Marine Fisheries Initiative Program

(MARFIN)

2011 ANNUAL REPORT

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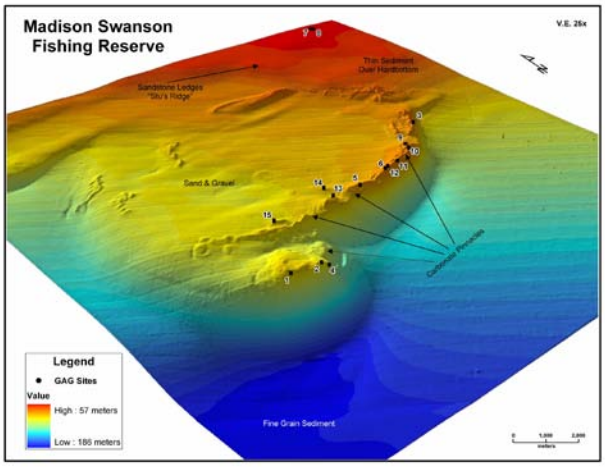
Prepared By:

Robert A. Sadler
and
Ellie Francisco Roche

State/Federal Liaison Branch
National Marine Fisheries Service
Southeast Regional Office
263 13th Avenue South
St. Petersburg, Florida 33701
(727) 824-5324



Cover Photo: Multibeam images of the northern West Florida Shelf indicating spawning aggregation sites of gag *Mycteroperca microlepis*.
(Taken from NA07NMF4330120 Final Report; courtesy of Dr. Chris Koenig, Florida State University)

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PREFACE

The Marine Fisheries Initiative (MARFIN) promotes and endorses programs that seek to optimize economic and social benefits from marine fishery resources through cooperative efforts that evoke the best research and management talents of the Southeast Region. Preference is given to cooperative planning efforts with up to three-year time horizons. The intent is to focus projects funded by MARFIN into cooperative efforts that provide clear answers for fishery needs covered by the National Marine Fisheries Service (NMFS) 2001 Strategic Plan for Fisheries Research. Goals one, two, and four are particularly important. For example, a geographically restricted age and growth study of a local fishery resource is of limited value unless it is coordinated with, or verified by, similar studies that span the range of the resource. The value of such studies is also relatively limited unless the results can be combined with other studies to provide a regional assessment of the resource. MARFIN provides this necessary programmatic integration through cooperative planning, accomplishment of program activities, and an annual MARFIN Conference.

The MARFIN program was created to bring together scientific, technical, industry, resource conservation, and management talents to conduct cooperative programs to facilitate and enhance the management of the marine fishery resources of the Gulf of Mexico and South Atlantic. MARFIN requires the timely dissemination of the results of both successful and unsuccessful efforts; therefore, each recipient of funding under this program is obligated to attend a MARFIN conference to report project findings. The bycatch issue remains a focal point of research needs for the Southeast Region. Critical reef fish fisheries are also being addressed, from efforts to reduce catches associated with shrimp trawls, to life history studies, as well as fishery-dependent and -independent characterization work. Delineation of fishery stocks (king mackerel, Gulf red snapper, South Atlantic red porgy, wahoo, and dolphinfish) continues to be an area of important research toward enhancement management of these commercially and recreationally vital fisheries. Research on economic and sociological impacts of fisheries regulations, including the establishment of marine fishery reserves, illustrates the recognition by the MARFIN program that all aspects of a fishery, including essential fish habitat, must be understood to provide adequate fisheries management.

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[1]NMFS Strategic Plan Goals:
- Provide scientifically sound information and data to support fishery conservation and management.
- Through conservation engineering research, contribute to efforts to reduce bycatch and adverse effects on EFH, promote efficient harvest of target species, and to improve the data from fishery surveys.
- Through economic and ecological research on marine communities and ecosystems, provide scientific data and information to increase long-term economic and social benefits to the Nation from living marine resources.
- Improve the fishery information system.
- Improve the effectiveness of external partnerships with fishers, managers, scientists, conservationists, and other interested groups.

HISTORY OF THE MARFIN PROGRAM

The MARFIN Program received its initial impetus from a 1983 discussion paper entitled: "Research Needs For Information Leading To Full and Wise Use of Fishery Resources In The Gulf of Mexico," by Dr. Thomas D. McIlwain of the Gulf Coast Research Laboratory while he was in the office of then Representative Trent Lott.[2] This paper, sometimes referred to as the Lott-McIlwain paper, proposed an additional investment in fisheries research and development in the Gulf of Mexico to increase the economic contribution of marine fisheries, develop more valuable products from existing fisheries, develop export markets, forecast variation in yields, and conserve and maintain presently exploited resources.

The next step in the evolution of MARFIN was the preparation and publication of the Marine Fisheries Initiative - Gulf of Mexico Phase.[3] This publication, developed by a joint industry, federal, state, and academic task force, detailed the research and development efforts necessary to enhance, restore, and maintain fisheries in the Gulf of Mexico. The program focused on funding projects that had the greatest probability of maintaining and improving existing fisheries, increasing revenues for the domestic industry, increasing yields from fisheries, and generating increased recreational opportunity and harvest potential. Projects were to be selected for funding based on their likelihood of achieving these benefits through both short-term and long-term research with consideration of the magnitude of the eventual benefit that might be realized. Both short-term projects yielding immediate benefits and long-term projects were to receive high-priority emphasis. Planning emphasis was placed upon attaining priority goals either through a single project or a series of projects necessary to attain that goal.

In 1992, the MARFIN program was expanded to include a South Atlantic component (North Carolina, South Carolina, Georgia, and the Atlantic coast of Florida). The goals and objectives of the South Atlantic Phase of MARFIN are described in Special Report No. 13 of the Atlantic States Marine Fisheries Commission, Marine Fisheries Initiative (MARFIN) South Atlantic Phase.[4]

The Lott-McIlwain paper and the Marine Fisheries Initiative publication were instrumental in gaining public support for the MARFIN program. On December 4, 1985, the conference report of the House and Senate that appropriated funds for the Departments of Commerce, Justice, State, the judiciary, and related agencies for the fiscal year (FY) ending September 30, 1986, allocated $2,850,000 for the MARFIN Program.

The following list represents funding for each year from the start of the MARFIN program until the current year:

Fiscal Year 1986 - $2,850,000

Fiscal Year 1987 - $3,500,000

[2]Office of Representative Trent Lott, Washington, DC; Dr. Thomas D. McIlwain; May 1983
[3]Gulf States Marine Fisheries Commission, P.O. Box 426, Ocean Springs, MS 39564; J.Y. Christmas, D.J. Etzold, T.D. McIlwain, L.B.Simpson (eds.) January 1985
[4]Special Report No, 13 of the Atlantic States Marine Fisheries Commission; E.J. Joseph, V.G. Burrell, D.M. Cupka, P.J. Eldridge, August 1988

Fiscal Year 1988 - $3,500,000

Fiscal Year 1989 - $3,000,000

Fiscal Year 1990 - $3,000,000

Fiscal Year 1991 - $2,986,000

Fiscal Year 1992 - $4,000,000 (This includes $500,000 of the South Atlantic MARFIN and $1,300,000 for shrimp trawl bycatch studies.)

Fiscal Year 1993 - $3,540,000

Fiscal Year 1994 - $3,542,000

Fiscal Year 1995 - $3,540,000

Fiscal Year 1996 - $2,760,000 (No new projects were accepted due to a congressional allocation reduction and active multi-year projects selected during previous funding cycles.)

Fiscal Year 1997 - $3,000,000

Fiscal Year 1998 - $3,000,000

Fiscal Year 1999 - $3,000,000 (This includes $500,000 for the Northeast Region.)

Fiscal Year 2000 - $2,750,000 (No new projects were accepted during FY 2000 due to a reduction in congressional allocation, and because of the large number of active multi-year projects selected during previous funding cycles.)

Fiscal Year 2001 - $3,500,000 (This includes $250,000 for the Northeast Region and $750,000 for red snapper research.)

Fiscal Year 2002 - $3,500,000 (This includes $250,000 for the Northeast Region and $750,000 for red snapper research.)

Fiscal Year 2003 - $3,250,000 (This includes $250,000 for the Northeast Region and $500,000 for red snapper research. No new projects were accepted during FY 2003 because of the large number of active multi-year projects selected during previous funding cycles.)

Fiscal Year 2004 - $2,500,000

Fiscal Year 2005 - $3,400,000 (This includes $250,000 for the Northeast Region and $750,000 for red snapper research.)

Fiscal Year 2006 - $2,400,000

Fiscal Year 2007 - $2,898,000 (This includes $750,000 for red snapper research)

Fiscal Year 2008 - $2,898,000 (This includes $750,000 for red snapper research)

Fiscal Year 2009 - $3,000.000 (This includes $750,000 for red snapper research)

Fiscal Year 2010 - $3,000.000 (This includes $750,000 for red snapper research)

Fiscal Year 2011 - $3,000.000 (This includes $750,000 for red snapper research)

MARFIN promotes and endorses programs that seek to optimize economic and social benefits from marine fishery resources through cooperative efforts that evoke the best research and management talents of the Southeast Region. The intent of the MARFIN program is to focus projects on key fisheries' issues in the southeast United States.

MARFIN PROGRAM ORGANIZATION AND ADMINISTRATION

The NMFS Southeast Regional Administrator (RA) re-formed the MARFIN Panel in FY 1992 when the program was expanded to cover the South Atlantic (Appendix 1). Each member of the MARFIN Panel provides individual recommendations to the RA on MARFIN priorities and financial assistance applications. The MARFIN Panel membership is as follows:

- One state marine conservation agency representative each from the Gulf of Mexico and the South Atlantic areas.
- One representative each from the Gulf of Mexico and the South Atlantic commercial fishing industries.
- The Executive Directors of the Gulf of Mexico and South Atlantic Fishery Management Councils.
- The Executive Directors of the Gulf and Atlantic States Marine Fisheries Commissions.
- One representative each from the Gulf of Mexico and the South Atlantic recreational fishing industries.
- One representative each from the Gulf of Mexico and the South Atlantic Sea Grant Universities.
- A NMFS Southeast Fisheries Science Center representative.
- The NMFS Southeast Region Program Officer acts as an advisor to the RA and MARFIN Panel members concerning federal, Department of Commerce, and NOAA financial assistance administration requirements.

Alternate representatives to the MARFIN Panel serve when necessary. Individual Panel members are appointed by the NMFS Southeast Regional Administrator for staggered terms.

The RA of the NMFS Southeast Regional Office relies on recommendations from individual members of the MARFIN Panel in selecting each year's projects. Each year the RA and NMFS administrators and scientists identify areas of emphasis for the next year's competitive financial assistance program.

The NMFS Southeast Regional State/Federal Liaison Branch staff (Appendix 2) is responsible for the overall administration of all NMFS Southeast grants and cooperative agreement programs, including MARFIN. Their responsibilities include planning, application and selection, negotiation, performance monitoring, and close-out of all assigned competitive and noncompetitive financial assistance programs. A NMFS Southeast Regional scientific or technical expert is assigned as the technical monitor for each MARFIN award. The technical monitor is responsible to the State/Federal Liaison Branch Program Officer for all technical and cooperative aspects of assigned awards. The NOAA Grants Officer is responsible for the overall administration of each NMFS financial assistance award issued to recipients outside of the federal

government and cooperates with the NMFS Southeast Region State/Federal Liaison Branch in administering each financial assistance award.

Projects Completed in FY 2011

Due to agency funding limitations, a MARFIN Conference was not held in 2011. A listing of the projects completed in 2011 follows.

A. Red Snapper Research

"Discard Mortality of Red Snapper in the Northeastern Gulf of Mexico Recreational Fishery" – In this 14-month, $148,150 award to Patzig Marine Services, Inc., the researcher studied the discard mortality of red snapper in relation to fish condition, depth of capture, air, surface, and bottom temperature, time out of water, size, season, predators, and sea conditions. The fish were initially held in a holding pen and monitored for condition. The cages were then lifted to the surface and all dead fish removed and researched for age, growth, and reproduction information. Surviving tagged fish were released into the water. The results help determine discard mortality temporally at varying depths, and track red snapper movement through recapture information from the tagged fish. **MARFIN Award NA09NMF4330148**

B. Reef Fish and other Fishery Resources Associated with Reef Environments

"Protection of grouper and red snapper spawning in marine reserves: demographics, movements, survival, and spillover benefits in the eastern Gulf of Mexico" – In this $471,335 award to Florida State University, the researchers will evaluate the effectiveness of Gulf of Mexico shelf-edge marine reserves in protecting reef fish reproduction and immediate fishery benefits. **MARFIN Award NA07NMF4330120**

"Development of fisheries independent, habitat-based indices of abundance for pre-reproductive gag grouper in the northeastern Gulf of Mexico" – In this three-year, $297,945 award to the University of Florida, the researchers initiated a time-series of annual, fisheries independent gag census data from reefs along the depth contour of the Florida Big Bend. The project validated seabed classification and quantification software protocols for distinguishing gag habitat quality. **MARFIN Award NA07NMF4330123**

"Improved indices of juvenile and pre-fishery abundance for gray snapper, gag, and other estuarine-dependent reef fishes along the Gulf coast of Florida" – In this two-year, $218,245 award to the Florida Fish and Wildlife Conservation Commission, the researchers gathered information on the importance of fish habitats to estuarine-dependent reef fishes. These data will be used to develop improved indices of abundance for the reef fish species. The research results provided important information on various aspects of the reef fish species' life history. **MARFIN Award NA09NMF4330152**

C. Economic and Sociocultural Studies

"Comparative Ethnography in the Development of Impact Assessment Methodologies: Profiling Two South Carolina Fishing Communities" – In this two-year, $174,946 award to the Gulf and South Atlantic Fisheries Foundation, Inc., the researchers studied the cumulative economic and social impacts of black sea bass minimum size limits and other fishery management regulations on two fishing communities in South Carolina. The project will include ethnographic fieldwork, testing and refinement of methodologies, and analysis, followed by final data analysis, and feedback from communities and methodology experts. **MARFIN Award NA08NMF4330407**

"The operations and economics of the for-hire fishing fleets of the south Atlantic states and the Atlantic Coast of Florida" – In this two-year, $237,179 award to the University of Florida, the researchers analyzed current data on the demographic, economic, species targeting information, operator attitudes and business characteristics of the charter and headboat fleets of Florida, Georgia, South Carolina, and North Carolina. The research: 1) described the distribution of charter/head boats by type of boat and location; 2) described which species the charter and head boat fisheries are targeting/catching by general location and seasonal variation; 3) reported information on the demographics, economics and business characteristics of charter/head boat operations; 4) estimated the economic impacts of these regions charter and head boat recreational fishing related expenditures on the states' economies; 5) reported operators' perceptions of problems in their industry; and 6) compared the results with earlier trends. **MARFIN Award NA09NMF4330151**

OVERVIEW OF ONGOING RESEARCH PROJECTS

The following project descriptions provide the title and objectives/goals of ongoing research funded through the MARFIN Program in the Southeast Region:

A. Bycatch

a. "Development and Assessment of Bycatch Reduction Devices within the Southeastern Shrimp Trawl Fishery" – In this two-year, $289,659 award to the Gulf and South Atlantic Fisheries Foundation, Inc., the researchers will solicit bycatch reduction device (BRD) designs and/or prototypes. Those designs will be obtained from the shrimp industry, net shops, NMFS fishing gear experts, and Sea Grant. Three BRDs that show the greatest potential of reducing finfish bycatch will be developed. Selected fishing vessels and captains will then field test those experimental BRDs. Tows will be taken to study the three experimental BRDs. The research will calculate reduction rates achieved for each BRD tested, including total shrimp catch, finfish catch, total bycatch, and red snapper fishing mortality. **MARFIN Award NA08NMF4330406**

b. "New gear to reduce shrimp trawl bycatch: testing the capabilities of a newly certified TED" – In this $46,558 award to the University of Georgia, the researchers will assess the bycatch reduction capabilities of the newly certified Georgia Jumper Big Boy (Big Boy) turtle excluder device. The Big Boy has shown potential for bycatch reduction in pilot tests, but has not yet been tested without a fisheye bycatch reduction device (BRD). After analysis, the data will be presented to NMFS personnel. If the Big Boy shows overall bycatch reduction, the researchers will work with NMFS personnel to develop certification protocol to test the Big Boy as a BRD. **MARFIN Award NA09NMF4330145**

c. **"**Evaluating the effect of barotrauma on regulatory discards in the red snapper fishery using advanced acoustic telemetry and hyperbaric experimentation" – In this two-year $304,693, award to the Texas A & M University – Corpus Christi, the researchers will use acoustic telemetry to compare behavior and mortality of red snapper experiencing barotrauma (internal damage caused to an organ by changes in atmospheric pressure). The researchers will determine the relationship between previous discard mortality estimates and mortality rates derived from internally implanted acoustic telemetry tags, and examine the impact of multiple decompression events on red snapper growth, mortality, reproductive potential, and behavior. **MARFIN Award NA10NMF4330126**

d. "An Expanded Outreach Program and Technology Transfer of Updated Bycatch Reduction Devices and Turtle Excluder Devices to the Southeastern U.S. Shrimp Industry" – In this two-year, $158,067, award to the Gulf and South Atlantic Fisheries Foundation, Inc., new Bycatch Reduction Device and Turtle Excluder Device information will be provided to the fishing industry, to facilitate communication on the

status of prototype gears being tested. **MARFIN Award NA11NMF4330127**

B. Reef Fish and other Fishery Resources Associated with Reef Environments

a. "Are Louisiana's shelf-edge banks the center of abundance and historical natural refuge for the Gulf of Mexico's most valuable reef fish?" – In this three-year, $319,465, award to Louisiana State University, the researchers will survey potential habitat benefits of natural shelf-edge reefs, compared to nearby artificial reefs located in Louisiana's Artificial Reef Planning Areas. To determine the extent to which red snapper differentially utilize natural shelf edge habitats off Louisiana, the researchers will collect data during cruises each year. The researchers will collect red snapper during each cruise, using vertical longline and fish traps. **MARFIN Award NA08NMF4330409**

b. "Nursery origins of adult gag grouper, gray snapper, & lane snapper from the northern Gulf of Mexico: onshore-offshore connectivity of reef fish & contribution of seagrass beds to fishery production" – In this two-year, $221,230 award to the Marine Environmental Sciences Consortium/Dauphin Island Sea Lab, the researchers will quantify juvenile gag grouper (gag) and snapper distributions within seagrass areas (meadows) using otter trawl tows. In addition, the researchers will collect gag and snapper species to inventory (atlas) chemical signatures for the seagrass meadows. These samples will be used for determining the nursery origin of one-to-three-year-old gag and snapper collected from offshore reefs. This research, therefore, will help determine the distribution and life history of these important species. **MARFIN Award NA08NMF4330404**

c. "Digital Archiving of the Surviving SEAMAP Plankton Samples" – In this three-year, $276,798 award to the Louisiana State University, the researchers will conduct digital archiving and processing of the backlogged Southeast Area Monitoring and Assessment Program (SEAMAP) plankton samples to better assess the survivorship of plankton. This research will benefit fisheries management, since most economically important fish species have a critical planktonic early life-history stage. **MARFIN Award NA08NMF4330408**

d. "Genetic evaluation of population bottlenecks in gag (*Mycteroperca microlepis*)" – In this three-year, $298,656 award to the South Carolina Department of Natural Resources, the researchers will assess the impact of population declines and changes in sex ratio on the population genetic structure of gag grouper. The research goals are to: 1) examine archived samples of gag taken during 1993-1995 for genetic variation; 2) collect samples from ongoing surveys of gag and examine genetic; 3) estimate the effective population size and effective female population size from nuclear genes and mtDNA, respectively, for 1993-1995 and 2009-2010 samples; and 4) examine the data for genetic evidence of population bottlenecks associated with changes in population size and sex ratio that have occurred over the past several decades. **MARFIN Award NA09NMF4330154**

e. "Release mortality of Gulf of Mexico greater amberjack from commercial and recreational hand-line fisheries: Integration of fishing practices, environmental parameters, and fish physiological attributes" – In this two-year, $244,867 award to the University of Florida, the researchers will study discard rates and long-term release mortality rates for greater amberjack. Chronic release mortality will be estimated through tag-recapture analysis based on tagging of the released fish. The contribution of fishing practices and environmental factors to release mortality will be determines. The influence of fishing practices (e.g., gear type) on the proportion of amberjack discarded/released and release mortality will be assessed. The resulting data and models will aid in future great amberjack stock assessments. **MARFIN Award NA09NMF4330147**

f. "Assessment of genetic stock structure of gray triggerfish (Balistes capriscus) in U.S. waters of the Gulf of Mexico and south Atlantic regions" – In this three-year, $173,831 award to the University of Southern Mississippi, the researchers will develop a panel of molecular markers, and DNA sequencing assay, suitable for population genetic structure analysis. The sampling will be carried out in conjunction with on-going sampling activities by the Florida Fish and Wildlife Conservation Commission, the Southeastern Southeast Area Monitoring and Assessment Program (SEAMAP) surveys, and NMFS port sampling. The results will provide an assessment of population genetic structure and demography of gray triggerfish. **MARFIN Award NA09NMF4330150**

g. "Ecological and Fisheries Implications of Red Snapper (*Lutjanus campechanus*) and Gag (*Mycteroperca microlepis*) Interactions" – In this two-year, $295,185 award to the University of South Alabama, the researchers will determine how food and shelter are partitioned on reefs in which gag and red snapper occur. The researchers will also determine if catchability of one of those species is influenced by the other species; determine how reef specific changes in abundance of one species affect habitat use of the other species; and determine behavioral differences between gag and red snapper and evaluate how sizes of fish influence this interaction. **MARFIN Award NA10NMF4330105**

h. "Length and age sampling of the commercial snapper/grouper fishery and age and growth comparison of black sea bass caught along the North Carolina coastline" – In this three-year, $290,619 award to the North Carolina Department of Environment and Natural Resources, the researchers will obtain otoliths and spines from the snapper/grouper complex, caught by commercial fishermen, for processing and analysis by the NMFS Beaufort Laboratory; compare the age composition and growth of black sea bass commercially harvested; and use the results to determine if the fishery regulations have caused changes in the size of the fish at a given age and the size of transition from female to male. **MARFIN Award NA10NMF4330117**

i. "The recovering goliath grouper population of the southeastern U.S.; non-consumptive investigations of reproduction for stock assessment" – In this two-year, $298,129 award

to the Florida State University, the researchers will fill gaps in the data required for accurate stock assessments by tagging and marking of goliath grouper. The research tools include fishing marking (population assessments); video-laser (fish size determination); passive acoustics, remote operative vehicle, remote hydrophones, and digital spectrum recorders (spawning site reproductive patterns); and acoustic tags (movement patterns). **MARFIN award NA10NMF4330123**

j. "Continue Development of Fisheries Independent, Habitat-Based Indices of Abundance for Pre-Reproductive Gag Grouper in the Northeastern Gulf of Mexico" – In this three-year, $299,286 award to the University of Florida, the researchers will extend and refine fisheries-independent indices of abundance of pre-reproductive female gag grouper. The intent is to provide fisheries independent abundance indices to support stock assessment activities and habitat definition to aid in habitat restoration and improvement, specifically for this popular reef fish species. **MARFIN Award NA10NMF4330106**

k. "An evaluation of the effects of catch and release angling on survival and behavior of goliath grouper (*Epinephelus itajara*) with additional investigation into long-term residence and movement patterns" – In this three-year, $178,885 award to the Florida Fish and Wildlife Conservation Commission, the researchers will describe the effects of catch-and-release angling on the survival and behavior of goliath grouper across a range of depths and to provide information on the abundance, size distribution, and movement patterns of goliath grouper within the central eastern Gulf of Mexico. The researchers will perform catch-and-release angling at specific, established sites within designated depth zones; deploy semi-permanent acoustic receivers (hydrophones) at established sites to passively monitor acoustically tagged animals; continue conventional tagging efforts by externally tagging all caught fish; monitor established sites regularly via underwater surveys to quantify community structure, habitat characteristics, goliath grouper abundance and size distribution (via visual transects and video); and collect genetic samples. **MARFIN Award NA10NMF4330115**

l. "Use of otolith microchemistry to improve fisheries-independent indices of recruitment for gag (*Mycteroperca microlepis*): Linking estuarine nurseries to nearshore reefs in the eastern Gulf of Mexico" – In this two-year $339,736, award to the University of South Florida, the researchers will use otolith microchemistry to determine how seven different estuarine nurseries in the western Gulf of Mexico contribute to older stocks of gag grouper. The otolith microchemistry component will serve as a tool to distinguish between the estuarine nurseries and determine if the area differences continue over time. The project will gauge the relative contribution of these nurseries to the subsequent year class of gag groupers. These results will be combined into estuary-specific recruitment indices that will, in turn, improve existing methods of stock assessment. **MARFIN Award NA10NMF4330113**

m. "Integrated assessment modeling of natural mortality: a framework and simulation study" – In this two-year $133,344 award to the Virginia Polytechnic Institute & State University, the researchers will choose an appropriate approach to estimate natural mortality through model comparison and simulation studies. The laboratory research will provide a pilot study on selecting approaches in fisheries stock assessment for other species. Specifically, the researchers will construct a data matrix for the Gulf of Mexico red snapper fishery; design a series of natural mortality modeling approaches and apply them in a statistical catch-at-age modeling framework; develop Bayesian estimators and compare models using Deviance Information Criterion; further compare the performance of these models through a simulation study using different model comparison metrics such as precision and accuracy of natural mortality, biological reference points, and fishery status; and develop a framework for modeling natural mortality. **MARFIN Award NA10NMF4330119**

n. "Development of an algorithm to estimate age structures in landings precluding the routine use of age-length-keys for applications in data-poor fisheries and with species that cannot be aged directly" – In this two-year, $131,303 award to the University of Miami, the researchers will develop catch at age matrices for the red snapper and spiny lobster fisheries. The algorithm calculation will use an individual based modeling approach including a growth transfer matrix. The matrix will consider the variance-covariance of growth, recruitment-parent stock or recruitment environment dynamic functions, various exploitation patterns, and mortality rates. The research is intended to identify and overcome the weaknesses included in current catch-age structure methodology. This objective will be accomplished by developing an algorithm to obtain a more accurate number of organisms in the catch of the red snapper and spiny lobster fisheries. **MARFIN Award NA10NMF4330119**

o. "The use of Ultrasonic Telemetry to Estimate Natural and Fishing Mortality of Red Snapper (Lutjanus campechanus)" – In this two-year, $216,098 award to Auburn University, ultrasonic telemetry will be used to estimate red snapper movement, fishing mortality, and natural mortality using transmitter tag returns, telemetry movement information, and diver operated receivers. **MARFIN Award NA11MF4330126**

p. "Exploring the utility of side-scan sonar and experimental Z-traps in improving the efficiency of fisheries-independent surveys of reef fishes on the West Florida Shelf" - In this two-year, $329,987 award to the Florida Fish and Wildlife Conservation Commission, a survey of potential reef fish habitat will be completed to: 1) identify and classify habitat-based sampling strata; 2) partition sampling effort among identified strata so as to characterize the distribution, abundance, and size-structure of reef fishes; and 3) test the utility of two-throat z-traps. **MARFIN Award NA11MF4330122**

q. "Regional age structure, reproductive biology and trophic patterns of adult" - In this three-year, $481,664, award to Florida State University, various data on goliath grouper

will be used to validate age estimates through otolith and dorsal fin-ray samples and determine the reproductive status of samples; validate age estimates through otolith and dorsal fin-ray samples and determine the reproductive status of samples obtained by opportunistic sampling; collect dorsal fin ray samples from live goliath grouper; conduct stomach content and stable isotope analyses; and evaluate earlier tag returns. **MARFIN Award NA11MF4330123**

r. "Gray triggerfish (Balistes capriscus) life history in the South Atlantic Bight: The extensive collection and analysis of new data for age, growth, and reproduction and the comparison with data from 1992" - In this two-year, $146,345, award to the South Carolina Research Foundation award, gray triggerfish will be studied using chemical tagging and other methods to determine life history parameters such as reproductive seasonality, reproductive size, age at maturity, growth rates, population age structure, and sex ratios. **MARFIN Award NA11MF4330130**

s. "Evaluation of Approaches for Reef-Fish Stock Assessment under Data-Poor to Data-Rich Conditions" - In this two-year, $180,572, award to the University of Miami, data-poor assessment approaches will be studied to identify a suite of stock assessment models with information requirements corresponding to data conditions; synthesize the input data using fleet information and a fishery independent survey; and conduct a comparative analysis of stock assessment model types. **MARFIN Award NA11MF4330129**

C. Red Snapper Research

a. "Larval dispersion from the spawn of large, highly fecund red snapper found in offshore waters of the northern Gulf of Mexico" – In this two-year, $122,220 award to the University of Southern Mississippi, the researchers will determine the extent and potential for successful inshore larval recruitment from locations of large, highly fecund red snapper captured in the Gulf of Mexico during NMFS' ongoing longline surveys; estimate the contribution of spawn from these offshore stocks to the harvestable populations; determine impact of vertical migration on larval transport to inshore settlement sites; and examine the influence of strong storm events on large scale dispersal, especially toward the northeastern Gulf of Mexico. **MARFIN Award NA10NMF4330118**

b. "Spatial and temporal abundance and distribution of red snapper (Lutjanus campechanus) eggs across the northern Gulf of Mexico based on historic SEAMAP plankton surveys" – In this two-year, $211,258 award to the Dauphin Island Sea Lab/Marine Environmental Sciences Consortium, the researchers will utilize the SEAMAP database and archive to accurately inventory the existing red snapper egg samples; maximize long-term stability of DNA extracts for future DNA probing of other fish species; optimize a methodology to identify historic SEAMAP egg samples; and correlate quantified red snapper egg

abundances and relevant environmental records or habitat distributions. The project will help identify red snapper spawning locations and assess those locations' relative importance. Red snapper egg distributions can then be mapped across the northern Gulf of Mexico to investigate the temporal and spatial abundance of red snapper. **MARFIN Award NA09NMF4330153**

c. "Population Structure And Genetic Demography Of Red Snapper (*Lutjanus campechanus*) In The U.S. South Atlantic and Connectivity with Red Snapper In the Gulf of Mexico" – In this two-year, $204,106, award to the Texas A & M University – College Station, the researchers will study the population structure of red snapper. The results will be used to evaluate the extent of genetic flow between red snapper population along the Atlantic and Gulf of Mexico coastlines. The results will be highly useful for red snapper management purposes. **MARFIN Award NA10NMF4330114**

D. Economic and Sociocultural Studies

a. "Social Impacts of the Allocation/Reallocation of Marine Fisheries Resources on Communities in the Gulf of Mexico and South Atlantic: Development of an Empirical Predictive Model" – In this two-year, $322,986 award to the Gulf and South Atlantic Fisheries Foundation, Inc., the researchers will develop a quantitative model relying upon existing secondary data for predicting the social impacts of allocation or reallocation schemes on four fishing communities. The most important output will be a linear model to predict changes in community well-being as the allocation/reallocation of resources is considered during the fisheries management process. This research will specifically predict changes in social well being as shifts in Total Allowable Catch, and commercial and recreation allocations are made. **MARFIN Award NA09NMF4330149**

E. Aquaculture

a. "Genetic Risk Assessment Modeling for Offshore Marine Aquaculture Operations: Cobia" – In this two-year, $159,691 award to the South Carolina Department of Natural Resources, genetic samples of cobia will be analyzed using microsatellite data to determine the genetic stock structure. The data will be usable to assess potential genetic risks associated with offshore marine aquaculture. **MARFIN Award NA11NMF4330125**

Appendix 1: MARFIN PANEL MEMBERS

GULF OF MEXICO REPRESENTATION

GULF OF MEXICO FISHERY MANAGEMENT COUNCIL REPRESENTATIVE

Steve Bortone
Executive Director
Gulf of Mexico Fishery Management Council
2203 N. Lois Avenue, Suite 1100
Tampa, FL 33607
(813) 348-1630
FAX (813) 348-1711
Steve.bortone@gulfcouncil.org

ALTERNATE:

Dr. Rick Leard
(Same address and telephone number)
rick.leard@gulfcouncil.org

GULF SEA GRANT REPRESENTATIVE

Dr. Charles Wilson
Executive Director, LA Sea Grant
239 Sea Grant Building
Louisiana State University
Baton Rouge, LA 70803-7507
(225) 578-6710
FAX (225) 578-6331
cwilson@lsu.edu

ALTERNATE:

Dr. LaDon Swann
Director, Mississippi-Alabama Sea Grant Consortium
703 East Beach Drive
Ocean Springs, MS 39564
(228) 818-8843
FAX (228) 818-8841
(251) 861-3018 (AL)
FAX (251) 861-2344

swanndl@auburn.edu

GULF STATES MARINE FISHERIES COMMISSION REPRESENTATIVE

Mr. Larry B. Simpson
Executive Director
Gulf States Marine Fisheries Commission
2404 Government Street
Ocean Springs, MS 39564
(228) 875-5912
FAX (228) 875-6604
lsimpson@gsmfc.org

ALTERNATE:

Mr. Dave Donaldson
(Same address and telephone number)
ddonaldson@gsmfc.org

GULF RECREATIONAL REPRESENTATIVE

Mr. James Franks
The University of Southern Mississippi
Gulf Coast Research Laboratory
703 East Beach Drive
Ocean Springs, MS 39564
(228) 872-4202
FAX (228) 8724204
Jim.franks@usm.edu

ALTERNATE:

Dr. Bruce Comyns
Department of Coastal Sciences
University of Southern Mississippi
703 East Beach Drive
Ocean Springs, MS 39564
(228) 872-4267
Bruce.comyns@usm.edu

GULF COMMERCIAL REPRESENTATIVE

Ms. Kay Williams
9905 Wire Road
Vancleave, MS 39581
(228) 826-2160
FAX (228) 769-6153
hkaywilliams@hotmail.com

ALTERNATE:
To Be Named

GULF STATES REPRESENTATIVE

John Mareska
Marine Resources Division
AL Department of Conservation
and Natural Resources
2 North Iberville Drive
Dauphin Island, AL 36528
(251) 861-2882
FAX (251) 968-7307
john.mareska@dcnr.alabama.gov

ALTERNATE:

To Be Named

SOUTH ATLANTIC STATES REPRESENTATION

ATLANTIC STATES MARINE FISHERIES COMMISSION REPRESENTATIVE

Mr. John Vincent O'Shea
Executive Director
1050 N. Highland St., suite 200 A-N
Arlington, VA 22201
(703) 842-0740
FAX (703) 842-0741
voshea@asmfc.org

ALTERNATE:

Mr. Patrick Campfield
(Same address and telephone number)
pcampfield@asmfc.org

SOUTH ATLANTIC FISHERY MANAGEMENT COUNCIL REPRESENTATIVE

Mr. Robert Mahood
Executive Director
4055 Faber Place Drive, Suite 201
North Charleston, SC 29405
(843) 571-4366
FAX (843) 769-4520
robert.mahood@safmc.net

ALTERNATE:
Mr. Gregg Waugh
(Same address and telephone number)
gregg.waugh@safmc.net

SOUTH ATLANTIC STATES REPRESENTATIVE

Mr. William Teehan
Division of Marine Fisheries
FL Fish and Wildlife Conservation Commission
2590 Executive Center Circle East, Suite 201
Tallahassee, FL 32301
(850) 487-0580
FAX (850) 487-4847
William.Teehan@myfwc.com

ALTERNATE:

Jessica McCawley
(Same address and telephone number)
Jessica.McCawley@myfwc.com

SOUTH ATLANTIC RECREATIONAL REPRESENTATIVE

Mr. George Geiger
566 Ponoka Street
Sebastian, FL 32958
(772) 388-3183
georgejgeiger@bellsouth.net

ALTERNATE:
To Be Named

SOUTH ATLANTIC COMMERCIAL REPRESENTATIVE

Mr. Charles Phillips
Route 1, Box 1672 # 1 Pelican Point
Townsend, GA 31331
(912)832-4423
FAX (912)832-5228
ga_capt@yahoo.com

ALTERNATE:
To Be Named

SOUTH ATLANTIC SEA GRANT REPRESENTATIVE

Mr. Richard DeVoe
SC Sea Grant Consortium
287 Meeting Street
Charleston, SC 29401
(843) 727-2078
FAX (843) 727-2080
Rick.DeVoe@scseagrant.org

ALTERNATE:
To Be Named

Appendix 2: NMFS SOUTHEAST REGION STATE/FEDERAL LIAISON BRANCH STAFF

National Marine Fisheries Service
Southeast Regional Office
State/Federal Liaison Branch
263 13th Avenue South
St. Petersburg, Florida 33701
(727) 824- 5324
FAX (727) 824-5364

Ellie Francisco Roche
Chief, State/Federal Liaison Branch
Ellie.Roche@noaa.gov

Robert A. Sadler
Fisheries Grants Specialist
Robert.Sadler@noaa.gov

Jeffrey E. Brown
Fisheries Grants Specialist
Jeff.Brown@noaa.gov

Kelly B. Donnelly
Fisheries Grants Specialist
Kelly.Donnelly@noaa.gov

Demetrio (Dax) A. Ruiz
Fisheries Grants Specialist
Dax.Ruiz@noaa.gov

Appendix 3

MARFIN PUBLICATIONS AND REPORTS

MARFIN PUBLICATIONS

Ball, A.O., M.G. Beal, R.W. Chapman, G.R. Sedberry

2006. Population structure of red porgy, *Pagrus pagrus*, in the Atlantic Ocean. Accepted with revisions by Marine Biology.

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Appendix 4

FEDERAL FUNDING OPPORTUNITY (FFO)

ANNOUNCEMENT OF FEDERAL FUNDING OPPORTUNITY

EXECUTIVE SUMMARY

Federal Agency Name(s): National Marine Fisheries Service (NMFS), National Oceanic and Atmospheric Administration, Department of Commerce

Funding Opportunity Title: Marine Fisheries Initiative (MARFIN)

Announcement Type: Initial

Funding Opportunity Number:

Catalog of Federal Domestic Assistance (CFDA) Number: 11.433, Marine Fisheries Initiative.

Dates: Applications must be received by 5:00 p.m., Eastern Time, on July 18, 2011, to be considered for funding. Hard copy applications arriving after the closing date given above will be accepted for review only if the applicant can document that the application was provided to a delivery service that guaranteed delivery prior to the specified closing date and time; in any event, hard copy applications received by NMFS later than two business days following the closing date will not be accepted.

Funding Opportunity Description: The National Marine Fisheries Service (NMFS), Southeast Region, is seeking proposals under the Marine Fisheries Initiative Program (MARFIN), for research and development projects that optimize the use of fisheries in the Gulf of Mexico and off the South Atlantic states of North Carolina, South Carolina, Georgia, and Florida involving the U.S. fishing industry (recreational and commercial), including fishery biology, resource assessment, socioeconomic assessment, management and conservation, selected harvesting methods, and fish handling and processing. This program addresses NOAA's mission goal to "Protect, Restore, and Manage the Use of Coastal and Ocean Resources Through an Ecosystem Approach to Management."

FULL ANNOUNCEMENT TEXT

I. Funding Opportunity Description

A. Program Objective

The Marine Fisheries Initiative (MARFIN) is a competitive Federal assistance program that funds projects seeking to optimize research and development benefits from U.S. marine fishery resources through cooperative efforts involving the best research and management talents to accomplish priority activities. Projects funded under MARFIN provide answers for fishery needs covered by the NMFS Strategic Plan, available from National Marine Fisheries Service (NMFS), particularly those goals relating to: rebuilding over-fished marine fisheries, maintaining currently productive fisheries, and integrating conservation of protected species and fisheries management. Funding priorities for MARFIN are formulated from recommendations received from non-Federal scientific and technical experts and from NMFS research and operations officials.

With the long term planning capabilities available through the Southeast Data Assessment and Review (SEDAR) process, the priorities are selected to coordinate assessment needs with this solicitation. There is no preference between short-term and long-term projects.

B. Program Priorities

Proposals must address one of the priority areas listed below as they pertain to federally managed species. If you select more than one priority, you should list first on your application the priority that most closely reflects the objectives of your proposal. Projects should focus on the greatest probability of recovering, maintaining, improving, or developing fisheries; improving the understanding of factors affecting recruitment success; and/or generating increased values and recreational opportunities for fisheries. Any research projects pertaining to effects of the Deepwater Horizon oil spill as they relate to the priorities will be considered. The priorities are not listed in any particular order of importance.

1. Bycatch

The bycatch of biological organisms (including interactions with sea turtles and marine mammals) by various fishing gear types can have wide-reaching impacts from a fisheries management and an ecological standpoint. Numerous factors contribute to bycatch and bycatch mortality, including fishing gear, depth, species morphology, environmental variables, and regulations. Determining methods and gear for reducing bycatch and bycatch mortality can reduce fishing mortality and operational costs, increase efficiency, and result in less waste.

a. Collect and analyze shrimp trawl fisheries data in the Southeast U.S. to expand and update current bycatch estimates, temporally and spatially emphasizing areas of greatest impact by shrimping. Sampling effort should include estimates of numbers, weight, and random samples of size (age) structure of associated bycatch complex. The statistical design and extent of the shrimp-trawl observation program should ensure bycatch data collected are appropriate and sufficient for stock assessment of the bycatch species, specifically red snapper, Spanish mackerel, and other species of commercial and recreational importance.

b. Identify, develop, and evaluate gear development, and evaluation of gear, non-gear, and tactical fishing options to reduce bycatch in the Southeast U.S. shrimp trawl fisheries.

c. Obtain estimates of fishing effort in the Southeast U.S. shrimp fishery through the use of vessel monitoring systems, electronic logbooks, or other data collection sources.

Note: guidance and research requirements for shrimp trawl fisheries are contained in the Cooperative Bycatch Plan for the Southeast, available from NMFS.

d. Characterize and assess the impact of bycatch of regulatory discards in the commercial and recreational reef fish fisheries including depth-related release mortality for species caught with hook and line, bottom longline, and bandit gear. Studies are needed to evaluate the impacts of the Gulf of Mexico individual fishing quota programs on bycatch, including whether discards are due to harvest of undersized fish or lack of sufficient allocation. Studies are also needed to estimate the magnitude of discarded snapper-grouper species associated with quota and seasonal closures in the Gulf of Mexico and South Atlantic.

e. Characterize the species composition, age, size, sex, and disposition (e.g., discard mortality rates) of all fishes caught (landings and discards) by commercial and recreational fishermen in reef fish and mackerel fisheries with respect to depth and latitude, as well as estimate effort. Species of interest include: South Atlantic and Gulf of Mexico black grouper, red grouper, red snapper, gag, greater amberjack, hogfish, gray triggerfish, tilefish, yellowtail snapper, goliath grouper, scamp, vermilion snapper, and Spanish mackerel; South Atlantic white grunt, black sea bass, red porgy, warsaw grouper, speckled hind, wreckfish, blueline tilefish, and snowy grouper; Gulf of Mexico yellowedge grouper; and Caribbean yellowfin grouper, yellowedge grouper, red hind, silk snapper, queen snapper, yellowtail snapper, mutton snapper, queen triggerfish, surgeonfishes, and parrotfishes.

f. Identify gear and tactics that can be used to return regulatory discards to depth in the recreational and commercial reef fish fisheries to minimize or reverse pressure-related fishing trauma.

g. Develop on-board recording systems (e.g., video monitoring, electronic logbooks) that will capture information on discarded fishes in the commercial and recreational reef fish fisheries including species, length, depth, location, and disposition (float, swim, etc.).

h. Identify gear and tactics that can be used to reduce sea turtle interactions with reef fish bottom longline gear in the Gulf of Mexico.

2. Reef Fish and other Fishery Resources Associated with Reef Environments

Some species within the reef fish complex are overfished and/or experiencing overfishing because of directed efforts and bycatch in other fisheries. Reef fish are vulnerable to overfishing because they tend to concentrate over specific types of habitat, are often long-lived, may aggregate to spawn, and sometimes change sex.

a. Collect basic biological data for species in commercially and recreationally important fisheries. For all reef fish species, representative age, length, and sex composition data are needed for all sectors (commercial, MRFSS, headboat) gear, seasons, and areas. Life history studies are needed that cover the complete geographic range of species scheduled for assessments. Species-specific estimates of recruitment, fecundity, steepness, natural mortality, release mortality, and gear selectivity are also needed for stock assessments, as well as estimates of how catchability has changed overtime due to technological and other advances. Fishery-independent data that can be used to assess status and trends of reef fish species are needed, particularly in the Gulf of Mexico and Caribbean. In addition, data are needed on less dominant stocks not scheduled for assessments, including many Caribbean species.

(1) Age, growth, and reproduction of reef fish

(a) Describe the age, growth, and reproductive patterns, especially for South Atlantic and Gulf of Mexico red grouper, black grouper, red snapper, gag, greater amberjack, hogfish, tilefish, goliath grouper, yellowtail snapper, scamp, vermilion snapper, and Spanish mackerel; South Atlantic white grunt, black sea bass, red porgy, warsaw grouper, speckled hind, snowy grouper, blueline tilefish, and wreckfish; Gulf of Mexico yellowedge grouper and scamp; and Caribbean yellowfin grouper, red hind, silk snapper, queen snapper, yellowtail snapper, mutton snapper, queen triggerfish, surgeonfishes and parrotfishes that are scheduled for stock assessments. Black grouper, misty grouper, yellowedge grouper, red hind, speckled hind, coney, graysby, warsaw grouper, other less dominant stocks, and management units for which data are lacking in the Caribbean require more age information. Better methods and standardized techniques are needed for aging yellowedge grouper, tilefish, snowy grouper, blueline tilefish, and other deep water species. Discrepancies in fish age estimates by different institutions need to be resolved. Age composition of commercial and recreational discards is needed. Fecundity information is also needed for reef fish species from the Gulf of Mexico,

South Atlantic, and Caribbean.

(b) Collect otoliths from groupers, snappers, and other reef fish species according to the Gulf States Marine Fisheries Commission (GSMFC) otolith manual. If proposal is selected for funding, coordinate studies and design sampling systems to provide production-style aging programs for the reef fish fishery with Steve VanderKooy at GSMFC (228) 875-5912. Analyze age information (by gear and sector) considering temporal and geographic effects, where applicable. Develop standardized techniques for aging reef fishes. Resolve any discrepancies in fish age estimates by different institutions.

(c) Age sampling from commercial, headboat, and Marine Recreational Fishery Statistic Survey (MRFSS) that is representative of the catches for South Atlantic and Gulf of Mexico red grouper, black grouper, red snapper, gag, greater amberjack, hogfish, gray triggerfish, tilefish, vermilion snapper, and Spanish mackerel; South Atlantic white grunt, black sea bass, red porgy, warsaw grouper, speckled hind, blueline tilefish, and snowy grouper; Gulf of Mexico yellowedge grouper and scamp; and Caribbean yellowfin grouper, red hind, silk snapper, queen snapper, mutton snapper, yellowtail snapper, queen triggerfish, and yellowedge grouper.

(2) Population assessment of reef fish and other fishery resources associated with reef environments. Innovative methods are needed for assessing data-poor species, including length-based assessment approaches. Compare data-poor assessment approaches with approaches (e.g., age structured assessment model) for data-moderate or data rich species.

(3) Develop fishery-independent methods and oceanographic models for monitoring and predicting recruitment of reef fishes in the Gulf of Mexico and South Atlantic.

(4) Assess the contribution of live-bottom habitat, Marine Protected Areas in the South Atlantic and Gulf of Mexico, habitat areas of particular concern (HAPC) off Fort Pierce, Florida (*Oculina* bank), and off west central Florida (i.e., Florida Middle Grounds) to reef fish recruitment.

(5) Stock structure of reef fish and other fishery resources associated with reef fish environments.

(a) Examine retention and residency of reef fish species. Examine temporal and spatial differences in the size at age, size at maturity, and other life history characteristics.

(b) Genetic research on stock structure of red grouper, gag, black sea bass, and other commercially and recreationally important reef fishes in the Gulf and South Atlantic. Continue the oceanographic and genetic studies to identify the origin of spiny

lobster recruitment to the Southeast United States.

(c) Otolith microchemistry of dominant reef fish from the Gulf, South Atlantic, and Caribbean to determine estuarine nursery habitat.

(d) Coordinated tagging studies between researchers in the Gulf and South Atlantic to determine the magnitude of exchange of gag and greater amberjack between the Gulf and South Atlantic. Tagging data are needed to help elucidate movement of black sea bass between Mid-Atlantic and South Atlantic regions. A tag and recapture program for red drum in the Gulf of Mexico to help determine the status of the offshore portion of the stock. Tagging programs specifically designed to examine the mixing of king mackerel between Gulf and South Atlantic regions should be developed. Tagging data are needed for spiny lobster to provide estimates of growth and natural mortality.

b. Management of reef fish

(1) Identify ways to design, manage, and implement a U.S. Caribbean fishing permit specific to gear or fishery.

(2) Collect and assemble commercial and recreational catch information for reef fish species in the Caribbean. Needed data include: species caught, pounds landed, gear used, fishing effort (e.g., trip length, number of traps, number of sets, number of hooks), area and habitat fished, number of fishers, and depth fished. Information on landings by species is particularly needed in the U.S. Virgin Islands. Methods are also needed for improving fishery-independent data reporting in Puerto Rico and the U.S. Virgin Islands so that reliance on adjustment factors for estimating catch may be reduced.

(3) Develop a pilot program for fisheries-dependent and fisheries-independent sampling of reef fish species, such as groupers, tilefishes, and snappers, including quantifying bycatch, catch composition, and size frequency.

(4) Evaluate the utility of electronic logbooks and other data collection systems for commercial and for-hire fisheries in the Gulf of Mexico and South Atlantic. Projects should focus on validation of data and timeliness of data delivery.

(5) Evaluate the efficacy of various size limit and bag limit combinations for reducing reef fish mortality and bycatch.

(6) Evaluate historical catch and total removal estimates for use in stock assessments.

(7) Identify spawning locations for reef fishes in the Gulf of Mexico, South Atlantic, and Caribbean.

3. Red Snapper Research

Red snapper are overfished and undergoing overfishing in the South Atlantic and overfished in the Gulf of Mexico. Additional information is needed to improve stock assessments of red snapper.

a. Develop and evaluate gear, fishing tactics, and management measures to minimize the bycatch of or increase the survival of discarded red snapper and other reef fish species in the directed and shrimp trawl fisheries. Identify fishing tactics and gear that can be used to reduce red snapper interactions and discard mortality in the South Atlantic and Gulf of Mexico with hook-and-line gear.

b. Characterize and assess the impact of bycatch of undersized red snapper, including release mortality, during recreational and commercial fishing. Research on the catch-and-release mortality of red snapper and other reef fish species, by gear (e.g., capture by commercial bandit rigs that are electrically or hydraulically powered), sector (e.g., headboat, private boat, charter boat, commercial), and depth. Studies are needed to evaluate acute (short-term observations typically at surface by observers) with chronic, long-term release survival rates. More information is needed on release mortality and discard rate by depth, fish size, season, and fishery. Studies are also needed to evaluate the impacts of the Gulf of Mexico individual fishing quota program on bycatch, including whether discards are due to harvest of undersized fish or lack of sufficient allocation.

c. Research to document predation rates on discarded red snapper and other reef fish species.

d. Life history studies that cover the complete range of the species, including fecundity estimates by length and age. Fecundity samples are particularly needed from older red snapper.

e. Pilot projects for developing red snapper abundance indices covering a broad seasonal/spatial scale, age structure, age specific mortality rates, and recruitment indices.

f. Estimates of red snapper mortality rates through traditional tagging methods or utilization of genetic tag methods. Obtain better estimates of red snapper release mortality rates in commercial and recreational fisheries.

g. Research (e.g., otolith analysis, tagging, etc.) to better describe stock structure and mixing rates between the eastern and western Gulf of Mexico. Research should include oceanographic data to determine whether transport from the Campeche Banks could be supplying important numbers of larvae to the western stock.

h. Provide information on the effects of shrimp trawling on red snapper through community effects including nutrient cycling and changes in predation pressure.

i. Examine the age structure of red snapper taken from longlines (survey and fishery) and other gear, to evaluate availability to gear types and the geographic distribution of fish as they age.

j. Conduct representative sampling of age- and length-composition consistently across area, time, and gear.

k. Research to clarify the magnitude and timing of density-dependent compensation in juveniles by estimating survival at different densities of juvenile abundance.

l. Utilize simulation studies to identify and evaluate appropriate management strategies (including use of various reference points) and corresponding assessment modeling approaches for the fishery complex (shrimp, red snapper, vermilion snapper, etc.). Research could also test the hypothesis that red snapper production is enhanced in some way by increased shrimp trawling.

m. Obtain better estimates of red snapper natural mortality and release mortality in commercial and recreational fisheries.

n. Use genetics techniques to reinvestigate the stock structure and estimate the effective population size of red snapper in the Gulf of Mexico and along the Atlantic coast.

o. Investigate life history (i.e. growth, survival, feeding, habitat preferences, movement) of larval/juvenile (ages 0 and 1) red snapper in the South Atlantic.

p. Conduct fishery-independent surveys in the Gulf of Mexico to reconcile differences between catch per unit effort indices and fishery-dependent age composition used for the stock assessment.

q. Monitor the expansion or repopulation of reefs by red snapper along the west coast of Florida and assess the potential impact on gag and red grouper populations in terms of potential competitive interactions and catch based estimates of abundance.

r. Research, including gut content analysis of groundfishes and predator-prey interactions, to assess possible impacts of reductions in shrimp trawl bycatch on post-settlement survival of juvenile red snapper and other reef fishes.

4. Economic and Sociocultural Studies

Social and economic assessments are required components of all fishery management plans and actions. These assessments support the accomplishment of management objectives while minimizing adverse social and economic impacts.

a. Estimate effort supply models in response to regulatory actions (e.g., annual catch limits (ACLs), individual quotas, time/area closures, trip and bag limits, and size limits) and other external forces (e.g., imports, trade restrictions, hurricanes, and other environmental factors) for the commercial, for-hire and recreational sectors. Research should consider how targeting behavior changes spatially and temporally (e.g., when to fish, where to fish, how much to fish, what species to target, what gear to use, etc.) due to the above-mentioned forces.

b. Evaluate the allocation of harvests (total allowable catch (TAC)/quotas) among competing user groups. Key fisheries include individual species (e.g., red snapper, vermilion snapper, king mackerel, red grouper, and gag), and fishery management plans (FMPs)-designated species groups (Atlantic snapper-grouper and Gulf of Mexico grouper). The analysis should quantify the economic surplus to each sector and identify the allocation that maximizes the economic benefit to the nation, subject to the biological constraints specified by the respective rebuilding plans, where appropriate. Analysis should also consider behavioral responses in targeting and effort redirection (if applicable). Evaluation of the commercial sector should include analysis by gear type and fishing location (western and northern Gulf of Mexico, eastern Gulf, Florida Keys), including any FMP-designated location/season/zone, while the evaluation of the recreational sector should distinguish between charter, party boat, and private angler by fishing location.

c. Evaluate the socio-economic performance of past regulatory actions (e.g., area and seasonal closures, trip limits, bag limits, minimum size, etc.) in the commercial, for-hire, and recreational sectors. Research should also consider regulatory tools that would help minimize the socio-economic impact of accountability measures.

d. Evaluate the potential use of catch shares for the for-hire and recreational (private boat) sectors.

e. Estimate demand and supply relationships in the market for for-hire services. Fishing quality (stock size, catch per unit effort, average fish size) as a determinant of demand and supply should be emphasized. Key species are red drum, king mackerel, Spanish mackerel, red grouper, gag, black grouper, dolphin, wahoo, vermilion snapper, yellowtail snapper, red snapper, greater amberjack, and Atlantic black sea bass. The models should be applicable to the evaluation of the economic effects of common management tools, including, but not limited to, minimum and maximum size limits, bag limits, and seasonal closures. Important supply and demand factors such as cost, trip duration, time of departure, capacity, services offered, target species, fishing location, etc., should be investigated. Specific attention should also be given to species target behavior, time and space decisions. The project should clearly address the differences between the charter and headboat industries, such as clientele, target species, location of services, and affiliated tourism.

f. Develop economic incentives and other innovative alternatives to minimize by-catch, including by-catch quotas, gear and season/area restrictions. The project should contrast the relative costs, potential gains, and level of by-catch reduction associated with traditional methods and any innovative alternatives addressed by the project.

g. Examine the costs and benefits of vessel and/or permit buy-back programs in the reef-fish and shrimp fisheries (Gulf of Mexico shrimp and South Atlantic rock shrimp). The analysis must include costs of the program and examination of alternative funding mechanisms.

h. Develop and conduct a survey of crew members/mates who are not owner-operators in commercial and for-hire fisheries in the Southeast. Collect important social and economic information, including, but not limited to, basic household demographic information, household income and debt, employment patterns (seasonal, across fisheries, non-fishing), measures of well-being, and attitudinal information concerning fishing, fisheries management, and expectations of future well-being and continued participation in the fishing industry. Appropriate sampling to support analysis by fishery and gear-type will be required.

i. Evaluate the effect of recent trade-related actions (e.g., anti-dumping duties, payments under the Byrd Amendment, import bans, or other restrictions) and government assistance programs (e.g., trade assistance adjustments, hurricane and other disaster assistance) on the economic status and performance of the domestic shrimp fishery, including both the harvesting and processing sectors.

j. Evaluate the social impacts of the Gulf of Mexico Red Snapper individual fishing quota (IFQ) program. This research would examine how social relationships have changed, by conducting a social network analysis of the leasing and selling of shares. This research should examine: the central actor's ownership of shares and how this has changed over time; the online communities that have formed since implementation of the program and provide a venue for buying, selling, and leasing shares; and the previous and current fishing strategies (location, species fished, and landings, etc.) of fishermen who have sold their shares and those who were not granted shares and currently lease shares.

k. Evaluate the social capital within fishing communities. Projects should include an examination of: existing fishing-related organizations; existing organizations in a community (e.g., church, civic association, etc.); existing and potential partnerships for community organization; perceptions and interest in organizing of fishermen; perceptions and interest of community members; and barriers to organization. Projects should focus on geographically defined communities and encompass both commercial and recreational fisheries. Case studies of successful fishermen's organizations may be used for context and background, but focus of the project should be on adopting timely and efficient measures of social capital, defining the components of social capital for each respective

community, and describing differences among communities.

l. Identify and evaluate the associations between fishermen, communities, and specific habitats. Descriptions of various gear types and their associated habitats within fishing communities should include a measure of sensitivity of habitat and the fishing community's reliance on those habitats. Social impacts for various habitat-related issues and actions, such as essential fish habitat (EFH), HAPC, restoration, inland water-related issues should be discussed. The researchers should work with habitat and social science staff to identify regionally focused topics and develop a methodology for evaluating the social impacts of the implementation of management measures to address habitat-related issues.

m. Evaluate the existence and magnitude of subsistence fishing, including consideration of regional, demographic, or other factors that influence the rate of subsistence fishing. The research approach should be either an in-depth study of a particular fishing community or a broader regional approach using survey methodology. The research should examine all aspects of subsistence fishing, whether from the shore, pier, or vessels at sea, and encompass subsistent consumption by persons who otherwise would be considered recreational anglers as well as persons who are commercial fishermen who retain a significant portion of their harvests for personal/family consumption. For subsistence within the "recreational" sector, the incidence of subsistence fishing by mode, i.e., charter, headboat, or private angler (shore or boat), should be examined.

5. Aquaculture

Priorities for research include:

a. Develop hatchery methods for spawning and rearing reef fishes (e.g., snappers, groupers) coastal migratory pelagics (e.g., mackerels, cobia), red porgy, and greater amberjack. Projects should focus on increasing hatchery capacity, enhancing research and development capabilities in order to support culture of marine species in the marine environment (e.g., cages), on land (e.g., tanks and ponds), and for marine stock replenishment.

b. Develop science-based methodologies for evaluating effects associated with marine aquaculture and stock replenishment. Pilot studies should be developed in conjunction with commercial aquaculture operations to evaluate potential environmental effects (e.g., benthic habitat, water quality, protected resources, genetics). Project results should emphasize methodologies and guidance for avoiding and/or minimizing potential negative impacts and examine any potential beneficial effects or synergies with other uses of the marine environment.

c. Conduct studies on the siting of commercial aquaculture facilities in an ecosystem

management context (e.g., using GIS, oceanographic models). Studies should consider oceanographic factors and interactions of aquaculture facilities with marine ecosystems when identifying appropriate areas for aquaculture development.

d. Conduct studies assessing the social and economic effects of marine aquaculture (offshore, on land, stock replenishment).

C. Program Authority

Authority for the Marine Fisheries Initiative Program is provided by the following: 16 U.S.C 753a.

II. Award Information

A. Funding Availability

Approximately $2.0 million may be available in fiscal year (FY) 2012 for projects. This amount includes possible in-house projects. Actual funding availability for this program is contingent upon Fiscal Year 2012 Congressional appropriations. The NMFS Southeast Regional Office anticipates awarding approximately ten projects that will range from $25,000 to $175,000 per year for each project (not to exceed $175,000 per year). The total Federal amount that may be requested shall not exceed $175,000 for a one year project, $350,000 for a two year project, and $525,000 for a three year project. Applications exceeding these amounts will be rejected/returned without further consideration. Publication of this notice does not obligate NMFS to award any specific grant or cooperative agreement or any of the available funds. Project proposals accepted for funding with a project period over one year do not have to compete for the additional years of funding. However, funding for the additional years is contingent upon the availability of funds and satisfactory performance and is at the sole discretion of the agency.

B. Project/Award Period

The period of awards may be from one to three years.

C. Type of Funding Instrument

Proposals selected for funding will be funded through a grant or cooperative agreement depending upon the amount of collaboration, participation, or involvement of NOAA in the management of the project. An example of substantial involvement is: an exchange between the recipient and a NMFS laboratory of sample materials for analysis.

III. Eligibility Information

A. Eligible Applicants

Eligible applicants may be institutions of higher education, nonprofits, commercial organizations, individuals, state, local and Indian tribal governments. Federal agencies or institutions are not eligible. Foreign governments, organizations under the jurisdiction of foreign governments, and international organizations are excluded for purposes of this solicitation since the objective of the MARFIN program is to optimize research and development benefits from U.S. marine fishery resources.

B. Cost Sharing or Matching Requirement

Cost-sharing is not required for this program.

C. Other Criteria that Affect Eligibility

Not applicable.

IV. Application and Submission Information

A. Address to Request Application Package

Application packages are available through www.grants.gov. If applicants do not have internet access, applications may be requested from: National Marine Fisheries Service, State/Federal Liaison Branch, 263 13th Avenue South, St. Petersburg, FL 33701.

B. Content and Form of Application

1. Format Requirements:

All pages should be single-spaced and must be composed in at least a 12-point font with one-inch margins on 81/2 x 11 paper. The project description may not exceed 25 pages, exclusive of title page, project synopsis, literature cited, budget information, resumes of investigator, and letters of support (if any). Failure to follow the requirements will result in the rejection of the application and subsequent return.

Any PDF or other attachments that are included in an electronic application must meet the above format requirement when printed out.

2. Content Requirements:

The following information must be included. Failure to submit will result in the rejection of the application and subsequent return.

a. Signed Title Page: The Application for Federal Assistance (SF-424) must be

signed by the authorized representative. Electronic signatures submitted through www.grants.gov satisfy this requirement.

b. Project Synopsis (1-page limit): It is critical that the project synopsis accurately describes the project being proposed and conveys all essential elements of the activities. It is imperative that potential applicants tie their proposals to one of the program priorities described in Section I.B., Funding Opportunity Description. The Project Synopsis must identify the principal investigator(s) and a brief statement of qualifications.

c. Project Description (25-page limit): The applicant should describe and justify the project being proposed and address each of the evaluation criteria as described below in Section V. , Application Review Information. Project descriptions should include clear objectives and specific approaches to achieving those objectives, including methods, timelines, and expected outcomes.

d. Literature Cited: If applicable.

e. Budget and Budget Justification: There must be a detailed budget justification accompanying the SF424A Budget Information form. Indicate matching funds if provided in a separate column. Provide justifications for all budget items in sufficient detail to enable the reviewers to evaluate the appropriateness of the funding requested. For multi-year award applications, indicate and describe separate funding amounts for each funding year in the detailed justification. You must submit a copy of a current negotiated indirect cost rate agreement with a Federal agency, if such agreement exists.

f. Resumes (2 pages maximum for each major participant).

g. Standard Application Forms: Please refer to the appropriate application package available through Grants.gov.

h. NOAA must analyze the potential environmental impacts, as required by the National Environmental Policy Act (NEPA). Consequently, as part of an applicant's package, applicants are required to answer the following questions:

(1) Has any National Environmental Policy Act (NEPA) or other environmental compliance documentation (e.g., Endangered Species Act Biological Opinion; Letter of Concurrence or Biological Assessment/Evaluation; Clean Water Act permit; State Historic Preservation Officer consultation; state environmental compliance documentation (mini-NEPA); etc.) been completed? If yes, list the environmental compliance documentation that has been completed and provide copies of the documentation as appropriate.

(2) Would the proposed activity or environmental impacts of the activity be subject to public controversy? If yes, describe the potential controversy.

(3) Would the proposed activity have potential environmental impacts that are highly uncertain or involve unique or unknown risks? If yes, describe the impacts that are uncertain or involve unique or unknown risks.

(4) Is the proposed activity related to other activities (both NOAA and non-NOAA that together may cumulatively adversely impact the environment? For example, the proposed activity is one of a series of projects that together may cause a change in the pattern of pollutant discharge, traffic generation, economic change, flood plain change, or land use. If yes, briefly describe the other activities and discuss how the related projects would have cumulative impacts on the environment.

(5) Would the proposed activity involve a non-native species? If yes, describe how the non-native species is involved.

(6) Would the proposed activity occur within a unique geographic area of notable recreational, ecological, scientific, cultural, historical, scenic or aesthetic importance? If yes, describe the area, including the name or designation if known.

(7) Would the proposed activity affect districts, sites, highways, structures, or objects listed in or eligible for listing in the National Register of Historic Places or cause loss or destruction of significant scientific, cultural, or historical resources? If yes, describe the impact.

(8) Would the proposed activity affect public health or safety? The effects may be adverse or beneficial and temporary, long-term, or permanent. If yes, describe the effects and the circumstances that would cause these impacts.

(9) Would the proposed activity affect directly or indirectly, in an adverse or beneficial manner, any listed endangered, threatened, or otherwise protected species or their critical habitat under federal and state laws including the Endangered Species Act and the Marine Mammal Protection Act? If yes, name the species and/or habitat that will be impacted and describe the circumstances that would impact the species and/or habitat.

Applications must identify the principal participants, and include copies of any agreements describing the specific tasks to be performed by participants. Project applications should give a clear presentation of the proposed work, the methods for carrying out the project, its relevance to managing and enhancing the use of Gulf of Mexico and/or South Atlantic fishery resources, and cost estimates as they relate to specific aspects of the project. Budgets must include a detailed breakdown, by category of expenditures, with appropriate justification for both the Federal and non-Federal shares.

All applications must include funding for the principal investigator to participate in an

annual MARFIN Conference that NMFS may hold in the southeast regional area at the completion of the project. The conference funds must be obligated and held by the recipient in reserve for later use, when the conference may be held. The presenter will be asked to provide an abstract and PowerPoint presentation to NMFS in advance if the conference is held.

Applications should exhibit familiarity with related work that is completed or ongoing. Proposals should state whether the research applies to the Gulf of Mexico, South Atlantic or North Atlantic for highly migratory species or multiple areas. Successful applicants are required to collect and manage data in accordance with standardized procedures and format approved or specified by NMFS and to participate with NMFS in specific cooperative activities that are determined by consultations between NMFS and successful applicants before project grants are awarded. All data collected as part of an awarded grant must be provided to the National Marine Fisheries Service.

C. Submission Dates and Times

Applications must be received by 5:00 p.m. Eastern Time on July 18, 2011, to be considered for funding. For applications submitted through grants.gov, a date and time receipt indication is included and will be the basis of determining timeliness. Hard copy submissions will be dated and time stamped when they are received in the NMFS office. Hard copy applications arriving after the closing date given above will be accepted for review only if the applicant can document that the application was provided to a delivery service that guaranteed delivery prior to the specified closing date and time; in any event, hard copy applications received by NMFS later than two business days following the closing date will not be accepted. Faxed or emailed copies of applications will not be accepted.

D. Intergovernmental Review

Applications submitted by state and local governments are subject to the provisions of Executive Order (E.O.) 12372, Intergovernmental Review of Federal Programs. Any applicant submitting an application for funding is required to complete item 16 on SF-424 regarding clearance by the State Single Point of Contact (SPOC) established as a result of E.O. 12372. To find out about and comply with a State's process under EO 12372, the names, addresses and phone numbers of participating SPOCs are listed in the Office of Management and Budget's home page at:
http://www.whitehouse.gov/omb/grants/spoc.html.

E. Funding Restrictions

Indirect Costs - If the applicant does not have a negotiated indirect cost rate agreement with a Federal agency, then they may direct cost all charges, or submit a request to establish a rate. The Federal share of indirect costs awarded will not exceed 25 percent of

the total direct costs identified on Standard Form 424A Budget Information. The indirect rate is fixed at 25 percent in order to maximize the funds available for actual research and to allow applicants to recover a reasonable indirect cost.

Construction is not an allowable activity under this program. Therefore, applications will not be accepted for construction projects.

Funding beyond the first year will be dependent upon satisfactory performance and the continued availability of funds.

F. Other Submission Requirements

Please refer to important information in "Submission Dates and Times" above to help ensure your application is received on time.

G. Address for Submitting Proposals

Applications must be submitted through www.grants.gov unless an applicant does not have internet access. In that case, hard copies with original signatures may be sent to: National Marine Fisheries Service, State/Federal Liaison Branch, 263 13th Avenue South, St. Petersburg, FL 33701.

V. Application Review Information

A. Evaluation Criteria

Applications responsive to this solicitation will be evaluated by three or more appropriate private and/or public sector experts to determine their technical merit. These reviewers will provide individual evaluations of the proposals. No consensus advice will be given. These reviewers provide comments and assign scores to the applications based on the following criteria, with the points shown in parentheses:

1. Importance/relevance and applicability of proposed projects to the program goals (35 points):

This criterion ascertains whether there is intrinsic value in the proposed work and/or relevance to NOAA, Federal, regional, state, or local activities. For this program, this includes: Does the proposal have a clearly stated goal(s) with associated objectives that meet the needs outlined in the project narrative?

2. Technical/scientific merit (40 points):

This criterion assesses whether the approach is technically sound and/or innovative, if the methods are appropriate, and whether there are clear project goals and objectives. For this

program, this includes: Does the proposal clearly identify and describe, in the project outline and statement of work, scientific methodologies and analytical procedures that will adequately address project goals and objectives?

3. Overall qualifications of applicants (15 points):

This criterion ascertains whether the applicant possesses the necessary education, experience, training, facilities, and administrative resources to accomplish the project. For this program, this includes: Does the applicant possess the necessary education and identify the appropriate resources to complete the project?

4. Project costs (10 points):

This criterion evaluates the budget to determine if it is realistic and commensurate with the project needs and time frame. For this program, this includes: Does the budget appropriately allocate and justify costs?

5. Outreach and education (no points):

This criterion assesses whether the project provides a focused and effective education and outreach strategy regarding NOAA's mission to protect the Nation's natural resources. This criterion is not used by the MARFIN program.

B. Review and Selection Process

When we receive applications we will screen them to ensure that they were received by the deadline date (see Submission Dates and Times); include SF 424 authenticated by an authorized representative; were submitted by an eligible applicant; address one of the funding priorities for federally managed species; and include a budget, statement of work, and milestones, and identify the principal investigator. We do not have to screen applications before the submission deadline in order to identify deficiencies that would cause your application to be rejected so that you would have an opportunity to correct them. However, should we do so and provide you information about deficiencies, or should you independently decide it is desirable to do so, you may correct any deficiencies in your application before the deadline. After the deadline, the application must remain as submitted; no changes can be made to it. If your application does not conform to these requirements and the deadline for submission has passed, the application will be returned without further consideration.

Following the technical review, we will determine the score for each individual review and average the individual review scores to determine the final score for each application. Then, we will rank applications in descending order by their average scores. The top twenty applications will be forwarded to a panel for further review. Those applications that are not in the top twenty category will be eliminated from further consideration.

Those applications that meet the top twenty ranking will be presented to a panel of non-NOAA fishery experts known as the MARFIN panel. Each member of the MARFIN Panel individually considers: if needs of the Agency are addressed in each proposal; if the project assists industry; and if the project addresses issues that are important to regional fisheries management. Needs of the Agency follow the information identified in the Magnuson-Stevens Act, Title III, Sections 301 and 404. The individuals on the Panel provide comments and rate each of these proposals as either "Recommended for Funding" or "Not Recommended for Funding". The Panel will give no consensus advice. The Program Manager ranks the proposals in the order of preferred funding based on the number of Panel members recommending the proposal for funding. In the event that there are two or more projects tied in the panel's percent selected category that are competing for the final available funds, all tied projects will be given equal consideration by the selecting official regardless of their peer review score. The selecting official will resolve any ties by selecting the projects that are most pertinent to the research needs as listed under the program priorities at the time of selection. Program priorities are not listed in order of importance because the importance can change over time.

C. Selection Factors

The MARFIN Panel ratings will be provided in rank order to the Selecting Official for final funding recommendations. The Selecting Official shall award in the rank order unless the proposal is justified to be selected out of rank order based on the following factors:

1. Availability of funding;

2. Balance/distribution of funds:

   a. geographically
   b. by type of institutions
   c. by type of partners
   d. by research areas
   e. by project types

3. Duplication of other projects funded or considered for funding by NOAA/federal agencies;

4. Program priorities and policy factors;

5. Applicant's prior award performance;

6. Partnerships with/Participation of targeted groups;

7. Adequacy of information necessary for NOAA staff to make a NEPA determination and draft necessary documentation before recommendations for funding are made to the Grants Officer.

The Selecting Official may negotiate the funding level of the proposal. The Selecting Official makes final recommendations for award to the Grants Officer who is authorized to obligate funds.

D. Anticipated Announcement and Award Dates

Subject to the availability of funds, successful applications are usually recommended for funding. within 275 days from the date of publication of this notice. The earliest start date of awards (1st of a month) is approximately 395 days after the date of publication of this notice. Applicants should consider this selection and processing time in developing requested start dates for their applications.

The exact amount of funds awarded, the final scope of activities, the project duration, and specific NMFS cooperative involvement with the activities of each project are determined in pre-award negotiations between the applicant, the NOAA Grants Office and the NMFS Program Office. Recipients must not initiate projects until an approved award is received from the NOAA Grants Office.

VI. Award Administration Information

A. Award Notices

Successful applicants will receive notification that the application has been approved for funding by the NOAA Grants Management Division with the issuance of an award signed by a NOAA grants officer. This is the authorizing document that allows the project to begin. The award will be issued electronically to the authorizing official of the project. Unsuccessful applicants will be notified that their proposals were not selected for recommendation by the program office.

B. Administrative and National Policy Requirements

Administrative and national policy requirements for all Department of Commerce awards are contained in the Department of Commerce Pre-Award Notification Requirements for Grants and Cooperative Agreements contained in the Federal Register notice of February 11, 2008 (73 FR 7696). A copy of the notice may be obtained at http://www.gpoaccess.gov/fr/search.html

Limitation of Liability - Funding for potential projects in this notice is contingent upon the availability of funds. In no event will NOAA or the Department of Commerce be responsible for proposal preparation costs. Publication of this announcement does not

oblige NOAA to award any specific project or to obligate any available funds.

National Environmental Policy Act (NEPA) - NOAA must analyze the potential environmental impacts, as required by the National Environmental Policy Act (NEPA), for applicant projects or proposals which are seeking NOAA federal funding opportunities. Detailed information on NOAA compliance with NEPA can be found at the following NOAA NEPA Web site at www.nepa.noaa.gov/, including our NOAA Administrative Order 216-6 for NEPA website at http://www.corporateservices.noaa.gov/~ames/NAOs/Chap_216/naos_216_6.html and the Council on Environmental Quality implementation regulations website at http://ceq.hss.doe.gov/nepa/regs/ceq/toc_ceq.htm

Consequently, as part of an applicant's package, and under their description of their program activities, applicants are required to provide detailed information on the activities to be conducted, locations, sites, number and species expected to be caught, species and habitat to be affected, possible construction activities, and any environmental concerns that may exist (e.g., the use and disposal of hazardous or toxic chemicals, introduction of non-indigenous species, impacts to endangered and threatened species, aquaculture projects, and impacts to coral reef systems). In addition to providing specific information that will serve as the basis for any required impact analyses, applicants may also be requested to assist NOAA in drafting of an environmental assessment, if NOAA determines an assessment is required.

Applicants will also be required to cooperate with NOAA in identifying feasible measures to reduce or avoid any identified adverse environmental impacts of their proposal. The failure to do so shall be grounds for not selecting an application. In some cases if additional information is required after an application is selected, funds can be withheld by the grants officer under a special award condition requiring the recipient to submit additional environmental compliance information sufficient to enable NOAA to make as assessment of any impacts that a project may have on the environment.

C. Reporting

Unless otherwise specified by terms of the award, performance and financial reports are to be submitted semi-annually. Performance reports should include progress on identified milestones. Electronic submission of reports is required and conducted through the use of NOAA's Grants Online system. All reports will be submitted on a semi-annual schedule and must be submitted no later than 30 days following the end of each 6-month period from the start date of the award. In addition to the financial and performance reports, grant recipients will be required to submit a comprehensive final performance report 90 days after the project end date.

VII. Agency Contacts

For questions regarding the application process, you may contact: Robert Sadler, (727) 824-5324, or Robert.Sadler@noaa.gov.

VIII. Other Information

Applicants must have a Dun and Bradstreet Data Universal Numbering System (DUNS) number (www.dnb.com) and be registered in the Central Contractor Registry (CCR) (www.ccr.gov). Allow a minimum of thirty days to receive a DUNS number and to be registered in CCR. Applicants are strongly encouraged not to wait until the application deadline date to begin the application process through http://www.grants.gov.