

Appendix A. Glossary

Acceptable Biological Catch (ABC): Maximum amount of fish stock than can be harvested without adversely affecting recruitment of other components of the stock. The ABC level is typically higher than the total allowable catch, leaving a buffer between the two.

ALS: Accumulative Landings System. NMFS database which contains commercial landings reported by dealers.

Biomass: Amount or mass of some organism, such as fish.

B_{MSY}: Biomass of population achieved in long-term by fishing at F_{MSY} .

Bycatch: Fish harvested in a fishery, but not sold or kept for personal use. Bycatch includes economic discards and regulatory discards, but not fish released alive under a recreational catch and release fishery management program.

Caribbean Fishery Management Council (CFMC): One of eight regional councils mandated in the Magnuson-Stevens Fishery Conservation and Management Act to develop management plans for fisheries in federal waters. The CFMC develops fishery management plans for fisheries off the coast of the U.S. Virgin Islands and the Commonwealth of Puerto Rico.

Catch Per Unit Effort (CPUE): The amount of fish captured with an amount of effort. CPUE can be expressed as weight of fish captured per fishing trip, per hour spent at sea, or through other standardized measures.

Charter Boat: A fishing boat available for hire by recreational anglers, normally by a group of anglers for a short time period.

Cohort: Fish born in a given year. (See year class.)

Control Date: Date established for defining the pool of potential participants in a given management program. Control dates can establish a range of years during which a potential participant must have been active in a fishery to qualify for a quota share.

Constant Catch Rebuilding Strategy: A rebuilding strategy where the allowable biological catch of an overfished species is held constant until stock biomass reaches B_{MSY} at the end of the rebuilding period.

Constant F Rebuilding Strategy: A rebuilding strategy where the fishing mortality of an overfished species is held constant until stock biomass reached B_{MSY} at the end of the rebuilding period.

Directed Fishery: Fishing directed at a certain species or species group.

Discards: Fish captured, but released at sea.

Discard Mortality Rate: The percent of total fish discarded that do not survive being captured and released at sea.

Derby: Fishery in which the TAC is fixed and participants in the fishery do not have individual quotas. The fishery is closed once the TAC is reached, and participants attempt to maximize their harvests as quickly as possible. Derby fisheries can result in capital stuffing and a race for fish.

Effort: The amount of time and fishing power (i.e., gear size, boat size, horsepower) used to harvest fish.

Exclusive Economic Zone (EEZ): Zone extending from the shoreline out to 200 nautical miles in which the country owning the shoreline has the exclusive right to conduct certain activities such as fishing. In the United States, the EEZ is split into state waters (typically from the shoreline out to 3 nautical miles) and federal waters (typically from 3 to 200 nautical miles).

Exploitation Rate: Amount of fish harvested from a stock relative to the size of the stock, often expressed as a percentage.

F: Fishing mortality.

Fecundity: A measurement of the egg-producing ability of fish at certain sizes and ages.

Fishery Dependent Data: Fishery data collected and reported by fishermen and dealers.

Fishery Independent Data: Fishery data collected and reported by scientists who catch the fish themselves.

Fishery Management Plan: Management plan for fisheries operating in the federal produced by regional fishery management councils and submitted to the Secretary of Commerce for approval.

Fishing Effort: Usually refers to the amount of fishing. May refer to the number of fishing vessels, amount of fishing gear (nets, traps, hooks), or total amount of time vessels and gear are actively engaged in fishing.

Fishing Mortality: A measurement of the rate at which fish are removed from a population by fishing. Fishing mortality can be reported as either annual or instantaneous. Annual mortality is the percentage of fish dying in one year. Instantaneous is that percentage of fish dying at any one time.

Fishing Power: Measure of the relative ability of a fishing vessel, its gear, and its crew to catch fishes, in reference to some standard vessel, given both vessels are under identical conditions.

F_{30%SPR}: Fishing mortality that will produce a static SPR = 30%.

F_{45%SPR}: Fishing mortality that will produce a static SPR = 45%.

F_{OY}: Fishing mortality that will produce OY under equilibrium conditions and a corresponding biomass of B_{OY}. Usually expressed as the yield at 85% of F_{MSY}, yield at 75% of F_{MSY}, or yield at 65% of F_{MSY}.

F_{MSY}: Fishing mortality that if applied constantly, would achieve MSY under equilibrium conditions and a corresponding biomass of B_{MSY}

Fork Length (FL): The length of a fish as measured from the tip of its snout to the fork in its tail.

Gear restrictions: Limits placed on the type, amount, number, or techniques allowed for a given type of fishing gear.

Growth Overfishing: When fishing pressure on small fish prevents the fishery from producing the maximum poundage. Condition in which the total weight of the harvest from a fishery is improved when fishing effort is reduced, due to an increase in the average weight of fishes.

Gulf of Mexico Fishery Management Council (GFMC): One of eight regional councils mandated in the Magnuson-Stevens Fishery Conservation and Management Act to develop management plans for fisheries in federal waters. The GFMC develops fishery management plans for fisheries off the coast of Texas, Louisiana, Mississippi, Alabama, and the west coast of Florida.

Head Boat: A fishing boat that charges individual fees per recreational angler onboard.

Highgrading: Form of selective sorting of fishes in which higher value, more marketable fishes are retained, and less marketable fishes, which could legally be retained are discarded.

Individual Fishing Quota (IFQ): Fishery management tool that allocates a certain portion of the TAC to individual vessels, fishermen, or other eligible recipients.

Longline: Fishing method using a horizontal mainline to which weights and baited hooks are attached at regular intervals. Gear is either fished on the bottom or in the water column.

Magnuson-Stevens Fishery Conservation and Management Act: Federal legislation responsible for establishing the fishery management councils and the mandatory and discretionary guidelines for federal fishery management plans.

Marine Recreational Fisheries Statistics Survey (MRFSS): Survey operated by NMFS in cooperation with states that collects marine recreational data.

Maximum Fishing Mortality Threshold (MFMT): The rate of fishing mortality above which a stock's capacity to produce MSY would be jeopardized.

Maximum Sustainable Yield (MSY): The largest long-term average catch that can be taken continuously (sustained) from a stock or stock complex under average environmental conditions.

Minimum Stock Size Threshold (MSST): The biomass level below which a stock would be considered overfished.

Modified F Rebuilding Strategy: A rebuilding strategy where fishing mortality is changed as stock biomass increases during the rebuilding period.

Multispecies fishery: Fishery in which more than one species is caught at the same time and location with a particular gear type.

National Marine Fisheries Service (NMFS): Federal agency within NOAA responsible for overseeing fisheries science and regulation.

National Oceanic and Atmospheric Administration: Agency within the Department of Commerce responsible for ocean and coastal management.

Natural Mortality (M): A measurement of the rate at which fish are removed from a population by natural causes. Natural mortality can be reported as either annual or instantaneous. Annual mortality is the percentage of fish dying in one year. Instantaneous is that percentage of fish dying at any one time.

Optimum Yield (OY): The amount of catch that will provide the greatest overall benefit to the nation, particularly with respect to food production and recreational opportunities and taking into account the protection of marine ecosystems.

Overfished: A stock or stock complex is considered overfished when stock biomass falls below the minimum stock size threshold (MSST) (e.g., current biomass < MSST = overfished).

Overfishing: Overfishing occurs when a stock or stock complex is subjected to a rate of fishing mortality that exceeds the maximum fishing mortality threshold (e.g., current fishing mortality rate > MFMT = overfishing).

Quota: Percent or annual amount of fish that can be harvested.

Recruitment (R): Number or percentage of fish that survives from hatching to a specific size or age.

Recruitment Overfishing: The rate of fishing above which the recruitment to the exploitable stock becomes significantly reduced. This is characterized by a greatly reduced spawning stock, a decreasing proportion of older fish in the catch, and generally very low recruitment year after year.

Scientific and Statistical Committee (SSC): Fishery management advisory body composed of federal, state, and academic scientists, which provides scientific advice to a fishery management council.

Selectivity: The ability of a type of gear to catch a certain size or species of fish.

South Atlantic Fisheries Management Council (SAFMC): One of eight regional councils mandated in the Magnuson-Stevens Fishery Conservation and Management Act to develop management plans for fisheries in federal waters. The SAFMC develops fishery management plans for fisheries off North Carolina, South Carolina, Georgia, and the east coast of Florida.

Spawning Potential Ratio (Transitional SPR): Formerly used in overfished definition. The number of eggs that could be produced by an average recruit in a fished stock divided by the number of eggs that could be produced by an average recruit in an unfished stock. SPR can also be expressed as the spawning stock biomass per recruit (SSBR) of a fished stock divided by the SSBR of the stock before it was fished.

% Spawning Per Recruit (Static SPR): Formerly used in overfishing determination. The maximum spawning per recruit produced in a fished stock divided by the maximum spawning per recruit, which occurs under the conditions of no fishing. Commonly abbreviated as %SPR.

Spawning Stock Biomass (SSB): The total weight of those fish in a stock which are old enough to spawn.

Spawning Stock Biomass Per Recruit (SSBR): The spawning stock biomass divided by the number of recruits to the stock or how much spawning biomass an average recruit would be expected to produce.

Total Allowable Catch (TAC): The total amount of fish to be taken annually from a stock or stock complex. This may be a portion of the Allowable Biological Catch (ABC) that takes into consideration factors such as bycatch.

Total Length (TL): The length of a fish as measured from the tip of the snout to the tip of the tail.

Appendix B. History of Management.

History of Management of the South Atlantic Snapper Grouper Fishery

The snapper grouper fishery is highly regulated; some of the species included in this amendment have been regulated since 1983. **Table 1** summarizes actions in each of the amendments to the original FMP, as well as some events not covered in amendment actions.

Table 1. History of management for the Snapper Grouper Fishery of the South Atlantic region.

Document	All Actions Effective By:	Proposed Rule (PR) Final Rule (FR)	Major Actions. Note that not all details are provided here. Please refer to Proposed and Final Rules for all impacts of listed documents.
FMP (1983)	08/31/83	PR: 48 FR 26843 FR: 48 FR 39463	<ul style="list-style-type: none"> - 12" total length (TL) size limit – red snapper, yellowtail snapper, red grouper, Nassau grouper. - 8" TL size limit – black sea bass. - 4" trawl mesh size. - Gear limitations – poisons, explosives, fish traps, and trawls. - Designated modified habitats or artificial reefs as special management zones (SMZs).
Regulatory Amendment #1 (1987)	03/27/87	PR: 51 FR 43937 FR: 52 FR 9864	<ul style="list-style-type: none"> - Prohibited fishing in SMZs except with hand-held hook-and-line and spearfishing gear. - Prohibited harvest of goliath grouper in SMZs.
Amendment #1 (1988a)	01/12/89	PR: 53 FR 42985 FR: 54 FR 1720	<ul style="list-style-type: none"> - Prohibited trawl gear to harvest fish south of Cape Hatteras, NC and north of Cape Canaveral, Florida. - Directed fishery defined as vessel with trawl gear and ≥200 pounds (lbs) snapper grouper on board. - Established rebuttable assumption that vessel with snapper grouper on board had harvested such fish in the exclusive economic zone (EEZ).
Regulatory Amendment #2 (1988b)	03/30/89	PR: 53 FR 32412 FR: 54 FR 8342	<ul style="list-style-type: none"> - Established 2 artificial reefs off Ft. Pierce, Florida as SMZs.
Notice of Control Date	09/24/90	55 FR 39039	<ul style="list-style-type: none"> - Anyone entering federal wreckfish fishery in the EEZ off South Atlantic states after 09/24/90 was not assured of future access if limited entry program developed.
Regulatory Amendment #3 (1989)	11/02/90	PR: 55 FR 28066 FR: 55 FR 40394	<ul style="list-style-type: none"> - Established artificial reef at Key Biscayne, Florida as SMZ. Fish trapping, bottom longlining, spear fishing, and harvesting of goliath grouper prohibited in SMZ.
Amendment #2 (1990)	10/30/90	PR: 55 FR 31406 FR: 55 FR 46213	<ul style="list-style-type: none"> - Prohibited harvest/possession of goliath grouper in or from the EEZ. - Defined overfishing for goliath grouper and other species.

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Emergency Rule	8/3/90	55 FR 32257	<ul style="list-style-type: none"> - Added wreckfish to the fishery management unit (FMU). - Fishing year beginning 4/16/90. - Commercial quota of 2 million lbs. - Commercial trip limit of 10,000 lbs per trip.
Fishery Closure Notice	8/8/90	55 FR 32635	<ul style="list-style-type: none"> - Fishery closed because the commercial quota of 2 million lbs was reached.
Emergency Rule Extension	11/1/90	55 FR 40181	<ul style="list-style-type: none"> - Extended the measures implemented via emergency rule on 8/3/90.
Amendment #3 (1990b)	01/31/91	PR: 55 FR 39023 FR: 56 FR 2443	<ul style="list-style-type: none"> - Added wreckfish to the FMU. - Defined optimum yield (OY) and overfishing. - Required permit to fish for, land or sell wreckfish. - Required catch and effort reports from selected, permitted vessels. - Established control date of 03/28/90. - Established a fishing year for wreckfish starting April 16. - Established a process to set annual quota, with initial quota of 2 million lbs; provisions for closure. - Established 10,000 lb trip limit. - Established a spawning season closure for wreckfish from January 15 to April 15. - Provided for annual adjustments of wreckfish management measures.
Notice of Control Date	07/30/91	56 FR 36052	<ul style="list-style-type: none"> - Anyone entering federal snapper grouper fishery (other than for wreckfish) in the EEZ off S. Atlantic states after 07/30/91 was not assured of future access if limited entry program developed.

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Amendment #4 (1991)	01/01/92	PR: 56 FR 29922 FR: 56 FR 56016	<ul style="list-style-type: none"> - Prohibited gear: fish traps except black sea bass traps north of Cape Canaveral, Florida; entanglement nets; longline gear inside 50 fathoms; bottom longlines to harvest wreckfish**; - powerheads and bangsticks in designated SMZs off South Carolina. - Defined overfishing/overfished and established rebuilding timeframe: Red snapper and groupers ≤ 15 years (year 1 = 1991); other snappers, greater amberjack, black sea bass, red porgy ≤ 10 years (year 1 = 1991). - Required permits (commercial & for-hire) and specified data collection regulations. - Established an assessment group and annual adjustment procedure (framework). - Permit, gear, and vessel id requirements specified for black sea bass traps. - No retention of snapper grouper spp. caught in other fisheries with gear prohibited in snapper grouper fishery if captured snapper grouper had no bag limit or harvest was prohibited. If had a bag limit, could retain only the bag limit. - 8" TL size limit – lane snapper. - 10" TL size limit – vermilion snapper (recreational only). - 12" TL size limit – red porgy, vermilion snapper (commercial only), gray, yellowtail, mutton, schoolmaster, queen, blackfin, cubera, dog, mahogany, and silk snappers. - 20" TL size limit – red snapper, gag, and red, black, scamp, yellowfin, and yellowmouth groupers. - 28" fork length (FL) size limit – greater amberjack (recreational only). - 36" FL or 28" core length – greater amberjack (commercial only) - Bag limits – 10 vermilion snapper, 3 greater amberjack. - Aggregate snapper bag limit – 10/person/day, excluding vermilion snapper and allowing no more than 2 red snappers. - Aggregate grouper bag limit – 5/person/day, excluding Nassau and goliath grouper, for which no retention (recreational & commercial) is allowed. - Spawning season closure – commercial harvest greater amberjack > 3 fish bag prohibited in April south of Cape Canaveral, Florida. - Spawning season closure – commercial harvest mutton snapper > snapper aggregate prohibited during May and June. - Charter/headboats and excursion boat possession limits extended.

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Amendment #5 (1992a)	04/06/92	PR: 56 FR 57302 FR: 57 FR 7886	- Wreckfish: Established limited entry system with individual transferable quotas (ITQs); required dealer to have permit; rescinded 10,000 lb trip limit; required off-loading between 8 am and 5 pm; reduced occasions when 24-hour advance notice of offloading required for off-loading; established procedure for initial distribution of percentage shares of total allowable catch.
Emergency Rule	8/31/92	57 FR 39365	- Black Sea Bass: modified definition of black sea bass pot; allowed multi-gear trips; allowed retention of incidentally-caught fish on black sea bass trips.
Emergency Rule Extension	11/30/92	57 FR 56522	- Black Sea Bass: modified definition of black sea bass pot; allowed multi-gear trips; allowed retention of incidentally-caught fish on black sea bass trips.
Regulatory Amendment #4 (1992b)	07/06/93	FR: 58 FR 36155	- Black Sea Bass: modified definition of black sea bass pot; allowed multi-gear trips; allowed retention of incidentally-caught fish on black sea bass trips.
Regulatory Amendment #5 (1992c)	07/31/93	PR: 58 FR 13732 FR: 58 FR 35895	- Established 8 SMZs off South Carolina, where only hand-held, hook-and-line gear and spearfishing (excluding powerheads) was allowed.
Amendment #6 (1993)	07/27/94	PR: 59 FR 9721 FR: 59 FR 27242	- Commercial quotas for snowy grouper and golden tilefish. - Commercial trip limits for snowy grouper, golden tilefish, speckled hind, and warsaw grouper. - Include golden tilefish in grouper recreational aggregate bag limits. - Prohibited sale of warsaw grouper and speckled hind. - 100% logbook coverage upon renewal of permit. - Creation of the <i>Oculina</i> experimental closed area. - Data collection needs specified for evaluation of possible future individual fishing quota system.
Amendment #7 (1994a)	01/23/95	PR: 59 FR 47833 FR: 59 FR 66270	- 12" FL – hogfish. - 16" total length (TL) – mutton snapper. - Required dealer, charter and headboat federal permits. - Allowed sale under specified conditions. - Specified allowable gear and made allowance for experimental gear. - Allowed multi-gear trips in North Carolina. - Added localized overfishing to list of problems and objectives. - Adjusted bag limit and crew specifications for charter and head boats. - Modified management unit for scup to apply south of Cape Hatteras, North Carolina. - Modified framework procedure.
Regulatory Amendment #6 (1994)	05/22/95	PR: 60 FR 8620 FR: 60 FR 19683	- Established actions which applied only to EEZ off Atlantic coast of Florida: Bag limits – 5 hogfish/person/day (recreational only), 2 cubera snapper/person/day > 30" TL; 12" TL – gray triggerfish.
Notice of	04/23/97	62 FR 22995	- Anyone entering federal black sea bass pot sector off

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Control Date			South Atlantic states after 04/23/97 was not assured of future access if limited entry program developed.
Amendment #8 (1997a)	12/14/98	PR: 63 FR 1813 FR: 63 FR 38298	<ul style="list-style-type: none"> - Established program to limit initial eligibility for snapper grouper fishery: Must demonstrate landings of any species in snapper grouper FMU in 1993, 1994, 1995 or 1996; and have held valid snapper grouper permit between 02/11/96 and 02/11/97. - Granted transferable permit with unlimited landings if vessel landed \geq 1,000 lbs. of snapper grouper spp. in any of the years. - Granted non-transferable permit with 225 lb trip limit to all other vessels. - Modified problems, objectives, OY, and overfishing definitions. - Expanded South Atlantic Fishery Management Council's (South Atlantic Council) habitat responsibility. - Allowed retention of snapper grouper spp. in excess of bag limit on permitted vessel with a single bait net or cast nets on board. - Allowed permitted vessels to possess filleted fish harvested in the Bahamas under certain conditions.
Regulatory Amendment #7 (1998)	01/29/99	PR: 63 FR 43656 FR: 63 FR 71793	- Established 10 SMZs at artificial reefs off South Carolina.
Interim Rule Request	1/16/98		- South Atlantic Council requested all Amendment 9 measures except black sea bass pot construction changes be implemented as an interim request under the Magnuson-Stevens Fisheries Conservation and Management Act (Magnuson-Stevens Act).
Action Suspended	5/14/98		- NOAA Fisheries informed the South Atlantic Council that action on the interim rule request was suspended.
Emergency Rule Request	9/24/98		- South Atlantic Council requested Amendment 9 be implemented via emergency rule.
Request not Implemented	1/22/99		- NOAA Fisheries informed the South Atlantic Council that the final rule for Amendment 9 would be effective 2/24/99; therefore they did not implement the emergency rule.

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Amendment #9 (1998b)	2/24/99	PR: 63 FR 63276 FR: 64 FR 3624	<ul style="list-style-type: none"> - <u>Red porgy</u>: 14" TL (recreational and commercial); 5 fish recreational bag limit; no harvest or possession > bag limit, and no purchase or sale, in March and April. - <u>Black sea bass</u>: 10" TL (recreational and commercial); 20 fish recreational bag limit; required escape vents and escape panels with degradable fasteners in black sea bass pots. - <u>Greater amberjack</u>: 1 fish rec. bag limit; no harvest or possession > bag limit, and no purchase or sale, during April; quota = 1,169,931 lbs; began fishing year May 1; prohibited coring. - <u>Vermilion snapper</u>: 11" TL (recreational) Gag: 24" TL (recreational); no commercial harvest or possession > bag limit, and no purchase or sale, during March and April - <u>Black grouper</u>: 24" TL (recreational and commercial); no harvest or possession > bag limit, and no purchase or sale, during March and April. - <u>Gag and Black grouper</u>: Within 5 fish aggregate grouper bag limit, no more than 2 fish may be gag or black grouper (individually or in combination). - <u>All snapper grouper without a bag limit</u>: Aggregate recreational bag limit 20 fish/person/day, excluding tomtate and blue runners - <u>Vessels with longline gear</u> aboard may only possess snowy, Warsaw, yellowedge, and misty grouper, and golden, blueline and sand tilefish.
Amendment #9 (1998b) resubmitted	10/13/00	PR: 63 FR 63276 FR: 65 FR 55203	- Commercial trip limit for greater amberjack.
Regulatory Amendment #8 (2000a)	11/15/00	PR: 65 FR 41041 FR: 65 FR 61114	- Established 12 SMZs at artificial reefs off Georgia; revised boundaries of 7 existing SMZs off Georgia to meet Coast Guard permit specs; restricted fishing in new and revised SMZs.
Emergency Interim Rule	09/08/99, expired 08/28/00	64 FR 48324 and 65 FR 10040	- Prohibited harvest or possession of red porgy.
Emergency Action	9/3/99	64 FR 48326	- Reopened the Amendment 8 permit application process.
Amendment #10 (1998d)	07/14/00	PR: 64 FR 37082 and 64 FR 59152 FR: 65 FR 37292	- Identified essential fish habitat (EFH) and established habitat areas of particular concern (HAPCs) for species in the snapper grouper FMU.

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Amendment #11 (1998e)	12/02/99	PR: 64 FR 27952 FR: 64 FR 59126	<ul style="list-style-type: none"> - Maximum sustainable yield (MSY) proxy: Goliath and Nassau grouper = 40% static spawning potential ration (SPR); all other species = 30% static SPR. - OY: Hermaphroditic groupers = 45% static SPR; goliath and Nassau grouper = 50% static SPR; all other species = 40% static SPR. - Overfished/overfishing evaluations: Black sea bass: overfished (minimum stock size threshold (MSST)=3.72 million pounds, 1995 biomass=1.33 million pounds); undergoing overfishing (maximum fishing mortality threshold (MFMT)=0.72, fishing mortality (F)1991-1995=0.95). Vermilion snapper: Overfished (static SPR = 21-27%). Red porgy: Overfished (static SPR = 14-19%). Red snapper: overfished (static SPR = 24-32%). Gag: Overfished (static SPR = 27%). Scamp: No longer overfished (static SPR = 35%). Speckled hind: Overfished (static SPR = 8-13%). Warsaw grouper: Overfished (static SPR = 6-14%). Snowy grouper: Overfished (static SPR = 5=15%). White grunt: No longer overfished (static SPR = 29-39%). Golden tilefish: Overfished (couldn't estimate static SPR.) Nassau grouper: Overfished (couldn't estimate static SPR) Goliath grouper: Overfished (couldn't estimate static SPR). - Overfishing level (OFL): Goliath and Nassau grouper = $F > F_{40\%}$ static SPR; all other species: = $F > F_{30\%}$ static SPR. - Approved definitions for overfished and overfishing. $MSST = [(1 - \text{natural mortality (M)}) \text{ or } 0.5 \text{ whichever is greater}] * B_{MSY}$. $MFMT = F_{MSY}$
Amendment #12 (2000c)	09/22/00	PR: 65 FR 35877 FR: 65 FR 51248	<ul style="list-style-type: none"> - Red porgy: MSY=4.38 mp; OY=45% static SPR; MFMT=0.43; MSST=7.34 mp; rebuilding timeframe=18 years (1999=year 1); no sale during January-April; 1 fish bag limit; 50 lb. bycatch commercial trip limit May-December; modified management options and list of possible framework actions.
Amendment #13A (2003b)	04/26/04	PR: 68 FR 66069 FR: 69 FR 15731	<ul style="list-style-type: none"> - Extended for an indefinite period the regulation prohibiting fishing for and possessing snapper grouper spp. within the <i>Oculina</i> experimental closed area.
Notice of Control Date	10/14/05	70 FR 60058	<ul style="list-style-type: none"> - The South Atlantic Council is considering management measures to further limit participation or effort in the commercial fishery for snapper grouper species (excluding wreckfish).
Amendment #13C (2006)	10/23/06	PR: 71 FR 28841 FR: 71 FR 55096	<ul style="list-style-type: none"> - End overfishing of snowy grouper, vermilion snapper, black sea bass, and golden tilefish. Increase allowable catch of red porgy. Year 1 = 2006. - Snowy Grouper commercial: quota (gutted weight,

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			<p>gw) = 151,000 lbs gw in year 1, 118,000 lbs gw in year 2, and 84,000 lbs gw in year 3 onwards. Trip limit = 275 lbs gw in year 1, 175 lbs gw in year 2, and 100 lbs gw in year 3 onwards.</p> <p>Recreational: Limit possession to one snowy grouper in 5 grouper per person/day aggregate bag limit.</p> <ul style="list-style-type: none"> - Golden Tilefish Commercial: Quota of 295,000 lbs gw, 4,000 lbs gw trip limit until 75% of the quota is taken when the trip limit is reduced to 300 lbs gw. Do not adjust the trip limit downwards unless 75% is captured on or before September 1. Recreational: limit possession to 1 golden tilefish in 5 grouper per person/day aggregate bag limit. - Vermilion Snapper Commercial: Quota of 1,100,000 lbs gw. Recreational: 12" TL size limit. - Black sea bass commercial: Commercial quota (gutted weight) of 477,000 lbs gw in year 1, 423,000 lbs gw in year 2, and 309,000 lbs gw in year 3 onwards. Require use of at least 2" mesh for the entire back panel of black sea bass pots effective 6 months after publication of the final rule. Require black sea bass pots be removed from the water when the quota is met. Change fishing year from calendar year to June 1 – May 31. Recreational: Recreational allocation of 633,000 lbs gw in year 1, 560,000 lbs gw in year 2, and 409,000 lbs gw in year 3 onwards. Increase minimum size limit from 10" TL to 11" TL in year 1 and to 12" TL in year 2. Reduce recreational bag limit from 20 to 15 per person per day. Change fishing year from the calendar year to June 1 through May 31. - Red porgy commercial and recreational. - Retain 14" TL size limit and seasonal closure (retention limited to the bag limit). - Specify a commercial quota of 127,000 lbs gw and prohibit sale/purchase and prohibit harvest and/or possession beyond the bag limit when quota is taken and/or during January through April. - Increase commercial trip limit from 50 lbs ww to 120 red porgy (210 lbs gw) during May through December. - Increase recreational bag limit from one to three red porgy per person per day.
Notice of Control Date	3/8/07	72 FR 60794	- The South Atlantic Council may consider measures to limit participation in the snapper grouper for-hire fishery.
Amendment #14 (2007) Sent to NOAA Fisheries 7/18/07	2/12/09	PR: 73 FR 32281 FR: 74 FR 1621	- Establish eight deepwater Type II marine protected areas (MPAs) to protect a portion of the population and habitat of long-lived deepwater snapper grouper species.
Amendment	3/14/08	73 FR 14942	- Establish rebuilding plans and Sustainable Fisheries

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#15A (2008a)			Act (SFA) parameters for snowy grouper, black sea bass, and red porgy.
Amendment #15B (2008b)	2/15/10	PR: 74 FR 30569 FR: 74 FR 58902	<ul style="list-style-type: none"> - Prohibit the sale of bag-limit caught snapper grouper species. - Reduce the effects of incidental hooking on sea turtles and smalltooth sawfish. - Adjust commercial renewal periods and transferability requirements. - Implement plan to monitor and assess bycatch. - Establish reference points for golden tilefish. - Establish allocations for snowy grouper (95% commercial & 5% recreational) and red porgy (50% commercial & 50% recreational).
Amendment #16 (SAFMC 2009a)	7/29/09	PR: 74 FR 6297 FR: 74 FR 30964	<ul style="list-style-type: none"> - Specify SFA parameters for gag and vermilion snapper. - Recreational and commercial spawning closure January through April for all shallow water groupers. - For gag: Specify interim allocations 51% commercial and 49% recreational; directed commercial quota=352,940 lbs gw; reduce 5-grouper aggregate to 3-grouper and 2 gag/black to 1 gag/black. - Exclude captain & crew from possessing bag limit for vermilion snapper and grouper aggregate (including tilefish species). - For vermilion snapper: The final rule specified interim allocations 68% commercial & 32% recreational; directed commercial quota split January-June equal to 315,523 lbs gw and 302,523 lbs gw July-December; reduce bag limit from 10 to 5 and a recreational closed season November through March. - Require dehooking tools.
Amendment #17A (SAFMC 2010a)	12/3/10 red snapper closure; circle hooks March 3, 2011	PR: 75 FR 49447 FR: 75 FR 76874	<ul style="list-style-type: none"> - Specify an annual catch limit (ACL) and an accountability measure (AM) for red snapper with management measures to reduce the probability that catches will exceed the stocks' ACL. - Specify a rebuilding plan for red snapper. - Specify status determination criteria for red snapper. - Specify a monitoring program for red snapper.
Emergency Rule	12/3/10	75 FR 76890	- Delay the effective date of the area closure for snapper grouper species implemented through Amendment 17A.

Document	All Actions Effective By:	Proposed Rule Final Rule	Major Actions. Note that not all details are provided here. Please refer to Proposed and Final Rules for all impacts of listed documents.
Amendment #17B (SAFMC 2010b)	January 31, 2011	PR: 75 FR 62488 FR: 75 FR 82280	<ul style="list-style-type: none"> - Specify ACLs, annual catch targets (ACTs), and AMs, where necessary, for 9 species undergoing overfishing. - Modify management measures as needed to limit harvest to the ACL or ACT. - Update the framework procedure for specification of total allowable catch. - Prohibit harvest of six snapper-grouper species in depths greater than 240 feet to help reduce bycatch of speckled hind and warsaw grouper. - Prohibit all harvest and possession of speckled hind and warsaw grouper by setting the ACL = 0 (landings only).
Notice of Control Date	12/4/08	74 FR 7849	<ul style="list-style-type: none"> - Establishes a control date for the golden tilefish fishery of the South Atlantic.
Notice of Control Date	12/4/08	74 FR 7849	<ul style="list-style-type: none"> - Establishes control date for black sea bass pot fishery of the South Atlantic
Amendment #19 (Comprehensive Ecosystem-based Amendment 1) (SAFMC 2010c)	7/22/10	PR: 75 FR 14548 FR: 75 FR 35330	<ul style="list-style-type: none"> - Provide presentation of spatial information for EFH and EFH-HAPC designations under the Snapper Grouper FMP. - Designation of deepwater coral HAPCs.
Regulatory Amendment 10 (SAFMC 2011a)	5/31/11	PR: 76 FR 9530 FR: 76 FR 23728	<ul style="list-style-type: none"> Eliminate closed area for snapper grouper species approved in Amendment 17A.
Regulatory Amendment 9 (SAFMC 2011b)	Bag limit: 6/22/11 Trip limits: 7/15/11	PR: 76 FR 23930 FR: 76 FR 34892	<ul style="list-style-type: none"> - Establish trip limit for vermilion snapper and gag, increase trip limit for greater amberjack, and reduce bag limit for black sea bass.
Regulatory Amendment 11 (SAFMC 2011c)	May 10, 2012	PR: 76 FR 78879 FR: 77 FR 27374	<ul style="list-style-type: none"> - Eliminate harvest prohibition in depth greater than 240 ft for six deepwater species.

Document	All Actions Effective By:	Proposed Rule Final Rule	Major Actions. Note that not all details are provided here. Please refer to Proposed and Final Rules for all impacts of listed documents.
Amendment #18A (SAFMC 2012a)	July 1, 2012	PR: 77 FR 16991 FR: 77 FR 32408	<ul style="list-style-type: none"> - Limit participation and effort in the black sea bass portion of the snapper grouper fishery. - Modifications to management of the black sea bass pot sector. - Improve the accuracy, timing, and quantity of fisheries statistics.
Amendment 18B (TBD)	TBD	TBD	<ul style="list-style-type: none"> - Limit participation in the golden tilefish portion of the Snapper Grouper Fishery. - Establish initial eligibility requirements for a golden tilefish longline endorsement. - Establish an appeals process. - Allocate commercial golden tilefish quota among gear groups. - Allow for transferability of golden tilefish endorsements. - Adjust golden tilefish fishing year. - Modify trip limits for fishermen who receive a golden tilefish longline endorsement. - Establish trip limits for fishermen who do not receive a golden tilefish longline endorsement.
Amendment #20A	TBD	PR: 77 FR 19165 FR: 77 FR 59129	<ul style="list-style-type: none"> - Define and redistribute latent shares in the wreckfish ITQ program. - Establish a share cap. - Establish an appeals process.
Amendment #20B	October 26, 2012	TBD	-Update wreckfish ITQ according to Reauthorized Magnuson-Stevens Act.
Amendment #23 (Comprehensive Ecosystem-Based Amendment 2) (SAFMC 2011d)	January 30, 2012	PR: 76 FR 69230 FR: 76 FR 82183	<ul style="list-style-type: none"> - Designate the deepwater MPAs as EFH-HAPCs. - Limit harvest of snapper grouper species in South Carolina SMZs to the bag limit. - Modify sea turtle release gear.
Amendment #25 (Comprehensive ACL Amendment) (SAFMC 2011e)	April 16, 2012	PR: 76 FR 74757 Amended PR: 76 FR 82264 FR: 77 FR 15916	<ul style="list-style-type: none"> - Establish acceptable biological catch (ABC) control rules, ABCs, ACLs, ACTs, and AMs for species not undergoing overfishing. - Remove some species from snapper grouper FMU. - Specify ecosystem component species. - Specify allocations among the commercial and recreational sectors for species not undergoing overfishing. - Limit the total mortality for federally managed species in the South Atlantic to the ACLs.

Document	All Actions Effective By:	Proposed Rule Final Rule	Major Actions. Note that not all details are provided here. Please refer to Proposed and Final Rules for all impacts of listed documents.
Supplemental rule (Comprehensive ACL Amendment)	August 17, 2012	PR: 77 FR 23652 FR: 77 FR 42192	- Revise the commercial quota for greater amberjack in the regulations, from 1,169,931 lbs gutted weight to 769,388 lbs gutted weight.
Amendment #24 (SAFMC 2011f)	July 11, 2012	PR: 77 FR 19169 FR: 77 FR 34254	- Specify MSY, rebuilding plan (including ACLs, AMs, and OY), and allocations for red grouper.
Amendment #22	TBD	TBD	- Tagging program to allow harvest of red snapper as stock rebuilds. - Recreational tag program for golden tilefish, snowy grouper, and wreckfish.
Temporary rule for red snapper through emergency action	TBD	TBD	- Allow limited harvest of red snapper in 2012.
Resubmitted Amendment 18A Action Amendment	TBD	PR: 77 FR 55448 FR: 77 FR 72991	- Black sea bass pot endorsement transferability.
Regulatory Amendment 13	TBD	TBD	- Adjust ACLs and allocations for unassessed snapper grouper species with MRIP recreational estimates
Regulatory Amendment 14	TBD	TBD	- Modify the fishing year and reduce the trip limit for greater amberjack. - Implement additional regulations to protect mutton snapper during the spawning season. - Modify the minimum size limit for gray triggerfish. - Modify the commercial and recreational fishing years for black sea bass.
Regulatory Amendment 15	TBD	TBD	- Implement a revised ACL for yellowtail snapper based on the latest stock assessment, modify gag AM.
Regulatory Amendment 16	TBD	TBD	- Golden tilefish management measures.
Regulatory Amendment 17	TBD	TBD	- Adjustments to MPAs to enhance protection of speckled hind and warsaw grouper.
Regulatory Amendment 18	TBD	TBD	- ACLs and management measures for vermilion snapper and red pogy based on results of new assessment.
Amendment 27	TBD	TBD	- Establish the South Atlantic Council as the managing entity for Nassau grouper in the Southeast U.S. - Modify the SG framework. - Modify management measures for blue runner.

Document	All Actions Effective By:	Proposed Rule Final Rule	Major Actions. Note that not all details are provided here. Please refer to Proposed and Final Rules for all impacts of listed documents.
			<ul style="list-style-type: none"> - Reevaluate captain and crew possession prohibition for vermilion snapper, groupers, and tilefish. - Increase crew of commercial snapper grouper fishing trip.
Amendment 28	TBD	TBD	- Modify red snapper management measures, including the establishment of a process to determine future annual catch limits and fishing seasons.
Amendment 29	TBD	TBD	- Update ABCs, ACLs, and ACTs for snapper grouper species based on recommendations from SSC.
Amendment 30	TBD	TBD	- VMS for commercial sector of snapper grouper fishery.

Consultant's Report:
Summary of the MRFSS/MRIP
Calibration Workshop
27-29 March 2012
Raleigh, NC

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KEY WORKSHOP RECOMMENDATIONS

The following recommendations related to matching MRFSS-derived catch estimates with estimates derived from the new MRIP methodology were agreed-upon by a consensus of the workshop participants:

1. There is a need to re-estimate the marine recreational catch for years prior to 2004.
2. Officially re-estimated catch data for 2004 to 2011 represent the best available data and should be used, to the extent available, in stock assessments.
3. Updated and benchmark stock assessments should increase coefficients of variation (CVs) for hind-casted recreational catch estimates, based on 2004-2011 relationships. The methodology for increasing the CVs is still to be determined, but a first order approximation would be to use the ratio of the CVs generated by the MRFSS vs MRIP estimation methodologies for 2004-2011.
4. Prior to 2004 (or whichever year is the first year for which direct re-estimates are available, since the NMFS Office of Science and Technology (ST) is still working on re-estimation for years prior to 2004), hind-casted catch data should use a ratio (MRFSS/MRIP) estimator, either constant throughout the hind-casted time series or trended, based on ancillary information. This approach would not preclude more extensive species-specific approaches, but would be a default "acceptable" approach if other procedures were not available. For species that are rare in the catch and have high variance in the estimate of this ratio, then using the ratio for other related species may be prudent.
5. Until there is a new (updated or benchmark) stock assessment, the new MRIP-derived catch numbers should be adjusted to be in the same scale as catch numbers used for calculating the current recreational annual catch limits (ACLs). When these stocks are re-assessed, landings relative to ACLs would be tracked by using non-adjusted MRIP

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- estimates.
6. For data poor stocks that have developed ACLs on the basis of historical catch, the same methodology should be used to recalculate these ACLs, but with MRIP re-estimated numbers where available, and adjusted MRFSS numbers for earlier years.
 7. Caution is urged regarding applying MRFSS/MRIP ratios on a scale smaller than the spatial scale of the stock. Uncertainty in the estimates will increase in direct relation to the diminution of scale.
 8. Integration of new numbers should not require a full benchmark stock assessment. An update should be sufficient if the magnitude of the “bias” is relatively small, recreational catches do not dominate the overall catch, and major changes in the age composition (induced by re-weighting of the intercept biological samples) do not occur. If re-weighting occurs, then there is the potential for changes in the selectivity pattern for the fishery, which may have implications for biological reference points (BRPs) and may then require a new benchmark assessment.
 9. The above recommendations are based on the re-estimation of the MRFSS intercept data and represent the current state of the best science information available. Ongoing work on revision to the effort data collection procedures could result in future recommendations for revision of historical effort estimates. Implementation of the current set of revisions based on the intercept data should not be delayed to wait for possible revisions based on the effort data. The potential effects of revisions to the biological data could be important if the age or size structure of the recreational landings and discards change.
 10. At the end of the workshop, participants agreed that a working group should be formed to: (1) identify a list of species whose catch estimates are the most affected by the transition to MRIP, and present this list to the regional stock assessment steering committees for their consideration when scheduling upcoming stock assessments; and (2) develop a technical approach (or approaches) to hind-casting and forecasting catch estimates. Work on both tasks should be completed by May 1st.

Since the new MRIP methodology for catch estimation has already undergone independent peer review, and the applications proposed at the workshop only involve applying ratio estimators to adjust the MRFSS time series to match the MRIP time series (and vice versa), the workshop attendees saw no need to subject the consensus recommendations listed above to further independent peer review. A peer review may be needed, however, if a methodology is developed to expand the variance estimates for catch in hind-casted years.

The sequential release of MRIP data may cause some inconsistencies in the provision of scientific advice. These inconsistencies may arise if adjustment factors derived from the 2004-2011 data are different than estimators derived from the 1998-2011 data (assuming ST can successfully develop re-estimates for 1998-2003). If the entire data set is ultimately available, then we can compare hind-casted values with the revised estimates as a check for consistency. Similarly, changes in selectivity could occur when the length samples are revised. As noted previously, changes in selectivity could result in some changes to the BRPs, which could then require new benchmark assessments.

BACKGROUND

Early in 2012 the NOAA Fisheries Marine Recreational Information Program (MRIP) released re-estimates of catch statistics for the marine recreational fisheries of the US, 2004-2011, based on raw data collected under the Marine Recreational Survey Statistics (MRFSS) program and a newly-created methodology² developed under the MRIP program. By the time the numbers were released, MRIP staff had already begun planning a workshop that would develop a methodology for matching catch estimates derived by using the old MRFSS methodology with estimates derived by using the new MRIP methodology.

This objective for the workshop was important for two reasons. First, stock assessment scientists prefer to have time series of catch (and effort) data for the marine recreational fisheries that are as long as possible, uninterrupted by changes in data collection or estimation methodologies. By using a side-by-side comparison (calibration) of the original catch statistics, obtained with the MRFSS estimation methodology, to the re-estimated MRIP-based statistics for 2004 to 2011, it may be possible to hind-cast the time series based on the MRIP methodology to years prior to 2004; i.e., what would have been the likely catch estimates and their associated variances for years prior to 2004 had the MRIP estimation methodology been in place? Second, matching MRFSS-derived and MRIP-derived catch estimates would help fishery managers carry forward regional catch allocations (state-by-state, commercial vs recreational) based on the MRFSS-derived catch statistics to years when only the MRIP-based statistics will be available (beginning in 2013), thus providing as smooth a transition as possible within the management process.

PREPARATIONS FOR THE WORKSHOP

A workshop steering committee was formed in August 2011 to develop terms of reference and, eventually, an agenda and speakers list for the so-called MRFSS/MRIP Calibration Workshop. Committee members initially included representatives from your office (Ron Salz), the Northeast

² Breidt, F. J., Lai, H.-L., J. D. Opsomer, and D. A. Van Voorhees. 2012. A Report of the MRIP Sampling and Estimation Project: Improved Estimation Methods for the Access Point Angler Intercept Survey Component of the Marine Recreational Fishery Statistics Survey. NOAA Fisheries, MRIP Program, Silver Spring, MD. 83 pp. (<http://www.countmyfish.noaa.gov/projects/index.html>)

Fisheries Science Center (Jim Weinberg), the Northeast Regional Office (Sarah Heil), the Southeast Fisheries Science Center (Steve Turner), the Southeast Regional Office (Andy Strelcheck), and the NOAA Fisheries Office of Sustainable Fisheries (Wes Patrick). The committee developed the following three terms of reference for the workshop:

1. Review ongoing and completed studies comparing MRFSS methodologies to those slated for use in MRIP, and propose any additional work that would further facilitate MRFSS/MRIP calibration.
2. Propose a methodology for calibrating MRFSS data to MRIP data, based on the years in which paired estimates are available (currently expected to be 2004-2011), and demonstrate how it would work in hind-casting catch and effort for select data sets (pre-2004).
3. Recommend a plan for implementing the calibration methodology into updated and benchmark stock assessments.

The committee also developed a list of presentation topics associated with the terms of reference, as well as additional topics that would provide background information to help facilitate discussions at the workshop, in close coordination with the potential presenters of those topics (Attachment 1). The committee anticipated that some working papers associated with the presentation topics could be prepared and distributed ahead of the workshop, while others could be prepared following the workshop, based on agreements reached by the workshop participants on their contents.

At this point, the committee agreed (with permission from NOAA Fisheries leadership) to invite the Southeast Data, Assessment, and Review (SEDAR) program to co-sponsor the workshop and have a staff member (John Carmichael) join the steering committee. The SEDAR program is a cooperative Fishery Management Council process initiated in 2002 to improve the quality and reliability of fishery stock assessments in the South Atlantic, Gulf of Mexico, and US Caribbean. The Caribbean, Gulf of Mexico, and South Atlantic regional fishery management councils manage the SEDAR program in close coordination with NOAA Fisheries and the Atlantic and Gulf States Marine Fisheries Commissions. Furthermore, most of the stock assessments for

federally-managed species potentially affected by the switch from MRFSS to MRIP are in the southeast region. In addition to SEDAR staff actively participating in the workshop, the program handled travel arrangements for non-federal attendees, the venue for the meeting, and the meeting room and catering logistics. The Mid-Atlantic Fishery Management Council was asked to handle the web broadcast.

WORKSHOP AGENDA AND WORKING PAPERS

The workshop agenda was designed to address the three terms of reference and allow time for presentation of the background working papers. The finalized workshop agenda, including speakers, is attached (Attachment 2). Each session (Tuesday PM, all day Wednesday, and Thursday AM) was devoted to addressing one of the workshop's terms of reference, in order. The presentations in each session were based on the final list of working paper topics developed by the steering committee (Attachment 1), with additional time slots allotted on the agenda for extended discussions, especially in the second session (addressing the second term of reference – development of a methodology for matching catch estimates from MRFSS to those from MRIP, and vice versa).

All working papers prepared prior to the workshop, as well as presentations made at the workshop, are posted on the SEDAR website:

http://www.sefsc.noaa.gov/sedar/Sedar_Documents.jsp?WorkshopNum=002&FolderType=Data

WORKSHOP ATTENDANCE AND RECORDINGS

A total of 39 people attended the meeting in person (Attachment 3), while another 48 individuals participated via the web (Attachment 4). Besides NOAA Fisheries, participants also represented the regional fishery management councils and interstate commissions, state agencies, recreational fishing groups, and environmental organizations, as well as the public in general. All the sessions were also recorded (audio and what was being projected on the meeting room screen); the recordings are also accessible on the SEDAR website.

SESSION 1 SUMMARY

The purpose of the first workshop session (and the first term of reference) was to provide the workshop participants with background information and context. Presenters reviewed the differences in recreational catch estimates based on the MRFSS and MRIP methodologies in 2004-2011 for federally-managed species along the Atlantic and Gulf coasts, discussed lessons learned from earlier efforts to switch from one survey methodology to another, introduced the workshop participants to changes to the recreational fishing survey that will occur when the survey switches over to become 100% MRIP-based in 2013, and presented findings of MRIP-funded projects that have addressed or are currently addressing calibration of the MRFSS-based survey to the MRIP-based survey.

A number of important points were made during the Session 1 question and answer follow-ups to the presentations (Q&As) and subsequent discussions that were related to all three terms of reference for the workshop:

1. The participants were cautioned to be precise in use of terms such as calibration, avidity, and variance; for instance, calibration can take on many forms and should not be used to characterize hind-casting catch estimates for years when side-by-side MRFSS and MRIP surveys were not conducted.
2. Participants were encouraged to incorporate public outreach through the entire process of matching and combining MRFSS and MRIP catch time series. Difficulty in explaining to the public the statistical basis underlying the process is a good reason to develop effective communication about the changes.
3. Although it is highly desirable to account for multiple design changes simultaneously, it is often not possible to wait until an entire set of changes has been made. Scientists and managers have a mandated responsibility to use the best scientific information. However, incremental transition without sufficient planning and resources could result in significant disruptions to stock assessments and management systems. Coordination among scientists, managers, and the fishing public is essential throughout the transition process.

4. Expect larger differences between the MRFSS and MRIP catch estimates as the scale (spatial, temporal) becomes finer, but recognize that the variance of these finer scale differences is larger and their significance is less.
5. MRIP must anticipate future uses well beyond those envisioned at its inception. This was a principal drawback to the design of the MRFSS-based survey. Flexibility in design and the ability to accommodate regional differences in fishery characteristics should be maintained as MRIP matures.
6. In matching MRFSS- and MRIP-derived catch estimates recognize that the data collection programs under MRFSS have not been static. The MRFSS survey evolved over time; MRFSS in the 1980s was not the same as MRFSS in the 1990s, and the survey continued to evolve during the 2004 to 2011 overlap period.

SESSION 2 SUMMARY – FIRST HALF

The first half of Session 2 (the morning) began with a presentation of the stock assessment ramifications of changes to the time series of marine recreational catch. Key points of the presentation and comments made during the follow-up Q&As were:

1. Biological reference points that are based on indices (proxies) are generally insensitive to catch. Catch helps scale the size of the population, whereas an index, such as CPUE, provides the trend. A constant bias in the catch over the time series may not change the estimate of relative stock status. Additionally, the bias needs to overcome the “noise” already present in the variance of parameters used in the stock assessment; for the northeast surveys, the coefficients of variation are about 30%.
2. When catch is over/under-estimated during a time period in which the abundance index indicates substantial decline, biomass is also over/under-estimated, respectively. When catch is overestimated at the beginning or end of a time series when indexes are not indicating substantial trends, biomass may be underestimated, but the effect is less pronounced.
3. Biases in catch will have more influence on assessments of short-lived species, which have more inter-annual variability in abundance.

4. Adjusting for bias over a catch time series may just be a matter of scaling (multiplying individual values in the time series by a constant or trended coefficient that adjusts for the bias).

Following the discussion on ramifications of bias in catch for stock assessments, scientists from the Northeast Fisheries Science Center (NEFSC) and Southeast Fisheries Science Center (SEFSC) provided their preliminary analyses of the impacts of the re-estimated recreational catch for 2004 to 2011 on assessed species. The total recreational catch for recreationally important species in the New England and Mid-Atlantic regions shows very little difference between the original MRFSS-based estimates and the MRIP-based re-estimates; bigger differences exist when examining recreational catch on a species-by-species basis. For the SEFSC, the original MRFSS-based catch estimates are within the MRIP confidence intervals; some species (e.g., red and black grouper, yellowtail snapper, and amberjack) show a systematic bias, but most do not. Most of the SEFSC assessments use an index based on MRFSS catch estimates, but it is usually not the most influential index in the stock assessment model. The greatest systematic bias for SEFSC-assessed species appears to occur in the southern Florida region, and is likely caused by sites in that region having a higher catch rate but lower probability of being sampled.

Several alternative, statistically-based methodologies that could be used to hind-cast prior to the years of side-by-side MRFSS- and MRIP-based estimates were then presented and discussed. The principal problem related to using a hind-casting methodology is changes (documented or undocumented) in the sampling design that occurred during the earlier years; significant effort is needed to find, process, and re-create old design information. Furthermore, the effort needs to be undertaken for all survey variables. Because of inadequate record keeping, re-calibrating catch estimates for the earliest years may not ever be possible. Also, developing methodologies to calibrate the MRFSS-based estimates of catch in earlier years goes beyond the catch value itself – changes to fishery selectivity, which affects the size-frequency patterns in the catch, also needs attention, since the changes may also affect derivation of biological reference points in stock assessments.

SESSION 2 SUMMARY – SECOND HALF

The second half (afternoon) of Session 2 was devoted entirely to a discussion of how MRFSS-based and MRIP-based catch estimates can be matched, and how the match-ups should be used in stock assessments and fisheries management. In 2013, the new MRIP-based intercept portion of the survey will be fully implemented and no MRFSS estimates will be available. The workshop participants decided that MRIP catch estimates should be adjusted to be on the same scale as that used to develop ACLs (i.e., the same scale as MRFSS-based estimates) for the purposes of quota monitoring for species until those ACLs can be re-calculated with an assessment that uses MRIP data. This adjustment would be for species where the ACL is set based on the results of a formal stock assessment model and those where the ACL is set based on historical data. For species where the ACL is set based on historical data, the ACL should be recalculated when the MRFSS re-estimates are available for the time period used to set the ACL. The uncertainty in the catch estimates increases as the spatial scale becomes finer; e.g., estimates of state catch are more uncertain than estimates of regional catch. Caution should be used when converting MRIP numbers on a spatial scale smaller than the scale of the stock ACL.

The group agreed that the calibration method eventually chosen does not need to be peer reviewed, as MRIP and its methodologies have already been thoroughly peer reviewed, and the benchmark assessment framework will provide another chance. However, there was concern about having the calibration method or methods second-guessed by multiple peer review panels going forward. To counter possible second-guessing, stock assessment scientists may want to undertake sensitivity analysis of the hind-casted recreational catch estimates (e.g., varying them by 5, 10, 20%) in order to determine the overall impact of changes in the estimates on biological reference points.

The workshop participants recognized the importance of strong, clear guidelines regarding calibration methods and how and when the methods should be used. Stock assessment scientists do not want to be in the position of developing *ad hoc* calibration methods on a species-by-species and region-by-region basis. There was a discussion of who should be responsible for developing the calibrated numbers for each species: the regional Science Centers and state

Technical Committees or NMFS ST. The ST personnel associated with MRIP clearly have the statistical expertise and the best understanding of the data, but effort that they expend in developing and implementing the calibrations is effort that is redirected from other MRIP tasks. Transparency and repeatability of the calibration process is also important, so that people outside the stock assessment process (anglers, environmental organizations, etc.) know the source and scientific basis for the recreational survey numbers that will be used in the assessment models.

After considerable discussion on the pros and cons of various methodologies that could be used to match MRFSS-based catch estimates with those based on MRIP, the workshop participants agreed that updated and benchmark stock assessments should increase coefficients of variation (CVs) for hind-casted recreational catch estimates, based on 2004-2011 relationships. The methodology for increasing the CVs is still to be determined, but a first order approximation would be to use the ratio of the CVs generated by the MRFSS vs MRIP estimation methodologies for 2004-2011. The participants also agreed that, prior to 2004 (or whichever year is the first year for which direct re-estimates are available, since ST is still working on re-estimation for years prior to 2004), hind-casted catch data should use a ratio (MRFSS/MRIP) estimator, either constant throughout hind-casted time series or trended, based on ancillary information. This approach would not preclude more extensive species-specific approaches, but would be a default "acceptable" approach if other procedures were not available. For species that are rare in the catch and have high variance in the estimate of this ratio, using the ratio for other related species may be prudent. Furthermore, until there is a new (updated or benchmark) stock assessment, the new MRIP-derived catch numbers should be adjusted to be in the same scale as catch numbers used for calculating the current recreational annual catch limits (ACLs). When these stocks are re-assessed, then ACLs and catch tracking would be monitored by using un-adjusted MRIP estimates.

For data-poor stocks that have ACLs based on historical catch, the same methodology should be used to recalculate these ACLs, but with MRIP re-estimated numbers where available, and adjusted MRFSS numbers for earlier years. Until these recalculations can be completed, the procedure described in the preceding paragraph can be used.

The participants also agreed that the re-estimated recreational catch for 2004 to 2011 based on the new MRIP methodology represents the current state of the best science information available. Ongoing work on revision to the effort data collection procedures that will be incorporated into MRIP in the near future could result in future recommendations for revision of historical effort estimates. However, implementation of the current set of revisions based on the intercept data should not be delayed to wait for possible revisions based on the effort data.

In addition to the effect of new MRIP data-weighting procedures on estimated recreational catch, the group acknowledged that this re-weighting (e.g., data from some sample sites becomes more or less influential in the overall catch estimate) will also have some effect on the estimated size composition of the catch and on catch per effort statistics that are sometimes used as an index of abundance. These additional effects were not explored in this workshop, but are worthy of future investigation.

The above recommendations by the workshop participants for matching the MRFSS and MRIP catch estimates represent a consensus opinion. No minority opinions to the contrary were offered.

SESSION 3 SUMMARY

The purpose of this session was to go into further depth of discussion about how and when the time series of MRFSS and MRIP catch estimates would be integrated into stock assessments, especially following the 100% switchover to MRIP in 2013. The session began with an overview of the current SEDAR and Northeast region procedures for scheduling, undertaking, and reviewing stock assessment updates and benchmarks. A benchmark assessment conducted under the SEDAR process takes approximately 15 months to complete, which is added to the time it takes for the assessment to be used by an SSC to develop an ABC recommendation, review of the ABC and action by the fishery management council or interstate commission, development of a specifications package and submittal to NMFS, NMFS review and development of a proposed rule, the public comment period on the proposed rule, publication of a final rule, then implementation at the beginning of the next fishing season. The Northeast has a

similar timeline.

However, integration of new MRIP-derived numbers should not require a full benchmark stock assessment, which would shorten the timeline considerably. An update should be sufficient if the magnitude of the “bias” is relatively small, recreational catches do not dominate the overall catch, and major changes in the age composition (induced by re-weighting of the intercept biological samples) do not occur. If re-weighting occurs, then there is the potential for changes in the selectivity pattern for the fishery, which may have implications for biological reference points (BRPs) and may then require a new benchmark assessment.

The workshop participants then discussed how priorities for conducting updated and benchmark assessments might be changed based on the results of re-estimation of 2004 to 2011 recreational catches for species managed by the councils and commissions. The participants recommended that MRIP numbers be incorporated into the technical updates rather than wait for peer-reviewed benchmark assessments. Although benchmark and updated assessment schedules are already set for 2012 and 2013, decisions have to be made on how to prioritize future assessments that will use the new MRIP numbers. A screening tool should be developed to rank recreational species that need updated assessments and reference points, which includes criteria such as information on the magnitude (absolute and proportional) and statistical significance of the MRFSS-MRIP differences, the proportion of catch that is recreational, the proportion of recreational catch that is released alive, the extent to which management is based on recreational catch estimates, the socio-economic importance of the species, and the current status of the stock. These are just the ranking criteria associated with recreational species affected by the MRFSS to MRIP conversion; the participants recognized that the SEDAR Steering Committee and Northeast Region Coordinating Committee may have other criteria that will also affect scheduling species for updated and benchmark assessments, such as commercial importance and political considerations. Nevertheless, having an objective and understandable set of metrics will increase the transparency of the stock assessment prioritization process.

The sequential release of MRIP data may cause some inconsistencies in the provision of scientific advice. These inconsistencies may arise if adjustment factors derived from the 2004-

2011 data are different than estimators derived from the 1998-2011 data (assuming ST can successfully develop re-estimates for 1998-2003). If the entire data set is ultimately available, then we can compare hind-casted values with the revised estimates as a check for consistency. Similarly, changes in selectivity could occur when the length samples are revised. As noted previously, changes in selectivity could result in some changes to the BRPs, which could then require new benchmark assessments.

FOLLOW-UP ACTIONS

At the end of the workshop participants agreed that a working group should be formed to: (1) identify and prioritize a list of species whose catch estimates are the most affected by the transition to MRIP, and present this list to the SEDAR Steering Committee and Northeast Region Coordinating Committee for their consideration in prioritizing when scheduling upcoming stock assessments; and (2) develop a technical approach (or approaches) to hind-casting and forecasting catch estimates. Members of the working group should be representatives from the two NMFS science centers, the two interstate management commissions, and NMFS headquarters (ST). Work on both tasks should be completed by May 1st to accommodate the timetable for pending updated and benchmark assessments. Subsequent to the workshop, the following people have been named to the working group: Katie Drew (ASMFC), Gregg Bray (GSMFC), Tim Miller (NEFSC), Erik Williams and John Walter (SEFSC), and Ron Salz (ST).

ACKNOWLEDGEMENTS

The workshop and this report would not have been possible without the cooperation and supports from the Workshop Steering Committee (Steve Turner, Jim Weinberg, Wes Patrick, Sarah Heil, John Carmichael, Andy Strelcheck, and Ron Salz) and the workshop rapporteurs (Kari Fenske, John Froeschke, Mike Errigo, Jason Didden, and Katie Drew). Special thanks go to Katie Drew for allowing me to use some of her narrative for the summary of the Session 2 discussion, and to Jason Didden for overseeing the web link-ups. Overall guidance from Gordon Colvin and Dave Van Voorhees is also greatly appreciated.

MRFSS/MRIP Calibration Workshop: Presentation and Working Paper Topics

Topics Providing Background:

1. How the transition from the MRFSS-based survey to the for-hire survey undertaken in 2003 was handled. Although this transition only involved effort, some lessons may be gained in learning how the transition methodology was handled, and its subsequent impact on stock assessments.
2. Issues associated with how changes to historical recreational catch and effort data influence derivation of biological reference points in benchmark stock assessments.
3. Lessons learned from the calibration of ALBATROSS IV to BIGELOW trawl survey data. This paper should focus on the process, including how the peer review was used, and how the calibration methodology is being integrated into updated and benchmark stock assessments.
4. The switch from MRFSS to the new RecFin methodology in 2003-2004.

Topics Addressing the TORs:

1. Descriptions of the completed and ongoing MRIP-funded projects that address MRFSS/MRIP calibration issues (TOR #1).
2. Changes to the sampling design and estimation methodologies that are anticipated when MRIP is fully implemented in 2013.
3. Each Center should prepare a working paper on how the re-estimated recreational catch statistics for 2004-2010 affects the conclusions (i.e., provide a broad-brush examination of how complicated it would be to do the revised assessments) of the most recent stock assessments for species managed under the purview of the five councils (NEFMC, MAFMC, SAFMC, GFMC, and CFMC) (TOR #2).
4. Working paper(s) on proposed methodology or methodologies that could hind-cast MRIP-based estimates prior to 2004 (TOR #2). The proposed methodologies should also consider how to incorporate additional side-by-side estimates dating back to the late 1990s that will be released around June 2012.
5. Proposed process for incorporating MRIP-based estimates into stock assessments (TOR #3). This paper should focus on generating discussion at the workshop on criteria for determining whether assessment updates or benchmarks are needed, and how stocks/species should be ranked in terms of timing.

MRFSS/MRIP Calibration Workshop: Agenda

Day 1

1300 – 1320 Welcome and Introductions (J. Boreman)

1320 – 1340 Overview of MRFSS/MRIP comparisons of 2004-2011 estimated catch and effort (J. Foster)

1340 – 1400 Discussion

1400 – 1420 How the transition from the MRFSS-based survey to the for-hire survey undertaken in 2003 was handled (V. Matter)

1420 – 1430 Q and A

1430 – 1450 Lessons learned from the calibration of ALBATROSS IV to BIGELOW trawl survey data (R. Brown and P. Rago)

1450 – 1500 Q and A

1500 – 1520 The switch from MRFSS to the new RecFin methodology in 2003-2004 (D. Van Voorhees and H. Lai)

1520 – 1530 Q and A

1530 – 1550 Refreshment Break

1550 – 1630 Changes to the sampling design and estimation methodologies that are anticipated when MRIP is fully implemented in 2013, including descriptions of the completed and ongoing MRIP-funded projects that could potentially impact MRFSS/MRIP calibration efforts (R. Andrews and R. Salz)

1630 – 1640 Q and A

1640 – 1700 Open Discussion of Day 1 Topics

1700 – 1730 MRIP data sets and analysis methods (J. Foster)

Day 2

0830 – 0850 Recap of Day 1 presentations and discussion (J. Boreman)

0850 – 0910 Issues associated with how changes to historical recreational catch and effort data influence derivation of biological reference points in benchmark stock assessments (R. Methot)

0910 – 0920 Q and A

0920 – 0940 Impacts of re-estimates on NEFSC stock assessments (NEFSC staff)

0940 – 0950 Q and A

0950 – 1010 Impacts of re-estimates on SEFSC stock assessments (SEFSC staff)

1010 – 1020 Q and A

1020 – 1040 Refreshment Break

1040 – 1120 Proposed methodology or methodologies that could be used to hind-cast MRIP-based estimates prior to 2004 (J. Foster, J. Breidt, J. Opsomer)

1120 – 1130 Q and A

1130 – 1220 Open Discussion of proposed methodologies and agreement on approach

1220 – 1330 Lunch Break

1330 – 1700 Continue discussion

1700 – 1730 Wrap-up Day 2

Day 3

0830 – 0850 Recap of Day 2 presentations and discussion (J. Boreman)

0850 – 0920 Proposed process and constraints to incorporating MRIP-based estimates into stock assessments (J. Carmichael, J. Weinberg, J. Coakley)

0920 – 0930 Q and A

0930 – 1030 Open discussion and agreement on approach

1030 – 1050 Refreshment Break

1050 – 1200 Workshop wrap-up (second thoughts, writing assignments, timeline for completion of workshop report, procedure for peer review and updates for its terms of reference, etc.) (J. Boreman)

**MRFSS/MRIP Calibration Workshop:
In-Person Attendance**

Alexi Sharov, DNR, MD
Carolyn Belcher, DNR, GA
Cynthia M. Jones, ODU, VA
Dave Van Voorhees, NMFS, MD
Erik Williams, NMFS, NC
John Foster, NMFS, MD
Gary Shepherd, NMFS, MA
Greg Stunz, TX A&M, TX
John Carmichael, SEDAR, SC
Jason T. Didden, MAFMC, DE
John Boreman, MRIP, NCSU, NC
John Froeschke, GMFMC, FL
John Walter, NMFS, FL
Kari Fenske, SEDAR, SC
Katie Drew, ASMFC, VA
Laura Lee, DENR, NC
Mike Errigo, SAFMC, SC
Mike Murphy, FWC, FL
Paul Rago, NMFS, MA
Nick Farmer, NMFS, FL

Phil Haring, NEFMC, MA
Pres Pate, MRIP, NC
Rick Methot, NMFS, WA
Rob Andrews, NMFS, MD
Ron Salz, NMFS, MD
Steve Turner, NMFS, FL
Timothy Miller, NMFS, MA
Tom Sminkey, NMFS, MD
Vivian Matter, NMFS, FL
Wes Patrick, NMFS, MD
Ben Hartig, SAFMC, FL
Matt Cieri, DNR, ME
David Cupka, SAFMC, SC
Jeffrey Brust, DEP, NJ
Kathy Knowlton, DNR, GA
Ryan Rindone, GMFMC, FL
Mac Currin, SAFMC, NC
Dick Brame, CCA, NC
Ken Pollock, NCSU, NC
Gregg Bray, GSMFC, MS

**MRFSS/MRIP Calibration Workshop:
Web Attendance**

Gordon Colvin, NMFS, MD
Scott Ward, Fifth Estate, DC
Tony Kratowicz, PA
Dick Brame, CCA, NC
Beverly Sauls, FWCC, FL
Lewis Gillingham, VMRC, VA
Moira Kelly, NMFS, MA
Andrew Cox, Billfish Foundation, FL
Chris Wilson, NCDMF, NC
Ed Bracken, NJ
Ray Mroch, NCDMF, NC
Sonya Davis, VMRC, VA
Ed Zlokovitz, MDDNR, MD
John Depersenaire, RFA, NJ
Forbes Darby, NMFS, MD
Doug Mumford, NCDMF, NC
Shizhen Wang, NOAA, MD
Geoff White, ACCSP, VA
Russell Porter, PSMFC, OR
Kevin Sullivan, NHFG, NH
Rob Swit, TU, NJ
Patrick Lyman, Envirotactics, NJ
Claudia Friess, Ocean Conservancy, TX
Roy Crabtree, NMFS, FL

Lauren Anderson, Fifth Estate, DC
Ed Hibsich, PSMFC, OR
Julia Byrd, SCDNR, SC
Hongguang Ma, HI
Joe Weinstein, CDFG, CA
Todd Phillips, Ocean Conservancy, TX
David Heil, FWCC, FL
Toby Carpenter, CDFG, CA
Lauren Dolinger-Few, NMFS, MD
Dustin Addis, FWCC, FL
Helen Takade-Heumacher, NC
Han-Lin Lai, NMFS, WA
Lou Arangio, Fortescue Anglers, NJ
Allison Watts, VMRC, VA
Michael Burton, NMFS, NC
Kyle Shertzer, NMFS, NC
Ed Schweitzer, JCSA, NJ
Mike Collins, SAFMC, SC
Stewart Caldwell, NJ
Doug Vaughan, NC
Scott Baker, NC Sea Grant, NC
Amy Didden, DE
William Heitzman, NJ
Joe Cimino, VMRC, VA

MRFSS/MRIP Calibration Workshop Ad-hoc Working Group Report

May 16, 2012

Ron Salz (Chair) – NOAA Fisheries, ST1
Tim Miller – NOAA Fisheries, NEFSC
Erik Williams – NOAA Fisheries, SEFSC
John Walter – NOAA Fisheries, SEFSC
Katie Drew – ASMFC
Greg Bray - GSMFC

One outcome of the MRFSS/MRIP Calibration Workshop was the formation of an ad-hoc working group charged with the following: 1) Establish a priority list in each region for which species assessments should be updated to incorporate the new MRIP-derived catch estimates; and, 2) Provide a technical approach (or approaches) to hind-casting and forecasting catch estimates, including examples. The ad-hoc working group included representatives from the NEFSC, SEFSC, GSMFC, ASMFC, and S&T Headquarters.

Species Prioritization

At the workshop participants discussed how priorities for conducting updated and benchmark assessments might be changed based on the results of re-estimation of 2004 to 2011 recreational catches for managed species. Although benchmark and updated assessment schedules are already set for 2012 and 2013, decisions have to be made on how to prioritize future assessments that will use the new MRIP numbers. The ad-hoc committee was asked to develop a metric that could be used to rank species based on the potential impact the switch from MRFSS to MRIP estimates could have on assessment outcomes. The metric was based on criteria related to the magnitude and significance of differences between MRFSS and MRIP catch estimates and the relative importance of the recreational catch time series in the overall assessment model. It was noted during the workshop that many other criteria, unrelated to the re-estimation of MRFSS numbers, will likely also affect scheduling species for updated and benchmark assessments (e.g., socio-economic importance, stock status, and political considerations). Nevertheless, workshop participants did see value in having an objective and understandable set of recreational data metrics that could be used as part of the stock assessment prioritization process.

Six criteria were used to rank species:

1. Total MRIP A and B1 in numbers
2. Mean percent difference between MRFSS and MRIP AB1 numbers calculated as:

$$-\frac{\quad}{\quad}$$

3. Mean percent difference between MRFSS and MRIP B2 numbers calculated as:

$$-\frac{\quad}{\quad}$$

4. Fraction of discards to total catch

$$-\frac{\quad}{\quad}$$

5. Multiple R^2 (Pearson correlation squared) between the annual MRIP AB1 and MRFSS AB1 values calculated from a linear regression of one versus the other or, equivalently:

6. Percent of total landings attributed to the recreational sector

The six criteria were chosen to represent a combination of factors that would be important in prioritization of species. First the total A plus B1 numbers give an idea of the magnitude of the recreational fishing mortality associated with landings. Next the percent difference between both AB1 and B2 (released alive) numbers provide an idea of the average difference between MRFSS and MRIP estimates; while noting that the average can be low if positive and negative differences cancel each other out. The fraction of discards provides a measure of the importance of discards which can be quite influential in many assessments. The correlation between the annual AB1 numbers provides an estimate of how well the estimates track each other, noting that the estimates could differ in magnitude but might still have the same trend. Finally, the percent of landings attributed to the recreational sector provide an idea of how influential the recreational landings may be in the assessment model, compared to commercial landings, and how sensitive the results may be to changes in recreational inputs.

For each of the six criterion species were initially assigned categorical ranks ranging from one through the total number of species. For example, 16 species were compared for Northeast region with one representing the lowest priority species for that criterion and 16 the highest priority. Ranks were then scaled back to a 10 point scale to provide relative ranks which could be compared across regions as follows:

$$\text{Rank 10-point scale} = 10 * \text{Initial Rank} / \text{Number of Species}$$

The overall priority rank score was calculated as the average of the categorical ranks across the six criteria. Tables 1, 2 and 3 give rankings for the Northeast, South Atlantic and Gulf of Mexico species, respectively. It should be noted that regional separations were based upon MRIP subregions (Northeast

= 4 & 5, South Atlantic = 6, and Gulf of Mexico = 7) which do not necessarily reflect the regional partitions used in all stock assessments.

Table 1. Metrics and rankings for Northeast species prioritization based on projected impact of changes in recreational time series data on stock assessments.

Northeast Region	MRIP AB1 (Number of Fish) Sum 2004-2011		Mean % Difference AB1 Catch		Mean % Difference B2 Catch		Relative Importance of Discards (B2 catch)		R2 Correlation Coefficient MRFSS and MRIP AB1		Avg % Recreational Landings (2004 - 2011)		Overall Priority Rank (higher values indicate greater priority)
	Value (1,000s)	Rank	Value	Rank	Value	Rank	Value	Rank	Value	Rank	Value	Rank	
tautog	6,508	4.4	0.083	5.6	0.085	6.9	0.092	7.5	0.883	7.5	91%	10.0	7.0
scup	28,205	7.5	-0.157	9.4	-0.136	9.4	0.076	3.8	0.818	6.9	32%	4.4	6.9
spot	69,387	8.8	0.096	6.9	0.042	5.0	0.043	0.6	0.982	9.4	43%	5.6	6.0
spotted seatrout	104,875	10.0	-0.022	2.5	-0.024	3.1	0.080	4.4	0.770	5.0	87%	8.8	5.6
striped bass	18,350	5.6	-0.060	4.4	0.011	0.6	0.108	8.8	0.802	6.3	80%	8.1	5.6
weakfish	4,268	3.8	0.089	6.3	-0.014	1.9	0.090	6.9	0.991	10.0	41%	5.0	5.6
bluefish	52,848	8.1	0.020	1.9	0.011	1.3	0.081	5.0	0.956	8.1	71%	7.5	5.3
red drum	26,154	6.9	0.012	1.3	-0.041	4.4	0.089	6.3	0.748	3.8	89%	9.4	5.3
atlantic cod	2,908	3.1	0.242	10.0	0.313	10.0	0.086	5.6	0.516	0.6	18%	2.5	5.3
summer flounder	482	1.3	0.048	3.8	0.098	7.5	0.119	9.4	0.732	3.1	45%	6.3	5.2
atlantic croaker	82,482	9.4	-0.036	3.1	-0.048	5.6	0.074	3.1	0.796	5.6	26%	3.1	5.0
spiny dogfish	156	0.6	0.107	7.5	0.103	8.1	0.122	10.0	0.588	1.3	3%	0.6	4.7
pollock	1,348	1.9	0.121	8.1	0.064	6.3	0.054	1.3	0.968	8.8	8%	1.9	4.7
black sea bass	14,738	5.0	0.008	0.6	0.036	3.8	0.105	8.1	0.595	1.9	51%	6.9	4.4
winter flounder	1,736	2.5	0.148	8.8	0.129	8.8	0.055	1.9	0.611	2.5	5%	1.3	4.3
spanish mackerel	20,804	6.3	0.077	5.0	0.020	2.5	0.061	2.5	0.757	4.4	30%	3.8	4.1

Table 2. Metrics and rankings for South Atlantic species prioritization based on projected impact of changes in recreational time series data on stock assessments.

South Atlantic Region	MRIP AB1 (Number of Fish) Sum 2004-2011		Mean % Difference AB1 Catch		Mean % Difference B2 Catch		Relative Importance of Discards (B2 catch)		R2 Correlation Coefficient MRFSS and MRIP AB1		Avg % Recreational Landings (2004 - 2011)		Overall Priority Rank (higher values indicate greater priority)
	Value (1,000s)	Rank	Value	Rank	Value	Rank	Value	Rank	Value	Rank	Value	Rank	
red snapper	313	3.6	0.185	8.6	0.123	6.8	0.102	9.5	0.978	8.6	74%	7.7	7.5
gray snapper	2,781	7.3	0.164	8.2	0.071	3.6	0.097	7.7	0.986	9.1	71%	6.8	7.1
mutton snapper	940	5.0	0.055	4.1	0.127	7.3	0.073	6.8	0.971	8.2	78%	8.2	6.6
black sea bass	4,023	8.2	0.083	5.0	0.074	4.1	0.104	10.0	0.958	7.7	36%	2.3	6.2
sheepshead	4,599	8.6	0.119	6.4	0.082	4.5	0.055	3.6	0.851	4.5	81%	8.6	6.1
wahoo	340	4.1	-0.088	5.5	-0.320	9.5	0.008	0.5	0.947	6.4	95%	9.1	5.8
blue runner	5,581	9.1	0.049	3.2	0.070	3.2	0.065	5.5	0.894	5.5	72%	7.3	5.6
red porgy	297	3.2	-0.288	9.1	-0.525	10.0	0.055	4.1	0.840	4.1	37%	2.7	5.5
red grouper	383	4.5	-0.369	10.0	0.028	0.9	0.087	7.3	0.900	5.9	40%	4.1	5.5
cero	132	1.8	0.162	7.7	-0.090	5.0	0.026	1.4	0.955	7.3	100%	9.5	5.5
yellow jack	60	0.9	0.123	7.3	0.052	2.3	0.049	2.7	0.988	10.0	100%	9.5	5.5
black grouper	29	0.5	-0.119	6.8	0.162	8.2	0.098	8.2	0.430	0.5	69%	6.4	5.1
greater amberjack	264	2.3	0.039	2.3	0.093	5.5	0.065	5.9	0.949	6.8	64%	5.5	4.7
gray triggerfish	1,072	5.5	0.045	2.7	0.095	5.9	0.066	6.4	0.748	1.8	58%	5.0	4.5
scamp	124	1.4	-0.319	9.5	-0.216	9.1	0.051	3.2	0.760	2.3	27%	1.4	4.5
spanish mackerel	7,741	10.0	0.103	5.9	0.069	2.7	0.044	2.3	0.839	3.6	34%	1.8	4.4
yellowtail snapper	2,005	6.4	-0.054	3.6	-0.129	7.7	0.064	5.0	0.825	2.7	16%	0.9	4.4
crevalle jack	2,596	6.8	-0.030	1.8	0.050	1.8	0.099	8.6	0.531	0.9	67%	5.9	4.3
vermilion snapper	1,303	5.9	0.067	4.5	0.099	6.4	0.057	4.5	0.651	1.4	38%	3.2	4.3
king mackerel	3,435	7.7	0.013	0.5	-0.032	1.4	0.034	1.8	0.987	9.5	52%	4.5	4.2
dolphin	7,454	9.5	0.026	0.9	-0.187	8.6	0.019	0.9	0.882	5.0	14%	0.5	4.2
gag	266	2.7	-0.027	1.4	0.004	0.5	0.099	9.1	0.832	3.2	38%	3.2	3.3

Table 3. Metrics and rankings for the Gulf of Mexico species prioritization based on projected impact of changes in recreational time series data on stock assessments.

Gulf of Mexico Region	MRIP AB1 (Number of Fish) Sum 2004-2011		Mean % Difference AB1 Catch		Mean % Difference B2 Catch		Relative Importance of Discards (B2 catch)		R2 Correlation Coefficient MRFSS and MRIP AB1		Avg % Recreational Landings (2004 - 2011)		Overall Priority Rank (higher values indicate greater priority)
	Value (1,000s)	Rank	Value	Rank	Value	Rank	Value	Rank	Value	Rank	Value	Rank	
gray snapper	8,189	9.4	-0.088	5.0	-0.047	3.1	0.099	8.8	0.904	6.9	91%	8.8	7.0
gray triggerfish	1,824	5.6	-0.105	6.3	-0.306	7.5	0.049	3.1	0.978	9.4	96%	9.4	6.9
greater amberjack	615	3.8	-0.111	6.9	-0.212	6.9	0.089	6.3	0.905	7.5	73%	6.9	6.4
mutton snapper	238	2.5	-0.398	8.1	-0.851	10.0	0.069	4.4	0.865	5.6	78%	7.5	6.4
red grouper	1,651	5.0	-0.118	7.5	0.025	2.5	0.115	10.0	0.983	10.0	20%	1.9	6.1
gag	2,862	7.5	-0.055	3.8	0.013	1.9	0.111	9.4	0.968	8.8	69%	5.6	6.1
red snapper	6,629	8.8	-0.046	2.5	-0.100	4.4	0.090	6.9	0.957	8.1	65%	5.0	5.9
cero	211	1.3	-0.466	10.0	-0.540	8.8	0.022	1.3	0.809	3.8	100%	10.0	5.8
bluefish	1,588	4.4	0.092	5.6	0.119	5.0	0.096	8.1	0.815	4.4	63%	4.4	5.3
black grouper	93	0.6	-0.453	9.4	-0.508	8.1	0.096	7.5	0.652	1.9	60%	3.8	5.2
dolphin	2,525	6.9	-0.415	8.8	-0.646	9.4	0.033	1.9	0.562	1.3	14%	0.6	4.8
spanish mackerel	12,780	10.0	0.055	4.4	0.003	0.6	0.069	3.8	0.714	2.5	69%	5.6	4.5
cobia	298	3.1	0.047	3.1	0.062	3.8	0.081	5.6	0.763	3.1	90%	8.1	4.5
vermilion snapper	2,937	8.1	-0.004	0.6	-0.176	5.6	0.020	0.6	0.831	5.0	14%	0.6	3.4
king mackerel	2,355	6.3	0.010	1.3	-0.003	1.3	0.047	2.5	0.895	6.3	41%	3.1	3.4
scamp	229	1.9	-0.026	1.9	0.204	6.3	0.080	5.0	0.534	0.6	28%	2.5	3.0

Technical Calibration Approach

Workshop participants recognized the importance of strong, clear guidelines regarding calibration methods and how and when the methods should be used. Stock assessment scientists do not want to be in the position of developing ad hoc calibration methods on a species-by-species and region-by-region basis. While more sophisticated and time-consuming calibration approaches were discussed, workshop participants reached consensus that, prior to 2004 (or whichever year is the first year for which direct re-estimates are available, since ST is still working on re-estimation for years prior to 2004), hind-casted catch data should use a straight-forward ratio estimator (i.e., MRFSS/MRIP), either constant throughout time hind-casted time series or trended based on ancillary information. A MRFSS/MRIP ratio estimator was also suggested to approximate adjusted variances associated with the revised catch estimates.

Use of a ratio estimator approach for calibrating from MFRSS to MRIP should not preclude development of more extensive species-specific approaches as warranted. However, for many assessed species the use of a simple ratio estimator may be sufficient considering the relatively small differences found between MRFSS and MRIP numbers, and more importantly the anticipated small impact the revised recreational time series will have on assessment outcomes. The reliability and confidence in using a ratio estimator will increase considerably as more years of re-estimated MRIP numbers become available. At present, only eight years of side-by-side MRFSS-MRIP estimates (2004-2011) are available to develop ratio estimators that for some species will be applied to 23 years of data (1981-2003). ST is currently working on revised estimates for 1998-2003 and may eventually go back even further depending on the availability and quality of original data sources.

The ad-hoc working group recommends the ratio estimator be based on the “ratio of means” (across all comparison years included) rather than based on the “mean of ratios” for individual years. Based on sampling theory, the ratio of means should be less biased and more stable than the "mean of ratios" (Cochran 1977) and it also represents the least-squares estimator for a slope in a zero-intercept model when the variance of y (the MRIP estimate in this case) is proportional to x (the MRFSS estimates in this case). The estimate of the calibration factor that is a ratio of mean catches is calculated as:

Formula A

$$\hat{R}_{RM} = \frac{\bar{C}_{MRIP}}{\bar{C}_{MRFSS}} = \frac{\sum_{y=1}^n \hat{C}_{y,MRIP}}{\sum_{y=1}^n \hat{C}_{y,MRFSS}}$$

Calibrated catch estimates for 1982-2003 are then calculated as:

Formula B

$$\hat{C}_{y,\hat{R}} = \hat{R} \hat{C}_{y,MRFSS}$$

The same formulas can also be applied for calibrating variances associated with MRFSS catch estimates.

Variances of the adjusted catch estimates should include two components: 1) calibrated variance of the catch estimate, and 2) variance associated with the ratio estimator used for calibrating the catch estimate.

The variance estimator for the ratio of means derived from the formula above can be approximated as:

Formula C

$$\hat{V}(\hat{R}_{RM}) = \hat{R}_{RM}^2 \left[\frac{\hat{V}(\bar{C}_{MRIP})}{\bar{C}_{MRIP}^2} + \frac{\hat{V}(\bar{C}_{MRFSS})}{\bar{C}_{MRFSS}^2} - 2 \frac{Cov(\bar{C}_{MRFSS}, \bar{C}_{MRIP})}{\bar{C}_{MRFSS} \bar{C}_{MRIP}} \right]$$

Where

$$\hat{V}(\bar{C}) = \frac{1}{n} \frac{\sum_{y=1}^n (\hat{C}_y - \bar{C})^2}{n-1}$$

An estimate of the variance of the calibrated estimate of catch that accounts for uncertainty in the estimate of the calibration factor is calculated as:

Formula D

$$\hat{V}(\hat{C}_{y,\hat{R}}) = \hat{C}_{y,MRFSS}^2 \hat{V}(\hat{R}) + \hat{R}^2 \hat{V}(\hat{C}_{y,MRFSS}) - \hat{V}(\hat{R}) \hat{V}(\hat{C}_{y,MRFSS})$$

This assumes the estimate of the ratio is independent of the estimate of the catch that is to be calibrated. The variances of the catches in the above equation, $\hat{V}(\hat{C}_{y,MRFSS})$ are the values after being calibrated.

Ratio Estimator Approach Example – Summer Flounder

To show an example of the approach suggested above we will hind-casted summer flounder landings numbers (A+B1) estimates and variances for 2003 based on a comparison of 2004-2011 MRFSS and MRIP estimates. Table 4 shows summer flounder AB1 numbers estimates and associated variances for the eight years of MRFSS and MRIP side-by-side estimates.

Table 4. Virginia through Maine MRFSS and MRIP 2004-2011 summer flounder AB1 numbers estimates, variances, variance of means, and co-variances of means.

Year	MRFSS AB1 Numbers (in 1,000s)	MRFSS Variance (in 1,000s)	MRIP AB1 Numbers (in 1,000s)	MRIP Variance (in 1,000s)
2004	4,557	33,226	4,316	67,076
2005	4,110	42,230	4,028	58,396
2006	4,052	41,047	3,951	76,508
2007	3,393	18,420	3,109	34,795
2008	2,295	13,168	2,350	44,728
2009	1,910	9,120	1,807	16,001
2010	1,484	10,791	1,502	14,433
2011	1,782	25,722	1,830	21,439
Mean 2004-2011	2,948	24,215	2,862	41,672
Variance of the Mean	185,048	22,410,864	160,925	71,527,726
Co-variance of MRFSS and MRIP Means			150,486	28,832,853

Using the “ratio of means” approach (Formula A) the ratio estimator for landings numbers is calculated as:

$$= 2,862 / 2,948 = 0.970756$$

When this ratio is applied to the MRFSS 2003 estimate of 4,559 (X 1,000) the calibrated MRIP estimate is 4,425.7 (X 1,000).

Similarly, the ratio estimator for the landings estimate variance is calculated as:

$$= 41,672 / 24,215 = 1.7209$$

When this ratio is applied to the MRFSS 2003 variance of 33,255.2 (X 1,000) the calibrated MRIP variance is 57,228.4 (X 1,000).

The next step is to calculate the variance and PSE associated with the ratio estimator.

Using the Formula C provided above, the variance is approximated as:

$$\begin{aligned} &= 0.9708^2 * (185,048 / 2,948^2 + 160,925 / 2,862^2 - 2 * 150,486 / (2,948 / 2,862)) \\ &= 0.004964 \end{aligned}$$

The PSE is calculated as:

$$\begin{aligned} &= 100 * \text{Sqrt} (\text{Variance}) / (\text{Mean}) \\ &= 100 * \text{Sqrt} (0.004964) / (0.9708) \\ &= 7.3 \% \end{aligned}$$

Finally we calculate the variance and PSE associated with the calibrated landings estimates for each year (Formula D) as:

$$\begin{aligned} &= (4,559^2 * 0.004964) + (0.9708^2 * 57,228.4) - (0.004964 * 57,228) \\ &= 156,821.9 \end{aligned}$$

The PSE for the calibrated estimate is calculated as:

$$\begin{aligned} &= 100 * \text{Sqrt} (\text{Variance}) / (\text{Mean}) \\ &= 100 * \text{Sqrt} (156,821.9) / (4,425.7) \\ &= 8.95 \% \end{aligned}$$

Table 5. Original MRFSS AB1 landings estimates, variances and PSEs alongside hind-casted MRIP AB1 landings estimates, variances, and PSEs for summer flounder from 1982-2003.

Year	MRFSS AB1 Numbers of Fish (in 1,000s)	MRFSS Variance (in 1,000s)	MRFSS PSEs	MRFSS AB1 Numbers (in 1,000s) with Ratio Adjustment	MRFSS Variance (in 1,000s) with Ratio Adjustment	Adjusted Variance with Ratio Estimator Variance Factor	Adjusted PSE with Ratio Estimator Variance Factor
1982	15,473	16,184,368	26	15,021	27,851,679	27,296,703	34.8
1983	20,996	2,160,077	7	20,383	3,717,276	5,672,877	11.7
1984	17,475	1,954,404	8	16,965	3,363,334	4,668,685	12.7
1985	11,066	1,763,372	12	10,743	3,034,586	3,452,504	17.3
1986	11,621	661,733	7	11,282	1,138,777	1,737,870	11.7
1987	7,865	154,646	5	7,635	266,130	556,535	9.8
1988	9,960	158,723	4	9,669	273,146	748,484	8.9
1989	1,717	10,613	6	1,667	18,264	31,755	10.7
1990	3,794	23,031	4	3,683	39,634	108,607	8.9
1991	6,068	58,913	4	5,891	101,383	277,815	8.9
1992	5,002	40,032	4	4,856	68,891	188,778	8.9
1993	6,494	67,475	4	6,304	116,118	318,192	8.9
1994	6,703	71,888	4	6,507	123,713	339,002	8.9
1995	3,326	17,700	4	3,229	30,459	83,466	8.9
1996	6,997	44,062	3	6,793	75,827	314,108	8.3
1997	7,167	82,185	4	6,958	141,433	387,560	8.9
1998	6,979	77,930	4	6,775	134,110	367,494	8.9
1999	4,107	26,988	4	3,987	46,444	127,266	8.9
2000	7,801	54,770	3	7,573	94,254	390,441	8.3
2001	5,294	44,842	4	5,139	77,169	211,462	8.9
2002	3,262	17,025	4	3,167	29,298	80,285	8.9
2003	4,559	33,255	4	4,426	57,229	156,821	8.9

Guidelines for Applying Ratio Estimator Approach

The ad-hoc working group recommends the following generally guidelines for applying a ratio estimator to calibrate recreational catch and variance estimates. These guidelines may not apply, or be practical, in all cases as the impact of changes in the recreational time series data will vary by assessment or particular management need:

- Ratio estimators should be calculated using stock level aggregate data to the extent possible. Caution should be used when calculating ratio estimates at finer geographic levels or by fishing mode.
- Ratio estimators can be based on either estimated numbers of fish or weights depending on which units are used directly in the assessment model. The exception may be if ratios based on weights appear unstable due to small sample sizes of weighed fish. In such cases it may be better to calculate a ratio estimator based on numbers and apply it to the weights.
- To the extent practicable, all years for which both MRFSS and MRIP estimates are available should be used to calculate ratios. If one or two years have ratios that are different enough from the other years so as to noticeably impact the overall ratio of means, a balanced trimmed mean approach which removes both the highest and lowest ratios is preferred over simply removing just the highest or lowest year.
- Trended ratio estimators are generally not recommended at present since only eight years are available for comparison. The basic ratio estimator itself could behave poorly with very few years of paired MRFSS and MRIP observations. As additional years of side-by-side estimates are made available bias in the ratio estimator will become negligible and it may be possible to develop trended ratio estimators that better reflect different MRFSS/MRIP ratios at different parts of the time series.
- It is recommended that stock assessment scientists conduct sensitivity analyses of the hind-casted recreational catch estimates (e.g., varying them by 5, 10, 20%) and length frequencies, as available, in order to gauge the overall impact of changes in the estimates on biological reference points. If the assessment results are sensitive to changes in the recreational time series there may be justification for developing more sophisticated models for hind-casting estimates than the ratio estimator approach suggested here.
- The ad-hoc working group did not fully evaluate a ratio estimator approach for calibrating length

frequencies as data were not available at the time of this report. The group did come up with two possible options but also recognized that other options may exist: 1) Adjust the numbers at length using the same ratio as used for total numbers, or 2) Estimate length-class specific ratios and adjust by length class, then sum the adjusted length classes for an alternative adjusted total number.

References

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Appendix E.

1 Bycatch Practicability Analysis (BPA)

1.1 Population Effects for the Bycatch Species

Background

Regulatory Amendment 13 to the Fishery Management Plan for the Snapper Grouper Fishery of the South Atlantic Region (Regulatory Amendment 13) revises the acceptable biological catch estimates (ABCs), annual catch limits (ACLs, including sector ACLs), and annual catch targets (ACTs) implemented through the Comprehensive ACL Amendment (SAFMC 2011c), for 37 un-assessed species in the snapper grouper fishery management unit (FMU). There are 60 species in the snapper grouper FMU, many of which co-exist with each other, and are encountered by fishers. Therefore, this BPA includes landings and discard information for species in addition to the 37 species considered in Regulatory Amendment 13 (see **Table 1**).

Most of the species in the snapper grouper FMU are taken with hook and line gear (see **Chapter 3**). Black sea bass are predominantly taken with pots; whereas, longline gear has been the predominant gear type used to capture golden tilefish. **Appendix B** contains the history of management for species in the Snapper Grouper FMP, including changes in gear, size limits, trip limits, seasonal closures, etc.

During 2007-2011, total landings and discards for the 37 un-assessed snapper grouper species in Regulatory Amendment 13 were lower than those for the snapper grouper species not included in the amendment, for both the commercial and recreational sectors (**Table 1**). For all species in the snapper grouper FMU, total number of discards for the commercial sector were lower than the recreational sector (both “private” and “for-hire” headboat/charterboat categories) (**Table 1**).

Commercial Sector

During 2007-2011, regulations (50 C.F.R. § 622.5) required participants in the South Atlantic snapper grouper fishery who were selected by the Science and Research Director (SRD) to maintain and submit a fishing record on forms provided by the SRD. Fishermen in the snapper grouper fishery were also required to submit logbooks with trip and effort information. In the Snapper Grouper FMP, landings (pounds whole weight, lbs ww) during 2007-2011 were dominated by vermilion snapper (1,086,090), yellowtail snapper (949,257), greater amberjack (796,063), gag (592,108), black sea bass (489,471), red grouper (480,195), gray triggerfish (427,642), and golden tilefish (372,466) (**Table 1**). Commercial discards during 2007-2011 were highest for yellowtail snapper (128,323), followed by gray snapper (74,887), vermilion snapper (36,825), red porgy (27,671), and black sea bass (20,132) (**Table 1**).

Currently, discard data are collected using a supplemental form that is sent to a 20% stratified random sample of the active permit holders in the snapper grouper fishery. However, in the absence of any observer data, there are concerns about the accuracy of logbook data in collecting bycatch information. Biases associated with logbooks primarily result from inaccuracy in reporting of species that are caught in large numbers or are of little economic interest (particularly of bycatch species), and from low compliance rates. Actions that could help resolve

some of these issues are currently being considered in amendments being developed by the South Atlantic Fishery Management Council (South Atlantic Council).

Recreational Sector

For the recreational sector during 2007-2011, estimates of the number of recreational discards were available from Marine Recreational Fisheries Statistical Survey (MRFSS) and the NMFS headboat survey. The MRFSS system classified recreational catch into three categories:

- Type A - Fishes that were caught, landed whole, and available for identification and enumeration by the interviewers.
- Type B - Fishes that were caught but were either not kept or not available for identification:
 - Type B1 - Fishes that were caught and filleted, released dead, given away, or disposed of in some way other than Types A or B2.
 - Type B2 - Fishes that were caught and released alive.

During 2007-2011, “for-hire” vessels for the snapper grouper fishery were selected to report by the SRD to maintain a fishing record for each trip, or a portion of such trips as specified by the SRD, and on forms provided by the SRD. Furthermore, the owner or operator of a vessel for which a charter vessel/headboat permit for South Atlantic snapper-grouper has been issued, who was selected to report by the SRD must participate in the NMFS-sponsored electronic logbook and/or video monitoring reporting program as directed by the SRD. Harvest and bycatch information was monitored by MRFSS. Since 2000, a 10% sample of charter vessel captains were called weekly to obtain trip level information. In addition, the standard dockside intercept data were collected from charter vessels and charter vessel clients were sampled through the standard random digital dialing of coastal households. Precision of charter vessel effort estimates has improved by more than 50% due to these changes (Van Voorhees *et al.* 2000).

Following an independent review by the National Research Council and a mandate from Congress, NMFS has overhauled MRFSS. The Marine Recreational Information Program (MRIP) was developed to provide more accurate recreational catch estimates. Samples under MRIP are drawn from a known universe of fishermen rather than randomly dialing coastal households. Other improvements have been and will be made that should result in better estimating recreational catches and the variances around those catch estimates. For this BPA, recreational data from 2007 to 2011 is obtained from MRIP data from Southeast Fisheries Science Center (SEFSC) Recreational ACL Dataset (October 2012) Recreational MRIP data includes official MRIP 2004-2011 re-estimates and ratio-estimated MRIP catches (1986-2003).

Harvest from headboats was monitored by NMFS at the SEFSC Beaufort Laboratory. Collection of discard data began in 2004. Daily catch records (trip records) were filled out by the headboat operators, or in some cases by NMFS approved headboat samplers based on personal communication with the captain or crew. Headboat trips were subsampled for data on species lengths and weights. Biological samples (scales, otoliths, spines, reproductive tissues, and

stomachs) were obtained as time allowed. Lengths of discarded fish were occasionally obtained but these data were not part of the headboat database.

The recreational sector can be further categorized into “private” and “for-hire” (headboat/charterboat) categories. During 2007-2011, private recreational landings (numbers of fish) for species in the Snapper Grouper FMP were dominated by blue runner (648,272), followed by gray snapper (320,071), black sea bass (303,905), white grunt (249,451), yellowtail snapper (197,021), and gray triggerfish/Atlantic spadefish (119,986/119,977) (**Table 1**). During 2007-2011, discards (numbers of fish) for snapper grouper species in the private recreational sector were highest for black sea bass (2,414,933), followed by gray snapper (1,303,945), blue runner (751,315), white grunt (638,048), tomtate (302,173), yellowtail snapper (230,731), and mutton snapper (177,604) (**Table 1**). For the same time period, the “for-hire” category (headboat/charterboat) targeted slightly different species in the snapper grouper FMU. Landings (headboat/charterboat) were highest for vermilion snapper/black sea bass (253,588/75,763), followed by white grunt (163,893/40,649), and yellowtail snapper/gray triggerfish (95,882/40,356) (**Table 1**). Discards in the headboat/charterboat categories were highest for black sea bass (333,521/177,846), followed by vermilion snapper (114,683/32,708), tomtate/white grunt (73,439/19,002), and yellowtail snapper/blue runner (32,646/15,444) (**Table 1**).

Table 1. Mean headboat, MRIP charter and private, and commercial estimates of landings and discards for species in the snapper grouper (S-G) fishery management unit in the U.S. southern Atlantic Ocean from 2007 to 2011. Headboat, MRIP charter and private landings are in numbers of fish (N); commercial landings are in pounds whole weight (lbs ww).

Name of stock or stock complex	Headboat				MRIP Charter				MRIP Private				Commercial	
	Catch (N)	Landings (N)	Discards (N)	Discards (%)	Catch (N)	Landings (N)	Discards (N)	Discards (%)	Catch (N)	Landings (N)	Discards (N)	Discards (%)	Landings (lbs ww)	Discards (N)
Deepwater complex														
Yellowedge grouper	12	9	3	24%	45	45	0	0%	221	221	0	0%	19,438	0
Blueline tilefish	1,732	1,709	23	1%	34,611	27,729	6,881	20%	10,809	9,851	958	9%	309,825	2
Silk Snapper	1,187	1,080	107	9%	1,646	1,475	171	10%	868	255	613	71%	12,559	1
Misty grouper	1	1	0	0%	0	0	0	0%	0	0	0	0%	1,765	0
Sand tilefish	1,348	903	444	33%	6,163	525	5,638	91%	24,397	5,769	18,628	76%	813	227
Queen snapper	0	0	0	0%	5	5	0	0%	0	0	0	0%	5,080	2
Black snapper	0	0	0	0%	0	0	0	0%	0	0	0	0%	147	32
Blackfin snapper	124	60	63	51%	259	259	0	0%	5,625	5,625	0	0%	1,567	1
Jacks complex														
Almaco jack	4,162	3,806	356	9%	3,788	2,660	1,128	30%	8,814	4,329	4,485	51%	204,945	106
Banded rudderfish	18,992	16,771	2,221	12%	5,559	3,829	1,729	31%	14,929	4,604	10,325	69%	53,262	739
Lesser amberjack	216	211	5	2%	62	62	0	0%	1,965	1,965	0	0%	15,268	110
Snappers complex														
Gray snapper	43,494	38,141	5,353	12%	7,291	6,142	1,149	16%	1,624,017	320,071	1,303,945	80%	109,225	74,887
Lane snapper	22,610	19,297	3,313	15%	4,988	3,661	1,327	27%	204,274	55,511	148,762	73%	4,105	697
Cubera snapper	452	425	28	6%	21	21	0	0%	4,178	3,904	275	7%	5,774	0
Dog snapper	89	60	29	32%	196	196	0	0%	3,954	3,575	379	10%	431	0
Mahogany snapper	32	31	2	6%	0	0	0	0%	853	853	0	0%	38	819
Grunts complex														
White grunt*	194,234	163,893	30,341	16%	59,651	40,649	19,002	32%	887,499	249,451	638,048	72%	149,521	564
Sailors choice	89	84	5	6%	1,249	69	1,180	94%	50,916	20,391	30,525	60%	0	0
Tomtate	122,805	49,366	73,439	60%	21,934	16,652	5,283	24%	420,317	118,144	302,173	72%	511	2,622
Margate	1,240	822	419	34%	129	30	99	77%	20,936	13,080	7,856	38%	3,494	29

Name of stock or stock complex	Headboat				MRIP Charter				MRIP Private				Commercial	
	Catch (N)	Landings (N)	Discards (N)	Discards (%)	Catch (N)	Landings (N)	Discards (N)	Discards (%)	Catch (N)	Landings (N)	Discards (N)	Discards (%)	Landings (lbs ww)	Discards (N)
Shallow water groupers complex														
Red hind	667	600	67	10%	210	51	158	76%	4,239	1,985	2,254	53%	11,883	147
Rock hind	2,820	2,312	508	18%	122	94	27	23%	5,127	2,072	3,055	60%	20,289	7
Yellowmouth grouper	69	62	7	10%	167	167	0	0%	1,792	1,792	0	0%	54	0
Yellowfin grouper	72	59	13	18%	0	0	0	0%	0	0	0	0%	5,701	6
Coney	172	102	70	41%	98	57	41	42%	2,634	1,789	845	32%	48	4
Graysby	4,414	3,642	772	17%	843	737	106	13%	8,336	3,137	5,200	62%	239	13
Porgies complex														
Jolthead porgy	7,739	7,577	161	2%	1,936	1,936	0	0%	11,444	11,066	378	3%	2,586	4
Knobbed porgy	6,280	6,193	87	1%	992	992	0	0%	5,209	2,717	2,493	48%	26,042	0
Saucereye porgy	324	323	1	0%	95	95	0	0%	424	424	0	0%	0	0
Scup	12,284	10,176	2,109	17%	125	90	35	28%	1,485	1,003	482	32%	0	0
Whitebone porgy	5,064	4,809	256	5%	1,830	1,782	49	3%	10,039	9,085	954	10%	18	17
Individual stocks														
Atlantic spadefish	162	133	29	18%	298	227	71	24%	271,647	119,977	151,670	56%	27,280	0
Blue runner	15,984	13,091	2,893	18%	28,139	12,695	15,444	55%	1,399,587	648,272	751,315	54%	208,772	1,155
Bar jack	235	188	47	20%	601	189	412	69%	11,961	2,933	9,028	75%	4,661	9
Gray triggerfish*	68,648	58,654	9,995	15%	48,945	40,356	8,588	18%	255,833	119,986	135,847	53%	427,642	2,091
Scamp	9,333	6,084	3,249	35%	6,432	4,393	2,038	32%	15,179	7,123	8,056	53%	281,807	2,723
Hogfish	354	264	91	26%	41	37	4	9%	33,770	30,221	3,549	11%	50,396	265
Total (species in Reg. Am. 13)	547,442	410,937	136,505		238,471	167,910	70,560		5,323,276	1,781,181	3,542,095		1,965,183	87,281
S-G species not in Reg. Am. 13	Headboat				MRIP Charter				MRIP Private				Commercial	
	Catch (N)	Landings (N)	Discards (N)	Discards (%)	Catch (N)	Landings (N)	Discards (N)	Discards (%)	Catch (N)	Landings (N)	Discards (N)	Discards (%)	Landings (lbs ww)	Discards (N)
Bank sea bass	6,009	6,009	0	0%	2,728	550	2,178	80%	11,322	2,651	8,672	77%	431	0

Name of stock or stock complex	Headboat				MRIP Charter				MRIP Private				Commercial	
	Catch (N)	Landings (N)	Discards (N)	Discards (%)	Catch (N)	Landings (N)	Discards (N)	Discards (%)	Catch (N)	Landings (N)	Discards (N)	Discards (%)	Landings (lbs ww)	Discards (N)
Black grouper	1,551	464	1,086	70%	501	389	112	22%	15,115	2,962	12,153	80%	59,427	3,031
Black sea bass	511,148	177,627	333,521	65%	253,609	75,763	177,846	70%	2,718,839	303,905	2,414,933	89%	489,471	20,132
Cottonwick	22	22	0	0%	0	0	0	0%	0	0	0	0%	0	0
Gag	8,633	3,736	4,897	57%	8,085	3,787	4,298	53%	150,501	25,430	125,072	83%	592,108	9,185
Golden tilefish	0	0	0	0%	932	932	0	0%	3,522	3,522	0	0%	372,466	16
Greater amberjack	6,232	4,239	1,994	32%	24,150	19,259	4,891	20%	56,083	20,988	35,095	63%	796,063	3,692
Longspine porgy	18	18	0	0%	11,423	11,423	0	0%	389	389	0	0%	13	0
Mutton snapper	17,572	13,984	3,588	20%	19,038	10,757	8,280	43%	291,123	113,519	177,604	61%	77,400	4,089
Ocean triggerfish	202	202	0	0%	382	300	82	22%	7,428	3,418	4,011	54%	0	0
Red grouper	11,109	2,374	8,735	79%	14,415	6,766	7,649	53%	93,235	44,063	49,171	53%	480,195	6,793
Red porgy	56,191	34,003	22,189	39%	24,792	14,996	9,796	40%	38,511	22,964	15,546	40%	179,256	27,671
Rock sea bass	0	0	0	0%	592	295	297	50%	9,190	2,945	6,245	68%	648	0
Schoolmaster	326	326	0	0%	8	8	0	0%	13,527	7,971	5,555	41%	231	0
Snowy grouper	139	95	44	32%	1,843	1,574	269	15%	1,080	893	187	17%	93,418	270
Vermilion snapper	368,271	253,588	114,683	31%	79,351	46,643	32,708	41%	205,807	85,100	120,707	59%	1,086,090	36,825
Yellowtail snapper	128,528	95,882	32,646	25%	31,652	25,573	6,079	19%	427,752	197,021	230,731	54%	949,257	128,323
Total (S-G species not in Reg. Am. 13)	1,115,952	592,567	523,384		473,500	219,014	254,486		4,043,423	837,741	3,205,682		5,176,473	240,028
Total (all S-G species)	1,663,393	1,003,504	659,889		711,971	386,924	325,047		9,366,700	2,618,922	6,747,778		7,141,657	327,308

Sources: MRIP data from SEFSC Recreational ACL Dataset (October 2012), Headboat data from SEFSC Headboat Logbook CRNF files (expanded; July 2012), Commercial landings data from SEFSC Commercial ACL Dataset (July 2012), with discard estimates from expanded SEFSC Commercial Discard Logbook (July 2012).

Note: Commercial discard estimates are for vertical line gear only. Recreational MRIP data includes official MRIP 2004-2011 re-estimates and ratio-estimated MRIP catches (1986-2003).

*Commercial gray triggerfish includes "triggerfishes, unclassified" category; commercial white grunt includes "grunts, unclassified" category.

Goliath grouper, Nassau grouper, Warsaw grouper, Speckled hind, and Red snapper are excluded from **Table 1** since they are prohibited species, and landings records are not available for all the years 2007-2011. Wreckfish landings are confidential.

Finfish Bycatch Mortality

Release mortality rates are unknown for most managed species, and as of this writing, there are no stock assessments for the 37 species in Regulatory Amendment 13. Recent Southeast Data, Assessment, and Review (SEDAR) assessments include estimates of release mortality rates based on published studies. Stock assessment reports can be found at <http://www.sefsc.noaa.gov/sedar/>.

SEDAR 17 (2008) recommended a release mortality rate for vermilion snapper of 38% for both the commercial and recreational sectors. An update to the stock assessment for vermilion snapper in 2012 recommended a release mortality rate of 41% for the commercial and 38% for the headboat and private recreational sectors (SEDAR Update Assessment 2012a). Release mortality of black sea bass is considered to be low (7% for the recreational sector and 1% for the commercial sector) (SEDAR 25; 2011) indicating minimum size limits are probably an effective management tool for black sea bass. Collins et al. (1999) reported venting of the swim bladder yielded reductions in release mortality of black sea bass, and the benefits of venting increased with capture depth. The same study was analyzed by Wilde (2009) to suggest that venting increased the survival of black sea bass, although this was an exception to the general findings of Wilde's (2009) study. SEDAR 15 (2008) estimated a 20% release mortality rate for greater amberjack. In the Gulf of Mexico, SEDAR 9 (2006) assumes a 0% release mortality rate for gray triggerfish. An update to the stock assessment for red porgy in 2012 used a release mortality rate of 35% for the commercial and headboat sectors, and 8% for the private recreational sector (SEDAR Update Assessment 2012b). The most recent stock assessment for yellowtail snapper in the South Atlantic used a release mortality of 11.5% for the commercial sector and 10% for the recreational sector (O'Hop et al. 2012). SEDAR 10 (2006) estimated release mortality rates of 40% and 25% for gag taken by commercial and recreational fishermen, respectively. SEDAR 24 (2010) used release mortality rates of 48% commercial; 41% for-hire, and 39% private recreational for red snapper. Release mortality rates were estimated as 20% for black grouper and red grouper in SEDAR 19 (2010). Snowy grouper are primarily caught in water deeper than 300 feet and golden tilefish are taken at depths greater than 540 feet; therefore, release mortality of the species are probably near 100% (SEDAR 4; 2004).

Practicability of Management Measures in Directed Fisheries Relative to their Impact on Bycatch and Bycatch Mortality

The snapper grouper fishery represents many species occupying the same location at the same time. Fishermen could harvest one of these species when targeting others and may return them to the water as "regulatory discards" (e.g., if the fish is under the size limit) or if undesirable. Consequently, a portion of the population would not survive. Discards for species in the snapper grouper FMU are shown in **Table 1** for both the commercial and recreational sectors, and release mortality of species with stock assessments are discussed in the section above.

Although fishery management actions can adversely impact non-target species, the proposed action in Regulatory Amendment 13 is not anticipated to increase bycatch of snapper-grouper species. As shown in **Tables 2-1** through **2-5** and discussed in detail in **Chapter 4** of Regulatory

Amendment 13, the biological, economic, social, and administrative impacts of **Alternative 2** would not differ much from **Alternative 1 (No Action)**. **Alternative 1 (no action)** would retain the ABCs, ACLs (including sector ACLs), and ACTs that were analyzed and implemented by the Comprehensive ACL Amendment (SAFMC 2011c). **Alternative 2 (Preferred)** would simply update ABCs, ACLs (including sector ACLs), and ACTs using the data described in **Section 1.5** of Regulatory Amendment 13.

Other actions have been taken in recently implemented amendments that could reduce the magnitudes of species addressed in Regulatory Amendment 13. Amendment 13C to the Snapper Grouper FMP (SAFMC 2006) required the use of 2" mesh in the back panel of black sea bass pots, which has likely reduced the magnitude of regulatory discards. Amendment 14 to the Snapper Grouper FMP (SAFMC 2007) established 8 marine protected areas for snapper grouper species where harvest and possession of snapper grouper species is prohibited. Amendment 15B to the Snapper Grouper FMP (SAFMC 2008b) implemented an action that could reduce the impacts from incidental bycatch of sea turtles and smalltooth sawfish. Seasonal closures of both commercial and recreational fisheries implemented by Amendment 16 to the Snapper Grouper FMP (Amendment 16; SAFMC 2009a) could also reduce bycatch mortality of snapper grouper species. Other actions in Amendment 16, which could reduce bycatch of snapper grouper species, include a reduction in the recreational bag limit to 1 gag or black grouper (combined) per day within a grouper aggregate bag limit of 3 fish and the establishment of a commercial quota for gag. When the commercial quota is met, all fishing for or possession of shallow water grouper species will be prohibited. Unobserved mortality due to predation or trauma associated with capture could be substantial (Burns *et al.* 2002; Rummer and Bennett 2005; St. John and Syers 2005; Parker *et al.* 2006; Rudershausen *et al.* 2007; Hannah *et al.* 2008; Diamond and Campbell 2009). Amendment 16 also included actions that required the use of dehooking devices, which could help reduce bycatch of vermilion snapper, black sea bass, gag, red grouper, black grouper, and red snapper. Dehooking devices can allow fishermen to remove hooks with greater ease and more quickly from snapper grouper species without removing the fish from the water. If a fish does need to be removed from the water, dehookers could still reduce handling time in removing hooks, thus increasing survival (Cooke *et al.* 2001).

Amendment 17A to the Snapper Grouper FMP (Amendment 17A; SAFMC 2010a) implemented regulations requiring the use of non-stainless circle hooks north of 28 degrees N. latitude, effective March 2, 2011. Circle hooks are generally thought to reduce discard mortality rate for red snapper (SEDAR 7 2005; Rummer 2007); however, Burns *et al.* (2004) did not observe decreased discard mortality rate when comparing recapture rates of red snapper caught on circle and J-hooks. Rummer (2007), and Diamond and Campbell (2009) found that a greater differential between the surface and bottom temperature caused a higher discard mortality rate for red snapper. Amendment 17B to the Snapper Grouper FMP (Amendment 17B; SAFMC 2010b) established ACLs and accountability measures (AMs) and address overfishing for eight species in the snapper grouper management complex currently listed as undergoing overfishing: golden tilefish, snowy grouper, speckled hind, warsaw grouper, black sea bass, gag, red grouper, and vermilion snapper, in addition to black grouper. ACLs and management measures implemented by Amendments 17A and 17B limited harvest of ten snapper grouper species and could help reduce discard mortality of co-occurring species.

The Comprehensive ACL Amendment (SAFMC 2011c) implemented ACLs and AMs for species not undergoing overfishing in four fishery management plans, in addition to other actions such as allocations and establishing annual catch targets for the recreational sector. The Comprehensive ACL Amendment also established additional measures to reduce bycatch in the snapper grouper fishery with the establishment of species complexes based on biological, geographic, economic, taxonomic, technical, social, and ecological factors. ACLs were assigned to these species complexes, and when the ACL for the complex is met or projected to be met, fishing for species included in the entire species complex is prohibited for the fishing year. ACLs and AMs will likely reduce bycatch of target species and species complexes as well as incidentally caught species.

Amendment 18A to the Snapper Grouper FMP (Amendment 18A; SAFMC 2012a) contained measures to limit participation and effort for black sea bass. As shown in **Table 1** of this BPA, discards for black sea bass were very high for both the commercial and recreational sectors. Amendment 18A established an endorsement program that enables snapper grouper fishermen with a certain catch history to harvest black sea bass with pots. In addition, Amendment 18A included measures to reduce bycatch in the black sea bass pot fishery, modified the rebuilding strategy, and other necessary changes to management of black sea bass as a result of a 2011 stock assessment (SEDAR-25). Amendment 24 to the Snapper Grouper FMP (Amendment 24; SAFMC 2011d) established a rebuilding plan for red grouper, which is overfished and undergoing overfishing. Amendment 24 also established ACLs and AMs for red grouper, which could help to reduce bycatch of red grouper and co-occurring species.

Additional information on fishery related actions from the past, present, and future considerations can be found in **Chapter 5** (Cumulative effects) of this document.

1.2 Ecological Effects Due to Changes in the Bycatch

The ecological effects of bycatch mortality are the same as fishing mortality from directed fishing efforts. If not properly managed and accounted for, either form of mortality could potentially reduce stock biomass to an unsustainable level. Regulatory Amendment 13 would update the existing ABCs, ACLs (including sector ACLs), and ACTs for 37 un-assessed snapper grouper species. Management measures that affect gear and effort for a target species can influence fishing mortality in other species. Ecological effects due to changes in the bycatch resulting from the action in Regulatory Amendment 13 would likely be small.

1.3 Changes in the Bycatch of Other Fish Species and Resulting Population and Ecosystem Effects

Regulatory Amendment 13 is not expected to affect major changes in bycatch of other fish species. Regulatory Amendment 13 incorporates MRIP landings rather than MRFSS into the ABCs and ACLs. The percent differences in the revised ABCs and ACLs in Regulatory Amendment 13 are relatively small compared to status quo levels. The primary effect of the preferred alternative in Regulatory Amendment 13 is to more accurately represent fishing effort

for the snapper grouper species addressed by the amendment. As a result, AMs are more likely to be triggered when needed, and the chances of triggering an AM when it is not needed would be reduced relative to the status quo. Furthermore, negligible biological or ecosystem effects are expected under the preferred alternative for Regulatory Amendment 13.

The intent of Regulatory Amendment 13 is to include the best scientific information available, and to prevent unnecessary negative socio-economic impacts that may otherwise be realized in the snapper grouper fishery and fishing community, in accordance with the provisions set forth in the Magnuson-Stevens Fishery Conservation and Management Act (Magnuson-Stevens Act), and to ensure the use of best available science as per National Standard 2.

1.4 Effects on Marine Mammals and Birds

Under Section 118 of the Marine Mammal Protection Act (MMPA), NMFS must publish, at least annually, a List of Fisheries (LOF) that places all U.S. commercial fisheries into one of three categories based on the level of incidental serious injury and mortality of marine mammals that occurs in each fishery. Of the gear utilized within the snapper grouper fishery, only the black sea bass pot is considered to pose an entanglement risk to marine mammals. The southeast U.S. Atlantic black sea bass pot sector is included in the grouping of the Atlantic mixed species trap/pot sectors, which the 2012 LOF classifies as a Category II (76 FR 73912; November 26, 2011). Gear types used in these fisheries are determined to have occasional incidental mortality and serious injury of marine mammals. For the South Atlantic snapper grouper fishery, the best available data on protected species interactions are from the SEFSC Supplementary Discard Data Program (SDDP) initiated in July of 200. The SDDP sub-samples 20% of the vessels with an active permit. Since August 2001, only three interactions with marine mammals have been documented; each was taken by handline gear and each released alive (McCarthy SEFSC database). The longline and hook-and-line gear components of the snapper-grouper in the South Atlantic are classified in the 2012 LOF (76 FR 73912; November 26, 2011) as Category III fisheries.

Although the black sea bass pot sector can pose an entanglement risk to large whales due to their distribution and occurrence, sperm, fin, sei, and blue whales are unlikely to overlap with the black sea bass pot fishery operated within the snapper grouper fishery since it is executed primarily off North Carolina and South Carolina in waters ranging from 70-120 feet deep (21.3-36.6 meters). There are no known interactions between the black sea bass pot fishery and large whales. NMFS's biological opinion on the continued operation of the South Atlantic snapper grouper fishery determined the possible adverse effects resulting from the fishery are extremely unlikely. Thus, the continued operation of the snapper grouper fishery in the southeast U.S. Atlantic exclusive economic zone is not likely to adversely affect sperm, fin, sei, and blue whales (NMFS 2006).

North Atlantic right and humpback whales may overlap both spatially and temporally with the black sea bass pot sector. Revisions to the Atlantic Large Whale Take Reduction Plan have folded the Atlantic mixed species trap/pot sectors into the plan (72 FR 193; October 5, 2007).

The requirements will help further reduce the likelihood of North Atlantic right and humpback whale entanglement in black sea bass pot gear.

Observer data and vessel logbooks indicate that pelagic longline fishing for Atlantic swordfish and tunas results in catch of non-target finfish species such as bluefin tuna, billfish, and undersized swordfish, and of protected species, including threatened and endangered sea turtles. Also, this fishing gear incidentally hooks marine mammals and sea birds during tuna and swordfish operations.

The Bermuda petrel and roseate tern occur within the action area. Bermuda petrels are occasionally seen in the waters of the Gulf Stream off the coasts of North Carolina and South Carolina during the summer. Sightings are considered rare and only occurring in low numbers (Alsop 2001). Roseate terns occur widely along the Atlantic coast during the summer but in the southeast region, they are found mainly off the Florida Keys (unpublished USFWS data). Interaction with fisheries has not been reported as a concern for either of these species.

Fishing effort reductions have the potential to reduce the amount of interactions between the fishery and marine mammals and birds. Although, the Bermuda petrel and roseate tern occur within the action area, these species are not commonly found and neither has been described as associating with vessels or having had interactions with the snapper grouper fishery. Thus, it is believed that the snapper grouper or coastal migratory pelagic fisheries are not likely to negatively affect the Bermuda petrel and the roseate tern.

Additionally, the establishment of commercial and recreational ACLs for species in the Snapper Grouper FMP in April 2012, through the Comprehensive ACL Amendment (SAFMC 2011c) could reduce or cap bycatch mortality on protected species, including marine mammals and birds.

1.5 Changes in Fishing, Processing, Disposal, and Marketing Costs

The action in Regulatory Amendment 13 is not expected to change existing procedures and mechanisms that were implemented by the Comprehensive ACL Amendment (SAFMC 2011c). Therefore, additional costs related to fishing, processing, disposal, and marketing of the species affected by Regulatory Amendment 13 are not expected (see economic effects in **Chapter 4** and **Appendix F** for the Regulatory Impact Review). Economic effects of the action proposed in Regulatory Amendment 13 are addressed in **Chapter 4**, as well as the Regulatory Flexibility Act Analysis (**Appendix G**).

1.6 Changes in Fishing Practices and Behavior of Fishermen

The implementation of Regulatory Amendment 13 would not result in a modification of fishing practices by commercial and recreational fishermen, and are likely to have little effect on the magnitude of discards. Social effects of actions proposed in Regulatory Amendment 13 are

addressed in **Chapter 4** of this document. **Section 3.3.3** includes information on environmental justice.

1.7 Changes in Research, Administration, and Enforcement Costs and Management Effectiveness

Research and monitoring is ongoing to update data in Regulatory Amendment 13 and other recently implemented amendments to reduce bycatch. As data are collected, the effectiveness of measures in recently implemented amendments, and by future actions being proposed by the South Atlantic Council to reduce bycatch can be evaluated. Some observer information has recently been provided by MARFIN and Cooperative Research Programs, but more is desired. In 1990, the SEFSC initiated a logbook program for vessels with federal permits in the snapper grouper fishery from the Gulf of Mexico and South Atlantic. Approximately 20% of commercial fishermen are asked to fill out discard information in logbooks; however, a greater percentage of fishermen could be selected with emphasis on individuals that dominate landings. The SEFSC is developing electronic logbooks, which could be used to enable fishery managers to obtain information on species composition, size distribution, geographic range, disposition, and depth of fishes that are released. Electronic logbook reporting is in place for headboats in the southeast, which is expected to improve the quality of data in that sector. Further, the South Atlantic Council is developing an amendment that could require vessel monitoring systems for snapper grouper vessels, which would be expected to improve data quality.

Cooperative research projects between science and industry are being used to a limited extent to collect bycatch information on the snapper grouper fishery in the South Atlantic. For example, Stephen and Harris (2010) characterized the entire (retained and discarded) catch of reef fishes from a selected commercial fisherman in the South Atlantic including total catch composition and disposition of fishes that were released. The Gulf and South Atlantic Fisheries Foundation, Inc. conducted a fishery observer program within the snapper grouper vertical hook-and-line (bandit rig) fishery of the South Atlantic United States. Through contractors they randomly placed observers on cooperating vessels to collect a variety of data quantifying the participation, gear, effort, catch, and discards within the fishery.

In the spring 2010, Archipelago Marine Research Ltd. worked with North Carolina Sea Grant and several South Atlantic Unlimited Snapper Grouper Permit holders to test the effectiveness of electronic video monitoring to measure catch and bycatch. A total of 93 trips were monitored with video monitoring, 34 by self-reported fishing logbooks, and 5 by observers. Comparisons between electronic video monitoring data and observer data showed that video monitoring was a reliable source of catch and bycatch data.

Research funds for observer programs, as well as gear testing and testing of electronic devices are also available each year in the form of grants from the Foundation, Marine Fisheries Initiative (MARFIN), Saltonstall-Kennedy (S-K) program, and the CRP. Efforts are made to emphasize the need for observer and logbook data in requests for proposals issued by granting agencies. A condition of funding for these projects is that data are made available to the Councils and NMFS upon completion of a study.

Additional administrative and enforcement efforts would help to implement and enforce fishery regulations. NMFS established the South East Fishery-Independent Survey in 2010 to strengthen fishery-independent sampling efforts in southeast US waters, addressing both immediate and long-term fishery-independent data needs, with an overarching goal of improving fishery-independent data utility for stock assessments. Meeting these data needs is critical to improving scientific advice to the management process, ensuring overfishing does not occur, and successfully rebuilding overfished stocks on schedule.

1.8 Changes in the Economic, Social, or Cultural Value of Fishing Activities and Non-Consumptive Uses of Fishery Resources

The preferred management measure, and any changes in economic, social, or cultural values are discussed in **Chapter 4** of Regulatory Amendment 13.

1.9 Changes in the Distribution of Benefits and Costs

The distribution of benefits and costs expected from the action in Regulatory Amendment 13 are expected to be negligible and discussed in **Chapter 3**. Economic and social effects of the action proposed in Regulatory Amendment 13 are addressed in **Chapter 4**.

1.10 Social Effects

The social effects of all the measures are described in **Chapter 4** of Regulatory Amendment 13.

1.11 Conclusion

This section evaluates the practicability of taking additional action to minimize bycatch and bycatch mortality using the ten factors provided at 50 CFR 600.350(d)(3)(i). In summary, measures proposed in Regulatory Amendment 13 are intended to revise the ABCs, ACLs (including sector ACLs), and annual catch targets implemented by the Comprehensive ACL Amendment (SAFMC 2011 c) for 37 un-assessed snapper-grouper species using the best scientific information available. Relative to the status quo, very little change in bycatch of snapper grouper species is expected from the implementation of Regulatory Amendment 13.

Recreational landings are now based on the new MRIP survey rather than MRFSS. However, the Comprehensive ACL Amendment used information from MRFSS in the determination of the ACLs. The revisions in Regulatory Amendment 13 update ACLs using MRIP data to prevent a disjunction between the ACLs and on landings data to determine if AMs are triggered. The primary effect of the preferred alternative in Regulatory Amendment 13 is more accurately represent the fishing effort for the snapper grouper species addressed by the amendment. As a result, AMs are more likely to be triggered when needed, and the chances of triggering an AM when it is not needed would be reduced relative to the status quo. Furthermore, negligible

biological or ecosystem effects are expected under the preferred alternative for Regulatory Amendment 13.

The intent of Regulatory Amendment 13 is to use the best scientific information available and to prevent unnecessary negative socio-economic impacts that may otherwise be realized in the snapper-grouper fishery and fishing community, in accordance with the provisions set forth in the Magnuson-Stevens Act.

Management measures have been put into place through many amendments to reduce bycatch and efforts are ongoing to collect information on nature and magnitude of bycatch. Further, future actions are planned to improve the quality of data collected, which could serve to enhance information in bycatch. Better bycatch and discard data would provide a better understanding of the composition and magnitude of catch and bycatch, enhance the quality of data provided for stock assessments, increase the quality of assessment output, provide better estimates of interactions with protected species, and lead to better decisions regarding additional measures to reduce bycatch.

Appendix F. Regulatory Impact Review

The National Marine Fisheries Service (NMFS) requires a Regulatory Impact Review (RIR) for all regulatory actions that are of public interest. The RIR does three things: (1) It provides a comprehensive review of the level and incidence of impacts associated with a regulatory action; (2) it provides a review of the problems and policy objectives prompting the regulatory proposals and an evaluation of the major alternatives which could be used to solve the problem; and (3) it ensures that the regulatory agency systematically and comprehensively considers all available alternatives so that the public welfare can be enhanced in the most efficient and cost effective way.

The RIR also serves as the basis for determining whether any proposed regulations are a “significant regulatory action” under certain criteria provided in Executive Order 12866 (E.O. 12866) and whether the approved regulations will have a “significant economic impact on a substantial number of small business entities” in compliance with the Regulatory Flexibility Act of 1980 (RFA).

1.1 Problems and Objectives

The purpose and need, issues, problems, and objectives of this action are presented in **Chapter 1** of Regulatory Amendment 13 to the Snapper Grouper Fishery of the South Atlantic Region (Regulatory Amendment 13), and are incorporated herein by reference.

1.2 Methodology and Framework for Analysis

This RIR assesses management measures from the standpoint of determining the resulting changes in costs and benefits to society. To the extent practicable, the net effects of the proposed measures for an existing fishery should be stated in terms of producer and consumer surplus, changes in profits, and employment in the direct and support industries. Where figures are available, they are incorporated into the analysis of the economic impacts of the different actions and alternatives.

1.3 Description of the Fishery

A description of the South Atlantic snapper grouper fishery is contained in **Chapter 3** of Regulatory Amendment 13 and is incorporated herein by reference.

1.4 Effects of the Management Measure

1.4.1. Commercial Landings

Alternative 2 (Preferred) would change the commercial ACLs for five stock complexes and six individual stocks, which are expected to increase annual commercial landings of deepwater stock complex and porgies, but decrease annual commercial landings of the jacks stock complex, blue runner, and gray triggerfish. There are expected to be no changes in annual landings of three stock complexes and four individual stocks because expected landings are expected to remain under the current and proposed ACLs.

Alternative 2 (Preferred) would increase annual commercial landings by 33,821 lbs whole weight (lbs ww) and \$78,259 and, at the same time, decrease annual commercial landings by 46,527 lbs ww and \$74,520, resulting in a net loss of 12,706 lbs but a net gain of \$3,769 (**Table 1.1**). There would be a net gain of ex-vessel revenue because the average ex-vessel price of a pound of deepwater stock complex species gained is substantially greater than the average ex-vessel price of a pound of gray triggerfish lost.

Table 1.1. Expected annual changes of commercial landings.

Stock Complex/Species	Commercial Landings					
	Lbs ww					Dollars
	Current ACL	Proposed ACL	Potential Landings Change	Expected 2012 Landings	Expected Landings Change	Expected Change of Ex-Vessel Revenue
Deepwater	343,869	376,469	32,601	343,869	32,601	76,612
Jacks	193,999	189,421	-4,578	193,999	-4,578	-3,250
Snappers	204,552	215,663	11,111	151,205	0	0
Shallow Water Groupers	49,489	49,777	288	27,932	0	0
Grunts	214,624	218,539	3,915	111,862	0	0
Porgies	35,128	36,348	1,220	35,128	1,220	1,647
Atlantic spadefish	36,476	35,108	-1,368	2,568	0	0
Blue runner	188,329	177,506	-10,823	187,073	-9,567	-10,716
Bar jack	6,686	5,265	-1,421	2,881	0	0
Gray triggerfish	305,262	272,880	-32,382	305,262	-32,382	-60,554
Scamp	341,636	333,100	-8,536	220,378	0	0
Hogfish	48,772	49,469	697	28,210	0	0
Total	1,968,822	1,959,545	-9,276	1,610,367	-12,706	3,739

1.4.2. Recreational Landings

Alternative 2 (Preferred) would increase the recreational ACLs of three stock complexes and two individual stocks, while decreasing the recreational ACLs of three stock complexes and four individual stocks. However, annual recreational landings are expected not to change in all six stock complexes and five of the six individual stocks (**Table 1.2**). **Alternative 2 (Preferred)** would yield a loss of Atlantic spadefish landings of 92,013 lbs and a decrease in associated economic benefits.

Table 1.2. Expected annual changes of recreational landings.

Stock Complex/Species	Recreational Landings				
	Lbs ww				
	Current ACL	Proposed ACL	Potential Landings Change	Expected 2012 Landings	Expected Landings Change
Deepwater	332,081	334,556	2,475	22,139	0
Jacks	261,490	267,800	6,310	163,867	0
Snappers	882,388	728,577	-153,811	117,651	0
Shallow Water Groupers	48,329	46,656	-1,673	18,687	0
Grunts	562,151	588,112	25,961	142,412	0
Porgies	113,869	106,915	-6,954	65,285	0
Atlantic spadefish	246,365	154,352	-92,013	246,365	-92,013
Blue runner	1,101,612	948,223	-153,389	235,011	0
Bar jack	13,834	19,515	5,681	2,213	0
Gray triggerfish	367,303	353,638	-13,665	122,434	0
Scamp	150,936	176,688	25,752	50,312	0
Hogfish	98,866	85,355	-13,511	75,138	0
Total	4,179,224	3,810,387	-368,837	1,261,514	-92,013

From 2006 to 2011 approximately 97% of Atlantic spadefish landings in the South Atlantic states were by private anglers (http://www.st.nmfs.noaa.gov/st1/recreational/queries/catch/time_series.html query on October 24, 2012). It is assumed that this percent would apply to expected annual losses of Atlantic spadefish landings to private anglers. Consequently, **Alternative 2 (Preferred)** is expected to reduce private anglers' annual landings of Atlantic spadefish by 89,253 lbs and for-hire operations by 2,760 lbs.

1.4.3. Total Landings

Alternative 2 (Preferred) would reduce total landings of the South Atlantic Snapper Grouper Fishery by 104,719 lbs. Approximately 88% of this total loss would be losses of recreational landings. The dollar value of the total loss would be equivalent to the combined losses of consumer surplus and producer surplus less the gain of ex-vessel revenue.

1.5 Public and Private Costs of Regulations

The preparation, implementation, enforcement, and monitoring of this or any Federal action involves the expenditure of public and private resources, which can be expressed as costs associated with the regulations. Costs associated with this emergency action include, but are not limited to Council costs of document preparation, meeting, and other costs; NMFS administration costs of document preparation, meetings and review, and annual law enforcement costs. A preliminary estimate is up to \$150,000 before annual law enforcement costs.

1.6 Determination of Significant Regulatory Action

Pursuant to E.O. 12866, a regulation is considered a “significant regulatory action” if it is expected to result in: (1) An annual effect of \$100 million or more or adversely affect in a material way the economy, a sector of the economy, productivity, competition, jobs, the environment, public health or safety, or State, local, or tribal governments or communities; (2) create a serious inconsistency or otherwise interfere with an action taken or planned by another agency; (3) materially alter the budgetary impact of entitlements, grants, user fees, or loan programs or the rights or obligations of recipients thereof; or (4) raise novel legal or policy issues arising out of legal mandates, the President's priorities, or the principles set forth in this executive order. Based on the information provided above, this regulatory action would not meet the first criterion. Therefore, this regulatory action is determined to not be economically significant for the purposes of E.O. 12866.

APPENDIX G. REGULATORY FLEXIBILITY ANALYSIS

G.1 Introduction

The purpose of the Regulatory Flexibility Act (RFA) is to establish a principle of regulatory issuance that agencies shall endeavor, consistent with the objectives of the rule and applicable statutes, to fit regulatory and informational requirements to the scale of businesses, organizations, and governmental jurisdictions subject to regulation. To achieve this principle, agencies are required to solicit and consider flexible regulatory proposals and to explain the rationale for their actions to assure that such proposals are given serious consideration. The RFA does not contain any decision criteria; instead, the purpose of the RFA is to inform the agency, as well as the public, of the expected economic impacts of the alternatives contained in the FMP or amendment (including framework management measures and other regulatory actions) and to ensure that the agency considers alternatives that minimize the expected impacts while meeting the goals and objectives of the FMP and applicable statutes.

With certain exceptions, the RFA requires agencies to conduct a regulatory flexibility analysis for each proposed rule. The regulatory flexibility analysis is designed to assess the impacts various regulatory alternatives would have on small entities, including small businesses, and to determine ways to minimize those impacts. In addition to analyses conducted for the Regulatory Impact Review (RIR), the initial regulatory flexibility analysis (IRFA) provides: (1) A description of the reasons why action by the agency is being considered; (2) a succinct statement of the objectives of, and legal basis for the proposed rule; (3) an identification, to the extent practicable, of all relevant Federal rules which may duplicate, overlap, or conflict with the proposed rule; (4) a description and, where feasible, an estimate of the number of small entities to which the proposed rule will apply; (5) a description of the projected reporting, record-keeping, and other compliance requirements of the final rule, including an estimate of the classes of small entities which will be subject to the requirements of the report or record; and (6) a description of significant alternatives to the proposed rule which accomplish the stated objectives of applicable statutes and which minimize any significant economic impact of the proposed rule on small entities.

G.2 Statement of need for, objectives of, and legal basis for the proposed rule

The purpose and need, issues, problems, and objectives of the action are presented in **Chapter 1** of Regulatory Amendment 13 to the Snapper Grouper Fishery of the South Atlantic Region, and are incorporated herein by reference.

G.3 Identification of federal rules which may duplicate, overlap or conflict with the proposed rule.

No federal rules have been identified that duplicate, overlap or conflict with the proposed rule.

G.4 Description and estimate of the number of small entities to which the proposed rule will apply.

This rule would apply to licensed commercial fishermen in the Finfish Fishing Industry (NAICS 114111) and for-hire operations in the Charter Fishing Industry (NAICS 487210) that harvest six stock complexes and six individual stocks of the South Atlantic Snapper Grouper Fishery. According to SBA Size Standards, a business in the Finfish Fishing Industry is small if its annual receipts are less than \$4 million, and a business in the Charter Fishing Industry is small if it has annual receipts less than \$7 million. An estimated 890 to 944 small businesses in the Finfish Fishing Industry and up to 1,754 small businesses in the Charter Fishing Industry participate in the Snapper Grouper Fishery and may be affected.

G.5 Description of the projected reporting, record-keeping and other compliance requirements of the proposed rule, including an estimate of the classes of small entities which will be subject to the requirement and the type of professional skills necessary for the preparation of the report or records.

Alternative 2 (Preferred) would increase the commercial ACLs for five stock complexes and one individual stock and the recreational ACLs for three stock complexes and two individual stocks. These increases represent potential increases in the numbers of days these fisheries remain open and potential gains in annual landings of these complexes and species. Conversely, **Alternative 2 (Preferred)** would decrease six commercial ACLs and seven recreational ACLs, which represent potential decreases in the numbers of days these fisheries remain open and potential reductions in annual landings. Actual increases and decreases in landings, however, depend on if the length of a fishing season changes or not. For example, an ACL could double or triple, but such a change would have no effect on landings if the length of the fishing season remains the same. See the RIR (**Appendix F**) for a more detailed description of the potential and expected changes in annual landings.

G.6 Economic impacts of management measures

Alternative 2 is expected to change the lengths of five commercial fishing seasons and one recreational fishing season and, in turn, the annual commercial landings of five commercial fisheries and one recreational fishery. Specifically, **Alternative 2 (Preferred)** is expected to increase the lengths of commercial fishing seasons for the deepwater and porgies stock complexes, which is expected to collectively increase annual landings by 33,821 pounds (lbs) and \$78,250 (**Table G.1**). **Alternative 2 (Preferred)** is also expected to decrease the lengths of commercial fishing seasons for the jacks complex, blue runner and gray triggerfish, which is expected to collectively decrease annual landings by 46,527 lbs and \$74,520. The collective net change to small businesses in the Finfish Fishing Industry would be a loss of annual landings of 12,706 lbs and \$3,739. With an estimated 890 to 944 small businesses potentially affected, the average annual loss per small business would be approximately 13 to 14 lbs and \$3.96 to \$4.20.

Alternative 2 (Preferred) is expected to decrease the length of the recreational fishing season for Atlantic spadefish and, subsequently, reduce annual recreational landings of the species by 92,013 lbs. It is unknown what percent of these recreational landings are by for-hire vessels; however, from 2006 to 2010, an average of 3% was landed by for-hire vessels. Nonetheless, the

following analysis of adverse impacts on small businesses in the Charter Fishing Industry considers for-hire landings ranging from less than 1% to 10%.

If small businesses account for less than 1% of the annual landings of Atlantic spadefish, they would collectively lose less than 920 lbs of their combined annual landings and if they account for 10%, they would collectively lose 9,201 lbs. With up to 1,754 small businesses in the Charter Fishing Industry that could be affected, 1% and 10% losses would represent approximately 0.5 lbs and 5.2 lbs per small business, assuming all are affected.

Table G.1. Potential and expected total impacts on small businesses in Finfish Fishing Industry.

Stock Complex/Species	Lbs whole weight		Dollars
	Potential Landings Change	Expected Landings Change	Expected Change in Ex-Vessel Revenue
Deepwater	32,601	32,601	76,612
Jacks	-4,578	-4,578	-3,250
Snappers	11,111	0	0
Shallow Water Groupers	288	0	0
Grunts	3,915	0	0
Porgies	1,220	1,220	1,647
Atlantic spadefish	-1,368	0	0
Blue runner	-10,823	-9,567	-10,716
Bar jack	-1,421	0	0
Gray triggerfish	-32,382	-32,382	-60,554
Scamp	-8,536	0	0
Hogfish	697	0	0
Total	-9,276	-12,706	3,739

G.7 Substantial number of small entities and significant economic impact criteria

Most to all of the businesses in the Snapper Grouper Fishery are assumed to be small businesses and could be affected by the rule. This rule is not expected to disproportionately affect small businesses or significantly reduce their profitability.

G.9 Description of significant alternatives

Alternative 1 (No Action) would retain the current ACLs, resulting in no gains or losses of annual landings and associated net economic benefits. **Alternative 2 (Preferred)** would have an adverse net economic impact in the short run; however, it is expected to have a larger beneficial net economic impact in the long run because it would implement ACLs that are based on better data.

Appendix H. Other Applicable Laws

1 Other Applicable Laws

1.1 Administrative Procedure Act (APA)

All federal rulemaking is governed under the provisions of the APA (5 U.S.C. Subchapter II), which establishes a “notice and comment” procedure to enable public participation in the rulemaking process. Under the APA, National Marine Fisheries Service (NMFS) is required to publish notification of proposed rules in the *Federal Register* and to solicit, consider and respond to public comment on those rules before they are finalized. The APA also establishes a 30-day wait period from the time a final rule is published until it takes effect, with some exceptions. Regulatory Amendment 13 to the Fishery Management Plan for the Snapper Grouper Fishery of the South Atlantic Region (Regulatory Amendment 13) complies with the provisions of the APA through the South Atlantic Fishery Management Council’s (South Atlantic Council) extensive use of public meetings, requests for comments and consideration of comments. The proposed rule associated with this amendment will have a request for public comments which complies with the APA, and upon publication of the final rule, there will be a 30-day wait period before the regulations are effective.

1.2 Information Quality Act (IQA)

The IQA (Section 515 of the Treasury and General Government Appropriations Act for Fiscal Year 2001 (Public Law 106-443)) which took effect October 1, 2002, directed the Office of Management and Budget (OMB) to issue government-wide guidelines that “provide policy and procedural guidelines to federal agencies for ensuring and maximizing the quality, objectivity, utility, and integrity of information disseminated by federal agencies.” OMB directed each federal agency to issue its own guidelines, establish administrative mechanisms allowing affected persons to seek and obtain correction of information that does not comply with OMB guidelines, and report periodically to OMB on the number and nature of complaints.

The NOAA Section 515 Information Quality Guidelines require a series of actions for each new information product subject to the IQA. Regulatory Amendment 13 has used the best available information and made a broad presentation thereof. The process of public review of this document provides an opportunity for comment and challenge to this information, as well as for the provision of additional information.

The information contained in this document was developed using best available scientific information. Therefore, Regulatory Amendment 13 and its Environmental Assessment (EA) are in compliance with the IQA.

1.3 Coastal Zone Management Act (CZMA)

Section 307(c)(1) of the federal CZMA of 1972 requires that all federal activities that directly affect the coastal zone be consistent with approved state coastal zone management programs to the maximum extent practicable. While it is the goal of the South Atlantic Council to have

management measures that complement those of the states, federal and state administrative procedures vary and regulatory changes are unlikely to be fully instituted at the same time. The South Atlantic Council believes Regulatory Amendment 13 is consistent to the maximum extent practicable with the Coastal Zone Management Plans of Florida, Georgia, South Carolina, and North Carolina. This determination will be submitted to the responsible state agencies under Section 307 of the CZMA administering approved Coastal Zone Management Programs in the States of Florida, South Carolina, Georgia, and North Carolina.

1.4 Endangered Species Act (ESA)

The ESA of 1973 (16 U.S.C. Section 1531 et seq.) requires that federal agencies must ensure actions they authorize, fund, or carry out are not likely to jeopardize the continued existence of threatened or endangered species or the habitat designated as critical to their survival and recovery. The ESA requires NMFS Service to consult with the appropriate administrative agency (itself for most marine species, and the U.S. Fish and Wildlife Service for all remaining species) when proposing an action that may affect threatened or endangered species or adversely modify critical habitat. Consultations are necessary to determine the potential impacts of the proposed action. They are concluded informally when proposed actions may affect but are “not likely to adversely affect” threatened or endangered species or designated critical habitat. Formal consultations, resulting in a biological opinion, are required when proposed actions may affect and are “likely to adversely affect” threatened or endangered species or adversely modify designated critical habitat. NMFS completed a biological opinion (NMFS 2006) in 2006 evaluating the impacts of the continued authorization of the South Atlantic snapper grouper fishery under the Fishery Management Plan for the Snapper Grouper Fishery of the South Atlantic Region (Snapper Grouper FMP) and Amendment 13C to the Snapper Grouper FMP on ESA-listed species (see **Section 3.0**). The opinion stated the fishery was not likely to adversely affect northern right whale critical habitat, seabirds, or marine mammals (see NMFS 2006 for discussion on these species). However, the opinion did state that the snapper grouper fishery would adversely affect sea turtles and smalltooth sawfish, but would not jeopardize their continued existence. An incidental take statement was issued for green, hawksbill, Kemp’s ridley, leatherback, and loggerhead sea turtles, as well as smalltooth sawfish. Reasonable and prudent measures to minimize the impact of these incidental takes were specified, along with terms and conditions to implement them. See NMFS (2006) for a full discussion of impacts to smalltooth sawfish.

Sea turtles are vulnerable to capture by bottom longline and vertical hook-and-line gear. The magnitude of the interactions between sea turtles and the South Atlantic snapper grouper fishery was evaluated in NMFS (2006) using data from the Supplementary Discard Data Program (SDDP). Three loggerheads and three unidentified sea turtles were caught on vertical lines; one leatherback and one loggerhead were caught on bottom longlines, all were released alive. The effort reported in the program represented between approximately 5% and 14% of all South Atlantic snapper grouper fishing effort. These data were extrapolated in NMFS (2006) to better estimate the number of interactions between the entire snapper-grouper fishery and ESA-listed sea turtles. The extrapolated estimate was used to project future interactions (**Table 1-1**).

The SDDP does not provide data on recreational fishing interactions with ESA-listed sea turtle

species. However, anecdotal information indicates that recreational fishermen occasionally take sea turtles with hook-and-line gear. The biological opinion also used the extrapolated data from the SDDP to estimate the magnitude of recreational fishing on sea turtles (**Table 1-1**).

Regulations implemented through snapper-grouper Amendment 15B (74 FR 31225; June 30, 2009) required all commercial or charter/headboat vessels with a South Atlantic snapper grouper permit, carrying hook-and-line gear on board, to possess required literature and release gear to aid in the safe release of incidentally caught sea turtles and smalltooth sawfish. These regulations are thought to decrease the mortality associated with accidental interactions with sea turtles and smalltooth sawfish.

Subsequent to the June 7, 2006, biological opinion, elkhorn and staghorn coral (*Acropora cervicornis* and *Acropora palmata*) were listed as threatened. In a consultation memorandum dated July 9, 2007, NMFS concluded the continued authorization of the South Atlantic snapper-grouper fishery is not likely to adversely affect these *Acropora* species. On November 26, 2008, an *Acropora* critical habitat was designated. In a consultation memorandum dated December 2, 2008, NMFS concluded the continued authorization of the snapper-grouper fishery is not likely to adversely affect *Acropora* critical habitat.

Additionally, on September 22, 2011, NMFS and the U.S. Fish and Wildlife Service determined the loggerhead sea turtle population consists of nine distinct population segments (DPSs) (76 FR 58868). Previously, loggerhead sea turtles were listed as threatened species throughout their global range. The snapper grouper fishery interacts with loggerhead sea turtles from what is now considered the Northwest Atlantic (NWA) DPS, which remains listed as threatened. Five DPSs of Atlantic sturgeon were also listed since the completion of the 2006 biological opinion. In a consultation memorandum dated February 15, 2012, NMFS concluded the continued authorization of the South Atlantic snapper grouper fishery is not likely to adversely affect the Atlantic sturgeon. The February 15, 2012, memorandum also stated that because the 2006 biological opinion had evaluated the impacts of the fishery on the loggerhead subpopulations now wholly contained within the NWA DPS, the opinion’s conclusion that the fishery is not likely to jeopardize the continued existence of loggerhead sea turtles remains valid.

Table 1-1. Three-year South Atlantic anticipated takes sea turtles by the snapper grouper fishery.

Species	Amount of Take	Total
Green	Total Take	39
	Lethal Take	14
Hawksbill	Total Take	4
	Lethal Take	3
Kemp’s Ridley	Total Take	19
	Lethal Take	8
Leatherback	Total Take	25
	Lethal Take	15
Loggerhead	Total Take	202
	Lethal Take	67

Source: NMFS 2006.

1.5 Executive Order 12612: Federalism

E.O. 12612 requires agencies to be guided by the fundamental federalism principles when formulating and implementing policies that have federalism implications. The purpose of the Order is to guarantee the division of governmental responsibilities between the federal government and the states, as intended by the framers of the Constitution. No federalism issues have been identified relative to the actions proposed in this amendment and associated regulations. Therefore, preparation of a federalism assessment under E.O. 13132 is not necessary.

1.6 Executive Order 12866: Regulatory Planning and Review

E.O. 12866, signed in 1993, requires federal agencies to assess the costs and benefits of their proposed regulations, including distributional impacts, and to select alternatives that maximize net benefits to society. To comply with E.O. 12866, NMFS prepares a Regulatory Impact Review (RIR) for all fishery regulatory actions that implement a new FMP or that significantly amend an existing plan. RIRs provide a comprehensive analysis of the costs and benefits to society associated with proposed regulatory actions, the problems and policy objectives prompting the regulatory proposals, and the major alternatives that could be used to solve the problems. The reviews also serve as the basis for the agency's determinations as to whether proposed regulations are a "significant regulatory action" under the criteria provided in E.O. 12866 and whether proposed regulations will have a significant economic impact on a substantial number of small entities in compliance with the Regulatory Flexibility Act. A regulation is significant if it is likely to result in an annual effect on the economy of at least \$100,000,000 or if it has other major economic effects.

In accordance with E.O. 12866, the following is set forth by the South Atlantic Council: (1) this rule is not likely to have an annual effect on the economy of more than \$100 million or to adversely affect in a material way the economy, a sector of the economy, productivity, jobs, the environment, public health or safety, or state, local, or tribal governments or communities; (2) this rule is not likely to create any serious inconsistencies or otherwise interfere with any action take or planned by another agency; (3) this rule is not likely to materially alter the budgetary impact of entitlements, grants, user fees, or loan programs or the rights or obligations of recipients thereof; (4) this rule is not likely to raise novel or policy issues arising out of legal mandates, or the principles set forth in the Executive Order; (5) this rule is not controversial.

1.7 Executive Order 12898: Environmental Justice

E.O. 12898 requires that "to the greatest extent practicable and permitted by law...each federal agency shall make achieving environmental justice part of its mission by identifying and addressing, as appropriate, disproportionately high and adverse human health or environmental effects of its programs, policies and activities on minority populations and low-income populations in the United States and its territories and possessions..."

The alternatives being considered in this amendment are not expected to result in any disproportionate adverse human health or environmental effects to minority populations or low-income populations of Florida, North Carolina, South Carolina or Georgia, rather the impacts would be spread across all participants in the black sea bass and golden tilefish fisheries regardless of race or income. A detailed description of the communities impacted by the actions

contained in this amendment and potential socioeconomic impacts of those actions are contained in **Sections 3.0** and **4.0** of this amendment.

1.8 Executive Order 12962: Recreational Fisheries

E.O. 12962 requires Federal agencies, in cooperation with States and Tribes, to improve the quantity, function, sustainable productivity, and distribution of U.S. aquatic resources for increased recreational fishing opportunities through a variety of methods. Additionally, the order establishes a seven-member National Recreational Fisheries Coordination Council responsible for, among other things, ensuring that social and economic values of healthy aquatic systems that support recreational fisheries are considered by federal agencies in the course of their actions, sharing the latest resource information and management technologies, and reducing duplicative and cost-inefficient programs among federal agencies involved in conserving or managing recreational fisheries. The South Atlantic Council also is responsible for developing, in cooperation with federal agencies, states and tribes, a Recreational Fishery Resource Conservation Plan - to include a five-year agenda. Finally, the Order requires NMFS and the U.S. Fish and Wildlife Service to develop a joint agency policy for administering the ESA.

The alternatives considered in this amendment are consistent with the directives of E.O. 12962.

1.9 Executive Order 13089: Coral Reef Protection

E.O. 13089, signed by President William Clinton on June 11, 1998, recognizes the ecological, social, and economic values provided by the Nation's coral reefs and ensures that Federal agencies are protecting these ecosystems. More specifically, the Order requires federal agencies to identify actions that may harm U.S. coral reef ecosystems, to utilize their program and authorities to protect and enhance the conditions of such ecosystems, and to ensure that their actions do not degrade the condition of the coral reef ecosystem.

The alternatives considered in this amendment are consistent with the directives of E.O. 13089.

1.10 Executive Order 13158: Marine Protected Areas (MPAs)

E. O. 13158 was signed on May 26, 2000 to strengthen the protection of U.S. ocean and coastal resources through the use of MPAs. The E.O. defined MPAs as "any area of the marine environment that has been reserved by Federal, State, territorial, tribal, or local laws or regulations to provide lasting protection for part or all of the natural and cultural resources therein." It directs federal agencies to work closely with state, local and non-governmental partners to create a comprehensive network of MPAs "representing diverse U.S. marine ecosystems, and the Nation's natural and cultural resources".

The alternatives considered in this amendment are consistent with the directives of E.O. 13158.

1.11 Marine Mammal Protection Act (MMPA)

The MMPA established a moratorium, with certain exceptions, on the taking of marine mammals in U.S. waters and by U.S. citizens on the high seas. It also prohibits the importing of marine mammals and marine mammal products into the United States. Under the MMPA, the Secretary of Commerce (authority delegated to NMFS) is responsible for the conservation and management of cetaceans and pinnipeds (other than walrus). The Secretary of the Interior is

responsible for walruses, sea otters, polar bears, manatees, and dugongs. Part of the responsibility that NMFS has under the MMPA involves monitoring populations of marine mammals to make sure that they stay at optimum levels. If a population falls below its optimum level, it is designated as “depleted.” A conservation plan is then developed to guide research and management actions to restore the population to healthy levels.

In 1994, Congress amended the MMPA, to govern the taking of marine mammals incidental to commercial fishing operations. This amendment required the preparation of stock assessments for all marine mammal stocks in waters under U.S. jurisdiction; development and implementation of take-reduction plans for stocks that may be reduced or are being maintained below their optimum sustainable population levels due to interactions with commercial fisheries; and studies of pinniped-fishery interactions. The MMPA requires a commercial fishery to be placed in one of three categories, based on the relative frequency of incidental serious injuries and mortalities of marine mammals. Category I designates fisheries with frequent serious injuries and mortalities incidental to commercial fishing; Category II designates fisheries with occasional serious injuries and mortalities; Category III designates fisheries with a remote likelihood or no known serious injuries or mortalities.

Under the MMPA, to legally fish in a Category I and/or II fishery, a fisherman must take certain steps. For example, owners of vessels or gear engaging in a Category I or II fishery, are required to obtain a marine mammal authorization by registering with the Marine Mammal Authorization Program (50 CFR 229.4). They are also required to accommodate an observer if requested (50 CFR 229.7(c)) and they must comply with any applicable take reduction plans. The commercial hook-and-line components of the South Atlantic snapper grouper fishery (i.e., bottom longline, bandit gear, and handline), which targets red snapper are listed as part of a Category III fishery (76 FR 73912, November 29, 2011) because there have been no documented interactions between these gear and marine mammals. The black sea bass pot component of the South Atlantic snapper grouper fishery is part of the Atlantic mixed species trap/pot fishery, a Category II fishery, in the 2012 LOF (76 FR 73912, November 29, 2011). The Atlantic mixed species trap/pot fishery designation was created in 2003 (68 FR 41725, July 15, 2003), by combining several separately listed trap/pot fisheries into a single group. This group was designated Category II as a precaution because of known interactions between marine mammals and gears similar to those included in this group. Prior to this consolidation, the black sea bass pot fishery in the South Atlantic was a part of the “U.S. Mid-Atlantic and Southeast U.S. Atlantic Black Sea Bass Trap/Pot” fishery (Category III). There has never been a documented interaction between marine mammals and black sea bass trap/pot gear in the South Atlantic. The actions in this EA are not expected to negatively impact the provisions of the MMPA.

1.12 National Environmental Policy Act (NEPA)

Regulatory Amendment 13 has been written and organized in a manner that meets NEPA requirements, and thus is a consolidated NEPA document, including a draft EA, as described in NOAA Administrative Order (NAO) 216-6, Section 6.03.a.2.

Purpose and Need for Action

The purpose and need for this action are described in **Section 1.3**.

Alternatives

The alternatives for this action are described in **Section 2.0**.

Affected Environment

The affected environment is described in **Section 3.0**.

Impacts of the Alternatives

The impacts of the alternatives on the environment are described in **Section 4.0**.

1.13 National Marine Sanctuaries Act (NMSA)

Under the NMSA (also known as Title III of the Marine Protection, Research and Sanctuaries Act of 1972), as amended, the U.S. Secretary of Commerce is authorized to designate National Marine Sanctuaries to protect distinctive natural and cultural resources whose protection and beneficial use requires comprehensive planning and management. The National Marine Sanctuary Program is administered by the Sanctuaries and Reserves Division of NOAA. The NMSA provides authority for comprehensive and coordinated conservation and management of these marine areas. The National Marine Sanctuary Program currently comprises 13 sanctuaries around the country, including sites in American Samoa and Hawaii. These sites include significant coral reef and kelp forest habitats, and breeding and feeding grounds of whales, sea lions, sharks, and sea turtles. The two main sanctuaries in the South Atlantic exclusive economic zone are Gray's Reef and Florida Keys National Marine Sanctuaries.

The alternatives considered in this document are not expected to have any adverse impacts on the resources managed by the Gray's Reef and Florida Keys National Marine Sanctuaries.

1.14 Paperwork Reduction Act (PRA)

The purpose of the PRA is to minimize the burden on the public. The PRA is intended to ensure that the information collected under the proposed action is needed and is collected in an efficient manner (44 U.S.C. 3501 (1)). The authority to manage information collection and record keeping requirements is vested with the Director of the Office of Management and Budget (OMB). This authority encompasses establishment of guidelines and policies, approval of information collection requests, and reduction of paperwork burdens and duplications. The PRA requires NMFS Service to obtain approval from the OMB before requesting most types of fishery information from the public. Actions in this document are not expected to affect PRA.

1.15 Regulatory Flexibility Act (RFA)

The RFA of 1980 (5 U.S.C. 601 et seq.) requires federal agencies to assess the impacts of regulatory actions implemented through notice and comment rulemaking procedures on small businesses, small organizations, and small governmental entities, with the goal of minimizing adverse impacts of burdensome regulations and record-keeping requirements on those entities. Under the RFA, NMFS must determine whether a proposed fishery regulation would have a significant economic impact on a substantial number of small entities. If not, a certification to

this effect must be prepared and submitted to the Chief Counsel for Advocacy of the Small Business Administration. Alternatively, if a regulation is determined to significantly impact a substantial number of small entities, the RFA requires the agency to prepare an initial and final Regulatory Flexibility Analysis to accompany the proposed and final rule, respectively. These analyses, which describe the type and number of small businesses, affected, the nature and size of the impacts, and alternatives that minimize these impacts while accomplishing stated objectives, must be published in the *Federal Register* in full or in summary for public comment and submitted to the chief counsel for advocacy of the Small Business Administration. Changes to the RFA in June 1996 enable small entities to seek court review of an agency's compliance with the RFA's provisions.

Since NMFS has determined whether a proposed fishery regulation would have a significant economic impact on a substantial number of small entities, a certification to this effect will be prepared and submitted to the Chief Counsel for Advocacy of the Small Business Administration.

This amendment includes the RFA in **Appendix G**.

1.16 Small Business Act (SBA)

Enacted in 1953, the SBA requires that agencies assist and protect small-business interests to the extent possible to preserve free competitive enterprise. The objectives of the SBA are to foster business ownership by individuals who are both socially and economically disadvantaged; and to promote the competitive viability of such firms by providing business development assistance including, but not limited to, management and technical assistance, access to capital and other forms of financial assistance, business training, and counseling, and access to sole source and limited competition federal contract opportunities, to help firms achieve competitive viability. Because most businesses associated with fishing are considered small businesses, NMFS Service, in implementing regulations, must make an assessment of how those regulations will affect small businesses.

1.17 Public Law 99-659: Vessel Safety

Public Law 99-659 amended the MSFCMA to require that a FMP or FMP amendment must consider, and may provide for, temporary adjustments (after consultation with the U.S. Coast Guard and persons utilizing the fishery) regarding access to a fishery for vessels that would be otherwise prevented from participating in the fishery because of safety concerns related to weather or to other ocean conditions. No vessel would be forced to participate in South Atlantic fisheries under adverse weather or ocean conditions as a result of the imposition of management regulations proposed in this amendment. No concerns have been raised by South Atlantic fishermen or by the U.S. Coast Guard that the proposed management measures directly or indirectly pose a hazard to crew or vessel safety under adverse weather or ocean conditions.

species	dataset	1986	1987	1988	1989	1990
Almaco Jack	CompACL	4910	13753	13923	3818	2767
	newMRFSS+newComm	4910	13753	13923	3818	2767
	newMRIP+newComm	4910	13490	13923	3818	2767
Atlantic Spadefish	CompACL	321550	69842	123207	129434	82567
	newMRFSS+newComm	321270	69785	122566	129434	82587
	newMRIP+newComm	188741	62042	120531	113658	55862
Banded Rudderfish	CompACL	376326	188	42335	219	60
	newMRFSS+newComm	355524	188	42335	219	60
	newMRIP+newComm	165152	1015	287532	219	60
Bar Jack	CompACL	65469	13546	2624	39961	8175
	newMRFSS+newComm	76859	16400	4751	37733	8175
	newMRIP+newComm	243407	13890	4784	85195	15808
Black Snapper	CompACL	0	0	0	0	0
	newMRFSS+newComm	0	0	0	0	0
	newMRIP+newComm	0	0	0	0	0
Blackfin Snapper	CompACL	3541	3236	1418	1269	888
	newMRFSS+newComm	3541	3236	1418	1269	888
	newMRIP+newComm	3541	3236	1418	1269	888
Blue Runner	CompACL	620019	290931	760223	586503	483985
	newMRFSS+newComm	619994	291032	758612	586308	484044
	newMRIP+newComm	522797	388311	642206	541251	445915
Blueline Tilefish	CompACL	118260	93235	51610	55994	102927
	newMRFSS+newComm	118260	93235	51610	55994	102927
	newMRIP+newComm	118260	93235	51610	55994	102927
Coney	CompACL	113	287	308	1658	925
	newMRFSS+newComm	113	287	308	1658	925
	newMRIP+newComm	113	287	308	1658	942
Cubera Snapper	CompACL	65669	3059	87901	14209	23003
	newMRFSS+newComm	65352	3059	87026	13801	22854
	newMRIP+newComm	76194	3059	83065	13554	22178
Dog Snapper	CompACL	6216	125	46	84	165
	newMRFSS+newComm	6266	125	46	84	165
	newMRIP+newComm	5493	125	46	84	165
Gray Snapper	CompACL	538487	670945	675940	562042	588020
	newMRFSS+newComm	538461	673300	675971	563289	596420
	newMRIP+newComm	536585	639926	604147	568808	557290
Gray Triggerfish	CompACL	205727	219992	251712	456182	593000
	newMRFSS+newComm	204688	221564	251651	456008	594717
	newMRIP+newComm	214068	226503	277250	568574	638644
Graysby	CompACL	676	362	573	524	912
	newMRFSS+newComm	676	362	604	524	912
	newMRIP+newComm	676	362	655	524	912
Hogfish	CompACL	280153	175820	131799	91150	93670
	newMRFSS+newComm	280188	173607	132171	89906	93670
	newMRIP+newComm	185316	149762	122239	84015	86792

Jolthead Porgy	CompACL	197512	29776	18523	26382	20734
	newMRFSS+newComm	197539	29776	18752	26678	20727
	newMRIP+newComm	233087	31407	18923	26817	20827
Knobbed Porgy	CompACL	69400	100001	182806	65144	95747
	newMRFSS+newComm	69400	104533	182958	65177	97984
	newMRIP+newComm	69400	106083	189565	70433	100051
Lane Snapper	CompACL	67661	190064	192869	249063	105369
	newMRFSS+newComm	67638	190036	192442	247272	105332
	newMRIP+newComm	65462	155795	170801	197940	96313
Lesser Amberjack	CompACL	0	11	1689	0	0
	newMRFSS+newComm	0	22	1464	0	0
	newMRIP+newComm	0	60	1483	0	0
Mahogany Snapper	CompACL	23	17	45	0	6
	newMRFSS+newComm	23	17	45	0	6
	newMRIP+newComm	23	17	45	0	6
Margate	CompACL	14543	12118	28036	11450	16674
	newMRFSS+newComm	14541	12118	28039	11480	16715
	newMRIP+newComm	14537	12118	63907	11211	26711
Misty Grouper	CompACL	9	30244	0	0	0
	newMRFSS+newComm	9	30244	0	0	0
	newMRIP+newComm	9	14495	0	0	0
Queen Snapper	CompACL	0	0	0	16539	32
	newMRFSS+newComm	0	0	0	14740	32
	newMRIP+newComm	0	0	0	17925	32
Red Hind	CompACL	8703	13723	9625	12702	33084
	newMRFSS+newComm	7553	13723	9666	12730	33224
	newMRIP+newComm	5577	14627	8168	12705	32675
Rock Hind	CompACL	4986	7187	6345	2959	8206
	newMRFSS+newComm	4986	7187	6434	2998	8291
	newMRIP+newComm	4986	7187	6627	3100	9503
Sailors Choice	CompACL	2334	34012	76483	46965	12546
	newMRFSS+newComm	2334	34051	76483	46965	12546
	newMRIP+newComm	1709	49392	59695	40986	11592
Sand Tilefish	CompACL	5941	6666	2707	2984	2474
	newMRFSS+newComm	5941	6702	2857	3008	2470
	newMRIP+newComm	5941	5301	2634	2989	2462
Saucereye Porgy	CompACL	762	396	1141	219	2617
	newMRFSS+newComm	762	396	1141	219	1674
	newMRIP+newComm	762	396	1141	219	1733
Scamp	CompACL	328435	387776	423107	453901	588855
	newMRFSS+newComm	324355	388137	438358	455501	590934
	newMRIP+newComm	328563	392707	475038	503311	604696
Scup	CompACL	6890	3278	3175	3704	2149
	newMRFSS+newComm	6890	3545	3175	3703	2149
	newMRIP+newComm	3847	3607	3860	7951	2236
Silk Snapper	CompACL	36388	41974	27888	18695	36827
	newMRFSS+newComm	36388	42539	29367	18695	36827

	newMRIP+newComm	36388	43045	30403	19086	36827
Tomtate	CompACL	115283	159199	185810	125693	89090
	newMRFSS+newComm	115283	158692	185584	124850	89313
	newMRIP+newComm	114964	159192	185775	128166	89335
White Grunt	CompACL	528260	800248	704972	799545	1218440
	newMRFSS+newComm	528260	810621	719803	812098	1237840
	newMRIP+newComm	519361	861935	746329	845913	1221481
Whitebone Porgy	CompACL	23908	43867	41693	31766	22110
	newMRFSS+newComm	23908	45215	41688	32126	22156
	newMRIP+newComm	23838	43273	45352	30673	24516
Yellowedge Grouper	CompACL	34823	27254	19904	15160	17300
	newMRFSS+newComm	34823	27254	19904	15160	17300
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Yellowfin Grouper	CompACL	27323	4467	45132	40369	4434
	newMRFSS+newComm	27323	4467	44213	40369	4434
	newMRIP+newComm	27323	4467	54254	24361	4434
Yellowmouth Grouper	CompACL	214	262	469	631	1021
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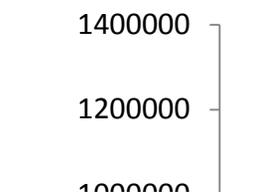
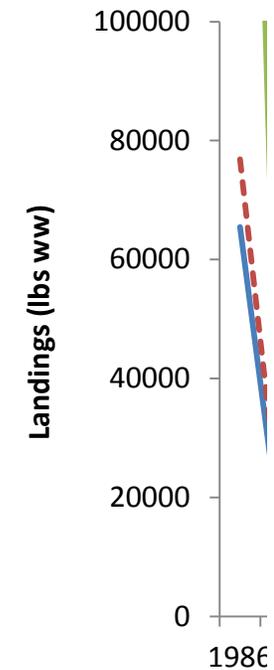
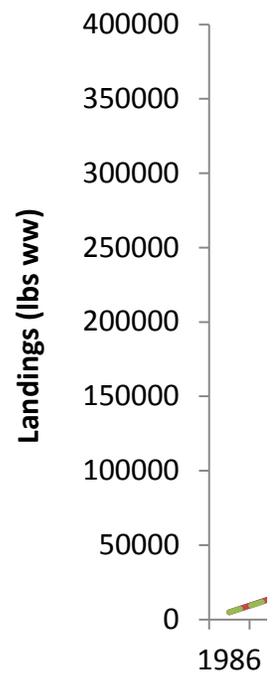
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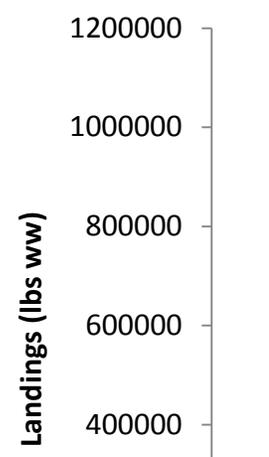
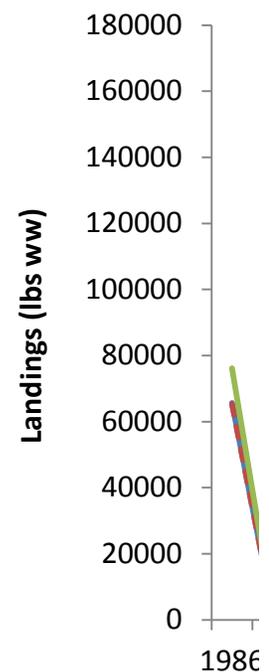
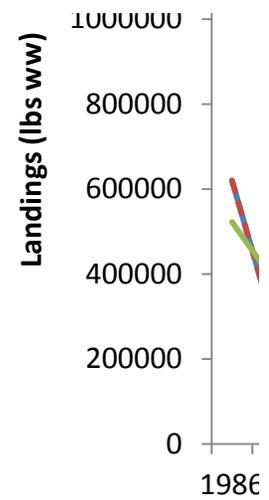
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511427	629137	655749	625476	669482	616711	609056	769863	691798
510883	653420	700750	666181	665954	616711	609056	769863	691798
493498	645243	641687	681603	708015	693837	622756	734503	737305
27500	28593	35294	20089	18247	21931	12560	30684	31928
28016	29551	35179	20654	18196	21931	12560	30671	31928
25024	24000	32506	17585	11236	15931	9930	23902	31327
46145	43806	29667	18414	37466	36532	13748	20583	22222
46330	43045	29667	18724	37466	33615	13748	20583	22222
46150	51342	29667	18633	37466	72295	13748	20583	22598
2906	4622	5795	2223	9258	3777	43530	9853	4206
2906	4625	5795	2223	9258	3777	43530	9853	4206
2906	4733	5087	2223	9258	3777	25722	9853	4206
3662	312	265	1354	4661	4970	1105	11009	341
3876	312	265	1476	4692	4970	1105	11009	341
3947	312	265	1704	4768	4040	1105	14434	341

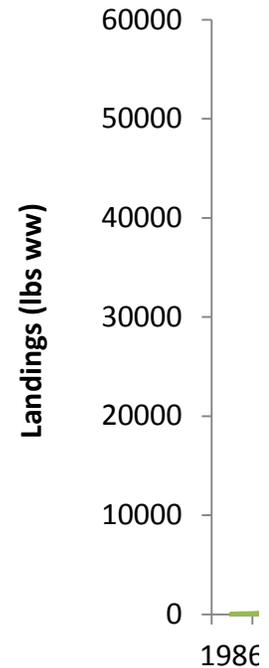
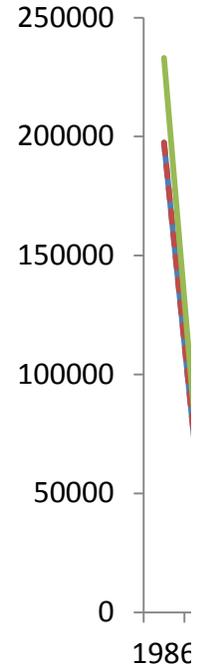
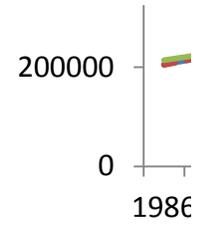
2009	2010	2011	ABC	ABC basis
239310			291922	3rd Highest 99-08
239337	252984	370294	286196	3rd Highest 99-08
256367	250635	366829	302517	3rd Highest 99-08
482136			282841	3rd Highest 99-08
482136	397180	78773	283177	3rd Highest 99-08
251006	471969	123247	189460	3rd Highest 99-08
110849			152999	3rd Highest 99-08
110739	132386	237820	152966	3rd Highest 99-08
112847	130209	199990	145434	3rd Highest 99-08
8183			20520	3rd Highest 99-08
8014	3790	15795	19684	3rd Highest 99-08
10445	3790	25990	24780	3rd Highest 99-08
0			382	3rd Highest 99-08
0	44	0	382	3rd Highest 99-08
0	44	0	382	3rd Highest 99-08
692			4154	3rd Highest 99-08
692	963	28726	4181	3rd Highest 99-08
692	842	22616	3665	3rd Highest 99-08
925306			1289941	3rd Highest 99-08
925306	608180	888947	1288716	3rd Highest 99-08
1331905	507788	946716	1125729	3rd Highest 99-08
595534			592603	2X high land (86-05)
595491	519787	190526	624028	2X high land (86-05)
600204	503744	192977	631341	2X high land (86-05)
2427			2589	3rd Highest 99-08
2424	544	227	2584	3rd Highest 99-08
3119	459	227	2718	3rd Highest 99-08
24498			31772	3rd Highest 99-08
24420	8257	22755	31602	3rd Highest 99-08
17747	8257	61519	24680	3rd Highest 99-08
7963			7523	3rd Highest 99-08
7963	3852	1344	7525	3rd Highest 99-08
5314	2044	820	3285	3rd Highest 99-08
448815			894019	3rd Highest 99-08
448878	386358	417312	893161	3rd Highest 99-08
403486	344472	361082	795743	3rd Highest 99-08
895069			672565	3rd Highest 99-08
895130	978802	1061656	672565	3rd Highest 99-08
901498	923990	983175	626518	3rd Highest 99-08
5725			17856	3rd Highest 99-08
5661	2511	4190	17757	3rd Highest 99-08
6484	2499	6855	17597	3rd Highest 99-08
127244			147638	3rd Highest 99-08
130278	105601	122801	147971	3rd Highest 99-08
137821	113085	121880	134824	3rd Highest 99-08

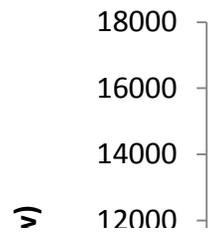
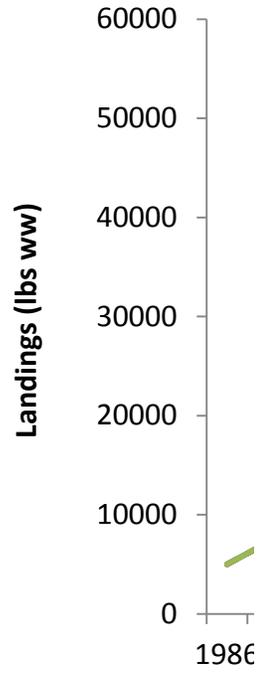
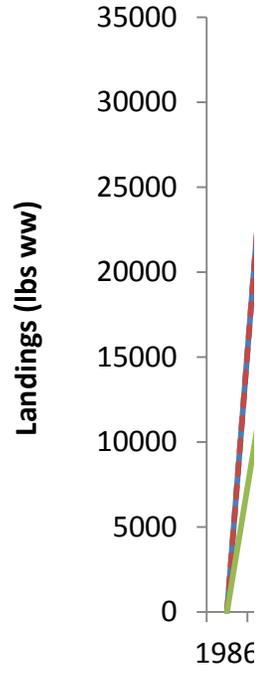


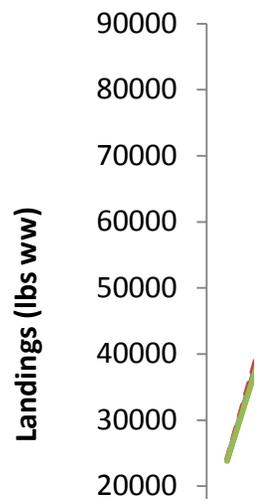
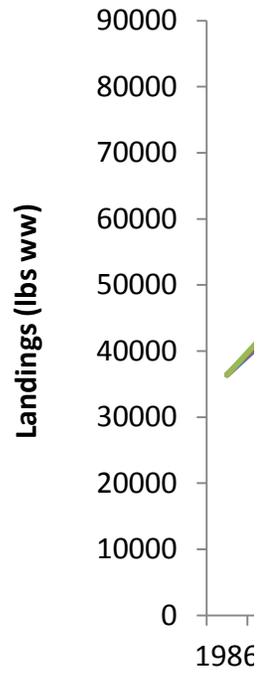
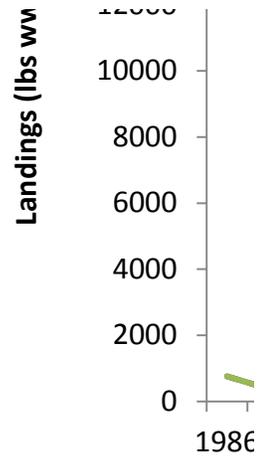
34323			42533	3rd Highest 99-08
34323	43727	33180	42533	3rd Highest 99-08
42196	41500	27948	37885	3rd Highest 99-08
35762			61194	3rd Highest 99-08
35774	32251	48417	64130	3rd Highest 99-08
35663	36726	48299	67441	3rd Highest 99-08
62712			153466	3rd Highest 99-08
62720	37056	44481	153466	3rd Highest 99-08
54972	31286	33504	119984	3rd Highest 99-08
8443			10568	3rd Highest 99-08
8481	13857	49125	10577	3rd Highest 99-08
8481	13857	49072	9270	3rd Highest 99-08
581			160	3rd Highest 99-08
313	61	34	160	3rd Highest 99-08
155	61	34	548	3rd Highest 99-08
11849			34662	3rd Highest 99-08
11830	5708	9819	34616	3rd Highest 99-08
13043	5322	8170	29889	3rd Highest 99-08
2349			2863	3rd Highest 99-08
2349	589	211	2863	3rd Highest 99-08
2349	589	211	2863	3rd Highest 99-08
1898			9344	3rd Highest 99-08
1898	5803	5644	9306	3rd Highest 99-08
1898	5803	5644	9466	3rd Highest 99-08
15783			25885	3rd Highest 99-08
15782	8881	5503	25875	3rd Highest 99-08
15434	8881	5503	24867	3rd Highest 99-08
27729			37569	3rd Highest 99-08
27800	19848	23630	37577	3rd Highest 99-08
30066	19837	23625	37953	3rd Highest 99-08
17816			35266	3rd Highest 99-08
18120	6699	2500	36920	3rd Highest 99-08
5818	5149	1463	22674	3rd Highest 99-08
15607			8823	3rd Highest 99-08
15192	2236	3847	8521	3rd Highest 99-08
15772	2066	4279	7983	3rd Highest 99-08
312			4205	3rd Highest 99-08
312	972	437	3710	3rd Highest 99-08
395	832	437	3606	3rd Highest 99-08
387215			492572	Median 99-08
390990	258512	324104	499255	Median 99-08
396682	276209	314978	509788	Median 99-08
8551			8999	3rd Highest 99-08
8551	11682	8841	8999	3rd Highest 99-08
8551	11808	8515	9306	3rd Highest 99-08
15996			27519	Median 99-08
16014	6613	28088	27529	Median 99-08

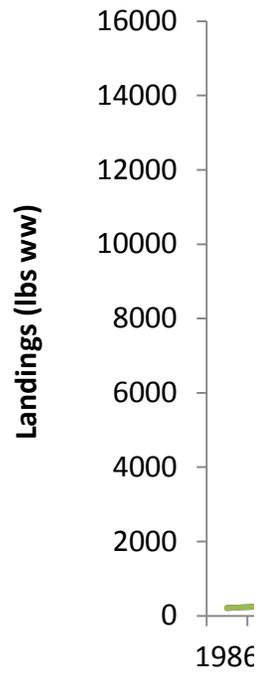
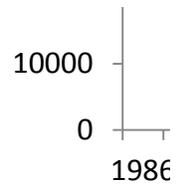


17296	6552	26048	25104	Median 99-08
92601			70948	3rd Highest 99-08
92025	33894	36957	70948	3rd Highest 99-08
95138	28485	32679	80056	3rd Highest 99-08
536840			635899	Median 99-08
536850	343218	371407	663390	Median 99-08
558227	366974	366340	674033	Median 99-08
8218			30684	3rd Highest 99-08
8219	28003	21273	30671	3rd Highest 99-08
12089	24729	23441	25024	3rd Highest 99-08
28402			30221	Median 99-08
28402	28516	2600	30221	Median 99-08
28024	26487	2600	30221	Median 99-08
3284			9258	3rd Highest 99-08
3284	3774	9549	9258	3rd Highest 99-08
3284	3774	9549	9258	3rd Highest 99-08
95			4661	3rd Highest 99-08
95	414	36	4692	3rd Highest 99-08
95	622	36	4040	3rd Highest 99-08

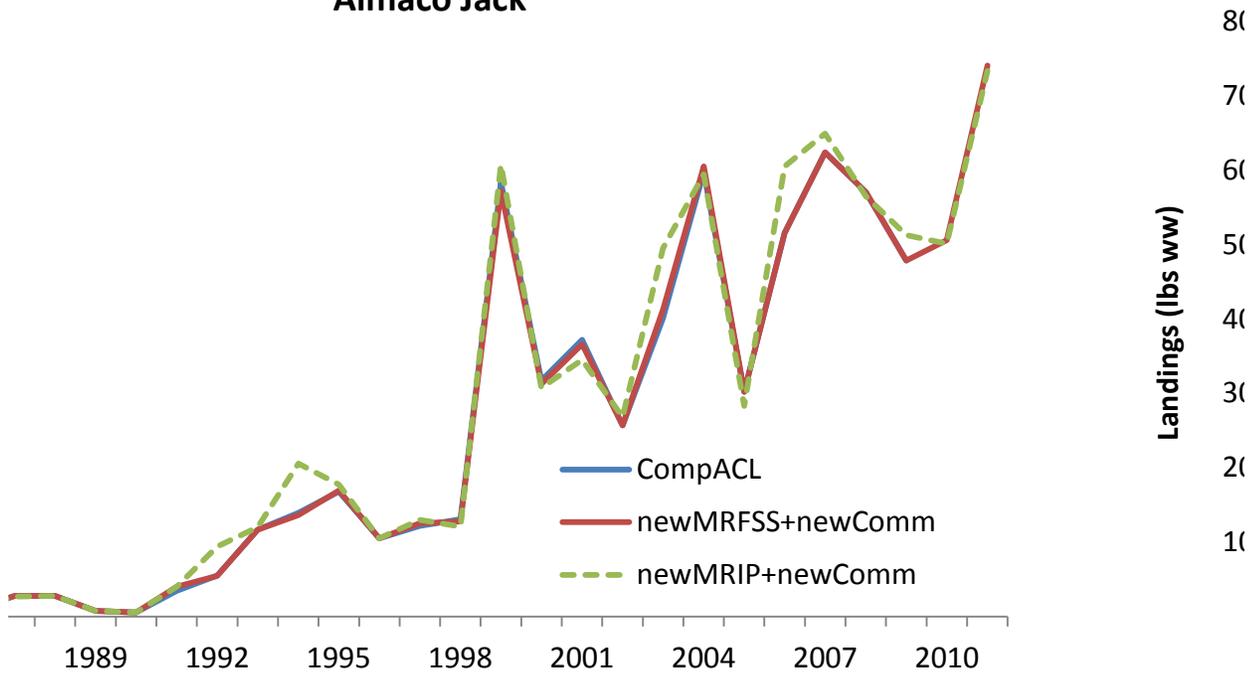




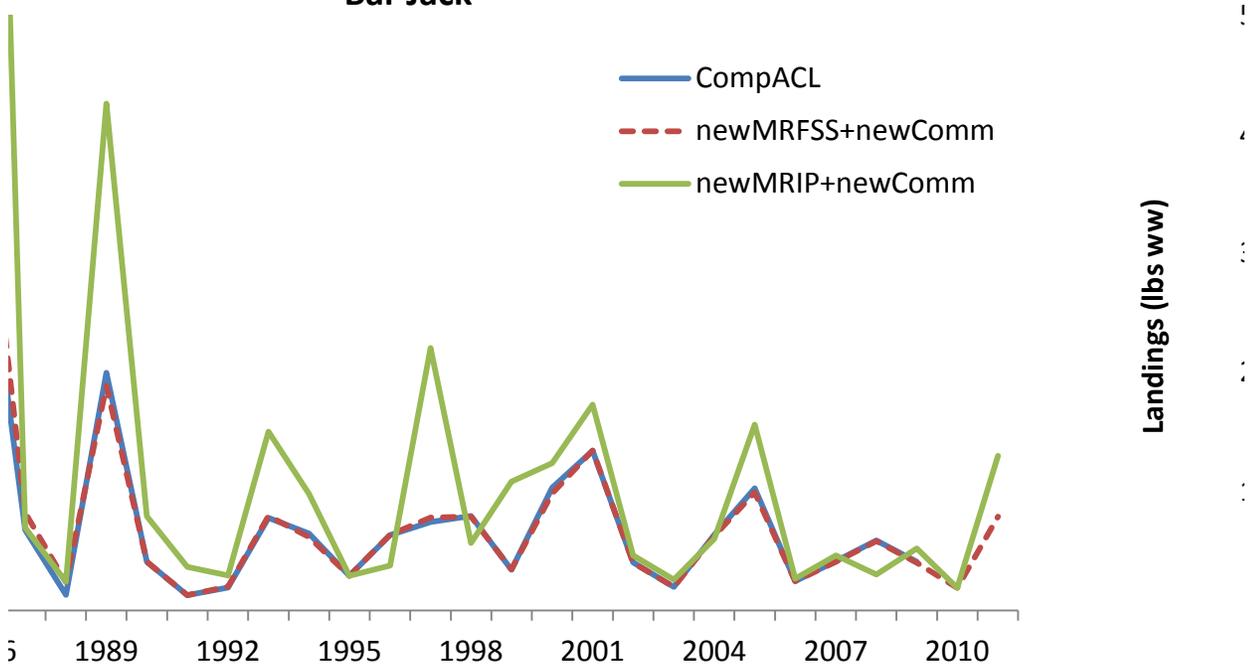




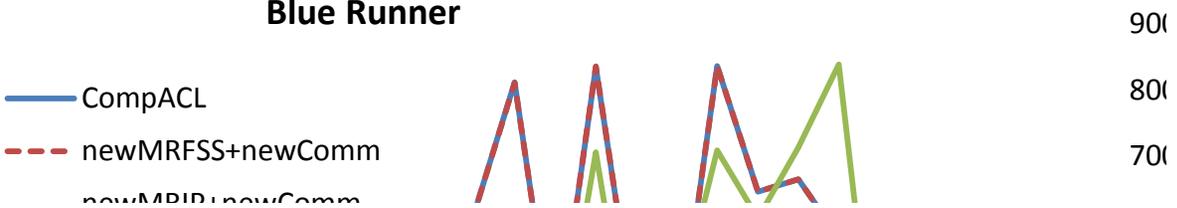
Almaco Jack

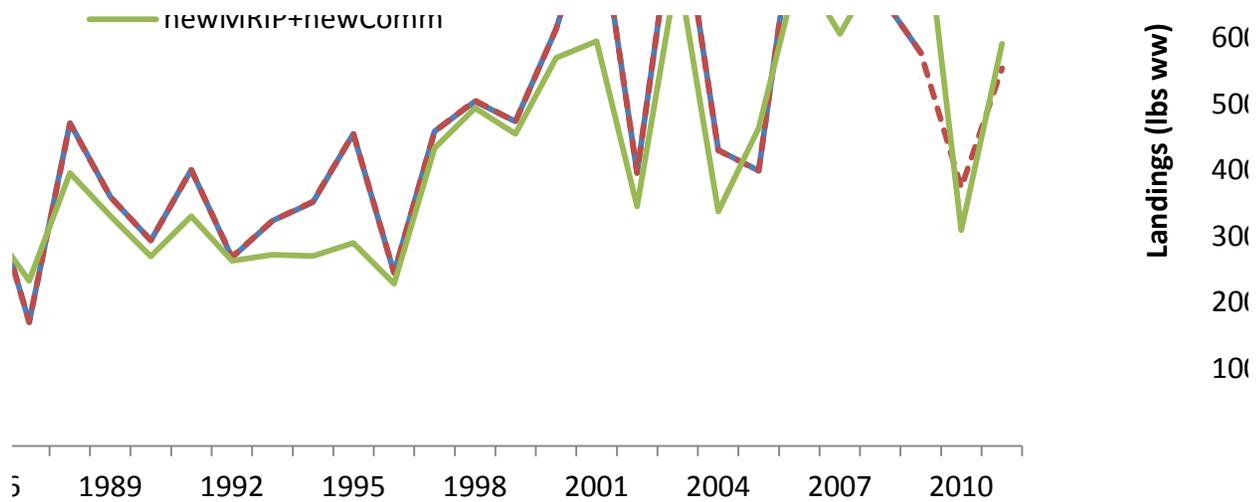


Bar Jack

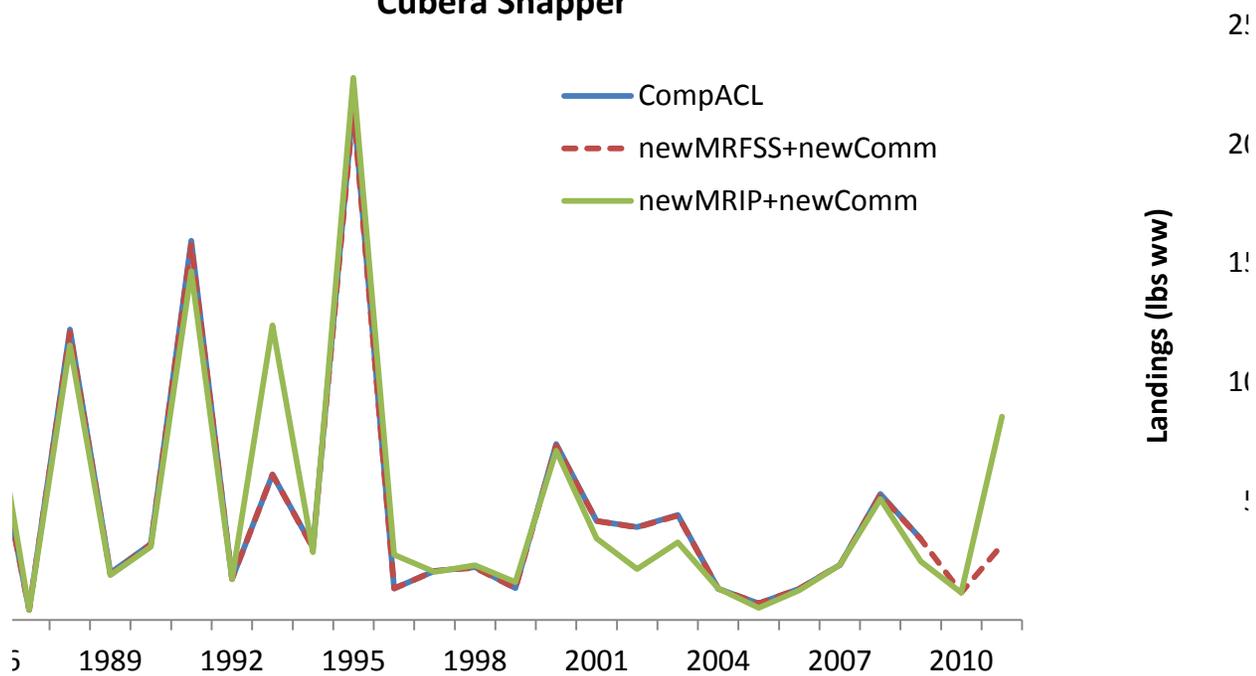


Blue Runner

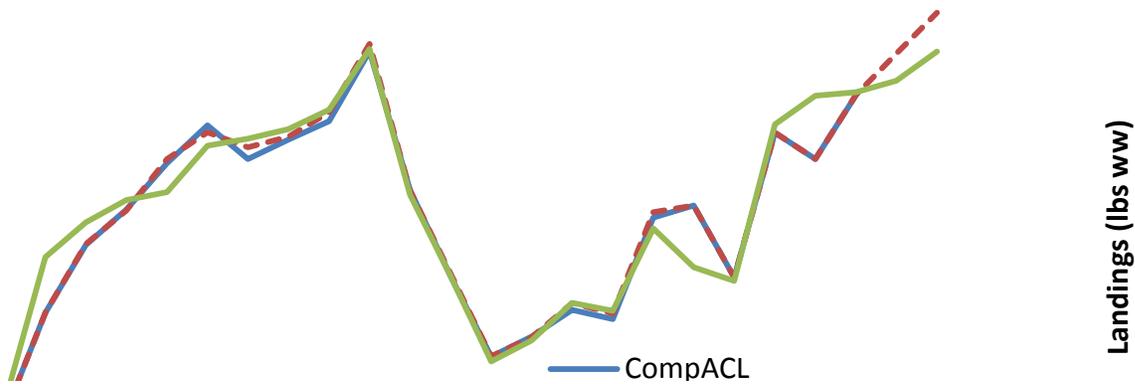


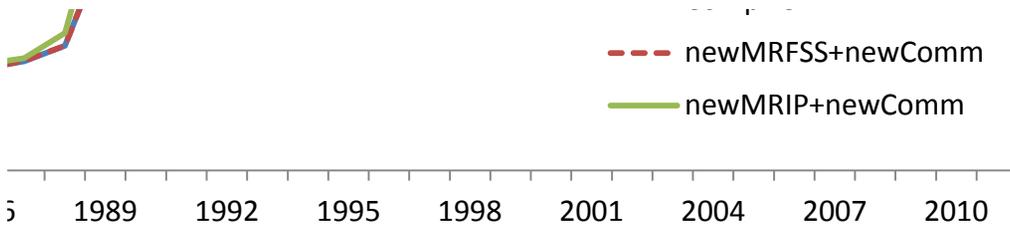


Cubera Snapper

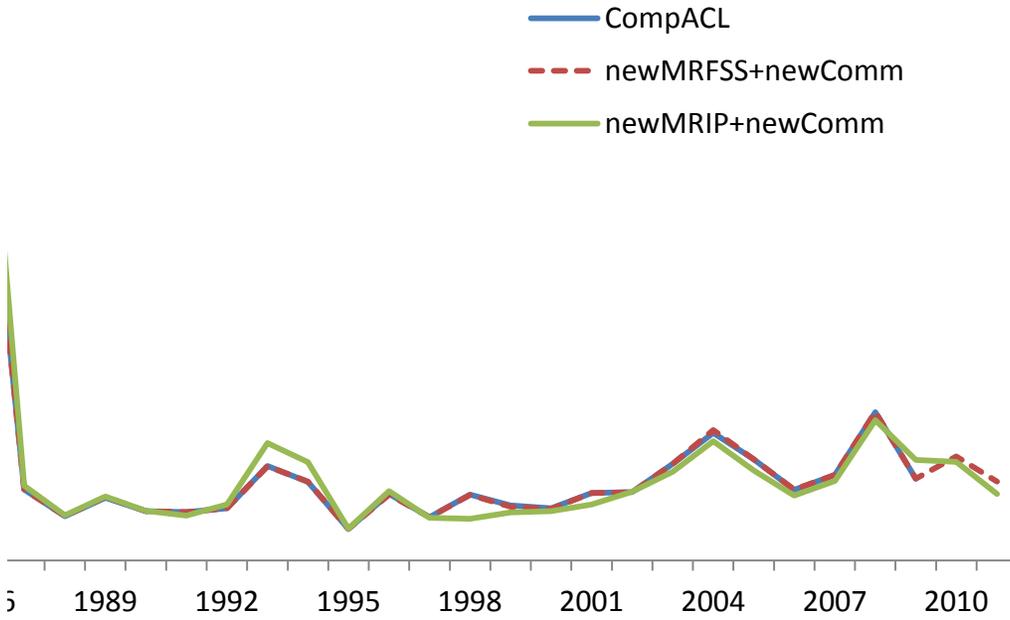


Gray Triggerfish

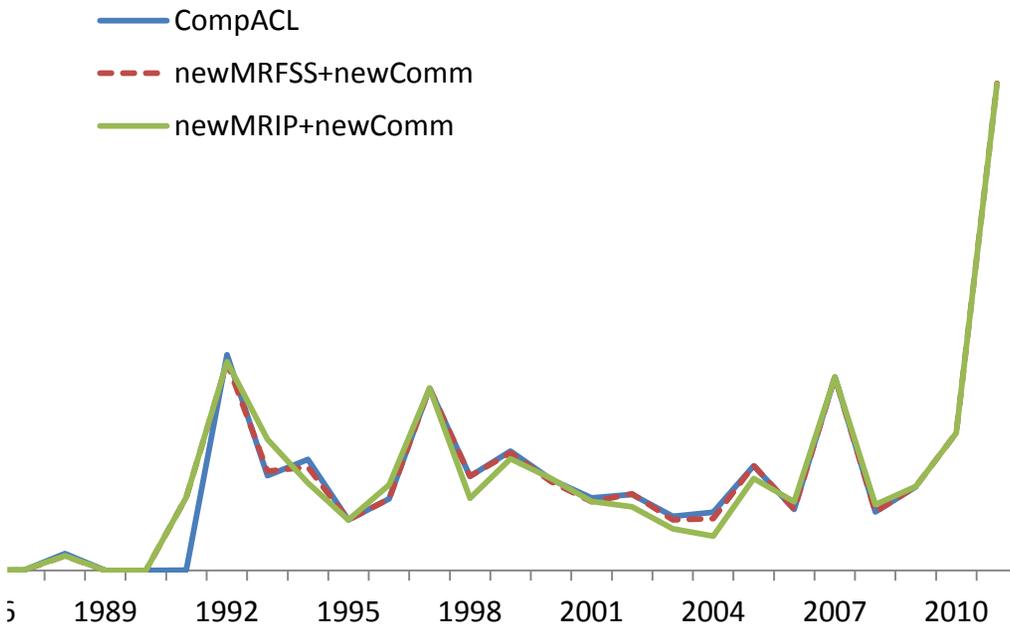




Jolthead Porgy



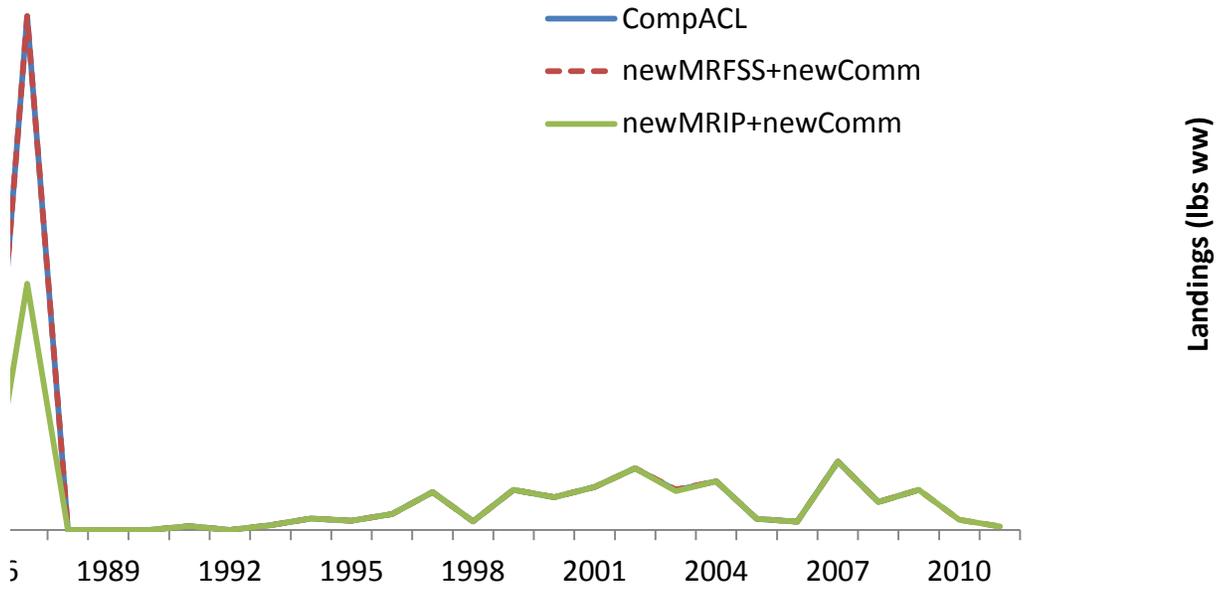
Lesser Amberjack



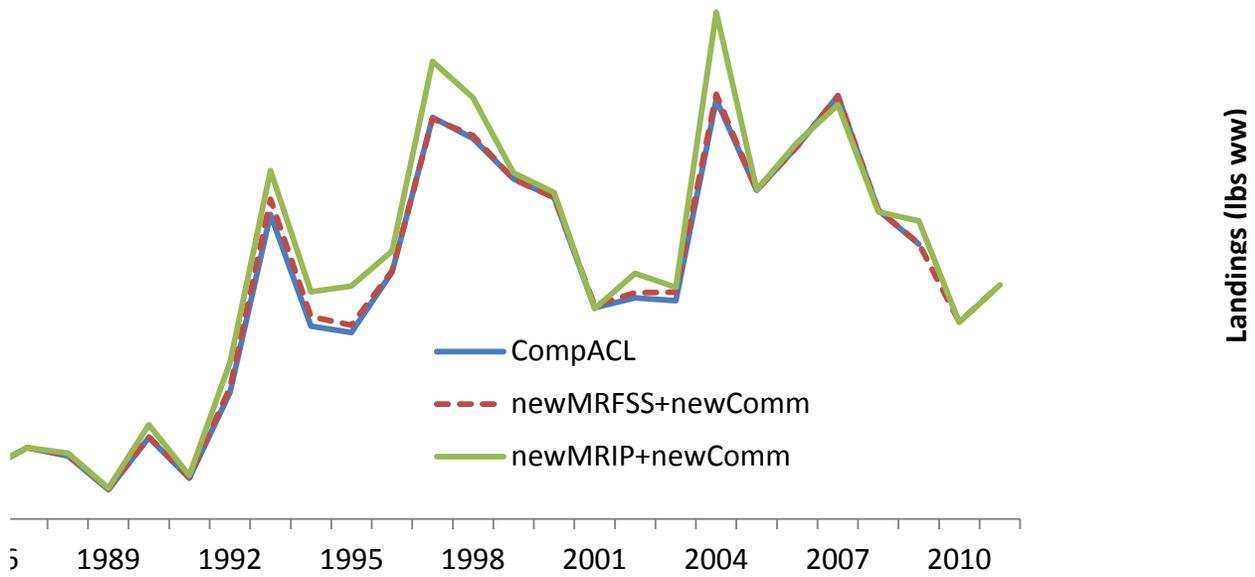
Landings (lbs ww)

Landings (lbs ww)

Misty Grouper

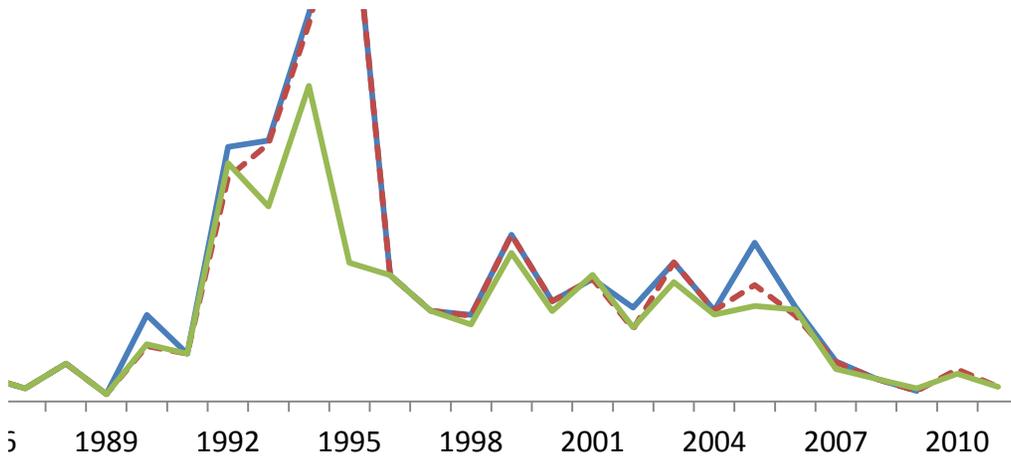


Rock Hind

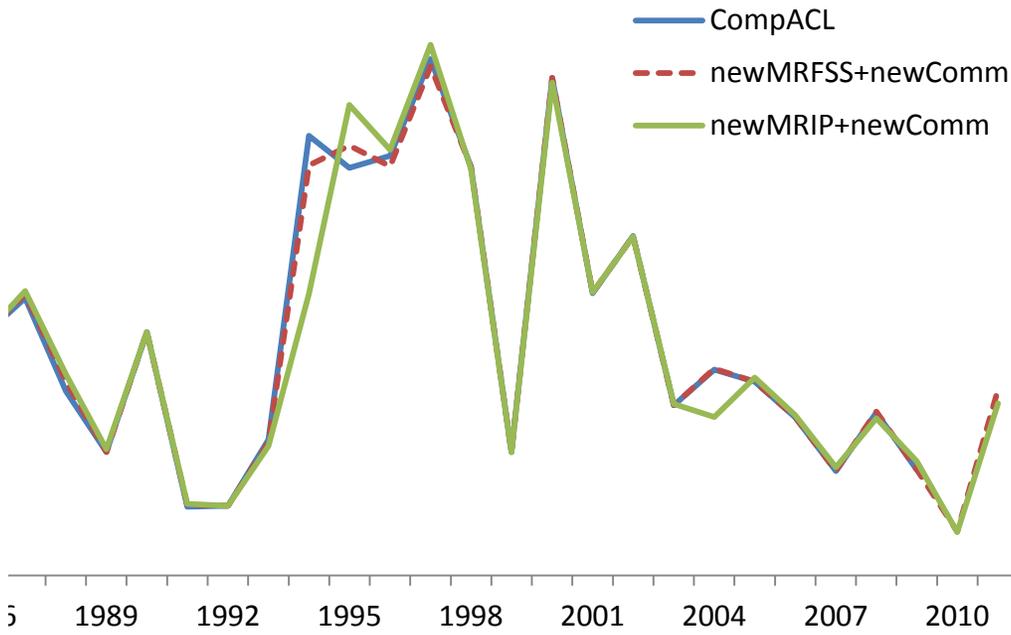


Saucereye Porgy

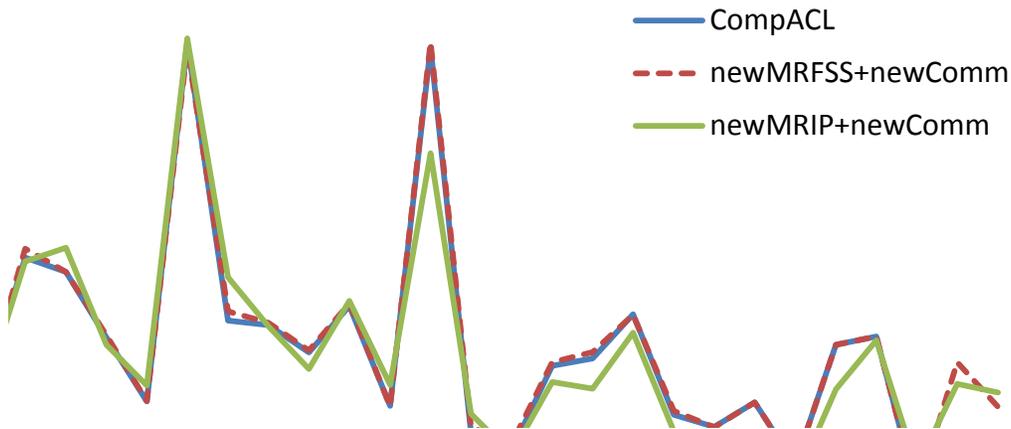


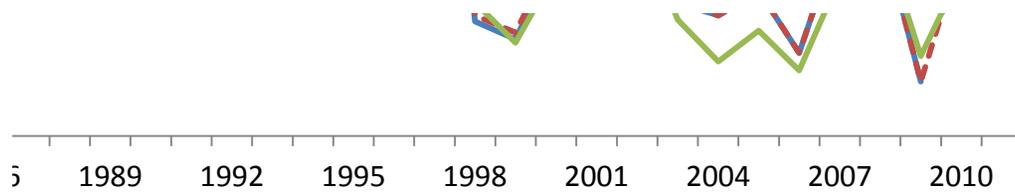


Silk Snapper



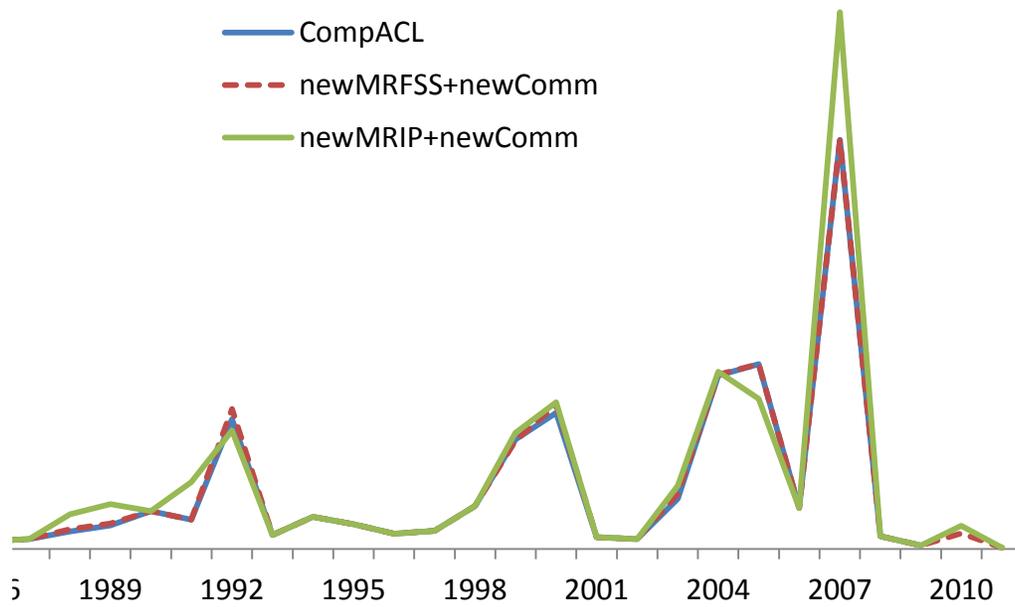
Whitebone Porgy



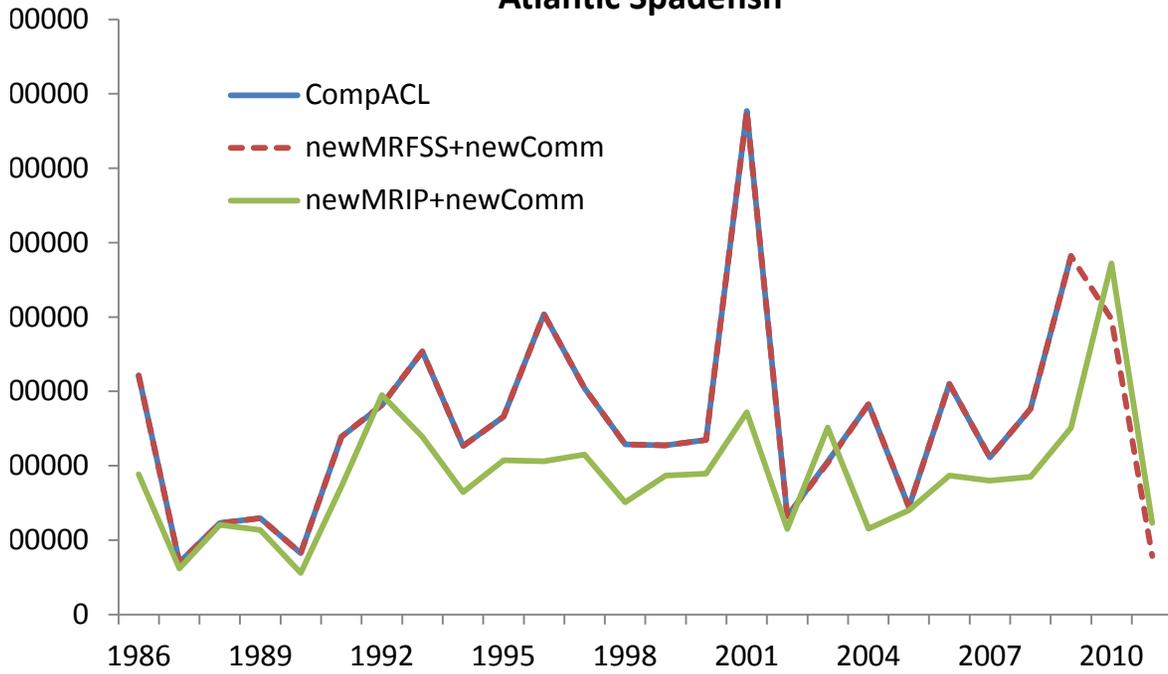


Yellowmouth Grouper

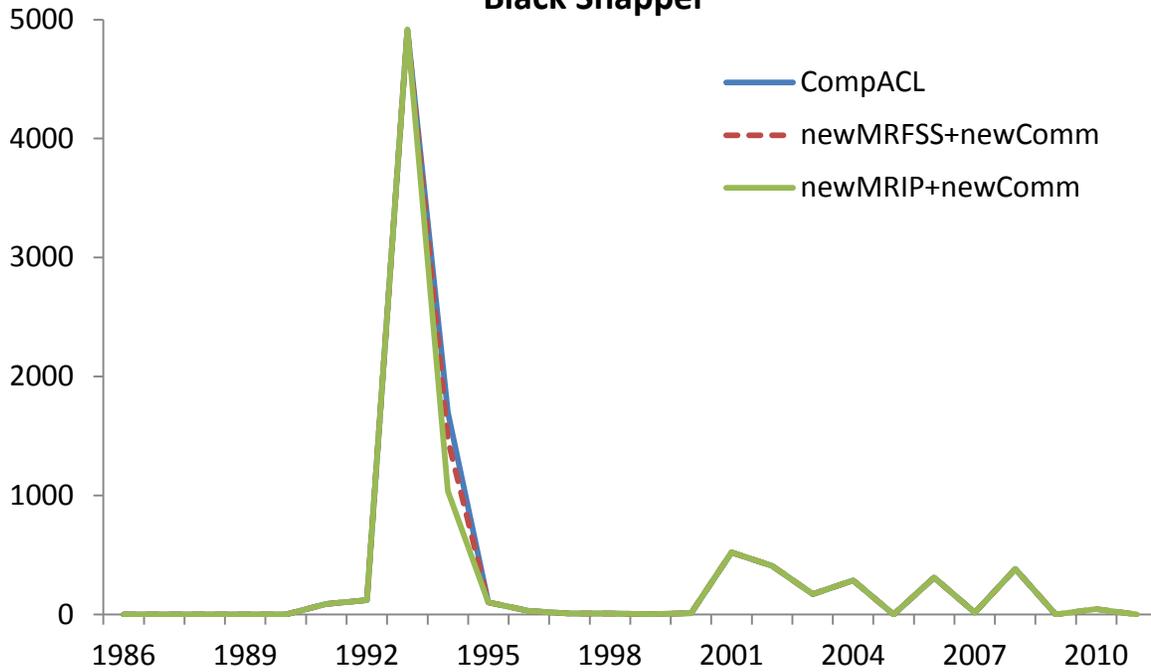
- CompACL
- - - newMRFSS+newComm
- newMRIP+newComm



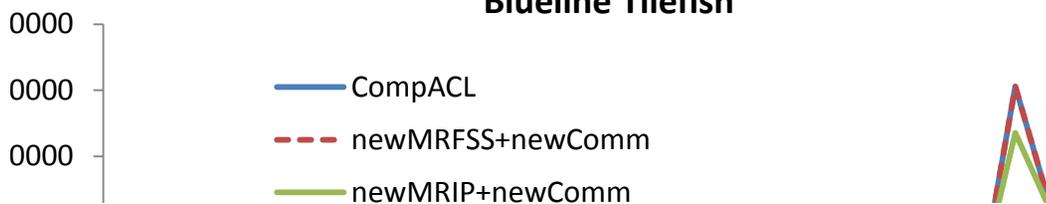
Atlantic Spadefish

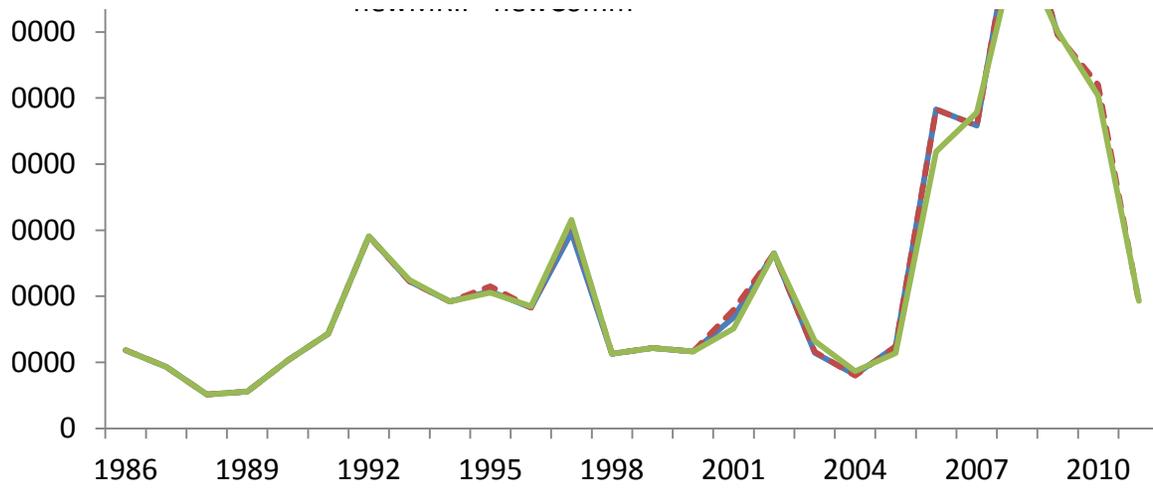


Black Snapper

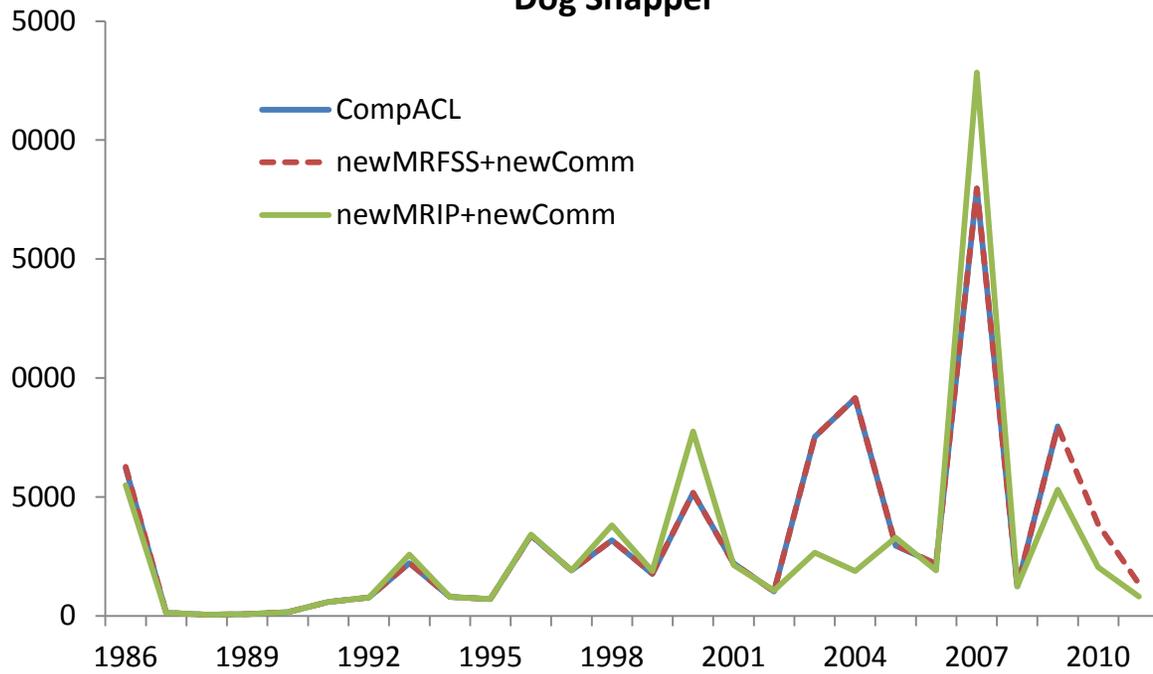


Blueline Tilefish

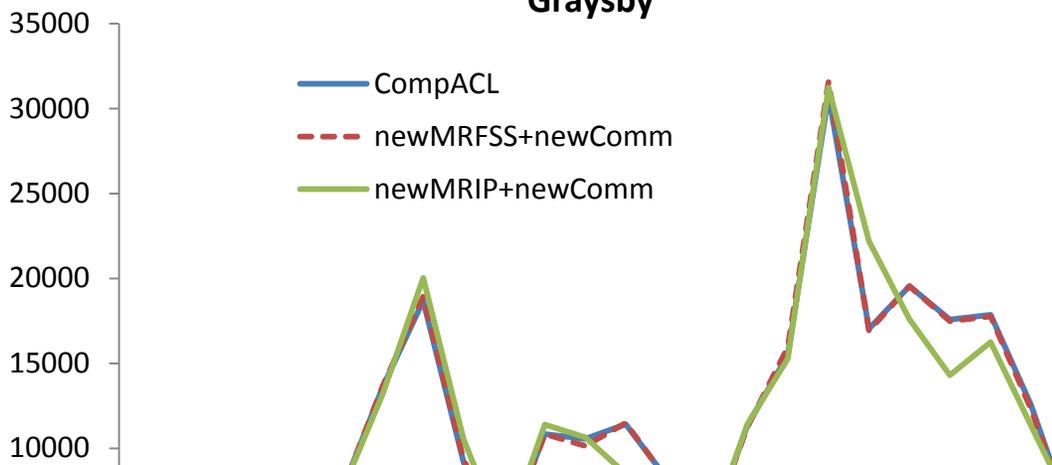


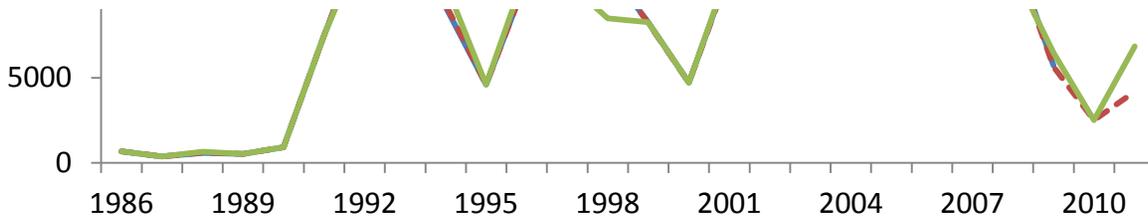


Dog Snapper

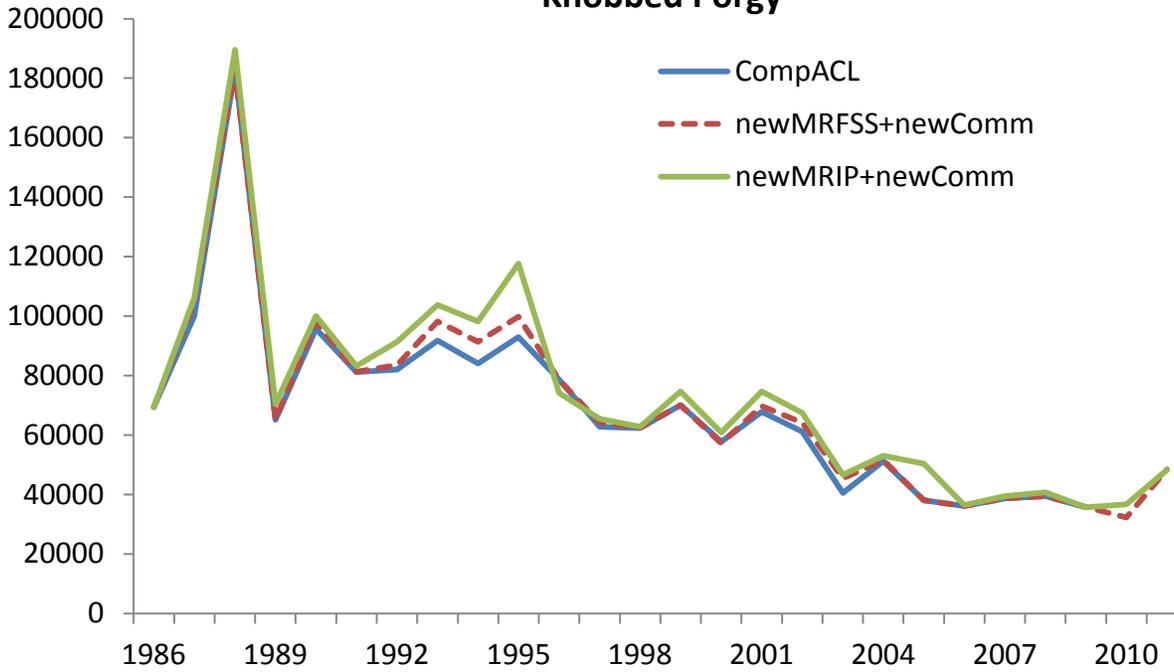


Graysby

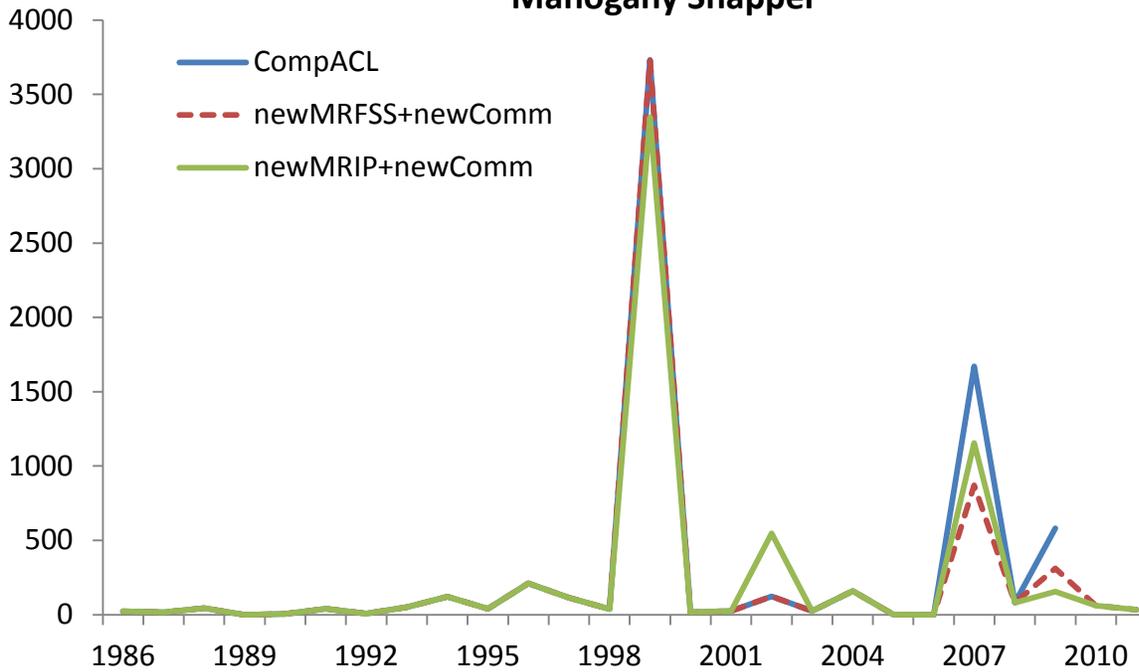




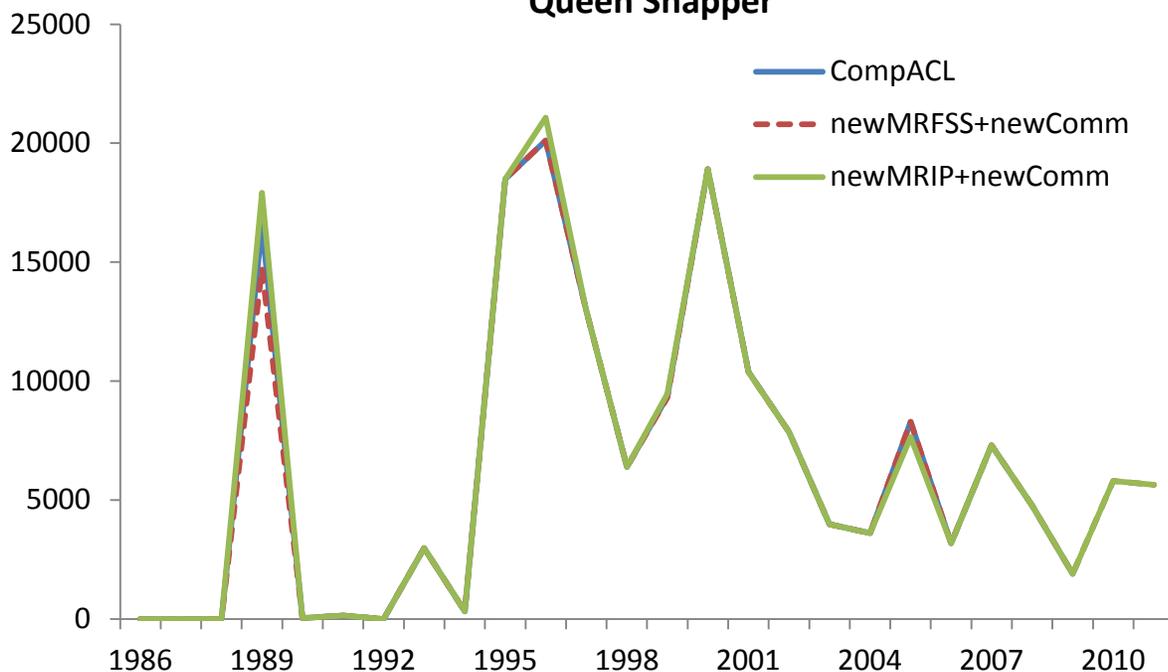
Knobbed Porgy



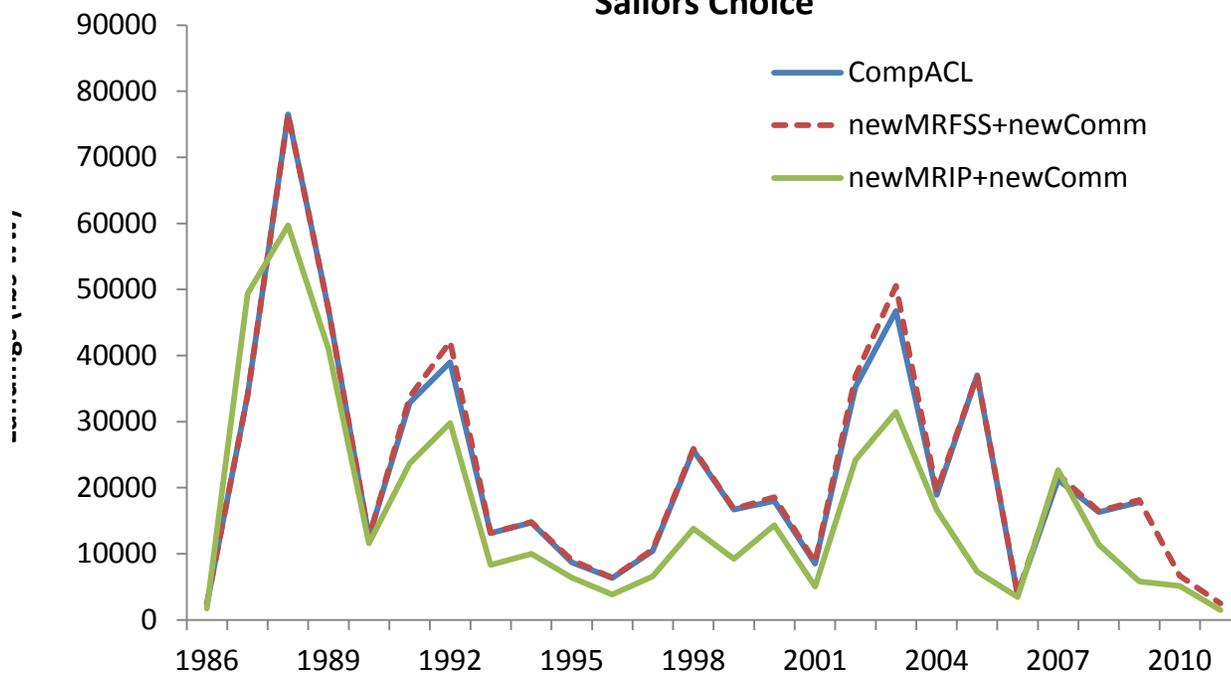
Mahogany Snapper



Queen Snapper

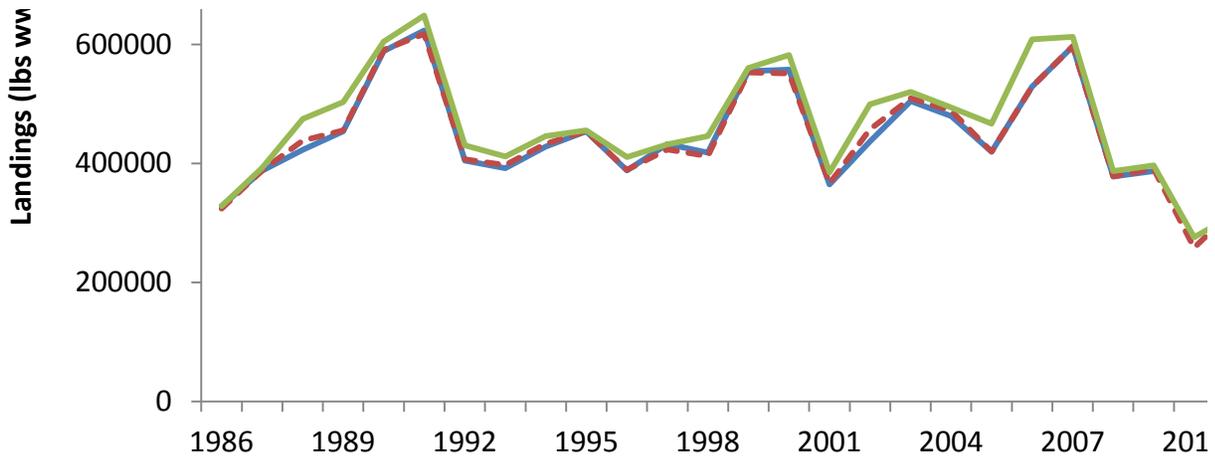


Sailors Choice

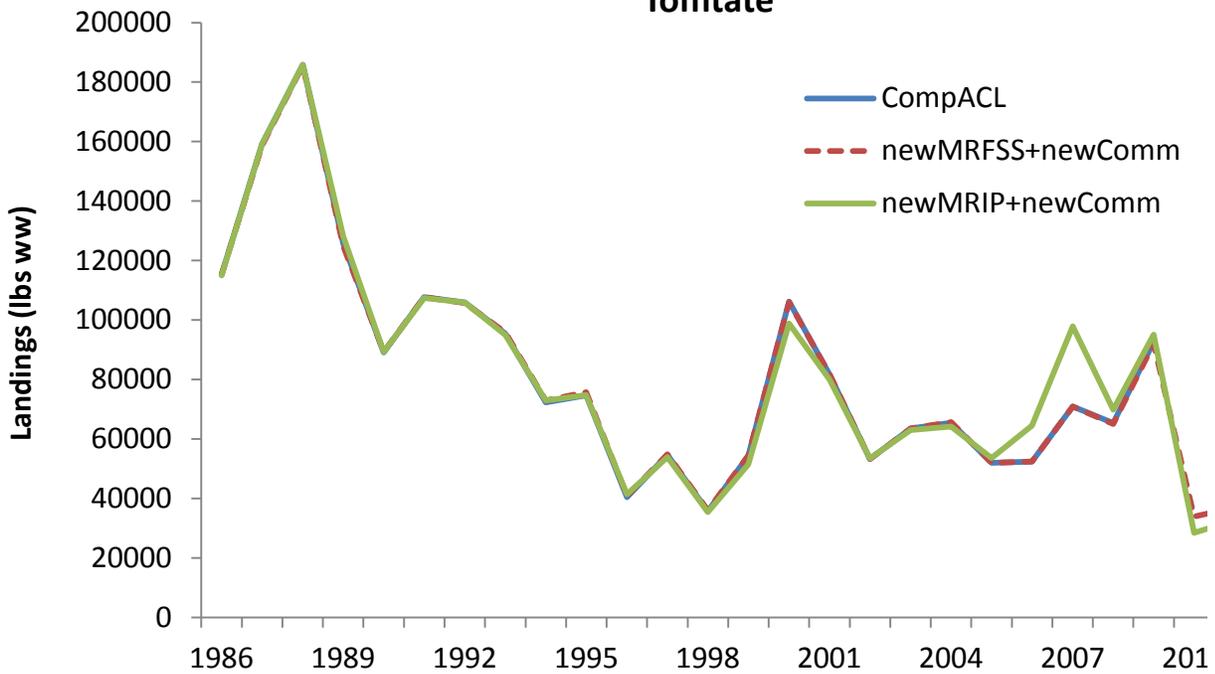


Scamp

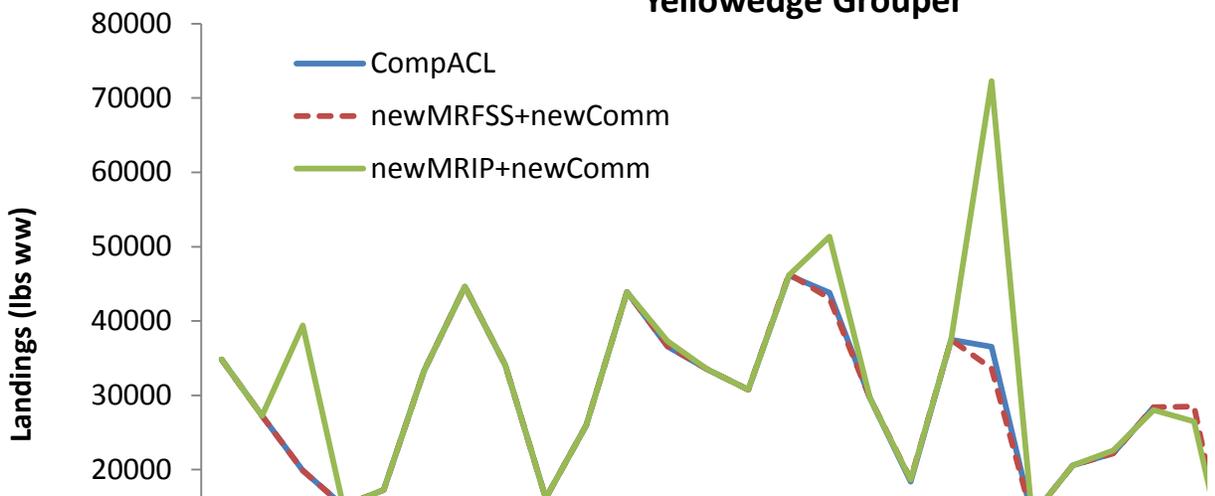


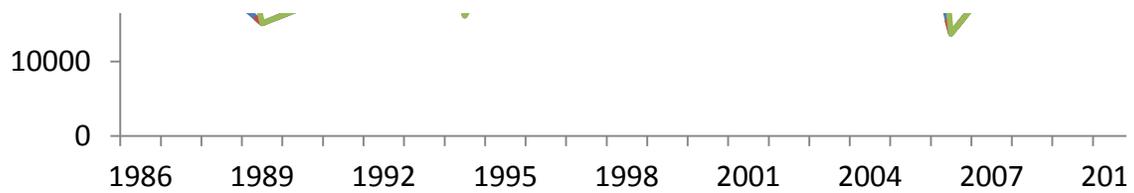


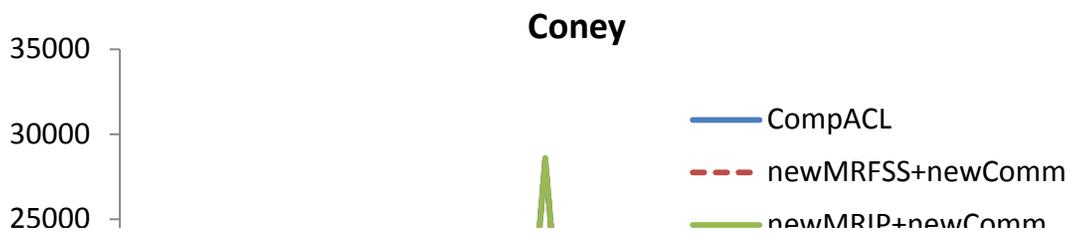
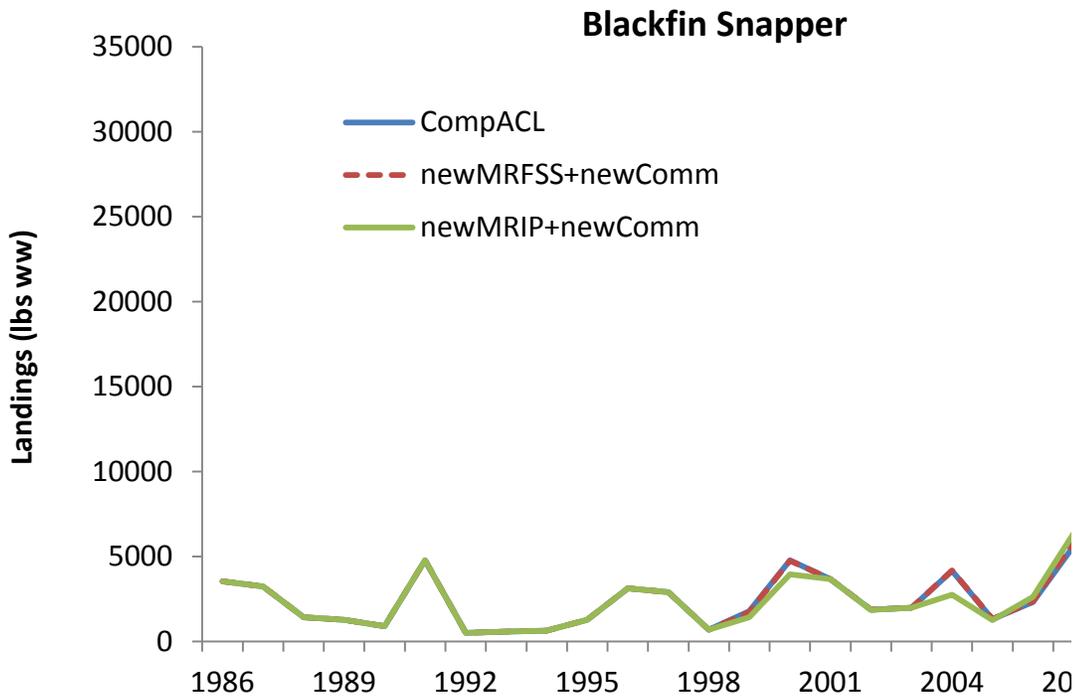
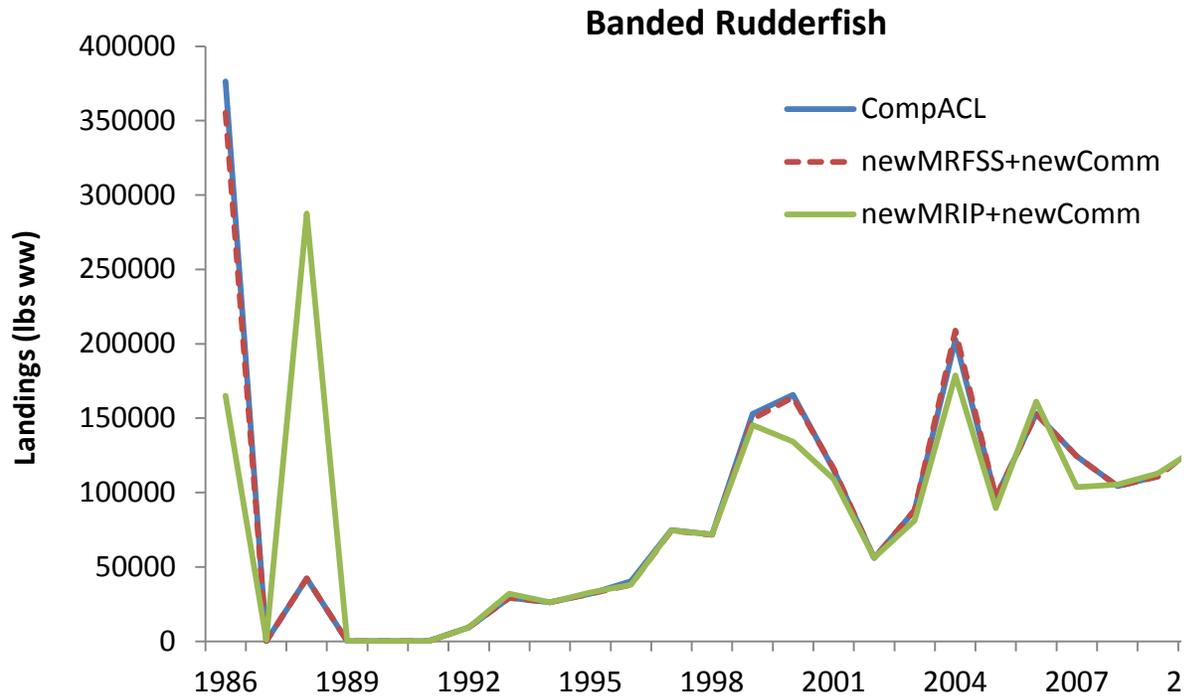
Tomtate

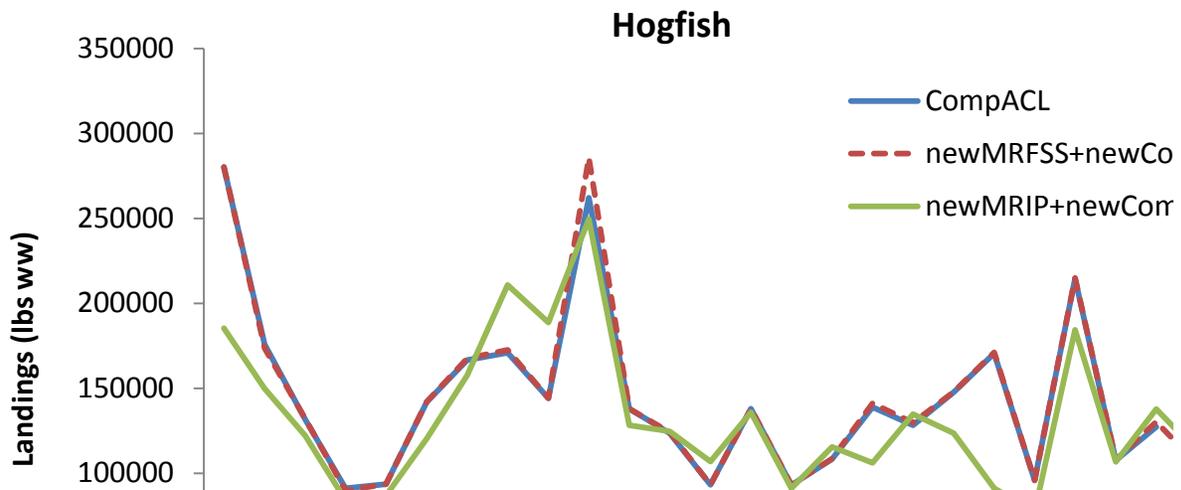
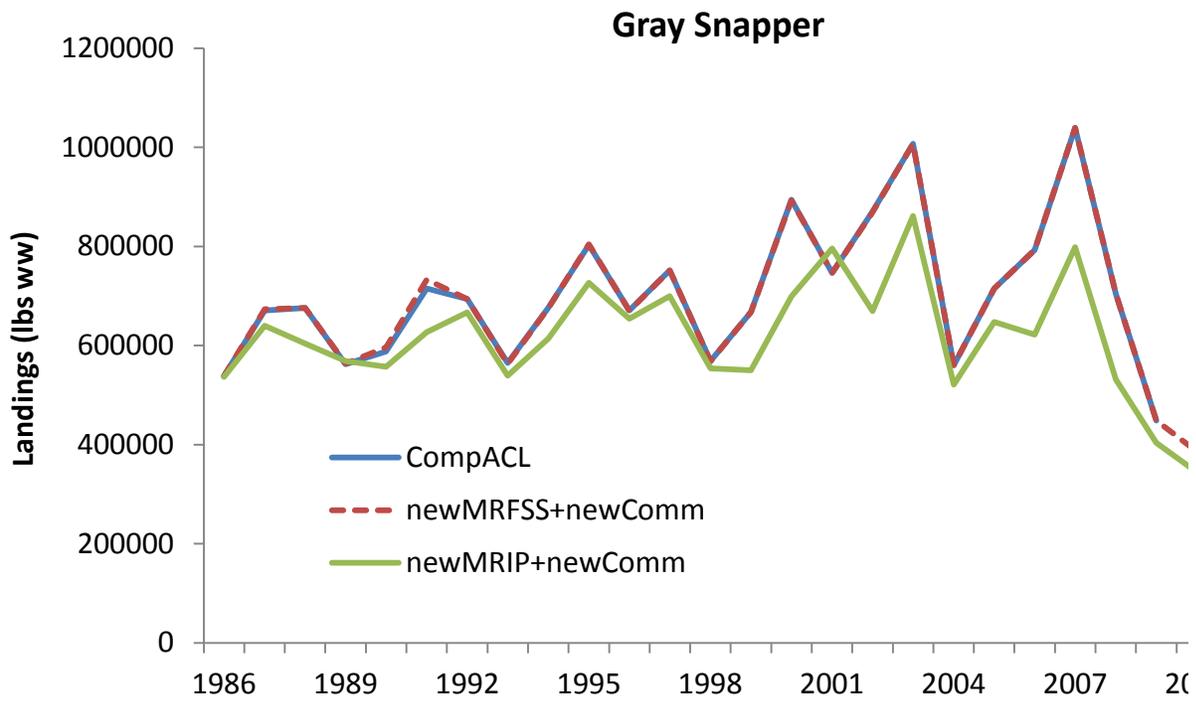
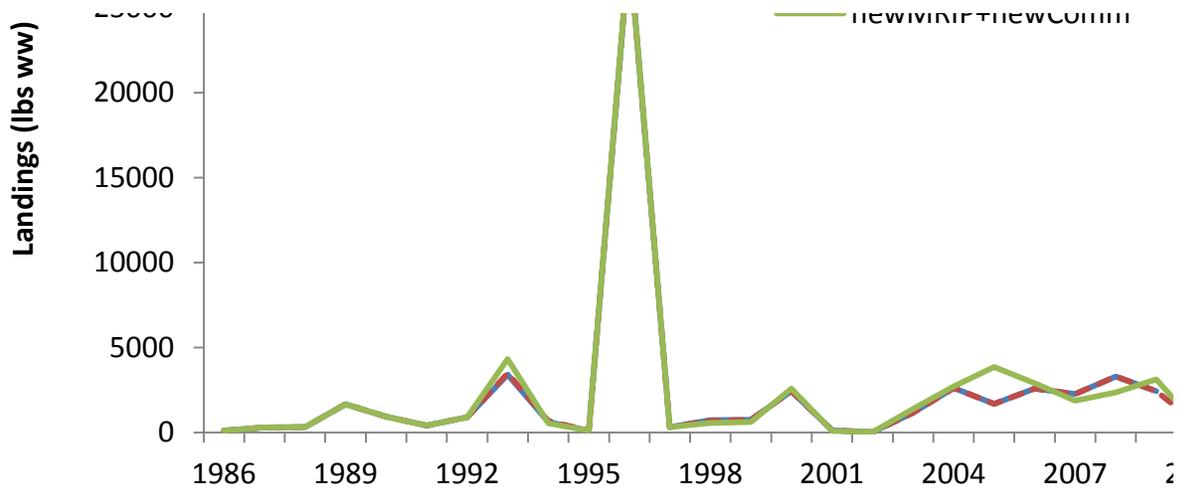


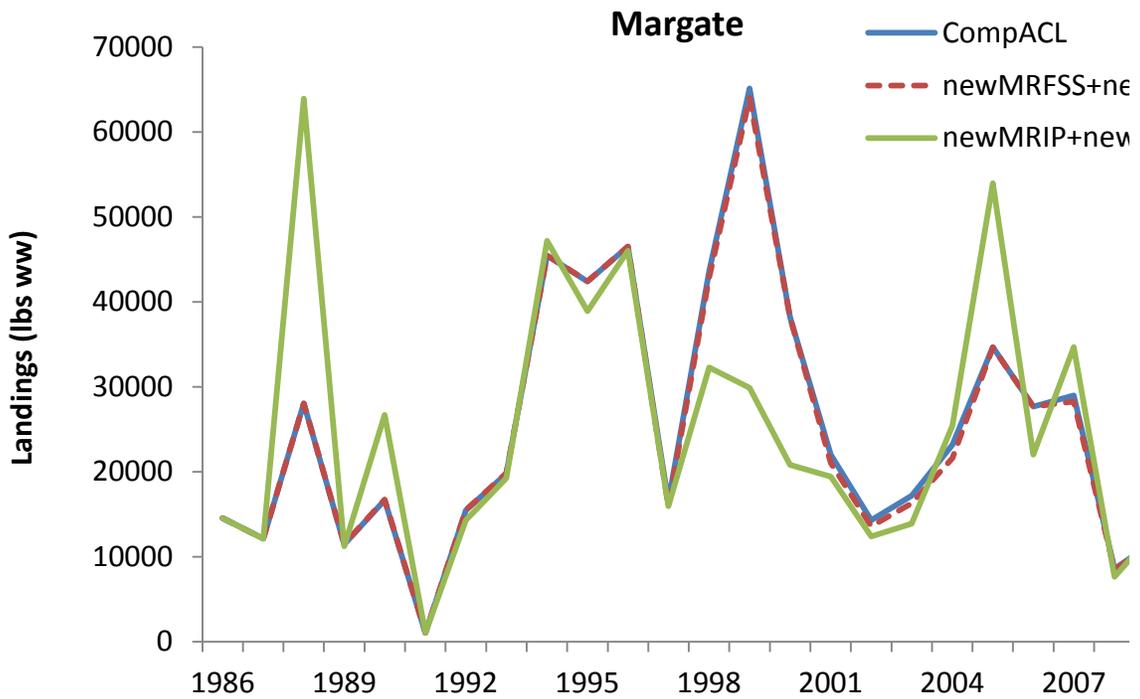
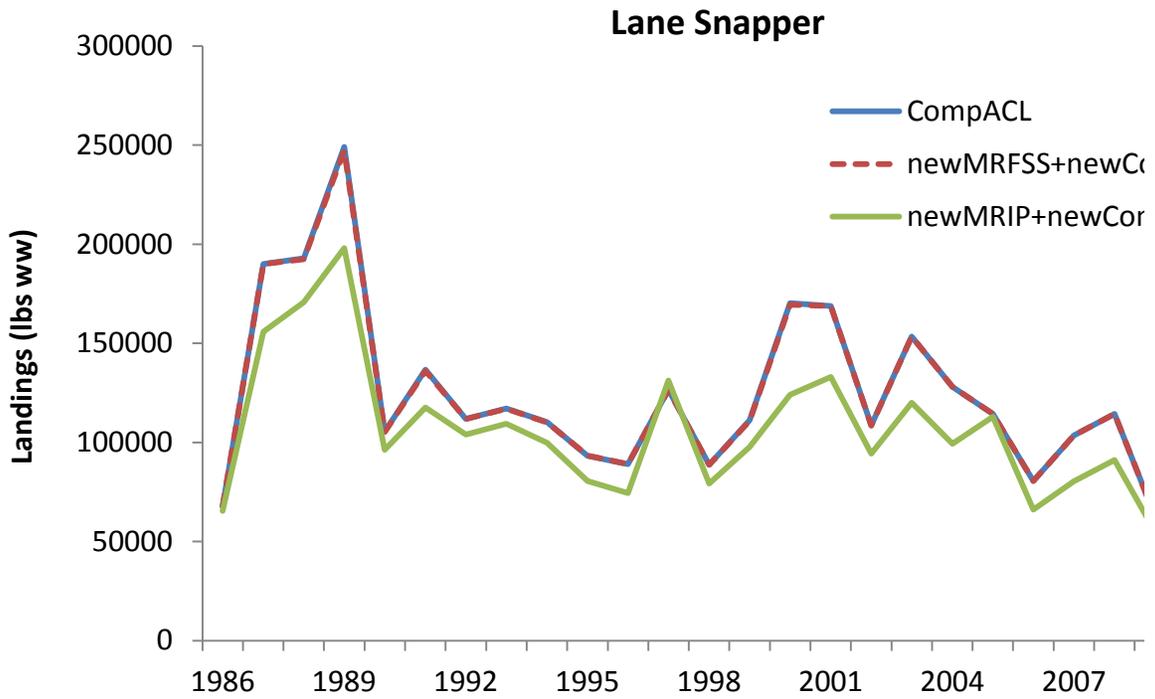
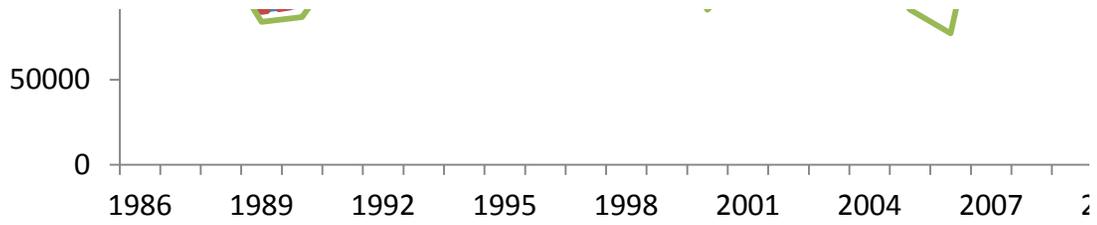
Yellowedge Grouper

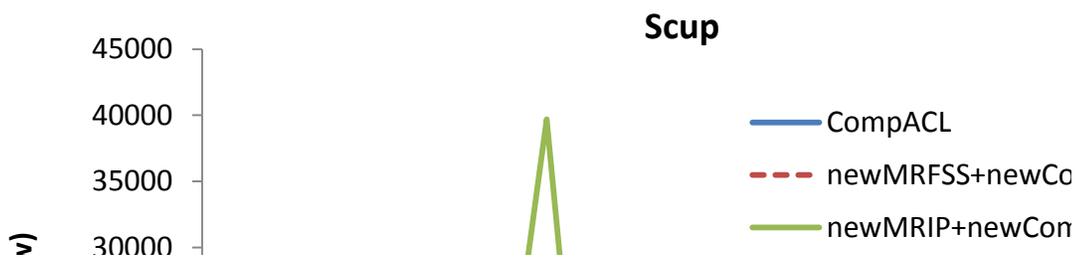
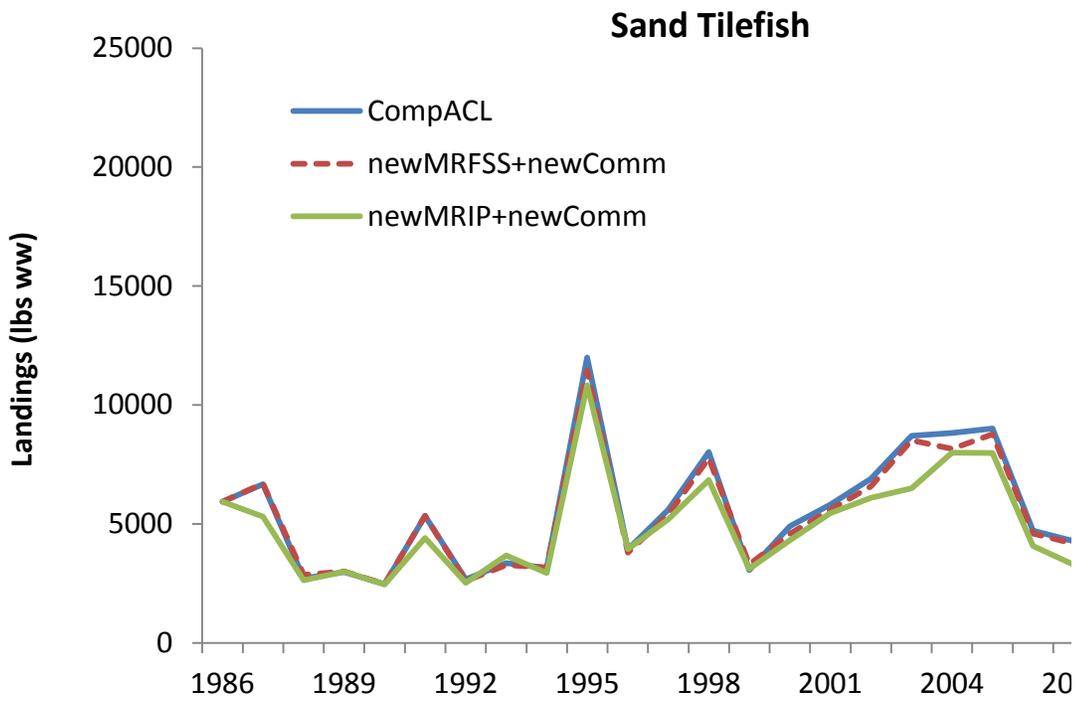
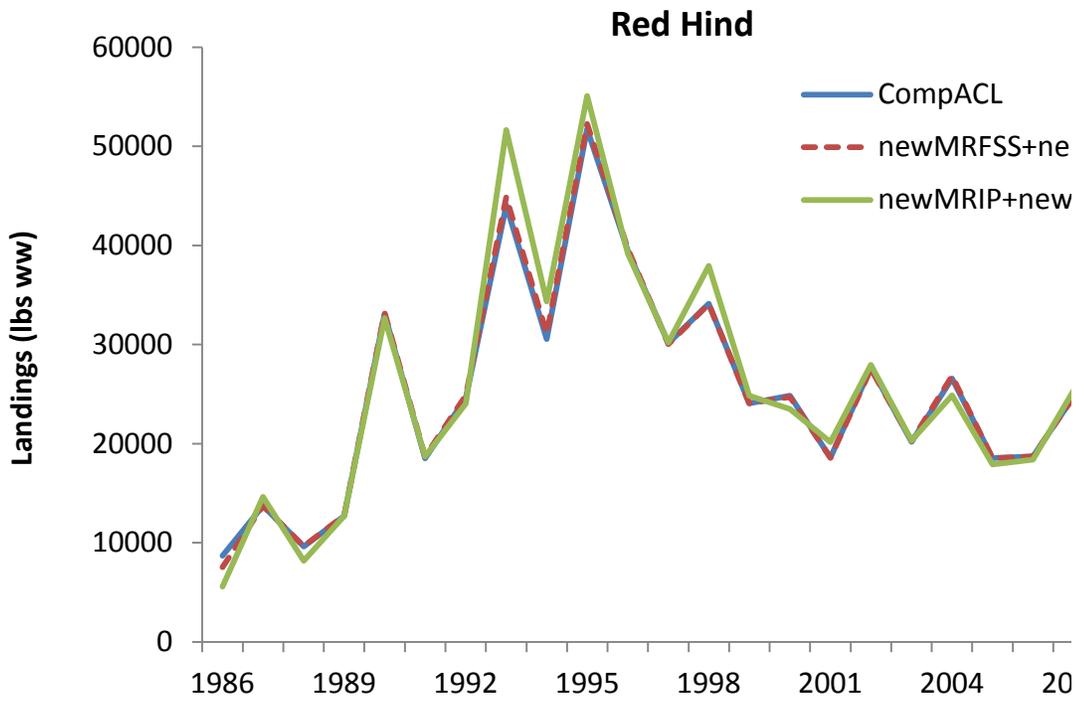




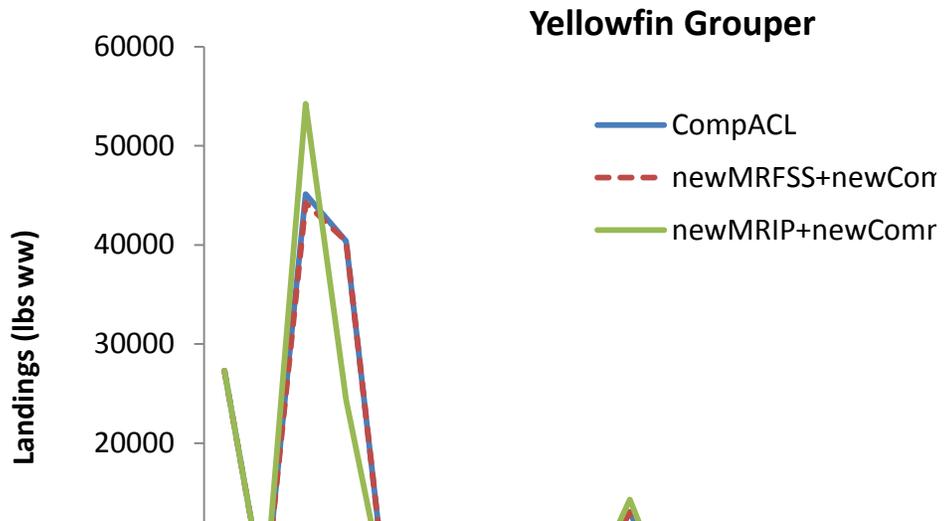
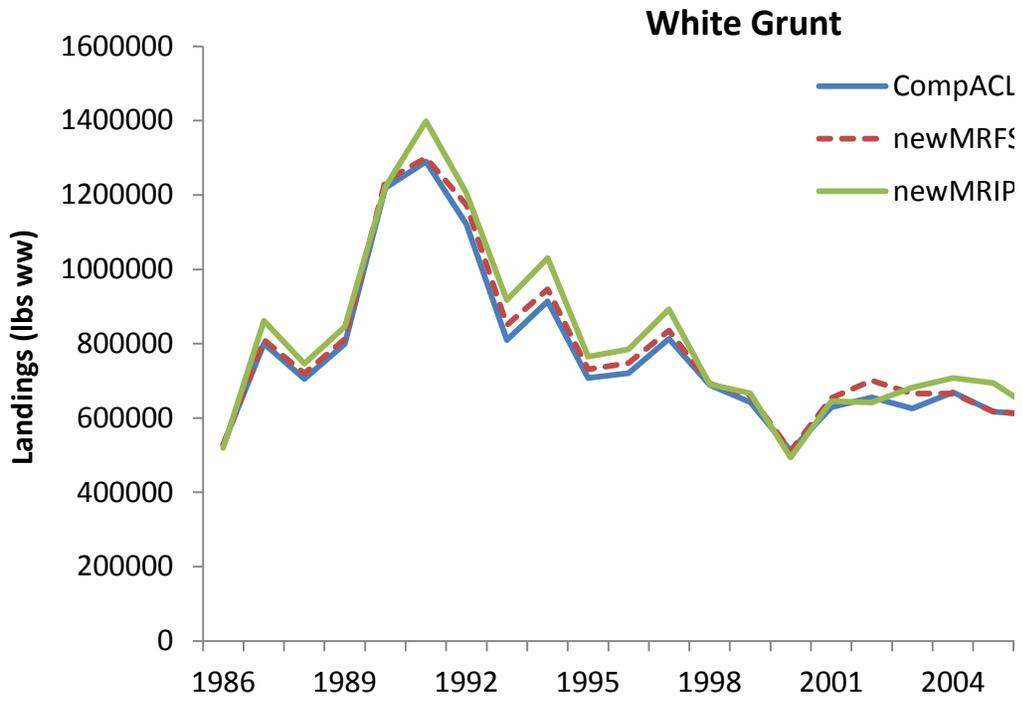
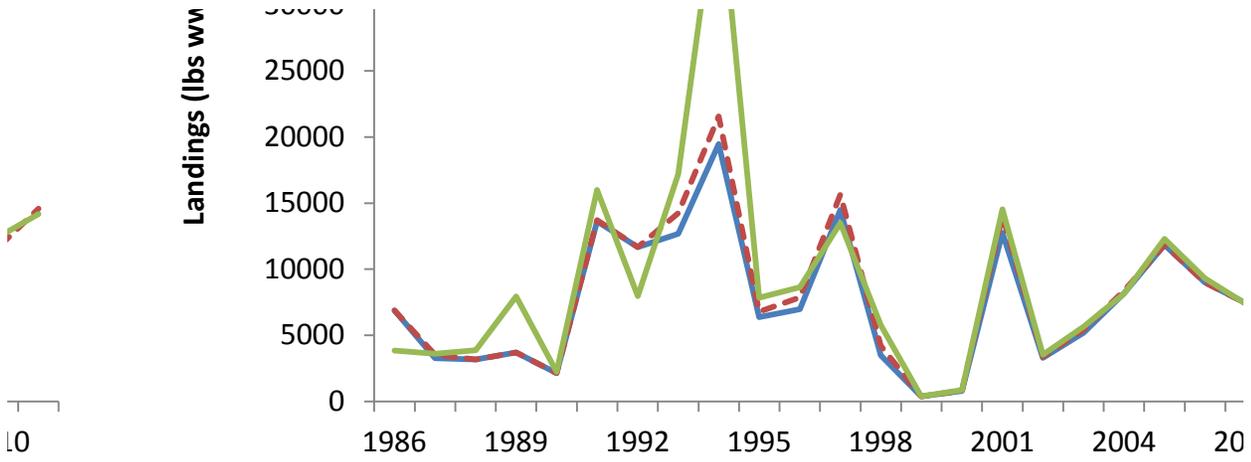


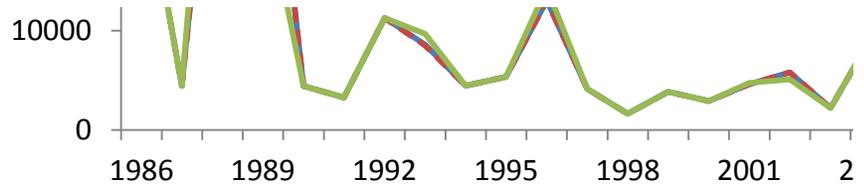






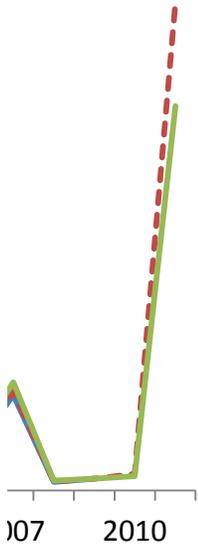
v)

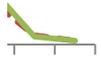






010





2010



010

mm

m



2010

omm
mm



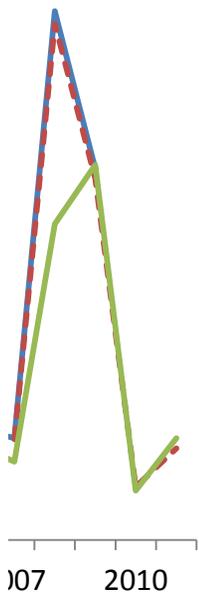
2010

ewComm
vComm

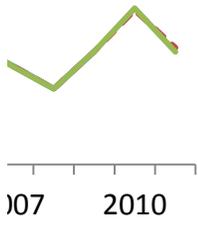


2010

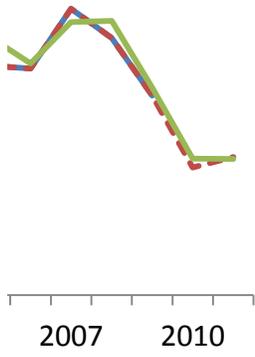
wComm
rComm



omm
nm

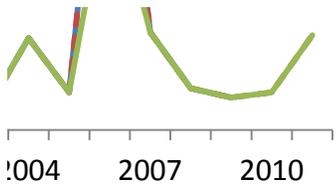


-
 SS+newComm
 2+newComm



nm
 n







Acceptable Biological Catch Calculations for South Atlantic Snapper-Grouper Species

LAPP/DM Branch
Southeast Regional Office
St. Petersburg, Florida

South Atlantic SSC Meeting
October 23-25, 2012

NOAA FISHERIES



Overview of ABC Calculations

ABCs calculated for 37 unassessed species

20 were assigned using **proxy method** due to late Council decision to retain many Snapper-Grouper stocks in FMU



Data Sources

CompACL

15 Sept 2010 Recreational ACL Data

“Shore” inadvertently assigned to For-Hire (no impact on ABC)

8 Oct 2010 Commercial ACL Data

NewMRFSS+NewComm

30 Aug 2012 Recreational ACL Data

Updated weight backfill, charter calibration (SEDAR-25 2011)

3 July 2012 Commercial ACL Data

NewMRIP+NewComm

1 Oct 2012 Recreational ACL Data

MRIP (2004-2011), adjusted MRFSS (1981-2003; SEDAR-31 2012), SEFSC standardized weight estimation (1981-2012)

3 July 2012 Commercial ACL Data

MRIP Data (2004-2011)

The Marine Recreational Information Program (MRIP) was implemented in 2004 to address issues identified by the National Research Council in the existing Marine Recreational Fisheries Statistics Survey (MRFSS) program.

GOAL - To provide more detailed, timely, and reliable estimates of marine recreational fishing catch and effort.

Currently, official MRIP estimates are available from 2004-2011. These represent the best available scientific data.

MRIP ('86-'03) = Recalibrated MRFSS

March 2012: **SEDAR MRIP Recalibration Workshop**

Ad-Hoc Working Group: apply ratio estimators, based on the ratios of the means, to hind-cast catch and variances.

Southeast Regional MRIP Recalibration WG: developed specific recommendations to address regional needs.

Salz et al. (2012)

MRFSS_MRIP Calibration

Ad-hoc Working Group FINAL Report

NOAA FISHERIES



MRIP ('86-'03) = Recalibrated MRFSS

Each ratio of means was calculated at the stock, sub-region, mode level* as:

$$\hat{R} = \frac{\overline{C}_{MRIP}}{\overline{C}_{MRFSS}} = \frac{\sum_{y=1}^n C_{y,MRIP}}{\sum_{y=1}^n C_{y,MRFSS}}$$

Ratios were applied at each stratum (species, sub-region, year, wave, state, mode, and area) to the A, B1, and B2 estimates and variances:

$$\hat{C}_{y,\hat{R}} = \hat{R} \hat{C}_{y,MRFSS}$$

**when available, else hierarchy used → Stock&SubRegion, Stock*

MRFSS → MRIP S. Atl. Ratio Estimators

Common Name	Charter	Private/Rental	Shore
almaco jack	1.015402	0.985457	
atlantic spadefish	1.628027	0.993378	0.617729
banded rudderfish	0.931823	0.928341	0.464524
bar jack	2.481521	1.196412	1.402559
black snapper			
blackfin snapper	0.937071	0.882982	
blue runner	0.994338	1.190118	0.802393
blueline tilefish	0.940958	0.792646	
coney	0.625635	1.162762	
cubera snapper	0.901402	0.948679	0.488547
dog snapper	1.020509	0.79838	1.522893
gray snapper	0.594493	0.963733	0.543697
gray triggerfish	1.056789	0.947016	0.548359
graysby	1.417926	0.910291	
hogfish	0.903173	0.873729	0.37575
jolthead porgy	0.849587	0.897303	0.482483
knobbed porgy	1.290265	1.204519	0.771392

Common Name	Charter	Private/Rental	Shore
lane snapper	0.804986	0.765977	0.513552
lesser amberjack	0.625834	1.013631	
mahogany snapper		1.326981	0.456246
margate	0.854906	0.946525	0.768271
misty grouper			
queen snapper	0.702257	0.969656	
red hind	0.985036	1.013069	
rock hind	1.356045	1.36774	
sailors choice	0.713252	0.98031	0.558199
sand tilefish	0.657189	0.907314	0.55074
saucereye porgy	0.461468	1.038721	
scamp	1.557292	1.20065	
scup	1.540459	1.155228	0.578074
silk snapper	1.05117	0.436414	
tomtate	1.364139	0.912316	0.898122
white grunt	1.235682	1.078366	0.7404
whitebone porgy	0.940949	0.783128	0.524168
yellowedge grouper	0.590406	2.407618	
yellowfin grouper		1.648847	
yellowmouth grouper	1.117054	1.021294	

Overview of ABC Calculations

Method for computing ABC:

Median landings (1999-2008) – *yellowedge grouper, silk snapper, white grunt, and scamp*

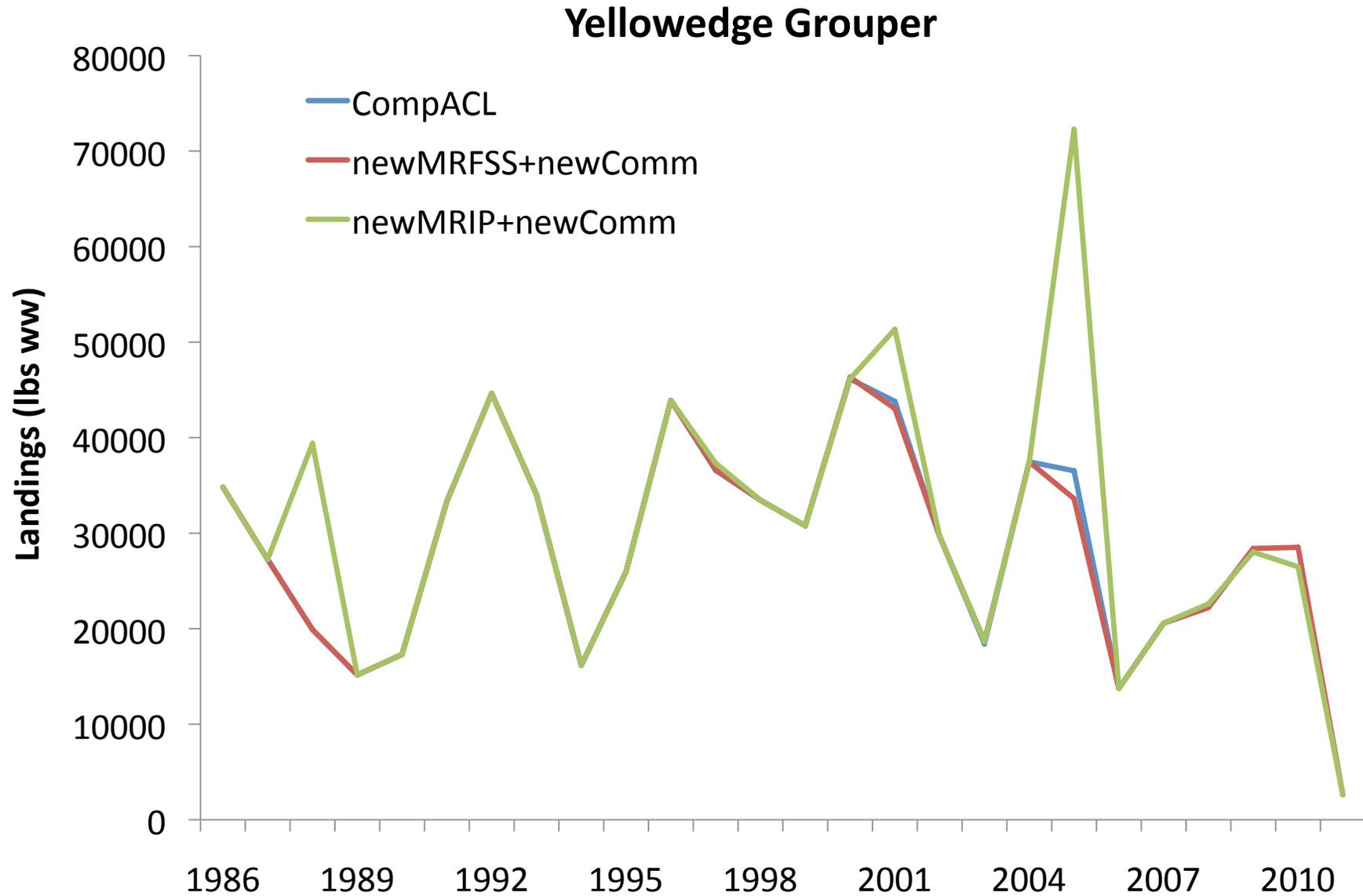
3rd highest landings (1999-2008) – *32 species*

2× max landings (1986-2005) – *blueline tilefish*

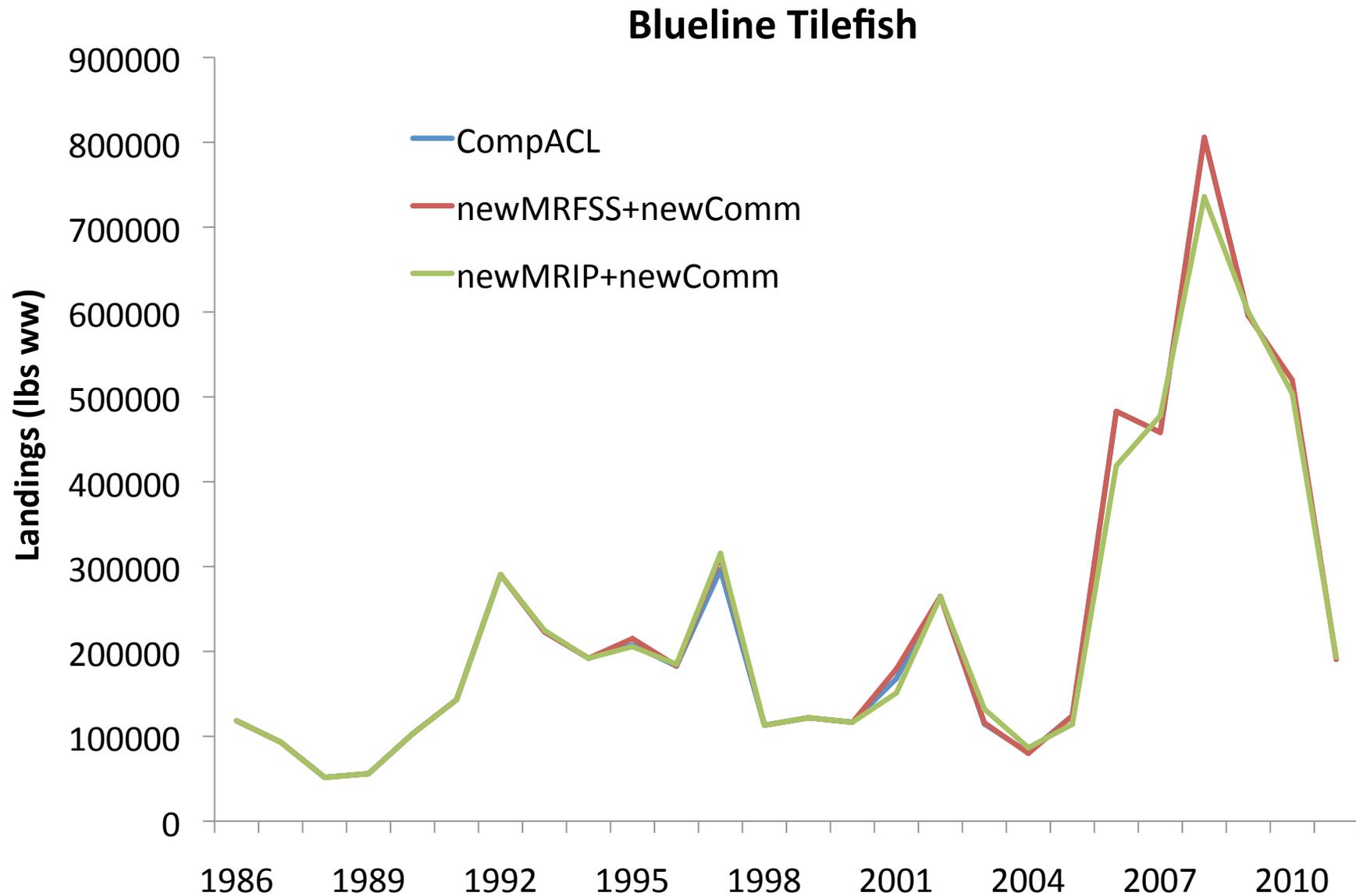
ABCs calculated for each stock individually using combined commercial and recreational annual landings



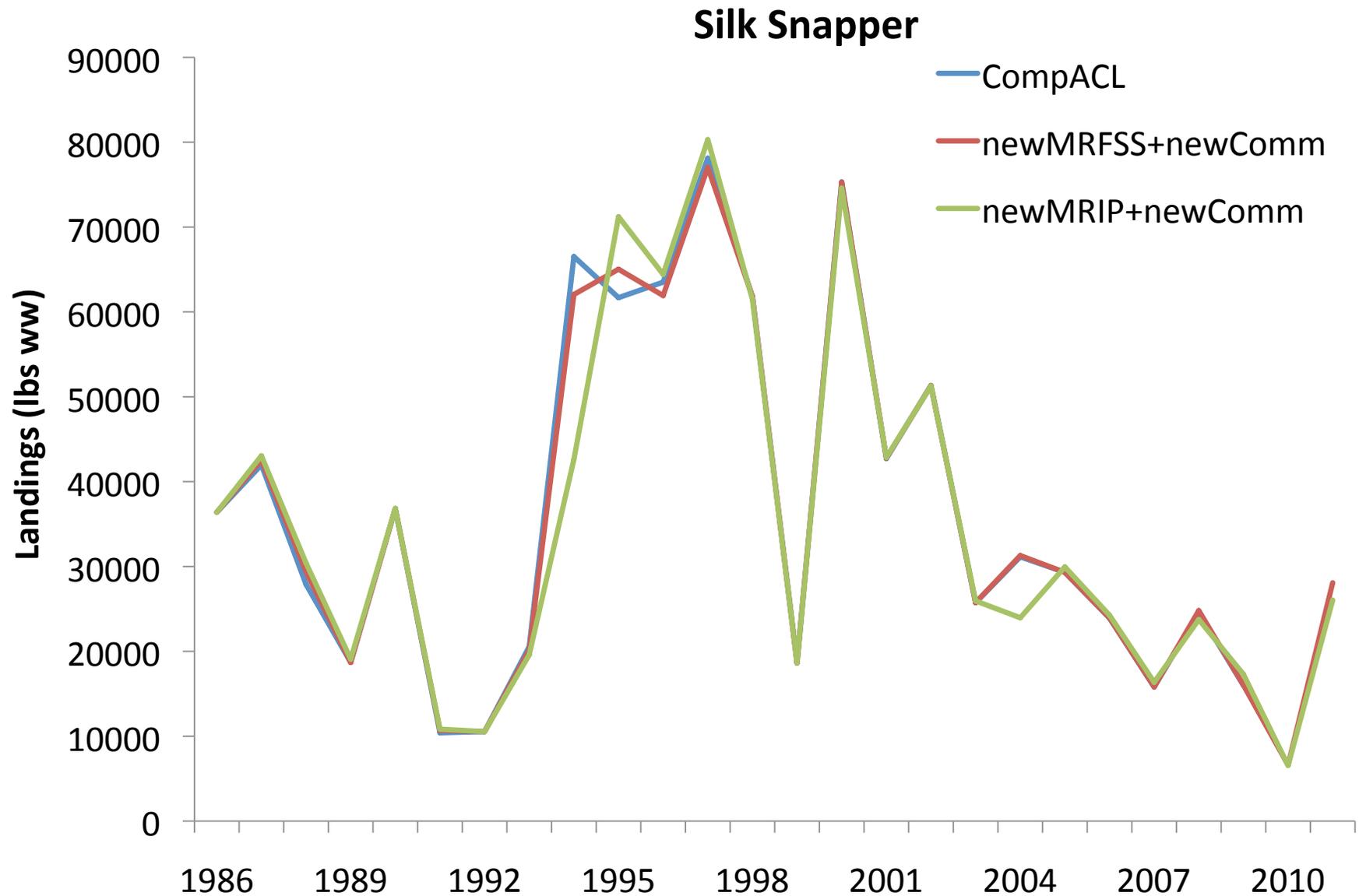
Yellowedge Grouper



BlueLine Tilefish

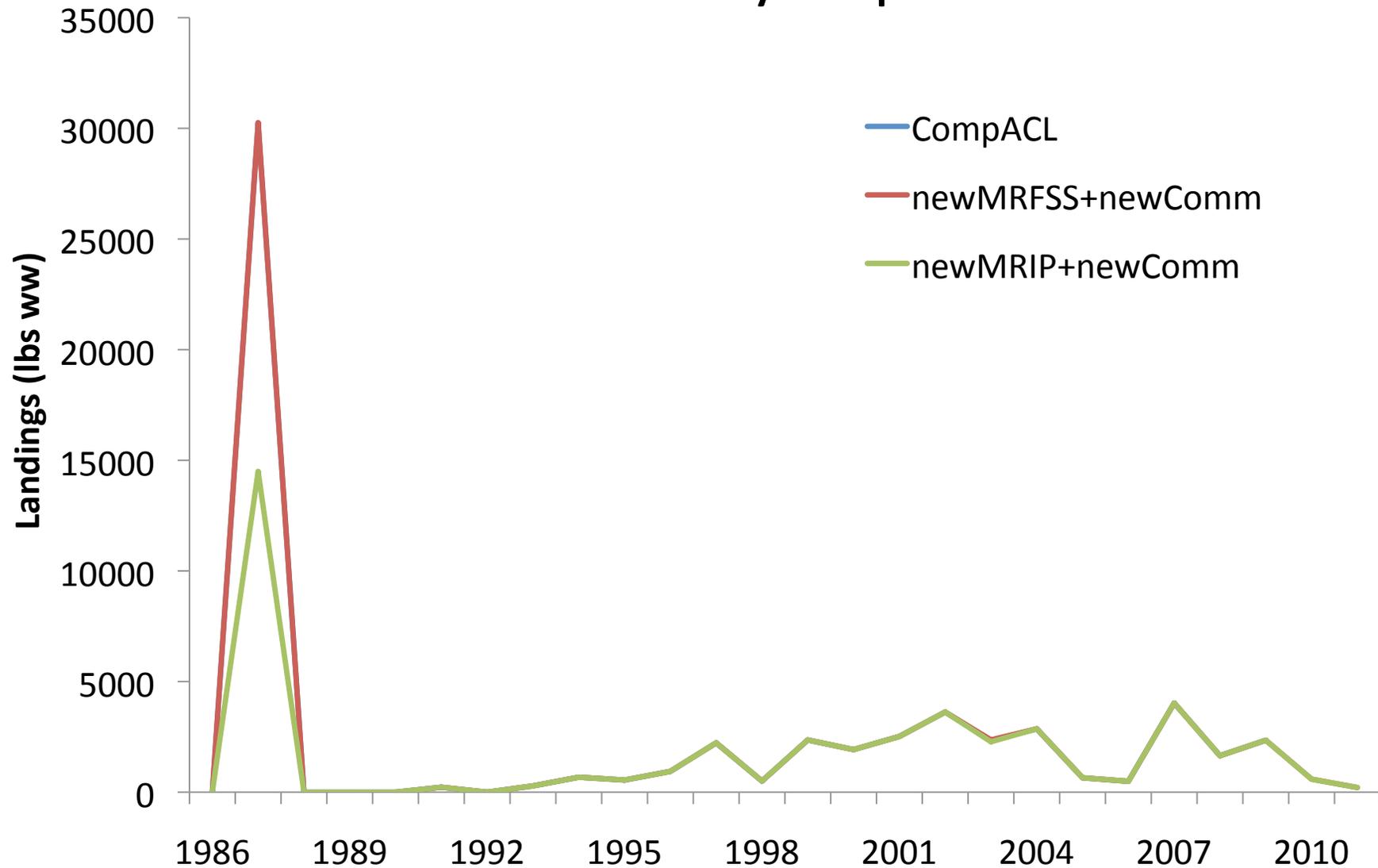


Silk Snapper

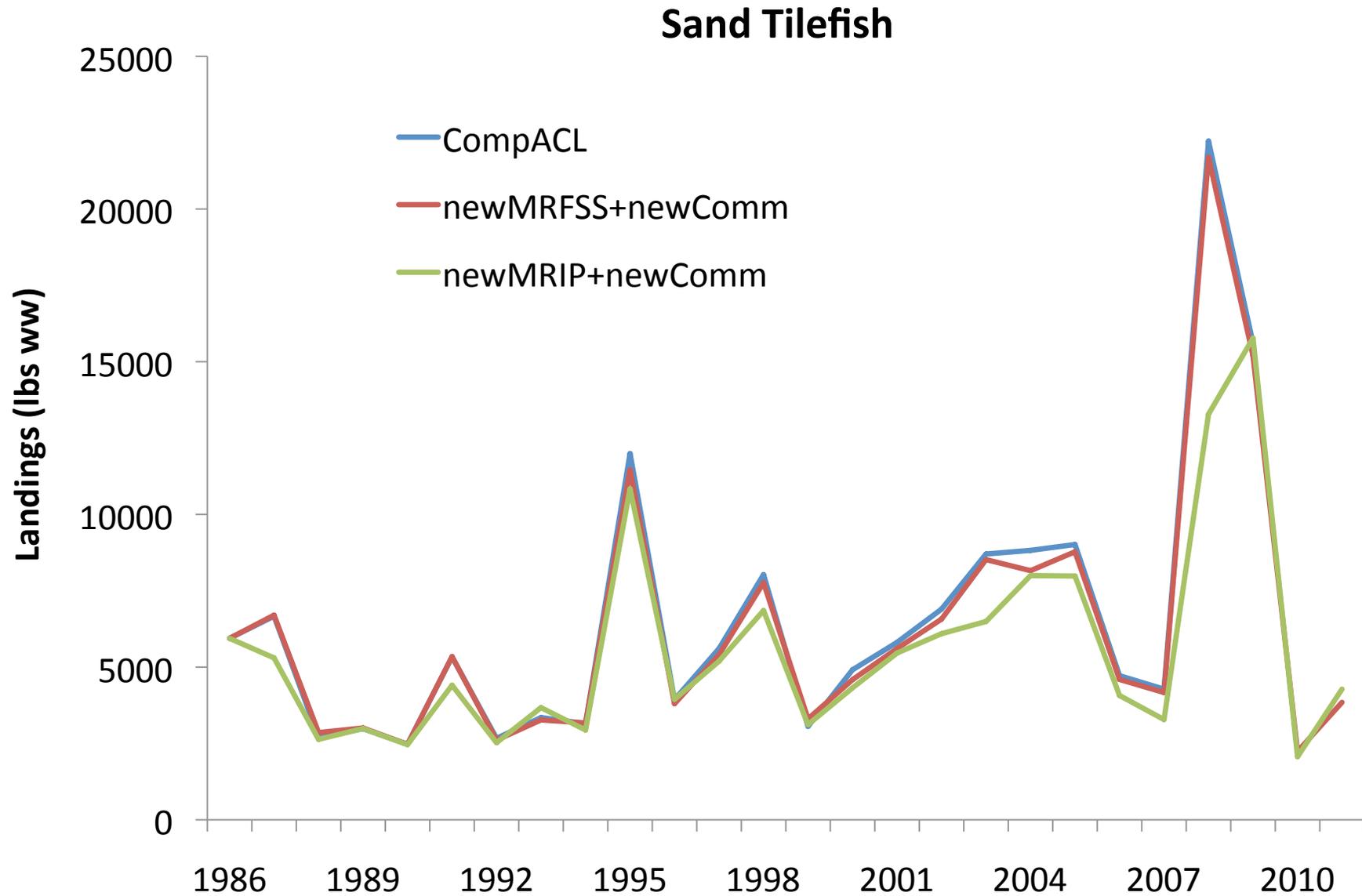


Misty Grouper

Misty Grouper

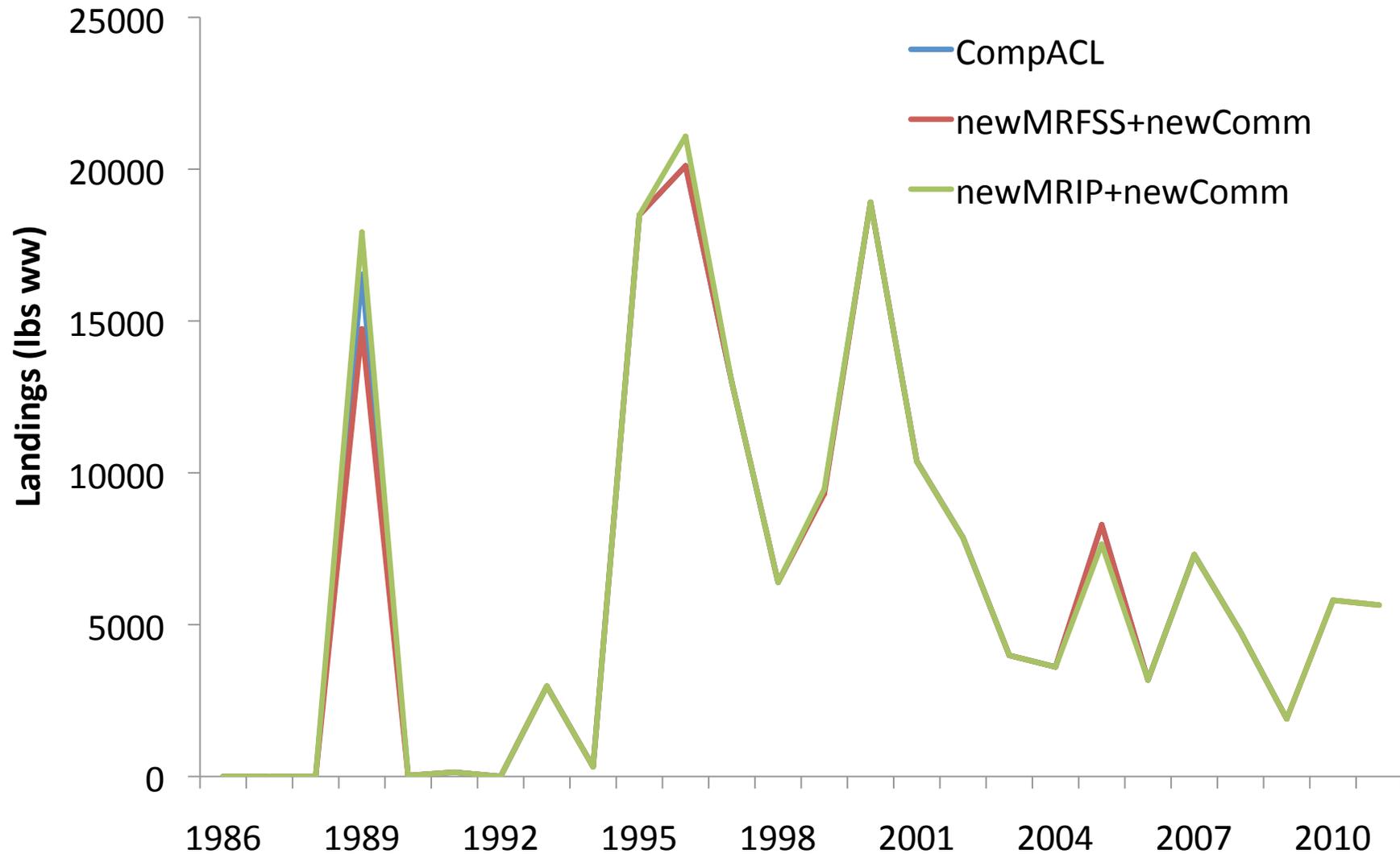


Sand Tilefish

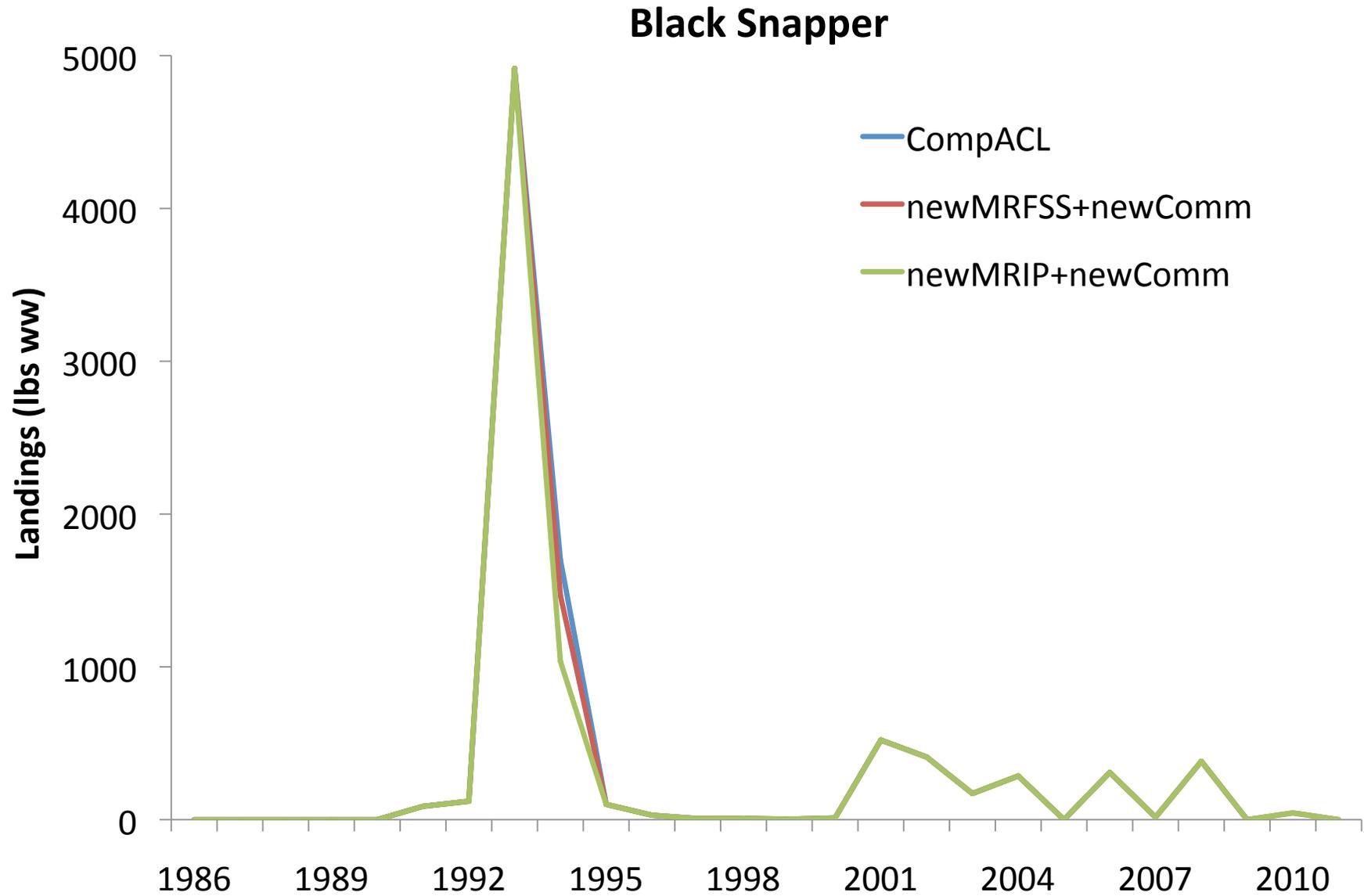


Queen Snapper

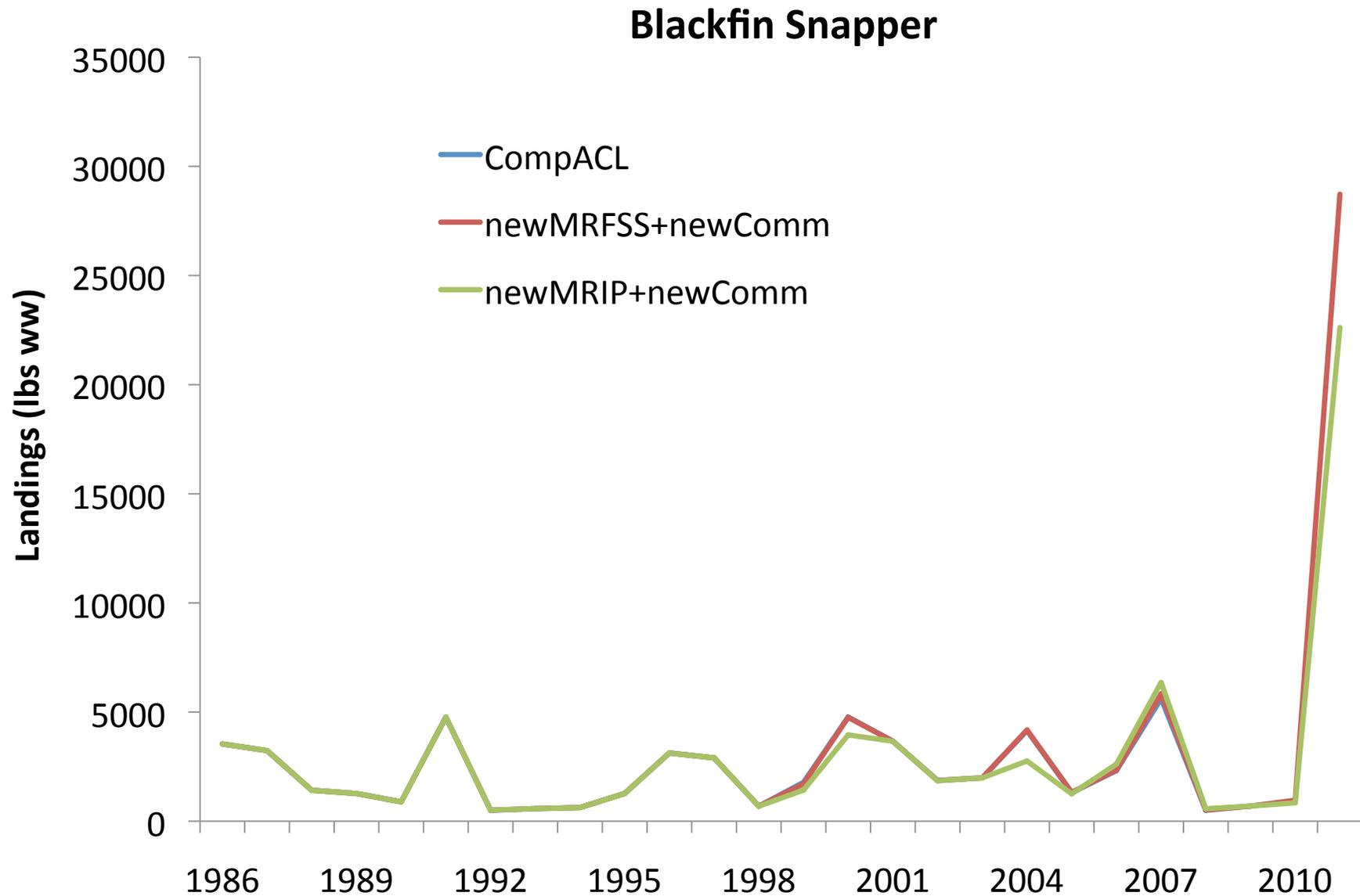
Queen Snapper



Black Snapper



Blackfin Snapper



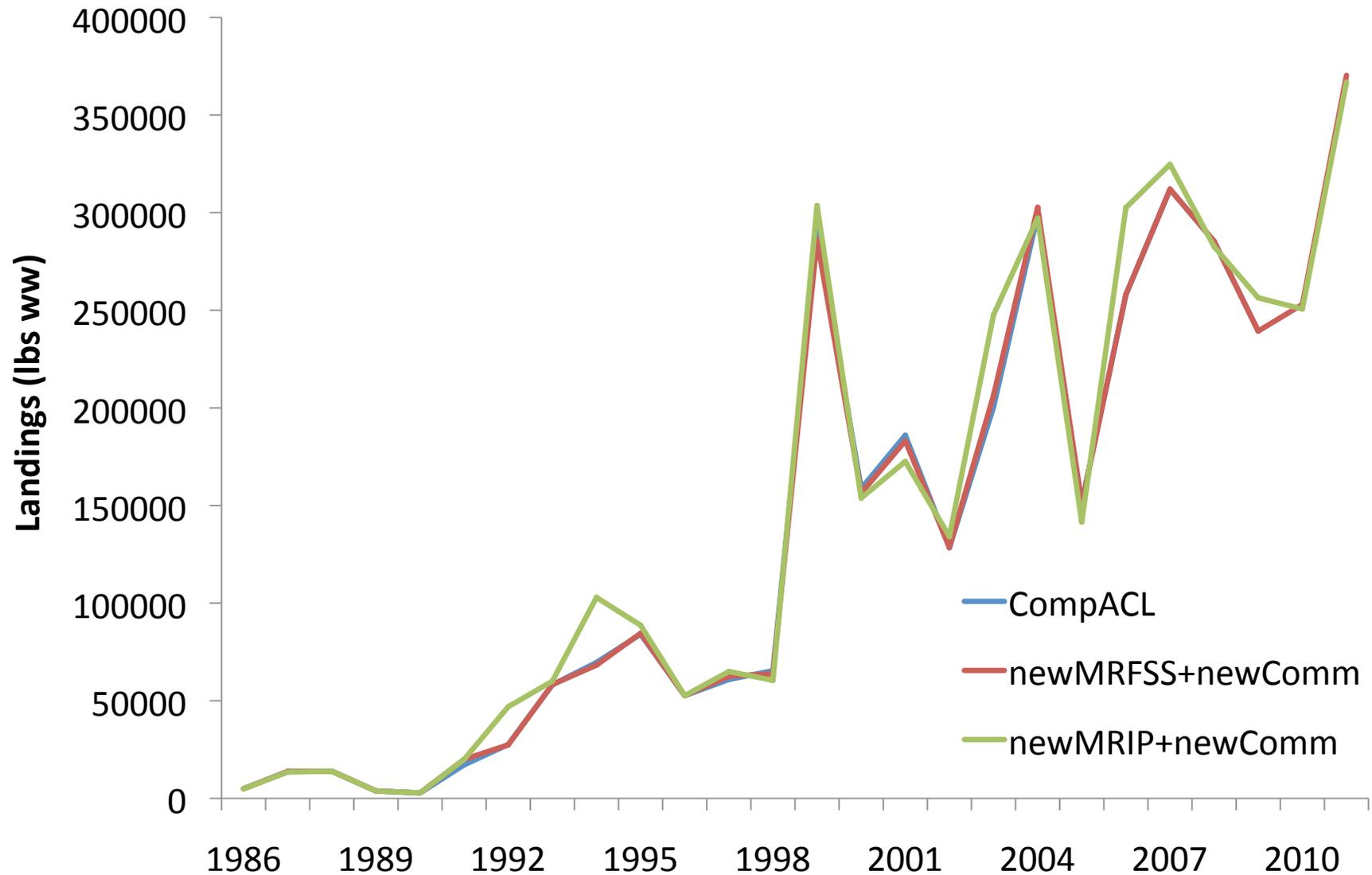
Deepwater Complex

ABC proxy

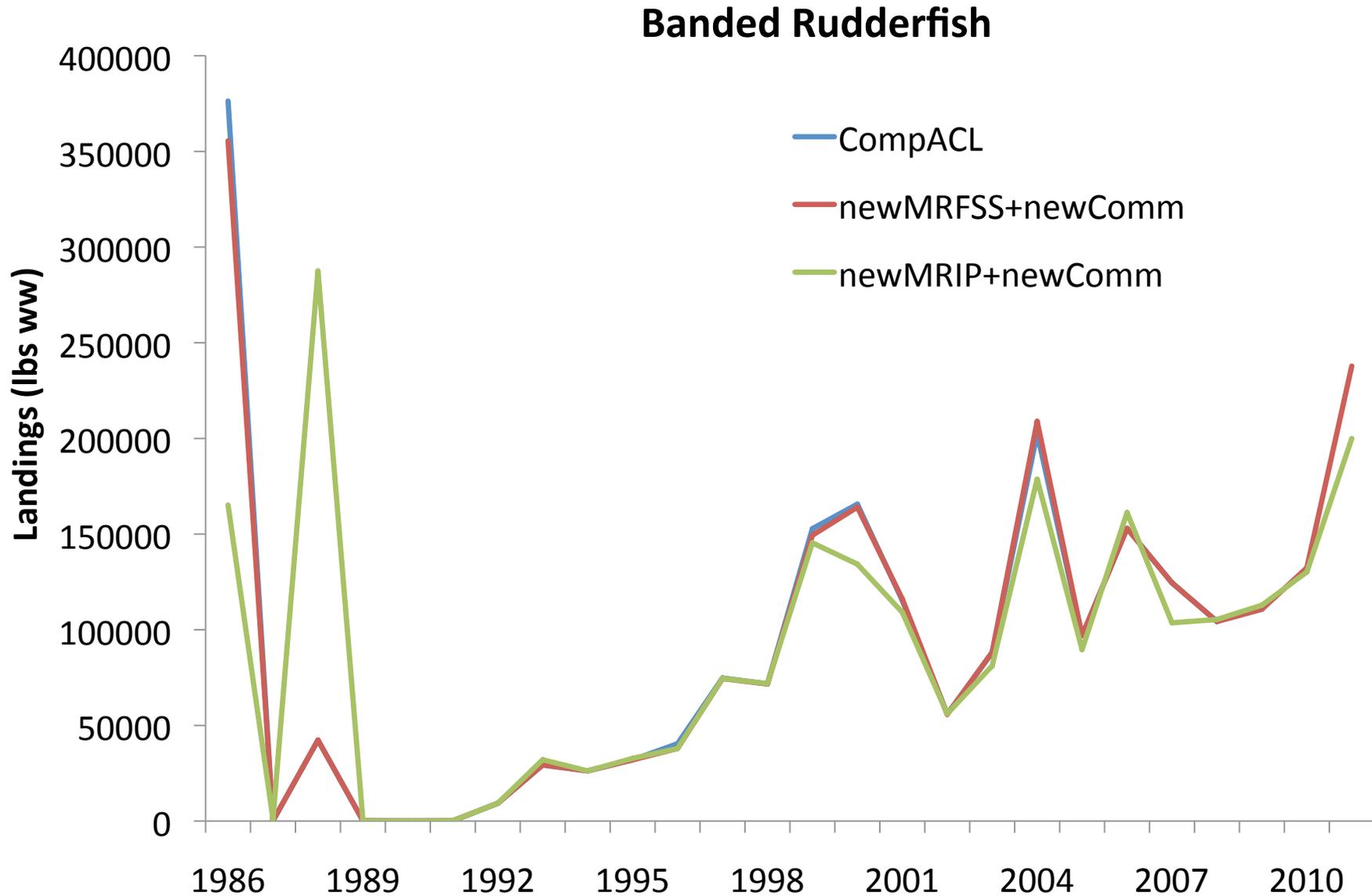
STOCK OR STOCK COMPLEX NAME	ABC			How ABC was calculated
	ACL Amendment	New MRFSS & Commercial	MRIP & New Commercial	
DEEPWATER	675,908	707,030	711,025	sum of individual ABCs
Yellowedge grouper	30,221	30,221	30,221	median (99-08)
Blueline tilefish	592,602	624,028	631,341	2× max landings (86-05)
Silk Snapper	27,519	27,529	25,104	median (99-08)
Misty grouper	2,863	2,863	2,863	3rd highest (99-08)
Sand tilefish	8,823	8,521	7,983	3rd highest (99-08)
Queen snapper	9,344	9,306	9,466	3rd highest (99-08)
Black snapper	382	382	382	3rd highest (99-08)
Blackfin snapper	4,154	4,181	3,665	3rd highest (99-08)

Almaco Jack

Almaco Jack

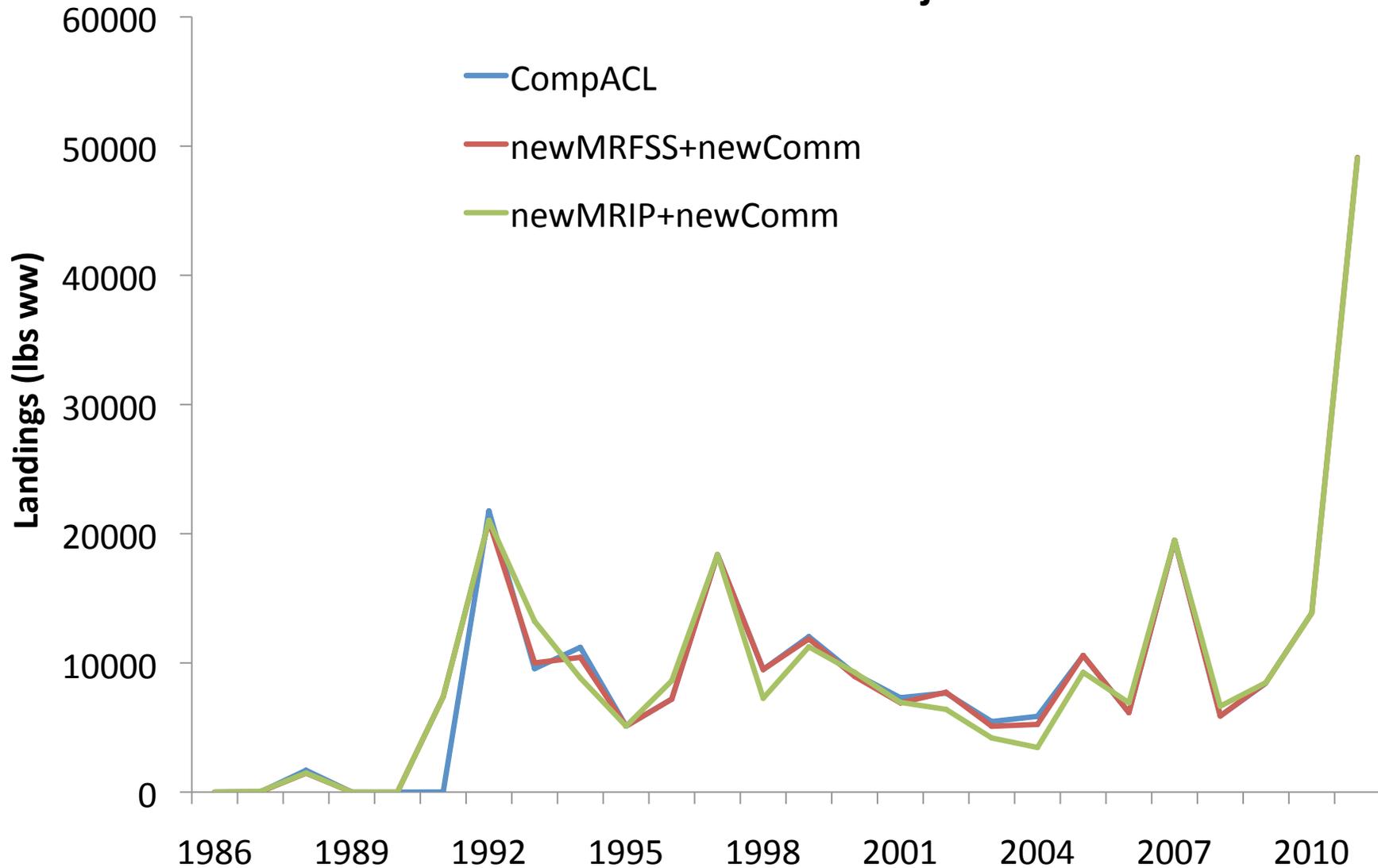


Banded Rudderfish



Lesser Amberjack

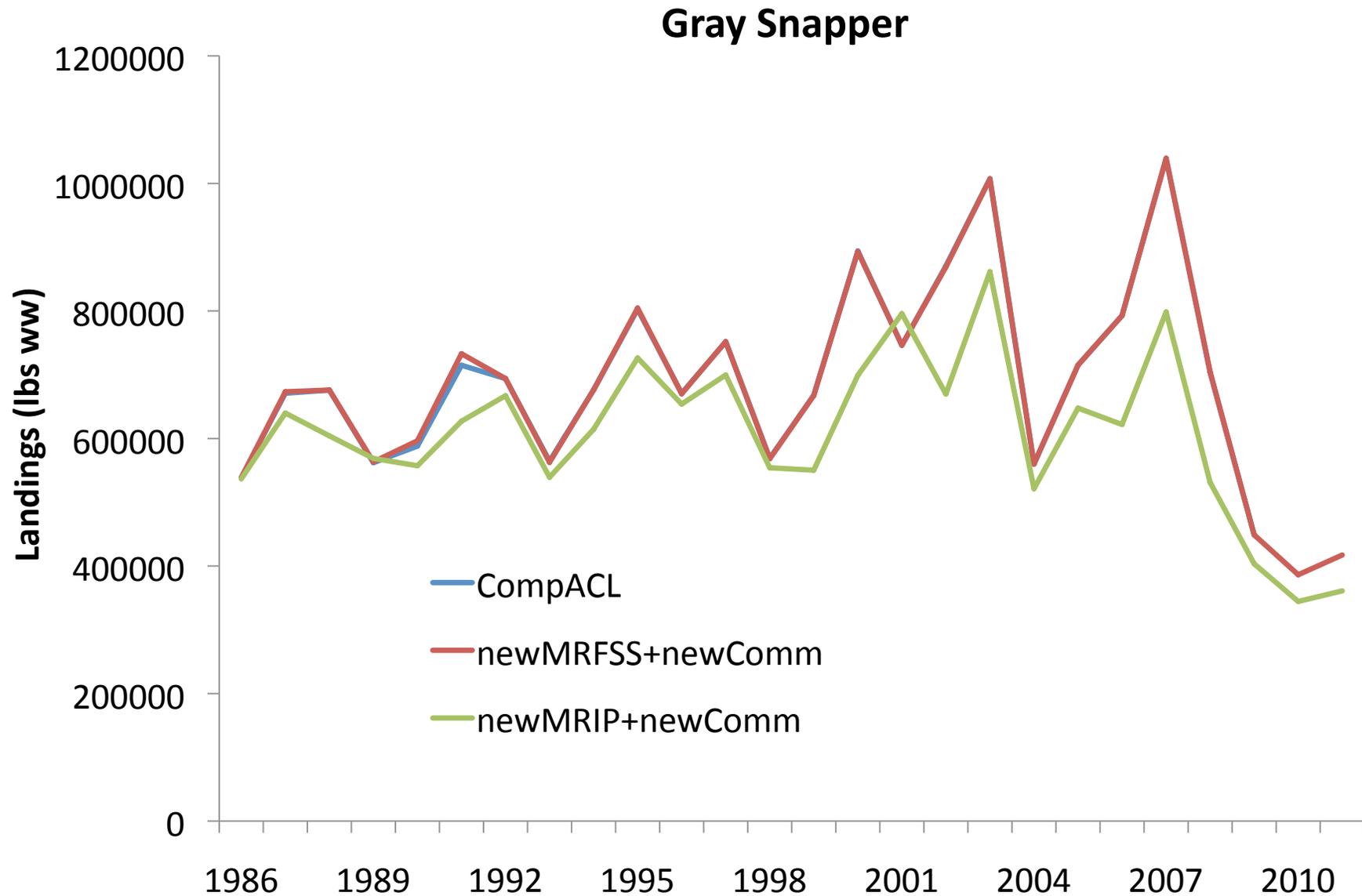
Lesser Amberjack



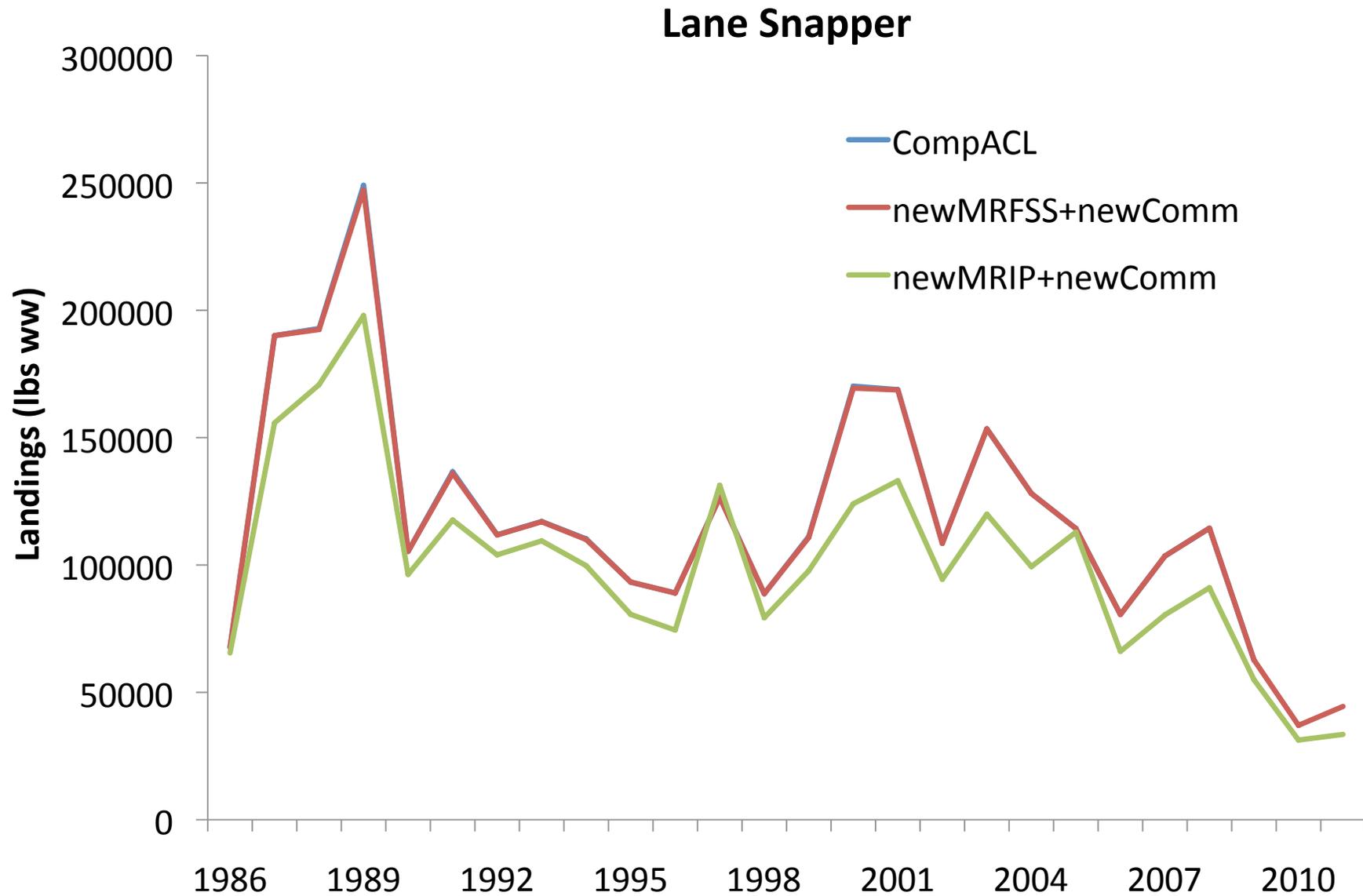
Jacks Complex

STOCK OR STOCK COMPLEX NAME	ABC			How ABC was calculated
	ACL Amendment	New MRFSS & Commercial	MRIP & New Commercial	
JACKS	455,489	449,739	457,221	sum of individual ABCs
Almaco jack	291,922	286,196	302,517	3rd highest (99-08)
Banded rudderfish	152,999	152,966	145,434	3rd highest (99-08)
Lesser amberjack	10,568	10,577	9,270	3rd highest (99-08)

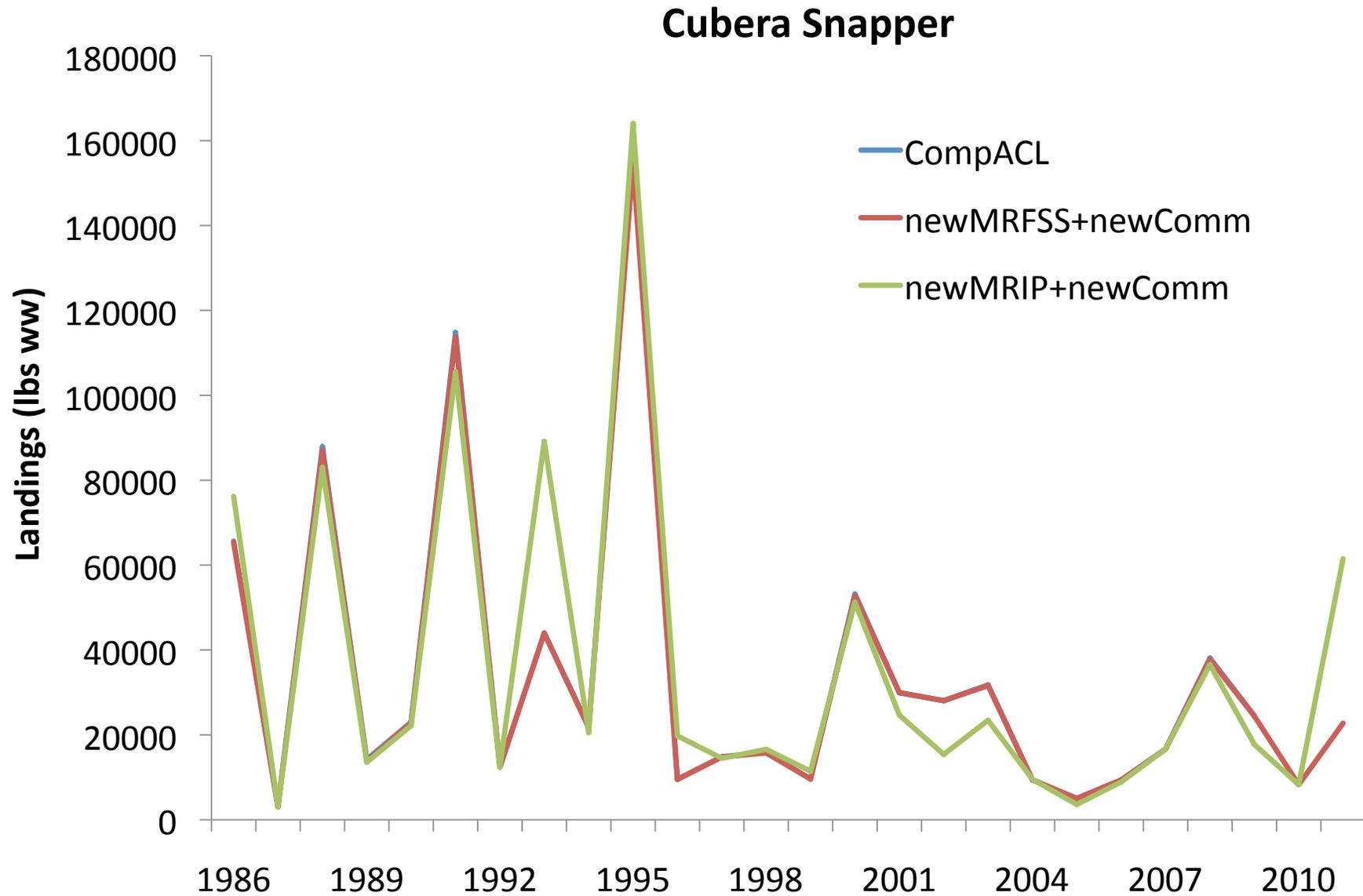
Gray Snapper



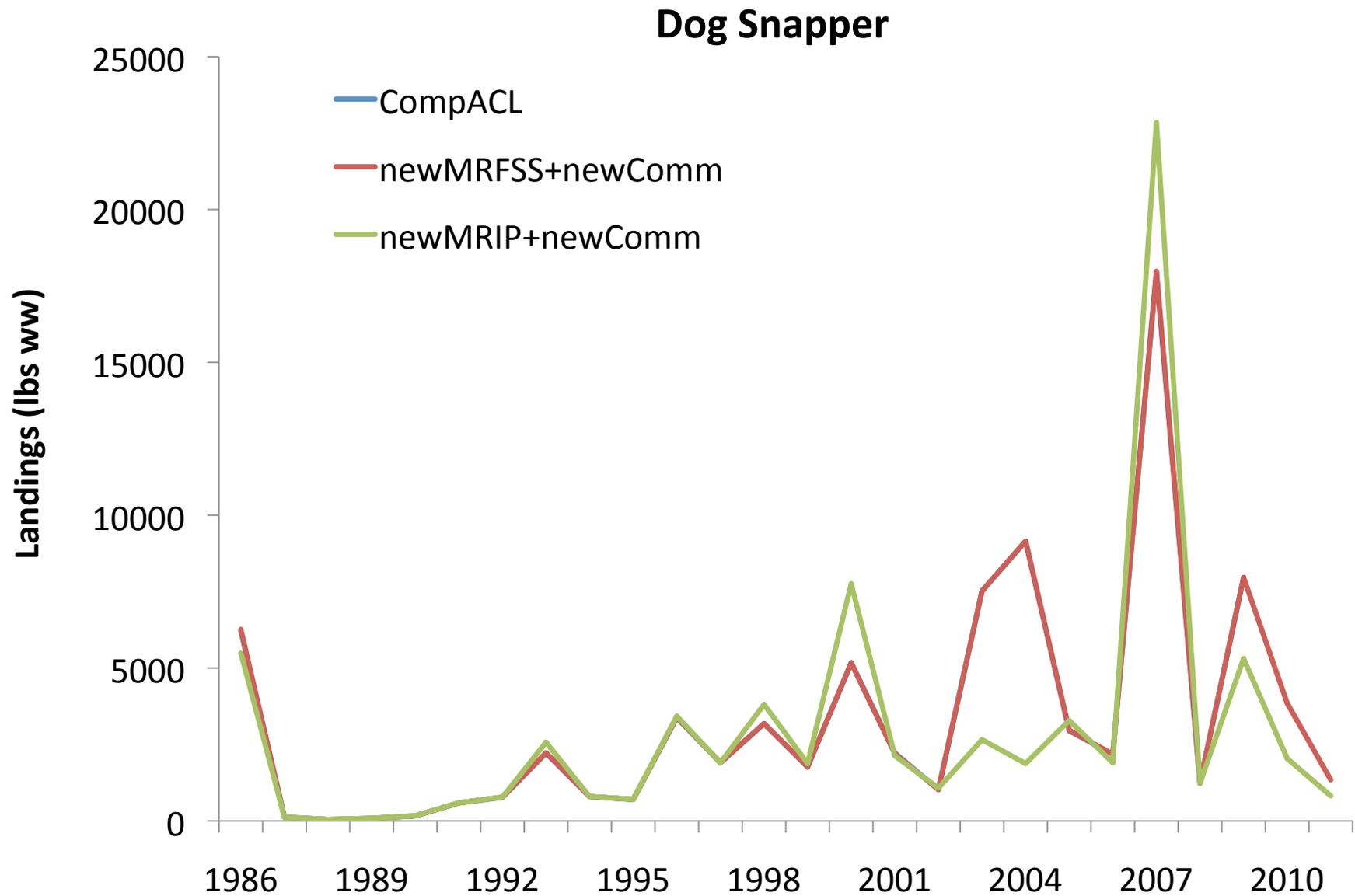
Lane Snapper



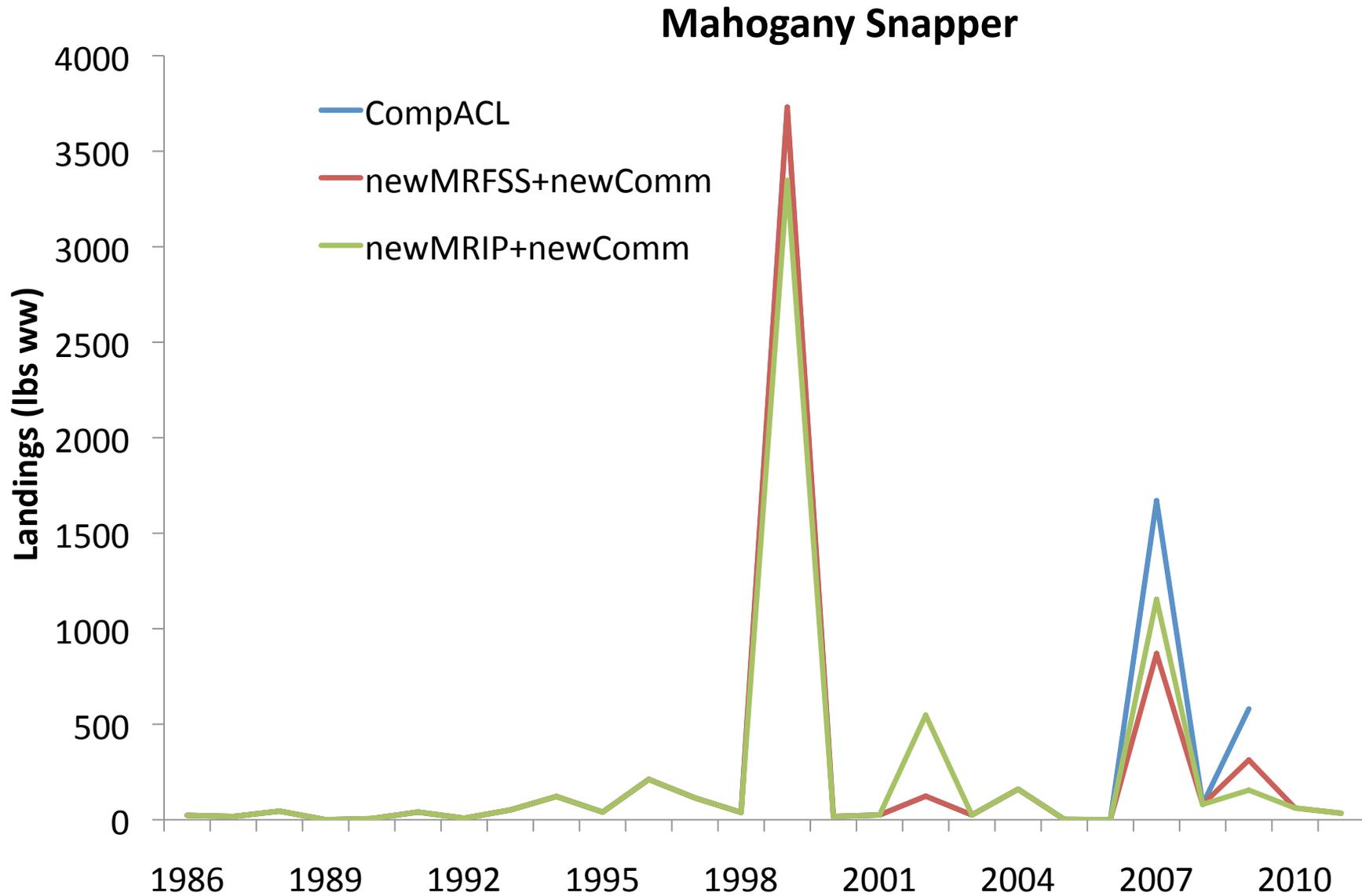
Cubera Snapper



Dog Snapper



Mahogany Snapper

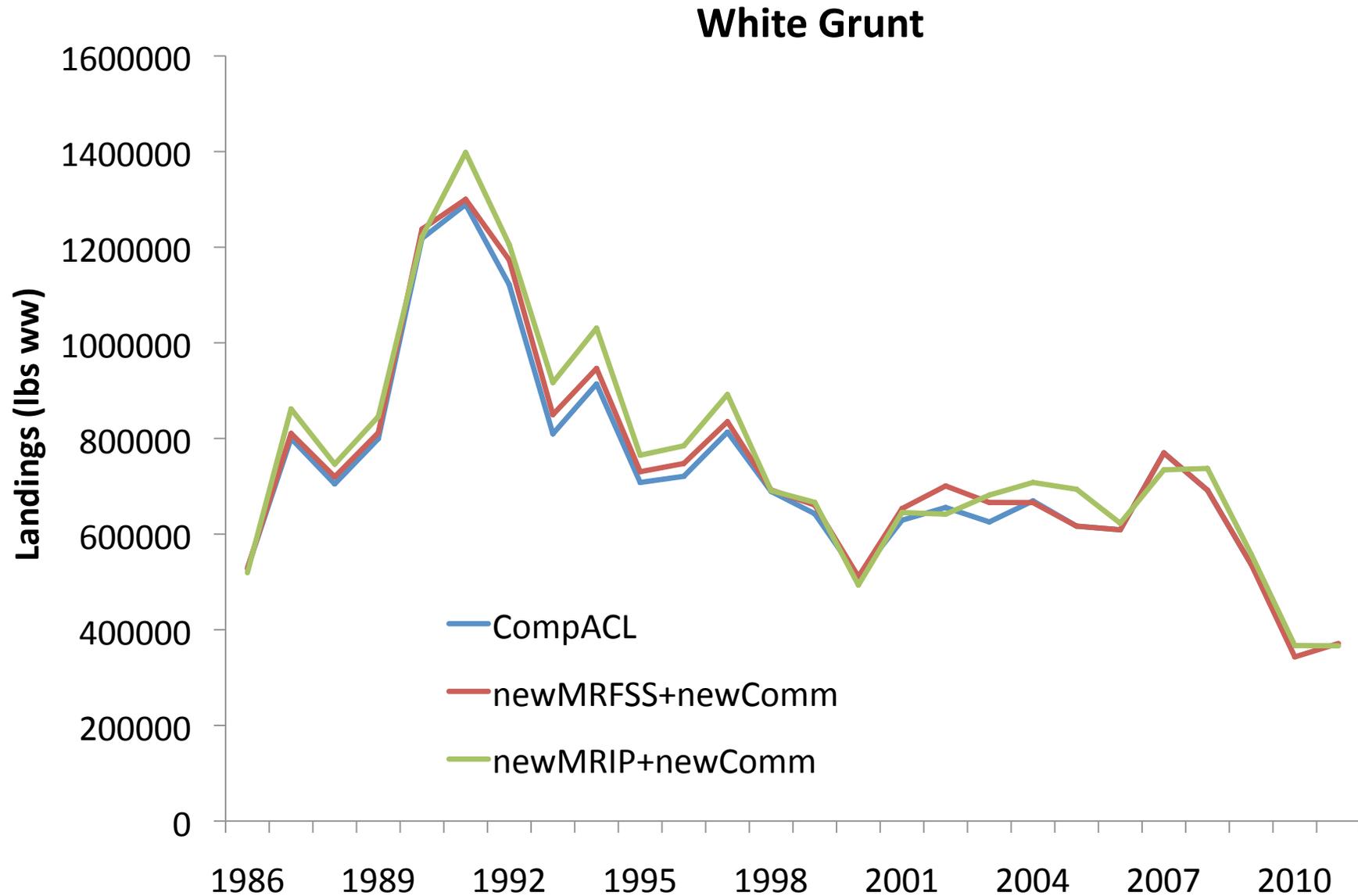


Snappers Complex

ABC proxy

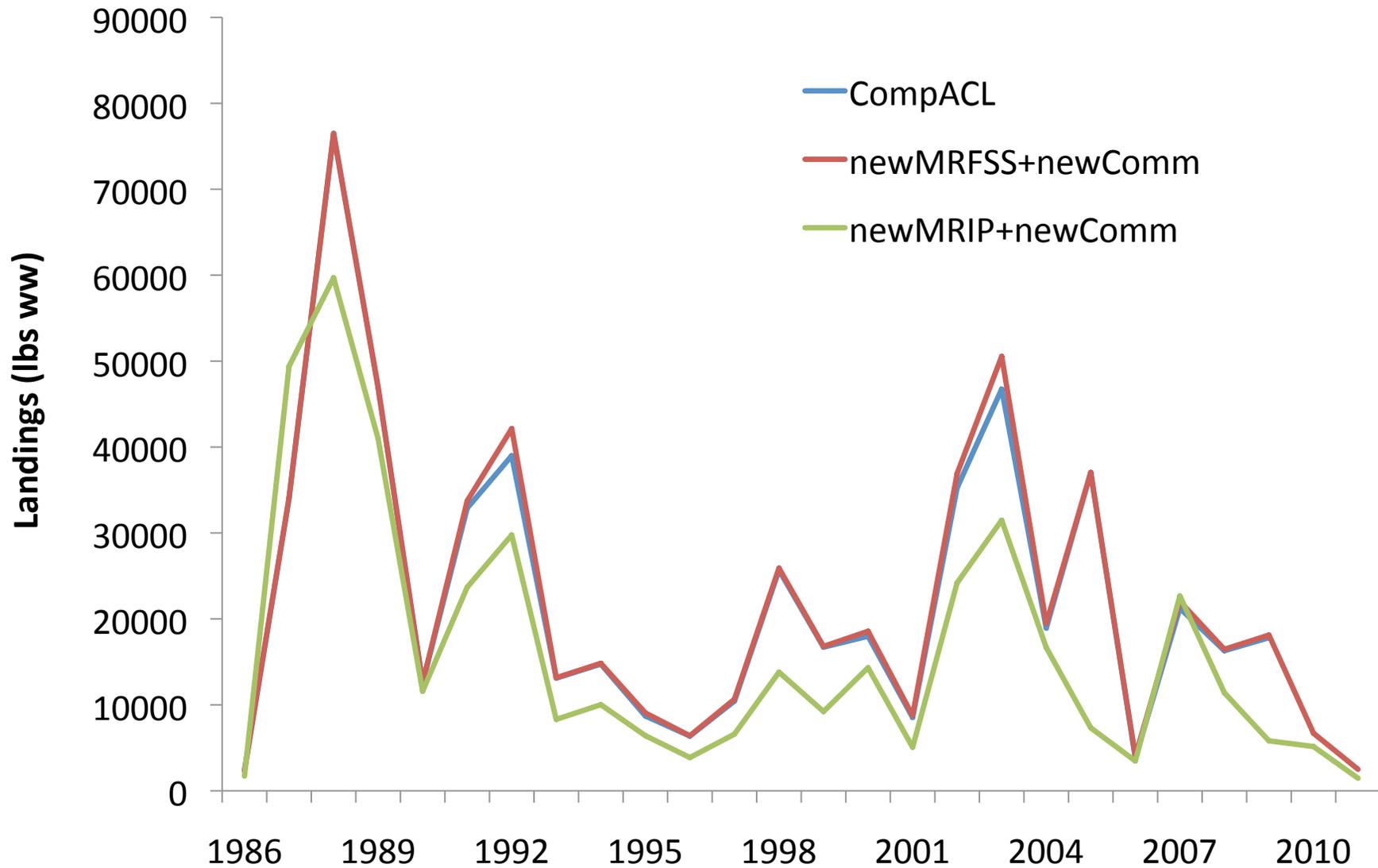
STOCK OR STOCK COMPLEX NAME	ABC			How ABC was calculated
	ACL Amendment	New MRFSS & Commercial	MRIP & New Commercial	
SNAPPERS	1,086,940	1,085,914	944,239	sum of individual ABCs
Gray snapper	894,019	893,161	795,743	3rd highest (99-08)
Lane snapper	153,466	153,466	119,984	3rd highest (99-08)
Cubera snapper	31,772	31,602	24,680	3rd highest (99-08)
<i>Dog snapper</i>	<i>7,523</i>	<i>7,525</i>	<i>3,285</i>	<i>3rd highest (99-08)</i>
<i>Mahogany snapper</i>	<i>160</i>	<i>160</i>	<i>548</i>	<i>3rd highest (99-08)</i>

White Grunt

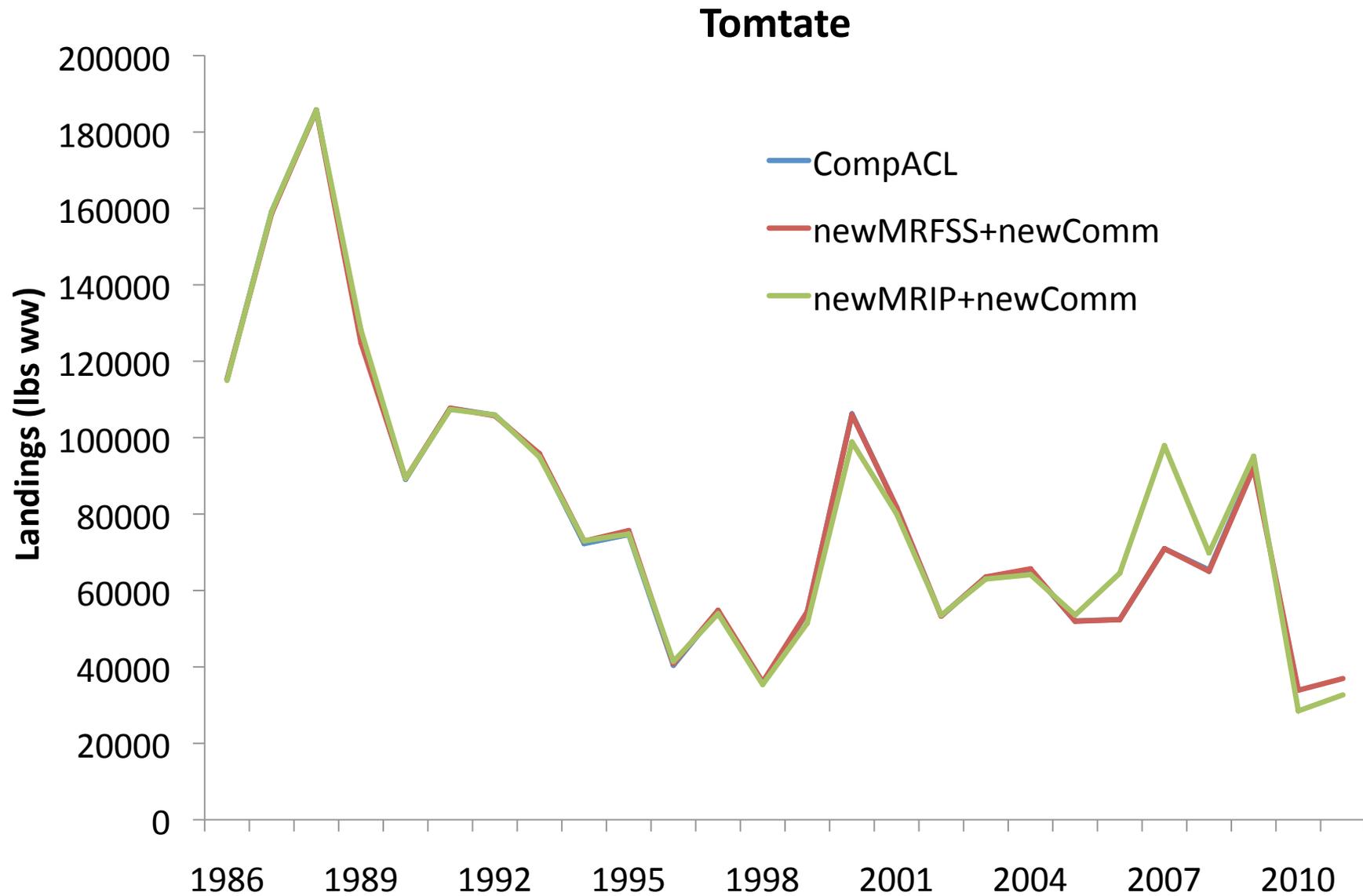


Sailors Choice

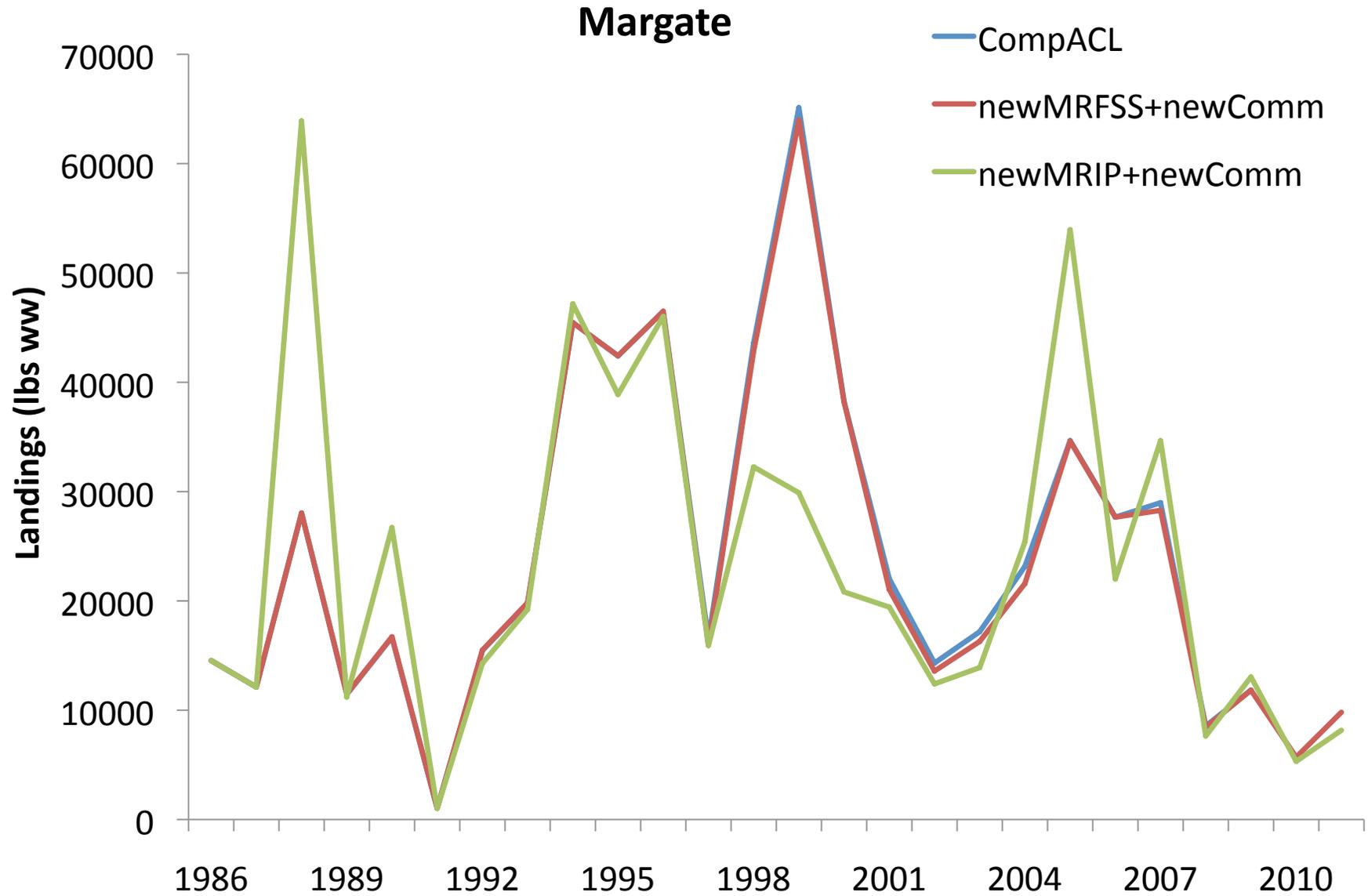
Sailors Choice



Tomtate



Margate

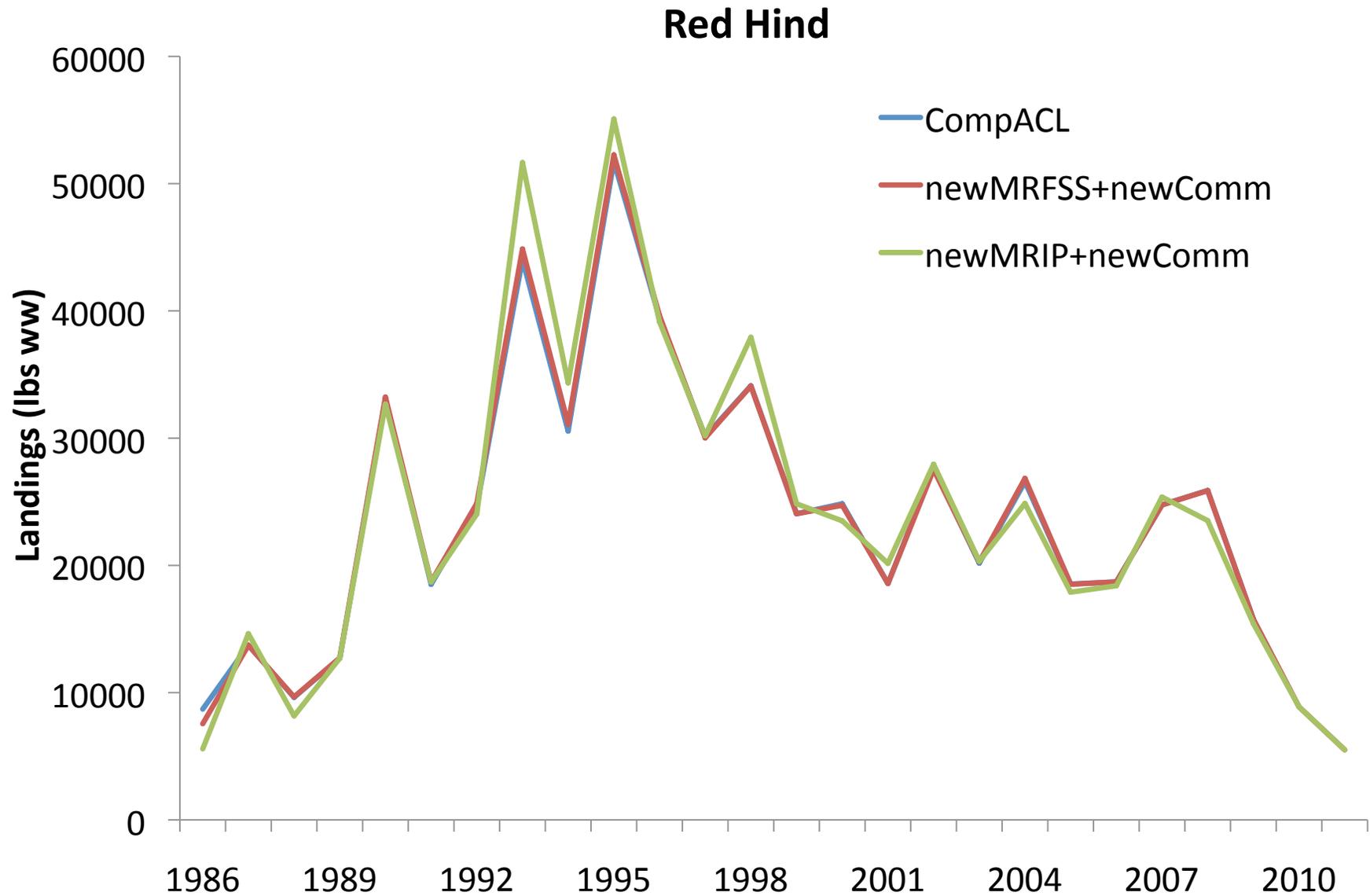


Grunts Complex

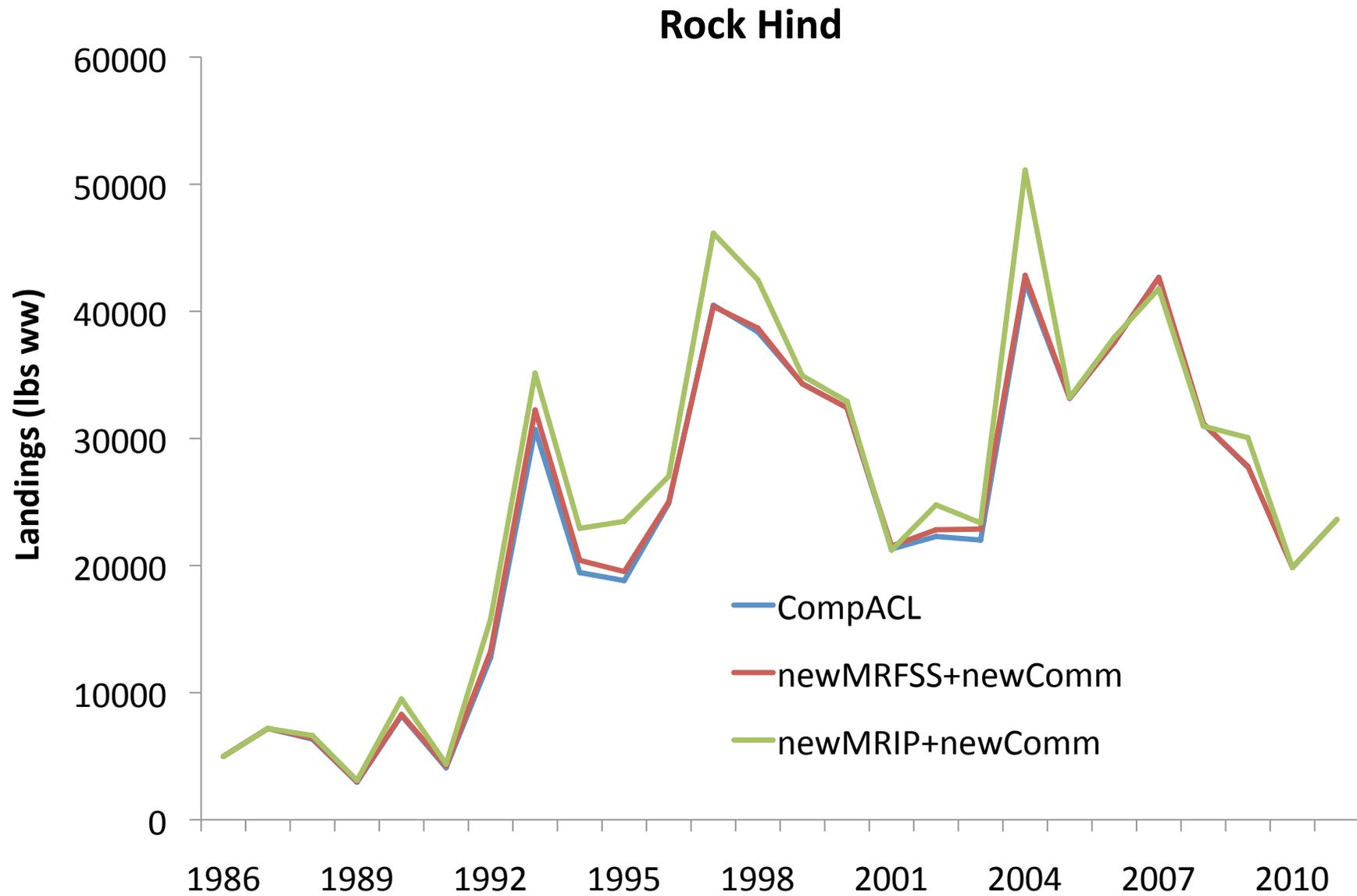
ABC proxy

STOCK OR STOCK COMPLEX NAME	ABC			How ABC was calculated
	ACL Amendment	New MRFSS & Commercial	MRIP & New Commercial	
GRUNTS	776,774	805,874	806,652	sum of individual ABCs
White grunt	635,899	663,390	674,033	median (99-08)
<i>Sailors choice</i>	<i>35,266</i>	<i>36,920</i>	<i>22,674</i>	<i>3rd highest (99-08)</i>
<i>Tomtate</i>	<i>70,948</i>	<i>70,948</i>	<i>80,056</i>	<i>3rd highest (99-08)</i>
<i>Margate</i>	<i>34,662</i>	<i>34,616</i>	<i>29,889</i>	<i>3rd highest (99-08)</i>

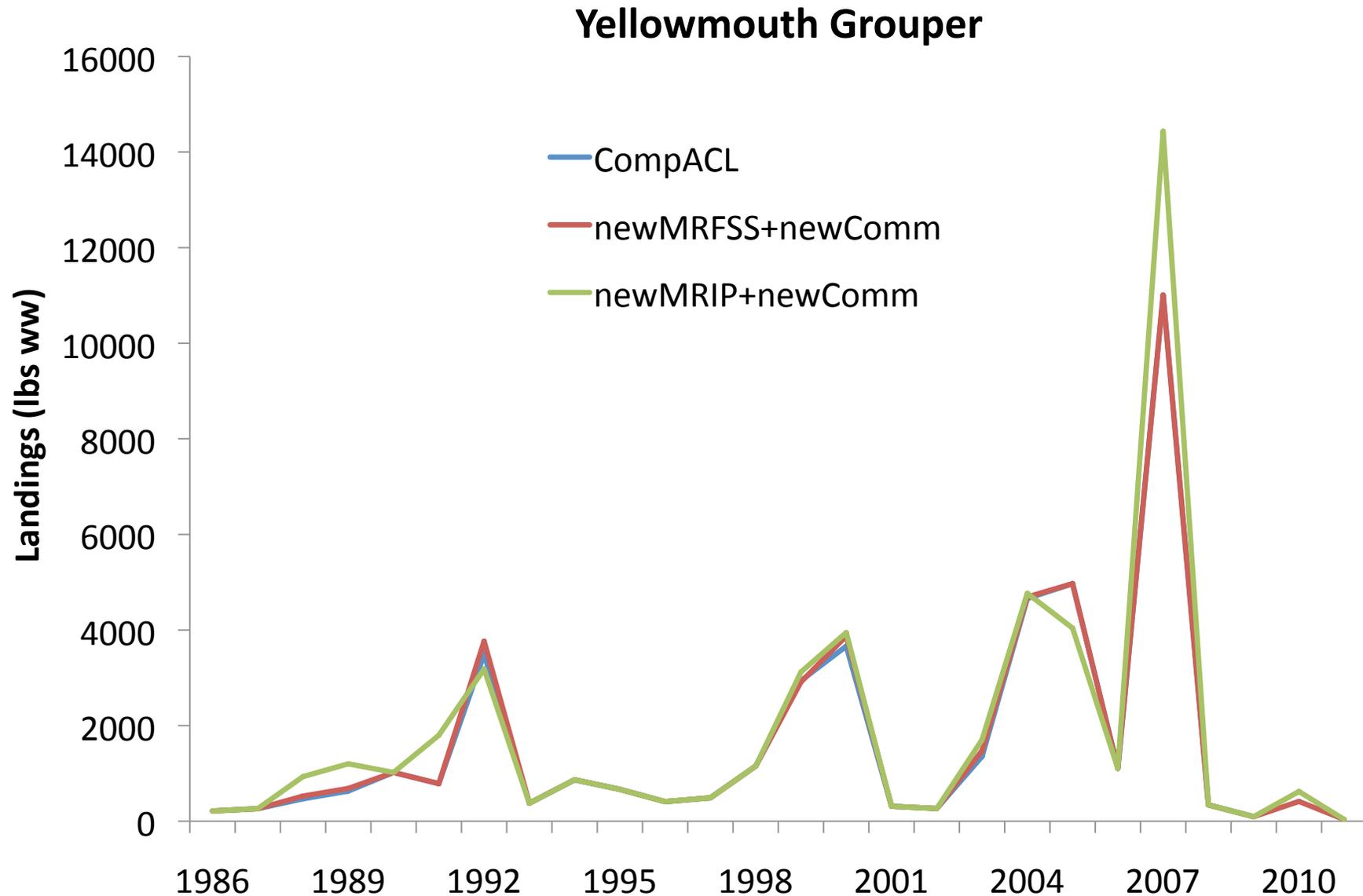
Red Hind



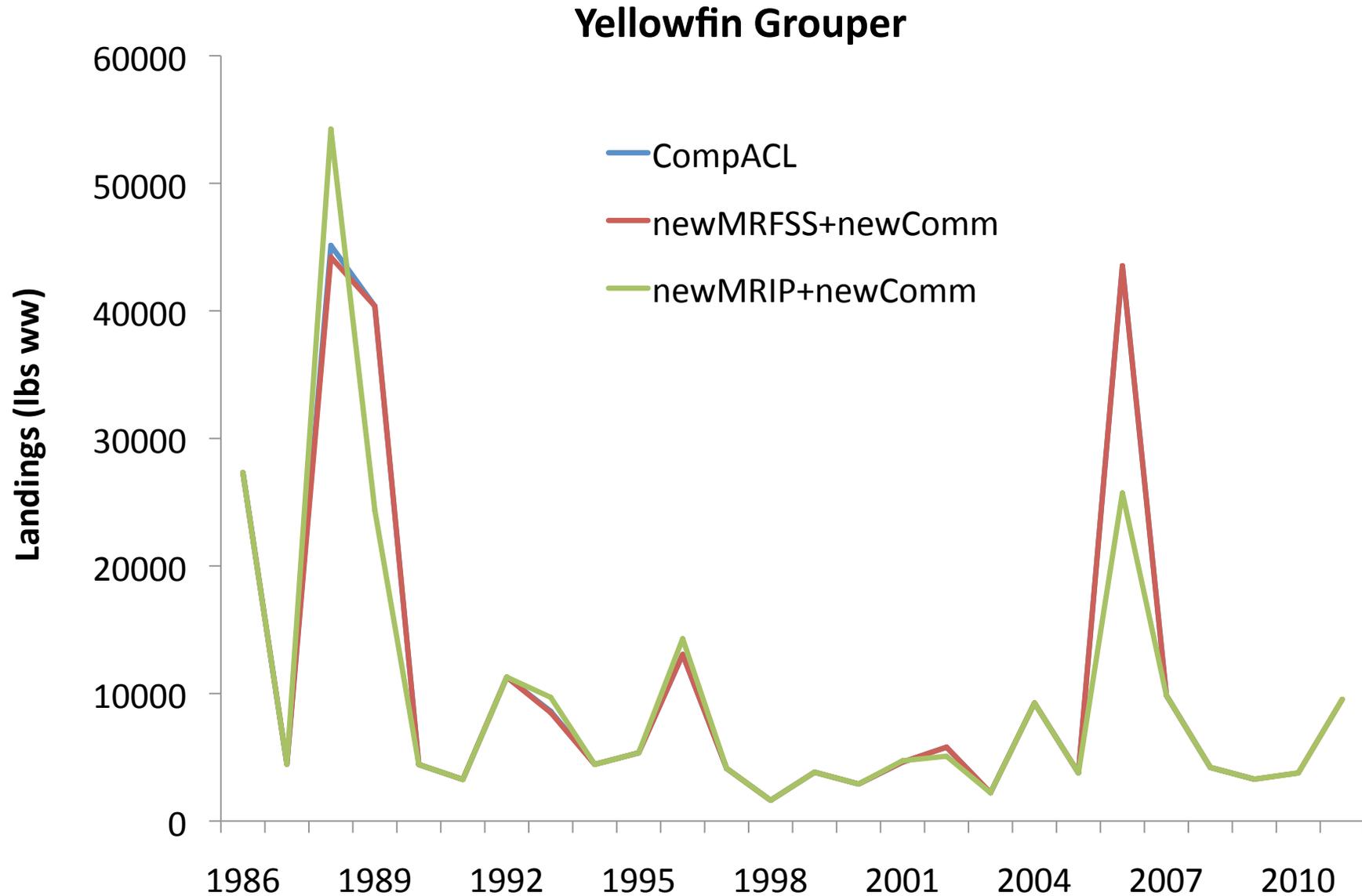
Rock Hind



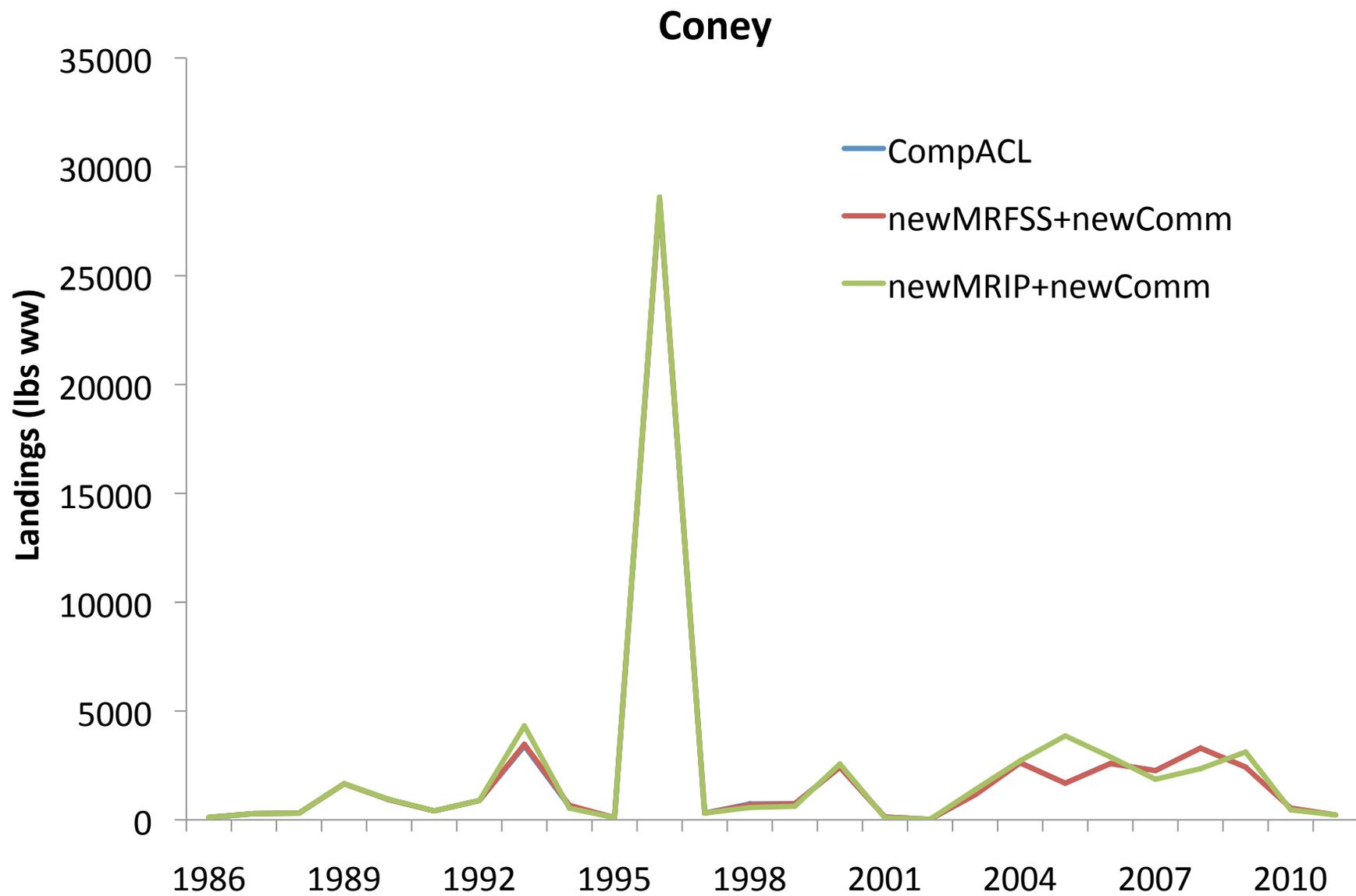
Yellowmouth Grouper



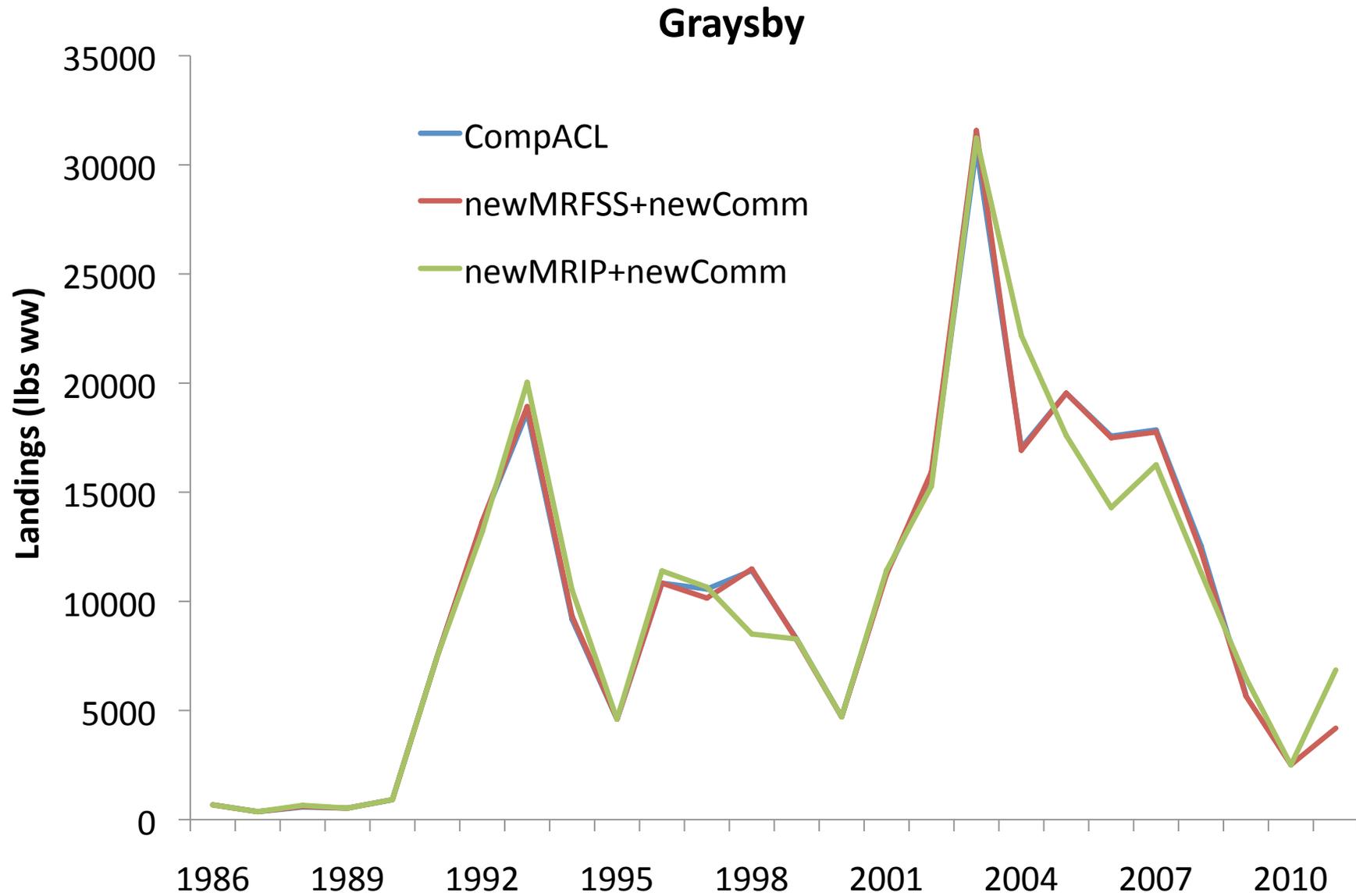
Yellowfin Grouper



Coney



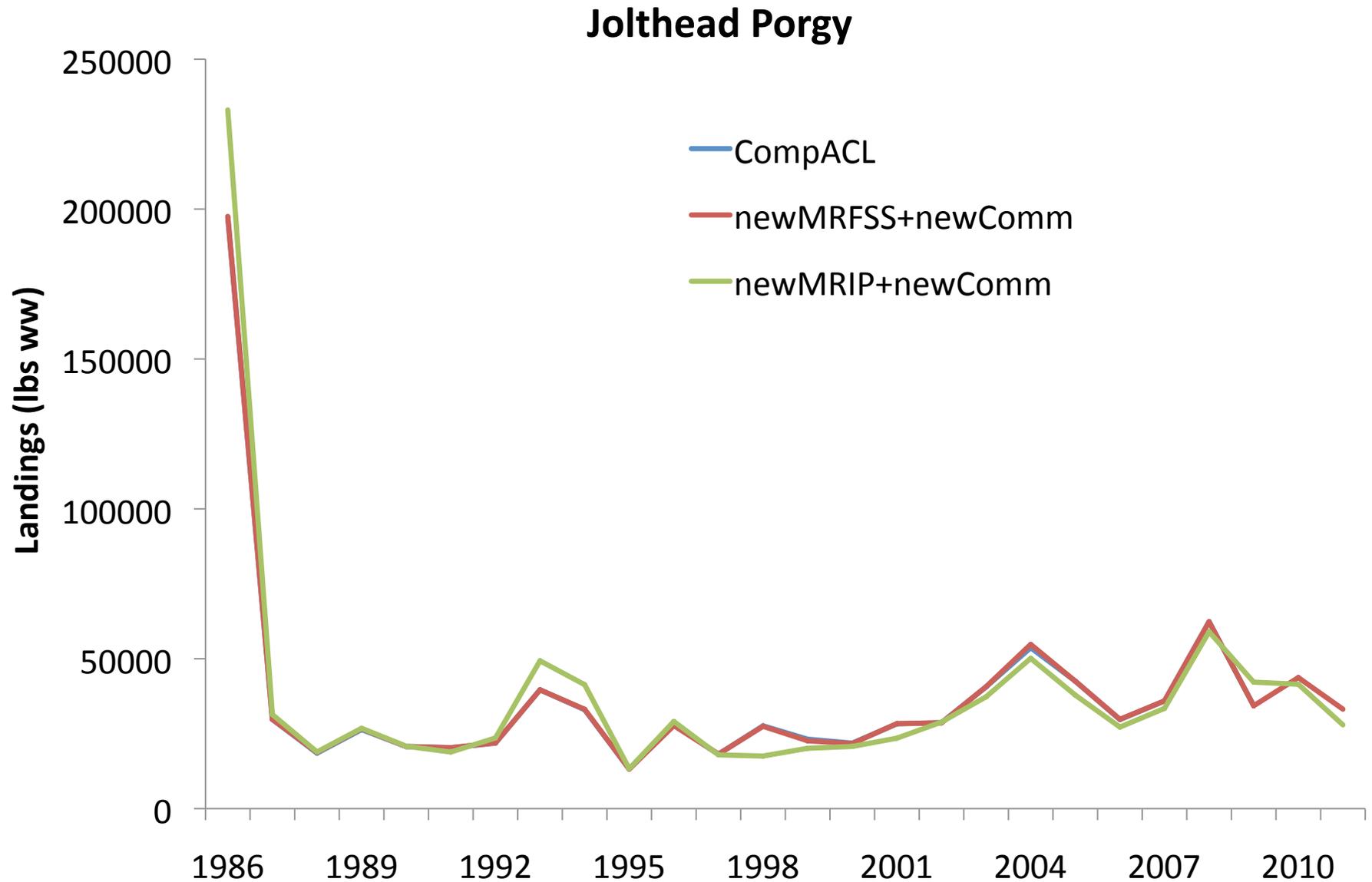
Graysby



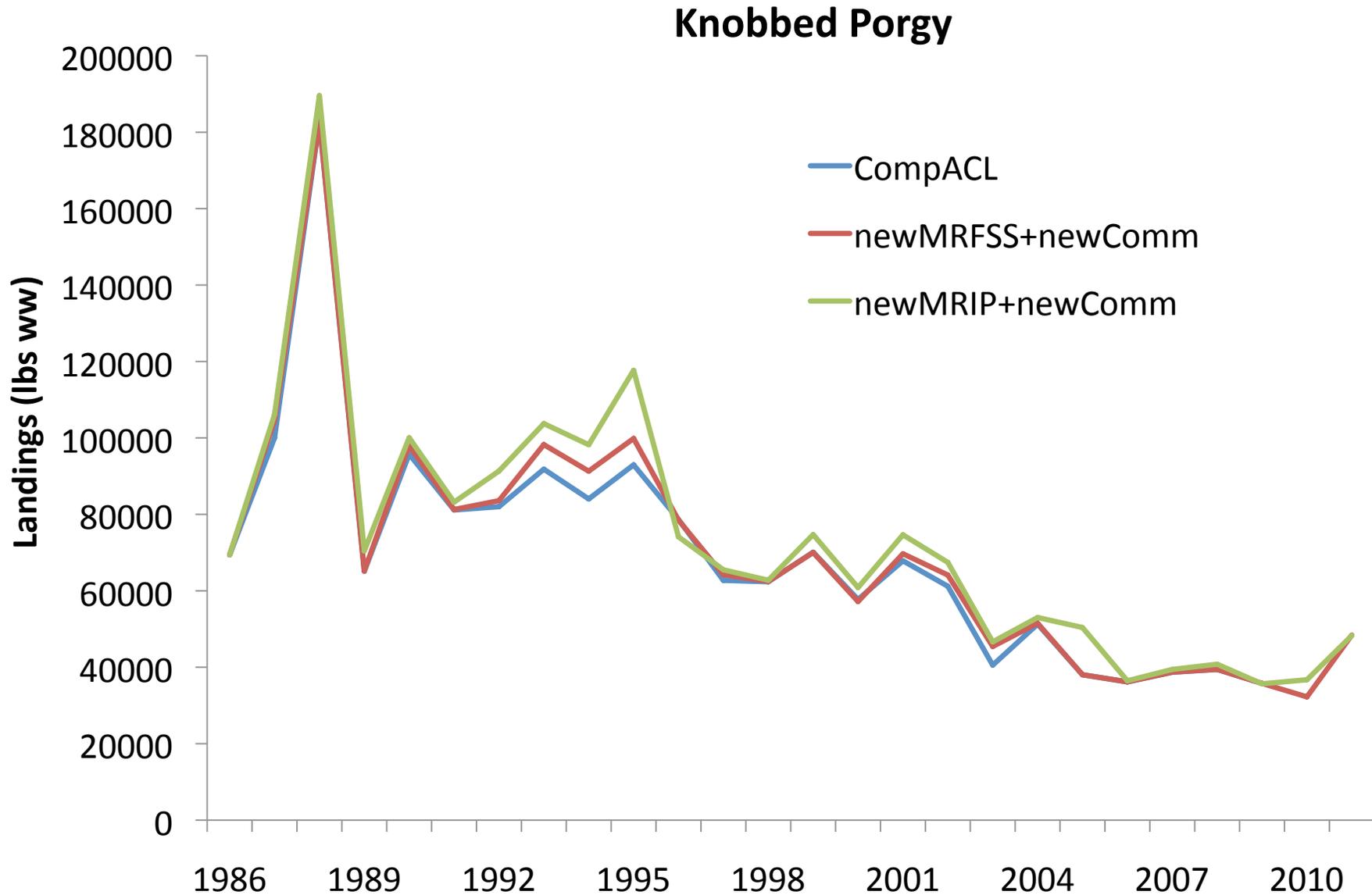
Shallow-water Grouper Complex *ABC proxy*

STOCK OR STOCK COMPLEX NAME	ABC			How ABC was calculated
	ACL Amendment	New MRFSS & Commercial	MRIP & New Commercial	
SHALLOW-WATER GROUPERS	97,817	97,745	96,432	sum of individual ABCs
Red hind	25,885	25,875	24,867	3rd highest (99-08)
Rock hind	37,569	37,577	37,953	3rd highest (99-08)
Yellowmouth grouper	4,661	4,692	4,040	3rd highest (99-08)
Yellowfin grouper	9,258	9,258	9,258	3rd highest (99-08)
Coney	2,589	2,584	2,718	3rd highest (99-08)
Graysby	17,856	17,757	17,597	3rd highest (99-08)

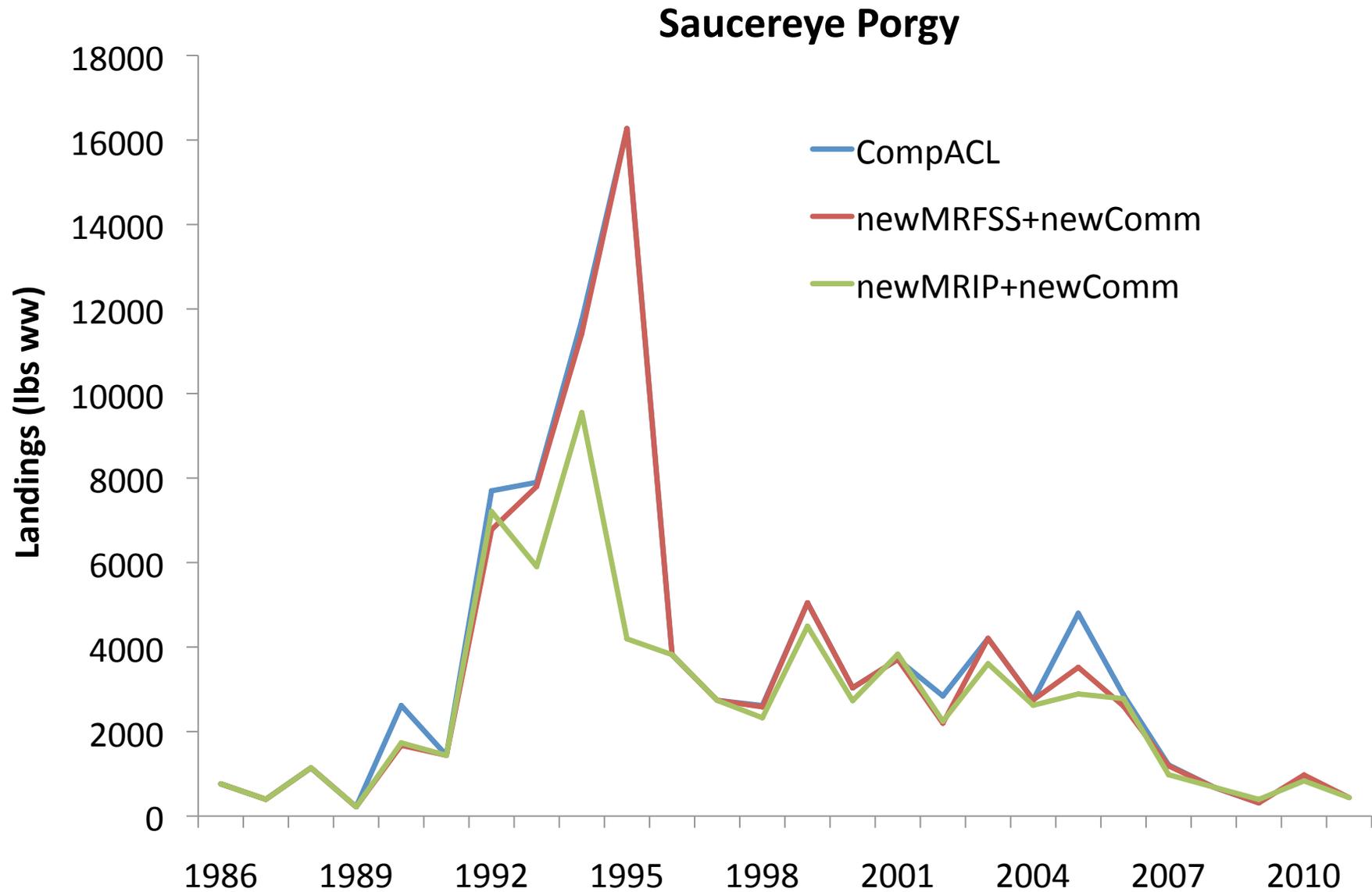
Jolthead Porgy



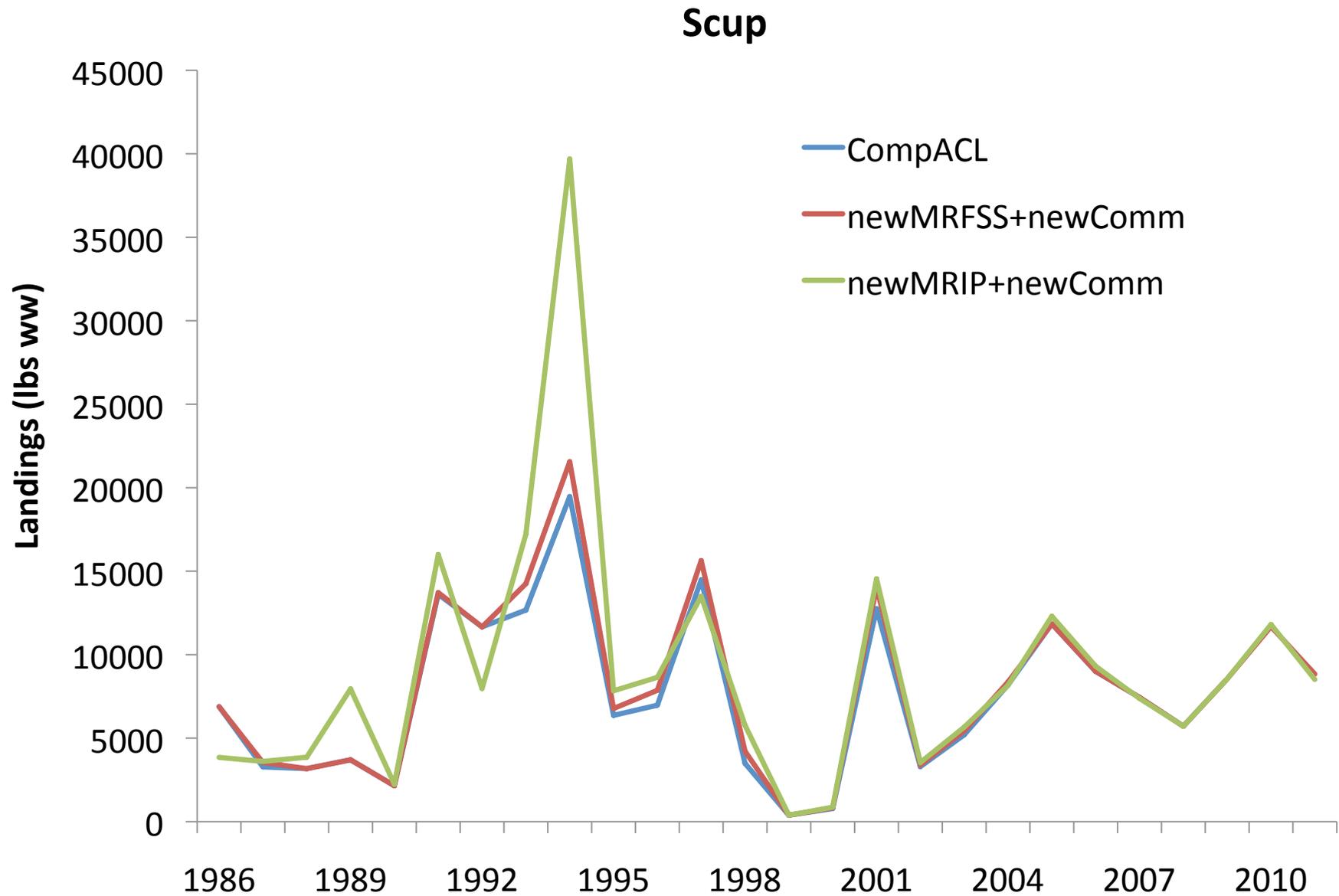
Knobbed Porgy



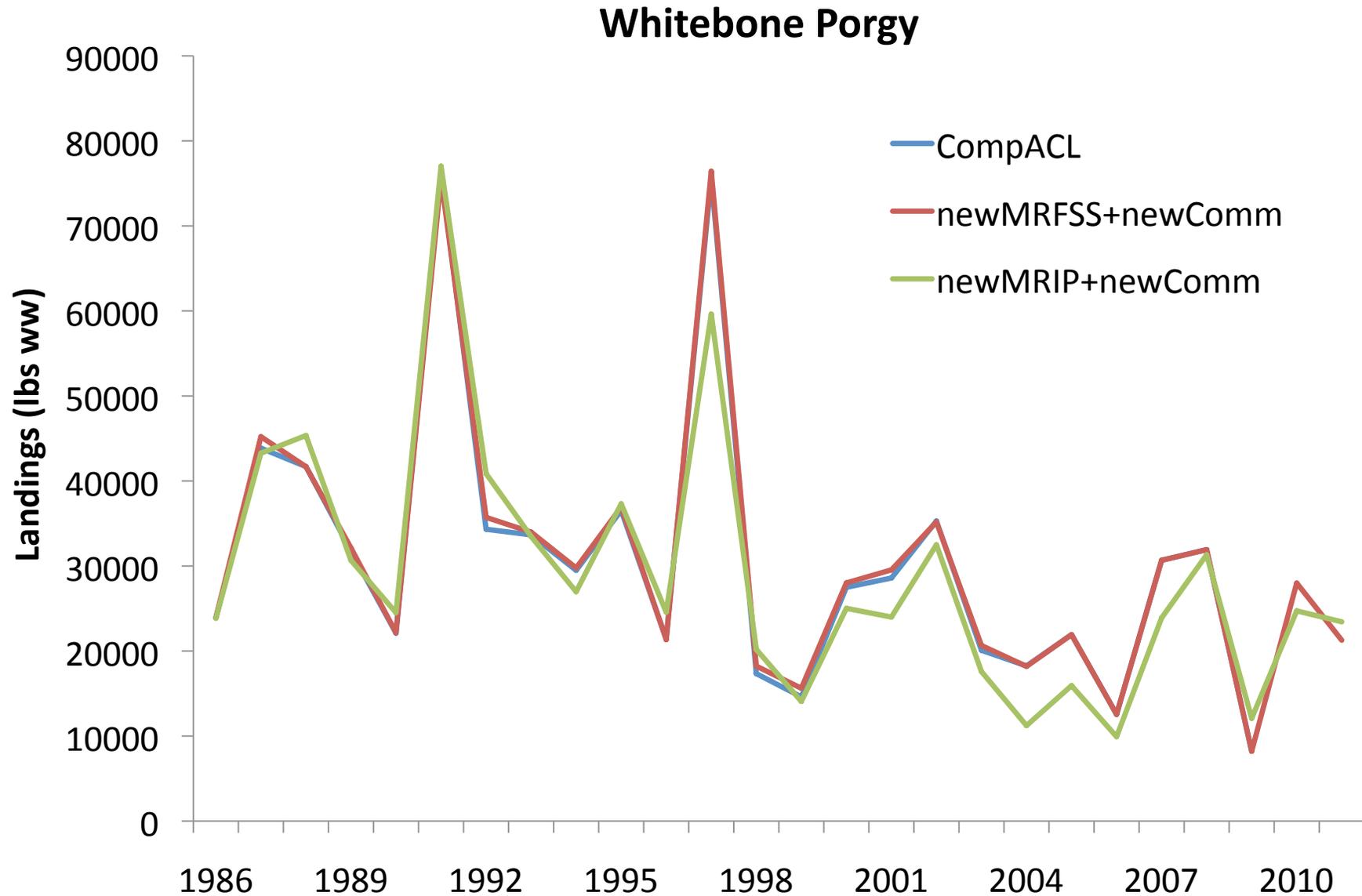
Saucereye Porgy



Scup



Whitebone Porgy

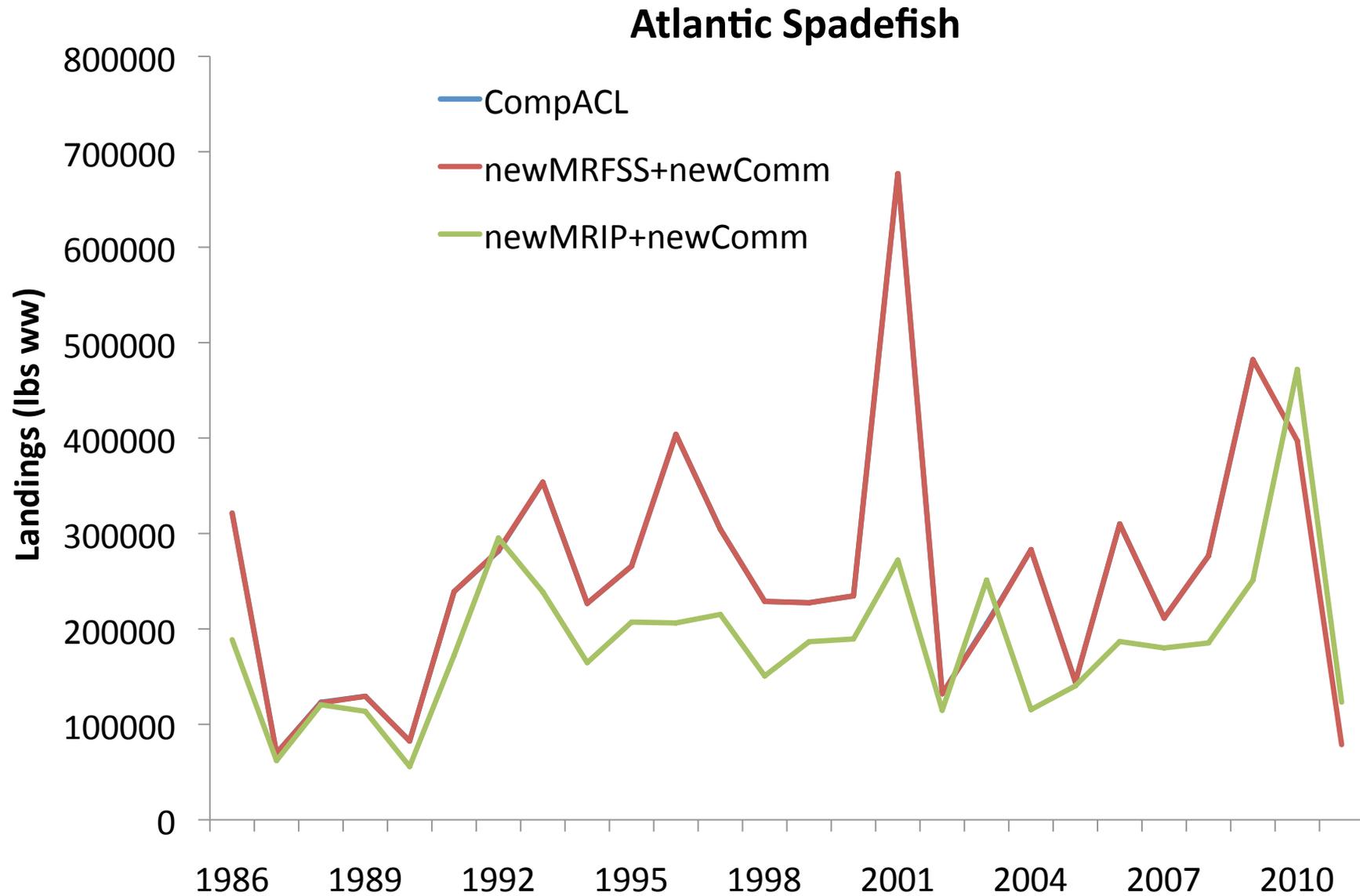


Porgies Complex

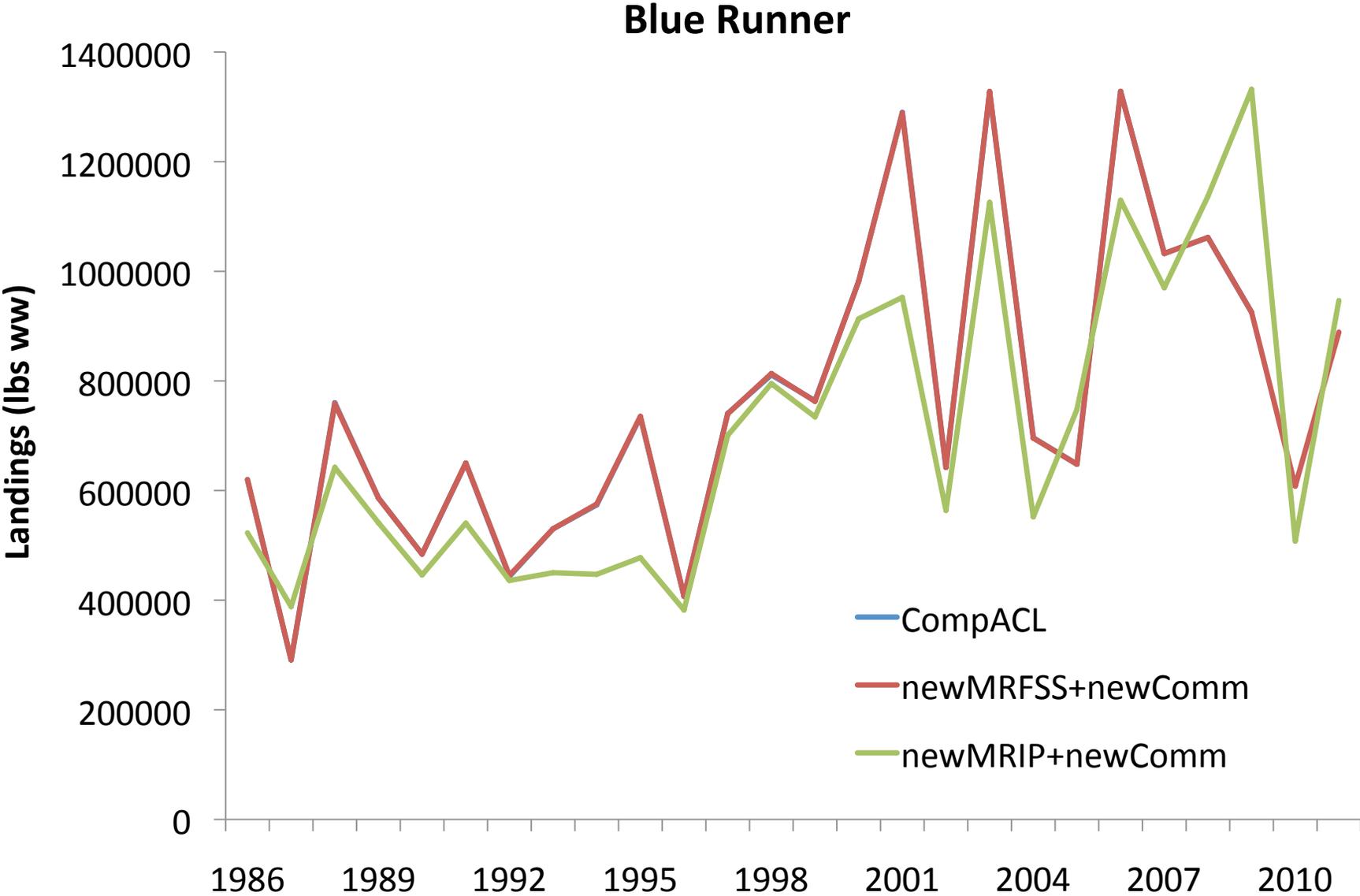
ABC proxy

STOCK OR STOCK COMPLEX NAME	ABC			How ABC was calculated
	ACL Amendment	New MRFSS & Commercial	MRIP & New Commercial	
PORGIES	147,614	150,041	143,263	sum of individual ABCs
Jolthead porgy	42,533	42,533	37,885	3rd highest (99-08)
Knobbed porgy	61,194	64,130	67,441	3rd highest (99-08)
Saucereye porgy	4,205	3,710	3,606	3rd highest (99-08)
Scup	8,999	8,999	9,306	3rd highest (99-08)
Whitebone porgy	30,684	30,671	25,024	3rd highest (99-08)

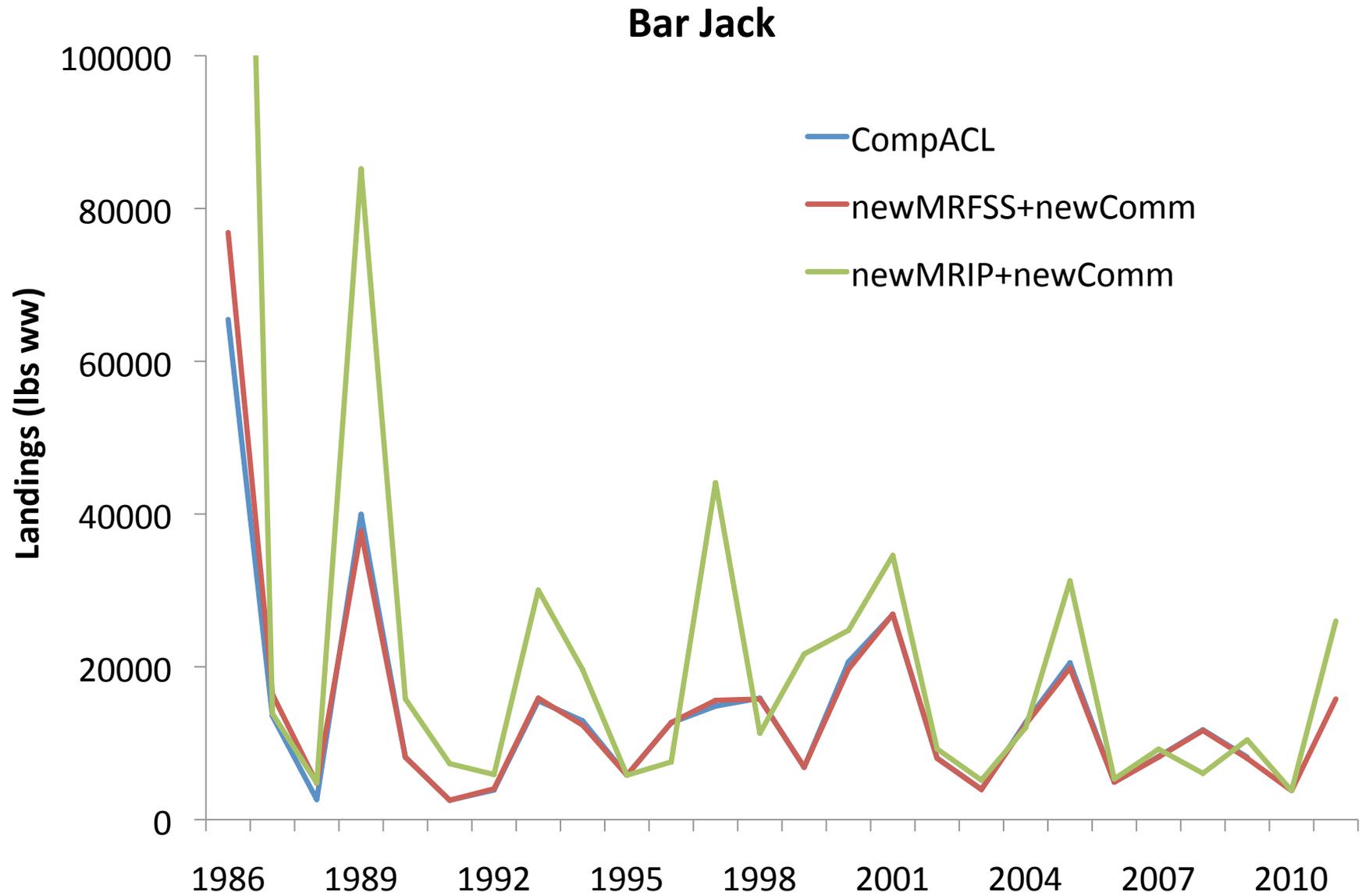
Atlantic Spadefish



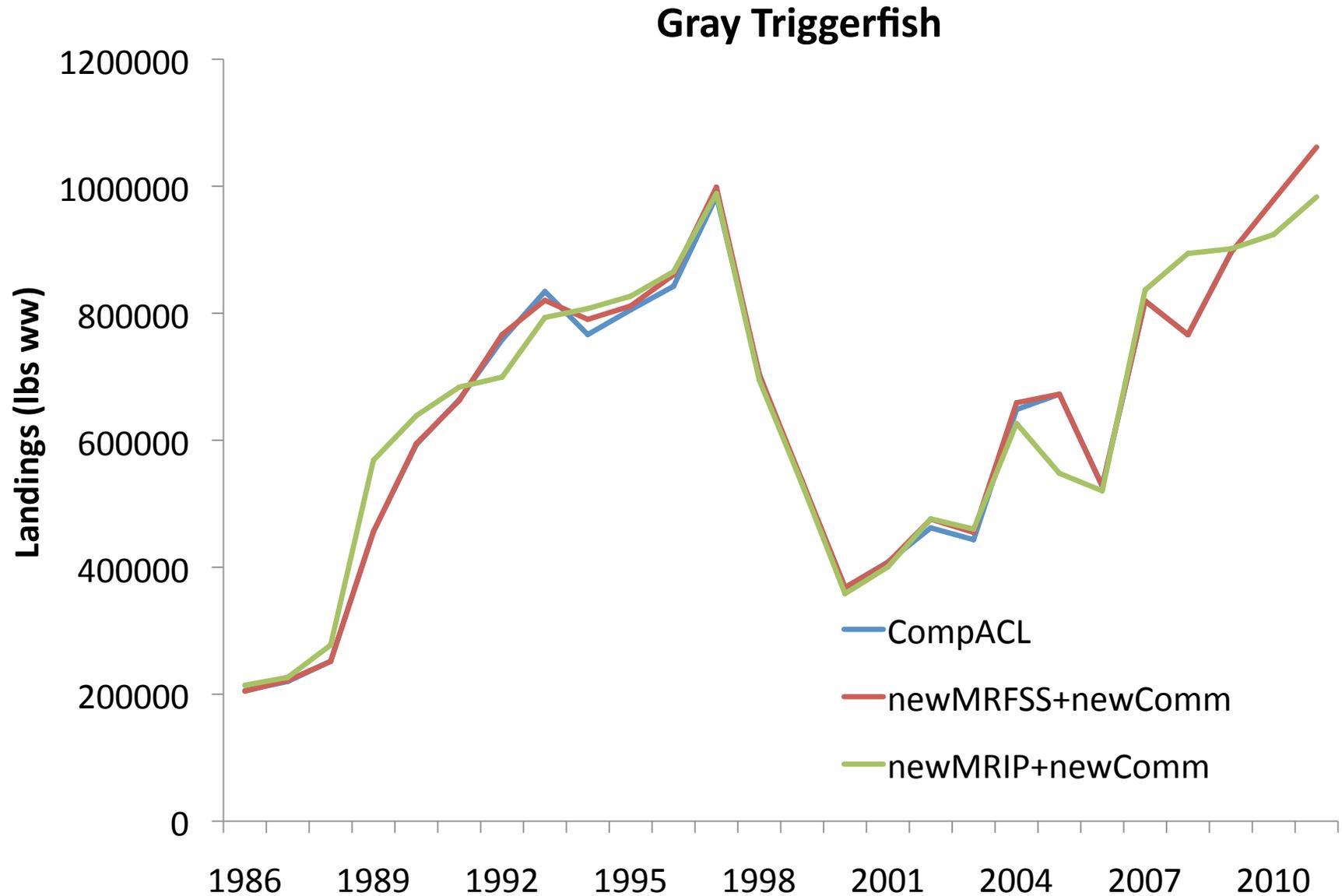
Blue Runner



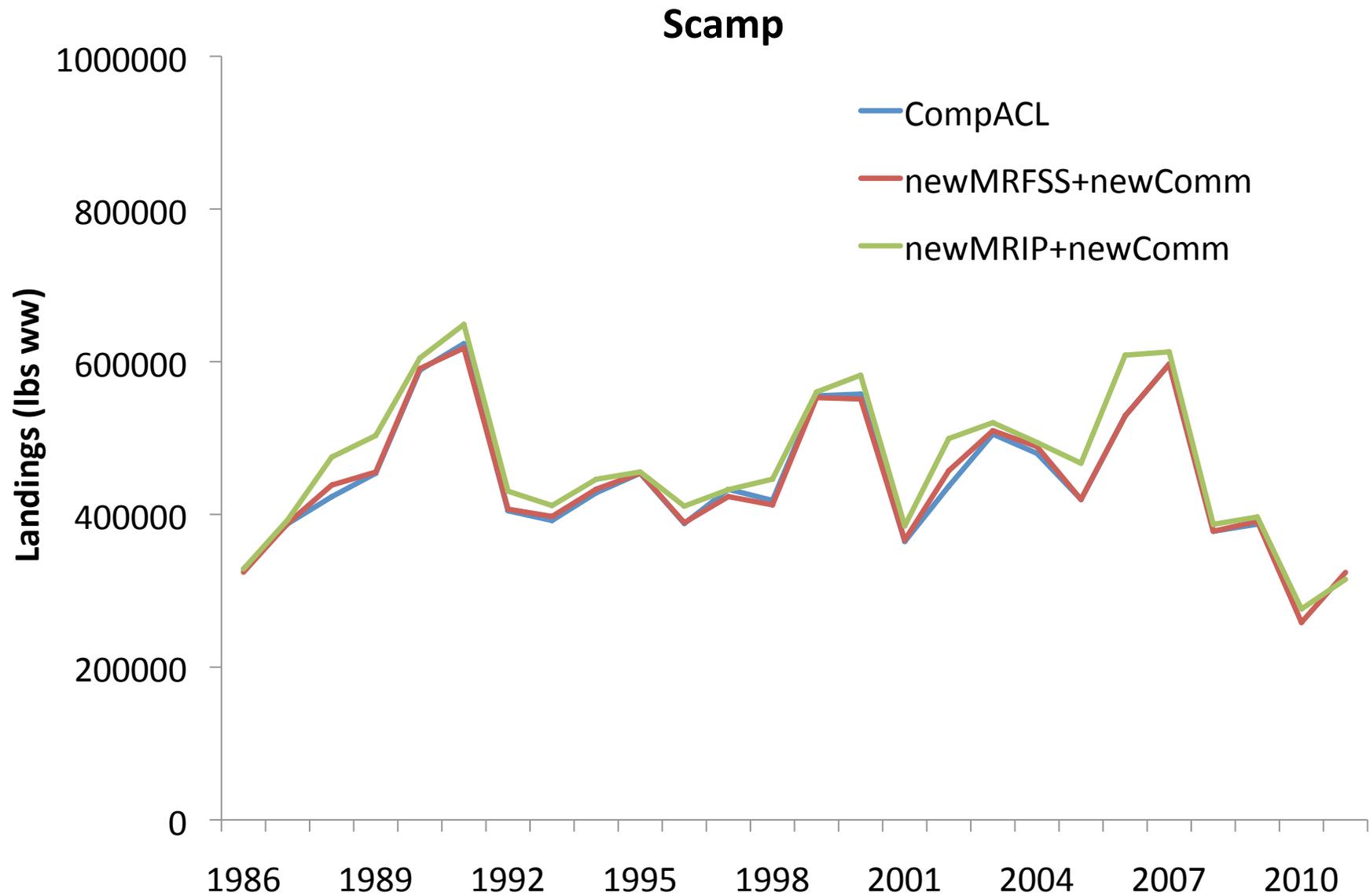
Bar Jack



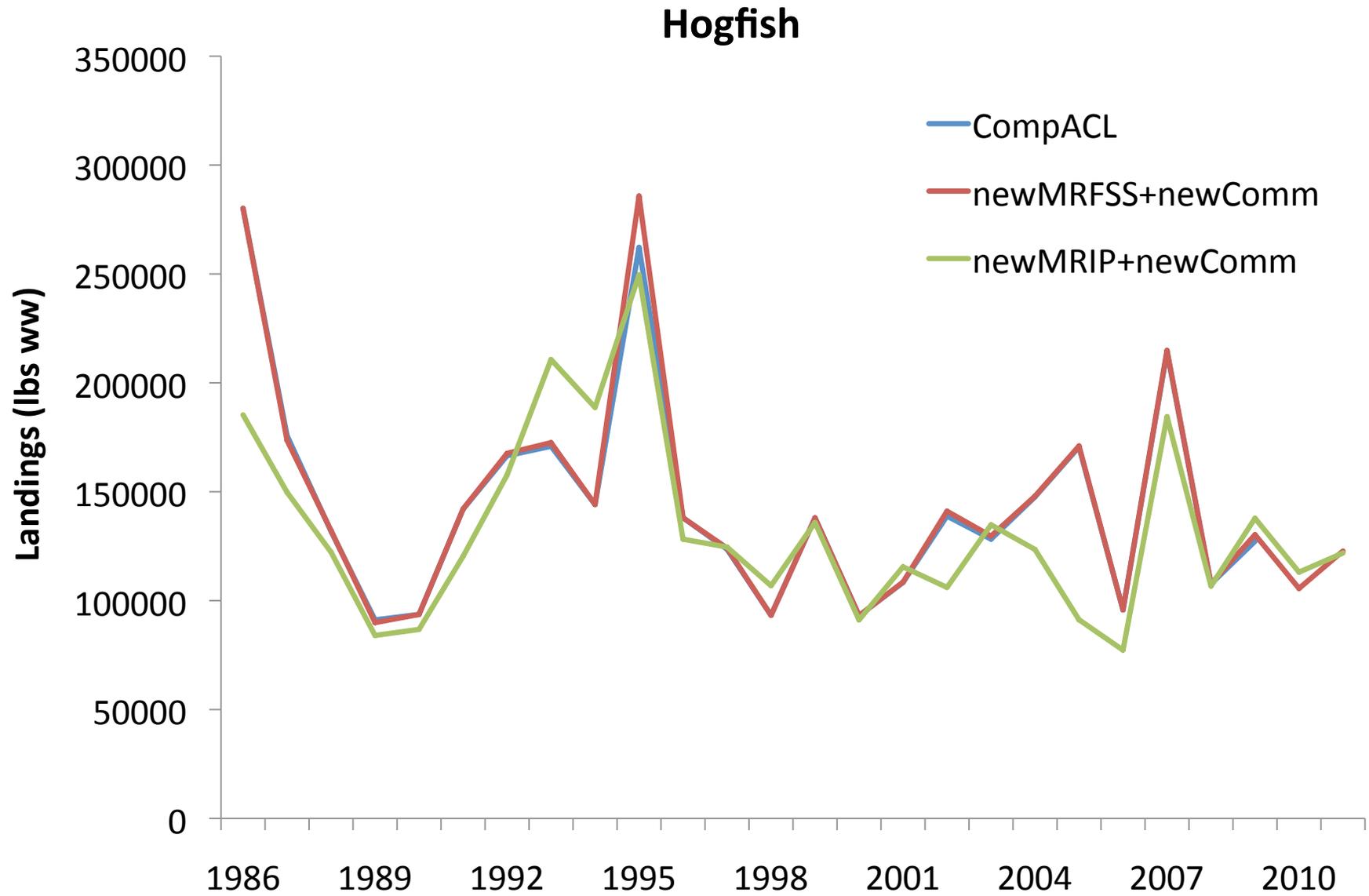
Gray Triggerfish



Scamp



Hogfish



Individual Stocks

ABC proxy

STOCK	ABC			How ABC was calculated
	ACL Amendment	New MRFSS & Commercial	MRIP & New Commercial	
Atlantic spadefish	282,841	283,177	189,460	3rd highest (99-08)
Blue runner	1,289,941	1,288,716	1,125,729	3rd highest (99-08)
Bar jack	20,520	19,684	24,780	3rd highest (99-08)
Gray triggerfish	672,565	672,565	626,518	3rd highest (99-08)
Scamp	492,572	499,255	509,788	median (99-08)
Hogfish	147,638	147,971	134,824	3rd highest (99-08)