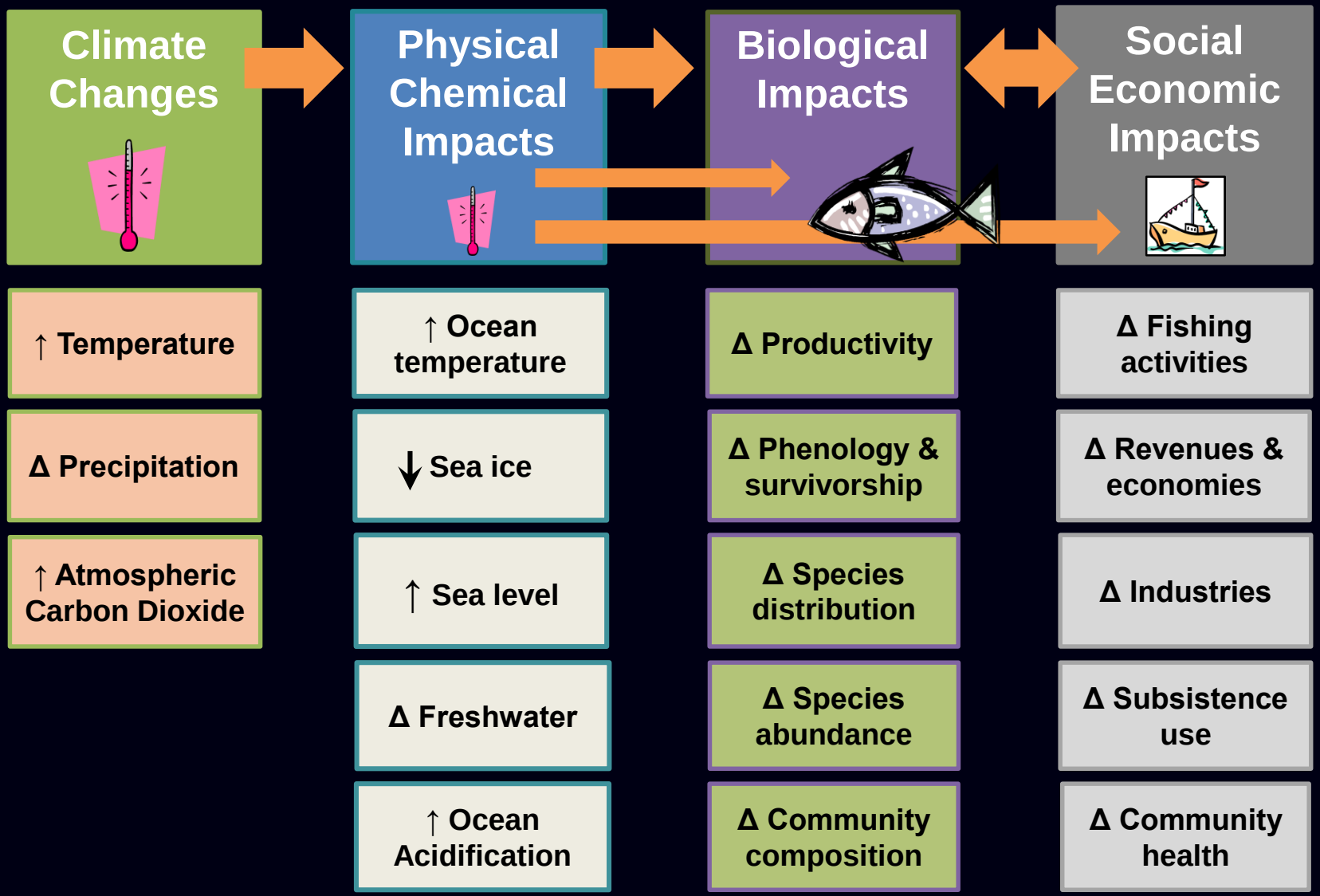
Gulf Council SSC Report From March 2015 Meeting in Tampa, FL

Will Patterson, Chair
March 30-April 1, 2015

NOAA Fisheries Draft Climate Science Strategy

WHY	Growing demands and requirements for climate-related information.
GOAL	Increase the production, delivery, and use of climate-related information to support agency and stakeholder decisions.
ASK	Provide input on the draft Strategy and future Regional Action Plans.

NOAA Fisheries Draft Climate Science Strategy



NOAA Fisheries Draft Climate Science Strategy

NOAA Technical Memorandum NMFS-SEFSC-653

ECOSYSTEM STATUS REPORT FOR THE GULF OF MEXICO

Mandy Karnauskas, Michael J. Schirripa, Christopher R. Kelble, Geoffrey S. Cook and J. Kevin Craig

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National Oceanic and Atmospheric Administration
National Marine Fisheries Service
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Evidence of climate-driven ecosystem reorganization in the Gulf of Mexico

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Abstract

The Gulf of Mexico is one of the most ecologically and economically valuable marine ecosystems in the world and is affected by a variety of natural and anthropogenic phenomena including climate, hurricanes, coastal development, agricultural runoff, oil spills, and fishing. These complex and interacting stressors, together with the highly dynamic nature of this ecosystem, present challenges for the effective management of its resources. We analyze a compilation of over 100 indicators representing physical, biological, and economic aspects of the Gulf of Mexico and find that an ecosystem-wide reorganization occurred in the mid-1990s. Further analysis of fishery landings composition data indicates a major shift in the late 1970s coincident with the advent of US national fisheries management policy, as well as significant shifts in the mid-1960s and the mid-1990s. These latter shifts are aligned temporally with changes in a major climate mode in the Atlantic Ocean: the Atlantic Multidecadal Oscillation (AMO). We provide an explanation for how the AMO may drive physical changes in the Gulf of Mexico, thus altering higher-level ecosystem dynamics. The hypotheses presented here should provide focus for further targeted studies, particularly in regard to whether and how management should adjust to different climate regimes or states of nature. Our study highlights the challenges in understanding the effects of climatic drivers against a background of multiple anthropogenic pressures, particularly in a system where these forces interact in complex and nonlinear ways.

Keywords: Atlantic Multidecadal Oscillation, fisheries management, human dimension, indicator, large marine ecosystem, regime shift

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NS-1 Guidelines Proposed Changes

- The bulk of the SSC discussion on proposed changes was focused on the statements: “The annualized expression of OY = ACL” and “An annual OY cannot exceed the ACL.”

- Several SSC members felt that management should move from being driven by buffers to stay away from limits (MSY) to being target (OY) based. One SSC member suggested that this could be accomplished by setting ACT = OY, and then setting ACL at some level between ACT and OFL depending on how large a buffer is needed. This would make ACT the main reference point for management

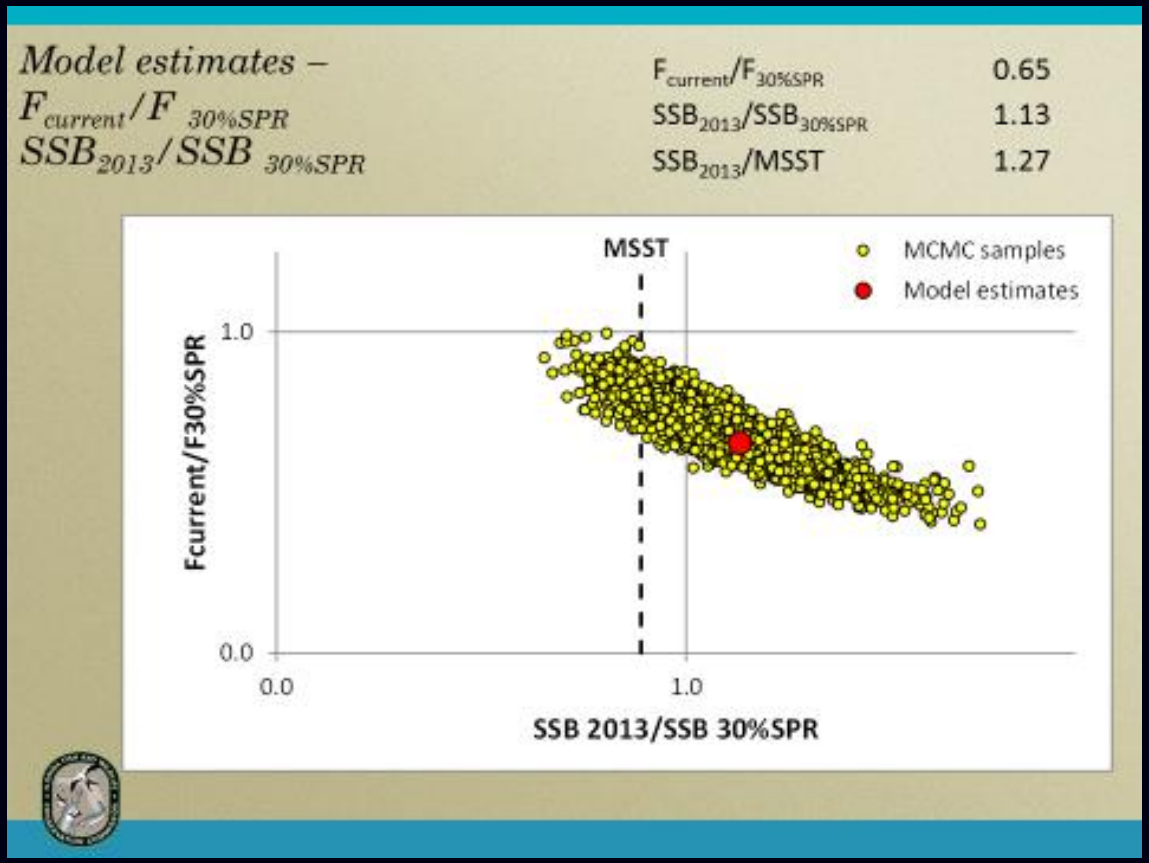
Spiny Lobster

- **The SSC concurred that a new stock assessment was not necessary for the spiny lobster fishery.**
- **The SSC did not come to a conclusion about the ACL exemption proposed by the review panel.**
- **The SSC did not recommend redefining OFL in terms of MFMT.**

Hogfish Assessment

Mutton Snapper Update Assessment

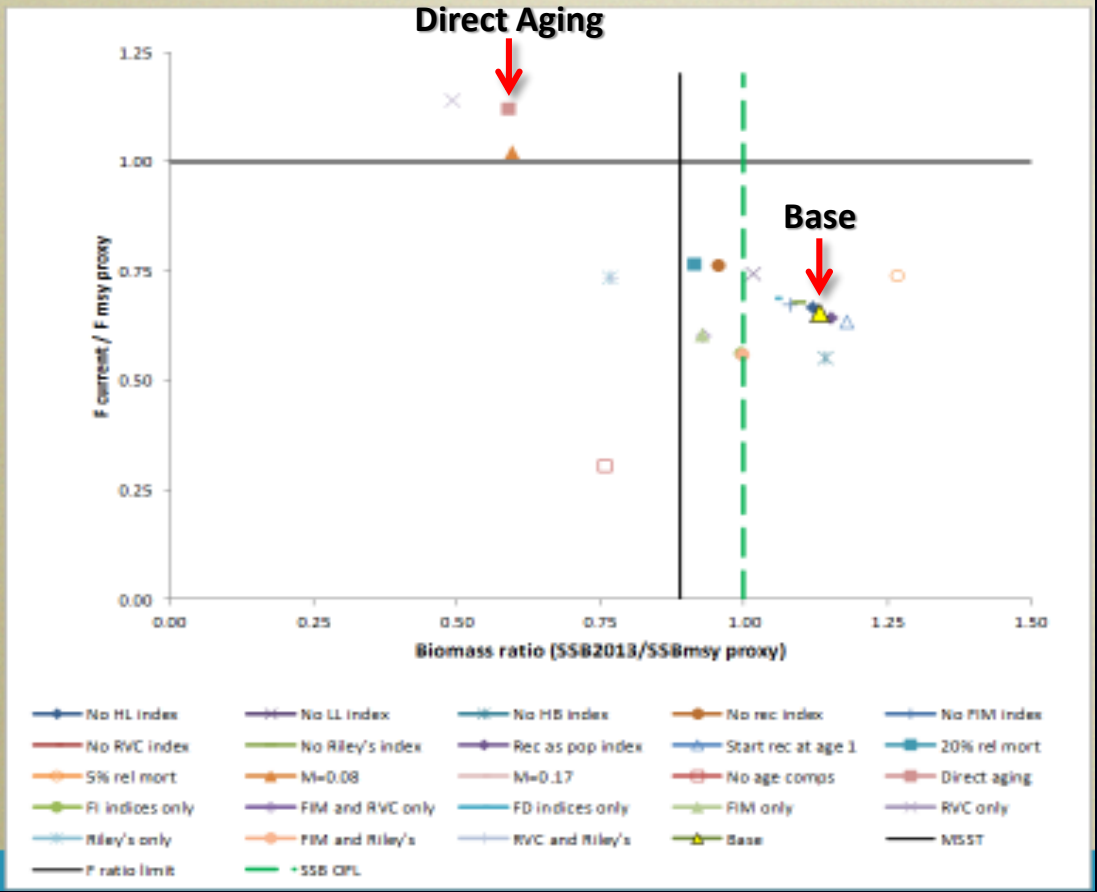
- **The Committee accepts that the 2015 SEDAR 15a update assessment of mutton snapper represents the best available science and is suitable for the development of management advice. Motion passed 9-0; no quorum.**



Mutton Snapper Update Assessment

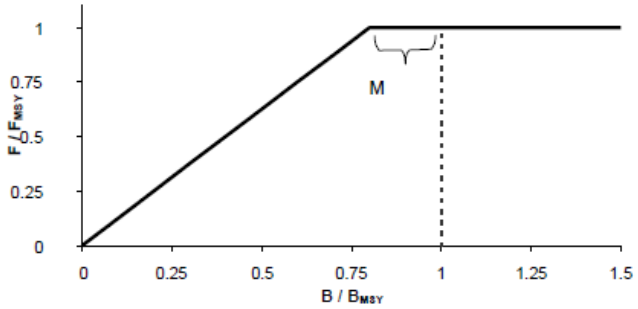
- Concerns were raised about why direct aging was not employed to estimate the catch at age matrix. No diagnostics were available to compare model fit between direct aging and ALK models. Such diagnostics are being prepared by Joe O'Hop of FWRI.

Summary of runs selected from Table 4.8.2 (Update document)



Proposed Changes to MSST Definition

Minimum Stock Size Threshold (MSST) for reef fish stocks with low natural mortality



Options Paper

to the Fishery Management Plan for the Reef Fish Resources of the Gulf of Mexico

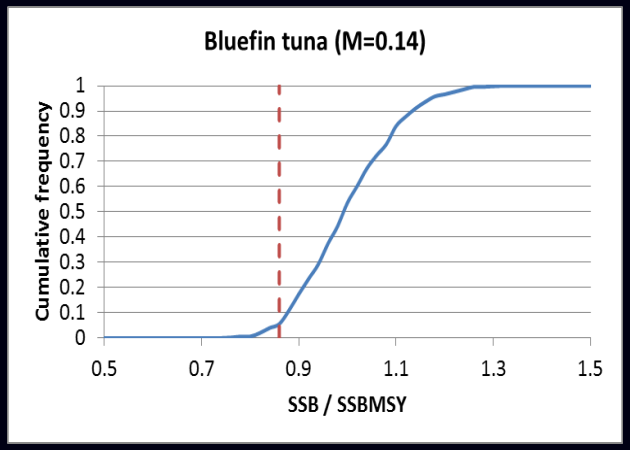
January 2015

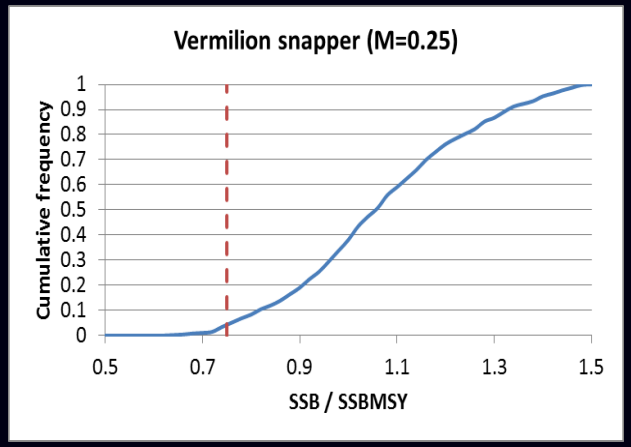
This is a publication of the Gulf of Mexico Fishery Management Council Pursuant to National Oceanic and Atmospheric Administration Award No. NA10NMF4410011.

Proposed Changes to MSST Definition

- Analysis performed by Clay Porch to examine likelihood of overfished status occurring due to natural fluctuations in productivity alone.

- Long-term (150 yr) stochastic projections to equilibrium when fished at MFMT performed for bluefin tuna (F_{MSY}), vermilion snapper (F_{MAX}), and gray triggerfish ($F_{30\%SPR}$).





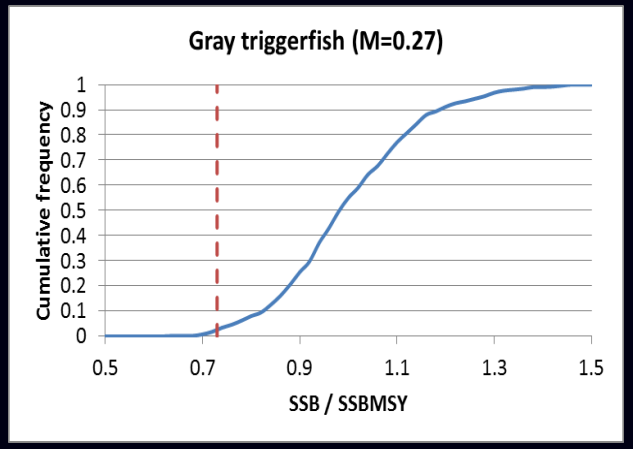
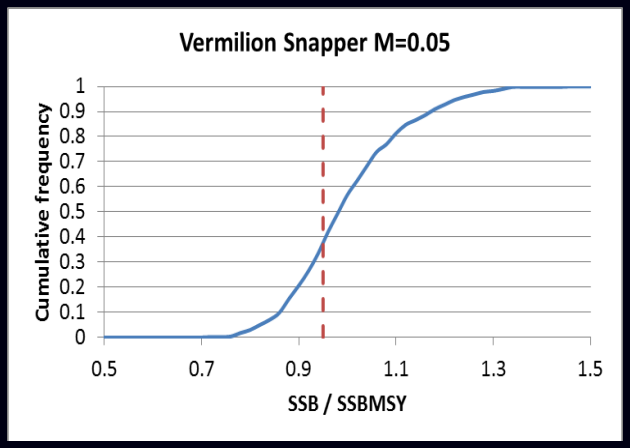
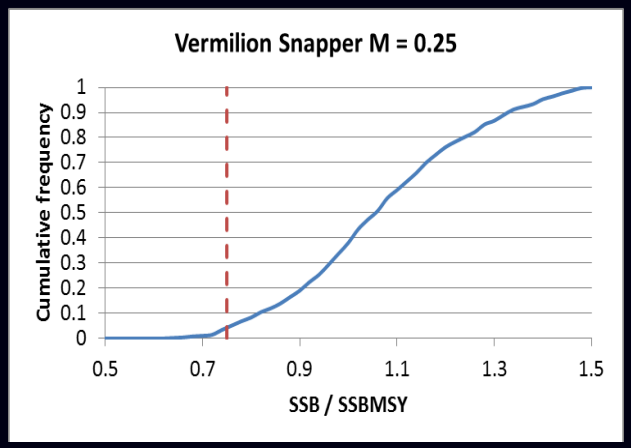


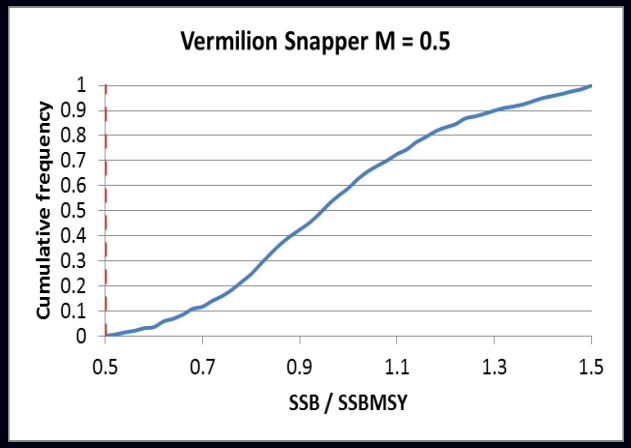
Figure 1. Cumulative probability distributions of the spawning biomass in the last year of the projection relative to the equilibrium spawning biomass associated with MFMT for each of the three species. The dashed vertical line represents the quantity 1-M.

Proposed Changes to MSST Definition

- **Second analysis: altered M for vermilion snapper and re-ran stochastic projections.**







- **The probability of classifying a stock as overfished when MSST is defined as (1-M) B_{MFMT} changes inversely with M in this example. However, SSC questioned if this was an appropriate way to estimate this relationship.**

Proposed Changes to MSST Definition

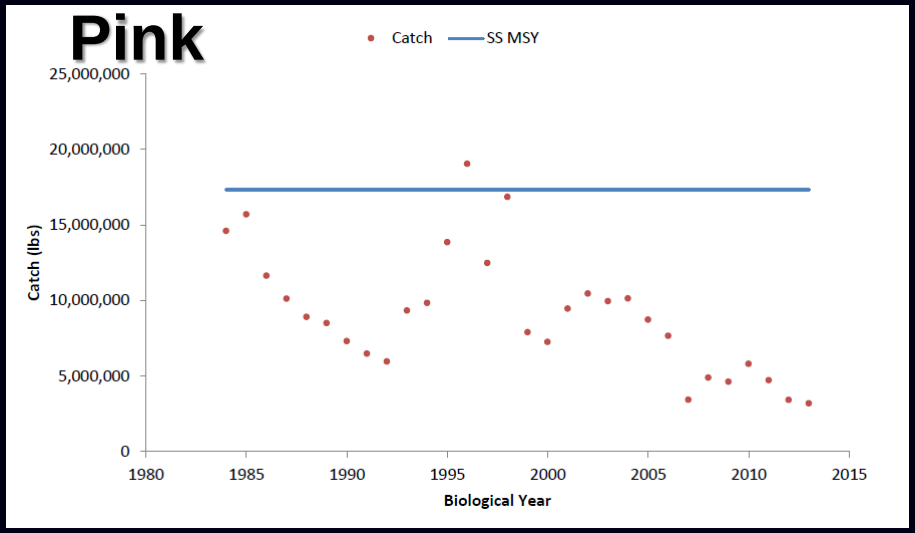
- SSC members suggested that the analysis be conducted for species that actually are estimated to have a very low (<0.1) M.

- It was pointed out that in setting MSST, the Council needs to consider the costs associated with different levels of MSST. If MSST is only slightly below B_{MFMT}, there is a risk of unnecessarily having to implement a rebuilding plan if the stock fluctuates below MSST but may recover on its own. On the other hand, if MSST is far below BMFMT, the likelihood of unnecessarily implementing a rebuilding plan is reduced, but the cost of rebuilding from a lower MSST will be greater.

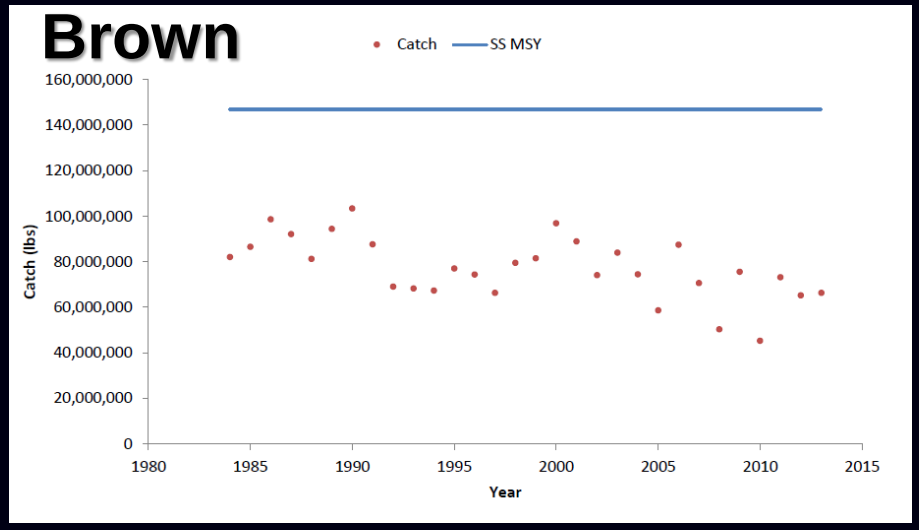
- SSC members felt the options for "low M" in the current MSST options paper were not actually very low. For example, only two reef fish stock have estimate M > 0.25.

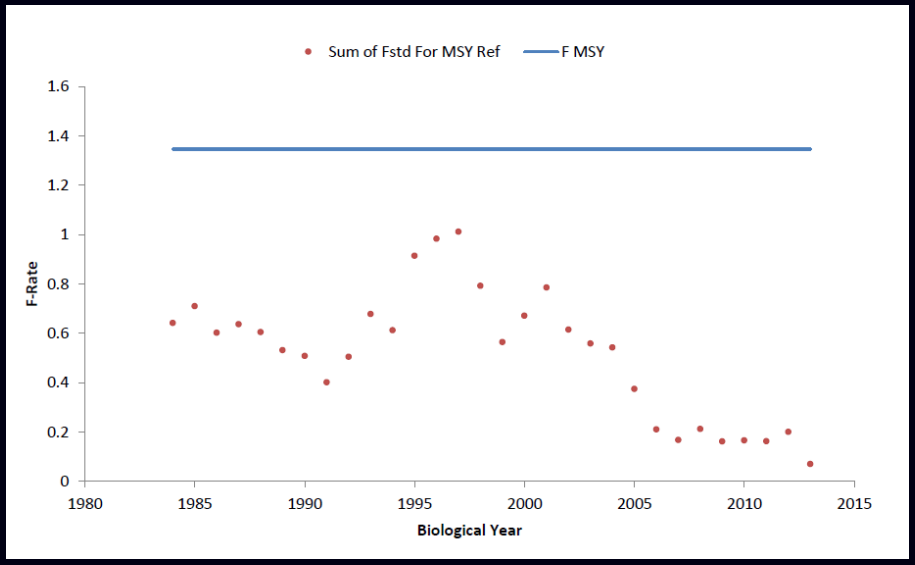
Penaeid Shrimp MSY/ABC

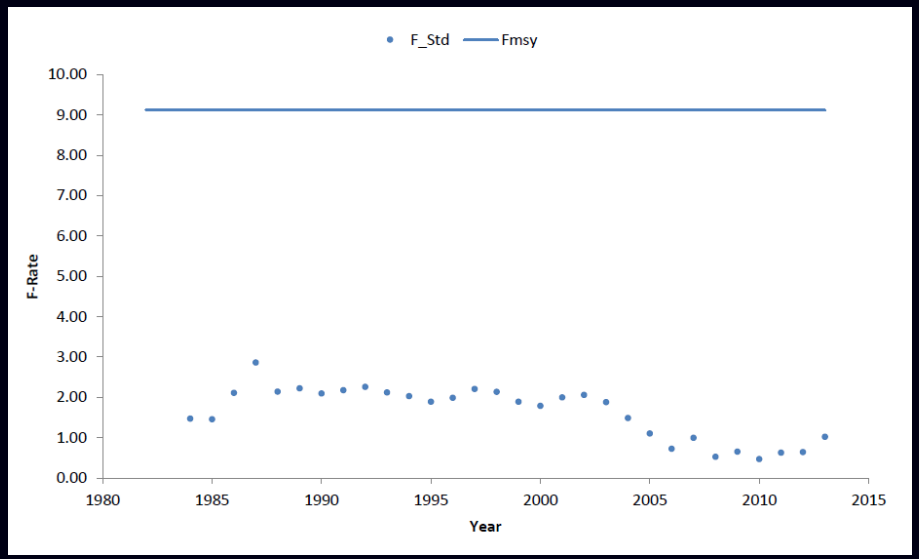
Pink



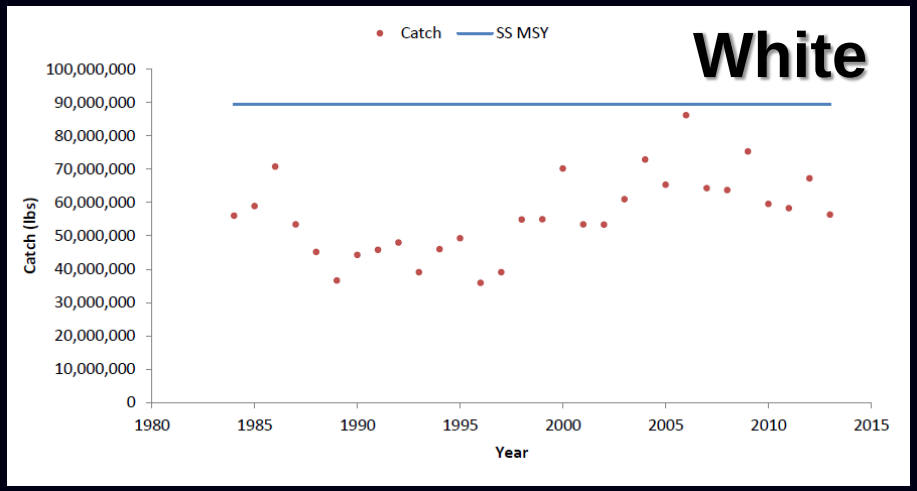
Brown

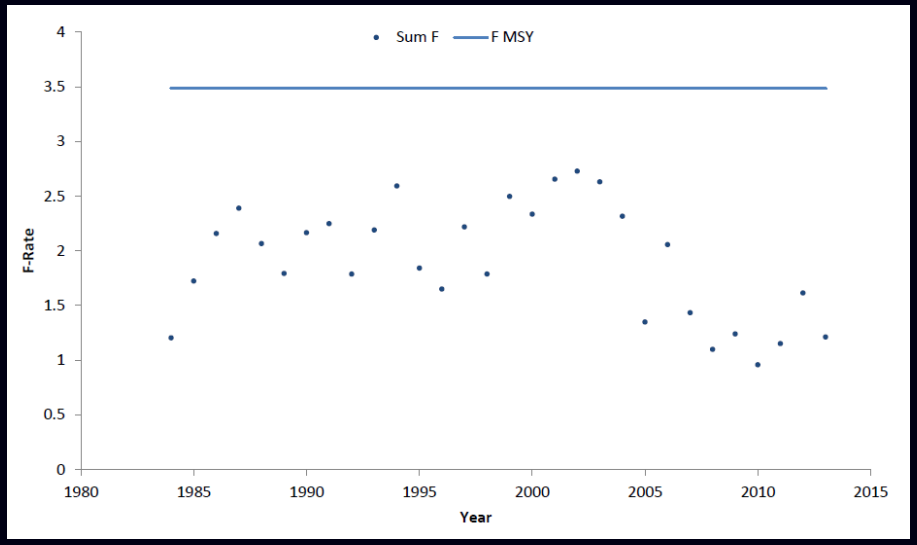






Penaeid Shrimp MSY/ABC





Penaeid Shrimp MSY/ABC

The SSC accepts the MSY advice resulting from the Gulf Penaeid Shrimp assessments as the best available science and finds them suitable for management advice.

Stock	Annual MSY (lbs of tails)	Annual F_{MSY}
Pink Shrimp	17,345,130	1.35
White Shrimp	89,436,907	3.48
Brown Shrimp	146,923,100	9.12

The Committee concurs with the recommendation from the Penaeid Shrimp MSY/ABC Control Rule Workshop that ABC be set equal to MSY for Gulf shrimp stocks.