herndon, NMFS/PR	Biologist, Protected Resources	Protected Resources Environment and Impacts
Denise Johnson, Ph.D. NMFS/SF	Economist and Sociologist	Economic Environment and Impacts
John Vondruska, Ph.D. NMFS/SF	Economist	Economic Environment and Impacts
Mike Jepson, Ph.D. NMFS/SF	Anthropologist	Social Environment and Impacts

NMFS = National Marine Fisheries Service, SAFMC = South Atlantic Fishery Management Council, GMFMC = Gulf of Mexico Fishery Management Council, SF = Sustainable Fisheries Division, PR = Protected Resources Division

REVIEWERS

Name	Discipline/Expertise	Role in EIS Preparation
Monica Smit-Brunello, NOAA GC	Attorney	Legal Review
Noah Silverman	Natural Resource Management Specialist	NEPA Review
David Dale, NMFS/HC	EFH Specialist	EFH Review
Jeff Isely, Ph.D. SEFSC	Biologist	Scientific Review
Bill Sharp, FWC	Fishery Biologist	State of Florida information
Otha Easley, OLE SERO	Law Enforcement	Enforcement

GC = General Counsel, SERO=Southeast Regional Office, NEPA=National Environmental Policy Act, HC = Habitat Conservation, SEFSC=Southeast Fisheries Science Center, FWC=Florida Fish and Wildlife Conservation Commission, OLE=NOAA Fisheries Service Office for Law Enforcement

7.0 LIST OF AGENCIES, ORGANIZATIONS AND PERSONS TO WHOM COPIES OF THE STATEMENT ARE SENT

Department of Commerce Office of General Counsel
Environmental Defense
Texas Parks and Wildlife Department
Alabama Department of Conservation and Natural Resources/Marine Resources Division
Louisiana Department of Wildlife and Fisheries
Mississippi Department of Marine Resources
Florida Fish and Wildlife Conservation Commission
Georgia Department of Natural Resources/Coastal Resources Division
South Carolina Department of Natural Resources/Marine Resources Division
North Carolina Division of Marine Fisheries
Florida Keys Commercial Fishermen's Association
Monroe County Commercial Fishermen's Association
National Fisheries Institute
National Marine Fisheries Service Office of General Counsel
National Marine Fisheries Service Office of General Counsel Southeast Region
National Marine Fisheries Service Southeast Regional Office
National Marine Fisheries Service Southeast Fisheries Science Center
National Marine Fisheries Service Silver Spring Office
National Marine Fisheries Service Office of Law Enforcement
United States Coast Guard
United States Fish and Wildlife Services

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Appendix A. Alternatives Considered but Rejected

Action: Delegate management of the Spiny Lobster FMP to Florida FWC

Alternative 1: No Action – Continue the current state and federal management system

Alternative 2: Delegate all management to Florida FWC, except establishment of an annual catch limit (ACL)

Alternative 3: Delegate certain management criteria to Florida FWC, except establishment of an ACL

Management criteria to delegate include:
Options a: Numerical specification of ACL and breakdown into sector-specific ACLs based on the definitions later in document
Options b: Commercial quotas and recreational allocations based on the allocations specified later in this document
Options c: Size limits
Options d: Recreational bag limits
Options e: Commercial trip limits
Options f: Permit endorsements
Options g: Fishing seasons
Options h: Application of the accountability measures, including closing the fishery when a sector reaches its quota and/or allocation
Options i: Rules and regulations for traps, including gear marking, tagging, etc.
Options j: Data collection and reporting requirements
Options k: Closed areas

Comparison of Alternatives: The Fishery Management Plan for Spiny Lobster in the Gulf of Mexico and South Atlantic (Spiny Lobster FMP) has been jointly managed by the Gulf of Mexico and South Atlantic Fishery Management Councils (Councils) since 1982. In 1989, the Spiny Lobster FMP was amended to establish compatible regulations between the federal and state fisheries. Thereafter, the Florida Fish and Wildlife Conservation Commission (FWC) has taken the lead in Caribbean spiny lobster fishery management, with NOAA Fisheries Service establishing compatible regulations when applicable. The commercial fishery is currently managed with a trap limitation and permitting program, minimum size limits, closed fishing seasons, gear restrictions, and other prohibitions. The recreational fishery is currently managed with minimum size limits, bag limits, closed fishing seasons, gear restrictions, and other prohibitions (Table 2.1.1).

The joint jurisdiction of the two Councils extends from the North Carolina/Virginia border in the South Atlantic to the Texas/Mexico border in the Gulf of Mexico. A majority of the commercial and recreational landings for Caribbean spiny lobster occurs in the waters off Florida (Table 2.1.1). Caribbean spiny lobster are also found in waters off other states within the Councils' jurisdiction, but in these areas, low abundance results in low levels of harvest. For example in the Gulf of Mexico, Alabama reported no commercial landings of spiny lobster species (C. Denson, Alabama Marine Resources Division, Alabama Department of Conservation and Natural Resources, pers. comm.). There were no reported commercial landings for spiny lobster in Mississippi, Louisiana, and Texas and no program currently in place to document recreational

landings in any of the states but Florida (Source: http://www.st.nmfs.noaa.gov/st1/commercial/landings/annual_landings.html).

Off Georgia there were no commercial landings of Caribbean spiny lobster species from state or federal waters for the years 1999-2008 (J. Califf, Commercial Fisheries Statistics Coordinator, Coastal Resources Division, Georgia Department of Natural Resources, pers. comm.). Similarly, in the state waters off South Carolina there were no recorded landings of spiny lobster species. In federal waters off South Carolina, commercial landings by divers between 1991 and 2003 included 6 lbs landed one year, and between 2004 and 2008, 15 lbs was landed in one year (G. Steele, Biological Statistician, South Carolina Department of Natural Resources, pers. comm.).

In state waters off North Carolina, there were no recorded landings of Caribbean spiny lobster. However, in federal waters off North Carolina there were low landings for Caribbean spiny lobster in 2001, 2003, 2004, 2006, 2007, and 2008. The average landings were 100 lbs or less live whole animal weight by commercial divers. The ex-vessel value for Caribbean spiny lobster species during this time period (1999-2008) ranged from $50 to $3,500 (A. Bianchi, Trip Ticket Coordinator, North Carolina Division of Marine Fisheries, pers. comm.). In 1999, 2000, 2002, and 2005 commercial landings for those species were not recorded by the North Carolina Division of Marine Fisheries.

Because of the low landings from states other than Florida, the federal fishery is currently managed through regulations affecting the EEZ off states in three areas: the South Atlantic states not including Florida (North Carolina, South Carolina, and Georgia), the State of Florida, and the Gulf of Mexico states not including Florida (Texas, Louisiana, Mississippi, and Alabama). This division of regulations reflects differences in Caribbean spiny lobster abundance and fishing effort in these regions (Table 2.1.2).

Table 2.1.2. Average commercial landings of Caribbean spiny lobsters 1999-2008 for Gulf federal waters, South Atlantic federal waters, and state of Florida waters (both coasts). Average pounds landed are live whole animal weight.

Caribbean Spiny Lobster	Gulf federal	Atlantic federal	Florida state waters
Average Pounds	164,912	998,218	1,709,646
Average # Trips	413	2,976	8,903
Average $ Value	$828,149	$4,878,155	$8,827,990

Source: Florida FWC, Marine Fisheries Information System 2009.

Note: This data is based on the trip ticket program. There is only one space available for waters fished. Fishers could fish in both state and federal waters within one day, based on the season and other fishing behaviors. This table should be viewed with some caution, because there could be additional unaccounted variability, due to the way the data is recorded and analyzed.

Alternative 1, no action, would continue the current state and federal management system and set an ACL and accountability measures as determined in actions later in this amendment for Caribbean spiny lobster. If this alternative was selected as the preferred alternative, the National Standard 1 guideline would still need to be met in 2011. Alternative 2 or 3 would set an ACL and accountability measures (AMs), but delegate all or certain management measures, respectively. Delegation to Florida would require agreement from Florida FWC to accept the responsibility of Caribbean spiny lobster management. Alternative 2, would delegate all

management of Caribbean spiny lobster to Florida FWC, but still set an ACL (see Action 4). If Alternative 2 was selected as a preferred alternative, Florida FWC could use various management criteria to maintain the ACL. This method of management is similar to what is occurring presently; Florida FWC has taken the lead in Caribbean spiny lobster fishery management, with NOAA Fisheries Service establishing compatible regulations when applicable through the Council's processes. One modification from the current management process in addition to setting an ACL is establishing AMs. If the ACL was exceeded Florida FWC would need to apply AMs, compatible in federal waters to account for these overages, under the National Standard 1 guidelines.

Alternative 3 would also set an ACL, but delegate certain management criteria to Florida FWC, such as size limits, bag limits, fishing seasons, and trip limits. This alternative could be become more complicated; if and when the ACL was exceeded NOAA Fisheries Service would need to implement the previously established AMs. If Florida FWC only has certain management criteria or vice versa, then the appropriate criteria for management may be split between the Councils and NOAA Fisheries Service and Florida FWC, making it more difficult to prevent the ACL from being exceeded or by initiating AMs, if and when they were exceeded. The public could also become confused, by management changes coming from NOAA Fisheries Service instead of Florida FWC and compatibility with these regulations. The benefit of delegating all or certain management criteria to Florida FWC is that the state can move faster than the federal system when and if, accountability measures need to be implemented. Alternatives 2 and 3 would still allow the Councils to maintain their joint Amendment 4 and 8 with the Caribbean Council (73 FR 1148). This newly implemented amendment prohibits importation of undersized Caribbean spiny lobsters into the U.S.

This action is primarily administrative and alternatives in this action are expected to have little impact on the biological or physical environments. Alternative 2 may be more streamlined than Alternative 3 or Alternative 1 simply due to all management criteria being delegated to Florida FWC. This may create more of an administrative burden for Florida FWC working jointly with NOAA Fisheries Service and the Councils, but be less burdensome to the public keeping up with regulatory changes. If Alternative 3 is selected as preferred, there may be more of an administrative burden for all parties involved, Florida FWC, NOAA Fisheries Service, and the Councils. In addition, by delegating only certain management criteria the process, meant to be streamlined, may become more burdensome for all parties involved. Further, members of the public following regulations for Caribbean spiny lobster may become confused if various management criteria are implemented from different agencies.

Action 1: Other species in the Spiny Lobster FMP

Alternative 2: Set ACLs and AMs for each species using historical landings
Option a: smoothtail spiny lobster, *Panulirus laevicauda*
Option b: spotted spiny lobster, *Panulirus guttatus*

Discussion: Alternative 2 would set ACLs and AMs for each species, which would be very difficult for smoothtail and spotted spiny lobster (Option a and b), because there are no historical landings available for these species. However, the other two species of slipper lobsters, Spanish and ridged (Option c and d) have commercial landings information, but are not targeted species. Positive biological and physical benefits are expected from setting ACLs and AMs; however, if no historical landings information is available, the rationale for setting biological determination criteria may have limited positive impacts on the physical or biological environment.

Action 2: Modify the current definitions of Maximum Sustainable Yield, Optimum Yield, Overfishing Threshold, and Overfished Threshold for Caribbean spiny lobster

2-3 Overfished Threshold

Alternative 2**:** Adopt the Gulf Council overfished threshold definition for the South Atlantic. The Gulf of Mexico definition: proxy for MSST of 15% transitional SPR, with the additional modification to static SPR.

Discussion: This action explores various alternatives for establishing biological reference points: MSY, OY, overfishing threshold, and overfished threshold. Currently the Gulf of Mexico and the South Atlantic Councils have different definitions for these biological reference points and the South Atlantic Council does not currently have an overfished threshold definition (GMFMC 1999, SAFMC 1998, SEDAR 8 2005).

Transitional SPR versus static SPR is used for the definitions of MSY, OY, overfishing, and overfished threshold by the Gulf Council. As the name suggests SPR ratio expresses spawning per recruit as a ratio in a fished condition, relative to the maximum theoretical amount of spawning per recruit that occurs when there is no fishing (Slipke and Maceina 2000; MRAG Americas 2001). Due to increased fishing effort reducing the potential reproductive output, the denominator in the spawning potential ratio is always greater than or equal to the numerator, so the resulting values will range between 0 and 1 (MRAG Americas 2001).

Generally, static SPR is more frequently used than transitional SPR. Static SPR requires minimal data inputs, whereas transitional SPR requires data from a full age-based stock assessment (Parkes 2001). Static SPR is calculated on a per-recruit basis assuming equilibrium conditions of recruitment and mortality throughout their life span. Transitional SPR is computed on a yearly basis and uses actual annual variation in population structure and mortality rates therefore it is considered a dynamic measure (MRAG Americas 2001, Slipke and Maceina 2001). The SEDAR 8 (2005) benchmark assessment terms of reference, suggest that static SPR was used is the assessment based on the South Atlantic Fishery Management Council's Spiny Lobster Amendment 6 (SAFMC 1998).

Alternative 2 under Action 2.3.4 would adopt the Gulf Council's current definition at 15% transitional SPR, with modification for consistency to static SPR. Again, static SPR is generally used when the stock is not overfished and stock assessments are not completed on an annual basis.

Action 3: Establish sector allocations for Caribbean spiny lobster in state and federal waters from North Carolina through Texas

Alternative 2: Allocate the spiny lobster ACL by the following sector and or gear allocations:
Option a: 75% to the commercial trap fishery, 4% to the commercial dive fishery, 1% to the commercial bully net fishery, and 20% to the recreational fishery

Alternative 3: Allocate the spiny lobster ACL by the following sector and or gear allocations:
Option a: 70% to the commercial trap fishery, 6% to the commercial dive fishery, 1% to the commercial bully net fishery, and 23% to the recreational fishery.

Alternative 4: Allocate the spiny lobster ACL by the following sector and or gear allocations:
Option a: 70% to the commercial trap fishery, 3% to the commercial dive fishery, 1% to the commercial bully net fishery, and 26% to the recreational fishery.

Alternative 5: Allocate the spiny lobster ACL by the following sector and or gear allocations:
Option a: 72% to the commercial trap fishery, 5% to the commercial dive fishery, 1% to the commercial bully net fishery, and 22% to the recreational fishery.

Alternative 6: Allocate the spiny lobster ACL by the following sector and or gear allocations:
Option a**:** 72% to the commercial trap fishery, 4% to the commercial dive fishery, 1% to the commercial bully net fishery, and 23% to the recreational fishery.

Discussion: The Florida Fish and Wildlife Conservation Commission (FWC) invited representatives of stakeholder groups participating in Florida's Lobster Fishery to serve as members of the Spiny Lobster Ad Hoc Advisory Board (Advisory Board). The Advisory Board was made up of five commercial trappers, three commercial divers, three recreational fishers, two wholesale dealers, two environmental groups, and one FWC representative on the board.

The Advisory Board was designed to bring together a group of stakeholder representatives from around the state who represent the diversity of the lobster fishery community and included commercial lobster trappers, commercial lobster divers, recreational lobster fishers, a special recreational license holder, wholesale lobster dealers, an environmental group, and a representative from the FWC. The goal was to provide constructive comments and guidance to the FWC in the form of proposed refinements to the management of Florida's spiny lobster fishery. Over a period of sixteen months the Advisory Board met approximately eight times for approximately two days each to focus on reviewing and discussing lobster fishery issues and proposals for refinements to Florida's spiny lobster fishery.

The Councils chose to combine all gear types when determining allocations for each sector. After this was accomplished for each of the alternatives, the alternatives moved to considered but rejected were identical or very similar to alternatives retained under the action.

Action 4-2: Set annual catch limits (ACLs) for Caribbean Spiny Lobster

Alternative 3: Set separate state and federal ACLs based on landings.
Option a: sum of ACLs = ABC
Option b: sum of ACLs = x% of ABC

Discussion: The Caribbean spiny lobster fishery occurs mainly off the state of Florida. Commercial landings data are available from 1984; starting in this year, commercial fishermen were required to sell their catch to licensed dealers who were required to submit trip tickets. Separate state and federal ACLs (Alternative 3) may be appropriate because a large amount of harvest is in state waters. However, distinguishing between landings from these areas is difficult. In addition, federal management would be limited to the portion of the fishery under federal authority. The sum of the state and federal ACLs could equal ABC (Option a) or be reduced from the ABC for management uncertainty (Option b).

Action 4-3: Set Annual Catch Targets for Caribbean Spiny Lobster

Alternative 3: Set separate state and federal ACTs (If Action 4.2, Alternative 2 or 3 chosen).

Discussion: Separate federal/state ACTs (Alternative 3) would be appropriate if separate ACLs are set (Action 4.2, Alternative 3), or if a single ACL is set (Action 4.2, Alternative 2). However, the federal government does not have authority to manage harvest of Caribbean spiny lobster in state waters. Unless the states adopt the ACTs as quotas, and institute accountability measures, any ACT set by the Councils could be exceeded without consequence. In an extreme case, landings in state waters could exceed the ABC under these circumstances.

Action 5: Accountability Measures (AMS) by Sector

Alternative 2: Establish in-season AMs.
Option b: Recreational
Sub-option i: quota closure
Sub-option ii: reduce the bag limit when 75% of the recreational ACL or ACT is projected to be met.
Option c: Recreational and commercial combined AM
Sub-option i: prohibit both recreational and commercial harvest when the commercial ACL or ACT, or combined ACL or ACT is projected to be met.
Sub-option ii: reduce the recreational and commercial bag/trip limits when 75% of the commercial ACL or ACT is projected to be met.

Discussion: Under Alternative 2, in-season AMs would be triggered to prevent the ACL from being exceeded. The efficacy of in-season AMs is largely reliant upon in-season monitoring of landings, which may be especially difficult for the recreational sector. The Marine Recreational

Fishing Statistics Survey and the newly implemented Marine Recreational Information Program does not collect landings information on crustaceans. Therefore, in-season tracking of Caribbean spiny lobster landings in the recreational sector would be based on the Marine Recreational Fishing Statistics Survey program and state landings reports. An additional obstacle to tracking recreational harvest in-season is that there is a lag time between when the Caribbean spiny lobsters are landed and when those landings are reported in the landings database. This lag time means that projections of when the ACL is expected to be met would need to be employed. Landings projections are not always 100% accurate, thus using such estimates could lead to an in-season AM being triggered prematurely, or not soon enough causing an ACL overage.

Action 8: Modify Tailing Requirements for Caribbean Spiny Lobster for Vessels that Obtain a Tailing Permit

Alternative 4: Modify the requirements for obtaining a Tail-Separation Permit.

Discussion: Alternative 4 would modify the prerequisites needed for obtaining a Tail-Separation Permit in a way that would make them more restrictive and specific. The regulations could be modified in such a way that would address the issue of recreational fishermen obtaining Tail-Separation Permits, as well as the issue of some fishermen landing undersized lobster tailed and legal sized lobster whole. However, Alternative 4, unless the modification includes the complete removal of the Tail-Separation Permit, would not be as biologically beneficial as Alternative 2.

Appendix B. Regulatory Impact Review

NOAA Fisheries Service requires a Regulatory Impact Review (RIR) for all regulatory actions that are of public interest pursuant to Executive Order (E.O.) 12866, as amended. The RIR: 1) provides a comprehensive review of the level and incidence of impacts associated with a proposed or final regulatory action; 2) provides a review of the problems and policy objectives prompting the regulatory proposals and an evaluation of the major alternatives that could be used to solve the problem; and 3) ensures that the regulatory agency systematically and comprehensively considers all available alternatives so that the public welfare can be enhanced in the most efficient and cost-effective way. The RIR provides the information needed to determine whether the proposed regulations constitute a "significant regulatory action" under the criteria provided in E.O. 12866 and serves as the basis for determining if the actions will have a significant economic impact on a substantial number of small entities as per the requirements of the Regulatory Flexibility Act (RFA). This RIR analyzes the expected impacts of these actions on the spiny lobster fishery. Additional details on the expected economic effects of the various alternatives under each action are included in Section 4.

Problems and Objectives

The purpose and need, issues, problems, and objectives of the proposed amendment are presented in Section 1.0 and are incorporated herein by reference. The stated purpose for this amendment is to bring the Fishery Management Plan for Spiny Lobster in the Gulf of Mexico and South Atlantic (FMP) into compliance with Magnuson-Stevens Fishery Conservation and Management Act (Magnuson-Stevens Act) regarding annual catch limits (ACLs) and accountability measures (AMs) to prevent overfishing; update biological reference points, policies, and procedures; and consider adjustment of management measures to aid law enforcement and consider measures to protect endangered species established under a biological opinion.

Methodology and Framework for Analysis

This RIR assesses management measures from the standpoint of determining the resulting changes in costs and benefits to society. To the extent practicable, the net effects of proposed measures should be stated in terms of producer and consumer surplus, changes in profits, and employment in the direct and support industries. However, given the competitive nature of the market for spiny lobster and the fact that prices are determined largely under global market conditions in which U.S. production is relatively small, potential changes in domestic production due to changing regulations are not expected to affect prices and thus consumer surplus. Further, given the lack of production cost data, estimates of producer surplus and profits are not currently available for vessels operating in the spiny lobster fishery. Therefore, benefits are stated in terms of gains in production and gross revenue. Since, by definition, gross revenue does not account for production costs, they are an overestimate of the actual net economic benefits to society. In addition, the public and private costs associated with the process of developing and enforcing regulations on fishing for spiny lobster in waters of the U.S. South Atlantic and Gulf of Mexico are provided.

Description of the Fishery
A description of the spiny lobster fishery is contained in Section 3.4.

Impacts of Management Measures

Details on the economic impacts of all alternatives are included in Section 4.0. The following discussion includes only the expected impacts of the preferred alternatives.

Other species in the Spiny Lobster Fishery Management Plan (FMP) (Action 1)

The FMP includes Caribbean spiny lobster, along with two other species of spiny lobster and two species of slipper lobster. **Preferred Alternative 4** would remove the other four species from the FMP. It would not affect fishing; hence, it would not have an economic impact. Commercial fishing is analyzed using inseparable data for the two species of slipper lobster taken together for Florida as a whole for reasons of confidentiality of data for most years, states, and gear, though it may be noted that landings in southeast coastal states (SC–MS only) peaked in 1985 at 133,440 lbs (ww). The long-term decline in landings of slipper lobsters may be partly explained by several factors, including required use of TEDs in shrimp trawls in waters off Florida (1990); a prohibition of the molestation and possession of berried female lobsters in Florida (1987); a decline in effort in the shrimp fishery; and the effort-related cost of trips for slipper lobster. Slipper lobsters cannot be viewed strictly as an incidental or bycatch species, because they were the top-value species on trips for the 8.6 vessels which landed 3,476 lbs out of the total of 4,737 lbs for the 23 vessels with landings (averages for 2004/2005 – 2008/2009).

Modify the Current Definitions of Maximum Sustainable Yield (MSY), Overfishing Threshold (MFMT), and Overfished Threshold (MSST) for Caribbean Spiny Lobster (Action 2)

Defining the MSY, MFMT, and MSST of a species does not alter the current harvest or use of the resource. Because there would be no direct effects on resource harvest or use, there would be no direct effects on fishery participants, associated industries or communities. Direct effects only accrue to actions that alter harvest or other use of the resource. Specifying MSY, MFMT, and MSST, however, establishes the platform for management, specifically from the perspective of bounding allowable harvest levels.

Establish Sector Allocations for Caribbean Spiny Lobster in State and Federal Waters from North Carolina through Texas (Action 3)

No sector allocations would be applied under **Preferred Alternative 1**; hence, it would not have an economic impact. Among the alternatives, it is most compatible with Florida's existing allocation system. Commercial fishing effort for Caribbean spiny lobster in Florida has been reduced substantially under the State's Trap Certificate Program, one of the nation's longest running market-based limited-access systems. In contrast with commercial fishing for spiny lobster, however, participation and entry into the recreational sector are neither limited nor managed under a market-based allocation system.

Acceptable Biological Catch (ABC) Control Rule, ABC Level(s), Annual Catch Limits (ACL), and Annual Catch Targets (ACT) for Caribbean Spiny Lobster (Action 4)

Under Action 4, the preferred alternatives/options for three biological parameters do the following: 1) specify the Gulf Council's ABC Control Rule, resulting in ABC = 7.32 mp (ww) (10-year mean of landings plus 1.5 standard deviation units); 2) specify that ACL = ABC; and 3) specify that ACT = OY= 6.59 mp.

Accountability Measures (AMs) by Sector (Action 5)

Under Action 5, **Preferred Alternative 4** establishes the ACT as the accountability measure for Caribbean spiny lobster, wherein ACT = 6.59 mp, which is less than the ACL of 7.32 mp. The AM is specified as being less than the ACL in accord with SF1 guidelines for the Magnuson-Stevens Act. The ACT of 6.59 mp exceeds the status-quo landings of 5.039 mp, and would not be expected to have any economic impact, assuming that catch in excess of ACT is allowed occasionally. It is noted that a sporadic instance of landings exceeding the ACT may or may not result in a fishery closure.

Develop or Update a Framework Procedure and Protocol for Enhanced Cooperative Management for Spiny Lobster (Action 6)

Preferred Alternative 2 would update the current protocol, while **Preferred Alternative 4, Option a** would revise the current framework procedures and adopt the base Framework Procedure. This would facilitate implementation of changes in management measures, such as changes in ACL, ACT, and AM. For small entities, such changes could be beneficial, or they could have an economic impact. While the proposed action is administrative in intent, the proposed rule as a whole is complicated. To the extent that any unresolved differences result in an economic impact, it would most affect Florida, especially Monroe County. This is because practically all of the southeast landings of spiny lobster occur in Florida. Furthermore, Florida landings occur largely in Monroe County (90% for commercial landings and 67% for recreational landings).

Modify Regulations Regarding Possession and Handling of Short Caribbean Spiny Lobsters as "Undersized Attractants" (Action 7)

Preferred Alternative 4 would allow undersized spiny lobster not exceeding 50 per boat plus 1 per trap aboard each boat if used in federal waters exclusively for luring, decoying or otherwise attracting non-captive spiny lobsters into the trap**.** This would allow more attractants on board a vessel than **Alternative 1**. Therefore, **Preferred Alternative 4** would not have an economic impact, it is consistent with Florida regulations, and it could bolster fishing in federal waters relative to fishing in state waters. The numbers of vessels, trips, and traps with landings of spiny lobster in Florida have declined substantially since the implementation of the State's Trap Certificate Program in the early 1990s, a stated goal of which was "to substantially reduce the mortality of undersize lobster" (FAC 68B-24.001). The associated fishing mortality is an estimated 189,091 lbs per year in 2004/2005 – 2009/2010 compared with 541,000 lbs per year in 1985/1986 – 1989/1990 (Table 4.3.3.1).

Modify Tailing Requirements for Caribbean Spiny Lobster for Vessels that Obtain a Tailing Permit (Action 8)

To facilitate the presentation of data, **Preferred Alternative 4** is discussed first. It would require that all Caribbean spiny lobster from the EEZ must be landed "whole" or "tailed" on a single trip. It could have an economic impact, and expedite the decline of deep-water, multi-day fishing in the EEZ. Total commercial landings in Florida of spiny lobster averaged 3.671 mp (ww) for 781 vessels in the last five years. This includes 0.670 mp landed from the EEZ by 274 vessels, which in turn includes 0.025 mp (ww) of tails landed by 35 vessels from the EEZ (total landings came to 0.057 mp (ww) for the same trips, including tails and whole lobster). These trips involve multi-day, deep-water fishing in the EEZ off Florida. Several factors have affected costs and revenues for deep-water, EEZ fishing for spiny lobster, including higher fuel prices, thereby helping to explain the steeper, long-term decline in this economic activity than for all fishing for spiny lobster in Florida.

Preferred Alternative 3, Action 8 would continue the long-standing policy intent under the FMP to allow possession and landing of tails on long commercial fishing trips (at least 48 hours) in the EEZ to make better use of onboard space to store catch. To accomplish this, **Preferred Alternative 3** would revise the current regulations to clearly state that vessels using tailing permits must have requisite Florida permits/licenses for commercial fishing for lobster in the Florida EEZ, or must have federal permits for lobster fishing in the EEZ for states other than Florida. Florida has income and other requirements for commercial and for-hire fishing vessels, and they apply whether a vessel lands spiny lobster in Florida from federal or state waters. In the last five years, approximately 275 vessels held federal lobster tail-separation permits in Florida.[15] There were 274 vessels with reported commercial landings of lobster from the EEZ off Florida, but only 35 of them landed lobster tails. While the number of for-hire vessels that fish for spiny lobster in the EEZ off Florida is not known, it is likely less than the 1,330 vessels with Florida permits/licenses to do so in state and federal waters. Perhaps some of the 1,330 vessels may have acquired federal lobster tail-separation permits. Under **Preferred Alternative 3**, for-hire vessels could continue to engage in for-hire fishing for lobster in the EEZ, they could not possess or land lobster tails, and they might have to add ice-chest capacity to keep the more cumbersome whole lobsters fresh for paying customers. However, bag limits and the demand for for-hire fishing services would not be affected.

Limit Spiny Lobster Fishing in Certain Areas in the EEZ off Florida to Protect Threatened Staghorn and Elkhorn Corals (*Acropora* spp.) (Action 9).

The no action alternative became the proposed action following the Council meetings of June 2011. The action and it alternatives are to become part of what will be Amendment 11 to the FMP. The alternatives are assessed in Section 4.9.2.

[15]Sources of data: analysis of NMFS, SERO permits data, mid-1990s through 2011 (RBASE, 30Oct06; PIMS, 24Jun11); Florida recreational permits for spiny lobster, Table 3.4.2.1; 35 vessels with FTT-reported landings, as in Table 4.9.2.1; 38 vessels with landings of lobster in Florida, unpublished summaries of NMFS, SEFSC, Coastal Fisheries Logbook data as of 09Mar11; and Aron Podey (Florida, FMC, Division of Fisheries Management), personal communication, 28Apr11.

Require Gear Markings so All Spiny Lobster Trap Lines in the EEZ off Florida are Identifiable (Action 10).

The no action alternative became the proposed action following the Council meetings of June 2011. The action and it alternatives are to become part of what will be Amendment 11 to the FMP. The alternatives are assessed in Section 4.10.2.

Allow the Public to Remove Derelict or Abandoned Spiny Lobster Traps Found in the EEZ off Florida (Action 11).

Preferred Alternative 6 would delegate authority for removal in the EEZ to the FWC, as now occurs in waters under state jurisdiction. Though none of the alternatives would affect ongoing commercial fishing activity during the open season, fishermen's perception about any trap removal can impact their economic activity, wellbeing, and willingness to support regulations (Shivlani et al., 2004). Thus, **Preferred Alternative 6** may have the least perceived economic impact.

Summary of Economic Impacts

Among the eleven actions, further consideration by the Councils of Actions 9 and 10 is deferred, pending Amendment 11. Of the remaining nine actions, two could have beneficial economic effects (the opposite of economic impacts). **Preferred Alternative 4,** Action 5, would not be expected to have any economic impact, providing that sporadic instances of landings exceeding the ACL may be allowed and not result in fishery closure. **Preferred Alternative 4,** Action 7 could bolster commercial fishing for lobster in the EEZ off Florida, which appears to have declined relatively more than fishing for lobsters in state waters. **Preferred Alternative 4,** Action 8, could have an economic impact on a long-declining and now relatively small number of vessels (35 vessels) that engage in deep-water, multi-day fishing for lobster in the EEZ off Florida.

Appendix C. Regulatory Flexibility Analysis (RFA, economic impacts of proposed regulatory actions)

1. Introduction

The purpose of the Regulatory Flexibility Act (RFA) is to establish a principle of regulatory issuance that agencies shall endeavor, consistent with the objectives of the rule and of applicable statutes, to fit regulatory and informational requirements to the scale of businesses, organizations, and governmental jurisdictions subject to regulation. To achieve this principle, agencies are required to solicit and consider flexible regulatory proposals and to explain the rationale for their actions to assure such proposals are given serious consideration. The RFA does not contain any decision criteria; instead the purpose of the RFA is to inform the agency, as well as the public, of the expected economic impacts of various alternatives contained in the FMP or amendment (including framework management measures and other regulatory actions) and to ensure the agency considers alternatives that minimize the expected impacts while meeting the goals and objectives of the FMP and applicable statutes.

With certain exceptions, the RFA requires agencies to conduct an initial regulatory flexibility analysis (IRFA) for each proposed rule. The IRFA is designed to assess the impacts various regulatory alternatives would have on small entities, including small businesses, and to determine ways to minimize those impacts. An IRFA is conducted to primarily determine whether the proposed action would have a "significant economic impact on a substantial number of small entities." In addition to analyses conducted for the RIR, the IRFA provides: 1) A description of the reasons why action by the agency is being considered; 2) a succinct statement of the objectives of, and legal basis for, the proposed rule; 3) a description and, where feasible, an estimate of the number of small entities to which the proposed rule will apply; 4) a description of the projected reporting, record-keeping, and other compliance requirements of the proposed rule, including an estimate of the classes of small entities which will be subject to the requirements of the report or record; and, 5) an identification, to the extent practicable, of all relevant federal rules, which may duplicate, overlap, or conflict with the proposed rule.

2. Statement of the need for, objectives of, and legal basis for the rule

A discussion of the need for and objectives of this action is provided in Section 1.2 of this document. The Magnuson-Stevens Act provides the statutory basis for this proposed rule.

3. Description and estimate of the number of small entities to which the proposed action would apply

This proposed action would apply to all fishing that is managed under the Fishery Management Plan for Spiny Lobster in the Gulf and South Atlantic. However, landings of spiny lobster occur predominantly in the Florida Keys (Monroe County) and elsewhere in south Florida. Relatively small (mostly confidential) amounts have been reported for other states since 1977. Excluding Florida, where the federal permit for spiny lobster fishing is not required, there were on average 66 vessels in other states with such permits in the last 5 years. Fishing for spiny lobster in Florida is managed cooperatively by the Councils and the State of Florida, which collects the

data used to analyze the activity. Commercial and for-hire fishing vessels that fish for spiny lobster in state and federal waters off Florida must have Florida permits/licenses. On average in the last 5 years, 781 vessels landed spiny lobster commercially in Florida, and they averaged $29,960 per vessel in gross revenue for all species landed. Among the 781 vessels, 274 landed spiny lobster from the EEZ, and averaged $15,889 in gross revenue. Another 23 vessels landed slipper lobster, and averaged $13,260 in gross revenue.

While the number of for-hire vessels that fish for spiny lobster in the EEZ off Florida is not known, it is likely less than 1,330 vessels that have the necessary Florida permits/licenses to engage in for-hire fishing for spiny lobster in state and federal waters. These vessels target other species as well, because recreational landings of spiny lobster occur predominantly in late July through the first week of September. The for-hire fleet is comprised mostly of charter boats, which charge a fee on a vessel basis, and a much smaller number of head boats, which charge a fee on an individual angler (head) basis. The charter boat annual average gross revenue is estimated to range from approximately $62,000-$84,000 in Florida. For head boats, the corresponding estimates are $170,000-$362,000 in Florida.

The Small Business Administration has established size criteria for all major industry sectors in the U.S. including fish harvesters. A business involved in commercial shellfish harvesting is classified as a small business if it is independently owned and operated, is not dominant in its field of operation (including its affiliates), and has combined annual receipts not in excess of $4.0 million (NAICS code 114112, shellfish fishing) for all its affiliated operations worldwide. A for-hire business involved in fish harvesting is classified as a small business if it is independently owned and operated, is not dominant in its field of operation (including its affiliates), and has combined annual receipts not in excess of $7.0 million (NAICS code 713990, recreational industries). Based on the average revenue estimates provided above, all commercial and for-hire fishing vessels expected to be directly affected by this proposed rule are determined for the purpose of this analysis to be small business entities.

4. Description of the projected reporting, record-keeping and other compliance requirements of the proposed rule, including an estimate of the classes of small entities which will be subject to the requirement and the type of professional skills necessary for the preparation of the report or records

This proposed rule would not establish any new reporting, record keeping, or other compliance requirements.

5. Identification of all relevant federal rules, which may duplicate, overlap or conflict with the proposed rule

No duplicative, overlapping, or conflicting federal rules have been identified.

6. Significance of economic impacts on small entities

<u>Substantial number criterion</u>

This proposed rule, if implemented, would be expected to affect all vessels that engage in commercial and recreational fishing in the EEZ that is managed under the Fishery Management Plan for Spiny Lobster in the Gulf and South Atlantic.

Significant economic impacts

The outcome of "significant economic impact" can be ascertained by examining two factors: Disproportionality and profitability.

Disproportionality: Do the regulations place a substantial number of small entities at a significant competitive disadvantage to large entities?

All entities expected to be directly affected by the measures in this proposed rule are determined for the purpose of this analysis to be small business entities, so the issue of disproportionality does not arise in the present case.

Profitability: Do the regulations significantly reduce profits for a substantial number of small entities?

The majority of the actions in this proposed regulation are either administrative in nature or would be expected to accommodate status quo harvests or fishing behavior. The possible exception to this determination is the proposed action to relating to the possession and landing of tailed lobsters from the EEZ. Available data does not support the determination of the number of vessels that may be affected by this proposed action. Approximately 35 vessels with commercial landings from the EEZ landed both tails and whole lobsters on the same trips. The effect on these vessels of the requirement to land either tails or whole lobsters on one trip is not known. This requirement may, however, be a problem for for-hire vessels with limited holding capacity. The solution for these vessels may simply be the purchase of additional ice chests to store customer harvests. However, while this proposed requirement may be limiting for some for-hire vessels, this would not be expected to be a problem, on average, for the for-hire fleet because the majority of vessels would not be expected to engage in the practice of landing tailed lobsters, or depend on this type of business for a significant portion of their revenues. As a result, the actions in this proposed regulation would not be expected to significantly reduce profits for a substantial number of small entities. Public comment, however, is requested on this determination, specifically with respect to the effects of the proposed modifications to the tailing requirements.

7. Description of significant alternatives to the proposed action and discussion of how the alternatives attempt to minimize economic impacts on small entities

Although none of the proposed actions would be expected to result in significant economic impacts on small entities, this section discusses all of the alternatives considered in this proposed amendment.

Other Species in the Spiny Lobster FMP

Including options, 10 alternatives were considered respecting species other than spiny lobster in the FMP, and the proposed action (which includes four alternatives, one for each of the four species) would remove all four species from the FMP. None of the alternatives would be expected have an economic impact on small entities because the alternatives are administrative in nature and the species addresses are not significantly harvested. One alternative, the status-quo no-action alternative, would not meet the requirements of the Magnuson-Stevens Act. A second alternative to the proposed action would have added one species to the FMP, and establish ACLs and AMs for two species, and another four other alternatives (one for each of four species) would have listed four species as ecosystem components under the FMP. These alternatives were not adopted because the Councils concluded these species no longer required federal management. The Councils concluded that the proposed action best meets the purpose and need to bring the Spiny Lobster FMP into compliance with Magnuson-Stevens Act requirements for ACLs and AMs to prevent overfishing.

Modify the definition of maximum sustainable yield, overfishing threshold, and the overfished threshold for Caribbean spiny lobster

Defining the MSY, MSST and other biological parameters for a species does not alter the current harvest or use of the resource. Therefore, no economic impact on small entities would be expected to result from the specification of these management parameters. The Councils concluded that the proposed actions for defining these parameters best meet the purpose and need to bring the Spiny Lobster FMP into compliance with Magnuson-Stevens Act requirements for ACLs and AMs to prevent overfishing.

Four alternatives, including the no-action alternative (status quo), were considered for the definition of MSY, and the proposed action specifies an MSY proxy; i.e., MSY = OFL = 7.90 mp, in accordance with the recommendations of the Gulf SSC for the Overfishing Limit (OFL). The no-action alternative was not adopted as the proposed action because it would not comply with the Magnuson Stevens Act. The remaining two alternatives to the proposed action were not adopted because they would require an updated stock assessment approved by the two SSCs, which is not available at this time.

Three alternatives, including the no-action alternative (status quo), were considered for the definition of the Overfishing Limit (OFL), and the proposed action specifies that OFL = 7.90 mp, in accordance with the recommendations of the Gulf SSC. The no-action alternative was not adopted because it would not comply with the Magnuson Stevens Act. The remaining alternative was not adopted because it would require an updated stock assessment approved by the two SSCs, which is not available at this time.

Three alternatives, including the no-action alternative (status quo), were considered for the definition of the Overfished Threshold (Minimum Stock Size Threshold, MSST), and the proposed action specifies a proxy value. The no-action alternative was not adopted because it would not comply with the Magnuson Stevens Act. The Councils recognize that the proposed action and the second alternative would both require an updated stock assessment approved by the two SSCs, which is not available at this time. However, despite the absence of an updated

stock assessment, the proposed action was adopted instead of the second alternative because the proposed action would be best capable of incorporating best available science.

Establish Sector Allocations for Caribbean Spiny Lobster in State and Federal Waters from North Carolina through Texas

Six alternatives, including the no-action alternative (status quo), to establish sector allocations were considered by the Councils. Among the six alternatives, the no-action alternative was adopted as the proposed action by the Councils. The five alternatives to the proposed action that would specify allocations would have varying effects determined by their combination with the selection of accommodating alternatives used to specify the ABC, ACL, OY, and ACT. Combining all the alternative combinations for sector allocations, ABC, ACL, OY, and ACT results in 108 single (stock) or paired-set (sector) ACLs, some of which were greater than or less than the respective status-quo landings. Any scenario where allowable landings would be reduced would be expected to result in a reduction in economic benefits to the respective affected sector. The Councils concluded that it was best to manage the spiny lobster fishery without allocations between the recreational and commercial sectors because no mechanism currently exists to track recreational landings and the commercial trip ticket data are not compiled with sufficient speed to support in-season quota monitoring. The Councils also concluded that the proposed action best meets the Amendment's purpose and need to bring the Spiny Lobster FMP into compliance with Magnuson-Stevens Act requirements for ACLs and AMs to prevent overfishing.

Acceptable Biological Catch (ABC) Control Rule, Annual Catch Limits (ACLs), and Annual Catch Targets (ACTs) for Caribbean Spiny Lobster

Including options, seven alternatives, including the no-action alternative (status quo), were considered for the action to specify an ABC control rule, and the proposed action specifies the Gulf Council's ABC Control Rule, for which ABC = (10-year mean of landings plus 1.5 standard deviations) = 7.32 mp (ww). Apart from the no-action alternative, which would not meet Magnuson-Stevens Act requirements, the other five alternatives to the proposed action would specify a higher or lower ABC. Because specifying an ABC control rule is an administrative action, no direct economic effects on any small entities would be expected to result from any of these alternatives. The proposed action was adopted because it would be consistent with decisions made for other species managed by the Councils and would provide a statistically based way of setting ABC, even if a new stock assessment changed the status of the stock. Further, the remaining alternatives, other than the no action alternative, were not adopted because they would not allow for changes to the ABC based on subsequent stock assessments.

Including options, seven alternatives, including the no-action alternative (status quo), were considered for the action to set ACLs, and the proposed action specifies that ACL = OY = ABC = 7.32 mp. The no-action (status-quo) alternative would not meet Magnuson-Stevens Act requirements. The remaining five alternatives to the proposed action would specify higher or lower ACLs, with each alternative specifying either a single ACL for the entire fishery or a sector specific ACL, one ACL for commercial fishing, and another ACL for recreational fishing. The alternatives that would have resulted in sector ACLs were not adopted because the adoption

of sector ACLs would have been inconsistent with the decision to not adopt allocation ratios for the sectors. Among the alternatives that would not establish sector ACLs, the proposed action would be expected to result in the greatest economic benefits because it would allow the greatest total harvest.

Including options, seven alternatives, including the no-action alternative (status quo), were considered for the action to set ACTs. The proposed action specifies that ACT = 6.59 mp. Although an ACT is not a required component of an FMP and the absence of an ACT would allow the largest harvest, 7.32 mp (subject to ACL = OY = ABC), the no-action alternative was not adopted because the Councils believed that an ACT was appropriate for this stock due to the uncertainty associated with harvest monitoring, particularly recreational landings. Similar to the action to specify the ACL, the remaining five alternatives to the proposed action would specify different ACTs, with each alternative specifying either a single ACT for the entire fishery or a sector specific ACT, one ACT for commercial fishing, and another ACT for recreational fishing. The alternatives that would have resulted in sector ACTs were not adopted because the adoption of sector ACTs would have been inconsistent with the decision to not adopt allocation ratios or ACLs for the sectors. Among the alternatives that would not establish sector ACTs, other than the no-action alternative, the proposed action would be expected to result in the greatest economic benefits because it would allow the greatest total harvest.

Accountability Measures

Including options and sub-options, 12 alternatives, including the no-action alternative (status quo), were considered for the action to establish accountability measures (AMs). The no-action alternative would not meet Magnuson-Stevens Act requirements. The proposed action would establish that AM = ACT = 6.59 mp. With the exception of the no-action alternative, the alternatives to the proposed action would be inconsistent with the adoption of other actions in this proposed amendment, notably the actions that tier off the decision to not specify sector allocations. Absent sector allocations, ACLs, and ACTs, the adoption of sector AMs would be inappropriate. Further, adjustment of sector seasons is not practical in the absence of sector ACLs or ACTs. As a result, the Councils concluded that the proposed action best meets the purpose and need to bring the Spiny Lobster FMP into compliance with Magnuson-Stevens Act requirements for ACLs and AMs to prevent overfishing.

Develop or Update a Framework Procedure and Protocol for Enhanced Cooperative Management for Spiny Lobster

Including options and sub-options, six alternatives, including the no-action alternative (status quo), were considered for the action to establish the framework procedure. The proposed action incorporates two of the alternatives, updating the current protocol for cooperative management and revising the current regulatory amendment procedures by adopting the base framework procedure. The no-action alternative was not adopted because the current protocol and framework procedure are out of date and not consistent with current assessment and management methods. The proposed action would facilitate implementation of changes in management measures required under the Magnuson-Stevens Act, such as changes in ACL, ACT, and AM. The remaining alternatives to the proposed action, other than the no-action alternative, were not

adopted because they could result in a delay in the implementation of necessary changes relative to the proposed action. Although such delay could have either positive or negative short-term economic impacts on small entities, the delay would nevertheless impede effective and efficient management of the stock.

Modify Regulations Regarding Possession and Handling of Short Caribbean Spiny Lobsters as "Undersized Attractants"

Including options and sub-options, five alternatives, including the no-action alternative (status quo), were considered for the action to modify the regulations regarding undersized spiny lobsters. The proposed action would allow undersized spiny lobster not exceeding 50 per vessel plus 1 per trap aboard each vessel if used in the EEZ exclusively for luring, decoying, or otherwise attracting non-captive spiny lobsters into the trap and would be expected to result in an increase in economic benefits to affected fishermen. Each of the non-adopted alternatives, including the no-action alternative, were not adopted because they would result in greater restrictions on the possession of undersized spiny lobsters used as attractants. As a result, each of these alternatives would be expected to result in lower economic benefits than the proposed action.

Modify Tailing Requirements for Caribbean Spiny Lobster for Vessels that Obtain a Tailing Permit

Four alternatives, including the no-action (status quo) alternative, were considered for the action to modify tailing requirements. Two of the alternatives are included in the proposed action, which would require that all lobsters from the EEZ be landed all whole or all tails on a single trip and require that vessels receiving a tailing permit must have either the requisite Florida permits/licenses for commercial fishing for lobster or a federal spiny lobster permit. The no-action alternative was not adopted because the tailing permit was intended to allow tailing by commercial fishermen on long trips but, instead, current regulatory language and application has allowed recreational fishermen to obtain the permit, contrary to Council intent. The remaining alternative to the proposed action would disallow any lobster tail-separation permits and was not adopted because it would not be consistent with the Council's intent and would be expected to result in greater economic losses than the proposed action.

Limit Spiny Lobster Fishing in Certain Areas in the EEZ off Florida to Protect Threatened Staghorn and Elkhorn Corals (*Acropora* spp.)

Including options and sub-options, eight alternatives, including the no-action alternative (status quo), were considered for the action to limit spiny lobster fishing to certain areas in the EEZ off Florida. Each of the alternatives to the proposed action would increase the restrictions on where spiny lobster fishing could occur relative to the status quo. As a result, each of these alternatives would be expected to result in adverse economic effects to spiny lobster fishermen relative to the status quo. The no action alternative was adopted as the proposed action in order to allow more public input before taking additional action and this action will be re-addressed in a subsequent amendment to the FMP.

Require Gear Markings so All Spiny Lobster Trap Lines in the EEZ off Florida are Identifiable.

Three alternatives, including the no-action alternative (status quo), were considered for the action to require gear markings on all lobster trap lines used in the EEZ off Florida. Each of the alternatives to the proposed action would impose new gear marking requirements and, as a result, each of these alternatives would be expected to result in adverse economic effects to spiny lobster fishermen relative to the status quo. The no action alternative was adopted as the proposed action in order to allow more public input before taking additional action and this action will be re-addressed in a subsequent amendment to the FMP.

Allow the Public to Remove Derelict or Abandoned Spiny Lobster Traps Found in the EEZ off Florida.

Six alternatives, including the no-action alternative (status quo), were considered for the action to designate authority to remove derelict or abandoned spiny lobster traps in the EEZ off Florida. The no-action alternative was not adopted because it would not allow the removal of derelict or abandoned traps and would not, therefore, be consistent with the Council's objectives. The proposed action would delegate authority for removal of derelict or abandoned traps to the Florida FWC, which has such responsibilities in Florida waters, and would be expected to have the least economic impact on small entities, based on comments by commercial fishermen. The other alternatives to the proposed action would allow the public to remove derelict or abandoned traps, or portions thereof, during different portions of the closed season. Assuming such authority only resulted in the removal of derelict or abandoned traps, none of the alternatives to the proposed action, other than the no-action alternative, would be expected to adversely affect ongoing commercial fishing activity during the open season or respective fishing businesses because, by definition, the traps removed would no longer be part of an active business operation. Nevertheless, the proposed action was adopted by the Council to allow the traps to be removed through an existing, coordinated, and well-managed program that minimizes the likelihood of valid traps being removed or molested.

Appendix D. Bycatch Practicability Analysis

Bycatch Practicability Analysis

Bycatch is defined as fish harvested in a fishery, but not sold or retained for personal use. This definition includes both economic and regulatory discards and excludes fish released alive under a recreational catch-and-release fishery management program. Economic discards are generally undesirable from a market perspective because of their species, size, sex, and/or other characteristics. Regulatory discards are fish required by regulation to be discarded, but also include fish that may be retained but not sold.

Agency guidance provided at 50 CFR 600.350(d)(3) identifies ten factors to consider in determining whether a management measure minimizes bycatch or bycatch mortality to the extent practicable. These are:

1. Population effects for the bycatch species;
2. Ecological effects due to changes in the bycatch of that species (effects on other species in the ecosystem);
3. Changes in the bycatch of other species of fish and the resulting population and ecosystem effects;
4. Effects on marine mammals and birds;
5. Changes in fishing, processing, disposal, and marketing costs;
6. Changes in fishing practices and behavior of fishermen;
7. Changes in research, administration, and enforcement costs and management effectiveness;
8. Changes in the economic, social, or cultural value of fishing activities and non-consumptive uses of fishery resources;
9. Changes in the distribution of benefits and costs; and
10. Social effects.

The Councils are encouraged to adhere to the precautionary approach outlined in Article 6.5 of the Food and Agriculture Organization of the United Nations Code of Conduct for Responsible Fisheries when uncertain about these factors.

The Caribbean spiny lobster fishery is concentrated off south Florida and the Florida Keys. The commercial component of the fishery is prosecuted primarily by traps, but some commercial fishers harvest Caribbean spiny lobster by SCUBA diving and a small percentage (1-2%) use bully nets or hoop nets, primarily in state waters, to harvest lobsters. The recreational component of the fishery harvests Caribbean spiny lobster by SCUBA diving typically using allowable equipment, such as tickle sticks and hand nets, and the required underwater measuring devices to meet minimum size limit requirements.

Federal regulations require lobster traps be no larger than 3 ft x 2 ft x 2 ft, or the volume equivalent. Most fishermen use wooden traps. A trap constructed of material other than wood must have a degradable panel on the upper half of the sides or on top of the trap. When the degradable panel is removed, the opening should be no smaller than the diameter of the entrance of the trap.

A study documenting bycatch in commercial lobster traps sampled the contents of wooden traps and documented bycatch of 232 individuals representing 23 species (n = 774 traps) in the Gulf of Mexico (Gulf) (Matthews and Donahue 1997). Plastic traps were also sampled in the same area in the Gulf and documented bycatch of 386 individuals representing 25 species (n = 517 traps). Wooden traps sampled from South Atlantic waters documented 758 individuals representing 63 species (n = 1,480). It was noted that wooden traps captured more invertebrates and grunts than plastic traps. Grunts (i.e., tomtates and white grunts) as well as stone crab, and spider crabs dominated bycatch from the all traps accounting for 64% of the bycatch. Economically valuable snapper and grouper species composed 2.6% and 1.3% of the bycatch in wooden and plastic traps in the Gulf; however, in the South Atlantic groupers and snappers comprised 7% of the bycatch from wooden traps. No legal-sized commercially valuable species were documented from the Gulf during the study, and only one out of 300 (0.3%) traps fishing in South Atlantic waters had these species. Daily bycatch mortality during this experiment was estimated to be between 0.0009 and 0.0027 animals per wooden trap/day. Diver observations indicated immediate escape for tomtates approximately 6.3 in (16 cm), and 90% of gray snapper approximately 10 in (25 cm) escaped in less than 24 hours and all escaped in less than 48 hours. Most importantly, during this study no confinement-induced mortality was observed among fish.

Lost or abandoned traps may “ghost fish” – continue to catch target and non-target species. However, most fishermen use wooden traps which degrade over time, and those constructed of material other than wood are required to have a degradable wood panel. No studies have quantified the level of ghost fishing by lobster traps, but these requirements ensure that traps do not ghost fish indefinitely.

There is limited information on bycatch and the potential for bycatch mortality in the recreational or commercial dive sectors. However, Parsons and Eggleston (2005) documented the frequency of undersized injured Caribbean spiny lobsters after the two-day recreational mini-season which is exclusively for sport divers. This season opens one week prior to the opening of the regular lobster fishing season for commercial and recreational fishers. The study documented a low percentage of injured lobsters before the mini-season; after the mini-season the percentage of injured lobsters had increased to 27.16% on patch reefs and 3.77% on patch heads. Parsons and Eggleston (2005) also documented that injured lobsters were unable to attract other lobsters and maintain the usual gregarious behavior of uninjured lobsters. In addition, they found in this study and an additional laboratory experiment that predation was documented more frequently on injured lobsters compared to uninjured lobsters, possibly due to the changes in species behaviors (Parsons and Eggleston 2005; 2006). The results of these studies determined that human disturbance and injury of lobsters on patch reef habitats greater than 25% during the mini-season causes lobsters to alter their behavior and reduce subsequent survival in the presence of natural predators such as gray triggerfish (Parsons and Eggleston 2006).

1. Population Effects for the bycatch species

The population effects of bycatch from the commercial trap fishery are expected to be minimal to none. Studies documented low bycatch and bycatch mortality of finfish by the commercial trap fishery for both wooden and plastic traps. Most of the finfish caught in commercial spiny lobster traps are juveniles and all escape within 48 hours (Matthews and Donahue 1997). Stone crabs were by far the most dominant species caught in two studies of lobster traps (Matthews et al. 1994, Matthews and Donahue 1997). Most lobster fishermen retain stone crabs caught in lobster traps. Stone crabs are predators on mollusks, and changes in stone crab populations would affect mollusk populations.

In the recreational fishery bycatch primarily consists of undersized Caribbean spiny lobsters. Because the gear types used by SCUBA divers and snorkelers targeting spiny lobster are considered highly selective for spiny lobster, very little bycatch of non-target species is expected in the recreational sector of the Caribbean spiny lobster fishery. Based on studies documenting injury of Caribbean spiny lobster during the two-day mini-season, a decrease in the use of shelters and gregarious behavior contributed to decreased survival when lobsters were exposed to natural predators such as gray triggerfish (Parson and Eggleston 2006). If these undersized lobsters have already spawned prior to opening the season it is unlikely the reproductive potential of a stock would be compromised. In addition, the 2010 update assessment determined that the majority of United States stock of Caribbean spiny lobsters is based on outside recruitment from other areas of the Caribbean; therefore, the recreational component of the fishery is not expected to have detrimental effects on the population within the fishery management area.

The population effects of bycatch mortality are the same as fishing mortality from directed fishing efforts. If not properly managed and accounted for, either form of mortality could potentially reduce stock biomass to an unsustainable level. Bycatch mortality is incorporated in assessments of finfish stocks if estimates are available. Stone crab caught in lobster traps are usually sold and recorded as commercial landings. Mortality of commercially and recreationally important finfish is negligible (Matthews and Donahue 1997). Little is known about the status of many finfish (e.g., grunts, cowfish, porgies) and invertebrate (e.g., spider crabs, urchins) species that are bycatch in lobster traps in the greatest numbers. None of these species have undergone (or are likely to undergo) formal stock assessments, because most are not targeted in commercial or recreational fisheries.

In the 2009 Biological Opinion, NOAA Fisheries Service determined the spiny lobster trap fishery as it currently operates may adversely affect the green, hawksbill, Kemp's ridley, leatherback, or loggerhead sea turtles, *Acropora* spp., or smalltooth sawfish, but is not likely to jeopardize their continued existence. This amendment contains an action to create protected areas for *Acropora* spp. corals in the South Atlantic within which deployment of spiny lobster traps would be prohibited. However, the Council deferred action on this closure until Amendment 11. Protected areas should be established before the beginning of the 2012 fishing season and are likely to reduce incidence of trap interactions with protected coral species.

2. Ecological effects due to changes in bycatch of lobster species

Actions setting annual catch limits (ACLs) and annual catch targets (ACTs) may limit effort if levels are set lower than average landings. Lower overall effort would reduce economic and regulatory discards of spiny lobster and may reduce the use of undersized lobsters as attractants. These changes may not impact the population if most recruits are from other areas of the Caribbean and not managed by U.S. regulations.

Currently, up to 50 Caribbean spiny lobsters under the minimum size limit or one per trap, whichever is greater, may be retained aboard a vessel, provided they are held in a live well. When in a trap, such "shorts" are used to attract other lobsters for harvest. Federal regulations are not consistent with State of Florida regulations, which allow up to 50 Caribbean spiny lobsters under the minimum size limit on board <u>and</u> one per trap. The practice of using shorts as attractants may increase the fishing mortality on juvenile lobsters and could facilitate their illegal trade. Questions have also arisen as to whether these shorts could be considered bycatch as defined under the Magnuson-Stevens Fishery Management and Conservation Act (Magnuson-Stevens Act).

Undersized lobster used as attractants are kept for personal use as bait under 50 CFR 640.21(c) and therefore meet the definition of bycatch in the Magnuson-Stevens Act. Lobsters in the range of 70-76 mm carapace length are retained by fishermen because they are of a desirable size to attract larger lobsters; clearly they are not economic discards. They are also not regulatory discards because fishermen are not *required* to discard or retain them; rather they are *allowed* to retain them. Fishermen release shorts alive after using them as bait, and about 1% percent per night escape from traps (J. Hunt and W. Sharp, pers. comm.).

Federal regulations provide specifications for live wells to hold shorts while on board a vessel. An undersized lobster held under these conditions must be released alive and unharmed when not used in a trap. Hunt et al. (1986) indicated an exposure and confinement mortality rate of 26.3% for lobsters exposed to air and confined in traps for four weeks. Lobsters that were held in live wells and confined for the same amount of time showed a mortality rate of 10.1%. A study conducted by Matthews (2001) indicated similar reductions in the mortality rates of spiny lobster kept for use as attractants based on observation of commercial lobster traps, due to the implementation of the live well requirement. Additionally, the Matthews (2001) study showed commercial and recreational harvest of spiny lobster increased notably as a result of decreased mortality of undersized lobsters maintained in live wells.

Experiments have shown that traps baited with shorts catch approximately three times more lobster than traps baited with any other method (Heatwole et al. 1988). Further, traps using non-lobster bait catch fewer lobsters than unbaited traps, probably because the bait attracted stone crabs, which lobsters avoid. Traps using non-lobster bait or no bait take two to three times longer to harvest the same amount of lobsters as traps using lobster bait. This increase in effort may actually increase bycatch of other species. Increased soak time (time traps are left in the water before being serviced) may also increase bycatch mortality. Therefore, allowing use of undersized attractants at the same level as allowed by Florida would be practicable from both an enforcement and biological aspect.

3. Changes in bycatch of other species and resulting population and ecosystem effects

If affected finfish are lobster predators, reductions in finfish bycatch may result in increased predation on the lobster population. Predator-prey relationships largely depend on the size structure of predator and prey populations. Gray triggerfish and octopus are suspected predators of lobsters, and lobster fishermen will often kill and discard these species (Matthews et al. 1994). Changes in the bycatch of non-lobster invertebrates (e.g., crustaceans and mollusks) also could have ecosystem effects. These species have ecological functions in addition to serving as prey for other invertebrates and fishes. For example, some species, like barnacles and hydrozoans, which are often attached to traps, condition habitat for other organisms by providing a growing surface or by contributing to the bioturbation of bottom sediments. Depending on behavior of the fishermen, many of these organisms are crushed or die of exposure when traps are brought on deck (Matthews et al. 1994).

4. Effects on marine mammals and birds

Bycatch of marine mammals and seabirds is not considered to be a problem in the spiny lobster fishery and actions evaluated in this amendment are not expected to significantly affect interactions with these animals. As noted in Section 4.14, the Florida spiny lobster trap fishery is listed as a Category III Fishery under the MMPA, meaning the annual mortality and serious injury of a stock resulting from the fishery is less than or equal to 1% of the maximum number of animals, not including natural mortalities, that may be removed from a marine mammal stock while allowing that stock to reach or maintain its optimum sustainable population (75 FR 68468; November 8, 2010).

Matthews et al. (1994) observed five dead cormorants (*Phalacrocorax auritus*) in 21,309 traps. Presumably these birds were attempting to remove bait or bycatch from the traps and became entangled. There is no information to indicate marine mammals and birds rely on Caribbean spiny lobster for food.

5. Changes in fishing, processing, disposal, and marketing costs

Changes in the number of shorts allowed on board vessels could change costs to fishermen. If undersized attractants were not allowed to be retained, fishermen who commonly use them as bait would need to purchase other bait. Common non-lobster baits include cowhide, cat food, mullet, and herring. Commercial trap fishermen who reported use of shorts as attractants had much lower average trip costs for bait compared with those who used purchased bait, and they had shorter trips and lower average trip costs for other major items as well (Shivlani et al. 2004). Trip costs for bait ranged $12.72 (Middle Keys) to $133.24 (Key West), with the average trip cost for bait of $60.90 (data in current dollars for 2001/2002).

6. Changes in fishing practices and behavior of fishermen

Any ACL or ACTM that limits the catch of lobster could change fishing practices and behavior of fishermen. Fishermen may deploy more traps early in the season, and retrieve those traps more often to try to obtain more of the allowed catch. However, the ACL and ACT chosen by the Councils are higher than recent landings and would not be expected to limit catch.

Changes to the number of shorts may impact behavior of fishermen. Experiments have shown that traps baited with shorts caught approximately three times more lobster than traps baited with any other method (Heatwole et al. 1988); therefore, traps using non-lobster bait or no bait would take two to three times longer to harvest the same amount of lobsters as traps using lobster bait. Although mortality of shorts may result in some foregone yield, a prohibition on the use of shorts would result in decreased economic benefits and changes in fishing practices, such as requiring traps to soak longer before servicing them.

7. Changes in research, administration, and enforcement costs and management effectiveness

Proposed actions that will affect bycatch are not expected to significantly impact research costs. Implementation of an ACL may require an additional administrative burden to monitor landings. Enforcement costs may be reduced if federal regulations concerning use of shorts are changed to be the same as Florida regulations.

8. Changes in the economic, social, or cultural value of fishing activities and non-consumptive uses of fishery resources

Most commercial spiny lobster fishermen do not consider keeping shorts for use as attractants as a form of bycatch or bycatch mortality because they are "borrowing" from the resource with the intent to release the lobsters back into the environment alive. In addition, about 1% percent per night escapes from traps (J. Hunt and W. Sharp, pers. comm.). Prohibiting or further restricting use of shorts may be viewed by commercial fishermen as an unnecessary regulation on a practice that has been used for a long time and results in low mortality under requirements for holding lobsters. On the other hand, recreational fishermen view the use of shorts as unnecessary mortality of lobsters that could eventually contribute to the fishable stock.

9. Changes in the distribution of benefits and costs

Actions setting an ACL or ACT may limit effort if levels are lower than average landings. In this case, lower effort would result in lower bycatch. Because limits would be set for the fishery as a whole, all sectors are expected to be affected in the same way.

Actions addressing use of undersized lobster as attractants apply only to the commercial trap sector and do not directly affect the commercial dive sector or the recreational sector. Therefore, any benefits or costs associated with increasing or decreasing the number of shorts allowed would directly affect only the commercial trap sector. The other sectors may be indirectly affected by changes in the mortality associated with the use of shorts.

10. Social effects

Bycatch is considered wasteful because it reduces overall yield obtained from the fishery. Yet, commercial lobster fishermen do not consider the use of shorts as attractants to be bycatch. Measures that reduce bycatch to the extent practicable will increase efficiency, reduce waste, and benefit stock recovery, thereby resulting in net social benefits. However, reducing one type of bycatch is not always practicable, especially if another type of bycatch is increased. Because it has been shown that traps must soak longer when shorts are not used as attractants, it is likely

that the bycatch of other species will be increased if the use of shorts were to be prohibited. Therefore, any measures that may change bycatch, such as changing the allowance of undersized lobsters as attractants, should be considered in light of potential unintended consequences, including changes in efficiency (longer soak times) and bycatch of other species.

Conclusion

This section evaluates the practicability of taking additional action to minimize bycatch and bycatch mortality in the Gulf and South Atlantic Caribbean spiny lobster fishery by using the ten factors provided at 50 CFR 600.350(d)(3)(i). In summary, setting ACLs and ACTs would impact bycatch only if set at levels that curtail the fishery to landings lower than those of recent years. Increasing the number of shorts allowed on board a vessel may slightly increase the mortality of those shorts, but ultimately may decrease total bycatch and bycatch mortality of other species. Therefore, the Councils concluded that current and proposed management measures minimize bycatch and bycatch mortality to the extent practicable in the Caribbean spiny lobster fishery.

Appendix E. Other Applicable Laws

The Magnuson-Stevens Fishery Conservation and Management Act (16 U.S.C. 1801 et seq.) provides the authority for U.S. fishery management. But fishery management decision-making is also affected by a number of other federal statutes designed to protect the biological and human components of U.S. fisheries, as well as the ecosystems within which those fisheries are conducted. Major laws affecting federal fishery management decision making are summarized below.

Administrative Procedures Act (APA)

All federal rulemaking is governed under the provisions of the APA (5 U.S.C. Subchapter II), which establishes a "notice and comment" procedure to enable public participation in the rulemaking process. Under the APA, NOAA Fisheries is required to publish notification of proposed rules in the Federal Register and to solicit, consider and respond to public comment on those rules before they are finalized. The APA also establishes a 30-day wait period from the time a final rule is published until it takes effect.

Coastal Zone Management Act (CZMA)

The CZMA of 1972 (16 U.S.C. 1451 et seq.) encourages state and federal cooperation in the development of plans that manage the use of natural coastal habitats, as well as the fish and wildlife those habitats support. When proposing an action determined to directly affect coastal resources managed under an approved coastal zone management program, NOAA Fisheries Service is required to provide the relevant state agency with a determination that the proposed action is consistent with the enforceable policies of the approved program to the maximum extent practicable at least 90 days before taking final action.

Data Quality Act (DQA)

The DQA (Public Law 106-443), which took effect October 1, 2002, requires the government for the first time to set standards for the quality of scientific information and statistics used and disseminated by federal agencies. Information includes any communication or representation of knowledge such as facts or data, in any medium or form, including textual, numerical, cartographic, narrative, or audiovisual forms (includes web dissemination, but not hyperlinks to information that others disseminate; does not include clearly stated opinions).

Specifically, the DQA directs the Office of Management and Budget (OMB) to issue government wide guidelines that "provide policy and procedural guidance to federal agencies for ensuring and maximizing the quality, objectivity, utility, and integrity of information disseminated by federal agencies." Such guidelines have been issued, directing all federal agencies to create and issue agency-specific standards to 1) ensure Information Quality and develop a pre-dissemination review process; 2) establish administrative mechanisms allowing affected persons to seek and obtain correction of information; and 3) report periodically to OMB on the number and nature of complaints received.

Scientific information and data are key components of FMPs and amendments and the use of best available information is the second national standard under the Magnuson-Stevens Act. To be consistent with the Act, fishery management plans (FMPs) and amendments must be based on

the best information available, properly reference all supporting materials and data, and should be reviewed by technically competent individuals. With respect to original data generated for FMPs and amendments, it is important to ensure that the data are collected according to documented procedures or in a manner that reflects standard practices accepted by the relevant scientific and technical communities. Data should also undergo quality control prior to being used by the agency.

Endangered Species Act (ESA)

The (ESA of 1973 (16 U.S.C. Section 1531 et seq.) requires that federal agencies use their authorities to conserve endangered and threatened species, and that they ensure actions they authorize, fund, or carry out are not likely to harm the continued existence of those species or the habitat designated to be critical to their survival and recovery. The ESA requires NOAA Fisheries Service, when proposing a fishery action that "may affect" critical habitat or endangered or threatened species, to consult with the appropriate administrative agency (itself for most marine species, the U.S. Fish and Wildlife Service for all remaining species) to determine the potential impacts of the proposed action. Consultations are concluded informally when proposed actions "may affect but are not likely to adversely affect" endangered or threatened species or designated critical habitat. Formal consultations, resulting in a biological opinion, are required when proposed actions may affect and are "likely to adversely affect" endangered or threatened species or designated critical habitat. If jeopardy or adverse modification is found, the consulting agency is required to suggest reasonable and prudent alternatives.

On August 27, 2009, formal consultation was completed on the continued authorization of the spiny lobster fishery in the South Atlantic and Gulf of Mexico (NMFS 2009). The biological opinion concluded the fishery would not affect ESA-listed marine mammals, or adversely affect Gulf sturgeon and *Acropora* spp. critical habitat. The biological opinion determined the continued authorization of the fishery was likely to adversely affect sea turtles, smalltooth sawfish and *Acropora* spp., but is not likely to jeopardize the continued existence of these species. An incidental take statement authorizing a limited amount of take for these species was issued.

Rivers and Harbors Act of 1899

The Rivers and Harbors Act was created in 1899 to prevent navigable waters of the United States from being obstructed. Section 10 of the Act requires that anyone wishing to dredge, fill, or build a structure in any navigable water and associated wetlands obtain a permit from the ACOE. An activity affecting wetlands may require a Section 404 and Section 10 permit, thus both sections are often included together in a permit notice. When these activities are permitted, and there is direct loss of submerged habitat, such as seagrasses, then mitigation is often required to compensate for this loss.

Clean Water Act (CWA)

In 1972, Congress passed the CWA - also known as the Water Pollution Prevention and Control Act - to protect the quality of the nation's waterways including oceans, lakes, rivers and streams, aquifers, coastal areas, and aquatic resources. The law sets out broad rules for protecting the

waters of the United States; Sections 404 and 401 apply directly to waters and aquatic resources protection.

Section 404 of the CWA (often referred to as “Section 404” or simply “404”) forbids the unpermitted "discharge of dredge or fill material" into waters of the United States. Section 404 does not regulate every activity in aquatic resources or coastal areas, but requires anyone seeking to fill any area to first obtain a permit from the Army Corps of Engineers. Constructing bridges, causeways, piers, port expansion, or any other construction or development activity along a waterway or in aquatic resources generally requires a 404 permit. When a fill project is permitted, there may be mitigation required to replace lost aquatic resources.

Section 401 of the Clean Water Act requires that an applicant for a Section 404 permit obtain a certificate from their state’s environmental regulatory agency (if the state has delegated such authority to the agency) that the activity will not negatively impact water quality. This permit process is supposed to prevent the discharge of pollutants (pesticides, heavy metals, hydrocarbons) or sediments into waters, which may be above acceptable levels, because decreased water quality may endanger the health of the people, fish, and wildlife. However, acceptable pollutant levels have not been established for many aquatic resources, which make it difficult for state agencies to fully assess a project’s impact on water quality.

National Marine Sanctuaries Act

Under the National Marine Sanctuaries Act (also known as Title III of the Marine Protection, Research and Sanctuaries Act of 1972), as amended, the Secretary of Commerce is authorized to designate National Marine Sanctuaries to protect distinctive natural and cultural resources whose protection and beneficial use requires comprehensive planning and management. The National Marine Sanctuaries are administered by NOAA’s National Ocean Service. The Act provides authority for comprehensive and coordinated conservation and management of these marine areas. The National Marine Sanctuary System currently comprises 13 sanctuaries around the country, including sites in American Samoa and Hawaii. These sites include significant coral reef and kelp forest habitats, and breeding and feeding grounds of whales, sea lions, sharks, and sea turtles. A complete listing of the current sanctuaries and information about their location, size, characteristics, and affected fisheries can be found at http://www.sanctuaries.nos.noaa.gov/oms/oms.html.

Fish and Wildlife Coordination Act

The Fish and Wildlife Coordination Act protects the quality of the aquatic environment needed for fish and wildlife resources. The Act requires consultation with the Fish and Wildlife Service (FWS) and the fish and wildlife agencies of States where the "waters of any stream or other body of water are proposed or authorized, permitted or licensed to be impounded, diverted . . . or otherwise controlled or modified" by any agency (except TVA) under a Federal permit or license. NOAA Fisheries Service was brought into the process later, as these responsibilities were carried over, during the reorganization process that created NOAA. Consultation is to be undertaken for the purpose of "preventing loss of and damage to wildlife resources", and to ensure that the environmental value of a body of water or wetland is taken into account in the decision-making process during permit application reviews. Consultation is most often (but not exclusively) initiated when water resource agencies send the FWS or NOAA Fisheries Service a

public notice of a Section 404 permit. FWS or NOAA Fisheries Service may file comments on the permit stating concerns about the negative impact the activity will have on the environment, and suggest measures to reduce the impact.

Executive Orders

E.O. 12114: Environmental Assessment of Actions Abroad

The purpose of this Executive Order is to enable responsible officials of federal agencies having ultimate responsibility for authorizing and approving actions encompassed by this Order to be informed of pertinent environmental considerations and to take such considerations into account, with other pertinent considerations of national policy, in making decisions regarding such actions. While based on independent authority, this Order furthers the purpose of the National Environmental Policy Act and the Marine Protection Research and Sanctuaries Act and the Deepwater Port Act consistent with the foreign policy and national security policy of the United States, and represents the United States government's exclusive and complete determination of the procedural and other actions to be taken by federal agencies to further the purpose of the National Environmental Policy Act, with respect to the environment outside the United States, its territories and possessions.

Agencies in their procedures shall establish procedures by which their officers having ultimate responsibility for authority and approving actions in one of the following categories encompassed by this Order, take into consideration in making decisions concerning such actions, a document described in Section 2-4(a):
(a) major Federal actions significantly affecting the environment of the global commons outside the jurisdiction of any nation (e.g., the oceans or Antarctica);
(b) major Federal actions significantly affecting the environment of a foreign nation not participating with the United States and not otherwise involved in the action;
(c) major Federal actions significantly affecting the environment of a foreign nation which provide to that nation:

> (1) a product, or physical project producing a principal product or an emission or effluent, which is prohibited or strictly regulated by Federal law in the United States because its toxic effects on the environment create a serious public health risk; or
> (2) a physical project which in the United States is prohibited or strictly regulated by Federal law to protect the environment against radioactive substances.

(d) major Federal actions outside the United States, its territories and possessions which significantly affect natural or ecological resources of global importance designated for protection under this subsection by the President, or, in the case of such a resource protected by international agreement binding on the United States, by the Secretary of State. Recommendations to the President under this subsection shall be accompanied by the views of the Council on Environmental Quality and the Secretary of State.

It has been determined in Section 4 there will be significant biological affects in a positive form as a result of actions in this amendment; and as indicated numerous times throughout the document, the restrictions considered in this document were developed in accordance with a number of international agreements and accords passed by foreign nations.

E.O. 12866: Regulatory Planning and Review
Executive Order 12866, signed in 1993, requires federal agencies to assess the costs and benefits of their proposed regulations, including distributional impacts, and to select alternatives that maximize net benefits to society. To comply with E.O. 12866, NOAA Fisheries Service prepares a Regulatory Impact Review (RIR) for all fishery regulatory actions that either implement a new fishery management plan or significantly amend an existing plan. RIRs provide a comprehensive analysis of the costs and benefits to society associated with proposed regulatory actions, the problems and policy objectives prompting the regulatory proposals, and the major alternatives that could be used to solve the problems. The reviews also serve as the basis for the agency's determinations as to whether proposed regulations are a "significant regulatory action" under the criteria provided in E.O. 12866 and whether proposed regulations will have a significant economic impact on a substantial number of small entities in compliance with the RFA. A regulation is significant if it is likely to result in an annual effect on the economy of at least $100,000,000 or has other major economic effects.

E.O. 12630: Takings
The Executive Order on Government Actions and Interference with Constitutionally Protected Property Rights, which became effective March 18, 1988, requires that each federal agency prepare a Takings Implication Assessment for any of its administrative, regulatory, and legislative policies and actions that affect, or may affect, the use of any real or personal property. Clearance of a regulatory action must include a takings statement and, if appropriate, a Takings Implication Assessment. Management measures limiting fishing seasons, areas, quotas, fish size limits, and bag limits do not appear to have any taking implications. There is a takings implication if a fishing gear is prohibited, because fishermen who desire to leave a fishery might be unable to sell their investment, or if a fisherman is prohibited by federal action from exercising property rights granted by a state.

E.O. 13089: Coral Reef Protection
The Executive Order on Coral Reef Protection (June 11, 1998) requires federal agencies whose actions may affect U.S. coral reef ecosystems to identify those actions, utilize their programs and authorities to protect and enhance the conditions of such ecosystems; and, to the extent permitted by law, ensure that actions they authorize, fund or carry out not degrade the condition of that ecosystem. By definition, a U.S. coral reef ecosystem means those species, habitats, and other national resources associated with coral reefs in all maritime areas and zones subject to the jurisdiction or control of the United States (e.g., federal, state, territorial, or commonwealth waters).

E.O. 13112: Invasive Species
The Executive Order requires agencies to use authorities to prevent introduction of invasive species, respond to and control invasions in a cost effective and environmentally sound manner, and to provide for restoration of native species and habitat conditions in ecosystems that have been invaded. Further, agencies shall not authorize, fund, or carry out actions that are likely to cause or promote the introduction or spread of invasive species in the U.S. or elsewhere unless a determination is made that the benefits of such actions clearly outweigh the potential harm; and that all feasible and prudent measures to minimize the risk of harm will be taken in conjunction

with the actions. The actions undertaken in this amendment will not introduce, authorize, fund, or carry out actions that are likely to cause or promote the introduction or spread of invasive species in the U.S. or elsewhere.

E.O. 13132: Federalism

The Executive Order on federalism requires agencies in formulating and implementing policies that have federalism implications, to be guided by the fundamental federalism principles. The Order serves to guarantee the division of governmental responsibilities between the national government and the states that was intended by the framers of the Constitution. Federalism is rooted in the belief that issues that are not national in scope or significance are most appropriately addressed by the level of government closest to the people. This Order is relevant to FMPs and amendment given the overlapping authorities of NOAA Fisheries Service, the states, and local authorities in managing coastal resources, including fisheries, and the need for a clear definition of responsibilities. It is important to recognize those components of the ecosystem over which fishery managers have no direct control and to develop strategies to address them in conjunction with appropriate state, tribes and local entities (international too). The proposed management measures in this amendment to the Spiny Lobster FMP have been developed with the local and federal officials.

E.O. 13158: Marine Protected Areas

Executive Order 13158 (May 26, 2000) requires federal agencies to consider whether their proposed action(s) will affect any area of the marine environment that has been reserved by federal, state, territorial, tribal, or local laws or regulations to provide lasting protection for part or all of the natural or cultural resource within the protected area.

E.O. 12898: Environmental Justice (EJ)

This Executive Order mandates that each Federal agency shall make achieving environmental justice part of its mission by identifying and addressing, as appropriate, disproportionately high and adverse human health or environmental effects of its programs, policies, and activities on minority populations and low-income populations in the United States and its territories and possessions. Federal agency responsibilities under this Executive Order include conducting their programs, policies, and activities that substantially affect human health or the environment, in a manner that ensures that such programs, policies, and activities do not have the effect of excluding persons from participation in, denying persons the benefit of, or subjecting persons to discrimination under, such, programs policies, and activities, because of their race, color, or national origin. Furthermore, each federal agency responsibility set forth under this Executive Order shall apply equally to Native American programs.

Specifically, federal agencies shall, to the maximum extent practicable; conduct human health and environmental research and analysis; collect human health and environmental data; collect, maintain and analyze information on the consumption patterns of those who principally rely on fish and/or wildlife for subsistence; allow for public participation and access to information relating to the incorporation of EJ principals in federal agency programs or policies; and share information and eliminate unnecessary duplication of efforts through the use of existing data systems and cooperative agreements among federal agencies and with state, local, and tribal governments. The proposed actions would be applied to all participants in the fishery, regardless

of their race, color, national origin, or income level, and as a result are not considered discriminatory. Additionally, none of the proposed actions are expected to affect any existing subsistence consumption patterns. Therefore, no EJ issues are anticipated and no modifications to any proposed actions have been made to address EJ issues.

Marine Mammal Protection Act (MMPA)

The MMPA established a moratorium, with certain exceptions, on the taking of marine mammals in U.S. waters and by U.S. citizens on the high seas. It also prohibits the importing of marine mammals and marine mammal products into the United States. Under the MMPA, the Secretary of Commerce (authority delegated to NOAA Fisheries Service) is responsible for the conservation and management of cetaceans and pinnipeds (other than walruses). The Secretary of the Interior is responsible for walruses, sea otters, polar bears, manatees, and dugongs.

In 1994, Congress amended the MMPA, to govern the taking of marine mammals incidental to commercial fishing operations. This amendment required the preparation of stock assessments for all marine mammal stocks in waters under U.S. jurisdiction; development and implementation of take-reduction plans for stocks that may be reduced or are being maintained below their optimum sustainable population levels due to interactions with commercial fisheries; and studies of pinniped-fishery interactions. The MMPA requires a commercial fishery to be placed in one of three categories, based on the relative frequency of incidental serious injuries and mortalities of marine mammals. Category I designates fisheries with frequent serious injuries and mortalities incidental to commercial fishing; Category II designates fisheries with occasional serious injuries and mortalities; and Category III designates fisheries with a remote likelihood or no known serious injuries or mortalities. To legally fish in a Category I and/or II fishery, a fisherman must obtain a marine mammal authorization certificate by registering with the Marine Mammal Authorization Program (50 CFR 229.4), they must accommodate an observer if requested (50 CFR 229.7(c)), and comply with any applicable take reduction plans.

The 2011 List of Fisheries (LOF) classifies the Florida spiny lobster trap/pot fishery as a Category III fishery (75 FR 68468; November 8, 2010). The 2011 LOF also classifies the bully net and commercial dive portions of the fishery (called the "Atlantic Ocean, Gulf of Mexico, Caribbean shellfish dive, hand/mechanical collection" fishery) as a Category III because there has never been a documented interaction with marine mammals.

Paperwork Reduction Act (PRA)

The PRA of 1995 (44 U.S.C. 3501 et seq.) regulates the collection of public information by federal agencies to ensure that the public is not overburdened with information requests, that the federal government's information collection procedures are efficient, and that federal agencies adhere to appropriate rules governing the confidentiality of such information. The PRA requires NOAA Fisheries Service to obtain approval from OMB before requesting most types of fishery information from the public. Modifications to the Tail Separation Permit requirements have been submitted to OMB to meet PRA requirements.

Small Business Act

The Small Business Act of 1953, as amended, Section 8(a), 15 U.S.C. 634(b)(6), 636(j), 637(a) and (d); Public Laws 95-507 and 99-661, Section 1207; and Public Laws 100-656 and 101-37 are

administered by the Small Business Association (SBA). The objectives of the act are to foster business ownership by individuals who are both socially and economically disadvantaged; and to promote the competitive viability of such firms by providing business development assistance including, but not limited to, management and technical assistance, access to capital and other forms of financial assistance, business training and counseling, and access to sole source and limited competition federal contract opportunities, to help the firms to achieve competitive viability. Because most businesses associated with fishing are considered small businesses, NOAA Fisheries Service, in implementing regulations, must make an assessment of how those regulations will affect small businesses. Implications to small businesses are discussed in the RIR herein (Section 7).

Magnuson-Stevens Act Essential Fish Habitat (EFH) Provisions

The Magnuson-Stevens Act includes EFH requirements, and as such, each existing, and any new, FMPs must describe and identify EFH for the fishery, minimize to the extent practicable adverse effects on that EFH caused by fishing, and identify other actions to encourage the conservation and enhancement of that EFH. Spiny lobster EFH, in both the Gulf of Mexico and South Atlantic, was identified and described only for the Caribbean spiny lobster (*Panulirus argus*). Therefore, the proposed removal of species from the FMU would not alter current EFH designations in the Spiny Lobster FMP. Additionally, the Councils and NMFS have determined there are no adverse effects to EFH that may occur as a result of the other actions proposed in this amendment as discussed in the Environmental Consequences section (Section 4).

Migratory Bird Treaty Act

Under the Migratory Bird Treaty Act (MBTA), it is unlawful to pursue, hunt, take, capture, kill, possess, trade, or transport any migratory bird, or any part, nest, or egg of a migratory bird, included in treaties between the United States and Great Britain, Mexico, Japan, or the former Union of Soviet Socialists Republics, except as permitted by regulations issued by the Department of the Interior (16 U.S.C. 703-712). Violations of the MBTA carry criminal penalties; any equipment and means of transportation used in activities in violation of the MBTA may be seized by the United States government and, upon conviction, must be forfeited to it. To date, the MBTA has been applied to the territory of the United States and coastal waters extending three miles from shore. Furthermore, Executive Order 13186 was issued in 2001, which directs federal agencies, including NOAA Fisheries Service, to take certain actions to further implement the MBTA.

National Environmental Policy Act (NEPA)

The NEPA of 1969 (42 U.S.C. 4321 et seq.) requires federal agencies to consider the environmental and social consequences of proposed major actions, as well as alternatives to those actions, and to provide this information for public consideration and comment before selecting a final course of action. Because NOAA Fisheries Service is proposing a major fishery action that may significantly affect the quality of the human environment, NOAA Fisheries Service has prepared this EIS to comply with NEPA and its implementing regulations.

Regulatory Flexibility Act (RFA)

The purpose of the RFA (1980, 5 U.S.C. 601 et seq.) is to ensure that federal agencies consider

the economic impact of their regulatory proposals on small entities, analyze effective alternatives that minimize the economic impacts on small entities, and make their analyses available for public comment. The RFA does not seek preferential treatment for small entities, require agencies to adopt regulations that impose the least burden on small entities, or mandate exemptions for small entities. Rather, it requires agencies to examine public policy issues using an analytical process that identifies, among other things, barriers to small business competitiveness and seeks a level playing field for small entities, not an unfair advantage.

After an agency determines that the RFA applies, it must decide whether to conduct a full regulatory flexibility analysis (IRFA or Final Regulatory Flexibility Analysis) or to certify that the proposed rule will not "have a significant economic impact on a substantial number of small entities. To make this determination, the agency conducts a threshold analysis, which has the following five parts: 1) Description of small entities regulated by proposed action, which includes the SBA size standard(s), or those approved by the Office of Advocacy, for purposes of the analysis and size variations among these small entities; 2) Descriptions and estimates of the economic impacts of compliance requirements on the small entities, which include reporting and recordkeeping burdens and variations of impacts among size groupings of small entities; 3) Criteria used to determine if the economic impact is significant or not; 4) Criteria used to determine if the number of small entities that experience a significant economic impact is substantial or not; and 5) Descriptions of assumptions and uncertainties, including data used in the analysis. If the threshold analysis indicates that there will not be a significant economic impact on a substantial number of small entities, the agency can so certify.

Public Law 99-659: Vessel Safety

Public Law 99-659 amended the Magnuson-Stevens Act to require that a FMP or FMP amendment must consider, and may provide for, temporary adjustments (after consultation with the U.S. Coast Guard and persons utilizing the fishery) regarding access to a fishery for vessels that would be otherwise prevented from participating in the fishery because of safety concerns related to weather or to other ocean conditions.

Appendix F. Scoping Summary

SUMMARY MINUTES
PUBLIC HEARING – MARATHON, FL
SPINY LOBSTER AMENDMENT 10
JOINT AMENDMENT FOR THE GULF OF MEXICO AND
SOUTH ATLANTIC FISHERY MANAGEMENT COUNCILS

September 22, 2009

Attendance:
Bob Gill, Gulf Council
Dr. Gregg Waugh, SAFMC
Dr. Carrie Simmons, Gulf Council Staff
Phyllis Miranda, Gulf Council Staff

36 Members of the Public

The public hearing was convened by Chairman Bob Gill at 6:00 p.m. Dr. Carrie Simmons reviewed the PowerPoint presentation with the public. The public was then invited to provide their comments.

Karl Lessard, Florida Keys Commercial Fishermen's Association. He read into the record from two written letters which had previously been provided to the Council at the June Council meeting and which are attached. In summary, these letters stated that they do not want the Councils to repeal the Spiny Lobster FMP, because it is felt that the state is not able to do a stock assessment alone. In addition, the size limit requirements on imports are crucial to maintain an economically viable fishery. The FKCFA is in support of the following allocation: 72% commercial trap fishery, 22% recreational divers, 5% commercial divers, and 1% bully net fishing. He requested that the Council set the ACL using a quota instead of using landing records. He added that they are mainly concerned about spiny lobster and the Council should do what they think is appropriate for the other lesser landed species in the FMP. He stated that mortality of short lobsters is estimated to be low, 8-10%; which is lower than fishing mortality on most other species.

Tim Daniels, Marathon, FL. He stated that the fishermen are scared that the catch limit on the lobster would be limited because of the data resulting from hurricanes and illegal fishing. The population has been reduced due to the hurricanes and this has caused them to not be able to catch as many lobsters. He stated that he would like to see the historical data to go back 20-30 years and that data be considered when setting an ACL. He felt that management of spiny lobster or stone crab should not be turned over to the state of Florida. He was in agreement with the previous allocation for Monroe County that Karl Lessard stated. He noted that the recreational diver mini-season is difficult to measure and control. He added that the use of shorts as an attractant is a necessary component of lobster fishing. He added that economic and social impact studies should be done on all the fisheries that are mandated under the MSA.

Hal Osburn, Florida Keys Commercial Fishermen's Association. He stated that sociological cultural information needs to be a focus of the studies and that ACLs and AMs should be based on the current stock assessment, not a future stock assessment as it is the best available data. He felt that the spiny lobster FMP should remain under the joint jurisdiction of the GMFMC, the SAFMC, and the FFWC. He added that the state cannot keep up with the requirements of managing the spiny lobster fishery and that the restriction on the importation of illegal size spiny lobster is very important and would not exist anymore under state management. He was of the opinion that all Caribbean spiny lobster landed should be landed either all whole or all tailed, and that having that regulation would prevent the abuse of having a short carapace but a long tail.

Gary Nichols, Nichols Seafood, Islamorada, FL and Organized Fishermen of Florida. He stated that lobster catch can historically be sustained to 6 million pounds. He would like to see an allocation that is closest to the 6 million pounds. He felt that the ACL should be based on the current stock assessment. He believed that the Councils should retain management of the spiny lobster. He stated that he is in favor of modifying the tailing permit to all tailed or all whole lobster landed. He added that the coral needs to be protected and that the coral working group and the Sanctuary were trying to identify more areas that needed to be closed to achieve that goal. He noted that he lobsters in deeper water and catches ridged slipper lobster, and he felt that whatever is appropriate to protect the spawning stock, such as egg bearing females, is important.

Jeff Cramer, Organized Fishermen of Florida. He stated that the current stock assessment should be used instead of using an updated assessment that may not reflect the true condition of the spiny lobster stock because of the hurricanes and other issues. He added that about a dozen fishermen in the coral workgroup were working with NOAA's Protected Species Division to identify areas that the corals are located. He said that the fishermen were willing to do anything to protect the corals and that the lobsters are not typically located near the corals. He felt that the Councils should maintain control over the FMP. He felt that the trip ticket system was flawed because on any given day he may fish in three areas, but only records one on the trip ticket. In general, he felt that fishing in federal waters was underreported and traps were moved between federal and state waters based on season and movement of the lobster. He stated that undersized lobsters imported from other countries were a big problem for local fishers. He indicated that he uses shorts as an attractant and that they were kept in good condition before going into the trap. He added that often the shorts escape the trap indicating that they could leave the trap at any time.

Richard Stiglitz, commercial fisherman, Monroe County, FL. He indicated that he has used shorts for 40 years. He stated that he takes care of the lobsters on his boat that he uses for shorts and that there is next to no short mortality on their boats. He felt that the ACLs need to be set high on the spiny lobster because a number set too low would be devastating to the Keys communities. He also stated that in the northern Gulf (Naples to Tampa) is a population of large spawning females and it should always be protected. He did not think any fishers were currently targeting this area, but it should be protected. He was in agreement with other speakers, that federal management should stay involved.

Additional attendees who chose not to speak on Spiny Lobster:
Chris Johnson, charter boat captain, Marathon, FL
Christy Johnson, Seasquared Charters
John Bartus, Marathon Chamber of Commerce
Rick Turner, charter boat captain, Marathon, FL
Don Moll, charter boat captain
Michelle Owen, Environmental Defense Fund
David McKinney, Environmental Defense Fund
Elizabeth Prieto, Marathon, FL
Edwin Prieto, Marathon, FL
Barbara Maddox, Captain Pip's Marina & Hideaway, Marathon, FL
Leda Dunmire, Pew Environmental Group
Dawn Ward, University of Florida, Gainesville, FL
Toby Kight, Marathon, FL
John Harrison, Marathon, FL
Gigi Harrison, Marathon, FL
Donald Beechum, Marathon, FL
Paul Lebo, Marathon, FL
Gene Trag, Marathon, FL
Capt. Don Muller
Richard Turner, Marathon, FL

SUMMARY MINUTES
PUBLIC HEARING – KEY WEST, FL
SPINY LOBSTER AMENDMENT 10
JOINT AMENDMENT FOR THE GULF OF MEXICO AND SOUTH ATLANTIC FISHERY MANAGEMENT COUNCILS

September 21, 2009

Attendance:
Bob Gill, Gulf Council
Dr. Gregg Waugh, SAFMC
Dr. Carrie Simmons, Gulf Council Staff
Phyllis Miranda, Gulf Council Staff

43 Members of the Public

The public hearing was convened by Chairman Bob Gill at 6:00 p.m. Dr. Carrie Simmons reviewed the PowerPoint presentation with the public. The public was then invited to provide their comments.

John Coffin, Big Pine Key, FL. He read into the record a written statement, which is attached. In summary, he said the spiny lobster fishery should be left to Florida FWC. They are vested in dealing with allocation issues and knowledgeable of the history of the fishery as well as the diverse groups of people competing in the fishery. He listed several positive and negative reasons for the Florida FWC to take over management of the fishery. He noted that the federal management system would have a lot do deal with as far as allocation issues in the fishery if management was not given to Florida FWC.

Jim Sharpe, Jr., Big Pine Key, FL. He read into the record a written statement which is attached. In summary, he felt that Florida FWC should have full and unrestricted management of the spiny lobster fishery, because 95% of the lobster fishery occurs in state waters. He added that the state has been studying and managing the lobster fishery for years and should continue managing the fishery. He noted that the state had received money to study casitas to see if it can be used as a viable commercial gear in a portion of the commercial fishery. He indicated that the state is also studying new trap designs to decrease wind driven trap movement.

George Niles, Florida Keys Commercial Fishermen's Association. He stated that he felt that the ACL for lobster should be set using the data from SEDAR. He added that the federal government should retain management of lobster, because the resources they had access to were of more value to the fishery than those that the state government had.

Bobby Pillar, Summerland Key, FL. He stated that he supported Mr. Niles' position with regard to lobster being federally managed as opposed to state managed. He felt that something needed to be done about lobster being imported from other countries into the states before lobster season

actually opens. He noted that in agreement with spiny lobsters being landed all tailed or all whole, the tailing permit could be modified.

Peter Bacle, Stock Island Lobster Co. He stated that neither state nor federal would do a good job of managing spiny lobster. He recommended no action on splitting the recreational and charterboat sectors. He felt that the ACL should be set for the fisheries in which there is an identifiable catch, i.e. the commercial industry. He added that there was no way to identify amounts of recreational catch. He was in agreement that short mortality was not a problem, because shorts really have lower mortality inside the traps because it is safer than outside the traps. He believes that the tailing permit should be kept, and that it was not an issue because his fish house handles very few tailed lobsters.

Lee Starling, commercial diver and spear fisherman, Key West, FL. He felt that the Gulf Council should retain management of spiny lobster. He stated that he was against the use of casitas, because he felt that they do impact migration patterns. He wanted to note that all types of fisheries have bycatch or potentially unintended consequences on other species, even divers. He felt that short lobsters used as attractants can get out of the traps and that mortality is not a problem.

<u>Additional attendees who chose not to speak on Spiny Lobster</u>:
Billy Wickers III, Big Coppit Key, FL
Capt. Bill Wickers, Key West Charter Boat Assoc.
Richard Gomez, Capt. Conch, Key West, FL
Robert Nevius, charter boat captain
Daniel Padron, Key West, FL
Craig Jiovani, C&J Ent. Co. Inc. d/b/a Charter Boat Grand Slam
Brice Barr, Double Down Sportfishing
Mimi Stafford, Key West, FL
Rob Harris, Conchy Joe's Marine & Tackle
Steven Lamp, Dream Catcher Charters
Gennifer Lamp, Key West, FL
Ron Meyers, Little Torch Key, FL
David McKinney, Environmental Defense Fund
Michelle Owen, Environmental Defense Fund
Kari MacLauchlin, University of Florida
Marlin Scott, Keys Radio Group
Chuck Coleman, Key West, FL
Josh Nicklaus, Key West, FL
Juan Blanco, Key West, FL

Appendix G. Public Hearing Summary

SUMMARY OF THE PUBLIC HEARING ON
SPINY LOBSTER AMENDMENT 10
SAINT PETERSBURG BEACH, FLORIDA
MAY 9, 2011

Council and Staff
Ed Sapp
Carrie Simmons
Emily Muehlstein

6 members of the Public in Attendance

Dennis O'Hern, Fishing Rights Alliance, St. Petersburg, FL – He felt that the Councils should stop trying to set annual catch limits because it is in defiance of the Magnuson-Stevens Act to reduce the maximum sustainable yield to the annual catch limits and annual catch targets. He stated that he sent letters to NOAA legal counsel, Eric Schwaab, and Congress about his opinion that there is a problem with establishing annual catch limits. He added that this defiance of the Magnuson-Stevens Act also holds true for lobster and for finfish by setting an artificial limit on data poor fisheries that the Councils know nothing about. He also stated that, in a good lobster fishing year with good weather, the annual catch limit would get exceeded in the season and then the fishery would be penalized for it. He felt that the process for establishing annual catch limits for data poor species needed to be revised.

Additional comments
Mr. O'Hern stated that nobody was at this public hearing because he did not tell anyone to attend because it was not his job. He added that he did not tell anyone to attend because he felt that it was a waste of time based on the previous scoping meetings. He mentioned that last year the recreational sector told the Council they did not want catch shares or sector separation.

He felt that a 24-inch minimum size limit for gag should be instituted and that when annual catch limits are not met in a current year, that the underage be added to the following year's catch limit. He warned the Council that the laws are about to come tumbling down because Congress is paying attention and that the state Governors will recall some of the members of the Council due to their defiance of Congress and the Jones Amendment by using catch share money which should have been frozen.

He mentioned that the change in location of the Kenner, Louisiana and the Biloxi, Mississippi public hearings at such short notice was illegal and that no information was given about the cancelation of the Mackerel Amendment. He questioned why there was no press release that notified the public that the public hearing documents were ready and available.

Post Lobster Testimony – Informal Discussion

Some members of the public made suggestions about notifying the public for better involvement in the comment process by using the saltwater license information from the states. It was added that possibly all people with lobster stamps could be given some type of notice about upcoming public hearings. They also suggested that we send information to bait shops so it can be posted on the walls for upcoming meetings to get more public involvement and input. Some members complained that using public hearing venues near the beach was not a good area because it was not easily accessible to the general public. They also requested that we start the meetings at 6:30 p.m. so that more people could attend after the workday.

The meeting was adjourned at 7:45 p.m.

Others who attended but chose not to speak:
Libby Carnahan
Ira Pearson
Cheryl Pearson
Robert Aylesworth
Russell Arsenault

SUMMARY OF THE JOINT PUBLIC HEARINGS THE SOUTH ATLANTIC COUNCIL HOSTED ON SPINY LOBSTER AMENDMENT 10
APRIL 2011

Public Hearings: April 2011	
Location	# comments
New Bern, NC	1
N. Charleston, SC	0
Pooler, GA	1
Jacksonville, FL	1
Cape Canaveral, FL	3
Duck Key, FL	9
Key West, FL	14

Letters Received	11

Most Common Concerns for the Public
[mostly commercial trap fishermen in the Florida Keys]

1) Require gear markings on trap lines **[Action 10]**
- most commenters supported No Action, including representatives/members of Organized Fishermen of Florida (OFF) and the Florida Keys Commercial Fishermen's Association (FKCFA)
- replacing trap lines will be very costly for the trap fishermen, with few benefits for the turtles, corals, etc.
- certain colors may even attract turtles, which would create more problems
- if there has to be one color for all lobster trap lines, it should be black
- Bill Kelly (FKCFA) provided an estimate for cost of replacing all trap lines with a specific color at: $12.6 million to replace all trap lines, and loss of over $6 million in discarded rope.

2) Closed areas to protect Elkhorn and Staghorn coral **[Action 9]**
- most commenters supported No Action, including representatives/members of the Gulf Spiny Lobster Advisory Panel, Organized Fishermen of Florida (OFF), the Florida Keys Commercial Fishermen's Association (FKCFA), the Florida Keys Sanctuary Advisory Council, and the SAFMC Coral AP.
- fishermen and Sanctuary Council representatives did not feel they were adequately involved in the process of designating the areas
- industry should be involved, and can help identify more useful areas to close to protect the corals
- existing closed areas in the Keys and the limit on the number of lobster traps are sufficient in protecting Elkhorn and Staghorn corals

3) Modify Tailing Permits **[Action 8]**

- overall, comments are mixed on which alternatives would best address the problem of eliminating illegal harvest by some divers but keeping the tailing permit available for Keys trap fishermen who work in the Tortugas and other places, requiring multi-day trips.
- some supported eliminating all tailing permits (Alternative 2), including two AP members who submitted letters
- others supported the additional requirements to obtain a tailing permit (Pref Alt 3), such as boat size requirements and longer trips
- some commenters suggested limiting tailing permits to Monroe County only

4) Use of Shorts as Attractants [**Action 7]**

- most commenters supported Preferred Alternative 4 (50/boat and 1/trap) because it is consistent with Florida regulations; use of shorts make traps more efficient; using shorts as attractants does not harm the stock and has been a traditional method of fishing
- four commenters, including two South Atlantic lobster AP members, commented in support Alternative 2 (prohibition on shorts) due to high mortality and the potential spread of PaV1 in traps via shorts

5) ACL and ACT values [**Action 4]**

- most commenters felt that the ACL/ACT is set too low
- some commenters stated that the most recent season (2010-11) was already projected to exceed the ACT; the stock is considered healthy and the limits leave no room to grow
- some commenters felt that the Council should not set ACLs without adequate data and an accepted stock assessment, regardless of MSA requirements

Action 1: Remove species from the management unit.	
Public Hearings	- Few comments, but all in support of Preferred Alternative
Letters	- None

Action 2: Set MSY, Overfishing Threshold, Overfished Threshold	
Public Hearings	- Two in support of Preferred Alternative (OFL= 7.9 MP)
Letters	- None

Action 3: Sector Allocations	
Public Hearings	- None
Letters	- None

Action 4-1: ABC Control Rule	
Public Hearings	- One in support of Preferred Alternative
Letters	- None

Action 4-2: Set ACL.	
Public Hearings	- Some support for Preferred Alternative, but in general most suggested a higher ACL
Letters	- One in support of more conservative ACL (AP member)

Action 4-3: Set ACT
- Discussed in the first section, #5

Action 5: Set AMs	
Public Hearings	- One in support of AM
Letters	- None

Action 6: Update Framework Procedure and Protocol	
Public Hearings	- one in support of Preferred Alternative
Letters	- None

Action 7: Use of Shorts as Attractants [extended from #4 in the first section]	
Public Hearings	- most supported Preferred Alternative 4 - two supported Alternative 2 (no possession or use)
Letters	- two supporting Alternative 2 - three supported Preferred Alternative 4

Action 8: Modifying Tailing Permits [extended from #3 in the first section]	
Public Hearings	- mixed reactions from commenters - some commenters supported divers being allowed to have tailing permits, because divers are switching to multi-day trips to offset fuel costs - one commenter opposed Preferred Alternative 4 (all whole or all tails) because it limits flexibility for tailoring long trips for the market; another opposed because it would require lobsters caught at the end of a multi-day trip to be tailed for no reason - one commenter supported Preferred Alternative 4 because it eliminates a loophole for illegal harvest of shorts
Letters	- two commenters, including one AP member, supported Alternative 2 (eliminating tailing permits) due to enforcement problems and too many criteria that would be difficult to monitor

Action 9: Establish closed areas to protect Elkhorn and Staghorn corals [extended from #2 in the first section]	
Public Hearings	- most commenters want No Action, or this action removed from Amendment 10 and added to a future amendment to allow for a better process - some commenters brought up the impact of divers, anchors, etc. on the corals, none of which are addressed in this action - fishermen feel their input would be valuable in identifying better areas - one commenter felt that additional closed areas would result in crowding - one commenter felt that closed areas could not be enforced and would cause more problems
Letters	- one commenter supported prohibiting lobster traps in waters 30m or less - one commenter supported delayed action and more industry involvement - one commenter felt that existing closed areas were sufficient

Action 10: Require gear markings on trap lines [extended from #1 in the first section]	
Public Hearings	- most commenters want No Action or at least have the color be black - need to better evaluate effects of traps on protected species before implementing something so costly, without being sure of the benefits - one commenter suggested requiring just a spot of spray paint color to identify the lobster trap lines - one commenter suggested replacing all existing rope would generate unnecessary landfill waste
Letters	- one commenter supported color for trap lines

Action 11: Allow public to remove derelict lobster traps in the Florida EEZ	
Public Hearings	- few comments, mostly in support of Preferred Alternative
Letters	- one commenter supported Alternative 2 to allow public to remove any derelict traps

Additional Comments From Public Hearings and Letters

- One commenter felt that there was a disconnect between findings (minimal impact on protected species by lobster traps) in the Biological Opinion and the recommendations.
- Four letters recommended that: "all SAFMC council members should demand to see the PaV1 PowerPoint presentation by Mark Butler of Old Dominion University and see how the PaV1 virus is transmitted from lobster to lobster at the June 7th SAFMC meeting in Key West."
- Several commenters felt we need better science and stock assessments to make good decisions
- Two commenters raised the concern that the diving sector needed more regulations
- Two commenters felt that the State of Florida should take over management of spiny lobster

Appendix H. Maps Showing Known Locations and Conservation Priorities of *Acropora* spp. colonies in the Florida Keys.

This appendix includes 15 maps, similar to those seen in section 4. The maps in that section superimposed all proposed closed areas on top of one another in an attempt to conserve space and allow for a direct comparison of relative size. However, there was also some concern that those maps may not be entirely clear because of all the information provided. Therefore, these maps present the same information as the maps in section 4 with the exception that the large, medium, and small proposed area closures appear separately. Each map depicts the identified locations of *Acropora* spp. from 1996-2010; the location and size of the proposed closed area; the boundary between state and federal waters; known areas of hardbottom habitat; any areas currently closed to trapping for spiny lobster; along with any existing Florida Keys National Marine Sanctuary Management Areas. "*Acropora* Priority Sites" also appear on these maps. These areas represent locations requiring high priority response from individuals responding to an environmentally damaging event, such as an oil spill, because of the nature of the natural resources occurring there. These priority sites are included here only for reference and do not have any regulatory impact of fishing. The charts also show hardbottom areas that may support *Acropora* spp., even if the presence of *Acropora* spp. has not been confirmed there. *Acropora* spp. is not anticipated in non-hardbottom habitat. Since *Acropora* spp. are only known to occur on hardbottom habitat and south of U.S. Highway 1, only the maps have been truncated to only show those areas. Some overlap exists between charts.

A list of coordinates for the proposed closed areas can be found after the maps.

Maps of Proposed Large Area Closures

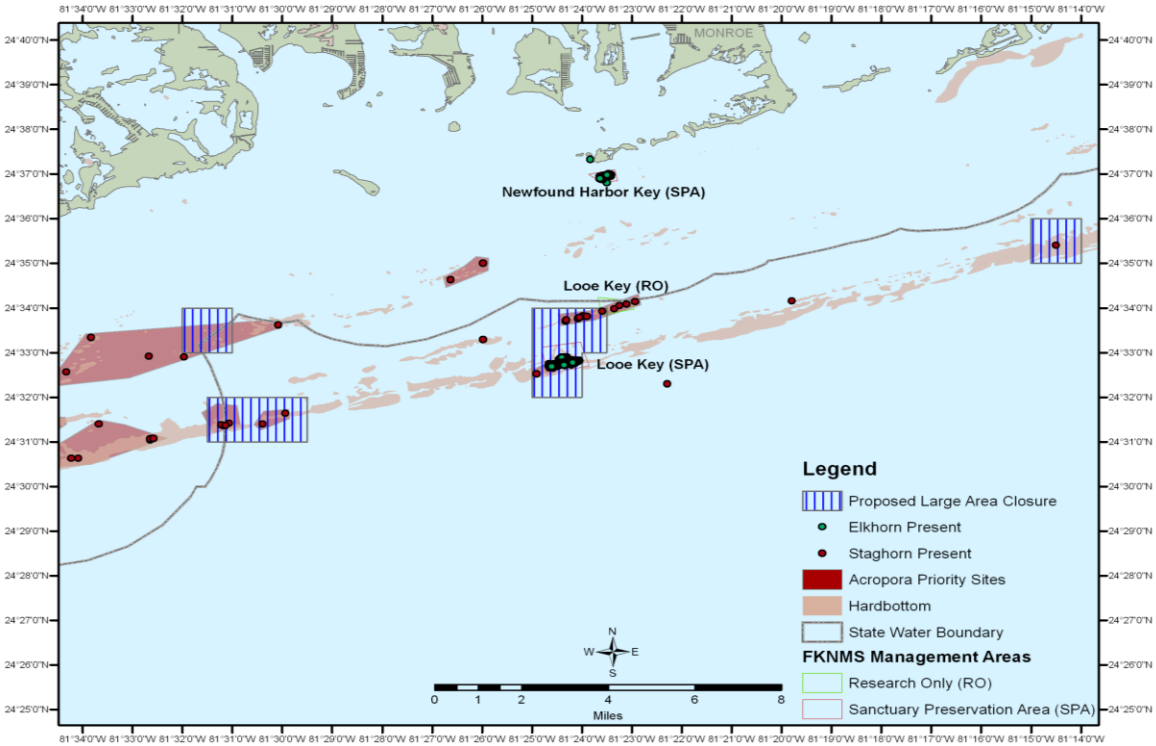

Figure 1 Proposed Large Area Closures in the Lower Keys

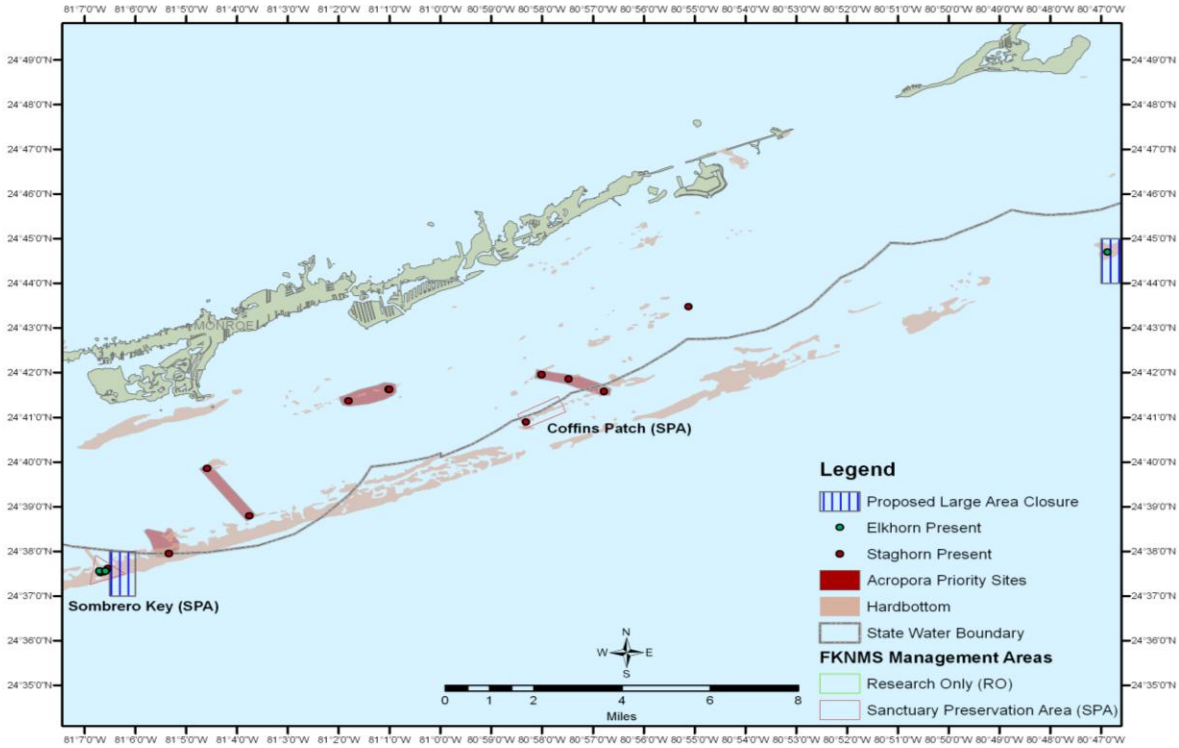

Figure 2 Proposed Large Area Closures in the Middle Keys

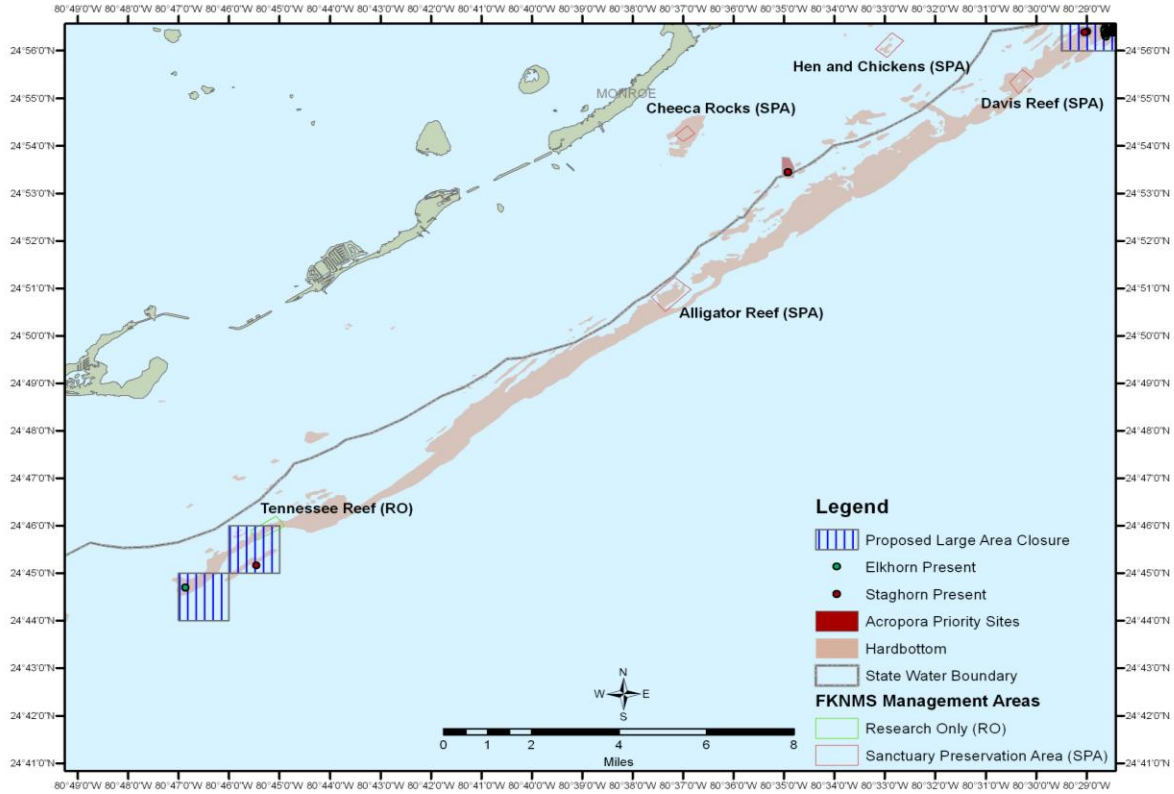

Figure 3 Proposed Large Area Closures in the Upper Keys

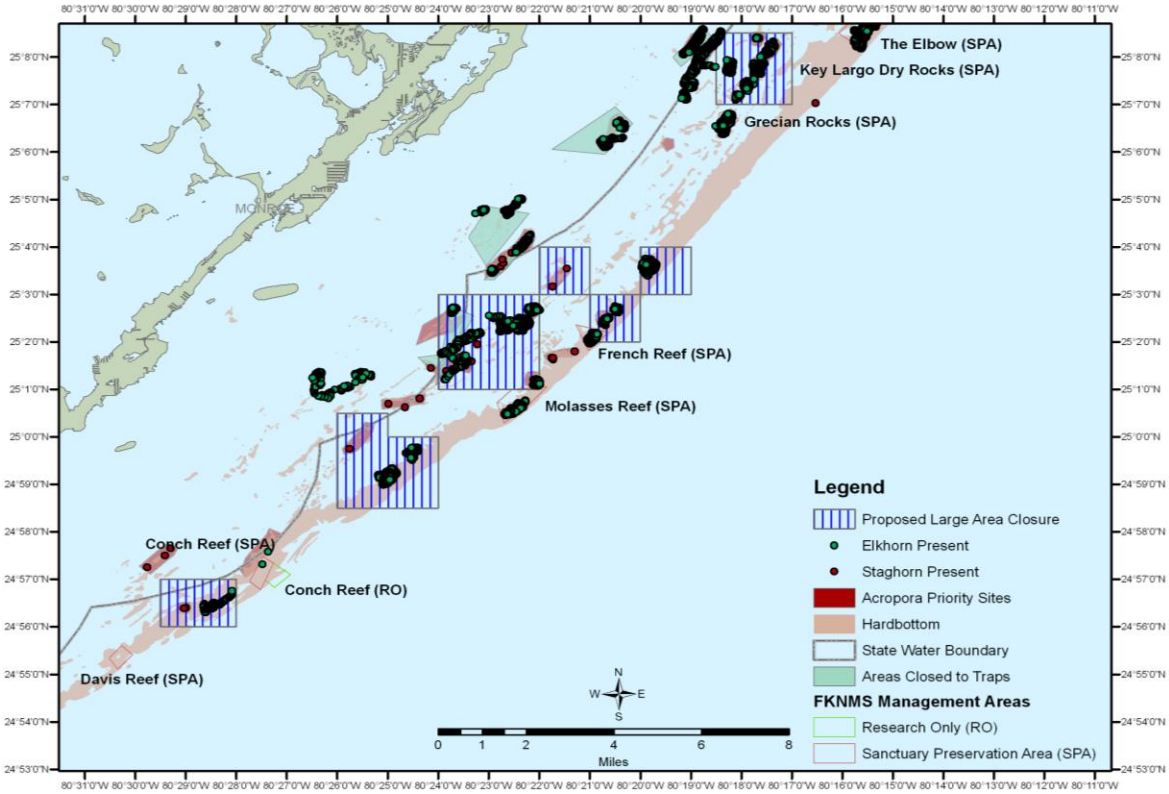

Figure 4 Proposed Large Area Closures in the Upper Keys (cont'd)

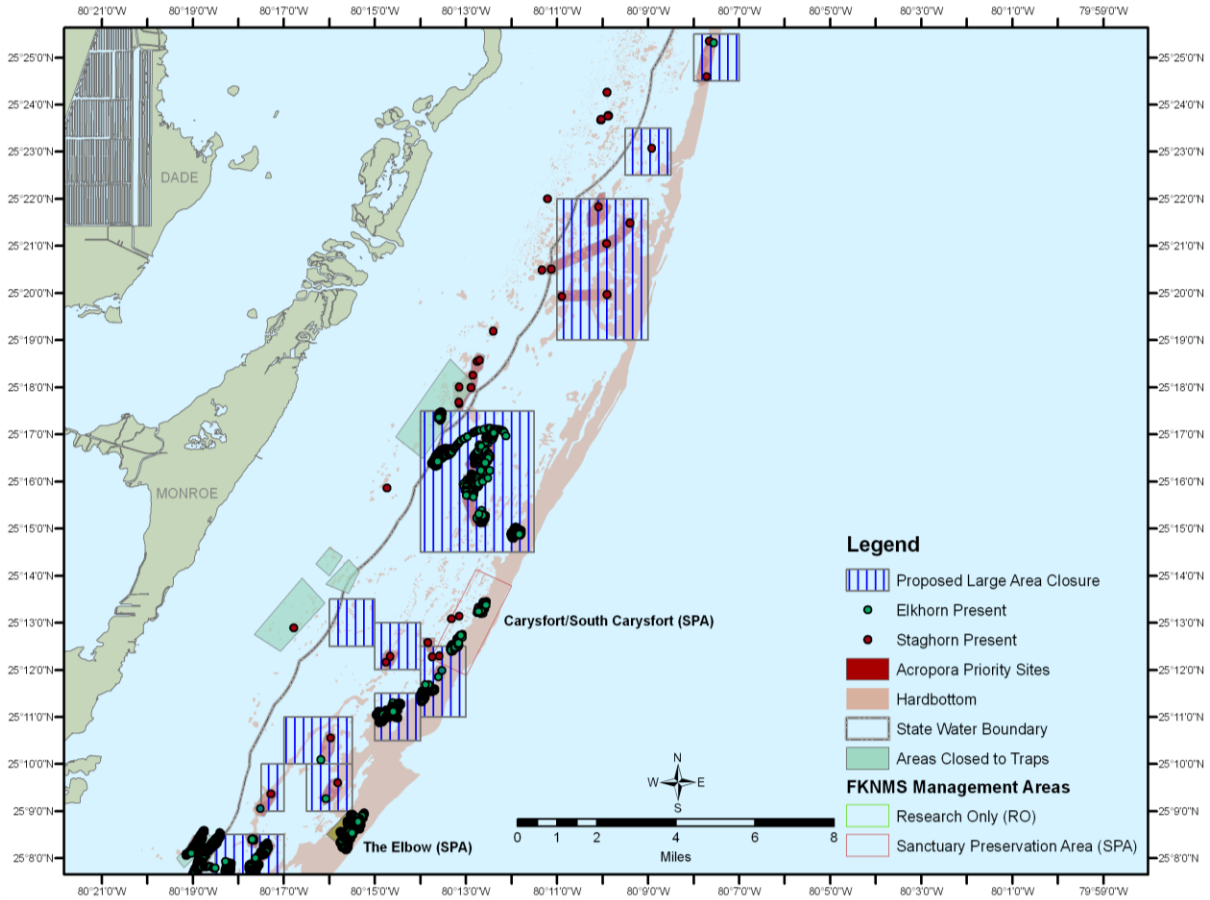

Figure 5 Proposed Large Area Closures in the Upper Keys (cont'd)

Maps of Proposed Medium Area Closures

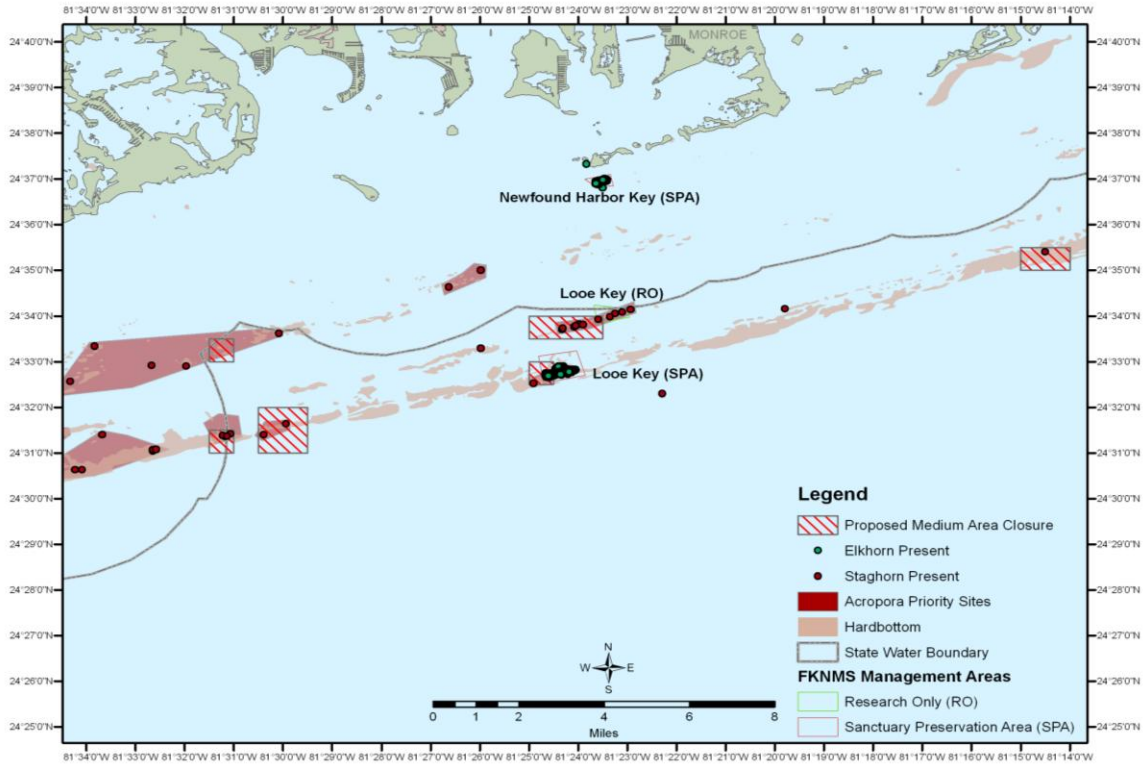

Figure 6 Proposed Medium Area Closures in the Lower Keys

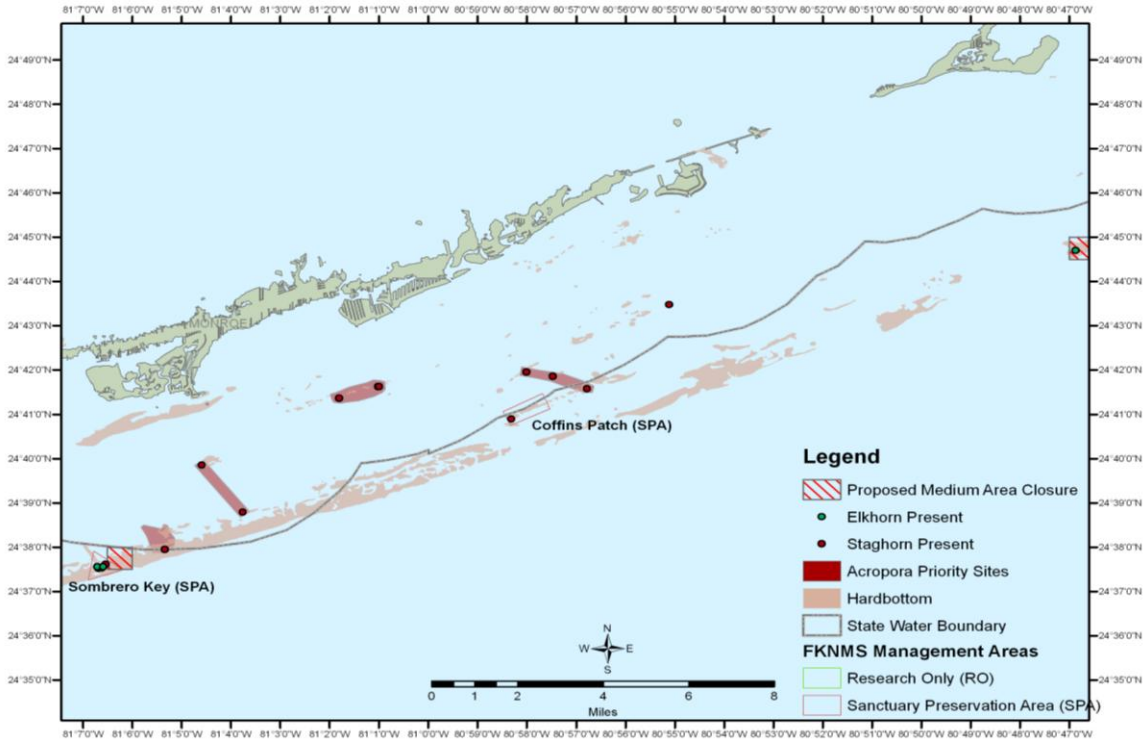

Figure 7 Proposed Medium Area Closures in the Middle Keys

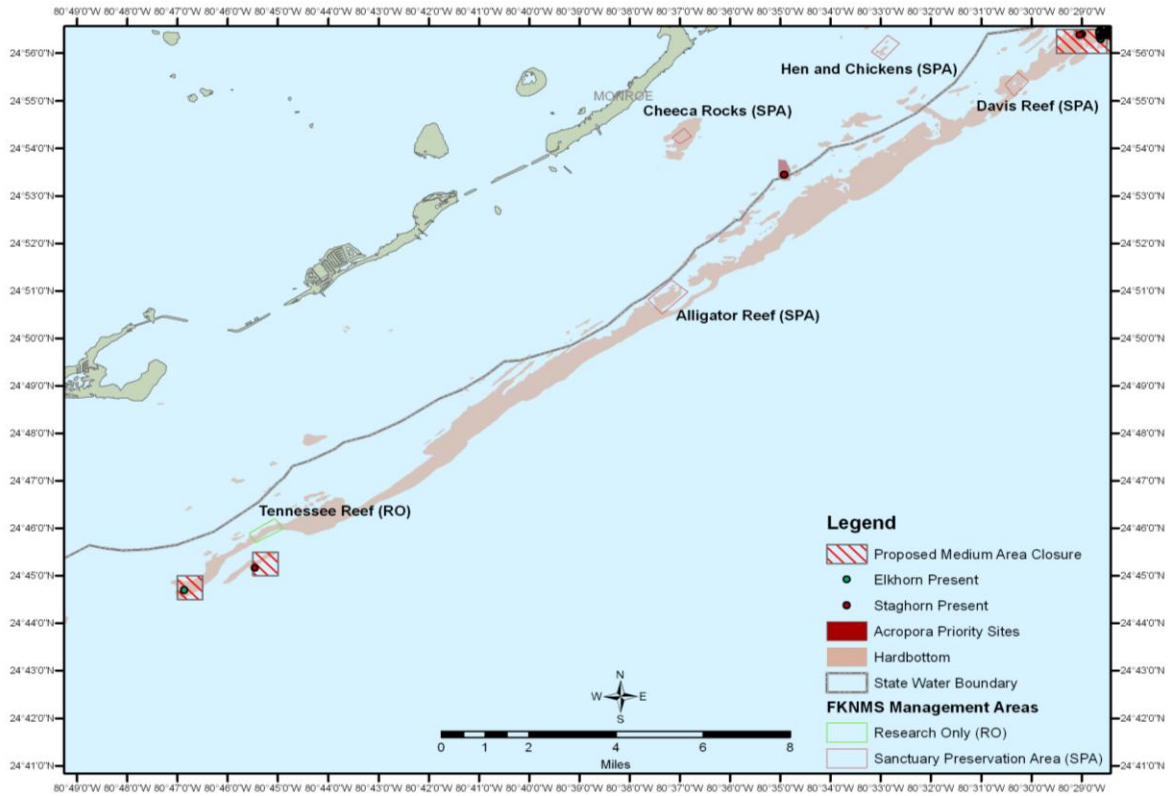

Figure 8 Proposed Medium Area Closures in the Upper Keys

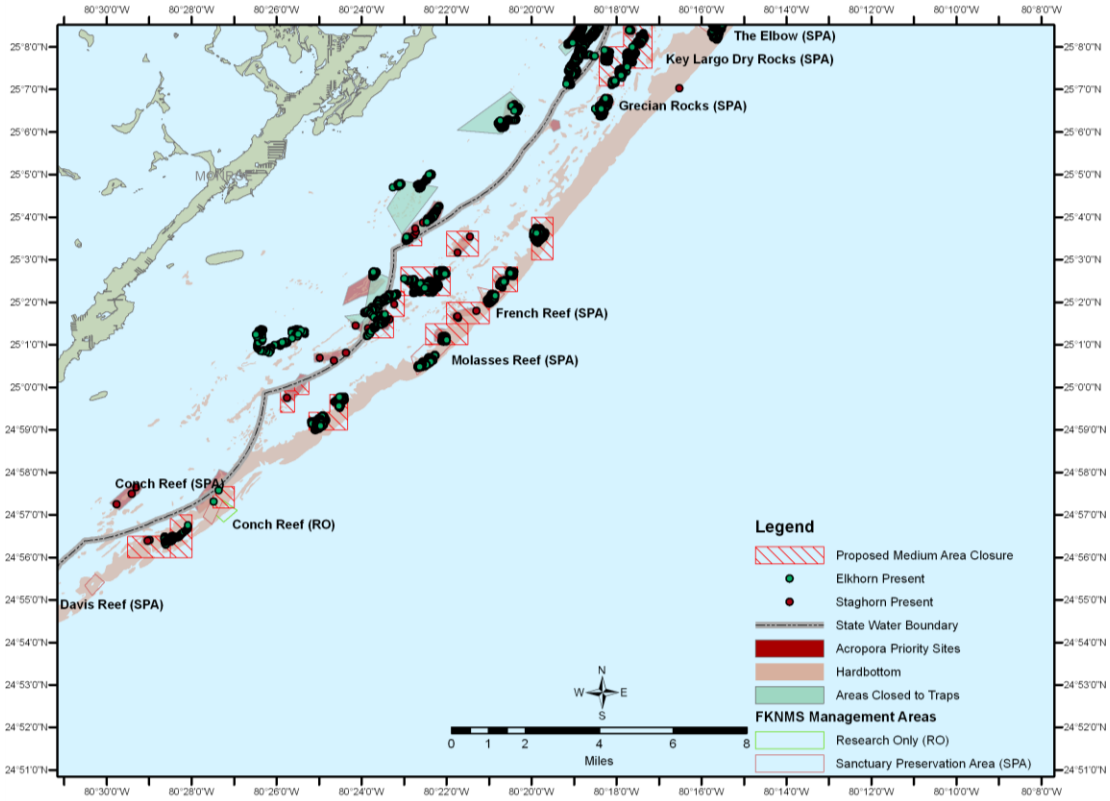

Figure 9 Proposed Medium Area Closures in the Upper Keys (cont'd)

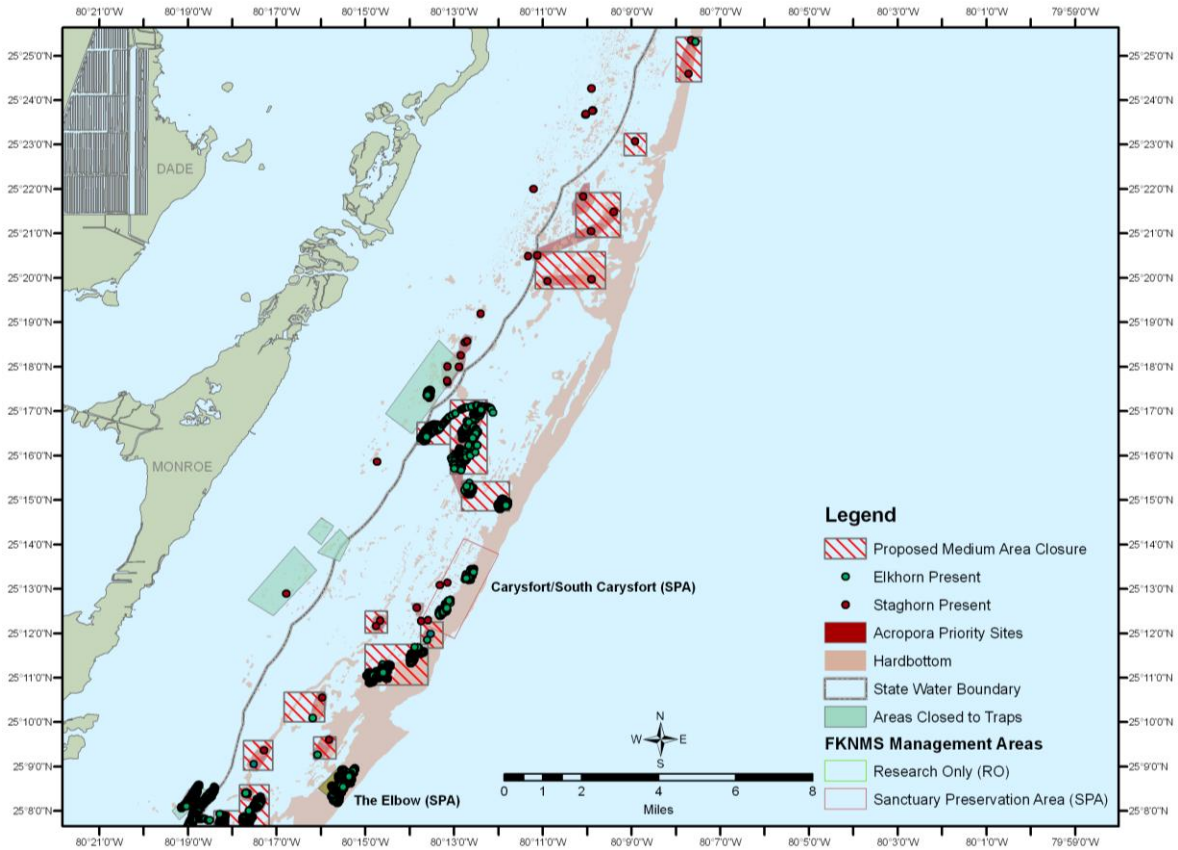

Figure 10 Proposed Medium Area Closures in the Upper Keys (cont'd)

Maps of Proposed Small Area Closures

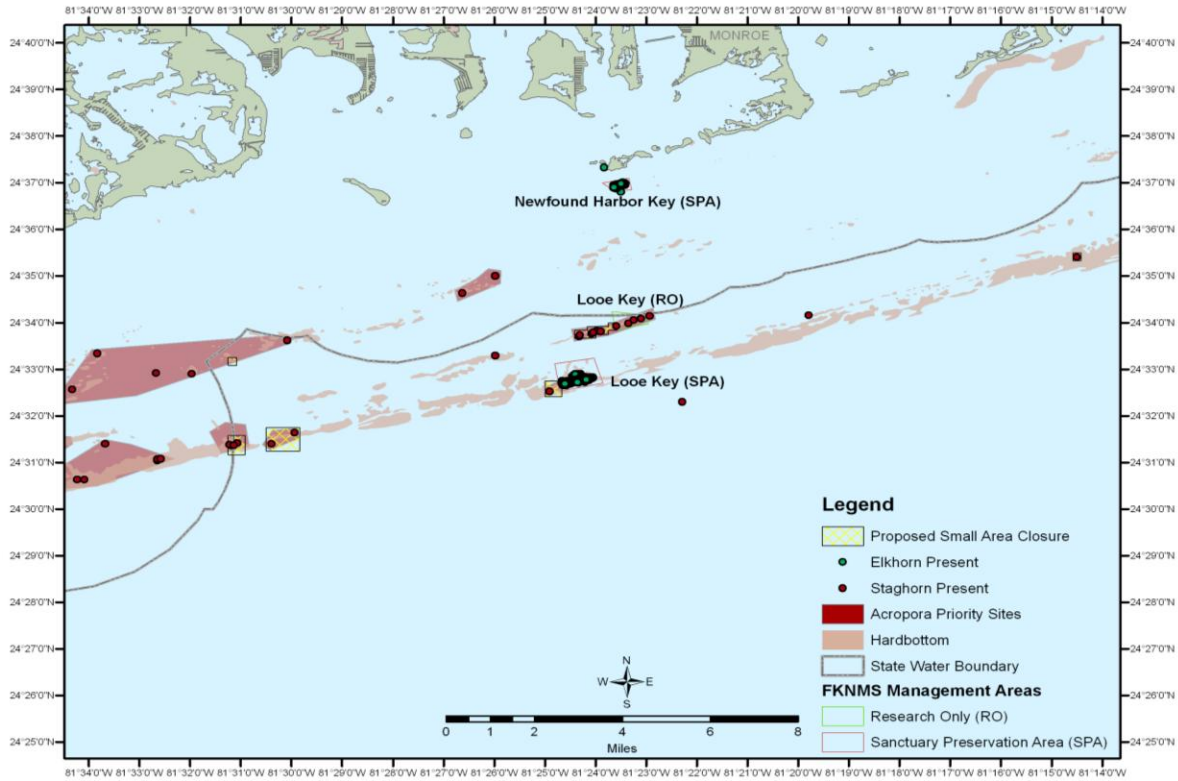

Figure 11 Proposed Small Area Closures in the Lower Keys

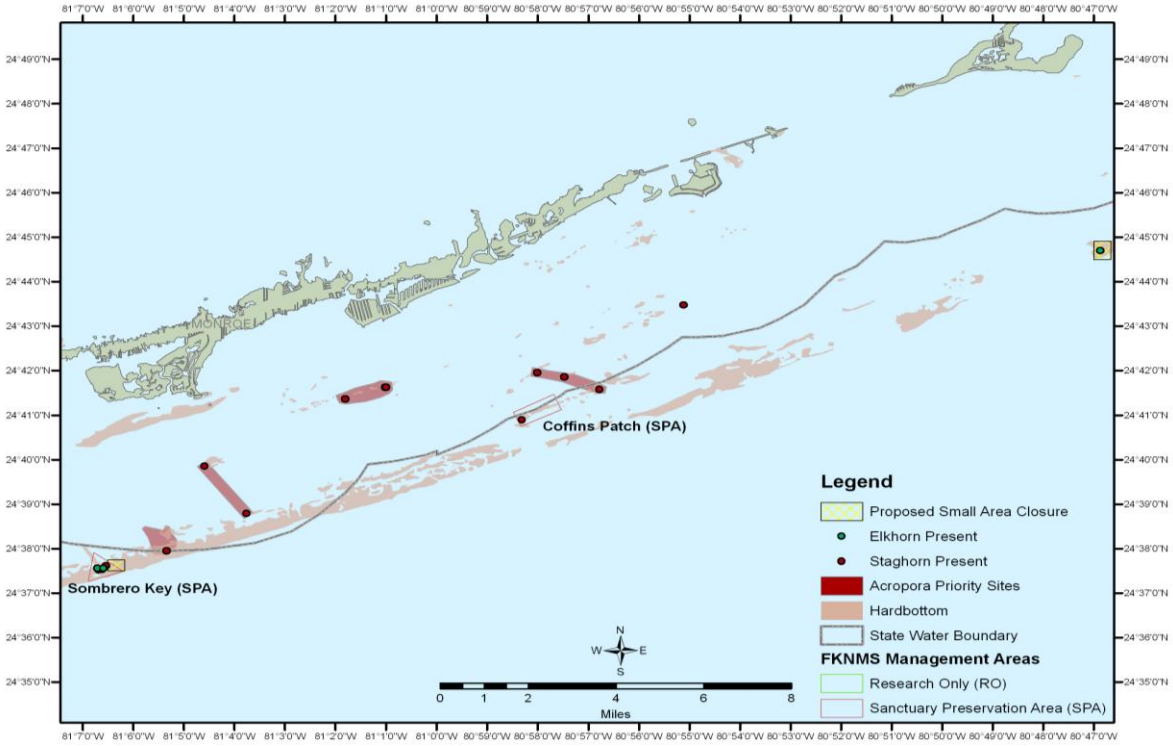

Figure 12 Proposed Small Area Closures in the Middle Keys

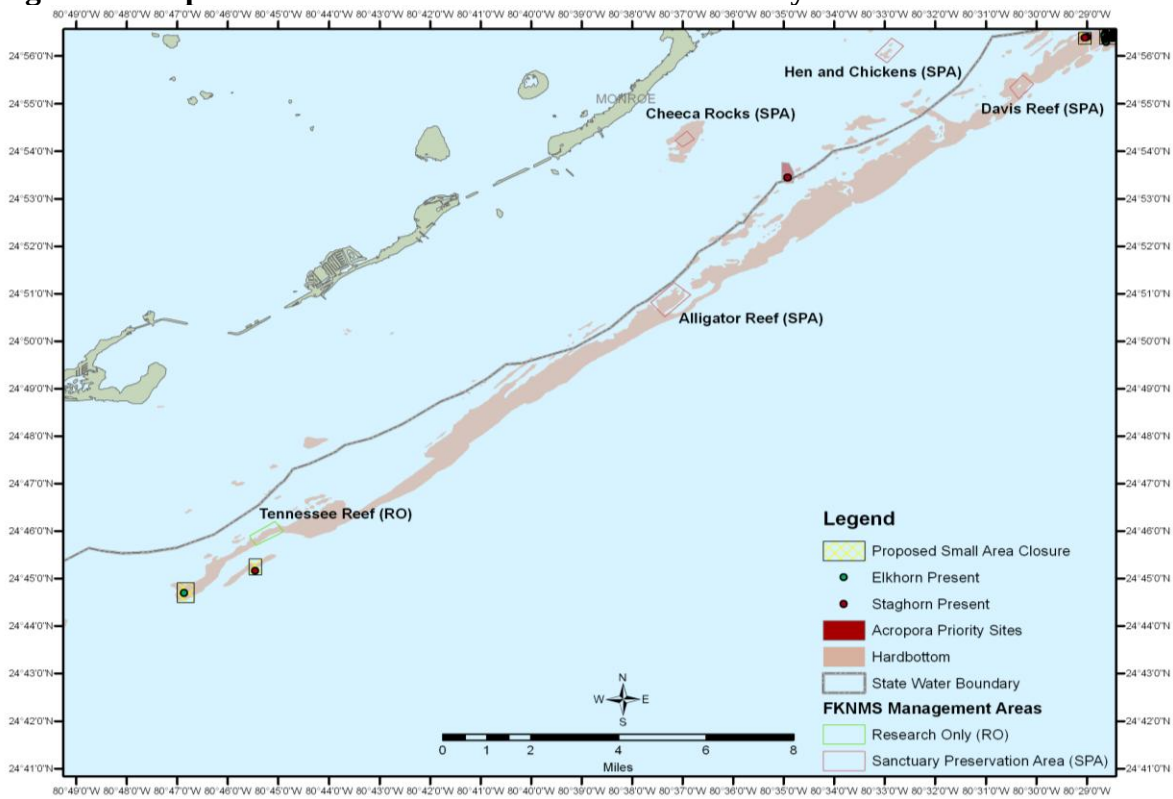

Figure 13 Proposed Small Area Closures in the Upper Keys

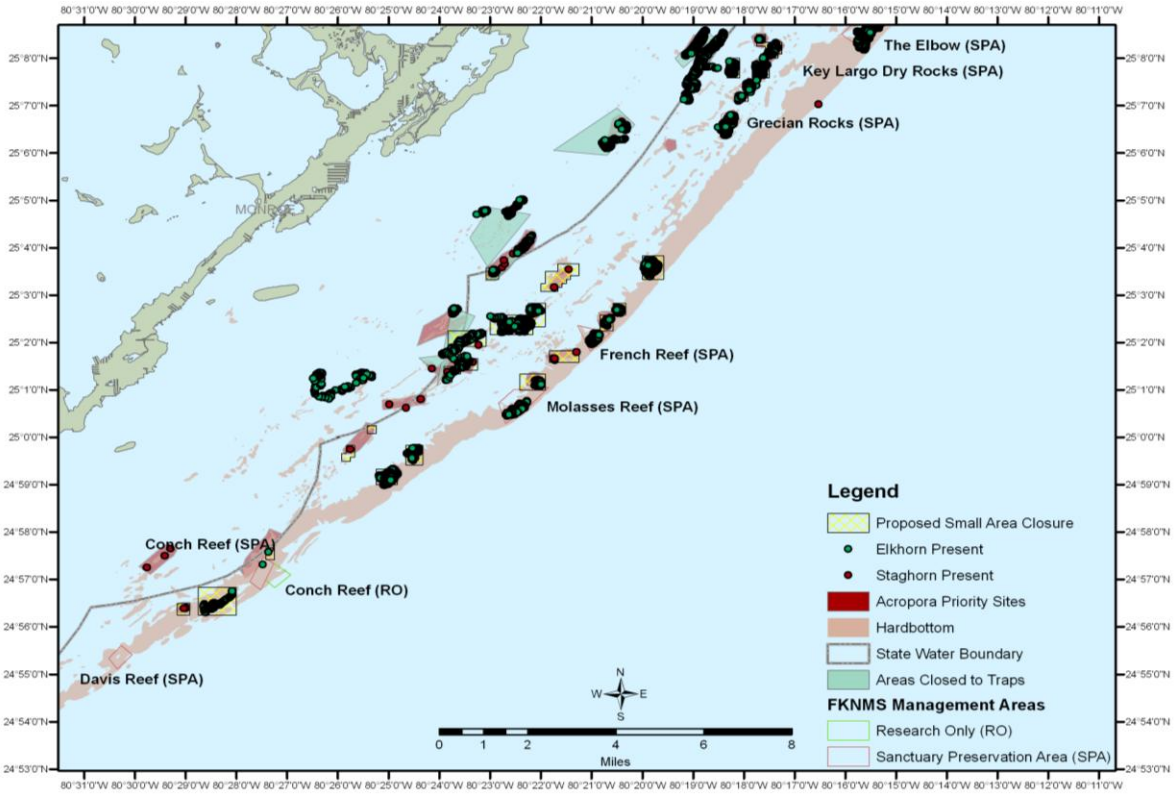

Figure 14 Proposed Small Area Closures in the Upper Keys (cont'd)

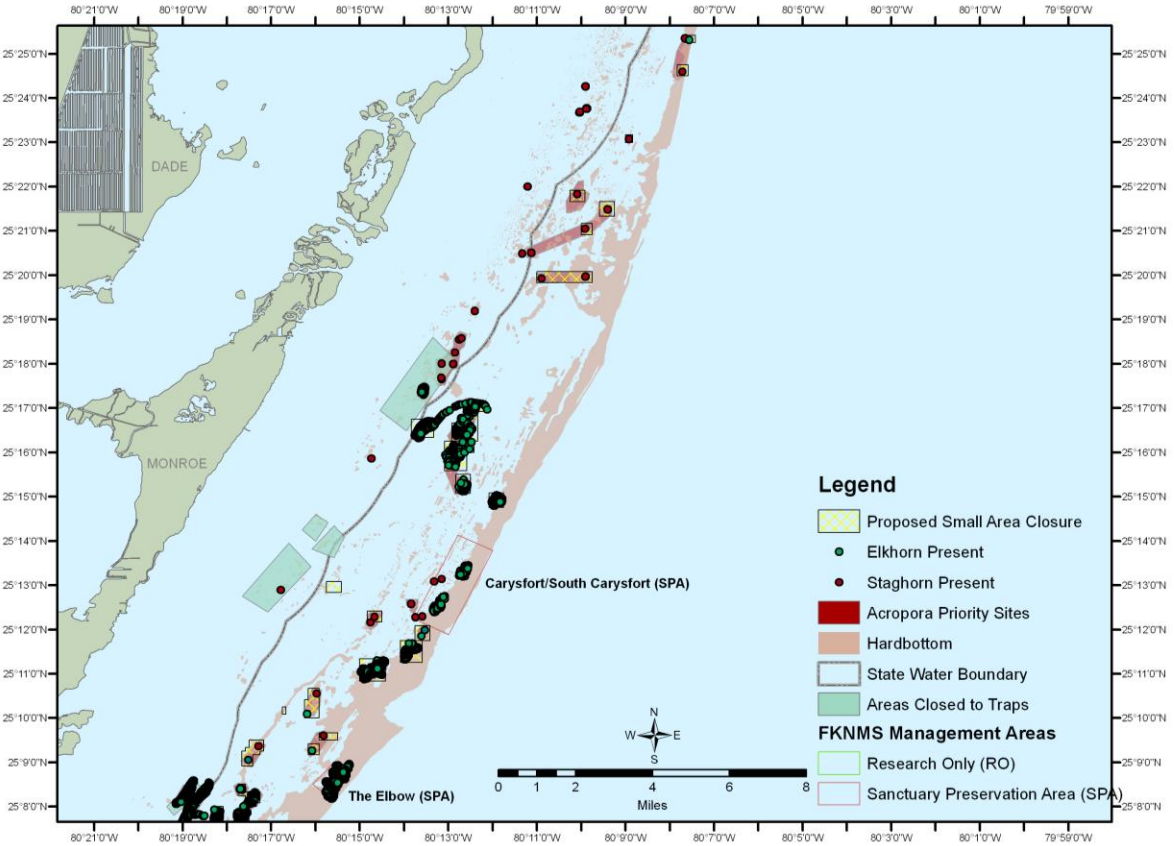

Figure 15 Proposed Small Area Closures in the Upper Keys (cont'd)

Table 1. Coordinates for Proposed Large Area Closures

Lobster Large Area 1		
Point	North Lat.	West Long.
A	24°34'0"	81°32'0"
B	24°34'0"	81°31'0"
C	24°33'0"	81°31'0"
D	24°33'0"	81°32'0"
A	24°34'0"	81°32'0"
Lobster Large Area 2		
Point	North Lat.	West Long.
A	24°32'0"	81°31'30"
B	24°32'0"	81°29'30"
C	24°31'0"	81°29'30"
D	24°31'0"	81°31'30"
A	24°32'0"	81°31'30"
Lobster Large Area 3		
Point	North Lat.	West Long.
A	24°34'0"	81°25'0"
B	24°34'0"	81°23'30"
C	24°33'0"	81°23'30"
D	24°33'0"	81°24'0"
E	24°32'0"	81°24'0"
F	24°32'0"	81°25'0"
A	24°34'0"	81°25'0"
Lobster Large Area 4		
Point	North Lat.	West Long.
A	24°36'0"	81°15'0"
B	24°36'0"	81°14'0"
C	24°35'0"	81°14'0"
D	24°35'0"	81°15'0"
A	24°36'0"	81°15'0"
Lobster Large Area 5		
Point	North Lat.	West Long.
A	24°38'0"	81°6'30"
B	24°38'0"	81°6'0"
C	24°37'0"	81°6'0"
D	24°37'0"	81°6'30"
A	24°38'0"	81°6'30"

Lobster Large Area 6		
Point	North Lat.	West Long.
A	24°45'0"	80°47'0"
B	24°45'0"	80°46'0"
C	24°46'0"	80°46'0"
D	24°46'0"	80°45'0"
E	24°45'0"	80°45'0"
F	24°45'0"	80°46'0"
G	24°44'0"	80°46'0"
H	24°44'0"	80°47'0"
A	24°45'0"	80°47'0"
Lobster Large Area 7		
Point	North Lat.	West Long.
A	24°57'0"	80°29'30"
B	24°57'0"	80°28'0"
C	24°56'0"	80°28'0"
D	24°56'0"	80°29'30"
A	24°57'0"	80°29'30"
Lobster Large Area 8		
Point	North Lat.	West Long.
A	25°0'30"	80°26'0"
B	25°0'30"	80°25'0"
C	25°0'0"	80°25'0"
D	25°0'0"	80°24'0"
E	24°58'30"	80°24'0"
F	24°58'30"	80°26'0"
A	25°0'30"	80°26'0"
Lobster Large Area 9		
Point	North Lat.	West Long.
A	25°3'0"	80°24'0"
B	25°3'0"	80°22'0"
C	25°1'0"	80°22'0"
D	25°1'0"	80°24'0"
A	25°3'0"	80°24'0"

Lobster Large Area 10		
Point	North Lat.	West Long.
A	25°4'0"	80°22'0"
B	25°4'0"	80°21'0"
C	25°3'0"	80°21'0"
D	25°3'0"	80°22'0"
A	25°4'0"	80°22'0"
Lobster Large Area 11		
Point	North Lat.	West Long.
A	25°3'0"	80°21'0"
B	25°3'0"	80°20'0"
C	25°2'0"	80°20'0"
D	25°2'0"	80°21'0"
A	25°3'0"	80°21'0"
Lobster Large Area 12		
Point	North Lat.	West Long.
A	25°4'0"	80°20'0"
B	25°4'0"	80°19'0"
C	25°3'0"	80°19'0"
D	25°3'0"	80°20'0"
A	25°4'0"	80°20'0"
Lobster Large Area 13		
Point	North Lat.	West Long.
A	25°8'30"	80°18'30"
B	25°8'30"	80°17'0"
C	25°7'0"	80°17'0"
D	25°7'0"	80°18'30"
A	25°8'30"	80°18'30"
Lobster Large Area 14		
Point	North Lat.	West Long.
A	25°10'0"	80°17'30"
B	25°10'0"	80°17'0"
C	25°9'0"	80°17'0"
D	25°9'0"	80°17'30"
A	25°10'0"	80°17'30"

Lobster Large Area 15		
Point	North Lat.	West Long.
A	25°10'0"	80°16'30"
B	25°10'0"	80°15'30"
C	25°9'0"	80°15'30"
D	25°9'0"	80°16'30"
A	25°10'0"	80°16'30"
Lobster Large Area 16		
Point	North Lat.	West Long.
A	25°11'0"	80°17'0"
B	25°11'0"	80°15'30"
C	25°10'0"	80°15'30"
D	25°10'0"	80°17'0"
A	25°11'0"	80°17'0"
Lobster Large Area 17		
Point	North Lat.	West Long.
A	25°13'30"	80°16'0"
B	25°13'30"	80°15'0"
C	25°12'30"	80°15'0"
D	25°12'30"	80°16'0"
A	25°13'30"	80°16'0"
Lobster Large Area 18		
Point	North Lat.	West Long.
A	25°11'30"	80°15'0"
B	25°11'30"	80°14'0"
C	25°10'30"	80°14'0"
D	25°10'30"	80°15'0"
A	25°11'30"	80°15'0"
Lobster Large Area 19		
Point	North Lat.	West Long.
A	25°13'0"	80°15'0"
B	25°13'0"	80°14'0"
C	25°12'0"	80°14'0"
D	25°12'0"	80°15'0"
A	25°13'0"	80°15'0"

Lobster Large Area 20		
Point	North Lat.	West Long.
A	25°12'30"	80°14'0"
B	25°12'30"	80°13'0"
C	25°11'0"	80°13'0"
D	25°11'0"	80°14'0"
A	25°12'30"	80°14'0"
Lobster Large Area 21		
Point	North Lat.	West Long.
A	25°17'30"	80°14'0"
B	25°17'30"	80°11'30"
C	25°14'30"	80°11'30"
D	25°14'30"	80°14'0"
A	25°17'30"	80°14'0"
Lobster Large Area 22		
Point	North Lat.	West Long.
A	25°22'0"	80°11'0"
B	25°22'0"	80°9'0"
C	25°19'0"	80°9'0"
D	25°19'0"	80°11'0"
A	25°22'0"	80°11'0"
Lobster Large Area 23		
Point	North Lat.	West Long.
A	25°23'30"	80°9'30"
B	25°23'30"	80°8'30"
C	25°22'30"	80°8'30"
D	25°22'30"	80°9'30"
A	25°23'30"	80°9'30"
Lobster Large Area 24		
Point	North Lat.	West Long.
A	25°25'30"	80°8'0"
B	25°25'30"	80°7'0"
C	25°24'30"	80°7'0"
D	25°24'30"	80°8'0"
A	25°25'30"	80°8'0"

Table 2. Coordinates of Proposed Medium Area Closures

Lobster Medium Area 1		
Point	North Lat.	West Long.
A	24°33'30"	81°31'30"
B	24°33'30"	81°31'0"
C	24°33'0"	81°31'0"
D	24°33'0"	81°31'30"
A	24°33'30"	81°31'30"
Lobster Medium Area 2		
Point	North Lat.	West Long.
A	24°31'30"	81°31'30"
B	24°31'30"	81°31'0"
C	24°31'0"	81°31'0"
D	24°31'0"	81°31'30"
A	24°31'30"	81°31'30"
Lobster Medium Area 3		
Point	North Lat.	West Long.
A	24°32'0"	81°30'30"
B	24°32'0"	81°29'30"
C	24°31'0"	81°29'30"
D	24°31'0"	81°30'30"
A	24°32'0"	81°30'30"
Lobster Medium Area 4		
Point	North Lat.	West Long.
A	24°34'0"	81°25'0"
B	24°34'0"	81°23'30"
C	24°33'30"	81°23'30"
D	24°33'30"	81°25'0"
A	24°34'0"	81°25'0"
Lobster Medium Area 5		
Point	North Lat.	West Long.
A	24°33'0"	81°25'0"
B	24°33'0"	81°24'30"
C	24°32'30"	81°24'30"
D	24°32'30"	81°25'0"
A	24°33'0"	81°25'0"

Lobster Medium Area 6		
Point	North Lat.	West Long.
A	24°35'30"	81°15'0"
B	24°35'30"	81°14'0"
C	24°35'0"	81°14'0"
D	24°35'0"	81°15'0"
A	24°35'30"	81°15'0"
Lobster Medium Area 7		
Point	North Lat.	West Long.
A	24°38'0"	81°6'30"
B	24°38'0"	81°6'0"
C	24°37'30"	81°6'0"
D	24°37'30"	81°6'30"
A	24°38'0"	81°6'30"
Lobster Medium Area 8		
Point	North Lat.	West Long.
A	24°45'0"	80°47'0"
B	24°45'0"	80°46'30"
C	24°44'30"	80°46'30"
D	24°44'30"	80°47'0"
A	24°45'0"	80°47'0"
Lobster Medium Area 9		
Point	North Lat.	West Long.
A	24°45'30"	80°45'30"
B	24°45'30"	80°45'0"
C	24°45'0"	80°45'0"
D	24°45'0"	80°45'30"
A	24°45'30"	80°45'30"
Lobster Medium Area 10		
Point	North Lat.	West Long.
A	24°56'30"	80°29'30"
B	24°56'30"	80°28'30"
C	24°56'0"	80°28'30"
D	24°56'0"	80°29'30"
A	24°56'30"	80°29'30"

Lobster Medium Area 11		
Point	North Lat.	West Long.
A	24°57'0"	80°28'30"
B	24°57'0"	80°28'0"
C	24°56'0"	80°28'0"
D	24°56'0"	80°28'30"
A	24°57'0"	80°28'30"
Lobster Medium Area 12		
Point	North Lat.	West Long.
A	24°57'40"	80°27'30"
B	24°57'40"	80°27'0"
C	24°57'10"	80°27'0"
D	24°57'10"	80°27'30"
A	24°57'40"	80°27'30"
Lobster Medium Area 13		
Point	North Lat.	West Long.
A	24°59'41"	80°25'55"
B	24°59'55"	80°25'55"
C	24°59'55"	80°25'35"
D	25°0'15"	80°25'35"
E	25°0'15"	80°25'15"
F	24°59'50"	80°25'15"
G	24°59'50"	80°25'35"
H	24°59'25"	80°25'35"
I	24°59'25"	80°25'55"
A	24°59'41"	80°25'55"
Lobster Medium Area 14		
Point	North Lat.	West Long.
A	24°59'25"	80°25'15"
B	24°59'25"	80°24'45"
C	24°59'50"	80°24'45"
D	24°59'50"	80°24'20"
E	24°59'0"	80°24'20"
F	24°59'0"	80°25'15"
A	24°59'25"	80°25'15"

Lobster Medium Area 15		
Point	North Lat.	West Long.
A	25°2'15"	80°24'0"
B	25°2'15"	80°23'0"
C	25°1'40"	80°23'0"
D	25°1'40"	80°24'0"
A	25°2'15"	80°24'0"
Lobster Medium Area 16		
Point	North Lat.	West Long.
A	25°1'40"	80°23'55"
B	25°1'40"	80°23'15"
C	25°1'10"	80°23'15"
D	25°1'10"	80°23'55"
A	25°1'40"	80°23'55"
Lobster Medium Area 17		
Point	North Lat.	West Long.
A	25°2'50"	80°23'5"
B	25°2'50"	80°21'55"
C	25°2'10"	80°21'55"
D	25°2'10"	80°23'5"
A	25°2'50"	80°23'5"
Lobster Medium Area 18		
Point	North Lat.	West Long.
A	25°3'50"	80°23'5"
B	25°3'50"	80°22'35"
C	25°3'20"	80°22'35"
D	25°3'20"	80°23'5"
A	25°3'50"	80°23'5"
Lobster Medium Area 19		
Point	North Lat.	West Long.
A	25°3'40"	80°22'0"
B	25°3'40"	80°21'15"
C	25°3'5"	80°21'15"
D	25°3'5"	80°22'0"
A	25°3'40"	80°22'0"

Lobster Medium Area 20		
Point	North Lat.	West Long.
A	25°1'30"	80°22'30"
B	25°1'30"	80°21'30"
C	25°1'0"	80°21'30"
D	25°1'0"	80°22'30"
A	25°1'30"	80°22'30"
Lobster Medium Area 21		
Point	North Lat.	West Long.
A	25°2'0"	80°22'0"
B	25°2'0"	80°21'0"
C	25°1'30"	80°21'0"
D	25°1'30"	80°22'0"
A	25°2'0"	80°22'0"
Lobster Medium Area 22		
Point	North Lat.	West Long.
A	25°2'50"	80°20'55"
B	25°2'50"	80°20'20"
C	25°2'15"	80°20'20"
D	25°2'15"	80°20'55"
A	25°2'50"	80°20'55"
Lobster Medium Area 23		
Point	North Lat.	West Long.
A	25°4'0"	80°20'0"
B	25°4'0"	80°19'30"
C	25°3'0"	80°19'30"
D	25°3'0"	80°20'0"
A	25°4'0"	80°20'0"
Lobster Medium Area 24		
Point	North Lat.	West Long.
A	25°8'0"	80°18'25"
B	25°8'0"	80°17'50"
C	25°8'35"	80°17'50"
D	25°8'35"	80°17'10"
E	25°7'30"	80°17'10"
F	25°7'30"	80°17'50"
G	25°7'5"	80°17'50"
H	25°7'5"	80°18'25"
I	25°7'30"	80°18'25"
A	25°8'0"	80°18'25"

Lobster Medium Area 25		
Point	North Lat.	West Long.
A	25°9'35"	80°17'45"
B	25°9'35"	80°17'5"
C	25°8'55"	80°17'5"
D	25°8'55"	80°17'45"
A	25°9'35"	80°17'45"
Lobster Medium Area 26		
Point	North Lat.	West Long.
A	25°9'40"	80°16'10"
B	25°9'40"	80°15'40"
C	25°9'10"	80°15'40"
D	25°9'10"	80°16'10"
A	25°9'40"	80°16'10"
Lobster Medium Area 27		
Point	North Lat.	West Long.
A	25°10'40"	80°16'50"
B	25°10'40"	80°15'55"
C	25°10'0"	80°15'55"
D	25°10'0"	80°16'50"
A	25°10'40"	80°16'50"
Lobster Medium Area 28		
Point	North Lat.	West Long.
A	25°12'30"	80°15'0"
B	25°12'30"	80°14'30"
C	25°12'0"	80°14'30"
D	25°12'0"	80°15'0"
A	25°12'30"	80°15'0"
Lobster Medium Area 29		
Point	North Lat.	West Long.
A	25°11'45"	80°15'0"
B	25°11'45"	80°13'35"
C	25°10'50"	80°13'35"
D	25°10'50"	80°15'0"
A	25°11'45"	80°15'0"

Lobster Medium Area 30		
Point	North Lat.	West Long.
A	25°12'15"	80°13'45"
B	25°12'15"	80°13'15"
C	25°11'40"	80°13'15"
D	25°11'40"	80°13'45"
A	25°12'15"	80°13'45"
Lobster Medium Area 31		
Point	North Lat.	West Long.
A	25°16'45"	80°13'50"
B	25°16'45"	80°13'5"
C	25°16'15"	80°13'5"
D	25°16'15"	80°13'50"
A	25°16'45"	80°13'50"
Lobster Medium Area 32		
Point	North Lat.	West Long.
A	25°17'15"	80°13'5"
B	25°17'15"	80°12'15"
C	25°15'35"	80°12'15"
D	25°15'35"	80°13'5"
A	25°17'15"	80°13'5"
Lobster Medium Area 33		
Point	North Lat.	West Long.
A	25°15'25"	80°12'50"
B	25°15'25"	80°11'45"
C	25°14'45"	80°11'45"
D	25°14'45"	80°12'50"
A	25°15'25"	80°12'50"
Lobster Medium Area 34		
Point	North Lat.	West Long.
A	25°20'35"	80°11'10"
B	25°20'35"	80°9'35"
C	25°19'45"	80°9'35"
D	25°19'45"	80°11'10"
A	25°20'35"	80°11'10"

Lobster Medium Area 35		
Point	North Lat.	West Long.
A	25°21'55"	80°10'15"
B	25°21'55"	80°9'15"
C	25°20'55"	80°9'15"
D	25°20'55"	80°10'15"
A	25°21'55"	80°10'15"
Lobster Medium Area 36		
Point	North Lat.	West Long.
A	25°23'15"	80°9'10"
B	25°23'15"	80°8'40"
C	25°22'45"	80°8'40"
D	25°22'45"	80°9'10"
A	25°23'15"	80°9'10"
Lobster Medium Area 37		
Point	North Lat.	West Long.
A	25°25'25"	80°8'0"
B	25°25'25"	80°7'25"
C	25°24'25"	80°7'25"
D	25°24'25"	80°8'0"
A	25°25'25"	80°8'0"

Table 3. Coordinates of Proposed Small Area Closures

Lobster Small Area 1		
Point	North Lat.	West Long.
A	24°33'15"	81°31'15"
B	24°33'15"	81°31'5"
C	24°33'5"	81°31'5"
D	24°33'5"	81°31'15"
A	24°33'15"	81°31'15"
Lobster Small Area 2		
Point	North Lat.	West Long.
A	24°31'35"	81°31'15"
B	24°31'35"	81°30'55"
C	24°31'10"	81°30'55"
D	24°31'10"	81°31'15"
A	24°31'35"	81°31'15"
Lobster Small Area 3		
Point	North Lat.	West Long.
A	24°31'45"	81°30'30"
B	24°31'45"	81°29'50"
C	24°31'15"	81°29'50"
D	24°31'15"	81°30'30"
A	24°31'45"	81°30'30"
Lobster Small Area 4		
Point	North Lat.	West Long.
A	24°32'45"	81°25'0"
B	24°32'45"	81°24'40"
C	24°32'25"	81°24'40"
D	24°32'25"	81°25'0"
A	24°32'45"	81°25'0"

Lobster Small Area 5		
Point	North Lat.	West Long.
A	24°33'50"	81°24'25"
B	24°33'50"	81°24'10"
C	24°33'55"	81°24'10"
D	24°33'55"	81°24'5"
E	24°33'55"	81°23'45"
F	24°34'0"	81°23'45"
G	24°34'0"	81°23'40"
H	24°34'0"	81°23'35"
I	24°33'50"	81°23'35"
J	24°33'50"	81°23'45"
K	24°33'45"	81°23'45"
L	24°33'45"	81°23'50"
M	24°33'45"	81°24'0"
N	24°33'40"	81°24'0"
O	24°33'40"	81°24'25"
A	24°33'50"	81°24'25"
Lobster Small Area 6		
Point	North Lat.	West Long.
A	24°35'30"	81°14'35"
B	24°35'30"	81°14'25"
C	24°35'20"	81°14'25"
D	24°35'20"	81°14'35"
A	24°35'30"	81°14'35"
Lobster Small Area 7		
Point	North Lat.	West Long.
A	24°37'45"	81°6'30"
B	24°37'45"	81°6'10"
C	24°37'30"	81°6'10"
D	24°37'30"	81°6'30"
A	24°37'45"	81°6'30"
Lobster Small Area 8		
Point	North Lat.	West Long.
A	24°44'55"	80°47'0"
B	24°44'55"	80°46'40"
C	24°44'30"	80°46'40"
D	24°44'30"	80°47'0"
A	24°44'55"	80°47'0"

Lobster Small Area 9		
Point	North Lat.	West Long.
A	24°45'25"	80°45'35"
B	24°45'25"	80°45'20"
C	24°45'5"	80°45'20"
D	24°45'5"	80°45'35"
A	24°45'25"	80°45'35"
Lobster Small Area 10		
Point	North Lat.	West Long.
A	24°56'30"	80°29'10"
B	24°56'30"	80°28'55"
C	24°56'15"	80°28'55"
D	24°56'15"	80°29'10"
A	24°56'30"	80°29'10"
Lobster Small Area 11		
Point	North Lat.	West Long.
A	24°56'50"	80°28'45"
B	24°56'50"	80°28'0"
C	24°56'15"	80°28'0"
D	24°56'15"	80°28'45"
A	24°56'50"	80°28'45"
Lobster Small Area 12		
Point	North Lat.	West Long.
A	24°57'40"	80°27'25"
B	24°57'40"	80°27'15"
C	24°57'25"	80°27'15"
D	24°57'25"	80°27'25"
A	24°57'40"	80°27'25"

Lobster Small Area 13		
Point	North Lat.	West Long.
A	24°59'40"	80°25'55"
B	24°59'40"	80°25'50"
C	24°59'50"	80°25'50"
D	24°59'50"	80°25'45"
E	24°59'50"	80°25'40"
F	24°59'35"	80°25'40"
G	24°59'35"	80°25'45"
H	24°59'30"	80°25'45"
I	24°59'30"	80°25'55"
K	24°59'35"	80°25'55"
A	24°59'40"	80°25'55"
Lobster Small Area 14		
Point	North Lat.	West Long.
A	25°0'15"	80°25'25"
B	25°0'15"	80°25'15"
C	25°0'5"	80°25'15"
D	25°0'5"	80°25'25"
A	25°0'15"	80°25'25"
Lobster Small Area 15		
Point	North Lat.	West Long.
A	24°59'20"	80°25'15"
B	24°59'20"	80°24'50"
C	24°59'0"	80°24'50"
D	24°59'0"	80°25'15"
A	24°59'20"	80°25'15"
Lobster Small Area 16		
Point	North Lat.	West Long.
A	24°59'50"	80°24'40"
B	24°59'50"	80°24'20"
C	24°59'25"	80°24'20"
D	24°59'25"	80°24'40"
A	24°59'50"	80°24'40"

Lobster Small Area 17		
Point	North Lat.	West Long.
A	25°2'15"	80°23'35"
B	25°2'15"	80°23'5"
C	25°1'55"	80°23'5"
D	25°1'55"	80°23'35"
E	25°1'40"	80°23'35"
F	25°1'40"	80°23'50"
G	25°2'15"	80°23'50"
A	25°2'15"	80°23'35"
Lobster Small Area 18		
Point	North Lat.	West Long.
A	25°1'40"	80°23'40"
B	25°1'40"	80°23'15"
C	25°1'25"	80°23'15"
D	25°1'25"	80°23'35"
E	25°1'20"	80°23'35"
F	25°1'20"	80°23'45"
G	25°1'10"	80°23'45"
H	25°1'10"	80°23'55"
I	25°1'30"	80°23'55"
J	25°1'30"	80°23'40"
A	25°1'40"	80°23'40"
Lobster Small Area 19		
Point	North Lat.	West Long.
A	25°3'35"	80°23'5"
B	25°3'35"	80°22'50"
C	25°3'20"	80°22'50"
D	25°3'20"	80°23'5"
A	25°3'35"	80°23'5"

Lobster Small Area 20		
Point	North Lat.	West Long.
A	25°2'35"	80°23'0"
B	25°2'35"	80°22'15"
C	25°2'50"	80°22'15"
D	25°2'50"	80°21'55"
E	25°2'20"	80°21'55"
F	25°2'20"	80°22'10"
G	25°2'10"	80°22'10"
H	25°2'10"	80°23'0"
A	25°2'35"	80°23'0"
Lobster Small Area 21		
Point	North Lat.	West Long.
A	25°1'20"	80°22'25"
B	25°1'20"	80°21'55"
C	25°1'0"	80°21'55"
D	25°1'0"	80°22'25"
A	25°1'20"	80°22'25"

Lobster Small Area 22		
Point	North Lat.	West Long.
A	25°3'15"	80°22'0"
B	25°3'15"	80°21'55"
C	25°3'30"	80°21'55"
D	25°3'30"	80°21'40"
E	25°3'30"	80°21'40"
F	25°3'40"	80°21'40"
G	25°3'40"	80°21'35"
H	25°3'40"	80°21'20"
I	25°3'40"	80°21'15"
J	25°3'25"	80°21'15"
K	25°3'25"	80°21'20"
L	25°3'25"	80°21'25"
M	25°3'20"	80°21'25"
N	25°3'20"	80°21'30"
O	25°3'15"	80°21'30"
P	25°3'15"	80°21'35"
Q	25°3'10"	80°21'35"
R	25°3'10"	80°21'40"
S	25°3'5"	80°21'40"
T	25°3'5"	80°22'0"
A	25°3'15"	80°22'0"
Lobster Small Area 23		
Point	North Lat.	West Long.
A	25°1'50"	80°21'50"
B	25°1'50"	80°21'15"
C	25°1'35"	80°21'15"
D	25°1'35"	80°21'50"
A	25°1'50"	80°21'50"
Lobster Small Area 24		
Point	North Lat.	West Long.
A	25°2'35"	80°20'50"
B	25°2'35"	80°20'35"
C	25°2'15"	80°20'35"
D	25°2'15"	80°20'50"
A	25°2'35"	80°20'50"

Lobster Small Area 25		
Point	North Lat.	West Long.
A	25°2'50"	80°20'35"
B	25°2'50"	80°20'20"
C	25°2'35"	80°20'20"
D	25°2'35"	80°20'35"
A	25°2'50"	80°20'35"
Lobster Small Area 26		
Point	North Lat.	West Long.
A	25°3'50"	80°20'0"
B	25°3'50"	80°19'35"
C	25°3'20"	80°19'35"
D	25°3'20"	80°20'0"
A	25°3'50"	80°20'0"
Lobster Small Area 27		
Point	North Lat.	West Long.
A	25°8'0"	80°18'20"
B	25°8'0"	80°18'5"
C	25°7'35"	80°18'5"
D	25°7'35"	80°18'20"
A	25°8'0"	80°18'20"
Lobster Small Area 28		
Point	North Lat.	West Long.
A	25°7'15"	80°18'10"
B	25°7'15"	80°17'55"
C	25°7'5"	80°17'55"
D	25°7'5"	80°18'10"
A	25°7'15"	80°18'10"
Lobster Small Area 29		
Point	North Lat.	West Long.
A	25°7'55"	80°17'50"
B	25°7'55"	80°17'30"
C	25°7'35"	80°17'30"
D	25°7'35"	80°17'50"
A	25°7'55"	80°17'50"

Lobster Small Area 30		
Point	North Lat.	West Long.
A	25°8'30"	80°17'45"
B	25°8'30"	80°17'35"
C	25°8'20"	80°17'35"
D	25°8'20"	80°17'15"
E	25°8'5"	80°17'15"
F	25°8'5"	80°17'20"
G	25°8'0"	80°17'20"
H	25°8'0"	80°17'40"
I	25°8'5"	80°17'40"
J	25°8'5"	80°17'35"
K	25°8'15"	80°17'35"
L	25°8'15"	80°17'45"
A	25°8'30"	80°17'45"
Lobster Small Area 31		
Point	North Lat.	West Long.
A	25°9'15"	80°17'40"
B	25°9'15"	80°17'35"
C	25°9'20"	80°17'35"
D	25°9'20"	80°17'30"
E	25°9'30"	80°17'30"
F	25°9'30"	80°17'10"
G	25°9'15"	80°17'10"
H	25°9'15"	80°17'15"
I	25°9'10"	80°17'15"
J	25°9'10"	80°17'25"
K	25°8'55"	80°17'25"
L	25°8'55"	80°17'40"
A	25°9'15"	80°17'40"
Lobster Small Area 32		
Point	North Lat.	West Long.
A	25°10'15"	80°16'45"
B	25°10'15"	80°16'40"
C	25°10'5"	80°16'40"
D	25°10'5"	80°16'45"
A	25°10'15"	80°16'45"

Lobster Small Area 33		
Point	North Lat.	West Long.
A	25°10'25"	80°16'15"
B	25°10'25"	80°16'10"
C	25°10'40"	80°16'10"
D	25°10'40"	80°15'55"
E	25°10'0"	80°15'55"
F	25°10'0"	80°16'15"
A	25°10'25"	80°16'15"
Lobster Small Area 34		
Point	North Lat.	West Long.
A	25°9'25"	80°16'10"
B	25°9'25"	80°15'55"
C	25°9'10"	80°15'55"
D	25°9'10"	80°16'10"
A	25°9'25"	80°16'10"
Lobster Small Area 35		
Point	North Lat.	West Long.
A	25°9'40"	80°15'55"
B	25°9'40"	80°15'30"
C	25°9'30"	80°15'30"
D	25°9'30"	80°15'55"
A	25°9'40"	80°15'55"
Lobster Small Area 36		
Point	North Lat.	West Long.
A	25°13'5"	80°15'45"
B	25°13'5"	80°15'25"
C	25°12'50"	80°15'25"
D	25°12'50"	80°15'45"
A	25°13'5"	80°15'45"
Lobster Small Area 37		
Point	North Lat.	West Long.
A	25°12'25"	80°14'50"
B	25°12'25"	80°14'30"
C	25°12'10"	80°14'30"
D	25°12'10"	80°14'50"
A	25°12'25"	80°14'50"

Lobster Small Area 38		
Point	North Lat.	West Long.
A	25°11'20"	80°15'0"
B	25°11'20"	80°14'25"
C	25°10'50"	80°14'25"
D	25°10'50"	80°15'0"
A	25°11'20"	80°15'0"
Lobster Small Area 39		
Point	North Lat.	West Long.
A	25°11'45"	80°14'5"
B	25°11'45"	80°13'35"
C	25°11'15"	80°13'35"
D	25°11'15"	80°14'5"
A	25°11'45"	80°14'5"
Lobster Small Area 40		
Point	North Lat.	West Long.
A	25°12'5"	80°13'45"
B	25°12'5"	80°13'25"
C	25°11'45"	80°13'25"
D	25°11'45"	80°13'45"
A	25°12'5"	80°13'45"
Lobster Small Area 41		
Point	North Lat.	West Long.
A	25°16'45"	80°13'50"
B	25°16'45"	80°13'20"
C	25°16'20"	80°13'20"
D	25°16'20"	80°13'50"
A	25°16'45"	80°13'50"

Lobster Small Area 42		
Point	North Lat.	West Long.
A	25°17'10"	80°12'40"
B	25°17'10"	80°12'10"
C	25°16'55"	80°12'10"
D	25°16'55"	80°12'20"
E	25°16'15"	80°12'20"
F	25°16'15"	80°12'55"
G	25°16'40"	80°12'55"
H	25°16'40"	80°12'45"
I	25°16'50"	80°12'45"
J	25°16'50"	80°12'40"
A	25°17'10"	80°12'40"
Lobster Small Area 43		
Point	North Lat.	West Long.
A	25°16'15"	80°13'5"
B	25°16'15"	80°12'25"
C	25°16'0"	80°12'25"
D	25°16'0"	80°12'35"
E	25°15'35"	80°12'35"
F	25°15'35"	80°13'5"
A	25°16'15"	80°13'5"
Lobster Small Area 44		
Point	North Lat.	West Long.
A	25°15'30"	80°12'50"
B	25°15'30"	80°12'30"
C	25°15'5"	80°12'30"
D	25°15'5"	80°12'50"
A	25°15'30"	80°12'50"
Lobster Small Area 45		
Point	North Lat.	West Long.
A	25°15'5"	80°12'5"
B	25°15'5"	80°11'45"
C	25°14'45"	80°11'45"
D	25°14'45"	80°12'5"
A	25°15'5"	80°12'5"

Lobster Small Area 46		
Point	North Lat.	West Long.
A	25°21'55"	80°10'15"
B	25°21'55"	80°9'55"
C	25°21'40"	80°9'55"
D	25°21'40"	80°10'15"
A	25°21'55"	80°10'15"
Lobster Small Area 47		
Point	North Lat.	West Long.
A	25°21'10"	80°10'0"
B	25°21'10"	80°9'45"
C	25°20'55"	80°9'45"
D	25°20'55"	80°10'0"
A	25°21'10"	80°10'0"

Lobster Small Area 48		
Point	North Lat.	West Long.
A	25°20'5"	80°11'0"
B	25°20'5"	80°9'45"
C	25°19'50"	80°9'45"
D	25°19'50"	80°11'0"
A	25°20'5"	80°11'0"
Lobster Small Area 49		
Point	North Lat.	West Long.
A	25°21'40"	80°9'35"
B	25°21'40"	80°9'15"
C	25°21'20"	80°9'15"
D	25°21'20"	80°9'35"
A	25°21'40"	80°9'35"
Lobster Small Area 50		
Point	North Lat.	West Long.
A	25°23'10"	80°9'0"
B	25°23'10"	80°8'50"
C	25°23'0"	80°8'50"
D	25°23'0"	80°9'0"
A	25°23'10"	80°9'0"
Lobster Small Area 51		
Point	North Lat.	West Long.
A	25°24'45"	80°7'50"
B	25°24'45"	80°7'35"
C	25°24'30"	80°7'35"
D	25°24'30"	80°7'50"
A	25°24'45"	80°7'50"
Lobster Small Area 52		
Point	North Lat.	West Long.
A	25°25'25"	80°7'40"
B	25°25'25"	80°7'25"
C	25°25'15"	80°7'25"
D	25°25'15"	80°7'40"
A	25°25'25"	80°7'40"

Appendix I. Biological Opinion.

The 2009 Biological Opinon on the Gulf of Mexico and South Atlantic Spiny Lobster Fishery is located at:

http://sero.nmfs.noaa.gov/pr/esa/Fishery%20Biops/Final%20SL%20BO.pdf

Appendix J. EPA Comments

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
REGION 4
ATLANTA FEDERAL CENTER
61 FORSYTH STREET
ATLANTA, GEORGIA 30303-8960

June 1, 2011

Dr. Roy E. Crabtree
Regional Administrator
Southeast Regional Office
National Oceanic and Atmospheric Administration
263 13th Avenue South
St. Petersburg, Florida 33701

Subject: EPA NEPA Review Comments on NOAA's DEIS for "Amendment 10 to the Fishery Management Plan for Spiny Lobster in the Gulf of Mexico and South Atlantic"; CEQ #20110116

Dear Dr. Crabtree:

The U.S. Environmental Protection Agency (EPA) has reviewed the subject National Oceanic and Atmospheric Administration (NOAA) Draft Environmental Impact Statement (DEIS) in accordance with our responsibilities under Section 102(2)(C) of the National Environmental Policy Act (NEPA) and Section 309 of the Clean Air Act. EPA understands that the purpose and need for Amendment 10 is to bring the spiny lobster fishery management plan into compliance with new requirements of the Magnuson-Stevens Fishery Conservation and Management Act (MSA) and to meet requirements of the Endangered Species Act (ESA). EPA also understands that the spiny lobster fishery management plan (FMP) is the jointly managed by the Gulf of Mexico and South Atlantic Fishery Management Councils (Councils).

It is our understanding that NOAA proposes 11 actions within the DEIS which include: 1) removal of lobster species from the FMP; 2) modification of maximum sustainable yield (MSY), overfishing & overfished; 3) establishment of sector allocations; 4) establishment of an acceptable biological catch (ABC) rule, annual catch limits (ACL), annual catch targets (ACT); 5) establishment of accountability measures (AM); 6) update of the framework procedure and protocol for enhanced cooperative management; 7) modification of regulations regarding use of undersized lobster as attractants; 8) modification of regulations regarding tailing permits; 9) closure of areas to protect threatened coral species; 10) requirement of trap line markings; and 11) removal of derelict traps.

The proposed action will impact the management of the following species[1]:

- Caribbean spiny lobster, *Panulirus argus*
- Smoothtail spiny lobster, *Panulirus laevicauda*

[1] P. S-3

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- Spotted spiny lobster, *Panulirus guttatus*
- Spanish slipper lobster, *Scyllarides aequinoctialis*
- Ridged slipper lobster, *Scyllarides nodifer*

EPA has a responsibility to review and comment on major Federal actions significantly affecting the quality of the human environment, including FMPs and FMP Amendments (Amendments) as developed, approved, and implemented under the MSA where those Plans and Amendments are subject to the EIS requirement of NEPA, but it should be clear that we defer to NOAA and the Councils as to the development of fishery statistics and the relative importance of the commercial and recreational fisheries for each species.

EPA appreciates that several alternatives for proposed actions were presented and that preferred alternatives were identified in the DEIS. Based on our review, we offer the following comments for the preferred alternatives for the 11 actions covered within the DEIS.

Actions and Alternatives:

Action – 1: Removal of lobster species from the FMP

- It is unclear from the table on page S-6 if all four of the species listed under the preferred alternative are being removed from the FMP, although it is somewhat clarified at the bottom of the page with a small table that has proposed species for removal. EPA notes that the text on page 17 is also unclear regarding how many species are being proposed for removal from the FMP. Later in the DEIS it is stated that **preferred alternative 4** would remove any or all of the other lobster species from the FMP.[2] EPA recommends that the preferred alternative in the FEIS specifically identify which species are being proposed for removal from the FMP.
- It is stated in the summary section of the DEIS that two species are currently managed under the existing FMP, while five species are included in plan. It is unclear in the summary section which species are currently managed in the FMP. EPA recommends clarification in the FEIS.
- EPA recommends additional discussion in the FEIS on why certain species are not managed under the existing FMP.
- It is stated in the DEIS that some of the species proposed for removal may not meet the National Standard 1 guidelines for an ecosystem component species designation. Based on our review of the DEIS it is our understanding that designating species as ecosystem component species as proposed under **alternative 3** would allow for continued data collection. This additional data could be used to determine if future management is needed. EPA recommends additional discussion be provided in the FEIS regarding the "pros and cons" of listing or not listing species as ecosystem component species.

[2] P. 115

Action 2: Modification of MSY, overfishing & overfished

- EPA defers to the Councils in setting the Maximum Sustainable Yields, Overfishing and Overfished Thresholds for the Caribbean Spiny Lobster.
- Under the preferred alternative the Councils propose to use 7.90 million pounds for the MSY proxy, which is the overfishing limit recommended by the Gulf of Mexico Scientific and Statistical Committee (Gulf SSC). The FEIS should provide further discussion on how the MSY proxy value was derived by the Gulf SSC.

Action 3: Establishment of sector allocations

- EPA defers to the Councils in establishment of sector allocations.
- The following statement is made when referring to the potential for ecological, biological, and physical impacts of setting sector allocations under Action 3, "The range of commercial allocations (74-80%) is not sufficient to affect the number of lobster traps used so there would be no change in the impacts from lobster traps."[3] EPA believes that additional background on the potential impacts to the environment from commercial versus recreational fishing for Caribbean Spiny Lobster should provided in the FEIS. This additional information should be presented in a manner to assist the reader in understanding the true environmental impact of setting versus not setting sector allocations.

Action 4: Establishment of ABC, ACL, ACT

- EPA defers to the Councils in setting acceptable biological catch control rules, annual catch limits, and annual catch targets for the Caribbean Spiny Lobster, however EPA does request clarification on **preferred alternative 2 option C**. Specifically, EPA recommends additional information be provided in the FEIS regarding the basis for setting the ACT at 6.0 million pounds.
- Two preferred alternatives are selected for the ACT on page S-11, while only one preferred alternative is selected for the ACT on page 29. The preferred alternative should be clearly defined in the FEIS.
- A description of the relevance of bolding certain values in Table 4.4.2.2 should be provided in the FEIS. EPA notes that the discussion provided on the proceeding page (p.136) does provide some clarification of this table.

Action 5: Establishment of accountability measures

- EPA defers to the Councils in establishment of accountability measures.
- A note provided at the top of page 31 indicates that more than one alternative, option, sub-option, or combination thereof, may be chosen as preferred, yet **alternative 4** is selected as the preferred alternative. EPA suggests clarification in the FEIS regarding the selection of a preferred alternative.

[3] P. 128

- Under the preferred alternative, **alternative 4**, the Councils propose to use an ACT of 6.0 million pounds as the AM. As stated above, EPA recommends additional information be provided in the FEIS regarding the basis for setting the ACT at 6.0 million pounds.

Action 6: Update of the framework procedure and protocol for enhanced cooperative management

- EPA notes that two preferred alternatives have been selected under Action 6. The first preferred alternative **(alternative 2)** addresses the current Protocol for Enhanced Cooperative Management and the other **(alternative 4: option a)** addresses the current Regulatory Amendment Procedures to develop a Framework Procedure to modify ACLs and AMs. EPA finds the discussion of Action 6 to be somewhat confusing for the reader, since two preferred alternatives have been selected and essentially two actions are being discussed. It may be more appropriate to separate Action 6 into two separate actions with their own alternatives analysis.
- Although EPA does not oppose the selection of **alternative 4: option a** as one of the preferred alternatives under Action 6, we do encourage more robust public involvement/engagement similar to **alternative 4: option c**.
- The preferred alternative should be labeled in table 2.6.2.

Action 7: Modification of regulations regarding use of undersized lobster as attractants

- EPA notes that preferred **alternative 4** tracks the State of Florida regulations and would make enforcement more effective.
- EPA agrees that bringing federal regulations more in line with the State of Florida regulations for the possession and handling of juvenile Caribbean Spiny Lobsters as "undersized attractants" will ease some of the enforcement concerns. However, EPA notes that the preferred alternative is less protective of juvenile Caribbean Spiny Lobsters than the existing regulation, 50CFR 640.21 (c), which allows no more than 50 undersized Caribbean Spiny Lobsters, or one per trap aboard the vessel, whichever is greater. Based on EPA's understanding of the preferred alternative, a fisherman could possess 50 juvenile Caribbean Spiny Lobsters in addition to one per trap. As started in the DEIS, some mortality, although low, would be expected. EPA finds it unclear why fisherman would need more juvenile Caribbean Spiny Lobsters than traps aboard. Please clarify in the FEIS.

Action 8: Modification of regulations regarding tailing permits;

- EPA supports the selection of both preferred **alternatives 3 and 4**, which would result in the greatest biological benefit.
- EPA recommends combining **alternatives 3 and 4** into a fifth alternative, since both have been selected as the preferred alternative. This would allow for the selection of alternative 3, 4, or a combination of the two.

Action 9: Closure of areas to protect threatened coral species

- A note provided at the top of page S-22 indicates that more than one alternative may be chosen as preferred, yet only one alternative is selected as the preferred throughout the DEIS (with one exception on p. 167), **alternative 3: option a**. The preferred alternative should be clearly defined in the FEIS.
- EPA notes that **alternative 2** would provide the greatest biological benefit to the *Acropora* corals but would also have the greatest economic impact because it would close approximately 73 square miles of the EEZ off Florida to trapping. EPA recommends that quantification of economic impacts in the context of all of the alternatives be included in the FEIS. This additional information would assist the reader in understanding the potential economic impact of the proposed alternatives.
- EPA notes the statement: "Alternative 4 differs from Preferred Alternative 3 in that it covers all fishing for spiny lobster, but the economic difference may be small if the waters are sufficiently deep that the lobsters are accessible primarily with traps and not diving."[4] It is unclear why **alternative 4: option a** was not selected as the preferred alternative, due to being more protective of the *Acropora* corals and minimal differences of economic impact between **alternative 3: option a** and **alternative 4: option a**. EPA notes that the Councils' decision may be based on Action 1 – removal of species from the FMP, but this should be made clear in the FEIS. In addition, as stated in the DEIS, "alternative 4 would be easier to enforce because any boat in a closed area with lobster on board would be in violation of regulations."[5] EPA recommends additional clarification in the FEIS regarding why **alternative 3: option a** was selected as the preferred alternative.

Action 10: Requirement of trap line markings

- Action 10 appears to be specific to gear markings for spiny lobster traps used in the EEZ off Florida only. Although EPA notes that the majority of the Caribbean Spiny Lobster fishing takes place off the coast of Florida, it is unclear why a similar action hasn't been proposed for gear markings off waters in other states covered by this DEIS (North Carolina, South Carolina, Georgia, Alabama, Mississippi, Louisiana, and Texas).

Action 11: Removal of derelict traps

- Similar to Action 10, Action 11 appears to be specific to the removal of derelict or abandoned spiny lobster traps found in the EEZ off Florida only. EPA is unclear on why similar action is not being proposed for the removal of traps off waters in other states covered by this DEIS (North Carolina, South Carolina, Georgia, Alabama, Mississippi, Louisiana, and Texas).

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[4] P. 176
[5] P. 178

General Comments:

Demographics/Social Vulnerability - EPA appreciates NOAA's efforts to evaluate potential environmental justice issues posed by Amendment 10 of the Spiny Lobster Fishery Management Plan. The DEIS examines county and state demographics for minority and low-income populations using 2000 and 2007 estimates from the U.S. Census Bureau. According to the DEIS, the demographic information presented includes those South Florida Counties that are most reliant on Spiny Lobster, commercially and recreationally. According to the DEIS, there are two coastal Florida counties (Miami-Dade and Broward Counties) along the proposed Fishery-Management areas that are considered minority and/or low-income. Both counties contain substantial minority populations. Miami-Dade County also has a substantial percentage of residents living below poverty relative to the state (16.1% vs. 12.6%). EPA notes a demographic error on page 108 which indicates that the residents in Miami-Dade are **74.4%** White (77.8% State) and **61.7%** Hispanic populations (20.5% State). We are also unclear why the county demographics in other coastal states affected by this fishery management plan are not included in the DEIS. EPA request clarification on how the fishing port cities and counties were determined to be "representative" of the fisheries of concern.

EPA appreciates the inclusion of the map in the DEIS of South Florida Counties with fishing communities that are geocoded based on their social vulnerability (i.e., unemployment, poverty, education, etc) using 2000 Census data. The social vulnerability map indicates that fishing communities in Miami-Dade, Martin, Palm Beach, Sarasota, St. Lucie, and Charlotte Counties are highly vulnerable to coastal environmental hazards and social disruptions including regulatory changes.[6]

Environmental Justice – Although proposed FMPs/Amendments are implemented for the sake of recovering the fishery, they can have societal effect on fishers. These affects can be equally or unequally distributed among fishers. Section 3.5.1. (Page 112) states that, "it is anticipated that the impacts of this amendment may affect communities with environmental justice concerns..." It is then stated that the impacts of Amendment 10 should not discriminate against any group and implies that the FMP will affect all groups in the same manner. While this may be true, the effect of the impact may vary based on the vulnerability of populations affected. For example, the DEIS documents landings and values for the top fifteen species for several coastal areas in south Florida (Figures 3.5.3 – 3.5.14). According to the DEIS, Caribbean spiny lobster is by far the most valuable species landed in Miami with over 60% of the value of the total landings and accounting for over 30% of the landings (Figure 3.5.12),[7] yet Miami-Dade County has higher than average poverty and is listed as highly vulnerable (Figure 3.5.1) which is not the case for other coastal areas described in the DEIS.

Public Participation – It is important to incorporate and discuss the public participation activities related to EJ associated with the project. There is no discussion of the public participation process related to EJ communities. Given that two coastal counties Miami-

[6] P. 99
[7] P. 108

Dade and Broward have substantial Hispanic populations, the DEIS should include some discussion about the strategies used to meaningfully engage or outreach to these communities in the decision-making and assessment process (i.e., Spanish materials/translators provided during the public involvement process, etc). EPA notes that two public hearing were held to discuss the Spiny Lobster Amendment 10, one in Key West Florida and the other in Marathon Florida (Appendix F). However, it is not clear that representatives of these communities were involved or that any issues they have were identified. EPA recommends more EJ specific outreach efforts for these public participation opportunities.

Section 5 – Fishery Impact Analysis/Social Impact Statement
No information is provided under this section in our copy of the DEIS. Please provide Section 5 in the FEIS.

Color Figures and Tables in DEIS
EPA found figures and tables in the DEIS copies delivered to the Region very difficult to review. Several figures and tables required color copies to interpret. EPA was able to download a pdf version off the Council's website for review. For future documents, please provide color copies of documents that require color to interpret. EPA does note that NOAA provided additional color copies of proposed closure areas which were helpful.

EPA DEIS Rating:

Although some clarification comments were offered for this DEIS, EPA generally supports NOAA and the Councils on Amendment 10 and gives deference to their fishery expertise. Therefore, EPA rates this DEIS as "LO" (Lack of Objections). Nevertheless, we request that NOAA and the Councils directly respond to our comments in a dedicated section of the FEIS.

EPA appreciates the opportunity to review the DEIS. Should NOAA have questions regarding our comments on the Amendment actions, please feel free to contact Dan Holliman at 404/562-9531 or holliman.daniel@epa.gov and for EJ comments please contact Ntale Kajumba at 404/562-9620 or kajumba.ntale@epa.gov of my staff.

Sincerely,

Heinz J. Mueller
Chief, NEPA Program Office
Office of Policy and Management

Appendix K. Response to DEIS Comments

Including comments from the EPA, 6 comments were received from individuals and organizations during the 45-day comment period on the DEIS. The following is a response to these comments. The EPA classified the DEIS and proposed actions as "LO" (Lack of Objections) and will publish these findings in the Federal Register. The following are responses to the public comments received. All comments received were posted to Federal e-Rulemaking Portal (http://www.regulations.gov, docket number: **NOAA-NMFS-2011-0106**).

Comment 1: The Councils and NMFS should be more conservative and set an ACL less than the ten-year mean.

Response: The preferred alternative for Action 4-2 sets ACL at 7.32 mp based on the recommendation for ABC by the Gulf SSC. Based on population genetics and physical transport data, juvenile spiny lobster that settle in south Florida have a high probability of recruiting from several spawning populations throughout the greater Caribbean and are not locally self-recruited. Therefore, landings in south Florida are unlikely to have a substantial effect on future recruitment there. In addition, current effort is limited by the number of trap tags issued by the State of Florida, commercial and recreational bag limits, and the length of the fishing season. Although fishers could fish more often and fish during a longer part of the season to increase effort, they presumably are already fishing at the level they desire because regulations do not prohibit such increased effort. Further, the preferred alternative for Action 4-3 sets an ACT at 90% of the ACL. If the ACT is exceeded in any year, the Council will convene a scientific review panel to consider if changes to the ACL, ACT, or accountability measures are needed to prevent landings from exceeding the ACL.

Comment 2: Tailing and the tailing permit should be eliminated. Law enforcement concerns still exist, especially concerning spearing of lobster and removing the tail to hide it.

Response: Under the preferred alternative, all vessels would be required to have either 1) a federal spiny lobster permit or 2) a Florida Restricted Species Endorsement and a Crawfish Endorsement associated with a Florida Saltwater Products License to obtain a tailing permit. Applications and renewals of the federal tailing permit by state permit holders would require those individuals to submit a copy of their SPL. These requirements would restrict federal tailing permits to only commercial lobster fishermen. Thus recreational divers could not obtain a tailing permit and use that to conceal illegal activity. Commercially permitted lobster divers would still be able to obtain a tailing permit and unscrupulous fishermen could remove evidence of the illegal act of spearing a spiny lobster.

Comment 3: Trap line markings need more discussion before implementation. The requirement is unnecessary and burdensome, fishermen already mark traps and buoys, and entanglements are rare.

Response: The Council chose "no action" as their preferred alternative for Action 10. Additional meetings with fishermen and other stakeholders will take place to determine the least burdensome method for trap line marking.

Comment 4: The Council and NMFS should not implement regulations on lobster before considering regulations to fish for Goliath grouper because Goliath grouper eat lobster.

Response: Many species prey on spiny lobster, particularly juvenile lobster. Gray triggerfish and octopus are considered particularly aggressive predators. The harvest of goliath grouper in the Gulf EEZ was prohibited under Reef Fish Amendment 2. Until a new stock assessment shows this species is no longer overfished, the moratorium is expected to continue.

Comment 5: Amendment 10 is not sufficient to prevent overfishing and keep landings within the ACL. Specifically, the preferred alternative for Action 5 to use the ACT as an accountability measure is not sufficient. Smooth-tailed spiny lobster, spotted spiny lobster, and Spanish slipper lobster should be ecosystem component species to promote ecosystem-based management and provide precautionary protection to the species.

Response: Currently, no quotas constrain harvest of Caribbean spiny lobster; commercial trap fishing for Caribbean spiny lobster is managed by restricting the number of trap tags issued by the State of Florida. Therefore, unless the state increases the number of trap tags it distributes, the number of traps could not increase even if more landings were allowed. Although fishers could fish more often and fish during a longer part of the season to increase effort, they presumably are already fishing at the level they desire because regulations do not prohibit such increased effort.

The preferred alternative for ACT is 90% of the ACL (6.59 mp). If this level of landings is exceeded during any fishing year, the Council would convene a scientific panel to review the ACL, ACT, and accountability measures. Although this would not prevent an overage of the ACL, landings are unlikely to increase so rapidly as to exceed the 10% buffer between the ACT and the ACL. Landings have not been higher than the ACL (7.32 mp) since the 2000/2001 fishing season, and the recent 10-year average is nearly 2 mp less than the ACL.

Based on the current data collection programs, if species were removed from the FMP, but landed and sold to a federal dealer, landings data would still be recorded for these species. This would negate any reason to designate them as ecosystem component species for data collection purposes alone. Further if the Councils chose to establish regulations for these species then they would have to be listed within the FMU which requires a full plan amendment to do so, regardless of if they are currently in the FMP or not.

Comment 6: From the EPA (see Appendix J).

Response: <u>Action 1</u> – All of the comments under this action were addressed in the FEIS in the sections referred to in the EPA comments. However, the team would like to clarify the fourth bullet regarding this action. Our understanding is the Council's designation of species as "ecosystem component species" does not in itself provide better data collection. The current federal recreational system would need to be modified to include invertebrates in addition to finfish. Further any species landed at a federally authorized dealer would be recorded, regardless of whether the species is in a fishery management plan or not. If the Councils chose to leave these species in the FMP and want to establish regulations they would have to place them within the Fishery Management Unit to do so and this action requires a full plan amendment. Therefore, designating species as ecosystem component species for data collection purposes only would not provide any additional benefits under the current system. The team included this information in the FEIS in Section 2.1 and 4.1.

Action 2 – *The discussion of the derivation of the MSY proxy was expanded in the FEIS in Section 2.2.*

Action 3 – *Section 4.9.1 of Amendment 10 includes information on potential commercial trap impacts on the environment. Section 3 of the Biological Opinion includes information on the potential impacts from the commercial and recreational spiny lobster fisheries on Acropora spp. Impacts to targeted and non-targeted species are discussed in the Bycatch Practicability Analysis;a reference to this has been added in Section 4.3. Given that potential impacts from the spiny lobster fishery is at most temporary and insignificant, establishing allocations would not impact the environment and potential commercial allocations of 74-80% would have no affect on the environment either.*

Action 4 – *Subsequent to publication of the DEIS, the Councils changed the preferred alternative for ACT during their June 2011 joint meeting. The ACT is set at 90% of ACL, providing a 10% buffer from ACL. The rationale for this decision is included in the FEIS in Sections 2.4 and 4.4. The other comments were also addressed in the FEIS in the sections referred to in the EPA comments.*

Action 5 - *The note at the top of page 31 has been removed because a single preferred alternative has been chosen. Subsequent to the publication of the DEIS, the Council changed their preferred alternative for ACT to equal a value that is 90% of the ACL or 6.59 million pounds. If the ACT is exceeded it would automatically trigger an AM whereby the Council will convene a review panel to assess whether or not corrective action is needed to prevent the ACL from being exceeded. An expanded discussion of this AM has been incorporated into the document in Sections 2.5 and 4.5.*

Action 6 – *The Councils chose to keep the Protocol and Procedure in one action. The Councils felt the level of public involvement under the Base Procedure (public comment during at least one Council meeting) was sufficient for routine actions that would be developed under the framework. The preferred alternative is indicated in Table 2.6.2*

Action 7 - *The document states the purpose of keeping 50 or more spiny lobsters onboard is to ensure there is an adequate supply of attractants during the baiting process for each trap, i.e., some traps will be onboard being baited while others would be in the water with baits already in them. Sections 2.7 and 4.7 have been updated.*

Action 8 - *Alternatives 3 and 4 were added to the document at separate Gulf and South Atlantic Council meetings and chosen as preferreds at separate Gulf and South Atlantic Council meetings. During the amendment development process neither Council requested the two alternatives be combined to make a new alternative. Choosing multiple preferred alternatives for a single action is a common practice with the Gulf and South Atlantic Councils; keeping the two alternatives separate avoids confusion and redundancy. Both course of action were analyzed in the EIS, and adding a combined alternative would not alter the substance of that analysis.*

Action 9 – *The summary has been updated. The preferred alternative for this action was changed to No Action at the June 2011 joint Council meeting. Closure of areas to protect Acropora spp. will be addressed in Amendment 11, including clarification of the economic impacts and the rationale for the Council preferred.*

Actions 10 and 11 – *Language was added to the beginning of Sections 2.10 and 2.11 explaining that the Biological Opinion only anticipated effects from spiny lobster trapping in federal waters adjacent to Florida, and therefore, actions to minimize those impacts only focus on that area.*

Response to General Comments

Social Environment/Environmental Justice
With regard to comments to the demographics and social vulnerability, it should be pointed out that the error that was noted for Miami-Dade census demographics is not an error. The seemingly contradictory statistic is an artifact of the census questionnaire, as Hispanic is not considered a race and that statistic is derived from a different question on the census form. Therefore, an individual can be both White and considered Hispanic, just as they can be considered any race and Hispanic. The minority threshold that is used for Environmental Justice is the inverse of the White alone, non-Hispanic variable included in the census demographics.

In response to why only Florida Counties where chosen for description of the social environment, the focus on south Florida is due to the nature of the fishery which is prosecuted primarily in Miami-Dade and Monroe Counties. Communities chosen for more detailed description were chosen based upon their ranking within what is called their "regional quota" (rq) the proportion of landings and value of community landings out of total landings for the region. All communities in both regions are located in Florida and as can be seen in the graphics presented for both regions (Figures 3.5.2 & 3.5.10), the communities in the lower portion of the top fifteen communities have less than 1% of landings and value from spiny lobster. Therefore those with fewer landings and value were not considered to be susceptible to impacts from the impending regulations as lobster is not an important part of overall landings. We do not have data refined to the individual or vessel level within communities to be able to analyze such impacts at this time.

Because we do not have demographic data on fishermen within the lobster fishery that would allow us to identify those who live below the poverty level or even those who are Hispanic (the only count would have to be those with Hispanic names), it is difficult to judge how those populations would be affected by actions within this amendment. While it is true that minorities and those below the poverty line do suffer more negative impacts from social disruption, we cannot state with certainty that they will be affected negatively from these actions. Therefore, we attempt to identify where vulnerable populations may be and hope that through public comment any specific issues that may be related to that vulnerability will be identified.
Concerning public participation, after submitting the DEIS to EPA, the summary document for this amendment was translated into Spanish by South Atlantic Council staff. An informational meeting was organized by local Sea Grant agents in Key West and a Spanish translator was brought in to assist with the discussion. Additionally, during public testimony at the Council meeting in Key West, a translator was also present to assist with testimony. In the future, outreach targeted to these populations will continue to ensure that these communities are well informed and have an opportunity to offer comments related to their involvement.

Comment-No information is provided under this section in our copy of the DEIS.
Section 5 – The Fishery Impact Statement is included in the FEIS.