Three-Year Audit – Florida Shrimp

Introduction to the tool

The three-year audit template was developed by FishChoice and is based on the FisheryProgress FIP Review Guidelines and feedback from the FisheryProgress Technical Oversight Committee. The audit template is designed to present key information about the current performance of the fishery and to verify reported progress on www.FisheryProgress.org. **FisheryProgress requires the use of three-year audit template.**

Basic FIP information

Target species scientific name and common name	Pink Shrimp *Farfantepenaeus aztecus*
Fishery location	Federal waters and state waters of Florida
Gear type(s)	Otter Trawl
Catch quantity (weight)	Pink 12, 537,420 pounds (2017)
Vessel type(s) and size(s)	90-130 ft. Freezer Boat/Trawler/Otter Trawl
Number of vessels	367 (2017)
Management authority	NOAA/NMFS, GMFMC, FFWC

Stakeholder consultation & meetings

In all cases, the review team consisted of Dr. Robert Trumble, FIP Reviewer; supported by Ms. Laura Deighan, TX-LA FIP Coordinator; and Ms. Nancy Mathews, FL FIP coordinator. The review team met in person at the offices of Cox Wholesale Seafoods (Nancy Mathews) on the 29th and 30th Oct, and jointly made conference calls to the experts who could provide background and material needed to understand the current status of MSC Performance Indicators (PIs) and the status of progress on the client action plans. In two cases, communications occurred outside the scheduled meeting to accommodate experts not otherwise available: one by telephone on Nov 1 after the closure of the meetings, and one by email over several days following the meeting. The list below provides information for participants on specific communications.

Name	Affiliation	Date and Subjects Discussed
Elizabeth Scott Denton	NOAA, Galveston Lab	Oct 29, 2019. Goals, design, and results of shrimp observer program
Gary Graham	Consultant; TX Sea Grant, retired	
Laura Picariello	TX Sea Grant; former Audubon GULF	
James Primrose	NOAA	
Frank Helies	NOAA	

Name	Affiliation	Date and Subjects Discussed
Matt Freeman	GMFMC staff	
Michelle Masi	NOAA, Galveston Lab	
Michelle Masi	NOAA, Galveston Lab	Oct 29, 2019. Stock assessment design and results; application of stock assessment into harvest strategy and control rule
Laura Picariello	TX Sea Grant; former Audubon GULF	
Gary Graham	Consultant; TX Sea Grant, retired	
Benny Gallaway	LGL Ecological Research Associates	
Lance Robinson	Texas Parks and Wildlife Department	Oct 29, 2019. Management of state shrimp fisheries (Texas)
Laura Picariello	TX Sea Grant; former Audubon GULF	
Jarrett Barker	Texas Parks and Wildlife Department - Enforcement	Oct 30, 2019. Enforcement of state shrimp fisheries (Texas)
Canh Nguyen	NOAA Gear Monitoring Team	Oct 30, 2019. TED, BRD monitoring
Michael Barnette	NOAA	Oct 30, 2019. ETP species, TED monitoring
Frank Helies	NOAA	Oct 30, 2019. Federal Management of shrimp fisheries (federal waters)
Peyton Cagle	Louisiana Department of Wildlife and Fisheries	Oct 31, 2019. Management and enforcement of state shrimp fisheries (Louisiana)
Julia Lightner	Louisiana Department of Wildlife and Fisheries	
Harry Blanchet	Louisiana Department of Wildlife and Fisheries	
Christian Winslow	Louisiana Department of Wildlife and Fisheries	
Chad Hebert	Louisiana Department of Wildlife and Fisheries - Enforcement	
Laura Picariello	TX Sea Grant; former Audubon GULF	
Benny Gallaway	LGL Ecological Research Associates	Oct 30, 2019. Red snapper fishing effort/sea turtle effort cap; electronic log books.
Gary Graham	Consultant; TX Sea Grant, retired	
Laura Picariello	TX Sea Grant; former Audubon GULF	
Ryan Gandy	Florida Fish and Wildlife Commission	Nov 1, 2019 Management of state shrimp fisheries (Florida)
Leann Bosarge	GMFMC – Voting Member	Nov 1, Nov 4 (by email) Council action on harvest control rule for shrimp

Summary of MSC pre-assessment scoring

Principle	Component	Performance Indicator		Current Score	Rationale and Justification
1	Outcome	1.1.1	Stock status	≥80	The 2018 stock assessment for pink shrimp (data through 2017) shows it is neither overfished nor undergoing overfishing, and the stock is above the biomass threshold. Pink shrimp have decreasing biomass (2011-2017) and higher F (2012-2017) in more recent years than in the several preceding years (2000-2010) for biomass and (2007-2011) for F. The 2018 stock assessment for pink shrimp noted that … "this decrease in spawning biomass warrants careful consideration as if this pattern of declining stocks and increasing fishing pressure continues at the current rate overfishing may become evident in this fishery in the very near future." Low fishing effort suggests that the abundance declines result from environmental impacts, rather than from fishing impacts.
		1.1.2	Stock rebuilding	NA	NA
	Management	1.2.1	Harvest Strategy	≥80	The discussion on harvest strategy in the 2016 Florida Shrimp pre-assessment still holds at this point. In addition, The GMFMC has implemented shrimp effort maxima to protect red snapper and sea turtles; reaching either of these maxima could result in shrimp effort reductions or fishery closures. Research has determined that natural mortality for juvenile red snapper is ~4 times the original estimate, therefore reducing the effectiveness on the effort cap and allowing a small increase in the effort cap for red snapper (FMP Amendment 18).
		1.2.2	Harvest control rules and tools	60-79	The MSA, Regulations for MSA, and the GMFMC Shrimp FMP have strong requirements for avoiding overfishing, avoiding an overfished state, and for rebuilding stocks as necessary. The current system has sufficient elements to reach an SG80 harvest control rule except that it does not specify "pre-agreed rules and management actions that will be taken in response to changes in indicators of stock status with respect to explicit or implicit reference points" (MSC Standard v2.01). However, the GMFMC has not set a clear HCR to implement the requirements. The warning in the 2018 pink shrimp stock assessment for risk of overfishing in

					the near future highlights the benefits of an HCR before low stock status becomes an issue needing action. The fishery remains at 60-79. The MSC provides guidance for lightly exploited stocks and data limited stocks useful for exploring options for HCR. See Workplan Results for further discussion.
		1.2.3	Information and monitoring	≥80	The discussion on information and monitoring in the 2016 Florida Shrimp pre-assessment still holds at this point. In addition, new information on the natural mortality of juvenile red snapper allows the Council to adjust shrimp effort limits that protect red snapper to levels that minimize impacts on the shrimp fishery while maintaining protection for red snapper (GMFMC Amendment 18).
		1.2.4	Assessment of stock status	≥80	The discussion on stock assessment in the 2016 Florida Shrimp pre-assessment still generally holds at this point. Draft stock assessment for pink shrimp shows similar results to those of the 2018 assessment, with declining biomass. The low fishing effort suggests that the abundance declines result from environmental impacts, rather than from fishing impacts.
2	Primary species	2.1.1	Outcome	≥80	An update of the 2012 catch composition report for the shrimp fishery is due in 2020. Therefore, no new data are available to update the discussion on Primary Species outcome from the 2016 Florida shrimp pre-assessment.
		2.1.2	Management strategy	≥80	An update of the 2012 catch composition report for the shrimp fishery is due in 2020. Therefore, no new species composition data are available to update the discussion on Primary Species management from the 2016 Florida shrimp pre-assessment. Main species consist of brown and white shrimp and red snapper. None of the main Primary Species experiences overfishing or is in an overfished state. The GMFMC regularly considers measures to minimize unwanted catch of Primary Species. White and brown are not unwanted. Finfish and blue crab are unwanted, and TEDs and BRDs actively discharge these species from the nets with limited retention. NOAA Fisheries gear experts continue to work with the shrimp fishing industry to develop new and effective ways to reduce bycatch, and regulations establish permits to test alternate TEDs and BRDs and to test modifications (50 C.F.R. §223.207e; 50 C.F.R. §222.207a). Individual fishermen account for a substantial portion of

					testing alternate methods.
		2.1.3	Information	60-79	On-board observer coverage remains on the order of 2%, and electronic logbook (ELB) coverage is on the order of 40%. A substantial proportion of the catch composition is not identified. It is not clear that the results of observer coverage represent the activities of the fleet as a whole. Therefore, the discussions from the 2016 pre-assessment generally hold, and the score remains at 60-79. The shrimp trips using otter trawl remain at sea for roughly 30-35 days, suggesting that the cost of fishermen acting differently with observers than without may be too high for an observer effect to occur. Recovery funds from the Deepwater Horizon settlement have added approximately 300 observer days per year in the Gulf of Mexico, a large portion of which is scheduled for the shrimp fishery. Comparison of ELB data with observer data shows comparable results. The Shrimp Roundtable and LGL proposed a research project to gather information on the unidentified portion of the catch. See Workplan Results for further discussion.
	Secondary species	2.2.1	Outcome	≥80	An update of the 2012 catch composition report for the shrimp fishery is due in 2020. Therefore, no new data are available to update the discussion on Primary Species outcome from the 2016 Florida shrimp pre-assessment.
		2.2.2	Management strategy	≥80	An update of the 2012 catch composition report for the shrimp fishery is due in 2020. Therefore, no new species composition data are available to update the discussion on Primary Species management from the 2016 Florida shrimp pre-assessment. Main species consist of Atlantic croaker and sea trout. Both of these species require RBF, which the 2016 pre-assessment scored as low risk. Numerous other species caught as low proportion of the total catch are considered minor species. The GMFMC regularly considers measures to minimize unwanted catch of Primary Species. TEDs and BRDs actively discharge these species from the nets with limited retention. NOAA Fisheries gear experts continue to work with the

					shrimp fishing industry to develop new and effective ways to reduce bycatch, and regulations establish permits to test alternate TEDs and BRDs and to test modifications (50 C.F.R. §223.207e; 50 C.F.R. §222.207a). Individual fishermen account for a substantial portion of the testing of alternate methods.
		2.2.3	Information	60-79	On-board observer coverage remains on the order of 2%, and electronic logbook (ELB) coverage is on the order of 40%. A substantial proportion of the catch composition is not identified. It is not clear that the results of observer coverage represent the activities of the fleet as a whole. Therefore, the discussions from the 2016 pre-assessment generally hold, and the score remains at 60-79. The shrimp trips using otter trawl remain at sea for roughly 30-35 days, suggesting that the cost of fishermen acting differently with observers than without may be too high for an observer effect to occur. Recovery funds from the Deepwater Horizon settlement have added approximately 300 observer days per year in the Gulf of Mexico, a large portion of which is scheduled for the shrimp fishery. Comparison of ELB data with observer data shows comparable results. The Shrimp Roundtable and LGL proposed a research project to gather information on the unidentified portion of the catch. See Workplan Results for further discussion.
	ETP species	2.3.1	Outcome	≥80	The 2014 Southeast US Shrimp Biological Opinion (BiOp) remains the best available information on the status of ETP species potentially affected by the shrimp fishery. The BiOp indicated that the shrimp fishery does not pose jeopardy to sea turtles, smalltooth sawfish, or sturgeon. The 2016 Florida shrimp pre-assessment lists the ETP species and summarizes the current status, and no substantive changes have occurred since then. NOAA Fisheries (Mike Barnette, pers. comm.) indicated that smalltooth sawfish may be increasing in abundance.
		2.3.2	Management strategy	≥80	The management strategy is based on requirements of the BiOp, and has increased in effectiveness since publication of the BiOp. The main measures of the management strategy

					consist of effort limitations on shrimp effort and minimum levels of compliance with TED effectiveness. Outreach to fishermen, monitoring of TEDs, and enforcement have demonstrated that compliance of otter trawls has substantially exceeded requirements. The management is comparable to or better than that described in the 2016 Florida pre-assessment. NOAA Fisheries gear experts continue to work with the shrimp fishing industry to develop new and effective ways to reduce bycatch, and regulations establish permits to test alternate TEDs and BRDs and to test modifications (50 C.F.R. §223.207e; 50 C.F.R. §222.207a). Individual fishermen account for a substantial portion of testing alternate methods.
		2.3.3	Information	≥80	On-board observer coverage remains on the order of 2%, and electronic logbook (ELB) coverage is on the order of 40%. A substantial proportion of the catch composition is not identified. It is not clear that the results of observer coverage represent the activities of the fleet as a whole. However, the success of generating a high degree of compliance with TED regulations provides information supporting a conclusion that the fishery does not jeopardize sea turtles, leading to a likely score ≥80. The shrimp trips using otter trawl remain at sea for roughly 30-35 days, suggesting that the cost of fishermen acting differently with observers than without may be too high for an observer effect to occur. Recovery funds from the Deepwater Horizon settlement have added approximately 300 observer days per year in the Gulf of Mexico, a large portion of which is scheduled for the shrimp fishery. Comparison of ELB data with observer data shows comparable results. The Shrimp Roundtable and LGL proposed a research project to gather information on the unidentified portion of the catch. See Workplan Results for further discussion.
	Habitats	2.4.1	Outcome	≥80	The 2016 EFH review by the GMFMC is the most current discussion of habitat status, and updates the discussion in the 2016 Florida shrimp pre-assessment. The situation

					remains as described in the 2016 Florida pre-assessment that the fishery occurs on soft sediments without substantial vertical relief in a highly dynamic area stirred by hurricanes and tropical storms. Neither the GMFMC nor Florida has established VME, but the GMFMC has set habitat areas of particular concern (HAPC) and regulations to protect it as necessary. Several shrimp trawling closures occur to protect habitat and prevent gear conflicts.
		2.4.2	Management strategy	≥80	No substantial changes in habitat management have occurred since the 2016 Florida shrimp pre-assessment. The GMFMC has set regulations for otter trawls to protect habitat. Florida Fish and Wildlife Commission (FFWC) has prohibited otter trawls with mesh area larger than 500 square feet inside the 3-mile limit, which will protect seagrass, the main vulnerable habitat in inshore waters.
		2.4.3	Information	≥80	The 2016 EFH review summarizes key information necessary for management.
	Ecosystem	2.5.1	Outcome	≥80	The Gulf of Mexico is undergoing serious anthropogenic threats, but there is no suggestion that the shrimp otter trawl fishery is a contributor. The strong condition of pink shrimp stocks, the generally good status of the primary, secondary, ETP, and habitat components (although secondary species would likely receive a condition for substantial amounts of unidentified fish caught by shrimp trawls), the model results indicating that shrimp is not a constraining forage species provide evidence that the shrimp fisheries do not adversely affect the Gulf of Mexico ecosystem.
		2.5.2	Management strategy	≥80	NOAA Fisheries and the Regional Councils have increased emphasis on ecosystem-based fishery management (EBFM) since the 2016 Florida shrimp pre-assessment. NOAA fisheries updated an integrated ecosystem assessment in 2017 and updated a national roadmap to EBFM in 2018, and the GMFMC prepared a white paper on ecosystem approaches to fisheries management in the Gulf of Mexico in 2018. The GoM ecosystem is under increasing stress from human-induced and natural pressures. The shrimp fishery appears as a minor cause of the pressures. While the GMFMC has not developed a Fisheries Ecosystem Plan, it implicitly takes into account ecosystem impacts when establishing shrimp management, such as advancing stock

					assessments, tracking ecosystem trends, climate change, multi-species interactions, connectivity, habitat conservation, and human dimensions.
		2.5.3	Information	≥80	Reasonable information exists to understand status for Primary, Secondary, ETP, and Habitat components. Additional information comes from ecosystem status reports, Atlantis ecosystem models, and ecopath with ecosim models. The ecosystem status reports do not address the impacts of shrimp fishing on the ecosystem. An Atlantis model does not fully characterize shrimp fishing, so does not yet provide full insight. Older ecopath with ecosim models predict that reduction in shrimp abundance from shrimp fishing will not affect production or rebuilding of predator species because of the abundance of alternate food sources.
3	Governance and Policy	3.1.1	Legal and customary framework	≥80	Federal management of otter trawl vessels with federal permits occurs through the fishing range of the vessels, including state waters. Vessels that fish only in state waters must have state permits and are subject to state management. NOAA Fisheries and FFWC report that the amount of otter trawl shrimp catch by state-only licensed vessels is small so the fishery is effectively federally managed. The GMFMC coordinates with state agencies for regulations as appropriate, for example the Texas Shrimp Closure in state and federal waters that prohibits otter trawl fishing to protect small shrimp until they reach marketable size. The federal and state management systems have a robust legal and customary framework as described in the 2016 Florida shrimp pre-assessment.
		3.1.2	Consultation, roles and responsibilities	≥80	The GMFMC, NOAA Fisheries, and FFWC have clearly defined roles and responsibilities and robust consultation requirements as described in the 2016 Florida shrimp pre-assessment.
		3.1.3	Long term objectives	≥80	The GMFMC, NOAA Fisheries, and FFWC have clear long-term objectives as described in the 2016 Florida pre-assessment.
	Fishery specific management system	3.2.1	Fishery specific objectives	≥80	The shrimp FMP lays out fishery-specific objectives, as described by the 2016 Florida pre-assessment.
		3.2.2	Decision making processes	≥ 80	The federal system, specifically within the GMFMC, has a strong and clear decision-making process as summarized in the 2016 Florida shrimp pre-assessment. The predominance of the decision making takes place in the federal system,

					leading to a likely decision to score this performance indicator on federal performance. The state system was not evaluated in the pre-assessment. If the fishery were to move to full assessment, an assessment team would have to determine whether to consider state management as a minor part in the composite management in which the federal system would prevail, or as a scoring element. If the latter, the state would need to present evidence that it makes decisions consistent with the precautionary approach.
		3.2.3	Compliance and enforcement	>80	State and federal compliance is robust for the Florida shrimp fishery, as summarized in the 2016 Florida shrimp pre-assessment.
		3.2.4	Management performance evaluation	≥ 80	The federal system, specifically within the GMFMC, has internal and external performance evaluation, as summarized in the 2016 Florida shrimp pre-assessment. The predominance of the decision making takes place in the federal system, leading to a likely decision to score this performance indicator on federal performance. The state system was not evaluated in the pre-assessment. If the fishery were to move to full assessment, an assessment team would have to determine whether to consider state management as a minor part in the composite management in which the federal system would prevail, or as a scoring element. If the latter, the state would need to present evidence that external review of the management system occurs.

Workplan results

Result	Related Action on FisheryProgress	Related MSC Performance Indicator	Explanation
No substantive action has taken place. Further planning was postponed pending	Develop a well-defined Harvest Control Rule	1.2.2	**MSC Guidance** The “annual crop” nature of brown, pink, and white shrimp makes traditional harvest control rules difficult or even unsuitable in practice

Result	Related Action on FisheryProgress	Related MSC Performance Indicator	Explanation
discussion during 3-year review. Therefore, the reviewer provided extended evaluation and recommendation for further steps.			for these species. HCRs have been developed for shrimp fisheries elsewhere in the world, for example in Australia (e.g., https://fisheries.msc.org/en/fisheries/exmouth-gulf-prawns/@@assessments; https://fisheries.msc.org/en/fisheries/australia-northern-prawn/@@assessments; https://fisheries.msc.org/en/fisheries/spencer-gulf-king-prawn/@@assessments). These other fisheries differ substantially from the GOM fisheries as their control rules open and close fisheries seasonally depending on abundance estimates from commercial or survey catch rates; the GOM white and brown shrimp fisheries mostly have seasonal closures not dependent on survey results or fishery performance, and the pink shrimp fishery does not have seasonal closures. Several "Guidance" or "Interpretation" statements by the MSC, which are not directly related to HCR, provide insight that may apply to development of suitable HCR for GOM shrimp. The MSC Interpretation "TRP [target reference point] in annual or nearly annual fisheries (FCR v2.0 - Annex SA PI 1.1.1)" addresses proxies for MSY for use as a TRP. The point is to assure that the stock remains in a productive zone with fishing superimposed on high natural variability. Comment: The proxy for MSY set by the GMFMC and used in the shrimp stock assessment meets this Interpretation. GSA2.5 provides substantial guidance on HCR for different situations. "HCRs are the arrangements by which a fishery expects to achieve the stock status outcomes expressed in PI 1.1.1. They are defined as the pre-agreed rules and management actions that will be taken in response to changes in indicators of stock status with respect to explicit or implicit reference points, and MSC expects these elements to be part of HCRs. The values adopted for such reference points are critical to the performance of the HCR, and CABs should ensure that the interaction between the rules of the HCR and the reference points is part of their assessment." For example: HCRs will usually include some form of dynamic rule, requiring that a change of some sort will be made in response to a fishery indicator moving above or below one of the trigger reference points. In lightly exploited fisheries, it may be that some reference points

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			are set to trigger changes in data collection or assessment approaches, as certain thresholds are reached (see Dowling et al, 2011a). Comment: Though lightly exploited at present, the rapidly declining shrimp biomass suggests that reaching the MSST in the foreseeable future is not a trivial probability. The environment has likely driven the decline, but both NOAA Fisheries and MSC require action when fisheries exceed thresholds. The MSC allows changing threshold levels to recognize natural environmental changes. HCRs are often applied on a frequent basis, such as with the annual setting of TACs or effort restrictions. Such HCRs respond dynamically to the monitoring data from the fishery with regular adjustments to input/output type management measures. In data-poor fisheries which are managed without such input/output controls, management may comprise only technical measures such as size limits, gear restrictions, closed seasons and closed areas. In these cases, the specific terms of the technical measures are usually set and fixed for a relatively long period of time (several years), based on occasional strategic stock assessments, that are shown to deliver defined target and/or limit reference points. Such an arrangement may be regarded as equivalent to a dynamic HCR operating over a longer time scale in cases where some indicators are monitored to confirm that the HCRs are delivering the intended targets for the stock. At the 80 level in scoring issue (a), 'well-defined' HCRs in these cases would be expected to explicitly include the conditions under which the technical measures in the fishery would be expected to be revised in the future. Comment: It is not clear that the 'technical measures' provisions would apply to the shrimp fisheries, as they are not data poor and have reference points. In all cases, the MSC requires some sort of explicit trigger that requires specific action. The current system has sufficient elements to reach an SG80 harvest control rule except that it does not specify "pre-agreed rules and management actions that will be taken in response to changes in indicators of stock status with respect to explicit or implicit reference points" (MSC Standard v2.01). **US Federal Requirements** The National Standard 1 guidelines (§600.310) require that "Any FMP

Result	Related Action on FisheryProgress	Related MSC Performance Indicator	Explanation
			shall establish a mechanism for specifying ACLs in the FMP (including a multiyear plan), implementing regulations, or annual specifications, at a level such that overfishing does not occur in the fishery, including measures to ensure accountability (Magnuson-Stevens Act section 303(a)(15)).” Further, each Council must establish an Acceptable Biological Catch control rule that will provide a built-in buffer that accounts for scientific uncertainty between the overfishing limit and the Acceptable Biological Catch levels for each managed stock. These levels are to be set by the Council’s Scientific and Statistical Committee using stock assessments or other available biological information, and the Acceptable Biological Catch control rule for determining the appropriate level of risk. … The National Standard 1 guidelines further recount that Section 303(a)(15) of the Magnuson-Stevens Act “shall not apply to a fishery for species that have a life cycle of approximately 1 year unless the Secretary has determined the fishery is subject to overfishing of that species (Pub. L. 109-479 104(b)(2)). This exception applies to a stock for which the average age of spawners in the population is approximately 1 year or less. While exempt from the ACL and AM requirements, FMPs or FMP amendments for these stocks must have SDC, MSY, OY, ABC, and an ABC control rule.” In response to the control rule (and other) requirements, the GMFMC passed a Generic Annual Catch Limit/Accountability Measures Amendment (2011) for all management plans. This generic amendment did not specify applicable action for shrimp other than royal red shrimp. Amendment 15 (2015) of the Shrimp FMP gives guidance for taking action in cases of overfishing: “If the MFMT is exceeded for two consecutive years, the appropriate committees and/or panels (e.g. stock assessment panels, advisory panels, SSCs) would convene to review changes in apparent stock size, changes in fishing effort, potential alterations in habitat or other environmental conditions, fishing mortality and other factors that may have contributed to the decline.” Amendment 15 also gives guidance for taking action in cases of overfished stocks: “The Shrimp Advisory Panel recommended that values below MSST for two years in a row designate the stock as overfished, as

Result	Related Action on FisheryProgress	Related MSC Performance Indicator	Explanation
			a solitary year below MSST might be indicative of environmental conditions and not necessarily an overfished condition. Unlike for overfishing, the SFA did not have a two-year provision for responding to an overfished determination (GMFMC 1999). In the Magnuson Stevens Act, if a stock is determined to be overfished, NMFS must notify the Council, and the Council must begin developing conservation and management measures to rebuild the stock. The Council is required to implement management measures within two years of being notified. Because of the biology of the shrimp stock, variability in environmental conditions, and the two-year timeframe to implement these measures, the stock may no longer be considered overfished by the time management measures are in effect." Comment: Neither the overfishing nor overfished guidance of Amendment 15 meets the MSC specifications for harvest control rule. It is not clear that Amendment 15 meets the requirements of NS1 requiring FMPs to have ABC control rules. Rather, the GMFMC tasks to the SSC the development of the ABC control rule. Subsequently in 2017, the GMFMC prepared a options paper for reconsidering the harvest control rules of the Generic Annual Catch Limit/Accountability Measures Amendment, as the gap between target and limit reference points seemed too small to offer effective management. Comment: The GMFMC has not taken action to revise the ABC control rule, but is preparing to convene the ABC Control Rule Working Group during 2020. **Recommendation** The FIP participants have an opportunity to interact with the GMFMC and the ABC Control Rule Working Group early in the process and to advocate for development of a robust harvest control rule that not only meets the needs of the GMFMC but of the MSC. Agreement by the GMFMC to meet MSC requirements are likely consistent with Council goals if the GMFMC agreed on rules with management actions or potential actions that will be taken in response to changes in indicators of stock status with respect to MFMT and MSST, e.g., specified action taken when biomass falls to or below MSST or fishing mortality reaches or exceeds MFMT.
The Gulf of Mexico	Evaluate observer	2.1.3, 2.2.3,	**Observer coverage**

Result	Related Action on FisheryProgress	Related MSC Performance Indicator	Explanation
Shrimp Supply Chain Roundtable hosted a workshop in Galveston, TX on July 11, 2018 to identify alternative ways to conduct a statistical analysis of observer coverage levels and evaluate data collection for the shrimp fishery. The workshop included those with expertise on the shrimp fishery, certification standards, and the history of the FIP and Supply Chain Roundtable, as well as representatives from NOAA. Participants proposed the use of electronic logbook (ELB) data to verify the accuracy of observer program data by comparing catch per unit effort (CPUE); work on this is underway and shows good conformance of ELB with on-board observer results. A report on ELB-Observer comparison is not yet available for review.	coverage levels	2.3.3	On-board observer coverage remains on the order of 2%, and electronic logbook (ELB) coverage is on the order of 40%. A substantial proportion of the catch composition is not identified. It is not clear that the results of observer coverage represent the activities of the fleet as a whole. The Gulf of Mexico Shrimp Supply Chain Roundtable hosted a workshop in Galveston, TX on July 11, 2018 to identify alternative ways to conduct a statistical analysis of observer coverage levels and evaluate data collection for the shrimp fishery. The workshop included those with expertise on the shrimp fishery, certification standards, and the history of the FIP and Supply Chain Roundtable, as well as representatives from NOAA. Participants proposed the use of electronic logbook (ELB) data to verify the accuracy of observer program data by comparing catch per unit effort (CPUE); work on this is underway and shows good conformance of ELB with on-board observer results. A report on ELB-Observer comparison is not yet available for review. However, several positive situations have occurred: • Comparison of ELB data with observer data shows comparable results. • The shrimp trips using otter trawl remain at sea for roughly 30-35 days, suggesting that the cost of fishermen acting differently with observers than without may be too high for an observer effect to occur (i.e., likely minimal observer effect). • The Gulf of Mexico Shrimp Supply Chain Roundtable and LGL proposed a research project to gather information on the unidentified portion of the catch. • Recovery funds from the Deepwater Horizon settlement have added approximately 300 observer days per year in the Gulf of Mexico, some portion of which is scheduled for the shrimp fishery. **Recommendation** Review by the GMFMC SSC and or SEDAR of these and other efforts, with its responsibility to assure best available science for the Council, and advice from the SSC and or SEDAR to the GMFMC could determine if the efforts are sufficient to enhance reliability of the data.

Result	Related Action on FisheryProgress	Related MSC Performance Indicator	Explanation
			It would help if the GMFMC/SSC set goals and objectives for shrimp observer coverage to relay to NOAA Fisheries. Two basic questions are relevant to the determination: 1. What needs to be estimated from the data? For example: • Landed catch • Discarded catch • Rare events (ETP) • Biological Information • Distribution 2. What resolution (e.g., time and space) is needed? For example: • Fishery wide • Fleet/sectors • Season/area • Individual vessel • Stock
	Evaluate observer data collection	2.1.3, 2.2.3	FIP participants developed a proposal for fishing vessels to retain and bring to shore subsamples of catch for full identification. If the research demonstrates feasibility for applying this identification of the currently unidentified portion of the catch to the entire fleet, then it could fill the gap of a large amount of unidentified catch. The proposal has not yet received funding, and the FIP participants are actively applying for funds. NOAA Fisheries personnel confirmed that the agency could use privately-developed research or data from privately-run observer programs, if previously agreed with the agency. NOAA Fisheries has a policy of treating certification participants as normal stakeholders and not conducting activities specifically to benefit certification programs. Therefore, it is not certain that NOAA Fisheries, and therefore the GMFMC, would provide resources aimed to produce the improvements sought by this FIP. It would benefit the FIP participants to understand current NOAA Fisheries and GMFMC priorities and to present to both the benefits that accrue from the improvements such that NOAA Fisheries and the GMFMC could justify support for the FIP in terms of current priorities.
Confirm compliance with TED requirements	Gear tuning	2.3.3	Outreach by FIP participants, NOAA Fisheries gear monitoring program, and enforcement activities has combined to result in TED compliance

Result	Related Action on FisheryProgress	Related MSC Performance Indicator	Explanation
			substantially exceeding the minimum levels necessary to protect sea turtles. TED compliance no longer seems to cause jeopardy to sea turtles.

References

Ainsworth, C. H., Schirripa, M. J., and Morzaria-Luna, H. (eds.) 2015. An Atlantis Ecosystem Model for the Gulf of Mexico Supporting Integrated Ecosystem Assessment. NOAA Technical Memorandum NMFS-SEFSC-676. https://repository.library.noaa.gov/view/noaa/4875.

Babcock, E. A., M. Barnette, J. Bohnsack, J. J. Isely, C. Porch, P. M. Richards, C. Sasso, and X. Zhang. 2018. Integrated Bayesian models to estimate bycatch of sea turtles in the Gulf of Mexico and southeastern U.S. Atlantic coast shrimp otter trawl fishery. NOAA Technical Memorandum NOAA NMFS-SEFSC-721: 47 p. doi: 10.25923/xwe2-nk67.

Code of Federal Regulations. 2019. PART 600—MAGNUSON-STEVENS ACT PROVISIONS. https://gov.ecfr.io/cgi-bin/text-idx?gp=&SID=234f998e93626c06a6ed119dda1f418e&mc=true&tpl=/ecfrbrowse/Title50/50chapterVI.tpl.

Code of Federal Regulations. 2019. THREATENED MARINE AND ANADROMOUS SPECIES. https://www.ecfr.gov/cgi-bin/text-idx?SID=809a55c8e80ad05f18e5e707117be76c&mc=true&node=pt50.10.223&rgn=div5#se50.10.223_1207

Code of Federal Regulations. 2019. PART 622—FISHERIES OF THE CARIBBEAN, GULF OF MEXICO, AND SOUTH ATLANTIC. https://www.ecfr.gov/cgi-bin/text-idx?SID=809a55c8e80ad05f18e5e707117be76c&mc=true&tpl=/ecfrbrowse/Title50/50cfr622_main_02.tpl

FWC. http://myfwc.com/about/commission/meeting-protocol/

FWC. http://myfwc.com/about/inside-fwc/mfm/

FWC. http://www.myfwc.com/about/commission/commission-meetings/

FWC. https://www.flrules.org/gateway/Division.asp?DivID=348

FWC. http://www.leg.state.fl.us/statutes/index.cfm?App_mode=Display_Statute&URL=0300-0399/0379/0379ContentsIndex.html

Gallaway, B.J, W. J. Gazey and J. G. Cole. 2017. An Updated Description of the Benefits and Consequences of Red Snapper Shrimp Trawl Bycatch Management Actions in the Gulf of Mexico, North American Journal of Fisheries Management, 37:2, 414-419, DOI: 10.1080/02755947.2016.1271842.

GMFMC. 2011. Generic Annual Catch Limits/Accountability Measures Amendment. http://gulfcouncil.org/wp-content/uploads/Final-Generic-ACL-AM-Amendment-September-9-2011-v.pdf.

GMFMC. 2012. Amendment Guide. Generic Annual Catch Limit/Accountability Measures Amendment. https://gulfcouncil.org/wp-content/uploads/Generic-ACL-AM-Amendment-Guide-Booklet-3-6-12.pdf

GMFMC. 2015. Status Determination Criteria for Penaeid Shrimp and Adjustments to the Shrimp Framework Procedure. Amendment 15 to Shrimp FMP. http://archive.gulfcouncil.org/docs/amendments/Shrimp%20Amendment%2015%20FINAL.pdf.

GMFMC. 2016. Final Report 5-Year Review of Essential Fish Habitat Requirements. http://gulfcouncil.org/wp-content/uploads/EFH-5-Year-Revew-plus-App-A-and-B_Final_12-2016.pdf

GMFMC. 2017. Acceptable Biological Catch Control Rule Revisions. Options Paper for a Generic Amendment. There

GMFMC. 2018. Ecosystem Approaches to Fishery Management in the Gulf of Mexico. http://gulfcouncil.org/wp-content/uploads/E-8a-Ecosystem-approaches-in-the-Gulf-of-Mexico.pdf

GMFMC. 2018. Coral Habitat Areas Considered for Habitat Area of Particular Concern Designation in the Gulf of Mexico. http://gulfcouncil.org/wp-content/uploads/Final-Coral-9-DEIS-20181005_508C.pdf.

GMFMC. 2019. Amendment 18 to Shrimp FMP. https://www.fisheries.noaa.gov/action/amendment-18-modifying-shrimp-effortthreshold.

Hart, R. A. 2018. Stock Assessment Update for Pink Shrimp (*Farfantepenaeus duorarum*) in the U.S. Gulf of Mexico for the 2017 Fishing Year. https://public.gulfcouncil.org:5001/.

Karnauskas, M. 2018. Gulf of Mexico Ecosystem-Based Fishery Management (EBFM) Road Map Implementation Plan. http://gulfcouncil.org/wp-content/uploads/Q-5-EBFM-Road-Map-Implementation.pdf

Karnauskas, M., Kelble, C. R., Regan, S., Quenée, C., Allee, R., Jepson, M., Freitag, A., Craig, J. K., Carollo, C., Barbero, L., Trifonova, N., Hanisko, D., Zapfe, G. (2017) *2017 Ecosystem status report update for the Gulf of Mexico*. NOAA Technical Memorandum NMFS-SEFSC-706, 51 p. http://www.aoml.noaa.gov/ocd/ocdweb/ESR_GOMIEA/report/GoMEcosystemStatusReport2017_NMFS-SEFSC-706_FINAL.pdf

MSC. accessed 11/2019. Interpretation for Annual Crop Stocks. https://mscportal.force.com/interpret/s/article/TRP-in-annual-or-nearly-annual-fisheries-PI-1-1-1-1527262011107.

NOAA. 2020. NOAA Landings. https://foss.nmfs.noaa.gov/apexfoss/f?p=215:200:3609118534120::NO:::.

NOAA Fisheries. 2014. Biological Opinion on the Continued Implementation of the Sea Turtle Conservation Regulations under the ESA and the Continued Authorization of the Southeast U.S. Shrimp Fisheries in Federal Waters under the Magnuson-Stevens Fishery Management Conservation Act. https://www.fisheries.noaa.gov/webdam/download/91825992

NOAA Fisheries. 2018. Ecosystem-Based Fisheries Management Road Map. https://www.fisheries.noaa.gov/resource/document/ecosystem-based-fisheries-management-road-map.

NOAA Fisheries. 2018. Southeastern Shrimp Otter Trawl Fleet TED Inspections, Compliance, Sea Turtle Capture Rates, and TED Effectiveness (April 2014 – December 2017). https://www.fisheries.noaa.gov/webdam/download/94029405.

NOAA Fisheries. 2018. §600.310 National Standard 1—Optimum Yield. https://www.ecfr.gov/cgi-bin/text-idx?SID=71b8c6026001cb90e4b0925328dce685&mc=true&node=se50.12.600_1310&rgn=div8

NOAA Fisheries. 2019. 2019 Gulf of Mexico EBFM Implementation Plan. https://www.fisheries.noaa.gov/webdam/download/90850744

NOAA Fisheries. 2019. Fishery Ecosystem Plans. https://www.st.nmfs.noaa.gov/ecosystems/ebfm/fishery-ecosystem-plan

NOAA Fisheries. 2019. https://www.fisheries.noaa.gov/southeast/bycatch/turtle-excluder-device-regulations#proposed-rule-to-require-teds-on-skimmer-trawl,-pusher-head-trawl,-and-wing-net-vessels

NOAA Fisheries. 2019. Turtle Excluder Devices. https://www.fisheries.noaa.gov/southeast/bycatch/turtle-excluder-devices

NOAA Fisheries. 2019. Bycatch Reduction Device Testing Manual – 2016. https://www.fisheries.noaa.gov/resource/document/bycatch-reduction-device-testing-manual-2016

NOAA Fisheries. 2019. Environmental Impact Statement To Reduce The Incidental Bycatch And Mortality Of Sea Turtles In The Southeastern U.S. Shrimp Fisheries. : https://www.fisheries.noaa.gov/southeast/bycatch/turtle-excluder-device-regulations#final-rule-to-require-teds-on-skimmer-trawl,-pusher-head-trawl,-and-wing-net-vessels

Parsons, G. 2019. Application of a New Bycatch Reduction Device for Use in the U.S. Shrimp Industry. https://www.fisheries.noaa.gov/southeast/sustainable-fisheries/experimental-shrimp-trawl-bycatch-reduction-device.

Raborn, S.W., B.J. Gallaway, J.G, Cole, W.J. Gazey, and K.I. Andrews. 2012. Effects of Turtle Excluder Devices (TEDs) on the Bycatch of Three Small Coastal Sharks in the Gulf of Mexico Penaeid Shrimp Fishery. North American Journal of Fisheries Management. 32:333-345.

Walters, C., S. J. D. Martell, V. Christensen, and B. Mahmoudi. 2008. An Ecosim model for exploring Gulf of Mexico ecosystem management options: implications of including multistanza life history models for policy predictions. Bulletin of Marine Science, 83(1): 251–271. https://pdfs.semanticscholar.org/1b8e/47a7527c8a39f52f1d3e188be6c2aad8be74.pdf .