

Amendment 2 to the Fishery Management Plans for Puerto Rico, St. Croix, and St. Thomas and St. John: Trawl and Net Gear and Descending Devices

Including Environmental Assessment, Fishery Impact Statement,
Regulatory Impact Review, and Regulatory Flexibility Act Analysis

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This Environmental Assessment is being prepared using the 2020 CEQ NEPA Regulations. The effective date of the 2020 CEQ NEPA Regulations was September 14, 2020, and reviews begun after this date are required to apply the 2020 regulations unless there is a clear and fundamental conflict with an applicable statute. 85 *Federal Register* at 43372-73 (§§ 1506.13, 1507.3(a)). This Environmental Assessment began on TBD and accordingly proceeds under the 2020 regulations.

Abbreviations and Acronyms Used in this Document

CFMC	(Council); Caribbean Fishery Management Council
DNER	Department of Natural and Environmental Resources
DPNR	Department of Planning and Natural Resources
EA	environmental assessment
EEZ	exclusive economic zone
E.O.	Executive Order
FMP	fishery management plan
MMA	marine managed area
MSA	(Magnuson-Stevens Act); Magnuson-Stevens Fishery Conservation and Management Act
NMFS	National Marine Fisheries Service
USVI	United States Virgin Islands

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Fishery Impact Statement

The Magnuson-Stevens Fishery Conservation and Management Act (Magnuson-Stevens Act) requires a Fishery Impact Statement (FIS) be prepared for all Fishery Management Plans (FMPs) and amendments. The FIS contains an assessment of the likely biological, social, and economic effects of the conservation and management measures on: (1) fishery participants and their communities; (2) participants in the fisheries conducted in adjacent areas under the authority of another Council; and (3) the safety of human life at sea. Detailed discussion of the expected effects for all proposed alternatives is provided in Chapter 4. The FIS provides a summary of these effects.

The National Marine Fisheries Service (NMFS) and the Caribbean Fishery Management Council (Council), developed Amendment 2 to the Comprehensive FMP for the Puerto Rico Exclusive Economic Zone (EEZ) (Puerto Rico FMP), the Comprehensive FMP for the St. Thomas and St. John EEZ (St. Thomas and St. John FMP), and the Comprehensive FMP for the St. Croix EEZ (St. Croix FMP) to prohibit the use of trawl nets, purse seines, and trammel nets for all fishing in federal waters around Puerto Rico, St. Croix, and St. Thomas/St. John, prohibit the use of gillnets for all fishing except for the use of surface gillnets that meet specified requirements for the harvest of certain species of baitfish in federal waters around Puerto Rico, St. Croix, and St. Thomas/St. John, and require that descending devices are available and ready for use when fishing for reef fish in federal waters around the U.S. Caribbean.

This amendment aims to prevent potential damage to habitats in the U.S. Caribbean EEZ, including essential fish habitat, from certain gear types, protect species associated with such habitats, as well as promote best fishing practices, and enhance the survival of released reef fish in the EEZ around Puerto Rico, St. Croix, and St. Thomas/St. John.

The affected area of this proposed action encompasses federal waters off Puerto Rico, St. Croix, and St. Thomas/St. John, as well as their fishing communities dependent on fishing for finfish resources.

The amendment contains four actions, with Actions 1-3 being similar actions corresponding to each of Puerto Rico, St. Croix, and St. Thomas/St. John, respectively, and would modify the use of trawl gear, gillnets, trammel nets, and purse seines in their respective EEZs. Within each action, four sub-actions would modify each of the gear types mentioned above for each island management area. Action 4 would establish requirements for the use of descending devices in the U.S. Caribbean EEZ. Actions and sub-actions are described and summarized below.

Actions 1(a), 2(a), and 3(a) would modify the use of trawl gear in federal waters around Puerto Rico, St. Croix, and St. Thomas/St. John, respectively. Trawl gear is not currently used in

federal or state waters of Puerto Rico or the U.S. Virgin Islands (USVI), however its use is authorized for the commercial harvest of Council-managed and of non-managed species. Preferred Alternative 3 of each sub-action would prohibit the use of trawl gear for all fishing in the EEZ around Puerto Rico, St. Croix, and St. Thomas/St. John.

Actions 1(b), 2(b), and 3(b) would modify the use of gillnets in federal waters around Puerto Rico, St. Croix, and St. Thomas/St. John, respectively. Gillnets are minimally used in federal waters around Puerto Rico, St. Croix, and St. Thomas/St. John due to depth and distance from the coast of federal waters, however its use is authorized for the commercial harvest of Council-managed pelagic species and non-managed species in all U.S. Caribbean federal waters. Gillnets are prohibited for use in USVI territorial waters, except for the use of surface gillnets for the harvest of certain species of baitfish. These surface gillnets are minimally used in USVI federal waters. Preferred Sub-alternative 2b of each sub-action would prohibit the use of gillnets in federal waters around Puerto Rico, St. Croix, and St. Thomas/St. John for all fishing, except surface gillnets for certain baitfish species and establishes mesh size and tending requirements for the surface gillnet.

Actions 1(c), 2(c), and 3(c) would modify the use of trammel nets in federal waters around Puerto Rico, St. Croix, and St. Thomas/St. John, respectively. Trammel nets and purse seines are not authorized for use nor prohibited for use in U.S. Caribbean federal waters. There is minimal use of trammel nets in Puerto Rico federal waters and there is no use of trammel nets in USVI federal waters. Preferred Alternative 2 of each sub-action would prohibit the use of trammel nets for all fishing in federal waters around Puerto Rico, St. Croix, and St. Thomas/St. John.

Actions 1(d), 2(d), and 3(d) would modify the use of purse seines in federal waters around Puerto Rico, St. Croix, and St. Thomas/St. John, respectively. Purse seines are not used in federal waters of Puerto Rico or the USVI. Preferred Alternative 2 of each sub-action would prohibit the use of purse seines for all fishing in federal waters around Puerto Rico, St. Croix, and St. Thomas/St. John.

Lastly, Action 4 would establish requirements for the use of descending devices for managed reef fish in the Puerto Rico, St. Croix, and St. Thomas/St. John FMPs. Preferred Alternative 2 would require a descending device be on board a commercial or recreational vessel and readily available for use while fishing for or possessing species in the reef fish component of any of the FMPs.

Assessment of Biological Effects

Prohibiting the use of trawl gear in federal waters around Puerto Rico, St. Croix, and St. Thomas/St. John (Preferred Alternative 3 of Actions 1(a), 2(a), 3(a), respectively) is an administrative action and it is not expected to have any significant biological/ecological impacts

because trawl gear has not historically been used in the U.S. Caribbean EEZ and is not currently used by Puerto Rico, St. Croix, or St. Thomas/St. John fishermen. Preventing trawl gear from being used in the future, could provide biological benefits by preventing potential bycatch and/or habitat effects from trawling activities in federal waters around Puerto Rico, St. Croix, and St. Thomas/St. John.

Prohibiting the use of gillnets in federal waters around Puerto Rico, St. Croix, and St. Thomas/St. John (Preferred Sub-alternative 2b in Actions 1(b), 2(b), 3(b), respectively), except surface gillnets for certain baitfish species, would reduce negative ecological and biological effects from the use of gillnets (e.g., prevention of bycatch of undersized individuals, protected species, other target and non-target species, and habitat) by setting species limitations, a minimum mesh size, and tending requirements for the use of surface gillnets.

Prohibiting the use of trammel nets in federal waters around Puerto Rico, St. Croix, and St. Thomas/St. John (Preferred Alternative 2 of Actions 1(c), 2(c), 3(c)) and purse seines (Preferred Alternative 2 of Actions 1(d), 2(d), 3(d)) is not expected to have any biological/ecological effects because neither trammel nets nor purse seines are currently authorized gear types for use in U.S. Caribbean federal waters. However, these actions could be slightly more beneficial to the biological and ecological environments of the EEZ around Puerto Rico, St. Croix, and St. Thomas/St. John than the status quo because they restrict future use of these gear types through a petition to the Council.

Lastly, requiring descending devices be rigged and ready when fishing for reef fish (Preferred Alternative 2 in Action 4) in federal waters around Puerto Rico, St. Croix, and St. Thomas/St. John, respectively, would benefit the biological and ecological environments of reef fish by potentially decreasing fishing mortality of Council-managed reef fish from barotrauma in each of the island management areas.

Assessment of Economic Effects

Prohibiting the use of trawl gear (Preferred Alternative 3 in each of Actions 1(a), 2(a), 3(a)), trammel nets (Preferred Alternative 2 in each of Actions 1(c), 2(c), and 3(c)), and purse seines (Preferred Alternative 2 in each of Actions 1(d), 2(d), and 3(d)) for all fishing in federal waters around Puerto Rico, St. Croix, and St. Thomas/St. John, respectively, are precautionary administrative actions and are not expected to result in any direct economic effects. These gear prohibitions would be expected to result in positive net economic effects if economic benefits associated with the prevention of additional bycatch outweigh the adverse economic effects due to forgone revenues that would be associated with the use of trawl nets, trammel nets or purse seines.

Similarly, prohibiting the use of gillnets for all fishing in federal waters around Puerto Rico, St. Croix, and St. Thomas/St. John (Preferred Sub-alternative 2b in Actions 1(b), 2(b), 3(b), respectively), with the exception of surface gillnets for certain baitfish species, is a precautionary management measure that would not be expected to directly result in economic effects under current conditions. This preventive management measure could result in indirect economic benefits due to the added protection they would provide stocks by preventing future increases in the usage of gillnet. Preferred Sub-alternative 2b preemptively balances the prevention of increased gillnet usage, reduces bycatch and impacts to habitat associated with this gear, while allowing gillnets to be used to harvest a predetermined list of baitfish species.

Lastly, requiring descending devices be rigged and ready when fishing for reef fish (Preferred Alternative 2 in Action 4) in federal waters around Puerto Rico, St. Croix, and St. Thomas/St. John, respectively, would add some minor economic impacts to recreational and commercial fishermen because they would need to incur in expenses to purchase or create the device, however, those expenses are expected to be minor because descending devices can be created with materials fishers may already have in their possession, and are low cost and easy to use.

Assessment of Social Effects

Prohibiting the use of trawl gear (Preferred Alternative 3 in each of Actions 1(a), 2(a), 3(a)), trammel nets (Preferred Alternative 2 in each of Actions 1(c), 2(c), and 3(c)), and purse seines (Preferred Alternative 2 in each of Actions 1(d), 2(d), and 3(d)) for all fishing in federal waters around Puerto Rico, St. Croix, and St. Thomas/St. John, respectively, are precautionary administrative actions and are not expected to result in any direct social effects. By disallowing use of trawl gear, trammel nets, or purse seines in all federal waters, the preferred alternatives would also preclude related fishing opportunity. Given the potential for ecological impacts to result from use of these gear types, taking these actions would prevent these problems and thereby minimize gear-related constraints on harvest potential and social effects in other fisheries.

Prohibiting the use of gillnets for all fishing in federal waters around Puerto Rico, St. Croix, and St. Thomas/St. John (Preferred Sub-alternative 2b in Actions 1(b), 2(b), 3(b), respectively), with the exception of surface gillnets for certain baitfish species, would prevent new fishing opportunities and any social benefits that could possibly follow. However, such prohibitions could help avoid net-related ecological damage and allow for social benefits among participants using other gear. Given that Preferred Sub-alternative 2b allows for use of properly configured and tended gillnets to capture certain bait species, it would provide potential benefits for participants in regional net fisheries.

Requiring descending devices be rigged and ready when fishing for reef fish (Preferred Alternative 2 in Action 4) in federal waters around Puerto Rico, St. Croix, and St. Thomas/St.

John, respectively, has the potential to generate positive effects on fish stocks across these island areas, based on the best scientific information. While nominal cost and effort would be required for harvesters to fabricate or purchase such devices, this would be outweighed by the potential to improve the status of benthic and demersal stocks, an outcome that could enhance fishing opportunities and associated social benefits among commercial and recreational participants. While outreach and education have the potential to improve understanding of descending devices and their benefits, such knowledge may expand as a function of normal social interaction and communication.

Assessment of Effects on Participants in Fisheries Conducted in Adjacent Areas under the Authority of another Fishery Management Council

The actions in this amendment would apply only to fishing conducted in federal waters off Puerto Rico, St. Croix, and St. Thomas and St. John. Therefore, this amendment is not expected to impact fishery participants in adjacent areas under the authority of the Gulf of Mexico or South Atlantic Fishery Management Councils.

Assessment of Effects on Safety at Sea

None of the actions are expected to increase safety at sea concerns, as they do not significantly affect current fishing practices.

In summary, no significant overall impacts to the biological/ecological environment, to protected species occurring within that environment, to the habitats constituting and supporting that environment, to the dependent socio-economic environment would be expected and would not present safety at sea issues as the action is not expected to significantly affect current fishing practices (i.e., trawl, gillnets, trammel nets, and purse seines are either not used in federal waters or minimally used in federal waters of the U.S. Caribbean).

Chapter 1. Introduction

1.1 What Action is Proposed?

At its December 2021 meeting, the Caribbean Fishery Management Council (Council) discussed an action to prohibit the use of trawl gear (bottom and mid-water trawls) in U.S. Caribbean federal waters as a precautionary approach to prevent potential negative impacts associated with trawling on the seabed (e.g., bottom trawling can potentially damage coral habitat and sponge habitat), and on target and non-target species (e.g., bottom and mid-water trawling bycatch). Trawls (any type) are an authorized gear type in the U.S. Exclusive Economic Zone (EEZ) around Puerto Rico, St. Croix, and St. Thomas/St. John for use in the commercial fisheries that are not managed under the Puerto Rico Fishery Management Plan (FMP), St. Croix FMP, and St. Thomas/St. John FMP (i.e., non-federally managed species). However, there is no evidence that trawling gear is or has been used for any commercial fishing in federal waters of the U.S. Caribbean, although bottom trawls have been used in the past for exploratory research (See [CFMC Dec 2021 Meeting](#) presentation and Knake and Whiteleather 1944). Moreover, Puerto Rico territorial fishing regulations (Article 13, f) prohibit the use of trawl nets (“*redes de arrastre*”) and floating drift nets (“*redes flotantes*,” does not include trammel nets or gillnets) in its jurisdictional waters (See [Puerto Rico Fishing Regulations 7949 2010](#)). The U.S. Virgin Islands (USVI) do not have specific regulations prohibiting the use of trawl gear types in their territorial waters ([USVI Division of Fish and Wildlife Fisher Handbook 2019](#)).

Federal regulations at 50 CFR 600.10 define a *trawl* as a cone or funnel-shaped net that is towed through the waters by one or more vessels. Furthermore, the National Marine Fisheries Service (NMFS) defines bottom trawling as a fishing practice that herds and captures the target species by towing a net along the ocean floor (See [NOAA Fisheries Bottom Trawls](#)). There are different types of bottom trawling nets (or techniques) such as otter trawls, beam trawls, towed dredges, and hydraulic dredges (Hickey 2017) and many of these are used and managed in other U.S. regions to capture groundfish, shrimp, and other bottom-associated species. Another type of trawling gear is the midwater trawl net (i.e., pelagic trawl), which is a large net towed through the water column.

During its December 2021 meeting, the Council also discussed placing further prohibitions in the U.S. Caribbean EEZ on the use of gillnets and trammel nets, and prohibiting the use of purse seines. Gillnets and trammel nets (in *Spanish*: filete (gillnet/single wall), trasmallo o mallorquín (trammel net), tremall (3-paned), chinchorro de ahorque) are suspended vertically in the water column by floats along the top and weights along the bottom, to entangle fish that attempt to pass through it. The nets can be fixed to the bottom, or be suspended within the water column or at the surface. Purse seines are used in many regions to catch a variety of schooling pelagic fish of all sizes, such as sardines or tunas (See [NMFS Fishing Gear: Purse Seines](#)), and consist of a large

wall of netting deployed to encircle an area or school of fish. The top of the net has floats and the bottom of the net has weights. The weighted bottom line is tightened to close up, or purse, the net underneath the fish so that the fish cannot escape and can be brought on the vessel.

Subject to a requirement that the gear be tended at all times, federal regulations at 50 CFR 600.725 list gillnets as an authorized gear type in the U.S. EEZ around Puerto Rico, St. Croix, and St. Thomas/St. John for (1) the commercial harvest of federally managed and non-federally managed pelagic species and for (2) the commercial harvest of other non-federally managed species in each of the island management areas. Meanwhile, purse seines and trammel nets are not authorized gear types for any fishery in any of the three island-management areas.

The use of gillnets, trammel nets, as well as pots, traps, or bottom longlines is currently prohibited year-round in the seven Council-managed seasonally closed areas (also called Marine Managed Areas (MMAs) in this document): Puerto Rico – (1) Bajo de Sico; (2) Abrir La Sierra; and (3) Tourmaline; in U.S. Virgin Islands – (4) Grammanik Bank; (5) Mutton Snapper Spawning Aggregation Area; (6) Hind Bank Marine Conservation District (MCD); and (7) Red Hind Spawning Aggregation Area East of St. Croix. There are no specific prohibitions on the use of trawl gear in these or other areas, except for the Hind Bank MCD in St. Thomas, where all fishing is prohibited year-round (Appendix A). The use of gillnets and trammel nets has been prohibited for the harvest of federally managed reef fish and spiny lobster since 2005 due to the potential for bycatch (CFMC 2005) (50 CFR 622.433(c) and 50 CFR 622.452(b)). Gillnets and trammel nets are not prohibited from use for the harvest of other species (e.g., baitfish [referring to species other than federally managed reef fish and spiny lobster]) in federal waters but they must be tended at all times (50 CFR 622.437(a)(3) & (c)(2); 50 CFR 622.477(a)(3) & (c)(2); 50 CFR 622.512(a)(3), (c)(2)).

Given that there are no specific federal regulations regulating the use of gillnets or trammel nets in the U.S. EEZ around Puerto Rico, St. Croix, and St. Thomas/St. John for the harvest of federally managed pelagic species, which are new to management under the Island-based FMPs (CFMC 2019 a,b,c; See Appendix B of this document for a list of managed pelagic species), the Council has discussed in past Council meetings, the need to restrict the use of these two gear types for the harvest of pelagic species. This is in order to prevent any potential effects from the gillnets and trammel nets, such as bycatch of target species that are prohibited with this gear type (i.e., federally managed reef fish and spiny lobster), catch of undersized or juvenile managed and non-managed species, all of which could increase potential for overfishing the affected species.¹ With respect to gear types such as purse seines and trammel nets, which are neither identified as an authorized gear type in the U.S. EEZ around Puerto Rico, St. Croix, and St. Thomas/St. John (50 CFR 600.725(v)), nor specifically prohibited from use in a fishery (except that the use of trammel nets is prohibited in the federally managed reef fish and spiny lobster fisheries), a

¹ Certain types of nets are regulated by NMFS in the highly migratory species (HMS) fisheries (50 CFR 635.19).

person may petition the Council to use these gear types. At that time, the Council and NMFS may take action to allow or prohibit the use of the gear.²

The Council is interested in potentially prohibiting the use of any trawls in Council MMAs and in the EEZ around Puerto Rico, St. Croix, St. Thomas/St. John for several reasons: (1) the use of trawls in the U.S. Caribbean EEZ has the potential to damage coral habitat including deep-water corals, as well as sponge habitat and deep-water sponges present in the area (discussion at CFMC December 2021 Meeting); (2) trawls can entangle protected species present in the U.S. Caribbean EEZ such as sea turtles; and (3) the use of trawls in the U.S. Caribbean EEZ has the potential to negatively affect certain habitats designated as essential fish habitat (EFH) and habitat areas of particular concern for managed species under the Magnuson-Stevens Fishery Conservation and Management Act (Magnuson-Stevens Act). There are also economic considerations related to the use of certain trawling gear types (e.g., damage or loss of gear) as well as implications for the bycatch of managed and unmanaged species in the U.S. Caribbean EEZ.

Previously, in the 2004 Essential Fish Habitat Generic Amendment to the FMPs of the U.S. Caribbean and associated final environmental impact statement (CFMC 2004), the Council recommended to take action to ban the use of trawls in the U.S. Caribbean EEZ. The Council noted that trawl gear was not used by commercial fishermen at the time, but recognized a potential for future use. As a rationale for its recommendation, the Council indicated that in the U.S. Caribbean, the complex mosaic of coral on the insular shelf left little space available for trawling that would not have direct impacts on coral. Thus, prohibiting trawling would prevent the use of a gear that has a high risk of adverse fishing impacts on sensitive and important habitat. However, these recommendations were not included in any Council amendments at the time nor have been included in an amendment to any of the Island-based FMPs to date.

The Council is also interested in whether continuing to identify trawls as an authorized gear type in the U.S. Caribbean EEZ (including in Council MMAs) for non-federally managed species may have potential implications on whether the existing Council MMAs qualify as conservation areas under Executive Order (E.O.) 14008.³ E.O. 14008 establishes a goal of conserving at least 30 percent of the lands and waters in the United States by 2030. Efforts are underway to determine how much of the lands and waters already qualify as conserved. For example, the Council Coordination Committee has established a subcommittee on area-based management to

² [50 CFR 600.725\(v\)](#): A person or vessel is prohibited from engaging in fishing or employing fishing gear when such fishing gear is prohibited or restricted by regulation under an FMP or other applicable law. However, after December 1, 1999, an individual fisherman may notify the appropriate Council, or the Director, in the case of Atlantic highly migratory species, of the intent to use a gear or participate in a fishery not already on the list. Ninety days after such notification, the individual may use the gear or participate in that fishery unless regulatory action is taken to prohibit the use of the gear or participate in the fishery (e.g., through emergency or interim regulations).

³ E.O. 14008, Tackling the Climate Crisis at Home and Abroad, January 27, 2021.

review MMAs to assess the level of protection they provide. The Council has been interested in whether existing MMAs will or could meet any conservation standards developed to implement E.O. 14008.

Therefore, with respect to trawl gear, gillnets, trammel nets, and purse seines, the Council passed the following two motions during the December 2021 meeting:

Motion 1: Prohibit the use of trawling gear from within the marine protected areas (i.e., Council MMAs) of the U.S. Caribbean EEZ.

Motion 2: Request staff to develop an options paper to prohibit the use of gillnets, trammel nets, trawl nets, drift nets, and purse seines for harvesting fish in the U.S. Caribbean EEZ.

During the August 2022 Council meeting (179th Regular Meeting), the Council made a request to include another action in this amendment. During the meeting, the Council discussed concerns about reef fish that are released (i.e., regulatory and/or economic discards⁴), but do not survive, focusing on injuries from barotrauma. Barotrauma is the rapid expansion of gases in a fish as it is quickly reeled up from depth (see <https://safmc.net/best-fishing-practices/>). To improve the survivorship of released reef fish, the Council considered a measure that would encourage the use of best fishing practices to minimize impacts to released fish resulting from capture, and thus discussed the use of descending devices as tools to reduce fishing mortality for reef fish from barotrauma. The Council expressed interest in following the steps taken by the Gulf of Mexico Fishery Management Council and the South Atlantic Fishery Management Council to require that descending devices be available and ready for use in a vessel used for certain fisheries to reduce bycatch mortality. Therefore, the Council passed a motion for staff to develop an additional action to include a requirement to have a descending device available and ready for use on a vessel when fishing for or possessing federally managed reef fish. The Council decided that it would also work on education and outreach activities with fishing communities regarding the development and use of descending devices.

1.2 Why is the Council Considering Action?

1.2.1 Statement of Purpose and Need

The purpose of this amendment is to prevent potential damage to habitats, including essential fish habitat, from certain gear types, protect species associated with such habitats, as well as to promote best fishing practices, and enhance the survival of released reef fish in the EEZ around Puerto Rico, St. Croix, and St. Thomas/St. John.

⁴ *Regulatory* discards are fish that are required by regulation to be discarded, but also include fish that may be retained but not sold. *Economic* discards are fish that are discarded because they are undesirable to the harvester. This category of discards generally includes certain species, sizes, and/or sexes with low or no market value.

The need for this amendment is to minimize potentially adverse effects of fishing to habitats and associated species, and to minimize the mortality of bycatch species.

1.3 Where Will the Action Have an Effect?

Under the Puerto Rico FMP (CFMC 2019a), the St. Croix FMP (CFMC 2019b), and the St. Thomas/St. John FMP (CFMC 2019c), the Council is responsible for managing fishery resources, including reef fish, in federal waters in the U.S. Caribbean region (i.e., EEZ) (Figure 1.1). The EEZ around Puerto Rico, described in detail in the Puerto Rico FMP and incorporated herein by reference, ranges from 9-200 nautical miles [17-370 kilometers] from the shore of the Commonwealth of Puerto Rico. The EEZ around St. Croix, described in detail in the St. Croix FMP and incorporated herein by reference, ranges 3-200 nautical miles (6-370 kilometers) from the shore of St. Croix, USVI. The EEZ around St. Thomas/St. John, described in detail in the St. Thomas/St. John FMP and incorporated herein by reference, ranges 3-200 nautical miles (6-370 kilometers) from shore of St. Thomas and St. John, USVI.

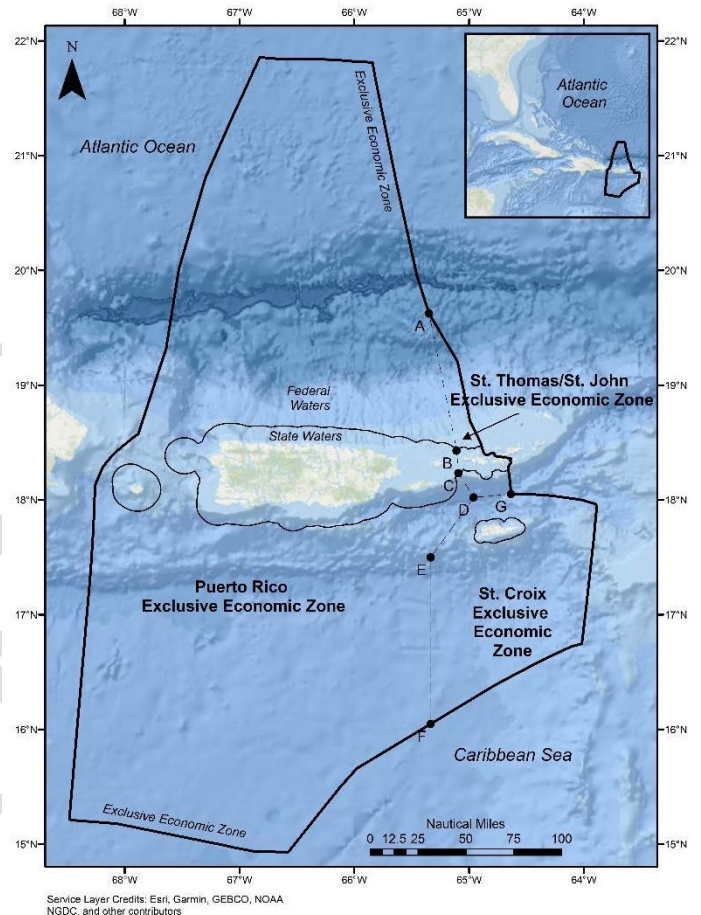


Figure 1.1. U.S. Caribbean region with boundaries between the Puerto Rico, St. Croix, and St. Thomas/St. John management areas.

1.4 History of Federal Fisheries Management

Puerto Rico FMP (CFMC 2019a), St. Croix FMP (CFMC 2019b), and St. Thomas/St. John FMP (CFMC 2019c)

The Puerto Rico FMP, St. Croix FMP, and St. Thomas/St. John FMP were effective October 13, 2022 ([87 FR 56204](#)). The Puerto Rico, St. Croix, and St. Thomas/St. John FMPs established management measures for fishing in federal waters around each respective island. Each FMP updated the list of species included for federal management and how those species are grouped into stocks or stock complexes; specified management reference points for managed stocks and stock complexes; updated accountability measures; described essential fish habitat for managed species; and updated framework procedures. Additionally, the FMPs retained other management measures established under the previous U.S. Caribbean-wide FMPs (Reef Fish FMP of Puerto Rico and the USVI, Spiny Lobster FMP of Puerto Rico and the USVI, Queen Conch FMP of Puerto Rico and the USVI, and Corals and Reef Associated Plants and Invertebrates FMP of Puerto Rico and the USVI) that apply to the respective island management area (e.g., seasonal and area closures, minimum size limits, recreational bag limits).

Prior to development of the Puerto Rico, St. Croix, and St. Thomas/St. John FMPs, reef fish stocks and stock complexes throughout the U.S. Caribbean (included in the Puerto Rico, St. Croix, and St. Thomas/St. John EEZs) were managed within the Reef Fish FMP of Puerto Rico and the USVI (CFMC 1985), as amended. The original Reef Fish FMP included only shallow-water reef fish species (originally titled Shallow-water Reef Fish FMP). The deep-water reef fish (e.g., snappers, groupers) were added for management through Amendment 2 to the Reef Fish FMP in 1993. A detailed history of management for the reef fish component of the Puerto Rico fishery, the St. Croix fishery, and the St. Thomas/St. John fishery is included in Appendix C of each of Puerto Rico, St. Croix, and St. Thomas/St. John FMPs. Amendment 1 (the Buoy Gear Amendment) referenced below includes a summary of those amendments to the original Reef Fish FMP that contained actions specifically related to deep-water reef fish. These actions and regulatory measures are incorporated into the Island-based FMPs, and are reflected in management of the reef fish component of the Puerto Rico fishery, the St. Croix fishery, and the St. Thomas and St. John fishery under the respective island-based FMP. Pelagic species were included for management in the Island-based FMPs, along with management measures for pelagic species.

Amendment 1 to the Puerto Rico, St. Croix, and St. Thomas and St. John FMPs: Modification to the Buoy Gear Definition and Use (Amendment 1)

Amendment 1, effective on August 21, 2023 (88 FR 46692; July 20, 2023) prohibits the use of buoy gear for all recreational fisheries (i.e., species managed and non-managed by the Council) in federal waters around Puerto Rico, St. Croix, and St. Thomas/St. John, and modifies the definition of buoy gear to increase the maximum number of hooks from 10 to 25 hooks in federal

waters around Puerto Rico, St. Croix, and St. Thomas/St. John for fisheries where buoy gear is authorized (i.e., the commercial sector). The purpose of Amendment 1 is to allow commercial fishermen targeting deep-water fish, including snappers and groupers, in U.S. Caribbean federal waters to use buoy gear with up to 25 hooks, while protecting deep-water reef fish resources and habitats from potential effects that might result from the use of buoy gear by the recreational sector.

DRAFT

Chapter 2. Proposed Actions and Alternatives

2.1 Action 1: Use of Trawl Gear, Gillnets, Trammel Nets, and Purse Seines in the U.S. Caribbean Exclusive Economic Zone (EEZ) around Puerto Rico

2.1.1 Action 1(a). Modify the Use of Trawl Gear in Federal Waters around Puerto Rico

Alternative 1. No action. Retain trawl gear as an authorized gear type for the commercial harvest of non-federally managed species in federal waters around Puerto Rico that is not otherwise prohibited.

Alternative 2. Prohibit the use of trawl gear for all fishing year-round in Caribbean Fishery Management Council (Council) seasonally closed areas/marine managed areas (MMA)⁵ in federal waters around Puerto Rico.

Alternative 3 (Preferred). Prohibit the use of trawl gear for all fishing in federal waters around Puerto Rico.

Discussion of Action 1(a) Alternatives

Alternative 1 would retain trawl gear, including bottom and mid-water trawls, as an authorized gear type for the commercial harvest of non-federally managed species in federal waters around Puerto Rico as listed in 50 CFR 600.725(v)(V). There is no evidence that the commercial sector uses (or has used) trawl gear (with exceptions noted in Section 1.1, such as for exploratory research).

Alternative 2 and **Preferred Alternative 3** would prohibit the use of all trawl gear (i.e., bottom and mid-water trawls) for all fishing (i.e., commercial and recreational; federally managed and non-federally managed) either in Council-managed seasonally closed areas/MMAs or throughout the EEZ, respectively, around Puerto Rico. Council MMAs in Puerto Rico are the Abrir La Sierra Bank red hind spawning aggregation area (50 CFR 622.439(a)(1)), the Tourmaline red hind spawning aggregation area (50 CFR 622.439(a)(2)) and Bajo de Sico (50 CFR 622.439(a)(3)). **Alternative 2** and **Preferred Alternative 3** would prevent potentially negative ecological, biological, and physical effects from the use of trawl gear in the future (e.g., habitat destruction, bycatch) in Council MMAs (**Alternative 2**) or throughout the EEZ around Puerto

⁵ CFMC Seasonally Closed Areas/Marine Managed Areas (MMAs) in Puerto Rico are: (1) Bajo de Sico; (2) Abrir La Sierra; and (3) Tourmaline.

Rico (**Preferred Alternative 3**). For example, potential impacts from trawling to coral and sponge habitat in the U.S. Caribbean EEZ, including the Puerto Rico EEZ could be caused by direct contact with bottom tending trawl gear and from impacts to sensitive vertical relief from near-bottom orientation of pelagic trawls in its sensitive habitats. Also, by specifically prohibiting the use of trawl gear for all commercial and recreational harvest under **Preferred Alternative 3**, fishermen would not be able to petition to use trawl gear under federal regulations for gear types that are not included in the authorized gear list (as discussed in Section 1.1).

Comparison of Alternatives

Alternative 1 is the status quo and would not change any regulations applicable to the use of trawls in federal waters around Puerto Rico. **Alternative 2** would prohibit the use of trawl gear for the harvest of fish in all components of the Puerto Rico fishery that occurs within the Council MMAs around Puerto Rico. **Preferred Alternative 3** would prohibit the use of trawl gear for the harvest of fish in all components of the Puerto Rico fishery that occurs within the EEZ around Puerto Rico. Because trawl gear has not historically been used in the U.S. Caribbean EEZ, including the Puerto Rico EEZ, and is not currently used, **Alternative 2** and **Preferred Alternative 3** are administrative actions and are not expected to have any additional physical, biological/ecological, social, and economic effects when compared to **Alternative 1**. However, **Alternative 2** and **Preferred Alternative 3** would prevent trawl gear from being used in the future, and thus could be more beneficial to the physical and biological environment by preventing potential bycatch and/or habitat effects resulting from trawling activities in federal waters around Puerto Rico (**Preferred Alternative 3**) or in Council MMAs (**Alternative 2**), with the former being more beneficial in protective fishery and habitat resources throughout the Puerto Rico EEZ. Furthermore, prohibiting the use of trawl gear in all components of the Puerto Rico fishery (**Preferred Alternative 3**) within the Puerto Rico EEZ would prevent future use of trawl gear that could result from a petition for its use,⁷ which could occur under **Alternative 1** and **Alternative 2** (outside the Council MMAs), thus providing more benefits to the physical, biological/ecological environment.

2.1.2 Action 1(b). Modify the Use of Gillnets in Federal Waters around Puerto Rico

Alternative 1. No action. Retain gillnets as an authorized gear type for the commercial harvest of federally managed and non-federally managed pelagic species and the commercial harvest of non-federally managed species in federal waters around Puerto Rico, and as a prohibited gear type for reef fish and spiny lobster in the EEZ around Puerto Rico and inside Council Seasonally Closed Areas or Council MMAs.

Alternative 2. Prohibit the use of gillnets⁶ in federal waters around Puerto Rico:

Sub-alternative 2a. For all fishing.

Sub-alternative 2b (Preferred). For all fishing, except surface gillnets for the following fish species belonging to the halfbeaks (Family Hemiramphidae), needlefishes (Family Belonidae), flyingfish (Family Exocoetidae), and goggle eye (bigeye scad) (Family Carangidae, Genus *Selar*). A surface gillnet used in the EEZ around Puerto Rico to fish for any baitfish must be tended at all times. Surface gillnet mesh size must not be smaller than 0.75 inches square or 1.5-inch stretch. The surface gillnet must be used 20 feet or more above the bottom.

Sub-alternative 2c. For fishing for federally managed pelagic species.

Discussion of Action 1(b) Alternatives

Alternative 1 would retain gillnets as an authorized gear type for the commercial harvest of federally managed and non-federally managed pelagic fish and for the commercial harvest of other non-federally managed species (e.g., species that are not managed by the Council), as listed in 50 CFR 600.725(v)(V). Federal regulations allow for the use of gillnets for the commercial harvest of non-federally managed species (e.g., baitfish such as ballyhoo or flying fish) subject to a requirement that the gear be tended at all times, and the use of gillnets is prohibited year-round for fishing for spiny lobster and federally managed reef fish.⁷ The use of gillnets for the commercial harvest of federally managed pelagics, non-federally managed pelagics, and other non-federally managed species could increase the potential for bycatch of target species that are prohibited with this gear type (i.e., federally managed reef fish and spiny lobster) and could also increase the potential for the catch of undersized or juvenile managed and non-managed species (i.e., federally managed pelagics and non-federally managed species), which could increase potential for overfishing and negatively affect these populations. Although the use of gillnets to

⁶ As noted in Alternative 1, the use of gillnets is already prohibited inside Council Seasonally Closed Areas or Council MMAs. Gillnets are also prohibited for all fishing for federally managed reef fish and spiny lobster.

⁷ Cast nets are authorized for the commercial and recreational harvest of non-federally managed species. Cast nets are surface nets typically used to fish for baitfish such as ballyhoo, sardines, and other species. The Council did not include cast nets in the motion to prepare this amendment.

harvest pelagic species in federal waters is less common than in Puerto Rico territorial waters, landings of some pelagic species with gillnets are reported (see Table 3.3.1 for landings). Because Puerto Rico allows the use of gillnets in state waters, **Alternative 1** would be partially compatible with Puerto Rico state regulations for certain species.

Sub-alternative 2a proposes to prohibit the use of gillnets to harvest all commercial and recreational species (i.e., federally managed and non-federally managed) in the EEZ around Puerto Rico. **Preferred Sub-alternative 2b** would prohibit the use of gillnets to harvest all commercial and recreational species (i.e., federally managed and non-federally managed) in the EEZ around Puerto Rico, with the exception of the use of surface gillnets to catch baitfish belonging to the halfbeak, needlefish, and flyingfish families and the bigeye scad (i.e., goggle eyes). **Preferred Sub-alternative 2b** would authorize the use of surface gillnets that meet certain specification to harvest baitfish. The specifications would require that the surface gillnet have mesh size openings that must not be smaller than 0.75 inches square or 1.5-inch stretch and that must be tended at all times, must be used 20 feet or more above the bottom. These specifications would not be compatible with Puerto Rico's specifications for gillnets used to catch baitfish in territorial waters, but would help to ensure that species other than baitfish would not be caught as bycatch and avoid impacts to habitat. Currently, gillnet is an authorized gear type for the commercial harvest of federally managed pelagic fish (See Appendix B) and non-federally managed pelagic fish (e.g., sardines, herring, ballyhoo, non-managed mackerel), and for the commercial harvest of non-federally managed species in the U.S. Caribbean EEZ, including the EEZ around Puerto Rico. Federal regulations prohibit the use of gillnets for the harvest of managed reef fish and spiny lobster in all U.S. Caribbean federal waters and prohibit the use of gillnets in all Council MMAs, and allow the use of gillnets (and trammel nets) to fish for any other species, which must be tended at all times (50 CFR 622.437(a)(3), (b)(2)). However, some landings of these species are still reported from federal waters (See Appendix E).

With respect to non-federally managed species, the Magnuson-Stevens Fishery Conservation and Management Act (Magnuson-Stevens Act) and the National Standard Guidelines give the Councils and NMFS authority to regulate fishing activity to support the conservation and management of fisheries, and where practicable, minimize adverse economic impacts on fishing communities. This could include regulations that pertain to fishing for non-managed species. For example, per Section 303(b)(12) and (14) of the Magnuson-Stevens Act, FMPs can "include management measures in the plan to conserve target and non-target species and habitats, considering the variety of ecological factors affecting fishery populations" and can "prescribe such other measures, requirements, or conditions and restrictions as are determined to be necessary and appropriate for the conservation and management of the fishery." Additionally, National Standard 8 provides that conservation and management measures shall provide for the sustained participation of fishing communities and to the extent practicable, minimize adverse economic impacts on such communities (16 U.S.C. § 1851(a)(8); 50 CFR 600.345). These

provisions, taken together, provide broad discretion to manage fishing for non-federally managed species for the benefit of federally managed species.

Although the use of gillnets for the commercial harvest of federally managed and non-federally managed pelagic species or other non-federally managed species in federal waters is considered to be minimal due to depth and distance from the coast of the location of federal waters (Table 3.3.1, [see Leroy 2007]), **Sub-alternative 2a** and **Preferred Sub-alternative 2b** would prevent or minimize negative ecological and biological effects resulting from the use of gillnets (e.g., reduced bycatch of undersized/ juvenile individuals, protected species, other target and non-target species), with the former being more beneficial because it prohibits the use of gillnets for all fishing. Federally managed species reported in Puerto Rico commercial landings with gillnet from federal waters include **barracuda and king mackerel** (Note that “federal waters” may also include harvest from waters around offshore islands belonging to Puerto Rico jurisdiction). Allowing the use of surface gillnets of a restricted size and with depth requirements for catching certain species of baitfish would allow fishermen to continue using these specific nets to catch baitfish in federal waters (**Preferred Sub-alternative 2b**), and would prevent fishermen from using gillnets for other federally managed and non-federally managed species. Specifying the minimum mesh size and requiring the net to be tended at all times in **Preferred Sub-alternative 2b** would minimize bycatch.

Sub-alternative 2c was included within this action per request of the Council at its December 2022 regular meeting. **Sub-alternative 2c** would prohibit the use of gillnets for the harvest of federally managed pelagic species (i.e., dolphin, pompano dolphin, wahoo, little tunny, blackfin tuna, king mackerel, cero mackerel, tripletail, and great barracuda (see Table 3.3.1 for landings of pelagic species in federal waters), and would retain gillnets as an authorized gear type for the commercial harvest of non-federally managed species in federal waters around Puerto Rico, and as a prohibited gear for reef fish and spiny lobster. Negative ecological and biological effects resulting from the use of gillnets for non-federally managed species could be expected from this sub-alternative (e.g., bycatch of undersized/juvenile individuals, protected species, and other target and non-target species). In addition, **Sub-alternative 2c** would not specify mesh size restrictions.

Comparison of alternatives

Alternative 1 is the status quo alternative (no changes to gillnet regulations in the EEZ around Puerto Rico) and would continue the potential for adverse effects from using the gear by allowing gillnet fishermen to continue to do so, thus it would be the least beneficial to the biological and ecological environment in federal waters off Puerto Rico, but the most beneficial to the socio-economic environment in the short term. When compared to the status quo, **Sub-alternative 2a** would be the most beneficial to the biological/ecological environment of St. Croix, as it prohibits the use of gillnets for all fishing, preventing any bycatch from this fishery,

followed by **Sub-alternative 2b**, which would reduce the potential for bycatch from the use of gillnets in general, although it won't completely eliminate it as it allows the use of surface gillnets for a prescribed group of species. Lastly, from the action alternatives, **Sub-alternative 2c** would be the least beneficial to the biological/ecological environment because it would still allow for the use of gillnets to harvest other non-federally managed species, thus retaining the potential of adverse effects from this gear type. From the action alternatives, **Sub-alternative 2c and Sub-alternative 2b** would be beneficial to the socio-economic environment in the short term because each of them would allow fishermen to continue to use gillnets except for Council-managed pelagic species or certain species of baitfish, respectively. The least beneficial of the action alternatives to the socio-economic environment would be **Sub-alternative 2a** (complete ban). In the long term, those alternatives that allow some use of gillnets could be less socio-economically beneficial if the fish resources are jeopardized from the use of gillnets.

With respect to certain species of baitfish, **Alternative 1, Preferred Sub-alternative 2b**, and **Sub-alternative 2c** would each continue to allow gillnets for catching those species, with no additional effects to the biological environment, socio-economic environment, or administrative environment, except that **Preferred Sub-alternative 2b** would define a surface gillnet used for baitfish as meeting certain specifications to minimize bycatch. Physical effects are not expected to result from the use of gillnets under any of the alternatives, as long as gillnets are not used on the bottom, but **Preferred sub-alternative 2b** provides more benefit to the physical environment because it establishes a minimum depth for using the surface gillnet. Administrative effects would be slightly higher under **Sub-alternatives 2a, 2b (Preferred), and 2c** than **Alternative 1**. **Sub-alternative 2c** would be the most difficult to enforce, followed by **Preferred Sub-alternative 2b** because of the specification of allowed species and mesh size and depth for use, which are not compatible with Puerto Rico regulations.

2.1.3 Action 1(c). Modify the Use of Trammel Nets in Federal Waters around Puerto Rico

Alternative 1. No action. Retain trammel nets as neither an authorized gear type for any fisheries in the EEZ around Puerto Rico, nor an otherwise prohibited gear type, except for federally managed reef fish and spiny lobster.

Alternative 2 (Preferred). Prohibit the use of trammel nets for all fishing in the EEZ around Puerto Rico.

2.1.4 Action 1(d). Modify the Use of Purse Seines in Federal Waters around Puerto Rico

Alternative 1. No action. Retain purse seines as neither an authorized gear type for any fisheries in the EEZ around Puerto Rico, nor an otherwise prohibited gear type.

Alternative 2 (Preferred). Prohibit the use of purse seines for all fishing in federal waters around Puerto Rico.

Discussion of Action 1(c) and Action 1(d) Alternatives

Alternative 1 of **Action 1(c)** and **Action 1(d)** would retain trammel nets and purse seines as neither an authorized gear type for any fisheries in the EEZ around Puerto Rico, nor an otherwise prohibited gear type, except that the use of trammel nets to harvest of federally managed reef fish and spiny lobster is prohibited. **Preferred Alternative 2** of **Action 1(c)** would prohibit the use of trammel nets and **Preferred Alternative 2** of **Action 1(d)** would prohibit the use of purse seines for all fishing in the U.S. EEZ around Puerto Rico. These gear types are not listed as authorized under any U.S. Caribbean fisheries, including Puerto Rico, in federal regulations at 50 CFR 600.725(v)(V), therefore **Preferred Alternatives 2** of **Actions 1(c) and 1(d)**, respectively, are administrative actions. As noted above, trammel nets are specifically prohibited for fishing for federally managed reef fish and spiny lobster in federal waters around all three-island management areas, including Puerto Rico. These gear types are also prohibited in Council MMAs. Similar to gillnets, federal regulations do not prohibit the use of trammel nets to fish for species other than federally **managed reef fish and spiny lobster, but they must be tended at all times (50 CFR 622.437(a)(3), (c)(2)).**

Purse seines are not used in federal and territorial waters of the U.S. Caribbean. **Preferred Alternative 2** of **Action 1(c)** and **Preferred Alternative 2** of **Action 1(d)** would specifically prohibit the use of these gear types for the harvest of all fish species in the Puerto Rico fishery, including the use of trammel nets for baitfish. As a prohibited gear type, fishermen would not be able to petition to use this gear as otherwise allowed under federal regulations for gear that are not included in the authorized gear list.

Comparison of alternatives in Action 1(c) Trammel nets and Action 1(d) Purse seines

Effects to the physical, biological, ecological, and socio-economic environments from **Preferred Alternative 2** in **Action 1(c)** and **Preferred Alternative 2** in **Action 1(d)** are not expected to be different from those of **Alternative 1** of **Action 1(c)** and **Action 1(d)** because neither trammel nets nor purse seines are currently authorized gear types for use in U.S. Caribbean federal waters for any fishing. **Preferred Alternatives 2** of **Actions 1(c)** and **1(d)** could be slightly more beneficial to the biological and ecological environment of the EEZ around Puerto Rico because these alternatives further restrict potential future use of these gear types through a petition to the Council. Administrative effects are expected to be slightly higher for both action alternatives than for its respective no action alternative (**Alternative 1**).

2.2 Action 2: Use of Trawl Gear, Gillnets, Trammel Nets, and Purse Seines in the U.S. Caribbean EEZ around St. Croix, USVI

2.2.1 Action 2(a). Modify the Use of Trawl Gear in Federal Waters around St. Croix, USVI

Alternative 1. No action. Retain trawl gear as an authorized gear type for the commercial harvest of non-federally managed species in the federal waters around St. Croix that is not otherwise prohibited.

Alternative 2. Prohibit the use of trawl gear for all fishing year-round in Council seasonally closed areas/ MMAs⁸ in federal waters around St. Croix.

Alternative 3 (Preferred). Prohibit the use of trawl gear for all fishing in federal waters around St. Croix.

Discussion of Action 2(a) Alternatives

Alternative 1 would retain the trawl gear types authorized for harvest under the St. Croix fishery components, including bottom and mid-water trawls, as an authorized gear type for the commercial harvest of non-federally managed species in federal waters around St. Croix as listed in 50 CFR 600.725(v)(V). There is no evidence that the commercial sector uses (or has used) trawl gear (with exceptions noted in Section 1.1, such as for exploratory research).

Alternative 2 and **Preferred Alternative 3** would prohibit the use of all trawl gear (i.e., bottom and mid-water trawl) for all fishing (i.e., commercial and recreational; federally managed and non-federally managed) either in Council-managed seasonally closed areas/MMAs or throughout the EEZ, respectively, around St. Croix. The Council MMAs around St. Croix are the Mutton snapper spawning aggregation area (50 CFR 622.479(a)(1)) and the Red hind spawning aggregation area east of St. Croix (50 CFR 622.479(a)(2)). **Alternative 2** and **Preferred Alternative 3** would prevent potentially negative ecological, biological, and physical effects from the use of trawl gear in the future (e.g., habitat destruction, bycatch) in the MMAs (**Alternative 2**) or throughout the EEZ around St. Croix (**Preferred Alternative 3**). For example, potential impacts from trawling to coral and sponge habitat in the U.S. Caribbean EEZ, including the EEZ around St. Croix could be caused by direct contact with bottom tending trawl gear and from impacts to sensitive vertical relief from near-bottom orientation of pelagic trawls in its sensitive habitats. Also, by specifically prohibiting the use of trawl gear for all commercial

⁸ CFMC Seasonally Closed Areas/Marine Managed Areas (MMAs) in St. Croix are: – (1) Mutton Snapper Spawning Aggregation Area; and (2) Red Hind Spawning Aggregation Area East of St. Croix.

and recreational harvest under **Preferred Alternative 3**, fishermen would not be able to petition to use trawl gear under federal regulations for gear types that are not included in the authorized gear list (as discussed in Section 1.1).

Comparison of Alternatives

Alternative 1 is the status quo and would not change any regulations applicable to the use of trawls in federal waters around St. Croix. **Alternative 2** would prohibit the use of trawl gear for the harvest of fish in all components of the St. Croix fishery that occurs within Council MMAs around St. Croix. **Preferred Alternative 3** would prohibit the use of trawl gear for the harvest of fish in all components of the St. Croix fishery that occurs within the EEZ around St. Croix. Because trawl gear has not historically been used in the U.S. Caribbean EEZ, including the St. Croix EEZ, and is not currently used, **Alternative 2** and **Preferred Alternative 3** are both administrative actions and are not expected to have any additional physical, biological/ecological, social, and economic effects when compared to **Alternative 1**. However, **Alternative 2** and **Preferred Alternative 3** would prevent trawl gear from being used in the future, and thus could be more beneficial to the physical and biological environment by preventing potential bycatch and/or habitat effects resulting from trawling activities in federal waters around St. Croix (**Preferred Alternative 3**) or in Council MMAs (**Alternative 2**), with the former being more beneficial in protective fishery and habitat resources throughout the EEZ around St. Croix. Furthermore, prohibiting the use of trawl gear in all components of the St. Croix fishery (**Preferred Alternative 3**) within the EEZ around St. Croix would prevent future use of trawl gear that could result from a petition for its use,⁷ which could occur under **Alternative 1** and **Alternative 2** (outside the Council MMAs), thus providing more benefits to the physical, biological/ecological environment.

2.2.2 Action 2(b). Modify the Use of Gillnets in Federal Waters around St. Croix, USVI

Alternative 1. No action. Retain gillnets as an authorized gear type for the commercial harvest of federally managed and non-federally managed pelagic species and the commercial harvest of non-federally managed species in federal waters around St. Croix, and as a prohibited gear type for reef fish and spiny lobster in the EEZ around St. Croix and inside Council Seasonally Closed Areas or Council MMAs.

Alternative 2. Prohibit the use of gillnets⁹ in federal waters around St. Croix:

Sub-alternative 2a. For all fishing.

⁹ The use of gillnets is already prohibited inside Council Seasonally Closed Areas or Council MMAs. Gillnets are also prohibited for all fishing for federally managed reef fish and spiny lobster.

Sub-alternative 2b (Preferred). For all fishing, except for surface gillnets for the following fish species belonging to the halfbeaks (Family Hemiramphidae), needlefishes (“gar”) (Family Belonidae), and flyingfish (Family Exocoetidae). A surface gillnet (single-walled) used in the EEZ around St. Croix to fish for any baitfish must be tended at all times. Surface gillnet mesh size must not be smaller than 0.75 inches square or 1.5-inch stretched. The surface gillnet must be used 20 feet or more above the bottom.

Sub-alternative 2c. For fishing for federally managed pelagic species.

Discussion of Action 2(b) Alternatives

Alternative 1 would retain gillnets as an authorized gear type for the commercial harvest of federally managed and non-federally managed pelagic fish and for the commercial harvest of other non-federally managed species (e.g., species that are not managed by the Council), as listed in 50 CFR 600.725(v)(V). Federal regulations allow for the use of gillnets for the commercial harvest of non-federally managed species (e.g., baitfish such as ballyhoo or flying fish), subject to a requirement that the gear be tended at all times, and the use of gillnets is prohibited year-round for fishing for spiny lobster and federally managed reef fish.¹⁰ The use of gillnets for the commercial harvest of federally managed pelagics, non-federally managed pelagics, and other non-federally managed species could increase the potential for bycatch of target species that are prohibited with this gear type (i.e., federally managed reef fish and spiny lobster) and could also increase the potential catch of undersized or juvenile managed and non-managed species (pelagics, non-federally managed species), which could increase potential for overfishing and negatively affect the populations. **Alternative 1** would not be compatible with regulations for gillnets in the USVI, which prohibit the use of gillnets in territorial waters, except surface gillnets with listed construction specifications for the harvest of certain species of baitfish.

Sub-alternative 2a proposes to prohibit the use of gillnets to harvest all commercial and recreational species (i.e., federally managed and non-federally managed) in the EEZ around St. Croix. **Preferred Sub-alternative 2b** would prohibit the use of gillnets to harvest all commercial and recreational species (i.e., federally managed and non-federally managed) in the EEZ around St. Croix, with the exception of surface gillnets for baitfish belonging to the halfbeak, gar, and flyingfish families. **Preferred Sub-alternative 2b** would authorize the use of surface gillnets that meet certain specification to harvest baitfish. The specifications would require that the gillnet have mesh size openings that may not be smaller than 0.75 inches square or 1.5-inch stretch, that must be tended at all times and must maintain must be used 20 feet or more above the bottom. These specifications are partially compatible with USVI’s specifications

¹⁰ Cast nets are authorized for the commercial and recreational harvest of non-federally managed species. Cast nets are surface nets typically used to fish for baitfish such as ballyhoo, sardines, and other species. The Council did not include cast nets in the motion to prepare this amendment.

for surface gillnets used for catching baitfish in territorial waters, and would help to reduce bycatch and avoid impacts to habitat. Currently, gillnet is an authorized gear type for the commercial harvest of federally managed pelagic fish (See Appendix B) and non-federally managed pelagic fish (e.g., sardines, herring, ballyhoo, non-managed mackerel), and for the commercial harvest of non-federally managed species in the U.S. Caribbean EEZ, including the EEZ around St. Croix. Federal regulations prohibit the use of gillnets for the harvest of managed reef fish and spiny lobster in all U.S. Caribbean federal waters and prohibit the use of gillnets in all Council MMAs, and allow the use of gillnets (and trammel nets) to fish for any other species, which must be tended at all times (50 CFR 622.477(a)(3), (b)(2)).

With respect to non-federally managed species, the (Magnuson-Stevens Act and the National Standard Guidelines give the Councils and NMFS authority to regulate fishing activity to support the conservation and management of fisheries. This could include regulations that pertain to fishing for non-managed species, and where practicable, minimize adverse economic impacts on fishing communities. For example, per Section 303(b)(12) and (14) of the Magnuson-Stevens Act, FMPs can "include management measures in the plan to conserve target and non-target species and habitats, considering the variety of ecological factors affecting fishery populations" and can "prescribe such other measures, requirements, or conditions and restrictions as are determined to be necessary and appropriate for the conservation and management of the fishery." Additionally, National Standard 8 provides that conservation and management measures shall provide for the sustained participation of fishing communities and to the extent practicable, minimize adverse economic impacts on such communities (16 U.S.C. § 1851(a)(8); 50 CFR 600.345). These provisions, taken together, provide broad discretion to manage fishing for non-federally managed species for the benefit of federally managed species.

Although the use of gillnets for the commercial harvest of federally managed and non-federally managed pelagic species or other non-federally managed species in federal waters is considered to be minimal due to depth and distance from the coast of the location of federal waters, **Sub-alternative 2a** and **Preferred Sub-alternative 2b** would prevent or minimize negative ecological and biological effects resulting from the use of gillnets (e.g., reduced bycatch of undersized/juvenile individuals, protected species, other target and non-target species), with the former being more beneficial because it prevents all use of gillnets. Based on commercial landings from 2012-2021 of federally managed species from EEZ waters around St. Croix, the only federally managed species harvested with gillnets was redbtail parrotfish (confidential data), and the two non-federally managed species harvested with gillnets were ballyhoo (6,211 pounds [lbs]) and needlefish (100 lbs). Allowing the use of surface gillnets for catching certain species of baitfish would allow fishermen to continue using these specific nets in federal waters (**Preferred Sub-alternative 2b**), and would prevent fishermen from using gillnets for other federally managed and non-federally managed species. Specifying the mesh size and the requirement the net be tended at all times and that it must be used 20 feet or more above the

bottom in **Preferred Sub-alternative 2b** would make the regulation partially compatible with USVI state regulations and would also reduce bycatch.

Sub-alternative 2c would prohibit the use of gillnets for the harvest of federally managed pelagic species (i.e., dolphin, wahoo), and would retain gillnets as an authorized gear type for the commercial harvest of non-federally managed species in federal waters around St. Croix, and as a prohibited gear for reef fish and spiny lobster. Negative ecological and biological effects resulting from the use of gillnets for non-federally managed species could be expected from this sub-alternative (e.g., bycatch of undersized/juvenile individuals, protected species, and other target and non-target species). In addition, **Sub-alternative 2c** does not specify mesh size restrictions.

Comparison of alternatives

Although the use of gillnets is minimal in St. Croix federal waters, from all alternatives proposed **Alternative 1** would be the least beneficial to the biological and ecological environment because it would continue to allow the commercial use of gillnets for certain groups of managed and non-managed species. When compared to the status quo, **Sub-alternative 2a** would be the most beneficial to the biological/ecological environment of St. Croix, as it prohibits the use of gillnets for all fishing, preventing any bycatch from this fishery, followed by **Sub-alternative 2b**, which would reduce the potential for bycatch from the use of gillnets in general, although it won't completely eliminate it as it allows the use of surface gillnets for a prescribed group of species. Lastly, from the action alternatives, **Sub-alternative 2c** would be the least beneficial to the biological/ecological environment because it would still allow for the use of gillnets to harvest other non-federally managed species, thus retaining the potential of adverse effects from this gear type. **Alternative 1** would be the most beneficial of all alternatives to the socio-economic environment in the short term because it would allow fishermen that use gillnets to commercially harvest pelagics and non-managed species to continue to do so. From the action alternatives, **Sub-alternative 2c** and **Sub-alternative 2b** would be beneficial to the socio-economic environment in the short term because each of them would allow fishermen to continue to use gillnets except for Council-managed pelagic species or certain species of baitfish, respectively. The least beneficial to the socio-economic environment would be **Sub-alternative 2a**. In the long term, those alternatives that allow some use of gillnets could be less beneficial if the fish resources are jeopardized from the use of gillnets. With respect to certain species of baitfish, **Alternative 1**, **Preferred Sub-alternative 2b**, and **Sub-alternative 2c** would each continue to allow gillnets for catching those species, with no additional effects to the biological environment, socio-economic environment, or administrative environment, except that **Preferred Sub-alternative 2b** would define a surface gillnet used for baitfish as meeting certain specifications to minimize bycatch. Physical effects are not expected to result from the use of gillnets under any of the alternatives, as long as gillnets are not used near the bottom, but of all the action alternatives, **Sub-alternative 2a** is the most beneficial because it prevents all use of gillnets

followed by **Preferred sub-alternative 2b**, because it establishes a minimum depth for using the surface gillnet, which is not specified by **Sub-alternative 2c**. Administrative effects would be slightly higher under **Sub-alternatives 2a** and **2c** than **Alternative 1**. **Preferred Sub-alternative 2b** would be partially compatible with USVI regulations for surface gillnets, facilitating enforcement of federal regulations, whenever these are compatible.

2.2.3 Action 2(c). Modify the Use of Trammel Nets in Federal Waters around St. Croix, USVI

Alternative 1. No action. Retain trammel nets as neither an authorized gear type for any fisheries¹¹ in the EEZ around St. Croix, nor an otherwise prohibited gear type, except for federally managed reef fish and spiny lobster.

Alternative 2 (Preferred). Prohibit the use of trammel nets for all fishing in federal waters around St. Croix.

2.2.4 Action 2(d). Modify the Use of Purse Seines in Federal Waters around St. Croix, USVI

Alternative 1. No action. Retain purse seines as neither an authorized gear type for any fisheries in the EEZ around St. Croix, nor an otherwise prohibited gear type.

Alternative 2 (Preferred). Prohibit the use of purse seines for all fishing in federal waters around St. Croix.

Discussion of Action 2(c) and Action 2(d) Alternatives

Alternative 1 of **Action 2(c)** and **Action 2(d)** would retain trammel nets and purse seines as neither an authorized gear type for any fisheries in the EEZ around St. Croix, nor an otherwise prohibited gear type, except that the use of trammel nets to harvest of federally managed reef fish and spiny lobster is prohibited. **Preferred Alternative 2** of **Action 2(c)** would prohibit the use of trammel nets and **Preferred Alternative 2** of **Action 2(d)** would prohibit the use of purse seines for all fishing in the U.S. EEZ around St. Croix. These gear types are not listed as authorized under any U.S. Caribbean fisheries, including St. Croix, in federal regulations at 50 CFR 600.725(v)(V), therefore **Preferred Alternatives 2** of **Actions 2(c)** and **2(d)**, respectively, are administrative actions. As noted above, trammel nets are specifically prohibited for fishing for federally managed reef fish and spiny lobster in federal waters around all three-island

¹¹ See 50 CFR 600.725(v)(V) for a list of fisheries <https://www.ecfr.gov/current/title-50/chapter-VI/part-600/subpart-H/section-600.725>

management areas, including St. Croix. These gear types are also prohibited in Council MMAs. Similar to gillnets, federal regulations do not prohibit the use of trammel nets to fish for species other than federally managed reef fish and spiny lobster, but they must be tended at all times (50 CFR 622.477(a)(3), (c)(2)). Trammel nets are prohibited for use in USVI territorial waters and no landings with trammel net were reported from 2012-2021. Purse seines (except purse seines authorized for HMS) are not used in federal and territorial waters of the U.S. Caribbean, **Preferred Alternative 2 of Action 2(c)** and **Preferred Alternative 2 of Action 2(d)** would specifically prohibit the use of these gear types for the harvest of all fish species in the St. Croix fishery, including for the use of trammel nets for baitfish. As a prohibited gear type, fishermen would not be able to petition to use this gear as otherwise allowed under federal regulations for gear that are not included in the authorized gear list.

Comparison of alternatives in Action 2(c) Trammel nets and Action 2(d) Purse seines

Effects to the physical, biological, ecological, and socio-economic environments from **Preferred Alternative 2 in Action 2(c)** and **Preferred Alternative 2 in Action 2(d)** are not expected to be different from those of **Alternative 1 of Action 2(c)** and **Action 2(d)** because neither trammel nets nor purse seines are currently authorized gear types for use in U.S. Caribbean federal waters for any fishing. In addition, there are no landings with trammel nets from USVI federal waters as it is prohibited in territorial waters. However, **Preferred Alternatives 2 of Actions 2(c)** and **2(d)** could be slightly more beneficial to the biological and ecological environment of the St. Croix EEZ because these alternatives further restrict potential future use of these gear types through a petition to the Council. Administrative effects are expected to be slightly higher for both action alternatives than for its respective no action alternative (**Alternative 1**).

2.3 Action 3: Use of Trawl Gear, Gillnets, Trammel Nets, and Purse Seines in the U.S. Caribbean EEZ around St. Thomas and St. John, USVI

2.3.1 Action 3(a). Modify the Use of Trawl Gear in Federal Waters around St. Thomas/St. John, USVI

Alternative 1. No action. Retain trawl gear as an authorized gear type for the commercial harvest of non-federally managed species in federal waters around St. Thomas/St. John that is not otherwise prohibited.

Alternative 2. Prohibit the use of trawl gear for all fishing year-round in Council seasonally closed areas/ MMAs¹² in federal waters around St. Thomas/St. John.

¹² CFMC Seasonally Closed Areas/Marine Managed Areas (MMAs) in St. Thomas and St. John are: (1) Grammanik Bank; and (2) Hind Bank.

Alternative 3 (Preferred). Prohibit the use of trawl gear for all fishing in federal waters around St. Thomas/St. John.

Discussion of Action 3(a) Alternatives

Alternative 1 would retain trawl gear, including bottom and mid-water trawls, as an authorized gear type for the commercial harvest of non-federally managed species in federal waters around St. Thomas/St. John as listed in 50 CFR 600.725(v)(V). There is no evidence that the commercial sector uses (or has used) trawl gear (with exceptions noted in Section 1.1, such as for exploratory research).

Alternative 2 and **Preferred Alternative 3** would prohibit the use of all trawl gear (i.e., bottom and mid-water trawl) for all fishing (i.e., commercial and recreational; federally managed and non-federally managed) either in Council-managed seasonally closed areas/MMAs or throughout the EEZ, respectively, around St. Thomas/St. John. Council MMAs in St. Thomas/St. John include the Grammanik Bank (50 CFR 622.514(a)(1)) and the Hind Bank Marine Conservation District (MCD) (50 CFR 622.514(a)(2)). All fishing is already prohibited in the Hind Bank MCD. **Alternative 2** and **Preferred Alternative 3** would prevent potentially negative ecological, biological, and physical effects from the use of trawl gear in the future (e.g., habitat destruction, bycatch) in Council MMAs around St. Thomas/St. John (**Alternative 2**) or throughout the EEZ around St. Thomas/St. John (**Preferred Alternative 3**). For example, potential impacts from trawling to coral and sponge habitat in the U.S. Caribbean EEZ, including the St. Thomas/St. John EEZ could be caused by direct contact with bottom tending trawl gear and from impacts to sensitive vertical relief from near-bottom orientation of pelagic trawls in its sensitive habitats. Also, by specifically prohibiting the use of trawl gear for all commercial and recreational harvest under **Preferred Alternative 3**, fishermen would not be able to petition to use trawl gear under federal regulations for gear types that are not included in the authorized gear list (as discussed in Section 1.1).

Comparison of Alternatives

Alternative 1 is the status quo and would not change any regulations applicable to the use of trawls in federal waters around St. Thomas/St. John. **Alternative 2** would prohibit the use of trawl gear in all Council MMAs (specifically in the Grammanik Bank, because all fishing is already prohibited within the Hind Bank MCD year-round). **Preferred Alternative 3** would prohibit the use of trawl gear for the harvest of fish in all components of the St. Thomas/St. John fishery that occurs within the EEZ around St. Thomas/St. John. Because trawl gear has not historically been used in the U.S. Caribbean EEZ, including the St. Thomas/St. John EEZ, and is not currently used, **Alternative 2** and **Preferred Alternative 3** are both administrative actions and are not expected to have any additional physical, biological/ecological, social, and economic effects when compared to **Alternative 1**. However, **Alternative 2** and **Preferred Alternative 3**

would prevent trawl gear from being used in the future, and thus could be more beneficial to the physical and biological environment by preventing potential bycatch and/or habitat effects resulting from trawling activities in federal waters around St. Thomas/St. John (**Preferred Alternative 3**) or in Council MMAs (**Alternative 2**), with the former being more beneficial in protective fishery and habitat resources throughout the St. Thomas/St. John EEZ. Furthermore, prohibiting the use of trawl gear in all components of the St. Thomas/St. John fishery (**Preferred Alternative 3**) within the St. Thomas/St. John EEZ would prevent future use through a petition for its use,⁷ which could occur under **Alternative 1** and **Alternative 2** (outside the Council MMAs), thus providing more benefits to the physical, biological/ecological environments.

2.3.2 Action 3(b). Modify the Use of Gillnets in Federal Waters around St. Thomas/St. John, USVI

Alternative 1. No action. Retain gillnets as an authorized gear type for the commercial harvest of federally managed and non-federally managed pelagic species and the commercial harvest of non-federally managed species in federal waters around St. Thomas/St. John, and as a prohibited gear type for reef fish and spiny lobster in the EEZ around St. Thomas/St. John and inside Council Seasonally Closed Areas or Council MMAs.

Alternative 2. Prohibit the use of gillnets¹³ in federal waters around St. Thomas/St. John:

Sub-alternative 2a. For all fishing.

Sub-alternative 2b (Preferred). For all fishing, except for surface gillnets for the following fish species belonging to the halfbeaks (Family Hemiramphidae), needlefishes (“gar”) (Family Belonidae), and flyingfish (Family Exocoetidae). A surface gillnet used in the EEZ around St. Thomas and St. John to fish for any baitfish must be tended at all times. The surface gillnet mesh size must not be smaller than 0.75 inches square or 1.5-inch stretch. The surface gillnet must be used 20 feet or more above the bottom.

Sub-alternative 2c. For fishing for federally managed pelagic species.

Discussion of Action 3(b) Alternatives

Alternative 1 would retain gillnets as an authorized gear type for the commercial harvest of federally managed and non-federally managed pelagic fish and for the commercial harvest of other non-federally managed species (e.g., species that are not managed by the Council), as listed in 50 CFR 600.725(v)(V). Federal regulations allow for the use of gillnets for the commercial harvest of non-federally managed species (e.g., baitfish such as ballyhoo or flying fish), subject to a requirement that the gear be tended at all times, and the use of gillnets is prohibited year-

¹³ The use of gillnets is already prohibited inside Council Seasonally Closed Areas or Council MMAs. Gillnets are also prohibited for all fishing for federally managed reef fish and spiny lobster.

round for fishing for spiny lobster and federally managed reef fish.¹⁴ The use of gillnets for the commercial harvest of federally managed pelagics, non-federally managed pelagics, and other non-federally managed species with gillnets could increase the potential for bycatch of target species that are prohibited with this gear type (i.e., federally managed reef fish and spiny lobster) and would also increase the potential catch of undersized managed and non-managed species (pelagic species, non-federally managed species), which could increase potential for overfishing and negatively affect the populations. Although the use of gillnets to harvest pelagic species with gillnets in federal waters is not common, landings of some pelagic species with gillnets are reported (see below in **Preferred Sub-alternative 2(b)**). **Alternative 1** would not be compatible with regulations for gillnets in the USVI, which prohibits the use of gillnets in territorial waters, except surface gillnets with listed construction specifications for the harvest of certain species of baitfish.

Sub-alternative 2a proposes to prohibit the use of gillnets to harvest all commercial and recreational species (i.e., federally managed and non-federally managed) in the EEZ around St. Thomas/St. John. **Preferred Sub-alternative 2b** would prohibit the use of gillnets to harvest all commercial and recreational species (i.e., federally managed and non-federally managed) in the EEZ around St. Thomas/St. John, with the exception of baitfish belonging to the halfbeak, gar, and flyingfish families. **Sub-alternative 2b** would authorize the use of surface gillnets to harvest baitfish. The specifications would require that the gillnet have mesh size openings that may not be smaller than 0.75 inches square or 1.5-inch stretch and that must be tended at all times. These specifications are partially compatible with USVI's specifications for surface gillnets used as nets to catch baitfish in territorial waters, and would help reduce bycatch and avoid impacts to habitat. Currently, gillnet is an authorized gear type for the commercial harvest of federally managed pelagic fish (See Appendix B) and non-federally managed pelagic fish (e.g., sardines, herring, ballyhoo, non-managed mackerel), and for the commercial harvest of non-federally managed species in the U.S. Caribbean EEZ, including the EEZ around St. Thomas/St. John. Federal regulations prohibit the use of gillnets for the harvest of managed reef fish and spiny lobster in all U.S. Caribbean federal waters and prohibit the use of gillnets in all Council MMAs, and allow the use of gillnets (and trammel nets) to fish for any other species, which must be tended at all times (50 CFR 622.512(a)(3), (b)(2)). With respect to non-federally managed species, the Magnuson-Stevens Act and the National Standard Guidelines give the Councils and NMFS authority to regulate fishing activity to support the conservation and management of fisheries, and where practicable, minimize adverse economic impacts on fishing communities. This could include regulations that pertain to fishing for non-managed species. For example, per Section 303(b)(12) and (14) of the Magnuson-Stevens Act, FMPs can "include

¹⁴ Cast nets are authorized for the commercial and recreational harvest of non-federally managed species. Cast nets are surface nets typically used to fish for baitfish such as ballyhoo, sardines, and other species. The Council did not include cast nets in the motion to prepare this amendment.

management measures in the plan to conserve target and non-target species and habitats, considering the variety of ecological factors affecting fishery populations" and can "prescribe such other measures, requirements, or conditions and restrictions as are determined to be necessary and appropriate for the conservation and management of the fishery." Additionally, National Standard 8 provides that conservation and management measures shall provide for the sustained participation of fishing communities and to the extent practicable, minimize adverse economic impacts on such communities (16 U.S.C. § 1851(a)(8); 50 CFR 600.345). These provisions, taken together, provide broad discretion to manage fishing for non-federally managed species for the benefit of federally managed species.

Although the use of gillnets for the commercial harvest of federally managed and non-federally managed pelagic species or other non-federally managed species in federal waters is considered to be minimal due to depth and distance from the coast of the location of federal waters, **Sub-alternatives 2a** and **Preferred Sub-alternative 2b** would prevent or minimize negative ecological and biological effects resulting from the use of gillnets (e.g., reduced bycatch of undersized individuals, protected species, other target and non-target species). Based on commercial landings from 2012-2021 of federally-managed species from EEZ waters around St. Thomas /St. John, species harvested with gillnet include red hind, coney, yellowtail snapper, blue runner (all landings are minor and confidential). Allowing the use of surface gillnets for catching certain species of baitfish would allow fishermen to continue using these specific nets for baitfish in federal waters (**Preferred Sub-alternative 2b**), and would prevent using gillnets for other managed and non-managed species. Specifying the mesh size, requiring the net be tended at all times, and requiring the gillnet be used 20 feet or more above the bottom in **Preferred Sub-alternative 2b** would make the regulation partially compatible with USVI territorial regulations and would also minimize bycatch.

Sub-alternative 2c would prohibit the use of gillnets for the harvest of federally managed pelagic species (i.e., dolphin, wahoo), and would retain gillnets as an authorized gear type for the commercial harvest of non-federally managed species in federal waters around St. Thomas/St. John, and as a prohibited gear for reef fish and spiny lobster. Negative ecological and biological effects resulting from the use of gillnets for non-federally managed species could be expected from this sub-alternative (e.g., bycatch of undersized or juvenile individuals, protected species, and other target and non-target species). In addition, **Sub-alternative 2c** does not specify mesh size restrictions.

Comparison of alternatives

Although the use of gillnets is minimal in St. Thomas/St. John federal waters, from all alternatives proposed **Alternative 1** would be the least beneficial to the biological and ecological environment because it would continue to allow the commercial use of gillnets for certain groups of managed and non-managed species. When compared to the status quo, **Sub-alternative 2a**

would be the most beneficial to the biological/ecological environment, as it prohibits the use of gillnets for all fishing, preventing any bycatch from this fishery, followed by **Sub-alternative 2b**, which would reduce the potential for bycatch from the use of gillnets in general, although it would not completely eliminate it as it allows the use of surface gillnets for a prescribed group of species. Lastly, from the action alternatives, **Sub-alternative 2c** would be the least beneficial to the biological/ecological environment because it would still allow for the use of gillnets to harvest other non-federally managed species, thus retaining the potential of adverse effects from this gear type. **Alternative 1** would be the most beneficial of all alternatives to the socio-economic environment in the short term, because it would allow fishermen that use gillnets to commercially harvest pelagics and non-managed species to continue to do so. From the action alternatives, **Sub-alternative 2c and Sub-alternative 2b** would be beneficial to the socio-economic environment in the short term because each of them would allow fishermen to continue to use gillnets except for Council-managed pelagic species or certain species of baitfish, respectively. The least beneficial to the socio-economic environment would be **Sub-alternative 2a** (complete ban). In the long term, those alternatives that allow some use of gillnets could be less beneficial if the fish resources are jeopardized from the use of gillnets. With respect to certain species of baitfish, **Alternative 1, Preferred Sub-alternative 2b, and Sub-alternative 2c** would each continue to allow gillnets for catching those species, with no additional effects to the biological environment, socio-economic environment, or administrative environment, except that **Preferred Sub-alternative 2b** would define a surface gillnet used for baitfish as meeting certain specifications to minimize bycatch. Physical effects are not expected to result from the use of gillnets under any of the alternatives, as long as gillnets are not used near the bottom, but of all the action alternatives, **Sub-alternative 2a** is the most beneficial because it prevents all use of gillnets followed by **Preferred sub-alternative 2b**, because it establishes a minimum depth for using the surface gillnet, which is not specified by **Sub-alternative 2c**. Administrative effects would be slightly higher under **Sub-alternatives 2a and 2c** than **Alternative 1**. **Preferred Sub-alternative 2b** would be partially compatible with USVI regulations for surface gillnets, facilitating enforcement of federal regulations whenever these are compatible.

2.3.3 Action 3(c). Modify the Use of Trammel Nets in Federal Waters around St. Thomas and St. John, USVI

Alternative 1. No action. Retain trammel nets as neither an authorized gear type for any fisheries in the EEZ around St. Thomas/St. John, nor an otherwise prohibited gear type, except for federally-managed reef fish and spiny lobster.

Alternative 2 (Preferred). Prohibit the use of trammel nets for all fishing in federal waters around St. Thomas/St. John.

2.3.4 Action 3(d). Modify the Use of Purse Seines in Federal Waters around St. Thomas and St. John, USVI

Alternative 1. No action. Retain purse seines as neither an authorized gear type for any fisheries in the EEZ around St. Thomas/St. John, nor an otherwise prohibited gear type.

Alternative 2 (Preferred). Prohibit the use of purse seines for all fishing in federal waters around St. Thomas/St. John.

Discussion of Action 3(c) and Action 3(d) Alternatives

Alternative 1 of **Action 3(c)** and **Action 3(d)** would retain trammel nets and purse seines as neither an authorized gear type for any fisheries in the EEZ around St. Thomas/St. John, nor an otherwise prohibited gear type, except that the use of trammel nets to harvest of federally-managed reef fish and spiny lobster is prohibited. **Preferred Alternative 2** of **Action 3(c)** would prohibit the use of trammel nets and **Preferred Alternative 2** of **Action 3(d)** would prohibit the use of purse seines for all fishing in the U.S. EEZ around St. Thomas/St. John. These gear types are not listed as authorized under any U.S. Caribbean fisheries, including St. Thomas/St. John, in federal regulations at 50 CFR 600.725(v)(V), therefore **Preferred Alternatives 2** of **Actions 3(c)** and **3(d)**, respectively, are administrative actions. As noted above, trammel nets are specifically prohibited for fishing for federally managed reef fish and spiny lobster in federal waters around all three-island management areas, including St. Thomas/St. John. These gear types are also prohibited in Council MMAs). Similar to gillnets, federal regulations do not prohibit the use of trammel nets to fish for species other than federally managed reef fish and spiny lobster, but they must be tended at all times (50 CFR 622.512(a)(3), (c)(2)). Trammel nets are prohibited for use in USVI territorial waters and no landings with trammel net in federal waters were reported from 2012-2021. Purse seines (except purse seines authorized for HMS) are not used in federal and territorial waters of the U.S. Caribbean, **Preferred Alternative 2** of **Action 3(c)** and **Preferred Alternative 2** of **Action 3(d)** would specifically prohibit the use of these gear types for the harvest of all fish species in the St. Thomas/St. John fishery, including for the use of surface trammel nets for baitfish. As a prohibited gear type, fishermen would not be able to petition to use of this gear as otherwise allowed under federal regulations for gear that are not included in the authorized gear list.

Comparison of alternatives in Action 3(c) Trammel nets and Action 3(d) Purse seines

Effects to the physical, biological/ecological, and socio-economic environments from **Preferred Alternative 2** in **Action 3(c)** and **Preferred Alternative 2** in **Action 3(d)** are not expected to be different from those of **Alternative 1** of **Action 3(c)** and **Action 3(d)** because both trammel nets and purse seines are currently not authorized for use in federal waters for any fishing. In addition, there are no landings with trammel nets from USVI federal waters as it is prohibited in

territorial waters. However, **Preferred Alternatives 2** of **Actions 3(c)** and **3(d)** could be slightly more beneficial to the biological/ecological environment of the St. Thomas/St. John EEZ because these alternatives further restrict potential future use of these gear types through a petition to the Council. Administrative effects are expected to be slightly higher for both action alternatives than for its respective no action alternative (**Alternative 1**).

2.4 Action 4: Requirements for the Use of Descending Devices in the Reef Fish Component of the Puerto Rico, St. Croix, and St. Thomas and St. John FMPs

2.4.1 Proposed Alternatives for Action 4

Alternative 1. No action. Descending devices are not required to be on board a vessel fishing for or possessing species in the reef fish component of the Puerto Rico, St. Croix, and St. Thomas/St. John FMPs.

Alternative 2 (Preferred). Require a descending device* be on board a commercial or recreational vessel and readily available for use while fishing for or possessing species in the reef fish component of any of the FMPs:

Preferred Sub-alternative 2a. Puerto Rico

Preferred Sub-alternative 2b. St. Croix

Preferred Sub-alternative 2c. St. Thomas/St. John

* For the purpose of this requirement, a “descending device” means an instrument to which is attached a minimum of a 16-ounce weight and a length of line that will release the fish at the depth from which the fish was caught, or a minimum of a 60 ft (18 m). The descending device attaches to the fish’s mouth or is a container that will hold the fish. The device must be capable of releasing the fish automatically, by the actions of the operator of the device, or by allowing the fish to escape on its own. Since minimizing surface time is critical to increasing survival, a descending device must be readily available for use while engaged in fishing.¹⁵

Discussion of Action 4 Alternatives

Alternative 1 would retain the status quo and not require a descending device be onboard a vessel fishing for or possessing federally-managed reef fish in the EEZ around Puerto Rico, St. Croix, and St. Thomas/St. John.

¹⁵ This definition of a descending device would be similar to the one described by the South Atlantic Fishery Management Council and Gulf of Mexico Fishery Management Council.

Preferred Alternative 2 would require a descending device be rigged and ready for use on a vessel when fishing for or possessing federally managed reef fish in federal waters around Puerto Rico (**Sub-alternative 2a**), St. Croix (**Sub-alternative 2b**), and St. Thomas/St. John (**Sub-alternative 2c**) (See Appendix B for a list of reef fish species managed under each FMP). The use of descending devices has been shown to be a low cost, effective way of reducing fishing mortality from discards and the required possession of this tool has been adopted by both the South Atlantic Fishery Management Council (South Atlantic Council) and the Gulf of Mexico Fishery Management Council (Gulf Council).¹⁶ By proposing the use of descending devices for reef fish experiencing barotrauma (e.g., caught in deep water, protruding stomach, etc.), the Council expects to reduce fishing mortality of regulatory and economic discards¹⁷ of federally-managed reef fish, which is one of the components of the island fisheries' most vulnerable to barotrauma. Also, to ensure that descending devices on board have the intended effect, devices must meet requirements in the definitions provided in **Preferred Alternative 2**.

As mentioned above, having a descending device on board a vessel is required in the South Atlantic and the Gulf of Mexico. The final rule (85 FR 36166) for Amendment 29 to the Fishery Management Plan of the South Atlantic Region published on June 15, 2020, specifying the requirements for a descending device. A descending device is also required for Gulf of Mexico reef fish in federal waters through the application of the Descend Act in 2022 (Direct Enhancement of Snapper Conservation and the Economy through Novel Devices Act of 2020). The Descend Act defines a descending device as an instrument that will release a fish at a depth sufficient for the fish to be able to recover from the effects of barotrauma; is a weighted hook, lip clamp, or box that will hold the fish while it is lowered to depth, or another device determined to be appropriate by the Secretary of Commerce; and is capable of releasing the fish automatically, releasing the fish by actions of the operator of the device, or by allowing the fish to escape on its own.¹⁸

Under **Preferred Sub-Alternatives 2a, 2b, and 2c**, requiring a descending device be rigged and ready for use would add some minor economic impacts to recreational and commercial fishermen because they would need to incur in expenses to purchase or create the device. Although, those expenses are expected to be minor because descending devices can be created

¹⁶ See Florida Fish and Wildlife Commission for an educational video on how to make an effective homemade descending device: <https://www.youtube.com/watch?v=Y0o9IxCxEAM>.

¹⁷ Regulatory discards are fish that are required by regulation to be discarded, but also include fish that may be retained but not sold. Economic discards are fish that are discarded because they are undesirable to the harvester. This category of discards generally includes certain species, sizes, and/or sexes with low or no market value.

¹⁸ NMFS published a final rule (87 FR 2355) clarifying the definition of a descending device and venting tool that published on January 14, 2022, where it further defines it as a device capable of releasing a fish at the depth from which the fish was caught; and specifies that the device must use a minimum of a 16-ounce weight and a minimum length of 60 feet length of line attached to the descending device. It must be rigged and ready for use when fishing for Gulf of Mexico reef fish. These regulations for the descending device in the Gulf of Mexico at § 622.30, match regulations for a descending device in the South Atlantic at § 622.188.

with materials fishers may already have in their possession, and are low cost and easy to use (see Appendix G for examples of descending devices). Requiring a descending device to be rigged and ready for use would benefit the biological environment of the managed reef fish by increasing their opportunities for survival and reducing fishing mortality from discards due to barotrauma. Because enforcing regulations specifically requiring the device to be used (versus the device being rigged and ready to use) is complicated, the Council, similar to actions taken by the South Atlantic Council and the Gulf Council, would require the device be on board, rigged and ready for use.

Comparison of Alternatives

Preferred Sub-Alternatives 2a, 2b, and 2c would be equally more beneficial to the biological and ecological environment of reef fish than **Alternative 1**, as any of them would require a descending device to be rigged and ready for use, which could decrease fishing mortality of Council-managed reef fish from barotrauma in each of the island management areas. In the short-term, socio-economic effects from **Preferred Sub-Alternatives 2a, 2b, and 2c** are expected to be larger than from **Alternative 1** due to the cost and effort for fishers to obtain and keep onboard a descending device. Administrative effects from **Preferred Sub-Alternatives 2a, 2b, and 2c** would also be higher than **Alternative 1** because of the regulatory action needed to effect the requirement and the additional efforts to enforce these regulations for all reef fish fishermen (commercial and recreational), in federal waters of the three management areas, and to conduct outreach and education activities.

Chapter 3. Affected Environment

This section describes the environment and resources included within federal waters off Puerto Rico, St. Croix, and St. Thomas/St. John that would be affected by the proposed action. Additional information on the physical, habitat, biological/ecological, economic, social, and administrative environments of Puerto Rico and the U.S. Virgin Islands (USVI) have been described in detail in the Puerto Rico Fishery Management Plan (FMP) (CFMC 2019a), the St. Croix FMP (CFMC 2019b), and the St. Thomas/St. John FMP (CFMC 2019c), and are incorporated by reference and summarized below.

3.1 Description of the Physical Environment

The U.S. Caribbean Exclusive Economic Zone (EEZ) covers approximately 75,687 mi² (196,029 km²), which, for management purposes, is divided into the Puerto Rico, St. Croix, and St. Thomas/St. John management areas (see Figure 1.1).

3.1.1 Puerto Rico

The Puerto Rico EEZ (i.e., federal waters) is located 9 - 200 nautical miles (17 - 370 km) from the shoreline and covers approximately 65,368 mi² (169,303 km²). Puerto Rico includes the adjacent inhabited islands of Vieques and Culebra as well as various other isolated islands without permanent populations including Mona, Monito, and Desecheo. Puerto Rico is surrounded on three sides by deep ocean waters: the Mona Passage to the west (> 3,300 ft [1,000 m] deep); the Puerto Rico Trench to the north (~28,000 ft [8,500 m] deep); and the Venezuelan Basin of the Caribbean Sea to the south (~16,400 ft [5,000 m] deep). To the east, Puerto Rico shares the shallow-water shelf platform with St. Thomas/St. John, USVI.

3.1.2 St. Croix

The St. Croix EEZ is located 3 - 200 nautical miles (6 - 370 km) from the shoreline and covers approximately 9,216 mi² (23,870 km²). St. Croix is located about 46 mi (74 km) south of St. Thomas/St. John and lies on a different geological platform than Puerto Rico, St. Thomas, and St. John. St. Croix is separated from those islands by a 2.5 mi (4 km) deep trench (CFMC 2004). The St. Croix shelf is much narrower and shallower than that of the northern islands, and has a total area of approximately 99 nm² (343 km²). Most of the shelf area is less than 80 ft (24.4 m) deep.

3.1.3 St. Thomas and St. John

The St. Thomas/St. John EEZ is located 3 - 200 nautical miles (6 - 370 km) from the shoreline and covers approximately 1,103 mi² (2,856 km²). The island of St. Thomas is bordered to the

west by the Puerto Rico islands of Vieques and Culebra, and to the east by St. John, which is bordered on the east by the British Virgin Islands. The shelf shared by the islands of St. Thomas/St. John is about 8 mi (12.9 km) wide on the south and 20 mi (32.2 km) wide on the north with an area of approximately 510 nm² (1751 km²). Most of the shelf area is greater than 80 ft (24.4 m) deep.

3.1.4 Habitat Environment and Essential Fish Habitat

The coastal marine environments of Puerto Rico and the USVI are characterized by a wide variety of habitat types, with 21 distinct benthic habitats types delineated. The Essential Fish Habitat Final Environmental Impact Statement (CFMC 2004) summarized the percent distribution for all habitats in the U.S. Caribbean from the 2,121 mi² (5,494 km²) of total bottom area mapped from aerial photographs. This total included both Puerto Rico (1,934 mi² [5,009 km²]) and the USVI (187 mi² [485 km²]), and covered from the shoreline to about 66 feet (ft) (20 meters [m]) depth. Appendix J in each of the Island-based FMPs describes the preferred habitats for all species managed on each island/island group.

Essential Fish Habitat

Essential fish habitat (EFH) is defined in the Magnuson-Stevens Fishery Conservation and Management Act (Magnuson-Stevens Act) as “those waters and substrates necessary to fish for spawning, breeding, feeding, or growth to maturity” (16 U.S. C. 1802(10)). EFH information for species affected by this amendment is described in each of the Island-based FMPs and in Amendment 1 to the Island-based FMPs (Buoy Gear Amendment) (CFMC 2022) and is summarized below.

For the list of EFH for reef fish and pelagic fish that are affected by this amendment, see Chapter 5, Section 5.14 of the Puerto Rico FMP, the St Croix FMP, and the St Thomas/St John FMP.

3.2 Description of the Biological and Ecological Environments

The Puerto Rico FMP (CFMC 2019a), St. Croix FMP (CFMC 2019b), and the St. Thomas/St. John FMP (CFMC 2019c), include a description of the biological environment for the species managed in federal waters in the respective island/island group management area, including reef fish, deep-water reef fish and pelagic species, which are incorporated herein by reference and summarized below. Reef fish and pelagic species are managed as stocks or stock complexes. See Appendix A for a complete list of species managed under the Reef Fish and Pelagic groups on each of the Island-based FMPs.

3.2.1 Description of the Species Affected by this Amendment

Species affected by this amendment include federally managed reef fish and pelagic species, as well as species not managed by the Council that are caught either as target (e.g., baitfish) or non-target species by the commercial and recreational sectors using the trawl gear, gillnets, trammel nets, and purse seines.

The reef fish component of the Puerto Rico fishery in the Puerto Rico FMP contains 51 species of fish and the pelagic fish component contains 9 species of fish (Appendix A). The reef fish component of the St. Croix fishery includes 41 species and the pelagic fish component contains two species of fish (Appendix A). The reef fish component of the St. Thomas/St. John fishery includes 45 species and the pelagic fish component includes two species of fish (Appendix A). Many of these stocks/stock complexes are taken primarily in commercial, subsistence, and/or recreational fisheries as described in Section 3.4 below.

3.2.1.1 *Life History and Biology*

Appendix J in each of the Island-based FMPs contains a comprehensive description of the life history and biology of each of the Council-species that may be affected by this amendment (Table 3.3.1).

3.2.1.3 *Status of the Stocks*

None of the managed stocks that would be affected by this amendment are undergoing overfishing and/or considered overfished in 2022. See The NMFS 2022 Report to Congress on the Status of U.S. Fisheries for additional information: <https://www.fisheries.noaa.gov/s3/2023-04/2022-Status-of-Stocks-RtC-041423-0.pdf> for more information.

3.2.1.3 *Responses to Climate Change*

Climate change can affect reef fish populations as the coral reef ecosystems in which they reside shift due to increases in water temperatures, extreme weather events (e.g., hurricanes) and shifts in ocean currents. These climate change-related shifts can also affect the food chain that reef fish and pelagic species rely on. For additional information, see <https://www.fisheries.noaa.gov/insight/understanding-our-changing-climate>.

3.2.2 Bycatch

Each of the Puerto Rico, St. Croix, and St. Thomas/St. John FMPs include a bycatch practicability analysis for the species managed under each FMP, which is incorporated herein by reference, and summarized below.

The reef fish component of the island-based fisheries is multi-species, while the pelagic component tends to be more species-specific. In Puerto Rico, St. Croix, and St. Thomas/St.

John, reef fish and pelagic fish are mainly harvested commercially in federal waters using hook and line gear, although some fishing with pots/traps for reef fish, as well as spears for both are used. Most of the fishing for reef fish occurs in territorial waters of Puerto Rico with hook and line, traps pots and spears, while some harvest of these groups are reported with nets such as gillnets and trammel nets, mainly in state waters. Recreational harvest of reef fish and pelagic fish in federal waters is thought to mostly be conducted with hook and line, though recreational data are not available at this time. Trawl fishing, which that is noted for producing large amounts of bycatch, is essentially absent from the U.S. Caribbean. Thus, bycatch is not as significant an issue in Puerto Rico, St. Croix, and St. Thomas/St. John as compared to other regions. What little bycatch that does occur is generally confined to regulatory discards (CFMC 2019a,b,c). However, the use of descending devices is expected to reduce mortality of bycatch species.

The actions in this amendment are not expected to significantly increase or decrease the magnitude of bycatch or bycatch mortality in the Puerto Rico, St. Croix, and St. Thomas/St. John fisheries that target reef fish and pelagic fish. Additionally, since fishermen in the U.S. Caribbean region traditionally utilize most resources harvested, and the amount of bycatch from the fisheries targeting reef fish and pelagic fish are minimal and are not expected to change under this amendment, little to no affect to mammals or birds would be expected.

3.2.3 Protected Species

Within the U.S. Caribbean, some species and their habitats are protected under the Marine Mammal Protection Act (MMPA), the Endangered Species Act (ESA), or both. A brief summary of these two laws and more information is available on the NMFS Office of Protected Resources website.¹⁹

The National Marine Fisheries Service (NMFS) completed a Biological Opinion on September 21, 2020, evaluating the impacts of the Puerto Rico, St. Croix, and St. Thomas/St. John fisheries on ESA-listed species that occur in the U.S. Caribbean region (NMFS 2020; Table 3.2.1). In the Biological Opinion, NMFS determined that the authorization of the fisheries conducted under each island FMP is not likely to adversely affect sperm, sei, and fin whales; the Northwest Atlantic DPS of loggerhead sea turtle and leatherback sea turtle; giant manta rays; or critical habitat of green, hawksbill, or leatherback sea turtles. The Biological Opinion also determined that the authorization of the island-based fisheries is not likely to jeopardize the continued existence of the North Atlantic DPS of green sea turtle, South Atlantic DPS of green sea turtle, hawksbill sea turtle, Nassau grouper, oceanic whitetip shark, Central and Southwest Atlantic DPS of scalloped hammerhead shark, elkhorn coral, staghorn coral, rough cactus coral, pillar

¹⁹ <https://www.fisheries.noaa.gov/protecting-marine-life>

coral, lobed star coral, mountainous star coral, or boulder star coral, or result in the destruction or adverse modification of designated *Acropora* critical habitat.

Table 3.2.1. ESA-listed species that may occur in the U.S. Caribbean region.

Common Name	Species Name	Status	Determination
Sei whale	<i>Balaenoptera borealis</i>	Endangered	NLAA
Sperm whale	<i>Physeter macrocephalus</i>	Endangered	NLAA
Fin whale	<i>Balaenoptera physalus</i>	Endangered	NLAA
Green sea turtle North Atlantic DPS	<i>Chelonia mydas</i>	Threatened	NLJ
Green sea turtle South Atlantic DPS	<i>Chelonia mydas</i>	Threatened	NLJ
Hawksbill sea turtle	<i>Eretmochelys imbricata</i>	Endangered	NLJ
Leatherback sea turtle	<i>Dermochelys coriacea</i>	Endangered	NLAA
Loggerhead sea turtle Northwest Atlantic DPS	<i>Caretta caretta</i>	Threatened	NLAA
Elkhorn coral	<i>Acropora palmata</i>	Threatened	NLJ
Staghorn coral	<i>Acropora cervicornis</i>	Threatened	NLJ
Rough cactus coral	<i>Mycetophyllia ferox</i>	Threatened	NLJ
Pillar coral	<i>Dendrogyra cylindrus</i>	Threatened	NLJ
Lobed star coral	<i>Orbicella annularis</i>	Threatened	NLJ
Mountainous star coral	<i>Orbicella faveolata</i>	Threatened	NLJ
Boulder star coral	<i>Orbicella franksi</i>	Threatened	NLJ
Scalloped hammerhead shark (Central and Southwest Atlantic DPS)	<i>Sphyrna lewini</i>	Threatened	NLJ
Nassau grouper	<i>Epinephelus striatus</i>	Threatened	NLJ
Oceanic whitetip shark	<i>Carcharhinus longimanus</i>	Threatened	NLJ
Giant Manta Ray	<i>Manta birostris</i>	Threatened	NLAA

NLAA = not likely to adversely affect

NLJ = not likely to jeopardize the continued existence

ESA designated critical habitat for the green sea turtle, hawksbill sea turtle, leatherback sea turtle, and *Acropora* corals also occur within the Council's jurisdiction. Critical habitat for green and hawksbill sea turtles occurs entirely within Puerto Rico state waters, and over 99% of the critical habitat for leatherback sea turtles around St. Croix occurs within USVI state waters. Designated critical habitat of *Acropora* corals in Puerto Rico and the USVI extend from the mean low water line seaward to the 98 foot (30 meter) depth contour ([73 FR 72209](#)), the majority of which occur in state waters.

The actions contained in this amendment are not anticipated to modify the operation of Puerto Rico, St. Croix, or St. Thomas/St. John fisheries in a manner that would cause effects to ESA-listed species or critical habitat that were not considered in the 2020 Biological Opinion.

Information on the Marine Mammal Protection Act and the ESA is available on the NMFS Office of Protected Resources website.²⁰

²⁰ <https://www.fisheries.noaa.gov/protecting-marine-life>

3.3 Description of the Reef Fish, Pelagic Fish, and other Fish Components of the Puerto Rico, St. Croix, and St. Thomas and St. John Fisheries that are Harvested with Nets*

Each of the Island-based FMPs (CFMC 2019a-c) contain a comprehensive description of the fisheries and sectors occurring within the respective EEZ and are incorporated herein by reference. Information from the original Reef Fish FMP and Amendment 1 to each of the Island-based FMPs (Buoy Gear Amendment) (CFMC 2022) was also used to draft the following sections, which describe the fisheries affected by this amendment.

3.3.1 Reef Fish and Pelagic Stocks Management

The following section characterizes the gillnet and trammel net component of each of the Puerto Rico, St. Croix, and St. Thomas/St. John fisheries targeting finfish. As discussed in Chapter 1, trawl net and purse seines are not currently used in the island-based fisheries and are not discussed in depth in this description. Their proposed prohibition is a precautionary approach taken by the Council to prevent its use in the future. In general, the use of gillnets for the commercial harvest of federally managed and non-federally managed pelagic species or other non-federally managed species (e.g., baitfish) (i.e., authorized fisheries) in federal waters around Puerto Rico, St. Croix, and St. Thomas/St. John is considered to be minimal due to depth and distance from the coast of federal waters, although some managed species are reported in the landings, most likely as regulatory bycatch. Trammel nets are not authorized for use in federal waters, but some landings of managed and un-managed species may also be reported with this gear type. Below is a brief description of the gear types addressed by this amendment.

Trawl nets

Federal regulations at 50 CFR 600.10 defines a *trawl* as a cone or funnel-shaped net that is towed through the waters by one or more vessels. Furthermore, NMFS defines bottom trawling as a fishing practice that herds and captures the target species by towing a net along the ocean floor (See [NOAA Fisheries Bottom Trawls](#)). There are different types of bottom trawling nets (or techniques) such as otter trawls, beam trawls, towed dredges, and hydraulic dredges (Hickey 2017) and many of these are used and managed in other U.S. regions to capture groundfish, shrimp, and other bottom-associated species. Another type of trawling gear is the midwater trawl net (i.e., pelagic trawl), which is a large net towed through the water column.

Gillnets (in *Spanish*: filete o chinchorro, trasmallo de ahorque (gillnet/single wall))

Single wall net that is suspended vertically in the water column by floats along the top and weights along the bottom, to entangle fish that attempt to pass through it. The net can be fixed to the bottom, or be suspended within the water column or at the surface. Federal regulations at 50 CFR 600.725 list gillnets as an authorized gear type in the U.S. EEZ around Puerto Rico, St.

Croix, St. Thomas/St. John for (1) the commercial harvest of federally managed and non-federally managed pelagic species and for (2) the commercial harvest of other non-federally managed species in each of the island management areas, subject to a requirement that the gear be tended at all times.

In USVI territorial waters, single-wall surface gillnets targeting baitfish (i.e., halfbeaks (Family Hemiramphidae), gar (Family Belonidae), and flyingfish (Family Exocoetidae) is the only type of gillnet allowed. These nets may not be more than 1,800 ft in length as measured by the float line, and may not be used within 20 ft of the bottom. Mesh size may not be smaller than 0.75-inch square or 1.5-inch stretch.

In Puerto Rico state waters, it is illegal to use gillnets, beach seines, and trammel nets that have a mesh greater than six inches (6") from knot to knot in extension. Additionally, gillnets used for bait fishing may not be more than a quarter 0.25 inch (knot-to-knot opening). Puerto Rico Fishing regulations prohibit the use of nets (beach seines, trammel nets, and gillnets) in conjunction with diving equipment ("Scuba"), except by written authorization from the DNER Secretary for the capture of lionfish.

Trammel nets (trasmallo o mallorquín (trammel net), tremall (3-paned), chinchorro de ahorque) Trammel nets are suspended vertically in the water column by floats along the top and weights along the bottom, to entangle fish that attempt to pass through it. The net can be fixed to the bottom, or be suspended within the water column or at the surface. Trammel nets are neither identified as an authorized gear type in the U.S. EEZ around Puerto Rico, St. Croix, St. Thomas/St. John (50 CFR 600.725(v)), nor specifically prohibited from use in a fishery (except that the use of trammel nets is prohibited in the federally managed reef fish and spiny lobster fisheries), but a person may petition the Council to use this gear type. At that time, the Council and NMFS may take action to allow or prohibit the use of the gear.

USVI regulations prohibit the use of trammel nets in the territory. Puerto Rico fishing regulations allow the use of trammel nets, and the outer panels may not have a mesh greater than six inches (6") from knot to knot. It is also prohibited to use this gear type in conjunction with diving equipment. Trammel nets are used in Puerto Rico state waters to fish for managed species such as spiny lobsters and mackerels (see Sections 3.3.1.2 and 3.4.1.1 for additional information on landings with this gear type).

Purse seines

Used in many regions to catch a variety of schooling pelagic fish of all sizes, such as sardines or tunas (See [NMFS Fishing Gear: Purse Seines](#)), and consist of a large wall of netting deployed to encircle an area or school of fish. The top of the net has floats and the bottom of the net has weights. The weighted bottom line is tightened to close up, or purse, the net underneath the fish

so that the fish cannot escape and can be brought on the vessel. Purse seines are neither identified as an authorized gear type in the U.S. EEZ around Puerto Rico, St. Croix, St. Thomas/St. John (50 CFR 600.725(v)), nor specifically prohibited from use in a fishery, but a person may petition the Council to use this gear type. At that time, the Council and NMFS may take action to allow or prohibit the use of the gear.

3.3.1.1 Management

Reef fish and pelagic stocks in federal waters are managed with annual catch limits (ACL) for Puerto Rico commercial and recreational sectors and for all harvest in St. Croix and in St. Thomas/St. John with an aggregate bag limit for recreational harvest of reef fish, seasonal closure for certain reef fish species (See CFMC 2022 and Tables 3.3.2 and 3.3.3 for a list of seasonal closures), and with area closures that protect spawning populations for some of the reef fish species and the habitat that supports those aggregations. Pelagic stocks/stocks complexes are additionally managed with an annual catch target (ACT) set at 90% of the applicable ACL. For specific information about ACLs and ACTs, see Chapter 5 of each of the Island-based FMPs (CFMC 2019a-c).

3.3.1.2 Landings with Net Gear

Puerto Rico

Landings of reef fish and pelagic species are available from self-reported commercial fishermen logbooks, and include information on fishing gear type and location where the catch was landed. At the time this amendment was prepared, the most recent and complete year of landings available was from 2019, and represents the best scientific information available. Net gear types used to catch managed and non-managed reef fish and pelagic species, and other non-managed species in federal and state waters include gillnets, trammel nets, cast nets, and beach seines (See Table 3.4.1 in Section 3.4.1.1). Gillnets are allowed in federal waters only for the commercial harvest of non-managed pelagic species and other species. Trammel nets are neither identified as an authorized gear type in federal waters around Puerto Rico, nor specifically prohibited from use in a fishery (except that similar to gillnets, the use of trammel nets is prohibited in the federally managed reef fish and spiny lobster fisheries). Although gillnets and trammel nets are specifically prohibited for harvesting reef fish and spiny lobster in federal waters around Puerto Rico, there are some landings reported of reef fish species and spiny lobster with these gears from federal waters (See Table E1 in Appendix E). Both trammel nets and gillnets are allowed, and widely used, in Puerto Rico state waters. It is important to note that the total landings reported from federal waters only represent a small percentage of the total landings from state waters. Table 3.3.1 below shows the top managed and non-managed species reported with gillnets from federal waters, state waters, or unknown waters. The top Council-managed finfish species reported with gillnets from federal waters from 2014 through 2019 include king and cero mackerels, parrotfish (unspecified), and lane snapper. The top non-managed finfish species reported with gillnets from federal waters from 2014 through 2019 include ballyhoo, bar jack, mullet, herring, and mojarras. Table 3.3.2 shows those managed and non-managed finfish

species reported with trammel nets from federal waters in commercial landings from 2014 through 2019. Landings with trammel nets from federal waters are minimal. Appendix E, Table E1 shows the full list of species landed commercially with gillnets and trammel nets in state, federal, and unknown waters.

Table 3.3.1. Adjusted landings in pounds for the top species (Managed and Non-Managed) reported for gillnet gear and trammel net gear in Puerto Rico Commercial Landings for 2014-2019 by State, Federal, or Unknown waters.

Management Status	Species	GILL NET		
		State	Federal	Unknown
Managed	Barracuda	2,251	Conf	429
Managed	Grouper,Coney	836	Conf	98
Managed	Grouper,Red Hind	1,022	212	Conf
Managed	Grunt,White	4,731	Conf	Conf
Managed	Hogfish	1,160	Conf	82
Managed	Mackerel,Cero	11,641	733	593
Managed	Mackerel,King	8,756	1,117	933
Managed	Parrotfishes,Unspecified	17,212	1,205	3,418
Managed	Snapper,Black	Conf	196	Conf
Managed	Snapper,Cardinal	1,818	Conf	652
Managed	Snapper,Cubera	1,856	Conf	316
Managed	Snapper,Lane	30,003	2,478	1,696
Managed	Snapper,Mutton	7,571	300	1,056
Managed	Snapper,Silk	809	504	Conf
Managed	Snapper,Yellowtail	14,644	327	1,260
Managed	Triggerfish,Queen	3,866	172	442
Managed	Tuna,Blackfin	1,222	.	241
Managed	Tunny,Little	1,460	Conf	Conf
Not-managed	Ballyhoo	214,720	2,608	42,371
Not-managed	Boxfish,Unspecified	12,640	89	1,334
Not-managed	Drummer,Whitemouth	6,685	Conf	388
Not-managed	Fishes,Bony,Unspecified	4,421	Conf	36
Not-managed	Goatfish,Spotted	801	Conf	Conf
Not-managed	Goatfish,Yellow	250	.	.
Not-managed	Grouper,Unspecified	193	Conf	.
Not-managed	Grunt,Unspecified	13,924	346	2,824
Not-managed	Herring,Sardinella	12,139	806	2,863
Not-managed	Jack,Bar	36,374	1,767	3,907
Not-managed	Jack,Horse-Eye	3,845	105	796
Not-managed	Jack,Yellow	258	.	83
Not-managed	Jacks	7,002	297	821
Not-managed	Lionfish	332	Conf	Conf

Management Status	Species	GILL NET		
		State	Federal	Unknown
Not-managed	Mojarra, Yellowfin	1,014	.	750
Not-managed	Mojarras, Unspecified	26,100	1,136	1,725
Not-managed	Mullet, White	42,196	1,164	4,875
Not-managed	Octopus, Unspecified	167	.	Conf
Not-managed	Porgy, Unspecified	21,417	411	2,043
Not-managed	Snapper, Unspecified	11,840	351	2,288
Not-managed	Squids, Unspecified	519	.	121
Not-managed	Squirrelfish	1,542	Conf	133
Not-managed	Tuna And Mackerels	312	.	.
Not-managed	Tuna, Albacore	2,792	.	Conf
Not-managed	Tuna, Skipjack	725	Conf	.

Conf = confidential information

*The values for the federal waters and unknown categories may include landings from waters around Puerto Rico jurisdictional offshore islands that are within the 9-200 nm.

Table 3.3.2. Adjusted landings in pounds for species (Managed and Non-Managed) reported from federal waters with trammel net gear in Puerto Rico Commercial Landings for 2014-2019 Table also shows landings from state and unknown waters for these species.

Management Status	Species	TRAMMEL NET		
		State	Federal	Unknown
Managed	Hogfish	2,407	Conf	564
Managed	Parrotfishes, Unspecified	35,511	Conf	1,244
Managed	Snapper, Silk	1,307	Conf	Conf
Managed	Triggerfish, Queen	4,666	Conf	158
Not-managed	Ballyhoo	832	Conf	Conf
Not-managed	Boxfish, Unspecified	32,683	322	4,100
Not-managed	Grunt, Unspecified	7,398	Conf	158
Not-managed	Porgy, Unspecified	1,386	Conf	107
Not-managed	Snapper, Unspecified	7,964	Conf	295
Not-managed	Snook, Common	Conf	Conf	Conf

Conf = confidential information

*The values for the federal waters and unknown categories may include landings from waters around Puerto Rico jurisdictional offshore islands that are within the 9-200 nm.

From 2014-2019, which represents the most recent and complete landings at the time this amendment was drafted, an average of 127 fishermen reported landings using gillnets and/or trammel nets in all Puerto Rico waters (Table 3.3.3). Additional information about fishermen and landings with net gear can be found in Section 3.4.1.1. From 2014 through 2019, an average of 16 fishermen reported using gillnets for managed and non-managed species in federal waters around Puerto Rico and an average of 5 fishermen reported using trammel nets to fish for

managed and non-managed species in federal waters around Puerto Rico (See Table 3.4.4 in Section 3.4.1.1)

Table 3.3.3. Annual commercial landings totals for managed and non-managed species harvested with gillnet and trammel net gear by state, federal, or unknown waters around Puerto Rico from 2014-2019 (most recent available data).

Year	# Fishers	# Trips	Managed Species			Non-Managed Species		
			State Waters	Federal Waters	Unknown	State Waters	Federal Waters	Unknown
2014	154	2,548	59,601	2,948	7,288	84,747	2,772	25,006
2015	121	2,540	48,426	2,102	6,181	83,375	2,369	29,342
2016	114	2,237	48,065	2,053	2,904	104,118	2,362	17,573
2017	113	1,707	32,479	2,261	418	96,931	1,646	1,189
2018	118	2,101	43,577	946	2,520	90,169	1,254	5,555
2019	141	2,167	54,887	1,510	2,341	105,908	3,345	3,864

Source: SEFSC 2023

St. Croix

Landings of reef fish, pelagic species, and other finfish species are available from self-reported commercial logbooks and include information on fishing gear type and location where the catch was landed. At the time this amendment was prepared, the most recent and complete year of landings available was from 2021, and represents the best scientific information available.

Net gear types reported to catch managed and non-managed reef fish and pelagic species, and other non-managed species in federal and state waters around St. Croix include gillnets (surface, used with scuba, etc.), cast nets, drop nets, seine net, and beach seines (See Table 3.4.6 in Section 3.4.1.2). Federal regulations allow for the use of gillnets for the commercial harvest of non-federally managed species (e.g., baitfish such as ballyhoo or flying fish, pelagics), subject to a requirement that the gear be tended at all times, and the use of gillnets is prohibited year-round for fishing for spiny lobster and federally managed reef fish.²¹ USVI regulations prohibit the use of gillnets in territorial waters, except for surface gillnets for the harvest of certain species of baitfish. Most of the gillnet landings from St. Croix waters are from surface gillnets. Trammel nets are neither identified as an authorized gear type in federal waters around St. Croix, nor specifically prohibited from use in a fishery (except that the use of trammel nets is prohibited in the federally managed reef fish and spiny lobster fisheries). Trammel nets are prohibited in the USVI state waters and landings from this gear type are not reported for St. Croix.

²¹ Cast nets are authorized for the commercial and recreational harvest of non-federally managed species. Cast nets are surface nets typically used to fish for baitfish such as ballyhoo, sardines, and other species. The Council did not include cast nets in the motion to prepare this amendment.

Table 3.3.4 below shows reported species landed with gillnets in federal waters, state waters, or unknown waters around St. Croix from commercial landings from 2012-2021. Over this 10-year period, the only federally managed species harvested with surface gillnets from EEZ waters around St. Croix was redbtail parrotfish (confidential data, which means that three or less fishermen reported landings with this gear type), and the two non-federally managed species harvested with surface gillnets from federal waters were ballyhoo (6,211 pounds [lbs]) and needlefish (100 lbs.). No landings values using gillnet were reported for 2019 or 2020, and the 2021 landings of non-managed species in state waters using gillnet was confidential. Note that there are landings from “unknown” waters that include flyinfish and big eye scad.

Section 3.4.1.2 contains additional information about the number of fishermen using gillnet or trammel gear in St. Croix. As discussed in Section 3.4.1.2, one fisherman reported using gillnets strictly in state waters and no fishermen reported using gillnets in federal waters in 2017. In 2018, one fisherman reported using gillnets in state waters and one fisherman reported using gillnets in federal waters. Appendix D shows the number of commercial fishermen that reported landings of managed and non-managed species from 2012 through 2021 in federal, state, and unknown waters around St. Croix for all gear types.

Table 3.3.4. Total landings in pounds for all species (Managed and Non-Managed) reported for gillnet gear in St. Croix Commercial Landings for 2012-2021 by State, Federal, or Unknown waters.

Management Status	Species	State	Unknown	Federal
Managed	GRUNT,BLUESTRIPED	15	.	.
	GRUNT,WHITE	37	.	.
	LOBSTERS,SPINY	25	.	.
	PARROTFISH,PRINCESS	1,195	.	.
	PARROTFISH,QUEEN	875	.	.
	PARROTFISH,REDBAND	905	.	.
	PARROTFISH,REDFIN	561	.	.
	PARROTFISH,REDTAIL	1,299	.	Conf
	PARROTFISH,STOPLIGHT	706	.	.
	SURGEONFISH,BLUE TANG	401	.	.
	SURGEONFISH,DOCTORFISH	77	.	.
	SURGEONFISH,OCEAN	10	.	.
	TRIGGERFISH,QUEEN	51	.	.
Non-managed	BALLYHOO	17,334	2,597	6,211
	BLUE RUNNER	160	.	.
	FLYINGFISH,UNSPECIFIED	.	120	.
	GOATFISH,UNSPECIFIED	15	.	.
	JACK,BAR	3,063	400	.

Management Status	Species	State	Unknown	Federal
	NEEDLEFISH,UNSPECIFIED	85	.	100
	SCAD,BIGEYE	170	159	.
	SCAD,ROUND	190	.	.
	SQUIRRELFISH	50	.	.
	TRUNKFISH	10	.	.

Conf = confidential information

St. Thomas and St. John

Landings of reef fish, pelagic species, and other finfish species are available from self-reported commercial logbooks and include information on fishing gear type and location where the catch was landed. In the USVI, landings are assumed to be fully reported and correction factors are not used. At the time this amendment was prepared, the most recent and complete year of landings available was from 2021, and represents the best scientific information available.

Net gear types reported to catch managed and non-managed reef fish and pelagic species, and other non-managed species in federal and state waters around St. Thomas/St. John include surface gillnets, cast nets, nets (unknown type), seine net, and beach seines (See Table 3.4.7 in Section 3.4.1.3). Federal regulations allow for the use of gillnets for the commercial harvest of non-federally managed species (e.g., baitfish such as ballyhoo or flying fish), subject to a requirement that the gear be tended at all times, and the use of gillnets is prohibited year-round for fishing for spiny lobster and federally managed reef fish.²² USVI regulations prohibit the use of gillnets in territorial waters, except for surface gillnets for the harvest of certain species of baitfish. Trammel nets are neither identified as an authorized gear type in federal waters around St. Croix, nor specifically prohibited from use in a fishery (except that the use of trammel nets is prohibited in the federally managed reef fish and spiny lobster fisheries). USVI regulations specifically prohibit the use of trammel nets in territorial waters and no landings are reported with this gear type in St. Thomas/St. John.

Managed species reported with surface gillnets in St. Thomas/St. John commercial landings from 2012 through 2021 are all from state waters and include red hind, coney, yellowtail snapper, and blue runner, but all landings are minor, sporadic through time and confidential. Non-managed species reported with surface gillnet are all from state waters as well and include the baitfish species herrings and ballyhoo (approximately 400 pounds total). During the 10-year period ending in 2021, the number of fishermen reporting landings with gillnets was between zero and two (see Section 3.4.1.3 and Appendix D for more information).

²² Cast nets are authorized for the commercial and recreational harvest of non-federally managed species. Cast nets are surface nets typically used to fish for baitfish such as ballyhoo, sardines, and other species. The Council did not include cast nets in the motion to prepare this amendment.

3.4 Description of the Economic Environment

3.4.1 Economic Description of the Fishery

3.4.1.1 Puerto Rico

The fisheries of Puerto Rico provide a desired source of food to the local population and tourists in addition to an important source of income to the local population. This income is derived from purchases associated with both commercial and recreational activities (e.g., fuel, ice, food) as well as the sale of landed products by the commercial sector.

As is well documented, the nature of the Puerto Rican commercial fishing industry is one of multiple gears with multiple species being harvested. In a recent study of the Puerto Rican fishery, Shivilani (2022) noted that 837 fishermen reported landings in 2018. More than three-quarters of interviewed fishermen (687 surveyed fishermen in total) identified themselves as full-time with almost 90% reporting that they had fished year-round.²³ On average fishermen reported making 3.6 trips per week. Just under 85% of the interviewed fishermen reported fishing exclusively in territorial waters (i.e., < nine nautical miles from shore) while another 12.1% reported fishing in both territorial and federal waters. Finally, 4.4% of the interviewed fishermen stated that they fished only in federal waters in 2018.

The relatively low percentage of interviewed fishermen reporting fishing activities in federal waters may be due, in part, to the relatively small platforms from which they operate. Specifically, Shivilani (2022) found that the average length of vessel was just over 20 feet with 97% of the vessels falling in the 10 to 29.9-foot range. Given this to be the case, one would not expect extensive fishing activities in federal waters.²⁴

A general economic description of Puerto Rico's commercial and recreational fisheries is given in Appendix D. The primary focus of this section is to examine commercial harvest by gear with particular emphasis being given to the commercial net fisheries.

In his survey of Puerto Rican fishermen, Shivilani (2022) queried those interviewed regarding gears fished. Overall, line gear²⁵ was by far the most prevalent gear mentioned with about 80%

²³ Shivilani (2022) notes that full-time fishermen may have been oversampled in his study given that almost a third of those reporting landings in 2018 (via the trip ticket) took less than ten trips.

²⁴ This, of course, does not address the issue of the reasons for the relatively small vessels. One might hypothesize that the costs of fishing in federal waters are high relative to revenues and, thus, there is little desire to fish in federal waters (and larger vessels). Alternatively, financing constraints may be a limiting factor.

²⁵ Types of line gear are numerous (see Shivilani, 2022) including gillnets which 17.3% of interviewees reported owning and cast nets (owned by 45.9%).

reported using it. This was followed by fishing pots/lobster pots (33.2%), scuba (31.7%), nets (30.7%), and free diving (17.6%).²⁶

The trip ticket data can also be used to examine gear usage and catch by jurisdiction. Relevant information pertaining to gears used under various scenarios (i.e., territorial versus federal waters and managed versus non-managed species) is provided in Tables 3.4.1 (pounds) and 3.4.2 (value).²⁷

With respect to managed species, five gears (bottom line, hand line, scuba, snare, and fish pot) represented three-quarters of all estimated landings, expressed in pounds, during the 2014-2019 period (Table 3.4.1). Due to the higher per pound price, these five gears contributed more than 80% of the value of managed species landed during the 2014-2019 period (Table 3.4.2).

On an absolute poundage basis, bottom line (172.5 thousand pounds), troll line (55.2 thousand pounds), hand line (30.4 thousand pounds) rod and reel (23.5 thousand pounds), and snare (23.0 thousand pounds) dominate poundage taken from federal waters. These five gears, combined, account for an estimated 84% of the harvest of managed species from federal waters expressed on a weight basis (Table 3.4.1).

Table 3.4.1. Estimated average annual landings (pounds) of managed and non-managed species by gear and territorial versus federal waters in Puerto Rico, 2014-2019.

Gear	Managed Species				Non-managed Species			
	Territorial Waters	Federal Waters	Total	% Federal Waters	Territorial Waters	Federal Waters	Total	% Federal Waters
	-----1000s Lbs.-----			% Federal Waters	-----1000s Lbs.-----			% Federal Waters
Beach Seine	14.9	2.3	17.2	13.4	30.6	1.3	31.9	4.0
Bottom Line	191.1	172.5	363.6	48.9	5.0	1.7	6.7	25.1
By Hand	1.8	0.18	1.98	9.5	1.3	0.02	1.32	1.8
Cast Net	0.76	0.13	0.89	17.4	32.3	2.4	34.7	7.0
Fish Pot	218.1	20.0	238.1	8.1	56.5	7.8	64.3	12.1
Gill Net	24.3	1.9	26.2	6.9	92.8	3.1	95.9	3.3
Hand Line	241.9	30.4	272.3	11.5	38.6	3.5	42.1	8.3
Land Crab Trap	0.21	0	0.21	0	3.5	0.15	3.65	4.1
Lobster Pot	53.7	5.2	58.9	9.2	1.2	0.03	1.23	2.3

²⁶ Percentages exceed 100 because many fishermen report using more than one gear.

²⁷ As discussed in Appendix D, a relatively small proportion of Puerto Rico seafood landings represent catches taken from federal waters (about 18% of landings given in terms of pounds and 21% by value). Given the relatively low percentage of landings derived from federal waters, it stands to reason that the harvest of managed species in federal waters is limited. For the 2014-2019 period, an estimated 19% of federally managed species were taken from federal waters with expanded landings (i.e., taking into account the ‘unknown’ landings in a manner similar to that discussed in **Appendix D**) equaling about 400 thousand pounds (valued at \$1.76 million in 2021 dollars) annually. With respect to the unmanaged species, less than 9% of landings were estimated to be taken from federal waters with estimated annual landings equal to 33.5 thousand pounds (\$87.8 thousand in 2021 dollars).

Gear	Managed Species				Non-managed Species			
	Territorial Waters	Federal Waters	Total	% Federal Waters	Territorial Waters	Federal Waters	Total	% Federal Waters
	-----1000s Lbs.-----				-----1000s Lbs.-----			
Long Line	13.4	0.96	14.36	7.7	2.8	0.33	3.13	10.6
Rod & Reel	42.4	23.5	65.9	37.9	7.3	1.9	9.2	20.9
Scuba Dive	271.4	16.5	287.9	5.9	18.5	1.1	19.6	5.8
Skin Dive	9.4	0.89	10.29	9.1	8.7	0.34	9.04	3.7
Snare	231.9	23.0	254.9	8.9	2.2	0.15	2.35	6.3
Spear Fish	121.7	11.2	132.9	7.9	27.8	2.1	29.9	7.0
Trammel Net	26.5	0.77	27.27	3.1	14.0	0.33	14.33	2.2
Troll Line	68.9	55.2	124.1	47.4	13.0	7.2	20.2	35.8
TOTAL	1,532.4	364.2	1,896.6	NA	356.1	33.5	389.6	NA

Note: Some trip tickets did not report whether the landed catch was derived in territorial or federal waters. Reported landings of catch from 'unknown waters' was partitioned in relation to the reported harvests from territorial and federal waters.

Source: SERO 2023

The harvest of non-managed species in federal waters is limited averaging just 33.5 thousand pounds annually during 2014-2019. Fish pots (7.8 thousand pounds valued at \$20,700 annually), troll line (7.2 thousand pounds valued at \$17,100 annually), hand lines (3.5 thousand pounds valued at \$9,500 annually), gill nets (3.1 thousand pounds valued at \$6,300), and cast nets (2.4 thousand pounds valued at \$9,100) accounted for more than 70% of the harvest of non-managed species in federal waters during 2014-2019 when evaluated on a weight basis and almost 65% when evaluated on a value basis.

Table 3.4.2. Estimated average annual landings (value^a) of managed and non-managed species by gear and territorial versus federal waters in Puerto Rico, 2014-2019.

Gear	Managed Species				Non-managed Species			
	Territorial Waters	Federal Waters	Total	% Federal Waters	Territorial Waters	Federal Waters	Total	% Federal Waters
	-----\$1,000s-----				-----\$1000's-----			
Beach Seine	51.2	7.9	59.1	13.4	111.6	3.3	114.9	2.9
Bottom Line	1,152.8	1,102.0	2,254.8	48.9	17.0	6.7	23.7	28.2
By Hand	10.8	1.1	11.9	9.6	6.3	0.11	6.5	1.8
Cast Net	2.2	0.5	2.6	17.7	73.2	9.1	82.3	11.0
Fish Pot	1,119.1	98.9	1,218.0	8.1	133.2	20.7	153.9	13.5
Gill Net	90.8	6.7	97.5	6.8	187.8	6.3	194.1	3.3
Hand Line	910.1	117.7	1,027.9	11.5	106.5	9.5	116.0	8.2
Land Crab Trap	2.4	0	2.4	0	85.7	3.6	89.3	4.1
Lobster Pot	388.4	39.4	427.8	9.2	2.9	0.10	3.0	3.3
Long Line	51.8	4.3	56.1	7.7	7.7	0.78	8.5	9.2
Rod & Reel	150.0	91.4	241.3	37.8	25.2	6.8	32.0	21.2
Scuba Dive	1,693.1	106.5	1,799.7	5.9	91.0	5.3	96.3	5.5
Skin Dive	46.6	4.6	51.3	9.0	38.8	1.2	40.1	3.1

Gear	Managed Species				Non-managed Species			
	Territorial Waters	Federal Waters	Total	% Federal Waters	Territorial Waters	Federal Waters	Total	% Federal Waters
	-----\$1,000s-----				-----\$1000's-----			
Snare	1,709.0	166.0	1,874.9	8.9	11.2	0.74	12.0	6.2
Spear Fish	405.4	34.9	440.2	7.9	107.1	7.0	114.1	6.2
Trammel Net	140.1	4.4	144.6	3.1	39.1	0.93	40.0	2.3
Troll Line	223.7	2.0	425.5	47.4	36.7	17.1	53.8	31.8
TOTAL	8,147.5	1,988.2	10,135.7	NA	1081.6	99.39	1,180.5	NA

^a Values are deflated based on the 2021 Implicit Price Deflator (GDP Deflator by Year).

Note: Some trip tickets did not report whether the landed catch was derived in territorial or federal waters. Reported landings of catch from ‘unknown waters’ was partitioned in relation to the reported harvests from territorial and federal waters. In addition, the TOTAL values given in this table will differ slightly from those in provided in previous tables because adjustments to 2021 dollars (i.e., deflating) were made based on average 2014-19 values rather than year-by-year values. Source: SERO 2023

Gillnets and trammel nets, as indicated in Tables 3.4.1 and 3.4.2, represent only a small share of total harvests from territorial and federal waters. Harvests of managed species using gillnets, for example represented only 1.4% of the total harvests of managed species by weight (26.2 thousand pounds out of a total 1,896 thousand pounds; Table 3.4.1) and less than one percent by value (\$97,500 out of a total \$10,136,000 ; Table 3.4.2). Harvests of managed species using trammel nets, like gillnets, accounted for 1.4% of total harvests of managed species by weight (27.3 thousand pounds out of a total 1,897 thousand pounds) with an equivalent amount (i.e., 1.4%) by value (\$144,600 out of a total \$10,136,000). Focusing only on harvests of managed species from federal waters indicates that gillnets account for significantly less than one percent by both weight and value (1.9 thousand pounds out of 364,000 pounds and \$6,700 out of \$1,988,000) of the total pounds and value of harvests of managed species in federal waters. This is also the situation with respect to trammel nets (0.77 thousand pounds out of a total 364,000 pounds and \$4,400 out of a total \$1,988,000).

With respect to non-managed species, the use of gillnets represented almost a quarter of total landings of non-managed species by weight (95.9 thousand pounds out of a total 390,000 pounds), but because of a relatively low price of gillnet harvests, only about 16% by value (\$194,000 out of \$1,180,000). The shares are significantly less when focusing only on federal waters (about 9% with respect to poundage but only 6.3% in terms of value due to a relatively low per pound price of non-managed species harvested from federal waters). Trammel nets, by comparison, accounted for less than 4% of the total landings of non-managed species by weight and value (14.3 thousand pounds out of 390 thousand pounds; \$40,000 out of a total \$1,180,000). Less than one percent of harvests from federal waters was taken by trammel nets whether expressed on a weight or value basis.

Information specific to the number of fishermen reporting the use of gillnet gear during the 2014-2019 period is given in Table 3.4.3 while similar information with respect to trammel nets is provided in Table 3.4.4. As indicated, the majority Puerto Rican commercial fishermen who report using gillnets deploy them in state waters rather than federal waters. Furthermore, more fishermen appear to use them in the harvest of non-managed species than in the harvest of managed species. Trammel net also tend to be deployed by more fishermen in territorial waters than in federal waters. Unlike gillnets, however, they appear to be deployed more for the harvest of managed species than non-managed species.

Table 3.4.3. Estimated number of fishermen using gillnet gear in Puerto Rico, by territorial and federal waters 2014-2019.

Year	Managed Species		Non-managed Species		Total	
	State	Federal	State	Federal	State	Federal
2014	79	17	113	15	146	25
2015	69	9	112	13	122	16
2016	57	8	99	12	112	14
2017	51	10	94	10	102	13
2018	61	6	96	10	112	13
2019	73	10	112	11	133	15
Avg	65	10	108	12	121	16

Note: The totals given for gillnet use in state or federal waters will not equal the sum of the respective components because some fishermen will harvest both managed and non-managed species with the same gear.

Source: SERO 2023

Table 3.4.4. Estimated number of fishermen using trammel net gear in Puerto Rico, by territorial and federal waters, 2014-2019.

Year	Managed Species		Non-managed Species		Total	
	State	Federal	State	Federal	State	Federal
2014	34	6	22	5	34	6
2015	25	5	19	3	25	5
2016	33	5	18	1	34	6
2017	26	3	14	1	26	2
2018	32	3	16	1	32	2
2019	40	7	24	0	40	
Avg	31	5	19	2	32	5

Note: The totals given for trammel net use in state or federal waters will not equal the sum of the respective components because some fishermen will harvest both managed and non-managed species with the same gear.

The information in Table 3.4.1 in conjunction with the information in Table 3.4.3 can be used to ascertain average catches, in pounds, among those fishermen reporting the use of gillnets. Similarly, the information in Table 3.4.2 in conjunction with the information in Table 3.4.3 can be used to ascertain average catches, in terms of revenues, among those fishermen reporting the use of gillnets. For example, average annual catch of managed species in territorial waters

during the 2014-2019 period equaled 24.3 thousand pounds and this catch was taken by an average of 65 fishermen during the same period of time. This equates to 374 pounds per fisherman. Relevant information pertaining to average pounds and revenues among fishermen reporting the use of gillnets and trammel nets during the 2014-2019 period is provided in Table 3.4.5.

As indicated, catch with gillnets in federal waters is limited. For managed species, catch per fisherman in federal waters during 2014-2019 averaged 190 pounds valued at \$670 while total catch in federal waters (i.e., managed and non-managed species) averaged 312 pounds valued at \$812. With respect to trammel nets, catch of managed species in federal waters during 2014-2019 averaged 154 pounds annually with an associated value of \$880 while the total catch of managed species in both territorial and federal waters averaged about 1,000 pounds annually during 2014-2019 with an associated value of about \$5,400.

Table 3.4.5. Catch among fishermen reporting the use of gillnets and trammel nets (pounds and value) in territorial and federal waters, 2014-2019 annual averages.

Year	Managed Species		Non-managed Species		Total	
	-----Gillnets-----					
	Territorial	Federal	Territorial	Federal	Territorial	Federal
Avg. Lbs. Per Fisherman	374	190	859	258	968	312
Avg. Revenues Per Fisherman ^a	\$1,397	\$670	\$1,739	\$525	\$2,302	\$812
Price Per Lb. ^a	\$3.74	\$3.53	\$2.02	\$2.03	\$2.38	\$2.60
	-----Trammel Nets-----					
Avg. Lbs. Per Fisherman	855	154	737	165	1,266	220
Avg Revenues Per Fisherman ^a	\$4,519	\$880	\$2,058	\$465	\$5,600	\$1,060
Price Per Lb. ^a	\$5.28	\$5.71	\$2.79	\$2.81	\$4.42	\$4.82

^a Revenues and prices are deflated based on the 2021 Implicit Price Deflator (GDP Deflator by Year).

3.4.1.2 *St. Croix*

A general economic description of the St. Croix commercial fishery is given in Appendix D. The number of commercial fishermen reporting landings in St. Croix between 2012 and 2021 averaged 62 annually and ranged from a high of 85 in 2012 to a low of 44 in 2018 (Appendix D). These fishermen reported an average of 2,195 trips annually during this period with a range from 804 (2018) to 3,791 (2012). Reported annual landings during this period ranged from a high of more than 500,000 pounds in 2012 to a low of just over 100,000 pounds in 2018. According to Kojis et al (2017), 14.6% of the St. Croix fishermen fished exclusively in federal waters while another 26.4% fished about equally in territorial and federal waters. The remaining 59.1% fish primarily in territorial waters.

Total commercial landings for St. Croix, by gear type and by territorial versus federal waters, for the 2012-2021 period are presented in Table 3.4.6. As indicated, a relatively few gear types dominate the reported landings of both managed and non-managed species over the 2012-2021 period. Harvest of managed species in federal waters, for example, tends to be dominated by handlines (430,000 pounds or about 43,000 pounds per year), by hand with scuba (397,000 pounds or about 40,000 pounds per year), spearfishing with scuba (169,000 pounds or about 17,000 pounds per year), and fish traps (139,000 pounds or about 14,000 pounds per year). Harvests of managed species from state waters tend to be dominated by scuba by hand, handlines, fish traps, and spearfishing with scuba.

Gears of any net type appear to account for only a very small percentage of managed-species landings derived from federal waters with landings associated with cast nets (the largest, non-confidential net gear) being only about 4,000 pounds during the 10-year period; or about 400 pounds per year.²⁸ Much of the information regarding gillnets of any kind (i.e., surface gillnets and gillnets used with scuba) is confidential indicating that less than three fishermen reported using that gear during the 10-year period ending in 2021. Harvests of non-managed species with surface gillnets totaled 28,864 pounds over the 10-year period ending in 2021 with just over 6,300 pounds coming from federal waters (this does not include any proportion of the 3,276-pound harvest from unknown waters). This would suggest that harvest of non-managed species using surface gillnets is under 1,000 pounds per year.

The relatively low landings in St. Croix associated with the use of gillnets is reinforced by the number of fishermen who, based on the trip ticket data, indicated the use of gillnets. In 2017, for example, one fisherman reported using gillnets strictly in state waters and no fishermen reported using gillnets in federal waters. In 2018, one fisherman reported using gillnets in state waters and one fisherman (possibly the same fisherman) reported using gillnets in federal waters. The catch in 2018 was entirely that of non-managed species.

Table 3.4.6. Landings of managed and non-managed species by gear and state versus federal waters in St. Croix, total for 2012-2021 period.

Gear Type	Managed			Non-managed		
	State	Unknown	Federal	State	Unknown	Federal
BEACH SEINE	Conf	Conf	Conf	Conf	Conf	Conf
BOTTOM FISHING HOOK AND LINE	.	Conf	.	.	Conf	.
BUOY (YO-YO)	60	.		Conf	.	Conf
BY HAND	82,655			369	.	
BY HAND WHILE SKIN DIVING	4,581	Conf		49	.	.
BY HAND WITH SCUBA	572,376			3,998		

²⁸ Trammel nets are prohibited in the U.S. Virgin Islands waters and landings from this gear type are not reported for St. Croix.

Gear Type	Managed			Non-managed		
	State	Unknown	Federal	State	Unknown	Federal
BY SNARE WITH SCUBA	48,323			Conf	.	Conf
CAST NET	Conf	Conf		19,746		
DRIFT LONGLINE	430	.		Conf	.	Conf
DROP NET (LIFT NET)	.	.	.	Conf	.	.
FISH TRAP	158,375			17,119		
GILL NET	Conf	.	.	1,715	.	.
GILL NET, FISHED USING SCUBA	3,317	.	.	Conf	.	.
GILL NET, SURFACE	Conf	.	Conf	19,277		
HAND GAFF WHILE SCUBA DIVING	.	Conf	.	.	.	.
HAND GAFF WHILE SKIN DIVING	Conf	.	.	.	.	.
HAND SNARE WHILE SKIN DIVING	267	.	Conf	Conf	.	.
HANDLINE	162,968			107,863		
HOOK AND LINE WITH POWER	3,896			2,858		
HOOK AND LINE-UNKNOWN TYPE	4,456			1,417		
LOBSTER TRAP	4,575			241	Conf	
LONGLINE	1,017	.		548	.	
NET-UNKNOWN TYPE	5,735	Conf	Conf	13,109		
ROD AND REEL	2,250			4,100		
SEINE NET	70,423		Conf	10,149		Conf
SKIN DIVING AND SCUBA	1,811	.	Conf	.	.	.
SPEAR OR BY HAND-UNKNOWN	Conf	Conf	.	.	Conf	.
SPEARFISHING WHILE SKIN DIVING	469	.	Conf	Conf	.	.
SPEARFISHING WITH SCUBA	98,155			4,633		
SPEARGUN WITH SCUBA	4,724	Conf		392	Conf	Conf
TRAP-UNKNOWN TYPE	13,685			2,415		

Conf = confidential information

3.4.1.3 St. Thomas and St. John

A general economic description of the St. Thomas/St. John commercial fishery is given in Appendix D. The reported number of St. Thomas and St. John fishermen averaged 68 annually during 2012-2021. The annual number of reported trips during the period averaged about 2,000 pounds which equates to slightly less than 30 trips per fisherman. Annual landings averaged 365,000 pounds and ranged from just over 300,000 pounds in 2021 to more than 430 pounds in 2016. The value of landings, adjusted for inflation to 2021 dollars, averaged \$2.64 million over the 2012-2019 period. According to Kojis et al. (2017), about 4.6% of St. Thomas commercial fishermen fish exclusively in federal waters while another 42.5% fish both territorial and federal waters about equally. The remaining 52.9% fish primarily in territorial waters. Total commercial landings for St. Thomas/St. John, by gear type and by territorial versus federal waters, for the 2012-2021 period are presented in Table 3.4.7. As was the case with respect to

St. Croix, a high preponderance of the landings is derived from a very limited number of gears. In federal waters, fish traps easily dominate harvests of federally managed species (totaling 1.146 million pounds over the ten-year period ending in 2021 or about 115,000 pounds per year. Combined landings of managed species from federal waters associated with the next three most prevalent gears (lobster traps, unknown-type of traps, and handlines) totaled only 732,000 pounds or about 73,000 pounds per year. With respect to non-managed species harvested in federal waters, fish traps dominate total landings over the ten-year period ending in 2021 (174,000 pounds in total or an average of 17.4 thousand pounds per year) with rod and reel (41,000 pounds) placing a distant second.

Table 3.4.7. Landings of managed and non-managed species by gear and state versus federal waters in St. Thomas and St. John, total for 2012-2021 period.

Gear Type	Managed			Non-managed		
	State	Unknown	Federal	State	Unknown	Federal
BEACH SEINE		Conf	Conf		Conf	Conf
BOTTOM FISHING HOOK AND	Conf	.	.	.	.	.
BUOY (YO-YO)	.	.	Conf	Conf	.	Conf
BY HAND						Conf
BY HAND WHILE SKIN DIVING		Conf	Conf			Conf
BY HAND WITH SCUBA		Conf			Conf	Conf
BY SNARE WITH SCUBA		.		Conf	.	.
CAST NET		.	Conf			
DRIFT LONGLINE	Conf	.	Conf	Conf	.	.
FISH TRAP						
GILL NET, SURFACE	Conf	.	.		.	.
HAND SNARE WHILE SKIN		.	Conf	Conf	.	.
HANDLINE						
HAWAIIAN SLING WHILE		.	Conf	Conf	.	.
HAWAIIAN SLING WITH	Conf	.	Conf	Conf	.	.
HOOK AND LINE WITH					Conf	
HOOK AND LINE-UNKNOWN						
LOBSTER TRAP						
LONGLINE	.	.	Conf	.	.	Conf
NET-UNKNOWN TYPE		Conf	.		Conf	
ROD AND REEL						
SEINE NET						
SKIN DIVING AND SCUBA	Conf	.	Conf	Conf	.	.
SPEAR OR BY HAND-	Conf	Conf	Conf	Conf	.	.
SPEARFISHING	Conf	.	.	Conf	.	.
SPEARFISHING WHILE SKIN		.	.		.	.
SPEARFISHING WITH SCUBA		.	.		.	.
SPEARGUN	Conf	.	.	Conf	.	.
SPEARGUN WHILE SKIN		.	.	Conf	.	.

SPEARGUN WITH SCUBA		.	.	Conf	.	.
TRAP-UNKNOWN TYPE						
TROLLED HOOK AND LINE	.	.	Conf	.	.	Conf
Conf = confidential information						

There are no reported harvests from federal waters of either managed species or non-managed species taken using surface gillnets (Table 3.4.7) with confirmation to this being given by the number of fishermen who reported any catch using gillnets during the 10-year period ending in 2021. Specifically, only one fisherman reported the use of gillnets and use was reported to be in state waters. There were no additional reports of gillnet usage until 2016 when one fisherman reported the use of gillnets in state waters. Finally, two fishermen reported the use of gillnets in 2018; both exclusively in state waters.²⁹

3.5 Description of the Social Environment

This section describes key aspects of the social environment potentially affected by the regulatory actions detailed in this amendment. Discussion of the overarching social context within which net-based harvest activities occur is provided, as is basic description of the social environment specifically associated with net gear usage around the various island regions. A wide range of descriptive social-environmental materials pertinent to the regulatory topics of interest are contained in the Island-based FMPs (CFMC 2019a-c), which are incorporated herein by reference.

3.5.1 Puerto Rico

Pursuit of living marine resources is an ancient aspect of life in what is now called Puerto Rico (Napolitano et al. 2019), with a wide range of seafood products supporting island societies over many centuries (Ramos 2010). Today, a complex society and culture characterize Puerto Rico, where long-standing cultural traditions extend to many parts of the world (Duany 2002; Reichard 2020), including traditions related to the consumption of seafood (Mattei et al. 2018). The current population estimate for Puerto Rico is 3,221,789 persons, nearly 99% of whom self-identify as Hispanic (U.S. Census Bureau 2022).

Although fishing is routinely undertaken by relatively few residents, the activity remains an important organizing feature of social life and source of food and income across Puerto Rico (Agar et al. 2022). Food and income generated through harvest of living marine resources is particularly important in a contemporary context of extensive household poverty. Rates of poverty for the island as a whole are inordinately high, consistently exceeding 43% since 2005.

²⁹ Trammel nets are prohibited in the U.S. Virgin Islands waters and landings from this gear type are not reported for St. Thomas and St. John.

As of 2021, the household poverty rate was 40.5%—more than double the rate for Mississippi which (at 19.5%) has the highest poverty rate of all 50 states. The national rate of household poverty was 11.6% in 2021. Estimated median household income during 2021 was \$21,967 in Puerto Rico, and \$70,784 for households in the 50 states (U.S. Census Bureau 2021).

3.5.1.1 Commercial/Artisanal Fishing and Social Aspects of Fishing in Puerto Rico

As described in variety of sources, Puerto Rico’s commercial fisheries are primarily artisanal in nature (Agar et al. 2020; Agar and Shivilani 2016; CFMC 2019a). Vessels are relatively small and harvesters tend to be opportunistic, targeting a variety of species over the course of a given year (CFMC 2019a; Valle-Esquivel et al. 2011). Landings data indicate that net gear is most commonly deployed in the nearshore zone. Evidence of net gear being deployed in federal waters is limited and relates primarily to acquisition of ballyhoo for use as bait by persons trolling for pelagics. Figure 3.5.1 depicts the principal municipios where netted fish are landed, with capture occurring almost exclusively within nine nautical miles from shore.

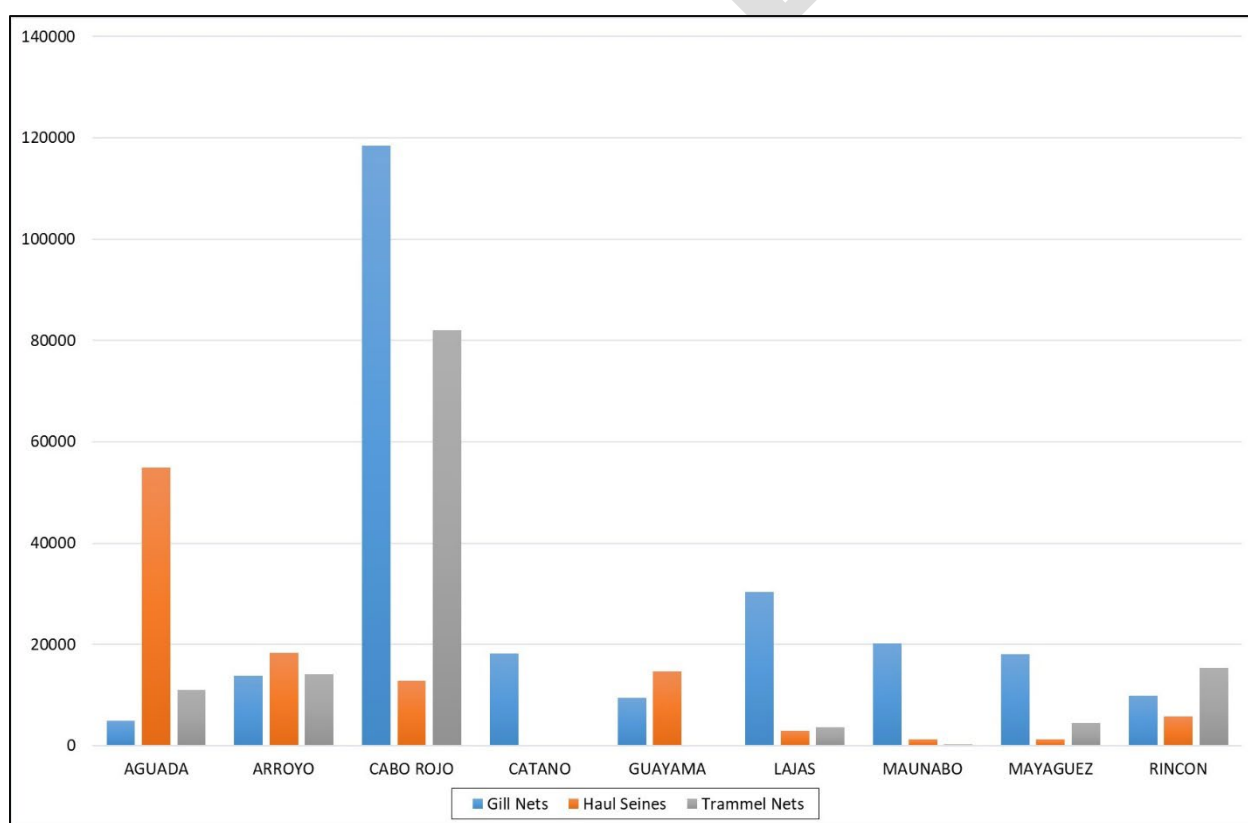


Figure 3.5.1. Municipalities where net-based landings occurred during the period 2016-2020.
Source: SEFSC, Community ALS File, February 2023.

Available data indicate that 1,074 licensed harvesters were living in Puerto Rico in 2016, increasing to 1,275 in 2018, and diminishing to ~1,200 by 2022 (NMFS 2022). As indicated in

Figure 3.5.2 below, harvesters reside across the main island, but especially in the coastal zone. Matos-Caraballo and Agar (2011) determined that about 92% of persons in the harvest sector land their catch in their home municipalities. This connection to place indicates the importance of fisheries-related social life in communities and extended family settings around this island region (cf. Griffith et al. 2013). Numerous researchers have examined social aspects of Puerto Rico fisheries, with extensive description provided in a wide range of documents, including those cited in CFMC (2019b) and in CFMC (2022) and NMFS (2022).

Approximately 34% of licensed harvesters were living on the west coast of Puerto Rico during the late 2000s (mainly in Cabo Rojo, Rincón, Mayagüez, and Aguadilla), with 27% on the south coast (Lajas, Salinas, Guánica, and Ponce), roughly 20% on the north coast (San Juan and Arecibo), and another 20% on the east coast (Vieques, Fajardo, and Naguabo). This pattern of distribution is reflected in Figure 3.5.2, which depicts municipio-specific extent of engagement in all commercial/artisanal fishing activities for the period 2016 through 2020. Engagement here is a generalizable composite indicator based on: (a) reported landings averaged over the time-series, (b) ex-vessel revenue associated with those landings, and (c) number of licensed harvesters and seafood retailers present in a given municipality.

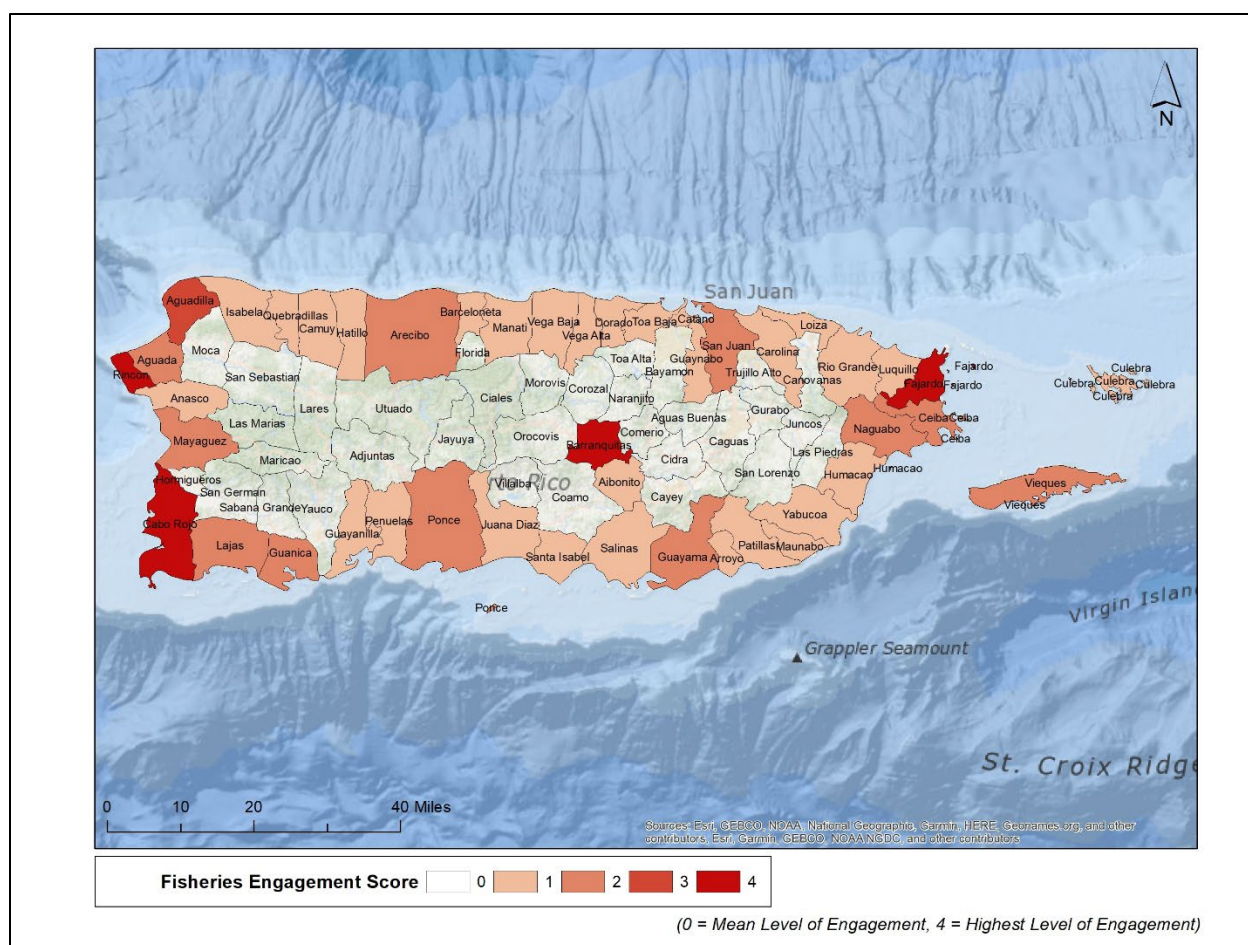


Figure 3.5.2. Commercial/artisanal fisheries engagement, 2016-2020: Municipios de Puerto Rico. Source: SERO/SEFSC ALS database, accessed March 2023.

The hurricane season of 2017 was highly active and damaging in the Caribbean, generating major impacts in municipalities around Puerto Rico. Subsequent rates of out-migration were unprecedented (Acosta et al. 2020), with some 133,500 residents leaving the island in 2018—a 36.9% increase in out-migration above the rate for the prior year (Glassman 2019). Detailed discussion of Hurricane Maria’s effects on fishery-engaged populations is provided in Agar et al. (2020). Based on extensive survey research conducted soon after the event, the authors assert that estimated losses totaled \$17.8 million, with damages to vessel, engine, gear, and shore side infrastructure accounting for more than half of losses, and foregone revenue the remaining 49%. The east coast was hardest hit, and the authors report that 165 or 16.3% of commercial harvesters active in 2016 departed the industry after the hurricane (Agar et al. 2020). The COVID-19 pandemic was similarly disruptive to Puerto Rico fisheries, with about 33% of participants forced to cease operating for more than 3 months during 2020 (NOAA Fisheries 2021). A wide range of pandemic impacts constrained Puerto Rico fisheries, largely the result of severely disrupted tourism and associated decline in demand for seafood at resorts and restaurants around the island. Agar et al. (2022) contains a social and economic description of contemporary Puerto

Rico fishing operations and a detailed discussion of the ways in which the pandemic has affected fleets around the island.

3.5.2 St. Croix, St. Thomas, and St. John

Persons of African, West Indian, French, and Danish descent have worked and lived for centuries in small communities around St. Croix, St. Thomas, and St. John (Rogozinski 1994; Olwig 1993). As discussed in various sources (cf. IAI 2006, 2007; CFMC 2019b, 2019c) early settlers supplemented small-scale farming with pursuit of marine resources, ultimately refining their fishing techniques and local ecological knowledge to become highly efficient and productive harvesters. Today, a relatively small number of residents are engaged in marine fisheries around the islands. Kojis (2017) reports that 260 commercial harvesters were active in 2016, with 141 residing on St. Croix, and 119 on St. Thomas and St. John. However, the harvest, transaction, and use of living marine resources, including those harvested with net gear, are of great social and dietary significance in around the islands (cf. Agar et al. 2022; Agar et al. 2020; Stoffle et al. 2009; Valdes-Pizzini et al. 2010; IAI 2006; CFMC 2019b,c).

The USVI was home to some 87,146 persons during 2020, an 18.1% decrease from the 106,405 persons enumerated in 2010 (U.S. Census Bureau 2021). A total of 42,261 residents were enumerated on St. Thomas during 2020, with 41,004 persons enumerated on St. Croix, and 3,881 on St. John that year. As discussed by Akin (2021), population loss around the islands relates in large part to out-migration following the 2017 hurricane season, and closure of the HOVENSA oil refinery earlier in the decade.

3.5.2.1 *Social and Cultural Aspects of Fishing on St. Thomas, St. John, and St. Croix*

As described in a variety of historic and recent sources, fishing in the USVI has long been artisanal in nature (Valdes-Pizzini et al. 2010; Stoffle et al. 2009; IAI 2006). Many species of reef fish, the snapper/grouper complex of species, and various pelagic species, have consistently been of primary interest to island-based harvesters. Spiny lobster, whelks, conchs, and other shellfish are also important here. Commercial/artisanal fisheries as a whole are essential sources of employment, food, and income, with participants landing an average of 1.4 million pounds of seafood worth \$7.4 million each year between 2005 and 2015 (NOAA Fisheries 2017).

Fishing is particularly important in certain areas around the islands, as indicated in Figure 3.5.3 below. The figure depicts relative levels of fisheries engagement by island district, as indicated by: (a) numbers of persons active in the harvest sector, (b) the local presence of fisheries-related infrastructure, and (c) the extent of local landings and value of living marine resources (see Colburn et al. 2016; Jepson and Colburn 2013; Jepson 2008). As discussed by Kojis et al. (2017), fishing operations around St. Croix, St. Thomas, and St. John are small-scale in nature, with most harvesters regularly working less than three miles from shore. Labor is extensive,

however, and the authors report that commercial fishery participants spend an average of 34.2 hours/week engaged in fishing-related activities, with little variation across the islands.

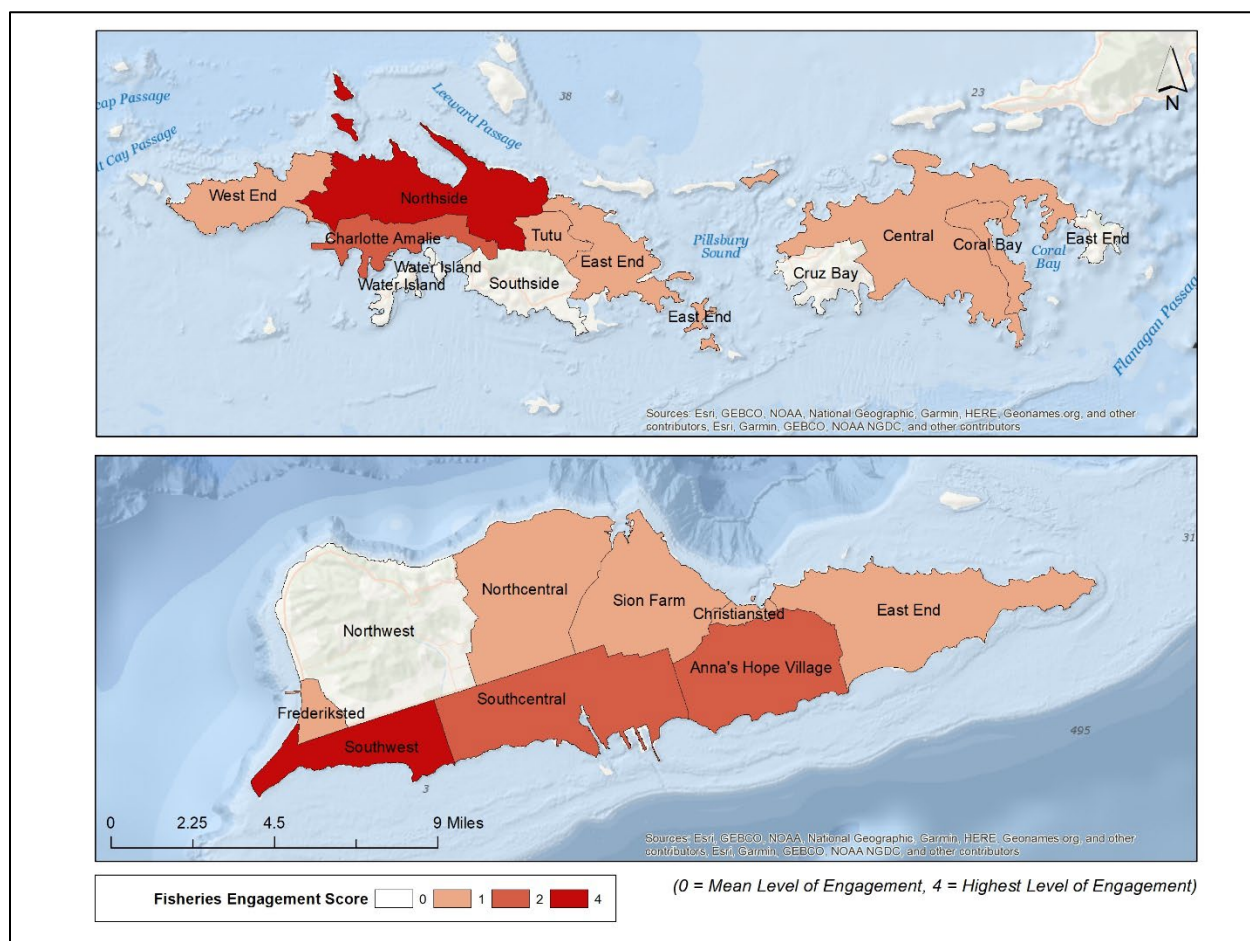


Figure 3.5.3. Commercial/artisanal fisheries engagement by island district, 2016-2020.

Source: SERO/SEFSC ALS database, accessed March 2023.

Of direct relevance to the present document, Kojis et al. (2017) assert that with the exception of cast (throw) nets, which are used primarily for capturing bait for pelagic-oriented fishing with rod and reel or handlines, relatively few commercial participants recently owned and/or used net gear around the USVI (Table 3.5.2). Moreover, only two of 191 respondents reported using net gear beyond three miles from shore. As per Kojis et al. (2017), more fishery participants on St. Thomas and St. John were using any type of net gear during the course of their research than on St. Croix (26.3% vs. 14.6%). This likely relates in part to the fact that gill and trammel nets were banned for use in the territorial waters of St. Croix in 2008 due to environmental concerns (Agar et al. 2019). St. Thomas and St. John harvesters traditionally used seine nets to pursue jacks and yellowtail snapper, with gillnets historically deployed off St. Croix to capture various species. Use of surface gillnets for species such as gar, ballyhoo, and flying fish is still permissible in

territorial waters, and certain St. Croix-based participants continue to use umbrella nets—mainly to pursue scad (*Decapturus punctatus*) (Kojis et al. 2017).

Table 3.5.1. Summary information regarding ownership and use of nets in the USVI.*

Location	N**	Number/% Sampled Who Own Beach Seines	Number/% Sampled Who Own Haul Seines	Number/% Sampled Who Own Gill Nets	Number/% Sampled Who Own Cast Nets	Number/% Using Any Nets >3 Miles from Shore
St. Thomas/ St. John	82	6/7.3%	12/14.6%	2/2.4%	55/67.1%	0/0%
St. Croix	109	4/3.6%	5/4.5%	12/11%	68/62.4%	2/1.8%

*Based on Kojis et al. (2017:81); **N = total number of research participants responding to questions about nets.

As discussed in relation to Puerto Rico, 2017 was a particularly damaging tropical storm season in the USVI (Stoffle et al. 2020). Crosson (2018) estimates that St. Croix fleets endured some \$2,148,665 in damages, stemming from damage to commercial fishing vessels and fishing gear, lost income, and damaged infrastructure. Estimated combined damages resulting from the same problems on St. Thomas and St. John totaled \$3,632,806 (Crosson 2018). The COVID-19 pandemic also generated major impacts on island fisheries, including temporary cessation of operations and widespread loss of revenue, due in large part to compromised rates of tourism and associated demand for seafood across the islands (NOAA Fisheries 2021).

3.5.3 Environmental Justice Considerations

Executive Order 12898 (Environmental Justice) was established in 1994 to require that federal actions be undertaken in a manner that identifies and avoids adverse human health and/or social and economic effects among low-income and minority groups and populations around the nation and its territories. Federal regulatory decisions must be undertaken in ways that ensure no individuals or populations are excluded, denied the benefits of, or are subjected to discrimination due to race, color, or nation of origin. Of relevance in the context of marine fisheries, federal agencies are further required to collect, maintain, and analyze data regarding patterns of consumption of fish and wildlife among persons who rely on such foods for purposes of subsistence. Established in 2021, *Executive Order 13985* calls for human equity in the context of federal decision-making and policy actions. Titled “Advancing Racial Equity and Support for Underserved Communities through the Federal Government,” the new order requires that federal policies and programs are designed and undertaken in a manner that delivers resources and benefits equitably to all citizens, including those who are members of historically underserved communities. Here, the phrase “underserved communities” refers to populations and persons that, in historic terms, have been systematically denied full and equitable opportunity to

participate in economic, social, and civic aspects of life in the nation. Finally, *Executive Order 14008*, established in 2021, calls on agencies to make achieving EJ part of their missions “by developing programs, policies, and activities to address the disproportionately high and adverse human health, environmental, climate-related and other cumulative impacts on disadvantaged communities, as well as the accompanying economic challenges of such impacts.”

Methods and data used to assess environmental justice concerns among U.S. fisheries are discussed in Jacob et al. (2013) and Jepson and Colburn (2013) among other sources (see also CFMC 2019b, 2019c). As provided in the following figures, three composite indices—poverty, population composition, and personal disruption—are applied to indicate relative degrees of vulnerability among communities in the U.S. Caribbean region where residents are engaged in the territorial and federally managed fisheries discussed in the previous sections of this amendment. Mean standardized community vulnerability reference points for each region are provided along the y-axis in the graphics, with means for the vulnerability measures and threshold standard deviations depicted along the x-axis. Scores exceeding the 0.5 standard deviation level indicate vulnerability to regulatory and other sources of social change.

As depicted in Figure 3.5.4 below, most sub-districts on St. Croix exceed the 0.5 and 1.0 standard deviation thresholds for one or more vulnerability indices developed to characterize social, demographic, and economic conditions around the island. The East End sub-district is the sole exception here, as might be expected given its resort-oriented economy. Meanwhile, the Southwest, South-central, and Sion Farm sub-districts each exceed the vulnerability indices for poverty and population composition. It is emphasized here that conditions are likely to have worsened in recent years given challenges resulting from the 2017 hurricane season and from pandemic-induced business closures and related problems during 2020.

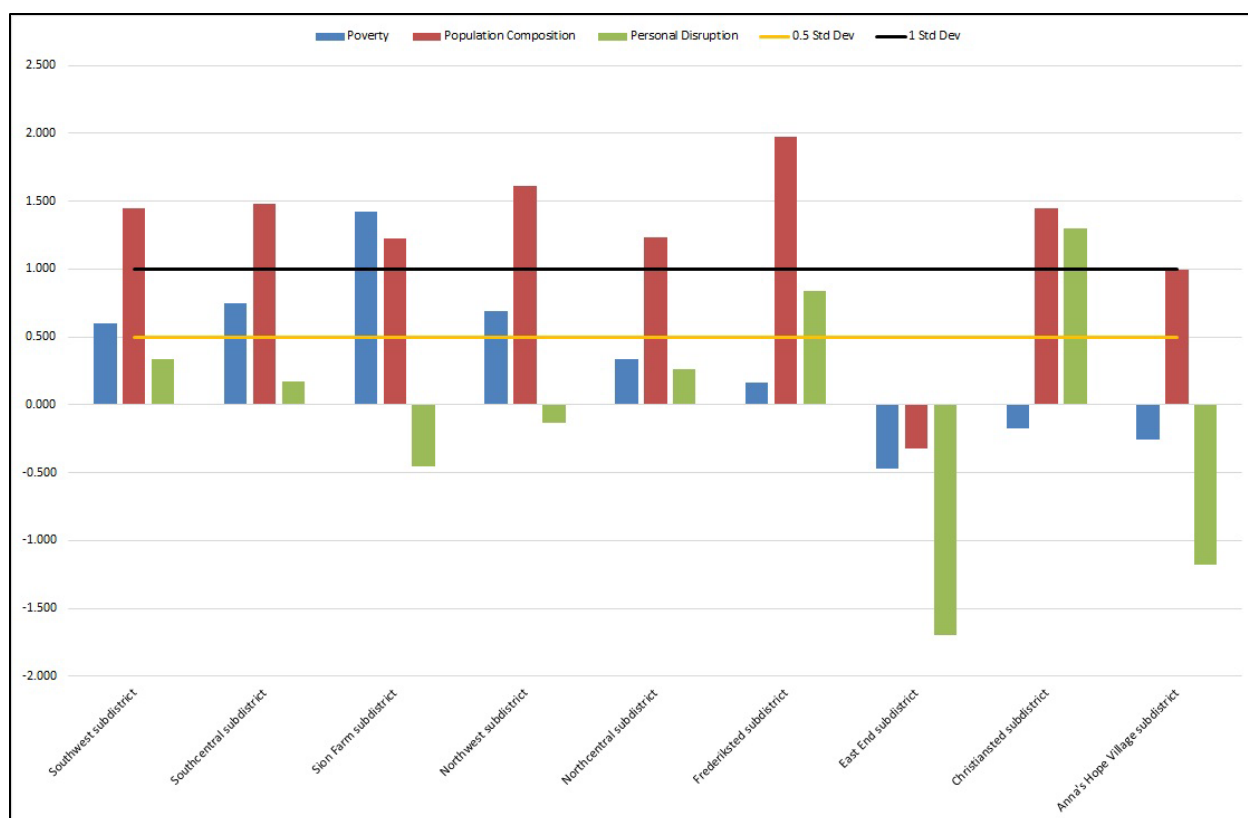


Figure 3.5.4. Social vulnerability indices for St. Croix coastal sub-districts.

Source: SERO County Social Vulnerability Indicators database [ACS 2014], CFMC 2019b

Figure 3.5.5 below, social indicators data reveal that most sub-districts on St. Thomas/St. John are relatively less vulnerable to social change than are those on St. Croix. However, local social, economic, and demographic vulnerabilities are indeed indicated for the sub-district of Charlotte Amalie, where poverty and local population composition indices exceed the 1.0 standard deviation threshold for local vulnerability to various sources of social change.

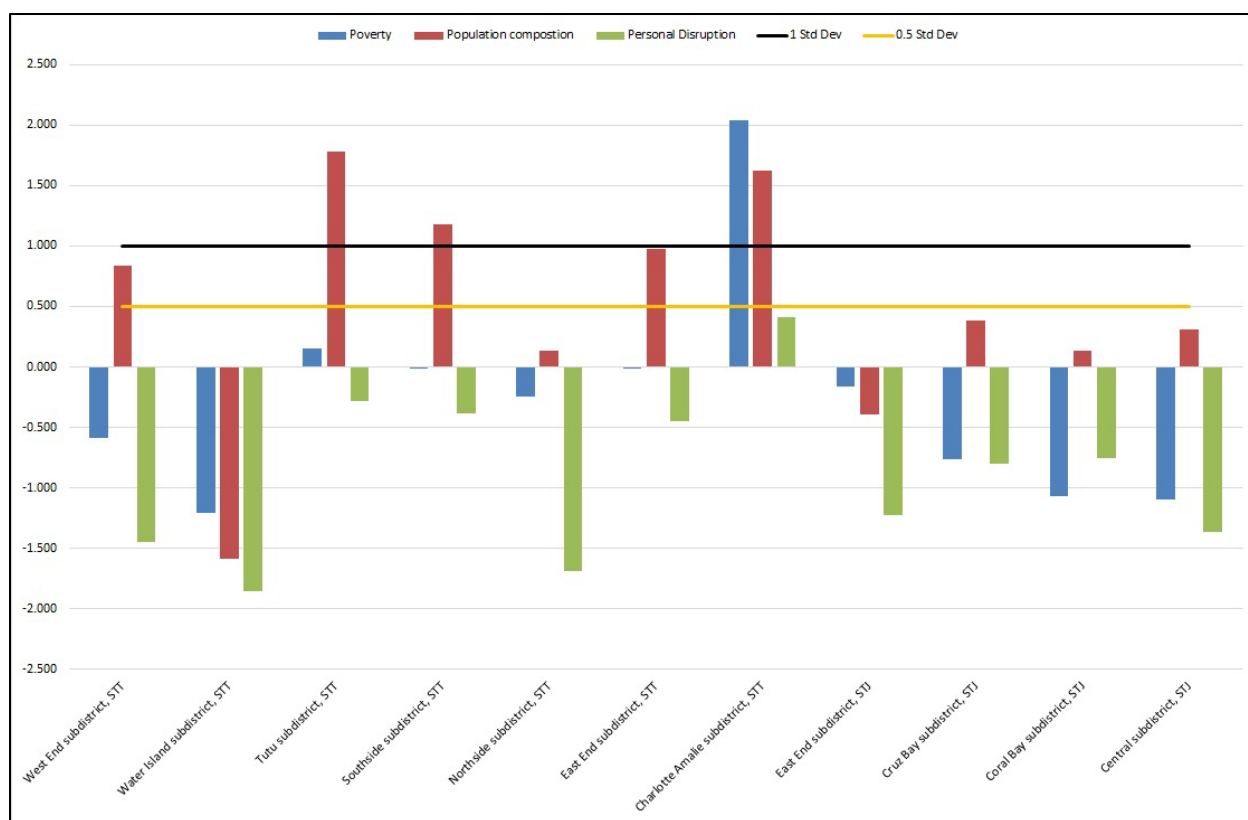


Figure 3.5.5. Social vulnerability indices for St. Thomas and St. John coastal sub-districts.
Source: SERO County Social Vulnerability Indicators database [ACS 2014], CFMC 2019c

Finally, as depicted in Figure 3.5.6, available social indicators data make clear that virtually all municipalities of Puerto Rico are, in socioeconomic and demographic terms, vulnerable to various sources of change. Moreover, social and economic conditions in the subject municipalities undoubtedly worsened in recent years given challenges experienced by householders during and after the 2017 hurricane season, and in relation to pandemic-related problems during 2020 and beyond. Given extensive social vulnerabilities noted of communities across the U.S Caribbean in recent years, the communities depicted in this section do bear the potential for environmental justice concerns in the context of new fishing regulations and/or other distinct or cumulative sources of change in the region. Although no fisheries-specific environmental justice problems are identified here in relation to prospective regulatory changes, the absence of such issues cannot be assumed at this time.

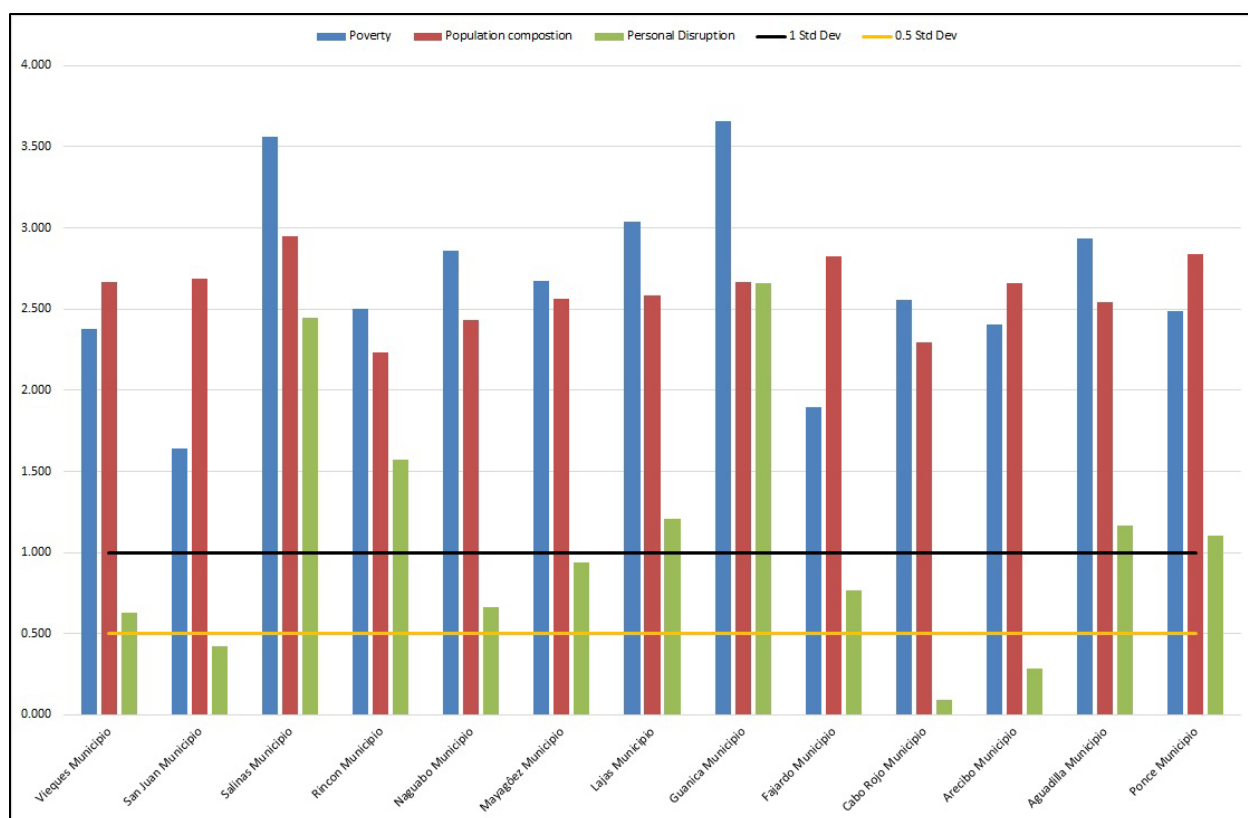


Figure 3.5.6. Social vulnerability indices for coastal municipalities in Puerto Rico.

Source: SERO County Social Vulnerability Indicators database [ACS 2014], CFMC 2019a

3.6 Description of the Administrative Environment

The administrative environment is discussed in detail in the Puerto Rico, St. Croix, and St. Thomas/St. John FMPs, which are incorporated herein by reference and summarized below.

3.6.1 Federal Fishery Management

Federal fishery management is conducted under the authority of the Magnuson-Stevens Act (16 U.S.C. 1801 et seq.), originally enacted in 1976 as the Fishery Conservation and Management Act. The Magnuson-Stevens Act claims sovereign rights and exclusive fishery management authority over most fishery resources within the U.S. EEZ, an area extending from the seaward boundary of each coastal state to 200 nm from shore, as well as authority over U.S. anadromous species and continental shelf resources that occur beyond the EEZ.

Responsibility for federal fishery management decision-making is divided between the U.S. Secretary of Commerce (Secretary) and eight regional Fishery Management Councils that represent the expertise and interests of constituent states. Regional councils are responsible for preparing, monitoring, and revising management plans for fisheries needing management within their jurisdiction. The Secretary is responsible for promulgating regulations to implement

proposed plans and amendments after ensuring that management measures are consistent with the Magnuson-Stevens Act, and with other applicable laws summarized in Appendix F. In most cases, the Secretary has delegated this authority to NMFS.

The Caribbean Fishery Management Council is responsible for the conservation and management of fishery stocks within federal waters surrounding Puerto Rico and the USVI. These waters extend to 200 nautical miles offshore from the seaward boundaries of Puerto Rico (9 nm from shore) and the USVI islands of St. Croix, St. Thomas/St. John (3 nm from shore). The Council consists of seven voting members: four members appointed by the Secretary, at least one of whom is appointed from each of the Commonwealth of Puerto Rico and the Territory of the USVI; the principal officials with marine fishery management responsibility and expertise for the Commonwealth of Puerto Rico and the Territory of the USVI, who are designated as such by their Governors; and the Regional Administrator of NMFS for the Southeast Region.

The public is involved in the fishery management process through participation at public meetings, on advisory panels and through council meetings that, with few exceptions for discussing personnel matters, are open to the public. The regulatory process is in accordance with the Administrative Procedure Act, in the form of “notice and comment” rulemaking, which provides extensive opportunity for public scrutiny and comment, and requires consideration of and response to those comments.

3.6.2 Puerto Rico and U.S. Virgin Islands Fisheries Management

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

3.6.2.1 Puerto Rico

The Commonwealth of Puerto Rico has jurisdiction over commonwealth fisheries in waters extending up to 9 nm from shore. Those fisheries are managed by Puerto Rico's Department of Natural and Environmental Resources (DNER) per Puerto Rico Law 278 of November 29, 1998 as amended, known as Puerto Rico’s Fisheries Law, which establishes public policy regarding fisheries. Section 19 of Article VI of the Constitution of the Commonwealth of Puerto Rico provides the foundation for the fishery rules and regulations. Puerto Rico Fishing Regulations 6902, implemented in 2004, included regulations for the management of marine managed areas

for fisheries purposes and imposed regulations for the protection of several species such as the Nassau grouper and the red hind. Puerto Rico Regulations 7949, implemented in 2010, is the current regulatory mechanism for management of fishery resources in Puerto Rico territorial waters as well as for those resources and areas with shared jurisdiction with the U.S. government through the Council.

3.6.2.2 U.S. Virgin Islands

The USVI has jurisdiction over territorial fisheries in waters extending up to 3 nm from shore. The USVI's Department of Planning and Natural Resources (DPNR) is responsible for the conservation and management of USVI fisheries and enforcement of boating and fishing regulations. The DPNR's Division of Fish and Wildlife (DFW) is responsible for data collection pertaining to the fisheries of the USVI. The DFW monitors commercial and recreational fisheries and provides recommendations to the DPNR Commissioner on matters relating to fisheries management. Rules and regulations for the USVI fisheries are codified in the Virgin Islands Code, primarily within Title 48 Chapter 12.

More information about these agencies can be found from the following web pages:

Puerto Rico DNER: <http://www.drna.pr.gov/>

USVI DPNR: <https://dpnr.vi.gov/>

Chapter 4. Environmental Consequences

4.1 Actions 1(a), 2(a) and 3(a): Use of Trawl Gear in the U.S.

Caribbean Exclusive Economic Zone (EEZ) around Puerto Rico, St. Croix, and St. Thomas/St. John

Summary of Actions and Alternatives for Actions 1(a), 2(a), and 3(a)

Action	Alt. 1	Alt 2.	Alt 3
1(a) Puerto Rico Trawl Gear 2(a) St. Croix Trawl Gear 3(a) St. Thomas/St. John Trawl Gear	No action. Retain as authorized for commercial non-FMP species	Prohibit use for all fishing in MMAs	(Preferred) Prohibit use for all federal waters

4.1.1 Effects on the Physical Environment

Actions 1(a), 2(a), and 3(a) address the use of trawl gear in federal waters around Puerto Rico, St. Croix, and St. Thomas/St. John, respectively. Trawl gear, which includes bottom and mid-water trawls has the potential to impact sensitive habitats present in the U.S. Caribbean such as coral and sponge habitat. Direct contact with these habitats, which may include species and critical habitat listed under the Endangered Species Act (ESA), could occur with bottom tending trawl gear and to sensitive vertical relief from near-bottom orientation of pelagic trawls.

Alternative 1 in Actions 1(a), 2(a), and 3(a) is the status quo and would not change any regulations applicable to the use of trawls in federal waters around Puerto Rico, St. Croix, and St. Thomas/St. John. It would retain the trawl gear, including bottom and mid-water trawls, as an authorized gear type for the commercial harvest of non-federally managed species within the Puerto Rico, St. Croix, and St. Thomas/St. John fishery components. However, there is no evidence that the commercial sector in any of the island-management areas uses (or has used) trawl gear (with exceptions noted in Section 1.1, such as for exploratory research), thus **Alternative 1** has no expected physical effects.

Alternative 2 in Actions 1(a), 2(a), and 3(a) would prohibit the use of trawl gear for fishing in the Council marine managed areas (MMA) around Puerto Rico, St. Croix, or St. Thomas/St. John, respectively, while **Preferred Alternative 3** in Actions 1(a), 2(a), and 3(a) would prohibit the use of trawl gear in the Puerto Rico, St. Croix, and St. Thomas/St. John EEZs. Because trawl gear has not historically been used in the U.S. Caribbean EEZ, and is not currently used, **Alternative 2** and **Preferred Alternative 3** are both administrative actions and are not expected to have any physical effects when compared to **Alternative 1**. However, by preventing the

potential future use of trawl gear, both **Alternative 2** and **Preferred Alternative 3** could be more beneficial to the physical environment by preventing potential habitat effects, such as to essential fish habitat (EFH) for federally managed species, from trawling activities in federal waters around Puerto Rico, St. Croix, and St. Thomas/St. John (**Preferred Alternative 3**) or in Council MMAs (**Alternative 2**). **Preferred Alternative 3** would be more beneficial in protecting fishery and habitat resources throughout the Puerto Rico, St. Croix, and St. Thomas/St. John EEZs, including ESA listed species and critical habitat present in the areas than **Alternative 2**. Prohibiting the use of trawl gear in all fishery components of the Puerto Rico, St. Croix, and St. Thomas/St. John fisheries (**Preferred Alternative 3**) would prevent fishermen from petitioning for its use, which could occur under **Alternative 1** and **Alternative 2**, thus providing more benefits to the physical environment.

4.1.2 Effects on the Biological/Ecological Environment

Alternative 1 of Actions 1(a), 2(a), and 3(a) is the status quo and would not change any regulations applicable to the use of trawls in federal waters around Puerto Rico, St. Croix, and St. Thomas/St. John. **Alternative 2** of Actions 1(a), 2(a), and 3(a) would prohibit all trawl gear in all Council MMAs, while **Preferred Alternative 3** of Actions 1(a), 2(a), and 3(a) would prohibit the use of trawl gear in the Puerto Rico, St. Croix, and St. Thomas/St. John EEZs. Because trawl gear has not historically been used in the U.S. Caribbean EEZ and is not currently used, **Alternative 2** and **Preferred Alternative 3** are both administrative actions and are not expected to have any additional biological or ecological effects when compared to **Alternative 1**. However, by preventing any future use of the trawl gear, both **Alternative 2** and **Preferred Alternative 3** could be more beneficial to the biological and ecological environments by preventing potential bycatch and/or habitat effects from trawling activities in federal waters around Puerto Rico, St. Croix, and St. Thomas/St. John (**Preferred Alternative 3**) or in Council MMAs (**Alternative 2**), with the former being more beneficial for fishery and habitat resources throughout the Puerto Rico, St. Croix, and St. Thomas/St. John EEZs. For instance, the Biological Opinion for the Island-based Fishery Management Plans (FMP) (NMFS 2020) estimated that fishing occurs in about 7% of the fishable area in federal waters off Puerto Rico, 18% of the St. Croix fishable area, and 41% of the St. Thomas/St. John fishable area, and **Preferred Alternative 3** would be expected to protect these resources throughout all these areas while **Alternative 2** would only protect a smaller portion of the fishable habitat from any potential physical effects from trawling. Also, prohibiting the use of trawl gear in all federal waters around Puerto Rico, St. Croix, and St. Thomas/St. John (**Preferred Alternative 3**) would prevent fishermen from petitioning for its use, which could occur under **Alternative 1** and **Alternative 2**, thus providing more benefits to the biological and ecological environment.

4.1.3 Effects on the Economic Environment

Alternative 1 of Actions 1(a), 2(a), and 3(a) (No action) would maintain existing trawl gear regulations in federal waters around Puerto Rico, St. Croix, and St. Thomas/St. John. Therefore, **Alternative 1**, which would not affect habitat, fishing practices or landings, would not be expected to result in economic effects. However, **Alternative 1** may result in indirect adverse economic effects in the future if petitions to use trawl gear in federal waters around Puerto Rico, St. Croix, and St. Thomas/St. John were submitted and approved. Although potential adverse economic effects that would result from the use of trawl gear cannot be quantified, they would be commensurate with damages to habitat and stocks that would result from the trawl gear deployed and the intensity of their use.

Alternative 2 would prohibit the use of trawl gear for all fishing in the Council MMAs in federal waters around Puerto Rico, St. Croix, and St. Thomas/St. John, while **Preferred Alternative 3** would prohibit the use of trawl gear in federal waters around Puerto Rico, St. Croix, and St. Thomas/St. John. Given that there is no evidence that the commercial and recreational sectors use trawl gear in federal waters around Puerto Rico, St. Croix, and St. Thomas/St. John, **Alternative 2** and **Preferred Alternative 3** are precautionary administrative measures. Therefore, relative to **Alternative 1**, **Alternative 2** or **Preferred Alternative 3** would not be expected to result in direct economic effects under current conditions. However, in the future, if petitions to use trawl gear in federal waters around Puerto Rico, St. Croix, and St. Thomas/St. John were submitted and approved, both **Alternative 2** and **Preferred Alternative 3** would be expected to result in economic effects based on the additional revenues fishermen would have earned using the gear and on the detrimental effects to habitat and stocks associated with the use of trawl gear. **Alternative 2** and **Preferred Alternative 3** would be expected to result in positive net economic effects if economic benefits associated with the prevention of additional bycatch and damages to habitat outweigh the adverse economic effects due forgoing revenues that would be earned with the use of trawl gear. Although these potential economic effects cannot be quantified, relative to **Alternative 1**, **Preferred Alternative 3** would be expected to result in greater economic benefits than **Alternative 2** because it would protect a larger area, i.e., the entirety of federal waters around Puerto Rico, St. Croix, and St. Thomas/St. John.

4.1.4 Effects on the Social Environment

For purposes of analysis in this and subsequent discussion of potential regulatory effects on the social environment, *social effects* are defined here to involve beneficial and/or deleterious human outcomes following from any loss or increase in *fishing opportunity*. Examples of social effects include, but are not limited to: (a) acquisition or failed acquisition of seafood for consumption by island-based individuals, families, and communities; (b) acquisition or failed acquisition of seafood for customary or traditional uses such as sharing in extended family settings or consumption at community celebrations; (c) the ability or inability to practice one's profession or

avocation on the ocean; (d) the ability or inability to accumulate and transmit traditional or local ecological knowledge in the context of fishing; and (e) the ability or inability to develop and maintain interpersonal relationships within social networks of fishery participants. Of note, both beneficial and deleterious social effects potentially associated with the actions described in this amendment are, in probabilistic terms, most likely to occur in island areas where residents are most extensively engaged in regional marine fisheries, as indicated in Section 3.5 above.

As a no action alternative, **Alternative 1** in Actions 1(a), 2(a), and 3(a) would retain authorized use of trawl gear only for harvest of non-federally managed species in federal waters around Puerto Rico, St. Croix, and St. Thomas/St. John. As there is no documented use of the gear in these zones, no effects can be anticipated. By specifying that use of trawl gear would not be allowed in MMAs, **Alternative 2** would diminish future fishing opportunity in such areas. By disallowing use of trawl gear in *all* federal waters, **Preferred Alternative 3** would also preclude related fishing opportunity. Given the potential for ecological impacts to result from use of trawl gear, however, **Alternative 2** would reduce, and **Preferred Alternative 3** would prevent such problems and thereby minimize gear-related constraints on harvest potential and social effects in other fisheries.

4.1.5 Effects on the Administrative Environment

Administrative effects are expected from creation of regulations, administering regulations, and enforcing regulations. Because trawling does not occur in federal waters there would be no difference in administrative effects in terms of enforcement between **Alternative 1**, **Alternative 2**, and **Preferred Alternative 3** in Actions 1(a), 2(a), and 3(a). However, **Preferred Alternative 3** would have an additional administrative burden from creating and administering regulations to implement the gear use prohibition.

4.2 Actions 1(b), 2(b) and 3(b): Use of Gillnets in the U.S. Caribbean Exclusive Economic Zone (EEZ) around Puerto Rico, St. Croix, and St. Thomas/St. John

Summary of Actions and Alternatives for Actions 1(b), 2(b), and 3(b) - Gillnets

Action	Alt. 1	Alt 2.
1(b) Puerto Rico Gillnet 2(b) St. Croix Gillnet 3(b) St. Thomas/St. John Gillnet	No action. Retain as an authorized gear type for the commercial harvest of FMP and non-FMP pelagic species and non-FMP managed species, and for reef fish and spiny lobster and inside Council Seasonally Closed Areas or Council MMAs.	<p>Prohibit use:</p> <p>Sub-alternative 2a. For all fishing in the EEZ.</p> <p>Sub-alternative 2b (Preferred for St. Croix - Action 2(b) and for St. Thomas/St. John - Action 3(c)). For all fishing in the EEZ, except for the following fish species belonging to the halfbeaks (Family Hemiramphidae), gar (Family Belonidae), and flyingfish (Family Exocoetidae). A surface gillnet used in the EEZ to fish for any baitfish must be tended at all times. Mesh size for the surface gillnet may not be smaller than 0.75 inches square or 1.5 inch stretch. The surface gillnet must maintain contact with the surface at all times or must be unattached to the ocean bottom.</p> <p>Sub-alternative 2b (Preferred for Puerto Rico -Action 1(b)). For all fishing in the EEZ, except for the following fish species belonging to the halfbeaks (Family Hemiramphidae), gar (Family Belonidae), and flyingfish (Family Exocoetidae) and the big eye scad (i.e., goggle eye, Genus Selar). A surface gillnet used in the EEZ to fish for any baitfish must be tended at all times. Mesh size for the surface gillnet may not be smaller than 0.75 inches square or 1.5 inch stretch. The surface gillnet must maintain contact with the surface at all times or must be unattached to the ocean bottom.</p> <p>Sub-alternative 2c. For fishing for all managed pelagic species</p>

4.2.1 Effects on the Physical Environment

Gillnets (single wall net; in *Spanish*: filete o chinchorro, trasmallo de ahorque) hang vertically in the water column and can be attached to the bottom or be free-floating. Negative physical effects to the habitats, EFH, critical habitat for ESA listed species could be possible if gillnets are attached to or have contact with the bottom. However, effects are not expected to result under **Alternative 1** and **Preferred Sub-alternatives 2b** and **2c** of Actions 1(b), 2(b), and 3(b) due to the depths and distances from the coast gillnets are used in federal waters around Puerto Rico, St. Croix, and St. Thomas/St. John. Moreover, requiring the net to be used 20ft or more above the

bottom in **Preferred Sub-alternative 2b** would further prevent any potential negative effects to the habitat.

4.2.2 Effects on the Biological/Ecological Environment

Alternative 1 of Actions 1(b), 2(b), and 3(b) would retain gillnets as an authorized gear type for the commercial harvest of federally managed and non-federally managed pelagic fish and for the commercial harvest of other non-federally managed species, as listed in 50 CFR 600.725(v)(V) in Puerto Rico, St. Croix, and St. Thomas/St. John, respectively. The commercial harvest of federally managed pelagics, non-federally managed pelagics, and other non-federally managed species with gillnets could increase the potential for bycatch of target species that are prohibited with this gear type (i.e., reef fish, spiny lobster) and could also increase the potential catch of undersized or juvenile managed and non-managed species and of ESA-listed species (i.e., sea turtles), which could increase potential for overfishing or negatively affect their populations.

Although the use of gillnets for the commercial harvest of federally managed and non-federally managed pelagic species or other non-federally managed species in federal waters is considered to be minimal due to depth and distance from the coast of the location of federal waters, **Sub-alternative 2a** and **Preferred Sub-alternative 2b** of Actions 1(b), 2(b), and 3(b) would prevent or reduce negative ecological and biological effects from the use of gillnets (e.g., prevention of bycatch of undersized or juvenile individuals, ESA protected species, other target and non-target species). Allowing the use of surface gillnets for catching certain species of baitfish would allow fishermen to continue using these specific nets in federal waters around Puerto Rico, St. Croix, or St. Thomas/St. John (**Preferred Sub-alternative 2b**), and would prevent using gillnets for other federally managed and non-federally managed species. Specifying the mesh size and requirement to tend the net at all times and used 20 feet or more above the bottom in **Preferred Sub-alternative 2b** would reduce bycatch of species for which gillnet is not authorized. Lastly, **Preferred Sub-alternative 2b** of Actions 2(b) and 3(b) would be partially compatible with USVI regulations for surface gillnets, facilitating enforcement of federal regulations and would be more beneficial to the ecological and biological environments because it would reduce bycatch by imposing a minimum mesh size and other requirements for gillnets in federal waters.

Sub-alternative 2c would prohibit the use of gillnets for the harvest of federally managed pelagic species (i.e., dolphin, wahoo in St. Croix and in St. Thomas/St. John; dolphin, pompano dolphin, wahoo, little tunny, blackfin tuna, king mackerel, cero mackerel, tripletail, and great barracuda in Puerto Rico), and would retain gillnets as an authorized gear type for the commercial harvest of non-federally managed in federal waters around Puerto Rico, St. Croix, or St. Thomas/St. John. Gillnets would continue to be a prohibited gear for reef fish and spiny lobster. Negative ecological and biological effects resulting from the use of gillnets for non-federally managed species could be expected from **Sub-alternative 2c** (e.g., bycatch of

undersized or juvenile individuals, protected species, and other target and non-target species). In addition, **Sub-alternative 2c** would not specify mesh size or tending restrictions.

4.2.3 Effects on the Economic Environment

Puerto Rico - Gillnets (Action 1(b))

Alternative 1 (No action) of Action 1(b) would retain current gillnet regulations in the federal waters around Puerto Rico and would not modify fishing practices and landings. **Alternative 1** would not be expected to result in direct economic effects because the limited number of fishermen using gillnets to harvest non-managed and managed species in federal waters would continue to do so. However, if the usage of gillnets increases, detrimental effects to stocks, e.g., increased bycatch of reef fish species and spiny lobster, may arise. Associated adverse indirect economic effects could then potentially result from **Alternative 1**. These potential adverse economic effects would be mitigated by the potential economic benefits that would accrue for fishermen and consumers as a result of increased harvest and availability of targeted species.

Remaining alternatives and sub-alternatives in this action propose modifications to gillnet regulations in the Puerto Rico EEZ. **Alternative 2** would prohibit the use of gillnets in federal waters around Puerto Rico for all fishing (**Sub-alternative 2a**), for all fishing except for a predetermined list of baitfish species subject to the use of surface gillnets that meet certain specifications (**Preferred Sub-alternative 2b**), or for fishing for federally managed pelagic species (**Sub-alternative 2c**). Direct economic effects that would result from **Sub-alternative 2a** would be determined by expected revenue losses to commercial fishermen who are traditionally using the gear and by the additional protection to stocks that would result from the gillnet prohibition.

Potential revenue losses can be measured by the average revenues earned using gillnets in federal waters around Puerto Rico. Based on Table 3.4.2., annual revenues from managed and non-managed species harvested in federal waters around Puerto Rico using gillnets averaged \$6,700 and \$6,300 (\$2021) between 2014 and 2019. Therefore, relative to **Alternative 1** (No action), **Sub-alternative 2a** would be expected to result in economic losses estimated at \$13,000 (\$2021) per year. Because it is expected that fishermen would adjust their fishing practices by using other gears to mitigate revenue losses, this estimate is an upper bound. **Preferred Sub-alternative 2b** and **Sub-alternative 2c** would be expected to result in smaller revenue losses than **Sub-alternative 2a** given the narrower gillnet prohibition they would implement. Although the economic benefits due to the added protection to stocks cannot be quantified, relative to **Alternative 1** (No action), based on the scope of the gillnet prohibition that would be implemented, protection from future expansions to gillnet usage and associated potential economic benefits would seem to be greater under **Sub-alternative 2a**, followed by **Preferred Sub-alternative 2b**, and **Sub-alternative 2c**. Net economic effects expected to result from **Sub-alternative 2a**, **Preferred Sub-alternative 2b**, and **Sub-alternative 2c** would be positive if the

economic value of the expected added protection to stocks is greater than the estimated revenue losses. Because **Preferred Sub-alternative 2b** also imposes minimum mesh size requirements, a requirement that nets be tended at all times, and is limited to a specific list of species, this alternative is expected to result in larger potential economic benefits (if any) than **Sub alternatives 2a** and **2c**. In effect, **Preferred Sub-alternative 2b** preemptively balances the prevention of increased gillnet usage, reduces bycatch and impacts to habitat associated with this gear, while allowing gillnets to be used to harvest a predetermined list of baitfish species.

St. Croix – Gillnets (Action 2(b)) and St. Thomas/St. John – Gillnets (Action 3(b))

Alternative 1 of Actions 2(b) and 3(b) (No action) would retain current gillnet regulations in the federal waters around St. Croix or St. Thomas/St. John, USVI, respectively and would not modify customary fishing practices and landings. Therefore, **Alternative 1** would not be expected to result in economic effects under existing conditions. However, if fishermen decided to use gillnets, detrimental effects to stocks such as increased bycatch of reef fish species and spiny lobster, may occur. Associated adverse indirect economic effects could then potentially result from **Alternative 1**. These potential adverse economic effects would be mitigated by the potential economic benefits that would accrue for fishermen and consumers as a result of increased harvest and availability of targeted species.

Remaining alternatives and sub-alternatives in Actions 2(b) and 3(b) propose modifications to gillnet regulations in federal waters around St. Croix or St. Thomas/St. John, respectively.

Alternative 2 would prohibit the use of gillnets in federal waters around St. Croix or St. Thomas/St. John for all fishing (**Sub-alternative 2a**), for all fishing except for a predetermined list of baitfish species, subject to the use of gillnets that meet certain specifications (**Preferred Sub-alternative 2b**), or for fishing for federally managed pelagic species (**Sub-alternative 2c**). These sub-alternatives are precautionary administrative management measures that would not be expected to directly result in economic effects under current conditions. These preventive management measures could result in indirect economic benefits due to the added protection they would provide stocks by preventing future increases in the usage of gillnet.

Relative to **Alternative 1** (No action), based on the scope of the gillnet prohibition that would be implemented, precautionary protection from future expansions to gillnet usage and associated potential economic benefits would seem to be greater under **Sub-alternative 2a**, followed by **Preferred Sub-alternative 2b**, and **Sub-alternative 2c**. However, because **Preferred Sub-alternative 2b** also imposes minimum mesh size requirements, a requirement that nets be tended at all times, and limits the use of such nets to a specific list of species, this alternative is expected to result in larger potential economic benefits than **Sub alternatives 2a** and **2c**. **Preferred Sub-alternative 2b** preemptively balances the prevention of increased gillnet usage, reduces bycatch and impacts to habitat associated with this gear, while allowing gillnets to be used to harvest a predetermined list of baitfish species.

4.2.4 Effects on the Social Environment

For purposes of analysis in this and subsequent discussion of potential regulatory effects on the social environment, *social effects* are defined here to involve beneficial and/or deleterious human outcomes following from any loss or increase in *fishing opportunity*. Examples of social effects include, but are not limited to: (a) acquisition or failed acquisition of seafood for consumption by island-based individuals, families, and communities; (b) acquisition or failed acquisition of seafood for customary or traditional uses such as sharing in extended family settings or consumption at community celebrations; (c) the ability or inability to practice one's profession or avocation on the ocean; (d) the ability or inability to accumulate and transmit traditional or local ecological knowledge in the context of fishing; and (e) the ability or inability to develop and maintain interpersonal relationships within social networks of fishery participants. Of note, both beneficial and deleterious social effects potentially associated with the actions described in this amendment are, in probabilistic terms, most likely to occur in island areas where residents are most extensively engaged in regional marine fisheries, as indicated in Section 3.5 above.

Puerto Rico - Gillnets (Action 1(b))

Alternative 1 (No action) would allow continued use of gillnets for harvest of managed and non-managed pelagic species and other non-managed species in federal waters, with prohibitions on use for harvesting reef fish and spiny lobster. However, because gillnets are rarely used in federal waters around Puerto Rico, extensive loss of opportunity and related social effects cannot be assumed. By banning gillnet use in federal waters, **Alternative 2** and **Sub-alternative 2a** would prevent new fishing opportunities and any social benefits that could possibly follow. However, such prohibitions could help avoid net-related ecological damage and allow for social benefits among participants using other gear. **Preferred Sub-alternative 2b** allows for use of properly configured and tended gillnets to capture certain bait species, with potential benefits for participants in regional net fisheries. Inasmuch as **Sub-alternative 2c** would retain gillnets as an authorized gear for harvest of federally managed pelagic species in federal waters, fishing opportunity could increase in the near-term, but with potential for by-catch related problems to diminish fishing opportunity over time.

St. Croix – Gillnets (Action 2(b)) and St. Thomas/St. John – Gillnets (Action 3(b))

Gillnets are rarely used in the federal waters around St. Croix or St. Thomas/St. John, with available landings data indicating minimal capture of species used for bait in pelagic fisheries. **Alternative 1** would retain properly configured and tended gillnets as an authorized gear for harvest of such species inside specified management areas. As such, the alternative would not diminish fishing opportunity or associated social benefits. While **Alternative 2** would prevent ecological impacts through prohibition of gillnets in all federal waters around the island (**Sub-alternative 2a**), lost opportunity to capture baitfish would also occur. **Preferred Sub-alternative 2b** would allow for such capture, and thereby eliminate potentially associated social impacts. Because **Sub-alternative 2c** would retain gillnets as an authorized gear for harvest of

non-federally managed species in federal waters, fishing opportunity could increase in the near-term, but with potential for bycatch related problems to diminish opportunity over time.

4.2.5 Effects on the Administrative Environment

Under **Alternative 1** in Actions 1(b), 2(b), and 3(b), gillnets are not listed as authorized under any U.S. Caribbean fisheries, including around the EEZ of Puerto Rico, St. Croix, and St. Thomas/St. John. Federal regulations specifically prohibit the use of gillnets for spiny lobster and federally managed reef fish, but allow the use of gillnets to fish for any other species, which must be tended at all times. **Sub-alternative 2a** would specifically prohibit the use of gillnets in the Puerto Rico, St. Croix, or St. Thomas/St. John EEZs. **Preferred Sub-alternative 2b** would allow the use of gillnets for certain species of baitfish and specify mesh and tending requirements and **Sub-alternative 2(c)** would allow the use of gillnets for the harvest of federally managed pelagic species. Administrative effects are expected to be slightly larger for **Preferred Sub-alternative 2b** and **Sub-alternative 2c** than for **Alternative 1** and **Sub-alternative 2a**, because of the additional burden in enforcing regulations that include exceptions for using gillnets (i.e., baitfish and managed pelagic species).

4.3 Actions 1(c), 2(c), and 3(c): Use of Trammel Nets in the U.S. Caribbean EEZ around Puerto Rico, St. Croix, and St. Thomas and St. John

Summary of Sub-actions and Alternatives

Action	Alt. 1	Alt 2.
1(c) Puerto Rico Trammel Net	Retain trammel nets as neither an authorized gear type for any fisheries in the EEZ around St. Thomas and St. John, nor an otherwise prohibited gear type, except for FMP reef fish and spiny lobster.	(Preferred for all three islands) Prohibit for all fishing
2(c) St. Croix Trammel Net		
3(c) St. Thomas/St. John Trammel net		

4.3.1 Effects on the Physical Environment

Trammel nets (trasmallo o mallorquín (trammel net), tremall (3-paned), chinchorro de ahorque) hang vertically in the water column and can interact with the bottom or be free-floating.

Physical effects to the habitats, EFH, critical habitat for ESA listed species could be possible if the trammel nets were attached to the bottom. However, physical effects are not expected

because this is an administrative action given that trammel nets are not authorized for use in federal waters and are not used in federal waters (**Alternative 1**) or would be specifically prohibited for use in federal waters around Puerto Rico, St. Croix, and St. Thomas/St. John (**Preferred Alternative 2**).

4.3.2 Effects on the Biological/Ecological Environment

Alternative 1 in Action 1(c), 2(c), and 3(c) would retain current regulations applicable to the use of trammel nets in federal waters around Puerto Rico, St. Croix, and St. Thomas/St. John.

Preferred Alternative 2 would specifically prohibit the use of trammel nets in the EEZ around St. Thomas/St. John. Effects to the biological/ecological environments from **Preferred Alternative 2** are not expected to be different from those of **Alternative 1** because trammel nets are currently not authorized for use in federal waters. However, **Preferred Alternative 2** could be slightly more beneficial to the biological and ecological environments of the EEZ around Puerto Rico, St. Croix, and St. Thomas/St. John because it further restricts future use of trammel nets through a petition to the Council, eliminating any potential effects from bycatch of undersized or juvenile organisms, overfishing, and effects to ESA-listed species such as sea turtles.

4.3.3 Effects on the Economic Environment

Puerto Rico (Action 1(c))

Alternative 1 (No action) of Action 1(c) would retain trammel nets as neither an authorized gear type for any fisheries in federal waters surrounding Puerto Rico, nor an otherwise prohibited gear type, except for federally-managed reef fish and spiny lobster in federal waters surrounding Puerto Rico. **Alternative 1** would not be expected to result in direct economic effects because fishermen using trammel nets in federal waters would continue to do so. **Alternative 1** may result in indirect adverse economic effects if the use of trammel nets in federal waters around Puerto Rico increases in the future. While potential adverse economic effects that would result from the use of trammel nets cannot be quantified at this time, they would be proportional to damages to stocks e.g., increased bycatch associated with the use of trammel nets.

Preferred Alternative 2 of Action 1(c) would prohibit the use of trammel nets in the EEZ around Puerto Rico. Direct economic effects that would result from **Preferred Alternative 2** would be determined by the added protection to stocks that would result from the trammel net prohibition and by expected revenue losses to commercial fishermen who currently use the gear.

Although the value associated with the additional protection to stocks that would result from **Preferred Alternative 2** cannot be estimated, potential revenue losses can be measured by the average revenues earned using trammel nets in federal waters around Puerto Rico. Based on Table 3.4.2., annual revenues from managed and non-managed species harvested in federal

waters using trammel nets averaged \$4,400 and \$930 (\$2021) between 2014 and 2019. Therefore, Relative to **Alternative 1** (No action), **Preferred Alternative 2** would be expected to result in economic losses estimated at \$5,330 (\$2021) per year. Because it is expected that fishermen would adjust their fishing practices by using other gears to mitigate revenue losses, this estimate is an upper bound. **Preferred Alternative 2** would be expected to result in positive net economic effects if economic benefits associated with the prevention of additional bycatch outweigh the adverse economic effects due to forgone revenues that would be associated with the use of trammel nets.

St. Croix (Action 2(c)) and St. Thomas/St. John (Action 3(c))

Alternative 1 of Actions 2(c) and 3(c) (No action) would retain trammel nets as neither an authorized gear type for any fisheries in federal waters around St. Croix or St. Thomas/St. John, USVI, nor an otherwise prohibited gear type, except for federally-managed reef fish and spiny lobster in federal waters surrounding St. Croix and St. Thomas/St. John. Because trammel nets are not currently authorized for use in federal waters, direct economic effects would not be expected to result from **Alternative 1**. In the future, **Alternative 1** may result in indirect adverse economic effects if petitions to use trammel nets in federal waters around St. Croix or St. Thomas/St. John were approved. While potential adverse economic effects that would result from the use of trammel nets cannot be quantified at this time, they would be proportional to damages to stocks e.g., increased bycatch associated with the use of trammel nets.

Preferred Alternative 2 of Actions 2(c) and 3(c) would prohibit the use of trammel nets in the EEZ around St. Croix or St. Thomas/St. John. **Preferred Alternative 2**, which is a precautionary administrative measure, would not be expected to result in direct economic effects. However, the preventive prohibition of future trammel net usage would be expected to result in economic effects based on the additional revenues fishermen would have earned using the gear (following approved petitions for its use) and on the detrimental effects to stocks due to increased bycatch associated with the use of trammel nets. **Preferred Alternative 2** would be expected to result in positive net economic effects if economic benefits associated with the prevention of additional bycatch outweigh the adverse economic effects due to forgone revenues that would be associated with the use of trammel nets.

4.3.4 Effects on the Social Environment

For purposes of analysis in this and subsequent discussion of potential regulatory effects on the social environment, *social effects* are defined here to involve beneficial and/or deleterious human outcomes following from any loss or increase in *fishing opportunity*. Examples of social effects include, but are not limited to: (a) acquisition or failed acquisition of seafood for consumption by island-based individuals, families, and communities; (b) acquisition or failed acquisition of seafood for customary or traditional uses such as sharing in extended family settings or consumption at community celebrations; (c) the ability or inability to practice one's profession or

avocation on the ocean; (d) the ability or inability to accumulate and transmit traditional or local ecological knowledge in the context of fishing; and (e) the ability or inability to develop and maintain interpersonal relationships within social networks of fishery participants. Of note, both beneficial and deleterious social effects potentially associated with the actions described in this amendment are, in probabilistic terms, most likely to occur in island areas where residents are most extensively engaged in regional marine fisheries, as indicated in Section 3.5 above.

Use of trammel nets for harvest of reef fish and spiny lobster is prohibited in the federal waters around Puerto Rico, St. Croix, and St. Thomas/St. John, in the Council MMAs, and in territorial waters off the USVI. Trammel nets are not legally usable in federal waters around Puerto Rico, St. Croix, and St. Thomas/St. John, and landings data indicate very little harvest from Puerto Rico and St. Croix in years past. No trammel net landings were reported for the period 2012 through 2021 from federal waters off St. Thomas/St. John. As such, loss of fishing opportunity resulting from **Alternative 1** of Actions 1(c), 2(c), and 3(c) is unlikely. **Preferred Alternative 2** would prohibit future use of trammel nets in federal waters, but because no present or historical use of the gear is documented in federal waters off St. Thomas/St. John, no loss of fishing opportunity or related social effects can be anticipated. For Puerto Rico and St. Croix federal waters, while trammel net-specific fishing opportunity would be lost, the alternative could ultimately benefit regional marine ecosystems and enhance fishing opportunity and social benefits among participants in other fisheries.

4.3.5 Effects on the Administrative Environment

Under **Alternative 1** of Actions 1(c), 2(c), and 3(c), trammel nets are not listed as authorized under any U.S. Caribbean fisheries, and the use of trammel nets is specifically prohibited for spiny lobster and federally managed reef fish. However, trammel nets are allowed to fish for any other species, but they must be tended at all times. **Preferred Alternative 2** would specifically prohibit the use of trammel nets in the EEZ around Puerto Rico, St. Croix, and St. Thomas/St. John, therefore it would not be possible for a fisherman to petition to the Council the use of this gear type. Administrative effects are expected to be slightly larger for **Preferred Alternative 2** than for **Alternative 1** for creating, administering, and enforcing the regulations.

4.4 Actions 1(d), 2(d), and 3(d): Use of Purse Seines in the U.S. Caribbean EEZ around Puerto Rico, St. Croix, and St. Thomas and St. John

Summary of Sub-actions and Alternatives

Action	Alt. 1	Alt 2.
1(d) Puerto Rico Purse Seines	Retain purse seines as neither an authorized gear type for any fisheries in the EEZ around St. Thomas and St. John, nor an otherwise prohibited gear type.	(Preferred for all three islands) Prohibit for all fishing
2(d) St. Croix Purse Seines		
3(d) St. Thomas/St. John Purse Seines		

4.4.1 Effects on the Physical Environment

Purse seines (used in many regions to catch tunas) consist of a large wall of netting deployed around an entire area or school of fish. Regardless of authorization or not for use in federal waters, purse seines are not expected to interact with the bottom, and therefore, no physical effects are expected from **Alternative 1** or **Preferred Alternative 2** in Actions 1(d), 2(d), and 3(d) for Puerto Rico, St. Croix, and St. Thomas/St. John, respectively.

4.4.2 Effects on the Biological/Ecological Environment

Purse seines have the potential to capture large amounts of fish, without discrimination, which could affect the biological and ecological environments of the Puerto Rico, St. Croix, and St. Thomas/St. John fisheries if they were used. Effects to the biological/ecological environments from **Preferred Alternative 2** in Actions 1(d), 2(d), and 3(d) for Puerto Rico, St. Croix, and St. Thomas/St. John, respectively, are not expected to be different from those of **Alternative 1** because purse seines are currently not authorized for use in federal waters. However, **Preferred Alternative 2** could be slightly more beneficial to the biological/ecological environments of the EEZ around Puerto Rico, St. Croix, and St. Thomas/St. John because it further restricts future use of this gear type through a petition to the Council and thus would prevent impacts to fish populations and ESA-listed species from bycatch.

4.4.3 Effects on the Economic Environment

Alternative 1 (No action) would retain current purse seine regulations in federal waters surrounding Puerto Rico, St. Croix, and St. Thomas/St. John. Because purse seines are not

currently authorized for use in federal waters around Puerto Rico, St. Croix, and St. Thomas/St. John (except for the harvest of highly migratory species), direct economic effects would not be expected to result from **Alternative 1**. In the future, **Alternative 1** may result in indirect economic effects if petitions to use purse seines in the Puerto Rico, St. Croix, or St. Thomas/St. John EEZs were submitted and approved. Potential net economic effects that would result from the use of purse seines would be determined by economic costs resulting from damages to stocks due to increased bycatch associated with the use of purse seines and by benefits associated with additional revenues that could have been earned if purse seines were used.

Preferred Alternative 2 would prohibit the use of purse seines in federal waters around Puerto Rico, St. Croix, and St. Thomas/St. John. **Preferred Alternative 2**, which constitutes a precautionary administrative measure, would not be expected to result in direct economic effects. However, the preventive prohibition of future purse seine usage would be expected to result in economic effects based on the additional revenues fishermen would have earned using the gear (following approved petitions for its use) and on the harmful effects to stocks due to increased bycatch associated with the use of purse seines. **Preferred Alternative 2** would be expected to result in positive net economic effects if economic benefits associated with the prevention of additional bycatch outweigh the adverse economic effects due to forgone revenues that would be associated with the use of purse seines.

4.4.4 Effects on the Social Environment

Alternative 1 for actions 1(d), 2(d), and 3(d) would involve no new federal restrictions on use of purse seines. Because such gear is not presently authorized or used in federal waters, lost fishing opportunity and any subsequent social effects cannot be easily determined. **Preferred Alternative 2** would make deployment of purse seine gear illegal in the years to come in federal waters around Puerto Rico, St. Croix, or St. Thomas/St. John. As there is no documented use of the gear in these zones, no effect would be anticipated.

4.4.5 Effects on the Administrative Environment

Under **Alternative 1** of Actions 1(d), 2(d), and 3(d), purse seines are not listed as authorized under any U.S. Caribbean fisheries, including St. Croix, in federal regulations. **Preferred Alternative 2** would specifically prohibit the use of purse seines in the Puerto Rico, St. Croix, or St. Thomas/St. John EEZs. Because purse seines are not used in federal waters nor are they authorized, there would be no difference in administrative effects in terms of enforcement, between **Alternative 1** and **Preferred Alternative 2**, although **Preferred Alternative 2** would have an additional administrative burden from creating and administering regulations to implement the broader prohibition on the use of purse seines.

4.5 Action 4: Requirements for the Use of Descending Devices in the Reef Fish Component of the Puerto Rico, St. Croix, and St. Thomas and St. John FMPs

Summary of Alternatives for Action 4

Action 4 - Puerto Rico, St. Croix, St. Thomas/St. John	Alt. 1	Alt 2. (Preferred)
	No action. No requirement to have descending devices on board a vessel fishing for fishing or possessing species in the reef fish component of the Puerto Rico, St. Croix, and St. Thomas and St. John FMPs.	<p>Require a descending device be on board a commercial or recreational vessel and readily available for use while fishing for or possessing species in the reef fish component of any of the FMPs:</p> <p>Preferred Sub-alternative a. Puerto Rico Preferred Sub-alternative b. St. Croix Preferred Sub-alternative c. St. Thomas and St. John</p> <p>* For the purpose of this requirement, a “descending device” means an instrument to which is attached a minimum of a 16-ounce weight and a length of line that will release the fish at the depth from which the fish was caught or a minimum of 60 feet. The descending device attaches to the fish’s mouth or is a container that will hold the fish. The device must be capable of releasing the fish automatically, by the actions of the operator of the device, or by allowing the fish to escape on its own. Since minimizing surface time is critical to increasing survival, descending devices shall be readily available for use while engaged in fishing.</p>

4.5.1 Effects on the Physical Environment

Alternative 1 would not require a descending device be on board a vessel fishing for or possessing federally managed reef fish in the EEZ around Puerto Rico, St. Croix, and St. Thomas/St. John. **Preferred Alternative 2** would require a descending device be rigged and ready for use on a vessel when fishing for or possessing federally managed reef fish in federal waters around Puerto Rico (**Sub-alternative 2a**), St. Croix (**Sub-alternative 2b**), and St. Thomas/St. John (**Sub-alternative 2c**). No physical effects are expected from **Alternative 1** or from any of the sub-alternatives of **Alternative 2** because descending devices do not have any interaction with the bottom.

4.5.2 Effects on the Biological/Ecological Environment

By proposing that descending devices be on board a vessel fishing for or possessing federally managed reef fish in the U.S. Caribbean EEZ (**Preferred Alternative 2**), the Council expects to reduce fishing mortality of regulatory and economic discards³⁰ of federally managed reef fish, which includes species caught by the island fisheries’ that are most vulnerable to barotrauma.

³⁰ Regulatory discards are fish that are required by regulation to be discarded, but also include fish that may be retained but not sold. Economic discards are fish that are discarded because they are undesirable to the harvester. This category of discards generally includes certain species, sizes, and/or sexes with low or no market value.

The Council's intent is that descending devices only be used when a fish may be experiencing barotrauma (e.g., caught in deep water, protruding stomach, etc.).

Preferred Sub-Alternatives 2a, 2b, and 2c would be equally more beneficial to the biological and ecological environments for managed reef fish than **Alternative 1** (no requirement of descending devices), as they would require a descending device to be rigged and ready for use, which could decrease fishing mortality of federally managed reef fish from barotrauma in each of the island management areas.

4.5.3 Effects on the Economic Environment

Alternative 1 (No action) would not require a descending device to be on board a vessel fishing for or possessing Council-managed reef fish in the EEZ around Puerto Rico, St. Croix, and St. Thomas/St. John. Therefore, **Alternative 1** would not affect current fishing practices or discard mortality and would not be expected to result in direct economic benefits.

However, **Alternative 1** would forgo improvements to fish stocks and resultant indirect economic effects that could be achieved through the increased usage of descending devices. These potential indirect economic effects would be determined by estimated increases in the survival of discarded fish returned to the water using descending devices, and by the costs of these devices.

Preferred Alternative 2 would require a descending device be onboard a commercial or recreational vessel and readily available for use while fishing for or possessing Council-managed reef fish in the EEZ around Puerto Rico (**Preferred Sub-alternative 2a**), St. Croix (**Preferred Sub-alternative 2b**), and St. Thomas/St. John (**Preferred Sub-alternative 2c**). Under **Preferred Sub-alternatives 2a, 2b, and 2c**, the onboard availability of descending devices and their proper use would be expected to result in economic effects determined by the costs of acquiring the devices and the benefits expected to result from the anticipated increases in the survival of discarded Council-managed reef fish in the EEZ around Puerto Rico, St. Croix, and St. Thomas/St. John. Because the additional time needed to use a descending device to return a fish to water is expected to be negligible relative to the time it takes to throw fish overboard, opportunity costs of fishermen's time are not included in this analysis.

For each preferred sub-alternative, the cost of acquiring descending devices is computed based on an estimated number of fishermen affected and on a per unit price of a descend device. Although there are a few charter for-hire entities this action would affect, additional costs are not expected to be borne by charter operators because they would likely manufacture their own devices. Therefore, only costs to the commercial are provided here. As discussed in Chapter 6, **Preferred Sub-alternative 2a** is expected to affect between 222 to 308 commercial fishermen in Puerto Rico. It is further indicated in Section 6 that the numbers of affected commercial

fishermen in St. Croix (**Preferred Sub-alternative 2b**), and in St. Thomas/St. John (**Preferred Sub-alternative 2c**) are estimated at 37 and up to 48, respectively. Direct costs per sub-alternative are based on a reported per-unit price of \$18.30 (\$2017) (SAFMC 2020) or, \$21.8 (\$2022) (using the BEA Implicit Price Deflator). Therefore, under **Preferred Sub-alternative 2a**, costs to fishermen in Puerto Rico are estimated to range between \$4,840 and \$6,714 (\$2022). Under **Preferred Sub-alternative 2b**, costs to fishermen in St. Croix are estimated at \$807 (\$2022). Under **Preferred Sub-alternative 2c**, costs to fishermen in St. Thomas/St. John are estimated at \$1,046 (\$2022). Based on information provided in the Appendix D, estimated costs for acquiring descending devices would account for less than 1% of commercial fishermen's average annual revenues recorded in Puerto Rico, St Croix, or St. Thomas/St John. Although they cannot be quantified due to the unavailability of data, economic benefits expected to result from each sub-alternative would be commensurate with the extent to which descending devices are adequately used to return fish to the water and the efficacy of the device in improving the survival odds of returned fish. In general, other things equal, greater economic benefits would be expected to result from a greater usage of descending devices coupled with improved survival rates of returned fish. On balance, net economic effects that would result from **Preferred Sub-alternatives 2a-c** would be expected to be positive if the benefits derived from stock improvements due to greater survival of fish returned to water outweigh the costs of acquiring descending devices.

4.5.4 Effects on the Social Environment

Alternative 1 would not require that descending devices be available for use on fishing vessels pursuing reef fish species around the federal waters of Puerto Rico, St. Croix, or St. Thomas/St. John. Based on the best available scientific information, **Preferred Sub-alternatives 2a, 2b, and 2c** have the potential to generate positive effects on fish stocks across these island areas. While nominal cost and effort would be required for harvesters to fabricate or purchase such devices, this would be outweighed by the potential for such devices to improve the status of benthic and demersal stocks, an outcome that could enhance fishing opportunities and associated social benefits among commercial and recreational participants. While outreach and education have the potential to improve understanding of descending devices and their benefits, such knowledge may expand as a function of normal social interaction and communication.

4.5.5 Effects on the Administrative Environment

Administrative effects from **Preferred Sub-Alternatives 2a, 2b, and 2c** are expected to be larger than **Alternative 1** because of the preparation of regulations to effect the requirement and the additional efforts to administer and enforce these regulations for all reef fish fishermen (commercial and recreational), in federal waters of the three management areas, and to conduct outreach and education activities.

4.6 Cumulative Effects Analysis

While this environmental assessment (EA) is being prepared using the 2020 Council on Environmental Quality National Environmental Policy Act Regulations, the cumulative effects discussed in this section meet the two-part standard for “reasonable foreseeability” and “reasonably close causal connection” required by the new definition of effects or impacts. Below is the five-step cumulative effects analysis that identifies criteria that must be considered in an EA.

1. *The area in which the effects of the proposed action will occur* – The affected area of this proposed action encompasses the state and federal waters of the U.S. Caribbean and includes the communities of Puerto Rico, St. Croix, St. Thomas/St. John that fish for finfish. For more information about the area in which the effects of this proposed action will occur, please see Chapter 3, Affected Environment, which describes these resources as well as other relevant features of the human environment.

2. *The impacts that are expected in that area from the proposed action* – The proposed action would prohibit the use of trawl nets, purse seines, and trammel nets for all fishing in federal waters around Puerto Rico, St. Croix, and St. Thomas/St. John, prohibit the use of gillnets for all fishing except for the use of surface gillnets that meet specified requirements for the harvest of certain species of baitfish in federal waters around Puerto Rico, St. Croix, and St. Thomas/St. John, and require that descending devices are available and ready for use when fishing for reef fish in federal waters around the U.S. Caribbean. The environmental consequences of the proposed actions are analyzed in Sections 4.1 - 4.4.

Prohibiting the use of trawl gear in federal waters around Puerto Rico, St. Croix, and St. Thomas/St. John (Actions 1(a), 2(a), 3(a), respectively) is an administrative action and it is not expected to have any significant impacts to the physical, biological/ecological, social, economic, and administrative environments because trawl gear has not historically been used in the U.S. Caribbean EEZ and is not currently used by Puerto Rico, St. Croix, or St. Thomas/St. John fishermen. However, because the action would prevent trawl gear from being used in the future, it could be more beneficial to the physical and biological environments by preventing potential bycatch and/or habitat effects resulting from trawling activities in federal waters around Puerto Rico, St. Croix, and St. Thomas/St. John.

Prohibiting the use of gillnets in federal waters around Puerto Rico, St. Croix, and St. Thomas/St. John (Actions 1(b), 2(b), 3(b), respectively), with the exception of surface gillnets for certain baitfish species, would not be expected to have any significant impacts to the physical, biological/ecological, social, economic, and administrative environments. As discussed in Chapter 2, although the use of gillnets for the commercial harvest of federally managed and

non-federally managed pelagic species or other non-federally managed species in federal waters is considered to be minimal due to depth and distance from the coast, this action would reduce negative ecological and biological effects resulting from the use of gillnets (e.g., prevention of bycatch of undersized individuals, protected species, other target and non-target species, and habitat) by setting species limitations, a minimum mesh size, and tending requirements for the use of gillnets.

Prohibiting the use of trammel nets in federal waters around Puerto Rico, St. Croix, and St. Thomas/St. John (Actions 1(c), 2(c), 3(c)) and purse seines (Actions 1(d), 2(d), 3(d)) is not expected to have any effects to the physical, biological, ecological, and socio-economic environments because neither trammel nets nor purse seines are currently authorized gear types for use in U.S. Caribbean federal waters. However, these actions could be slightly more beneficial to the biological and ecological environments of the EEZ around Puerto Rico, St. Croix, and St. Thomas/St. John than the status quo because they further restrict future use of these gear types through a petition to the Council.

Lastly, requiring descending devices be rigged and ready when fishing for reef fish (Action 4) in federal waters around Puerto Rico, St. Croix, and St. Thomas/St. John would benefit the biological and ecological environments of reef fish by potentially decreasing fishing mortality of Council-managed reef fish from barotrauma in each of the island management areas. Although requiring a descending device be rigged and ready for use would add some minor economic impacts to recreational and commercial fishermen because they would need to incur in expenses to purchase or create the device, those expenses are expected to be minor because descending devices can be created with materials fishers may already have in their possession, and are low cost and easy to use.

3. *Other past, present and reasonably foreseeable future actions that have or are expected to have impacts in the area* – Listed are actions under development in the U.S. Caribbean that would be expected to have impacts associated with them.

Other fishery related actions – The Island-based FMPs, implemented in 2022, reorganized management measures from the U.S. Caribbean-wide level to each island management area. Specific to reef fish, each island-based FMP retained management measures such as size limits, seasonal closures, and recreational bag limits and revised the management reference points. Specific to pelagic fish, each island-based FMP listed species for management (no pelagic species were managed previously), and established management reference points and accountability measure for these pelagic species. The cumulative effects analysis (CEA) for the Island-based FMPs found that the overall impacts of the actions included in the Island-based FMPs would be minimal.

Amendment 1 to each of the Puerto Rico, St. Croix, and St. Thomas/St. John FMPs: Modification to the Buoy Gear Use and Definition (Amendment 1), was approved by the Council in 2022, and was implemented in August 2023. The amendment prohibited the use of buoy gear by the recreational sector in federal waters around Puerto Rico, St. Croix, and St. Thomas/St. John and increased the number of hooks that can be used with buoy gear to fish commercially in federal waters around the U.S. Caribbean. The CEA for Amendment 1 found that the impacts of the actions included in the amendment would be minimal.

The Council, in partnership with NMFS and other regional constituencies, is in the process of moving towards implementation of ecosystem-based fishery management (EBFM) in the U.S. Caribbean. EBFM enables a more holistic approach to decision-making by considering trade-offs among fisheries, aquaculture, protected species, biodiversity, habitats, and the human community, within the context of climate, habitat, ecological, and other environmental change.

Non-fishery related actions – Actions affecting the U.S. Caribbean fisheries, including effects of global climate change, were included in the CEAs for the Island-based FMPs and Amendment 1. Other issues affecting human communities (e.g., high fuel costs, increased seafood imports, restricted access to fishing grounds, regional economies) were considered in the Island-based FMPs and are incorporated herein by reference.

Emerging information sheds light on how global climate change would affect, and is already affecting, fishery resources and the habitats upon which they depend. Impacts commonly mentioned are sea level rise, increased frequency of severe weather events, and change in air and water temperatures. In the U.S. Caribbean region, major climate-induced concerns include: (1) threats to coral reef ecosystems - coral bleaching, disease, and ocean acidification; (2) threats to habitats from sea level rise – loss of essential fish habitat; (3) climate-induced changes to species phenology and distribution, (4) changes in resource composition in fishing areas, (5) rise in temperature including ocean temperatures and their relationship to more severe and frequent storms, (6) droughts, and (7) effects on environmental justice. Climate change may impact reef fish and pelagic stocks in the future, but the level of impacts cannot be quantified at this time, nor is the time frame known in which these impacts would occur. The proposed action is not expected to significantly contribute to climate change through the increase or decrease in the carbon footprint from fishing, as this action would not be expected to change how the fishery is prosecuted. Actions affecting the U.S. Caribbean fisheries, including effects of global climate change, were included in the CEAs for the Island-based FMPs and other amendments to the FMPs. Other issues affecting human communities (e.g., high fuel costs, increased seafood imports, restricted access to fishing grounds, regional economies, effects of 2017 hurricanes, and the COVID-19 public health crisis) were also considered.

4. *The impacts or expected impacts from these other actions* – The cumulative effects from managing fishery resources in the U.S. Caribbean, including reef fish and pelagic fish, have been analyzed in other actions as listed in part three of this section. They include detailed analysis of the Puerto Rico, St. Thomas and St. John, and St. Croix fisheries, effects on non-targeted and protected species, and habitats in the U.S. Caribbean. The effects of this action would be expected to be positive in the long term, as they ultimately act to maintain fish stocks at a level that would allow the maximum benefits in yield and increased fishing opportunities to be achieved.

5. *The overall impact that can be expected if the individual impacts are allowed to accumulate* Cumulative effects resulting from prohibitions to the use of trawls, gillnets, trammel nets, and purse seines, and the requirement for descending devices when fishing for reef fish in federal waters, in combination with other past, present, and reasonably foreseeable future actions, would be expected to be minimal in each island management areas.

No significant overall impacts to the biological/ecological environment, to protected species occurring within that environment, to the habitats constituting and supporting that environment, or to the dependent socio-economic environment would be expected from the cumulative past, present, or reasonably foreseeable future actions as it would not be expected to significantly affect current fishing practices. Similarly, no significant cumulative effects would be expected to result from reasonably foreseeable future actions that may be taken, by other federal or non-federal agencies in combination with this action.

6. *Summary* – The proposed action is not expected to have significant effects to the physical, biological/ecological, economic, social, or administrative environments. Any effects of the proposed action, when combined with other past actions, present actions, and reasonably foreseeable future actions are not expected to be significant. The effects of the proposed action are, and will continue to be, monitored through collection of data by NMFS, individual state programs, stock assessments and stock assessment updates, life history studies, economic and social analyses, and other scientific observations.

Chapter 5. Regulatory Impact Review

5.1. Introduction

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 proposed or final regulatory action; (2) it provides a review of the problems and policy objectives promoting the regulatory proposals and an evaluation of the major alternatives that 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 the regulations are a “significant regulatory action” under the criteria provided in Executive Order (E.O.) 12866. This RIR analyzes the impacts this action would be expected to have on the fisheries of the U.S. Caribbean.

5.2. Problems and Objectives

The problems and objectives addressed by this action are discussed in Section 1.2.

5.3. Description of the Fishery

A description of the U.S. Caribbean fisheries is provided in Sections 3.3-3.5.

5.4. Impacts of Management Measures

5.4.1 Action 1: Use of Trawl Gear, Gillnets, Trammel Nets, and Purse Seines in the U.S. Caribbean Exclusive Economic Zone (EEZ) around Puerto Rico

5.4.1.1. Action 1(a). *Modify the Use of Trawl Gear in Federal Waters around Puerto Rico*

A detailed analysis of the economic effects expected to result from this action is provided in Section 4.1.3.1. The following discussion summarizes the expected economic effects of the preferred alternative.

Preferred Alternative 3, which is a precautionary measure, would be expected to result in economic effects based on the additional revenues fishermen would have earned using the trawl gear and on the detrimental effects to habitat and stocks associated with the use of trawl gear.

Preferred Alternative 3 would be expected to result in positive net economic effects if economic benefits associated with the prevention of additional bycatch and damages to habitat

outweigh the adverse economic effects due forgoing revenues that would be earned with the use of trawl gear in federal waters around Puerto Rico.

5.4.1.2. Action 1(b). Modify the Use of Gillnets in Federal Waters around Puerto Rico

A detailed analysis of the economic effects expected to result from this action is provided in Section 4.1.3.2. The following discussion summarizes the expected economic effects of the preferred sub-alternative.

Preferred Sub-alternative 2b is expected to result in direct economic effects which would be determined by the additional protection to stocks that would result from the gillnet prohibition and by expected revenue losses to commercial fishermen who are currently using the gear in the Puerto Rico EEZ. The value associated with the additional protection to stocks **Preferred Sub-alternative 2b** would provide cannot be estimated. Revenue losses associated with a gillnet ban to all fishing in the Puerto Rico EEZ are estimated at \$13,000 (\$2021) per year. Therefore, **Preferred Sub-alternative 2b**, which would set a gillnet prohibition with a narrower scope, is expected to result in potential revenue losses smaller than \$13,000 (\$2021). Net economic effects expected to result from **Preferred Sub-alternative 2b** would be positive if the economic value of the expected added protection to stocks is greater than the estimated revenue losses.

5.4.1.3. Action 1(c). Modify the Use of Trammel Nets in Federal Waters around Puerto Rico

A detailed analysis of the economic effects expected to result from this action is provided in Section 4.1.3.3. The following discussion summarizes the expected economic effects of the preferred alternative.

Direct economic effects that would result from **Preferred Alternative 2** would be determined by the extra protection to stocks that would result from the trammel net prohibition and by expected revenue losses to commercial fishermen who currently use the gear. The value associated with the additional protection to stocks **Preferred Alternative 2** would provide cannot be estimated. Relative to **Alternative 1** (No action), **Preferred Alternative 2** would be expected to result in economic losses estimated at \$5,330 (\$2021) per year. Because it is expected that fishermen would adjust their fishing practices by using other gears to mitigate revenue losses, this estimate is an upper bound. **Preferred Alternative 2** would be expected to result in positive net economic effects if economic benefits associated with the prevention of additional bycatch outweigh the adverse economic effects due to forgone revenues that would be associated with the use of trammel nets in federal waters around Puerto Rico.

5.4.1.4. Action 1(d). Modify the Use of Purse Seines in Federal Waters around Puerto Rico

A detailed analysis of the economic effects expected to result from this action is provided in Section 4.1.3.4. The following discussion summarizes the expected economic effects of the preferred alternative.

Preferred Alternative 2, which constitutes a precautionary administrative measure, would preventively prohibit the future use of purse seine and would be expected to result in economic effects based on the additional revenues fishermen would have earned using the gear and on the harmful effects to stocks due to increased bycatch associated with the use of purse seines.

Preferred Alternative 2 would be expected to result in positive net economic effects if economic benefits associated with the prevention of additional bycatch outweigh the adverse economic effects due to forgone revenues that would be associated with the use of purse seines in federal waters around Puerto Rico.

5.4.2 Action 2: Use of Trawl Gear, Gillnets, Trammel Nets, and Purse Seines in the U.S. Caribbean EEZ around St. Croix, USVI

5.4.2.1. Action 2(a). *Modify the Use of Trawl Gear in Federal Waters around St. Croix*

A detailed analysis of the economic effects expected to result from this action is provided in Section 4.2.3.1. The following discussion summarizes the expected economic effects of the preferred alternative.

Preferred Alternative 3, which is a precautionary measure, would be expected to result in economic effects based on the additional revenues fishermen would have earned using the trawl gear and on the detrimental effects to habitat and stocks associated with the use of trawl gear. Relative to **Alternative 1**, **Preferred Alternative 3** would be expected to result in positive net economic effects if economic benefits associated with the prevention of additional bycatch and damages to habitat outweigh the adverse economic effects due forgoing revenues that would be earned with the use of trawl gear in federal waters around St. Croix.

5.4.2.2. Action 2(b). *Modify the Use of Gillnets in Federal Waters around St. Croix*

A detailed analysis of the economic effects expected to result from this action is provided in Section 4.2.3.2. The following discussion summarizes the expected economic effects of the preferred sub-alternative.

As a precautionary administrative management measure, **Preferred Sub-alternative 2b** would be expected to result in indirect economic effects by preventing the use of gillnets in future. **Preferred Sub-alternative 2b** would result in net economic benefits if the additional protection it would provide stocks outweigh extra revenues that would have been earned using gillnets in federal waters around St. Croix.

5.4.2.3. Action 2(c). *Modify the Use of Trammel Nets in Federal Waters around St. Croix*

A detailed analysis of the economic effects expected to result from this action is provided in Section 4.2.3.3. The following discussion summarizes the expected economic effects of the preferred alternative.

Under **Preferred Alternative 2**, the preemptive prohibition of future trammel net usage would be expected to result in indirect economic effects based on the additional revenues fishermen would have earned using the gear and on the detrimental effects to stocks due to increased bycatch associated with the use of trammel nets. **Preferred Alternative 2** would be expected to result in positive net economic effects if economic benefits associated with the prevention of additional bycatch are greater than the adverse economic effects due to forgone revenues that would be associated with the use of trammel nets in federal waters around St. Croix.

5.4.2.4. Action 2(d). Modify the Use of Purse Seines in Federal Waters around St. Croix

A detailed analysis of the economic effects expected to result from this action is provided in Section 4.2.3.4. The following discussion summarizes the expected economic effects of the preferred alternative.

Preferred Alternative 2, which constitutes a precautionary administrative measure, would preventively prohibit the future use of purse seine and would be expected to result in economic effects based on the additional revenues fishermen would have earned using the gear and on the harmful effects to stocks due to increased bycatch associated with the use of purse seines.

Preferred Alternative 2 would be expected to result in positive net economic effects if economic benefits associated with the prevention of additional bycatch outweigh the adverse economic effects due to forgone revenues that would be associated with the use of purse seines in federal waters around St. Croix.

5.4.3 Action 3: Use of Trawl Gear, Gillnets, Trammel Nets, and Purse Seines in the U.S. Caribbean EEZ around St. Thomas and St. John, USVI

5.4.3.1. Action 3(a). Modify the Use of Trawl Gear in Federal Waters around St. Thomas and St. John

A detailed analysis of the economic effects expected to result from this action is provided in Section 4.3.3.1. The following discussion summarizes the expected economic effects of the preferred alternative.

Preferred Alternative 3, which is a precautionary measure, would be expected to result in economic effects based on the additional revenues fishermen would have earned using the trawl gear and on the detrimental effects to habitat and stocks associated with the use of trawl gear. Relative to **Alternative 1**, **Preferred Alternative 3** would be expected to result in positive net economic effects if economic benefits associated with the prevention of additional bycatch and damages to habitat outweigh the adverse economic effects due forgoing revenues that would be earned with the use of trawl gear in federal waters around St. Thomas/St. John.

5.4.3.2. Action 3(b). Modify the Use of Gillnets in Federal Waters around St. Thomas and St. John

A detailed analysis of the economic effects expected to result from this action is provided in Section 4.3.3.2. The following discussion summarizes the expected economic effects of the preferred sub-alternative.

As a precautionary administrative management measure, **Preferred Sub-alternative 2b** would be expected to result in indirect economic effects by preventing the use of gillnets in future. **Preferred Sub-alternative 2b** would result in net economic benefits if the additional protection it would provide stocks outweigh extra revenues that would have been earned using gillnets in federal waters around St. Thomas/St. John.

5.4.3.3. Action 3(c). Modify the Use of Trammel Nets in Federal Waters around St. Thomas and St. John

A detailed analysis of the economic effects expected to result from this action is provided in Section 4.3.3.3. The following discussion summarizes the expected economic effects of the preferred alternative.

Under **Preferred Alternative 2**, the preemptive prohibition of future trammel net usage would be expected to result in indirect economic effects based on the additional revenues fishermen would have earned using the gear and on the detrimental effects to stocks due to increased bycatch associated with the use of trammel nets. **Preferred Alternative 2** would be expected to result in positive net economic effects if economic benefits associated with the prevention of additional bycatch are greater than the adverse economic effects due to forgone revenues that would be associated with the use of trammel nets in federal waters around St. Thomas/St. John.

5.4.3.4. Action 3(d). Modify the Use of Purse Seines in Federal Waters around St. Thomas and St. John

A detailed analysis of the economic effects expected to result from this action is provided in Section 4.3.3.4. The following discussion summarizes the expected economic effects of the preferred alternative.

Preferred Alternative 2, which is a precautionary administrative measure, would preventively prohibit the future use of purse seine and would be expected to result in economic effects based on the additional revenues fishermen would have earned using the gear and on the harmful effects to stocks due to increased bycatch associated with the use of purse seines. **Preferred Alternative 2** would be expected to result in positive net economic effects if economic benefits associated with the prevention of additional bycatch outweigh the adverse economic effects due

to forgone revenues that would be associated with the use of purse seines in federal waters around St. Thomas/St. John.

5.4.4. Action 4: Requirements for the Use of Descending Devices in the Reef Fish Component of the Puerto Rico, St. Croix, and St. Thomas and St. John FMPs

A detailed analysis of the economic effects expected to result from this action is provided in Section 4.4.3. The following discussion summarizes the expected economic effects of the preferred alternative and sub-alternatives.

Under **Preferred Sub-alternatives 2a, 2b, and 2c**, the onboard availability of descending devices and their proper use would be expected to result in economic effects determined by the costs of acquiring the devices and the benefits expected to result from the anticipated increases in the survival of discarded Council-managed reef fish in the EEZ around Puerto Rico, St. Croix, and St. Thomas/St. John. Under **Preferred Sub-alternative 2a**, costs to fishermen in Puerto Rico are estimated to range between \$4,840 and \$6,714 (\$2022). Under **Preferred Sub-alternative 2b**, costs to fishermen in St. Croix are estimated at \$807 (\$2022). Under **Preferred Sub-alternative 2c**, costs to fishermen in St. Thomas/St. John are estimated at \$1,046 (\$2022). Economic effects that would result from **Preferred Sub-alternatives 2a-c** would be expected to be positive if the benefits to be derived from stock improvements due to greater survival of fish returned to water outweigh the costs of acquiring descending devices.

5.5 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. Estimated costs associated with this action include:

Council costs of document preparation, meetings, public hearings, and information dissemination \$ TBD

NMFS administrative costs of document preparation, meetings, and review TOTAL \$ TBD

The estimate provided here does not include any law enforcement costs.

5.6 Determination of Significant Regulatory Action

Pursuant to E.O. 12866, a regulation is considered a “significant regulatory action” if it is likely to result in: (1) an annual effect of \$200 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 legal or policy issues for which centralized review would meaningfully further the President's priorities or the principles set forth in this Executive order, as specifically authorized in a timely manner by the Administrator of OIRA in each case. Based on the information provided above, this action has been determined to not be economically significant for the purposes of E.O. 12866.

DRAFT

Chapter 6. Regulatory Flexibility Act Analysis

6.1 Introduction

The purpose of the Regulatory Flexibility Act (RFA) is to establish a principle of regulatory issuance that agencies shall endeavor, consistent with the objectives of the rule and of applicable statutes, to fit regulatory and informational requirements to the scale of businesses, organizations, and governmental jurisdictions subject to regulation. To achieve this principle, agencies are required to solicit and consider flexible regulatory proposals and to explain the rationale for their actions to assure such proposals are given serious consideration. The RFA does not contain any decision criteria; instead the purpose of the RFA is to inform the agency, as well as the public, of the expected economic effects of various alternatives contained in the regulatory action and to ensure the agency considers alternatives that minimize the expected economic effects on small entities while meeting the goals and objectives of the applicable statutes (e.g., the Magnuson Stevens Fishery Conservation and Management Act [Magnuson-Stevens Act]).

The RFA requires agencies to conduct at the least a threshold analysis to determine if there would be a significant economic impact on a substantial number of small entities. If the threshold analysis concludes there would not be a significant impact on a substantial number of small entities, the threshold analysis is sufficient. However, if the threshold analysis comes to a different conclusion, then an initial regulatory flexibility analysis (IRFA) is required. The following threshold analysis concludes there would not be a significant economic impact on a substantial number of small entities.

6.2 Statement of the need for, objectives of, and legal basis for the rule

A discussion of the reasons why action is being considered is provided in Section 1.2. The purpose of this proposed rule is to protect deep-water habitats and protected resources from potential gear impacts. More information about the need for and objectives of these actions can be found in Chapter 1 of this document. The Magnuson-Stevens Act provides the legal basis for this proposed rule.

6.3 Description and estimate of the number of small entities to which the proposed action would apply

This proposed rule directly impacts three sectors: recreational fishers (anglers), commercial fishing businesses, and for-hire fishing businesses.

Recreational Fishers (Anglers)

The proposed rule (Actions 1 through 4) would directly apply to recreational fishers (anglers) that fish in federal waters of the U.S. Caribbean.³¹ Recreational fishers (anglers) are not considered small entities as that term is defined in 5 U.S.C. 601(6), whether fishing from charter (for-hire) fishing, private or leased vessels. Therefore, estimates of the number of anglers directly affected by the proposed rule and any impacts on them are not assessed here.

Commercial Fishing Businesses

The proposed rule (Actions 1 through 4) would directly apply to commercial fishing businesses that operate in federal waters of the U.S. Caribbean. For RFA purposes, NMFS has established a small business size standard for businesses, including their affiliates, whose primary industry is commercial fishing ([50 CFR 200.2](#)). A business primarily involved in the commercial fishing industry (North American Industrial Classification Code [NAICS] code 11411) is classified as a small business if it is independently owned and operated, is not dominant in its field of operation (including its affiliates) and its combined annual receipts are no more than \$11 million for all of its affiliated operations worldwide. All of the following figures are expressed in 2021 dollars.

Puerto Rico

From 2014 through 2019, the Puerto Rico fishery as a whole generated average annual direct revenues of about \$11.05 million, while from 2014 through 2021, it generated average annual direct revenues of about \$10.05 million. During the six years from 2014 through 2019, there were an average of 797 commercial fishermen who reported landings, while from 2014 through 2021 that annual average fell to 756. Despite the decline in the number of active commercial fishermen in both 2020 and 2021, the remainder of this analysis uses the 2014 through 2019 figures to estimate the impacts of the proposed rule on Puerto Rico's commercial fishermen. As such, the estimates of both the number of Puerto Rico's commercial fishermen directly affected and any impacts on them would be greater using those six years.³²

It is estimated that from 2014 through 2019, the average commercial fisherman in Puerto Rico had annual revenue of \$13,862.³³ Maximum annual revenue from reported landings for any of them was less than \$60,000 and minimum annual revenue was about \$200. That range in individual annual revenues illustrates the difference between part-time fishermen and those full time. Nonetheless, whether full or part time, each active licensed commercial fisherman is expected to represent a unique commercial fishing business, and all active commercial fishing businesses in Puerto Rico are small.

³¹ Federal waters are from 9 – 200 nautical miles (nm) off the coast of Commonwealth of Puerto Rico, 3 – 200 nm off the coast of St. Croix and 3 – 200 nm off the coast of St. Thomas-St. John.

³² This is a more conservative approach.

³³ Average annual revenue was lower from 2014 through 2021.

Not all of Puerto Rico's active commercial fishing businesses operate in the exclusive economic zone (EEZ). From 2014 through 2019, an average 309 (38.8%) of the 797 annually active commercial fishermen reported that they operated in the EEZ (SEFSC Southeast Fisheries Reporting System, Caribbean Commercial Landings [CCL] Reports for Puerto Rico). The numbers of active commercial fishermen in 2020 and 2021 are lower than they were from 2014 through 2019. Possible explanations for the drops include the COVID pandemic, Hurricane Fiona, and aging of commercial fishermen.³⁴ Consequently, the proposed rule would apply to 309 small commercial fishing businesses in Puerto Rico.³⁵

St. Croix and St. Thomas/St. John, U.S. Virgin Islands (USVI)

From 2014 through 2019, the USVI fishery as a whole generated average annual direct revenues of \$4.63 million. Therefore, all commercial fishing businesses in the USVI (St. Croix and St. Thomas-St. John) are small.

From 2014 through 2019, there were 59 active commercial fishermen in St. Croix and 72 in St. Thomas/St. John, for a total of 131 active commercial fishermen in the USVI (SEFSC Southeast Fisheries Reporting System, CCL Reports for USVI).³⁶ Each of the 131 active commercial fishermen represents a unique small commercial fishing business. The average active small St. Croix commercial fisherman had annual revenue from all landings of about \$33,000, while the average active small St. Thomas/St. John commercial fisherman had annual revenue from all landings of about \$36,000. Annual revenue, however, varies considerably by active fisherman. The maximum average annual revenue among the active St. Croix commercial fishermen was about \$376,000, while the minimum average annual revenue was \$315,000. The maximum average annual revenue for any of the St. Thomas/St. John commercial fishermen was about \$239,000, while the minimum average annual revenue was \$22,000.

Thirty-seven (62.3%) of St. Croix's average annual 59 active commercial fishermen and 48 (67.0%) of St. Thomas/St. John's average annual 72 active commercial fishermen operated in federal waters from 2014 through 2019.³⁷ Because the proposed action directly affects

³⁴ The average age of Puerto Rico's commercial fishermen has increased as younger adults have chosen other occupations.

³⁵ Puerto Rico DNER estimates that in 2022 there were about 1,200 active commercial fishermen (R. Lopez, Director DNER Fisheries Laboratory, pers. comm. May 17, 2023), which, if that is a more accurate figure, would be a substantial increase in the number of active fishermen from previous years. Moreover, if that figure better represents the number of active commercial fishing businesses in the future and 38.8% of them operate in the EEZ, then about 466 commercial fishing businesses would be directly affected by the proposed rule, and all would be expected to be small. However, DNER's estimate likely includes subsistence fishermen who acquire a commercial license in order to use gears that are not approved for recreational fishing in order to increase their landings and contributions to the gift economy.

³⁶ If the averages from 2014 through 2021 are used, there is one less active commercial fishermen in St. Croix (57 as opposed to 58)) and the same number of active commercial fishermen in St. Thomas-St. John (67).

³⁷ If 2014 through 2021 are used, there is no change in the number of active St. Croix fishermen who operate in the EEZ, but the number of active St. Thomas-St. John fishermen who operate in the EEZ drops from 48 to 46.

commercial fishermen who operate in the U.S. Caribbean EEZ, the proposed rule would apply to 85 USVI commercial fishing businesses: 37 active small commercial fishing businesses in St. Croix and 48 active small commercial fishing businesses in St. Thomas/St. John. However, from 2001 to September 2021, there was a moratorium on new commercial fishing licenses. In September 2021, the USVI Department of Planning and Natural Resources (DPNR) Commissioner Jean-Pierre Oriol ended the USVI's 20-year old moratorium. The decision to lift the moratorium was, in part, made after looking at the 40% decrease in commercial participation in the fishery since 2001. The lifting of the moratorium does not mean there is no limit on the number of new licenses; the cap is 200 for St. Croix and 200 for St. Thomas/St. John. In October 2021, a limited entry license program for hook-and-line fishing was created to allow entry for fishers who were not able to commercially fish during the 20-year moratorium. Sixty-six (66) new commercial fishing licenses were granted for the 2022-2023 fishing year. According to a DPNR website dated in 2022 (<https://dpr.vi.gov/fish-and-wildlife/fisher-resources/commercial-fishing/>), there were approximately 300 licensed commercial fishermen, but it is unknown how many of those fishermen were or are actively fishing, and among them, how many operate in federal waters. Every newly licensed fisherman is expected to represent a small business. If all of the 66 newly licensed commercial fishermen are active, all operate in the EEZ, and all are small businesses, a total of 151 small commercial fishing businesses in the USVI would be directly affected by the proposed rule.

In summary, estimated averages of 309 small commercial fishing businesses in Puerto Rico and from 85 to 151 small commercial fishing businesses in the USVI would be directly affected by the proposed rule annually.

Charter (For-Hire) Fishing Businesses

Charter (for-hire) fishing vessels that take anglers into federal waters of the U.S. Caribbean would be directly affected by Actions 1 – 3; however, charter fishing businesses do not provide any of the gears whose use would be affected by those three proposed actions. Most to all charter fishing businesses that operate in the U.S. Caribbean EEZ sell billfish or deep-water pelagic species angler trips, and all anglers are provided rod-and-reel. Therefore, no charter (for-hire) fishing businesses would be affected by Actions 1 – 3. Action 4 would directly apply to for-hire fishing businesses that take anglers into federal waters of the U.S. Caribbean where they may catch reef fish.

A business involved in the operation of a charter fishing boat is included within the broader scenic and sightseeing transportation, water industry (NAICS code 487210).³⁸ Charter fishing operations (NAICS 4872012) make up just part of the broader industry.³⁹ A business primarily

³⁸ NAICS code 487201 applies to all businesses involved in the scenic and sightseeing water transportation industry.

³⁹ Dinner cruises, whale watching excursions, and harbor and other sightseeing boat tours are just some of the other businesses that make up the broader industry.

involved in scenic and sightseeing transportation, water industry is classified as a small business if it is independently owned and operated, is not dominant in its field of operation (including its affiliates) and its combined annual receipts are no more than \$14 million for all of its affiliated operations worldwide.⁴⁰ In 2021, there were 16 establishments in Puerto Rico in NAICS 487201, and 18 establishments in NAICS 487201 in the USVI (U.S. Census Bureau, County Business Patterns 2021). All but one in the USVI was located in St. Thomas/St. John. This analysis assumes all 16 establishments in Puerto Rico and all 18 in the USVI are unique charter fishing business and all are small.⁴¹ Therefore, 16 small charter fishing businesses in Puerto Rico, one small charter fishing business in St. Croix and 17 small charter fishing businesses in St. Thomas/St. John would be directly affected by Action 4.

6.4 Description of the projected reporting, record-keeping and other compliance requirements of the proposed rule and their impacts on small businesses

This proposed regulatory action would not impose any new reporting or record-keeping requirements on any of the small businesses that operate in the USVI or Puerto Rico. This proposed rule concerns the use of net gear and descending devices in the U.S. Caribbean EEZ.

The first three proposed actions concern net gear compliance requirements for each island area. Action 1 (Sub-actions 1(a) – 1(d)) would change the legally allowed use of trawl gear, gillnets, trammel nets, and purse seines in the EEZ off Puerto Rico. Action 2 (Sub-actions 2(a) – 2(d)) would change the legally allowed use of trawl gear, gillnets, trammel nets, and purse seines in the EEZ off St. Croix. Action 3 (Sub-actions 3(a) – 3(d)) would change the legally allowed use of trawl gear, gillnets, trammel nets, and purse seines in the EEZ off St. Thomas/St. John. Action 4 would require a descending device be on board and ready for use when commercially or recreationally fishing for deep-water reef fish in all federal waters of the U.S. Caribbean.

Action 1 (Puerto Rico)

Action 1 is comprised of four sub-actions concerning fishing gears that would affect commercial fishing in the EEZ off Puerto Rico: 1(a), 1(b), 1(c) and 1(d). **Preferred Alternative 3** of Sub-action 1(a) would prohibit the use of trawl gear⁴² for all fishing in federal waters around Puerto

⁴⁰ See U.S. Small Business Administration Table of Small Business Size Standards at https://www.sba.gov/sites/sbagov/files/2023-03/Table%20of%20Size%20Standards_Effective%20March%2017%2C%202023%20%281%29%20%281%29_0.pdf.

⁴¹ In 2017, all of the establishments (NAICS 48721) in Puerto Rico had combined total sales less than \$14 million as did all of the establishments (NAICS 48721) in the USVI.

⁴² A trawl means a cone or funnel-shaped net that is towed through the water, and can include a pair trawl that is towed simultaneously by two boats (50 CFR §600.10).

Rico. Under current regulation, trawls are not one of the authorized gears for fishing for Council-managed reef fish, pelagic species, or spiny lobster (50 CFR §600.725 (v)). Trawl gear is also not authorized for fishing for pelagic species not managed by the Council; however, it is an authorized gear for fishing for other species not managed by the Council.

An unauthorized gear is not a prohibited gear. Although trawl gear is not authorized for Council-managed species, a commercial fisherman could petition the Council to use it when harvesting Council-managed species in the future (as discussed in Section 1.1). **Preferred Alternative 3** of Sub-action 1(a) would eliminate any future petitions, if any, to use trawl gear in the EEZ off Puerto Rico to harvest Council-managed species (reef fish, pelagic species, spiny lobster) or pelagic species not managed by the Council. It would also eliminate trawl gear as an authorized gear to harvest non-pelagic species that are not managed by the Council.

Puerto Rico state fishing regulations (Article 13, part v) prohibit the use of trawl nets (“*redes de arrastre*”).⁴³ There is no evidence that the commercial sector uses (or has used) trawl gear (with exceptions noted in Section 1.1, such as for exploratory research).⁴⁴ For that reason, there is expected to be no economic impact on any small business in Puerto Rico from Sub-action 1(a).

Preferred Alternative 2 of Sub-action 1(b) would prohibit the use of gillnets⁴⁵ in federal waters around Puerto Rico, except for surface gillnets when fishing for certain families of baitfish, specifically halfbeaks (Family *Hemiramphidae*), needlefishes (Family *Belonidae*), goggle eye (bigeye scad; Family *Carangidae*, Genus *Selar*) and flyingfish (Family *Exocoetidae*).⁴⁶ When used for catching baitfish in the EEZ, surface gillnets would have to have a mesh size that is at least 0.75 square inches or 1.5 inch stretch and must be used 20 feet or more above the bottom.

Under current federal regulation, gillnets are prohibited when fishing for Council-managed spiny lobster ((50 CFR §622.437(c)(2)) or reef fish (50 CFR §622.437(a)(3)) in the EEZ off Puerto Rico, but gillnets are an authorized gear when fishing for Council-managed pelagics and species not managed by the Council, such as baitfish. Puerto Rico fishing regulations (Article 13, part v) prohibit the use of gillnets with less than 2 inches from knot to knot or with a mesh size greater than 6 inches and they must be tended at all times. An annual average of 108 of Puerto Rico’s

⁴³ PR DNER Reg. 7949, Article 13(f).

⁴⁴ Bottom trawls have been used in the past for exploratory research in federal waters of the U.S. Caribbean; however, both bottom trawlers and midwater trawlers are cost prohibitive for the U.S. Caribbean’s small-scale (artisanal) commercial fishing businesses.

⁴⁵ A gillnet means a panel of netting, suspended vertically in the water by floats along the top and weights along the bottom, to entangle fish that attempt to pass through it.

⁴⁶ It nor the similar prohibitions on gillnet use in the EEZ off St. Croix and St. Thomas/St. John can prohibit the use of shark gillnet by individuals with a valid shark gillnet permit. However, gillnet can only be used by persons who have a directed shark permit, an incidental shark permit (both of these are limited access permits) or a smoothhound permit (this is an open access permit). None of the permit holders of these three permits are located in the Caribbean. Those with an HMS Commercial Caribbean Small Boat permit are allowed to keep in commercial quantities BAYS tunas, swordfish, and sharks; however, the allowed gears are handline, spear and rod and reel.

commercial fishermen reported using gillnets in all waters from 2014 through 2019, and 13 (12.0%) of them used gillnets in federal waters. Total annual landings from the use of gillnets in all waters averaged 122,140 lbs (2014-2019), while an annual average of 10 gillnet fisherman landed 1,425 lbs of stocks or stock complexes from the EEZ that were not reef fish, spiny lobster or ballyhoo.⁴⁷ The 1,425 lbs landed represent about 0.06% of all reported marine resources landed by weight and by value, and the 10 fishermen represents 0.13% of the average 797 commercial fishermen with annual landings from all waters. The average fisherman who uses gillnet has annual revenue of about \$41,000, which is significantly higher than the average revenue for fishermen that use any gear. An average annual loss of about 143 lbs per fisherman for 10 gillnet fishermen has an average annual value of almost \$700 per fisherman, which represents 1.7% of the average gillnet fisherman's annual revenue. This individual annual loss would occur over three to four trips, with a reduction of landings of 36 to 48 lbs (\$177 to \$233) per trip.⁴⁸

Preferred Alternative 2 of Sub-action 1(c) would prohibit the use of trammel nets in the EEZ off Puerto Rico for all fishing. Trammel nets are neither identified as an authorized gear type in the U.S. EEZ around Puerto Rico, nor specifically prohibited from use in a fishery (except that the use of trammel nets is prohibited in the federally managed reef fish and spiny lobster fisheries). However, a commercial fisherman can petition the Council to use trammel nets in the EEZ off Puerto Rico when fishing for species other than reef fish or spiny lobster. However, to date, there have been no petitions to use trammel nets in federal waters off Puerto Rico. Consequently, **Preferred Alternative 2** of Sub-action 1(c) is expected to have no economic impact on small businesses in Puerto Rico.

Preferred Alternative 2 of Sub-action 1(d) would prohibit the use of purse seines in the EEZ off Puerto Rico for all fishing. Purse seines are neither identified as an authorized gear type in the U.S. EEZ around Puerto Rico, nor specifically prohibited from use in a fishery, but a commercial fisherman can petition the Council to use a purse seine in the EEZ off Puerto Rico. No petition has been made and there is no evidence to date that purse seines are or have been used in the EEZ off Puerto Rico. Therefore, **Preferred Alternative 2** of Sub-action 1(d) is expected to have no economic impact on small businesses in Puerto Rico.

Action 2 (St. Croix)

Action 2 is comprised of four sub-actions concerning fishing gears that would affect commercial fishing in the EEZ off St. Croix: 2(a), 2(b), 2(c) and 2(d). **Preferred Alternative 3** of Sub-action 2(a) would prohibit the use of trawl gear for all fishing in federal waters off St. Croix. Under current federal regulations, trawl gear is not authorized when fishing for any Council-managed species in the EEZ off St. Croix, but it is allowed when fishing for non-federally

⁴⁷ Gillnet is prohibited when fishing for reef fish or spiny lobster.

⁴⁸ Tonioli et al. (2012) estimate average profit per gillnet trip of \$99.75 (updated to 2021 dollars).

managed species. Although it is not authorized for the commercial harvest of federally managed species, a commercial fisherman could petition the Council to use trawl gear to catch those species in the EEZ off St. Croix. USVI regulations allow trawling gear in state waters off St. Croix. However, trawling gear is cost-prohibitive for St. Croix's small-scale (artisanal) fishery. Moreover, there is no evidence that trawling gear is or has been used by commercial fishermen in the EEZ off St. Croix. Consequently, Action 2(a) is expected to have no economic impact on any small business in St. Croix.

Preferred Alternative 2(b) of Action 2(b) would prohibit the use of gillnets for all fishing in the EEZ off St. Croix except when fishing for certain families of baitfish, specifically, halfbeaks (Family *Hemiramphidae*), gar (Family *Belonidae*), and flyingfish (Family *Exocoetidae*). When fishing for baitfish in the EEZ, gillnets would have to have a mesh size that is at least 0.75 square inches or 1.5 inch stretch and must maintain contact with the surface at all times or must be used 20 feet or more above the bottom. Under current federal regulations, the use of gillnets in the EEZ off St. Croix is prohibited when fishing for spiny lobster and Council-managed reef fish; however, gillnets can be used in federal waters for catching pelagics managed by the Council or species that are not managed by the Council (e.g., other pelagics and baitfish, such as ballyhoo or flying fish). USVI regulations (12 V.I.R. & Regs. §321-1) prohibit the use of all gillnets in state waters, with the exception of single-wall surface gillnets for the baitfish ballyhoo (Family *Hemiramphidae*), gar (Family *Belonidae*), and flying fish (Family *Exocoetidae*), and possession of an illegal gillnet on board a vessel is prohibited in USVI waters.^{49,50} These USVI-allowed surface gillnets must be tended at all times and possession of an illegal gillnet on board a vessel is prohibited in USVI waters. Any commercial fishing vessel that operates in federal waters must pass through state waters to make its landings in St. Croix. From that it follows that gillnets that may be currently used in federal waters off St. Croix must comply with USVI regulations and be limited to catching baitfish. For that reason, **Preferred Alternative 2** of Sub-action 2(b) is expected to have no economic impact on small businesses in St. Croix.

Preferred Alternative 2 of Action 2(c) would prohibit the use of trammel nets⁵¹ for all fishing in the EEZ off St. Croix. Under current regulation, trammel nets are neither identified as an authorized gear type in the U.S. EEZ around St. Croix nor specifically prohibited from use in a fishery (except that the use of trammel nets is prohibited in the federally managed reef fish and spiny lobster fisheries). USVI regulations prohibit the use of trammel net in state waters, and

⁴⁹ The state-allowed surface gillnets must be tended at all times when in use.

⁵⁰ See 12 V.I.C. Chapter 9A, §321(f): Any boat or vessel equipped with, or any person having in his possession, any gear, apparatus or other device or equipment contrary to the provisions of this chapter shall be considered to be in violation of those provisions.

⁵¹ A trammel net means a net consisting of two or more panels of netting, suspended vertically in the water column by a common float line and a common weight line. One panel of netting has a larger mesh size than the other(s) in order to entrap fish in a pocket.

possession of trammel nets onboard in state waters is prohibited.⁵² Any small business in St. Croix that operates a commercial fishing vessel in federal waters must pass through state waters to make its landings in St. Croix. From that, it follows that any trammel nets currently used in federal waters off St. Croix must comply with USVI regulations. Therefore, this action is expected to have no impact on any small business in St. Croix.

Preferred Alternative 2 of Action 2(d) would prohibit the use of purse seines⁵³ for all fishing in federal waters around St. Croix. Purse seines are neither identified as an authorized gear type in the U.S. EEZ around St. Croix, nor specifically prohibited from use in a fishery, but a commercial fisherman can petition the Council to use a purse seine in the EEZ off St. Croix. To date, there have been no petitions to use purse seines in the EEZ off St. Croix. Therefore, Action 2(d) is expected to have no impact on any small business in St. Croix.

Action 3 (St. Thomas/St. John)

Action 3 is comprised of four sub-actions concerning fishing gears that would affect commercial fishing in the EEZ off St. Thomas/St. John: 3(a), 3(b), 3(c) and 3(d). **Preferred Alternative 3** of Action 3(a) would prohibit the use of trawling gear for all fishing in federal waters around St. Thomas/St. John. Under current federal regulations, trawl gear is not authorized when fishing for any Council-managed species in the EEZ off St. Thomas/St. John, but it is allowed when fishing for non-federally managed species. Moreover, although it is not authorized for the commercial harvest of federally managed species, a commercial fisherman could petition the Council to use trawl gear in the EEZ off St. Thomas/St. John. USVI regulations allow trawling gear to be used in its state waters. However, there is no evidence that trawling gear is or has been used by commercial fishermen in the EEZ off St. Thomas/St. John. Hence, **Preferred Alternative 3** of Action 3(a) is expected to be no economic impact on any small business in St. Thomas/St. John.

Preferred Alternative 2(b) of Action 3(b) would prohibit the use of gillnets for all fishing in the EEZ off St. Thomas/St. John except when fishing for certain families of baitfish, specifically, halfbeaks (Family *Hemiramphidae*), gar (Family *Belonidae*), and flyingfish (Family *Exocoetidae*). Under current federal regulations, the use of gillnets in the EEZ off St. Thomas/St. John is prohibited when fishing for spiny lobster and Council-managed reef fish; however, gillnets can be used in federal waters for catching pelagics managed by the Council or species that are not managed by the Council (e.g., other pelagics and baitfish, such as ballyhoo or flying fish).

⁵² See US Virgin Islands Code Annotated, Title 12, Chapter 9A, §321 or <https://www.vinow.com/inc/vi-fishers-booklet.pdf>.

⁵³ A purse seine means a floated and weighted encircling net that is closed by means of a drawstring threaded through rings attached to the bottom of the net.

USVI regulations prohibit the use of all gillnets in state waters, with the exception of single-wall surface gillnets for the baitfish ballyhoo (Family *Hemiramphidae*), gar (Family *Belonidae*), and flying fish (Family *Exocoetidae*). These USVI-allowed surface gillnets must be tended at all times and possession of an illegal gillnet on board a vessel is prohibited in USVI waters. Any commercial fishing vessel that operates in federal waters must pass through state waters to make its landings in St. Thomas/St. John. From that it follows that gillnets that may be currently used in federal waters off St. Thomas/St. John must comply with USVI regulations and be limited to catching baitfish. For that reason, this action is expected to have no economic impact on any small business in St. Thomas/St. John.

Preferred Alternative 2 of Action 3(c) would prohibit the use of trammel nets for all fishing in the EEZ off St. Thomas/St. John. Under current regulation, trammel nets are neither identified as an authorized gear type in the U.S. EEZ around St. Thomas/St. John, nor specifically prohibited from use in a fishery (except that the use of trammel nets is prohibited in the federally managed reef fish and spiny lobster fisheries).. USVI regulations prohibit the use of trammel net in state waters, and possession of trammel nets onboard in state waters is prohibited. Any small business in St. Thomas/St. John that operates a commercial fishing vessel in federal waters must pass through state waters to make its landings in St. Thomas/St. John. From that, it follows that any trammel nets currently used in federal waters off St. Thomas/St. John must comply with USVI regulations. For that reason, this action is expected to have no impact on any small business in St. Thomas/St. John.

Preferred Alternative 2 of Action 3(d) would prohibit the use of purse seines for all fishing in the EEZ off St. Thomas/St. John. Purse seines are neither identified as an authorized gear type in the U.S. EEZ around St. Thomas/St. John, nor specifically prohibited from use in a fishery, but a commercial fisherman can petition the Council to use a purse seine in the EEZ off St. Thomas/St. John. No petition has been made and there is no evidence to date that purse seines are or have been used in the EEZ off St. Thomas/St. John. Therefore, **Preferred Alternative 2** of Action 3(d) is expected to have no economic impact on small businesses in St. Thomas/St. John.

Action 4

Preferred Alternatives 2(a), (b), and (c) of Action 4 would require a descending device be on board a commercial or recreational fishing vessel and readily available for use while fishing for or possessing species in the reef fish component of the Puerto Rico, St. Croix, and St. Thomas/St. John Fishery Management Plans.⁵⁴ A descending device means an instrument to which is attached a minimum of a 16 ounce weight and a length of line that will release the fish at the depth from which the fish was caught or a minimum of 60 feet. The descending device attaches to the fish's mouth or is a container that will hold the fish. The device must be capable of releasing the fish automatically, by the actions of the operator of the device, or by allowing

⁵⁴ Note that being ready for use does not include actually being used.

the fish to escape on its own. Since minimizing surface time is critical to increasing survival, descending devices shall be readily available for use while engaged in fishing.

A descending device can be either purchased from a fishing supplies business or made at home. The price of a commercially available descending device ranges from \$21 to \$60.⁵⁵ The cost of a homemade device can be negligible, depending on the availability of materials at hand. For example, one can make a descending device from a wire coat hanger that had been in their closet.⁵⁶ Therefore, the cost of a descending device is estimated to range from \$0 to \$60.

Action 4's Impact on Commercial Fishing Businesses

Puerto Rico

From 2014 through 2019, an annual average of 719 (90.2% of active) commercial fishermen in Puerto Rico reported landings of reef fish and 222 of them reported landings of reef fish harvested from the EEZ.⁵⁷ Therefore, Action 4 would have an average annual direct impact on at least 222 small commercial fishing businesses in Puerto Rico. However, some commercial fishermen who do not report landings of reef fish from the EEZ may still catch and release deep-water reef fish in federal waters, and they would be required to have a descending device. As stated previously, an annual average of 308 commercial fishermen report landings from the EEZ. Therefore, Action 4 would have an average annual direct impact on from 222 to 308 small commercial fishing businesses in Puerto Rico.

St. Croix and St. Thomas/St. John, USVI

As stated previously, 37 of St. Croix's commercial fishermen and 48 of St. Thomas/St. John's commercial fishermen reported landings of marine resources harvested from federal waters from 2014 through 2019, and it is assumed that all of these commercial fishermen may catch reef fish in the EEZ. Therefore, Action 4 would have an average annual direct impact on 37 small commercial fishing businesses in St. Croix and up to 48 in St. Thomas/St. John.

The cost of a descending device represents from 0% to 0.8% of the average annual revenue of the average small commercial fishing business in Puerto Rico. Similarly, it represents from 0% to 0.2% of the average annual revenue a small commercial fishing business in the USVI (St. Croix or St. Thomas/St. John). It is expected that most to all small commercial fishing

⁵⁵ The Florida Fish and Wildlife Commission (FWC) has produced publicly available videos that show how to use two commercially available descending devices: <https://www.youtube.com/watch?v=ZqBEPdbqJg>, and <https://www.youtube.com/watch?v=AT9K-zyVpB4&t=48s>.

⁵⁶ To learn how a descending device can be made from a wire coat hanger, see FWC's instructional video at <https://www.youtube.com/watch?v=A1gft9nEFCI>. To see how to make a descending device from a milk crate, see FWC's instructional video at https://www.youtube.com/watch?v=oaXpBMY0_rM. To learn how to make one with heavy gauge aluminum wire, see FWC's instructional video at <https://www.youtube.com/watch?v=Y0o9lxCxEAM>.

⁵⁷ Source: SEFSC Southeast Fisheries Reporting System, Puerto Rico Commercial Landings 2012 to Present, accessed May 30, 2023.

businesses would choose the least costly device (homemade), and, therefore, the cost to each small commercial fishing business would be negligible.

Action 4's Impact on Charter Fishing Businesses

As stated previously, 16 small charter fishing businesses in Puerto Rico, one small charter fishing business in St. Croix and 17 small charter fishing businesses in St. Thomas/St. John would be directly affected by Action 4. The cost of a descending device varies from \$0 to \$60. As like above, it is expected that most to all small charter fishing businesses would choose the least costly device (homemade), and therefore, the cost to each small charter fishing business would be negligible.

Summary of Impacts on Puerto Rico Small Businesses

Actions 1(a), 1(c) and 1(d) would have no direct economic impact on small commercial fishing businesses. Action 1(b) would have an average annual direct economic impact on 10 small commercial fishing businesses in Puerto Rico that use gillnet in the EEZ, and 10 fishermen represent 0.13% of the average 797 commercial fishermen with annual landings from all waters. An average annual reduction in landings of about 143 lbs (almost \$700) per fisherman represents 1.7% of the average gillnet fisherman's annual revenue. This reduction would occur over three to four trips, with an average reduction of landings of 36 to 48 lbs (\$177 to \$233) per trip. It is expected that these fishermen would act to mitigate for the loss by shifting those trips into state waters where about 97% of gillnet harvests occur. Consequently, Action 1(b) is not expected to have a significant economic impact on a substantial number of small businesses. Action 4 (Descending Devices) would have an average annual direct impact on 222 to 308 small commercial fishing businesses and 16 small charter fishing businesses, and it is expected that these businesses would choose to make their own descending devices and the cost would be negligible. Therefore, the proposed rule is not expected to have a significant economic impact on a substantial number of small businesses in Puerto Rico.

Summary of Impacts on St. Croix Small Businesses

Actions 2(a), 2(b), 2(c) and 2(d) would have no direct impact on small commercial fishing businesses. Action 4 would have an average annual direct impact on 37 small commercial fishing businesses and one small charter fishing business in St. Croix. It is expected that these 38 small businesses would choose to make their own descending device and the cost would be negligible. Consequently, it is expected that there would be no significant economic impact on a substantial number of small businesses in St. Croix.

Summary of Impacts on St. Thomas/St. John Small Businesses

Actions 3(a), 3(b), 3(c) and 3(d) would have no direct impact on small commercial fishing businesses. Action 4 would have an average annual direct impact on 48 small commercial fishing businesses and 17 small charter fishing businesses in St. Thomas/St. John. It is expected that these 65 small businesses would choose to make their own descending device and the cost would be negligible. Consequently, the proposed rule is not expected to have a significant economic impact on a substantial number of small businesses in St. Thomas/St. John.

Chapter 7. List of Preparers

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Denise Johnson	NMFS/SFD	Economist
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Brent Stoffle	NMFS/SEFSC	Social Scientist
Matthew Walia	NMFS/OLE	Compliance Liaison
Noah Silverman	NMFS/SERO	NEPA Regional Coordinator
Jose Rivera	NMFS/HCD	Fishery Biologist

CFMC = Caribbean Fishery Management Council, GC = General Counsel, HCD = Habitat Conservation Division, NEPA = National Environmental Policy Act, NMFS = National Marine Fisheries Service, NOAA = National Oceanic and Atmospheric Administration, OLE= Office of Law Enforcement, PRD = Protected Resources Division, SERO = Southeast Regional Office, SER = Southeast Region, SFD = Sustainable Fisheries Division, SEFSC = Southeast Fisheries Science Center

Chapter 8. List of Agencies, Organizations, and Persons Consulted

Department of Commerce Office of General Counsel

National Marine Fisheries Service Office of General Counsel

National Marine Fisheries Service Office of General Counsel Southeast Region

National Marine Fisheries Service Southeast Regional Office

National Marine Fisheries Service Southeast Fisheries Science Center

National Marine Fisheries Service Silver Spring Office

National Marine Fisheries Service Office of Law Enforcement Southeast Division

United States Coast Guard

United States Department of the Interior

U.S. Virgin Islands Department of Planning and Natural Resources

Puerto Rico Department of Natural and Environmental Resources

Puerto Rico Junta de Calidad Ambiental (Puerto Rico Environmental Quality Board)

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Appendices

Appendix A. List of Managed Reef Fish and Pelagic Stocks Included in each of the Island-based Fishery Management Plans

Puerto Rico Reef Fish

- **Snappers:** black, blackfin, silk, vermilion, wenchman, cardinal, queen, lane, mutton, dog, schoolmaster, yellowtail, cubera*
- **Groupers:** Nassau, goliath, coney, graysby, black, red, tiger, yellowfin, yellowmouth*, yellowedge, misty, red hind, rock hind
- **Parrotfishes:** blue, midnight, rainbow, queen, princess, redtail, stoplight, redband, striped
- **Surgeonfishes:** blue tang, ocean surgeonfish, doctorfish
- **Triggerfishes:** ocean, queen, gray*
- **Wrasses:** hogfish, puddingwife, Spanish hogfish
- **Angelfishes:** queen, grey, French
- **Grunts:** white grunt
- **Jacks:** crevalle jack*, African pompano*, rainbow runner*

* New to management

Puerto Rico Pelagics

* *All new to management*

- **Tripletail:** tripletail
- **Dolphinfish:** dolphin, pompano dolphin
- **Mackerels and Tunas (Scombridae):** little tunny, blackfin tuna, king mackerel, cero mackerel, wahoo
- **Barracudas:** great barracuda

St. Croix Reef Fish

- **Snappers:** black, blackfin, silk, vermilion, queen, lane, mutton, schoolmaster, yellowtail
- **Groupers:** Nassau, goliath, graysby, coney, red hind, rock hind, black, red, tiger, yellowfin, misty
- **Parrotfishes:** blue, midnight, rainbow, queen, princess, redtail, stoplight, redband, striped, redfin
- **Surgeonfishes:** blue tang, ocean surgeonfish, doctorfish
- **Triggerfishes:** queen
- **Angelfishes:** queen, grey, French
- **Grunts:** white grunt, bluestriped
- **Squirrelfish:** longspine squirrelfish

St. Croix Pelagics

**All new to management*

- **Dolphinfish:** dolphin
- **Mackerels and Tunas (Scombridae):** wahoo

St. Thomas and St. John Reef Fish

- **Snappers:** black, blackfin, silk, vermilion, queen, lane, mutton, yellowtail
- **Groupers:** Nassau, goliath, coney, red hind, black, red, tiger, yellowfin, yellowmouth*, yellowedge, misty
- **Parrotfishes:** blue, midnight, rainbow, queen, princess, redtail, stoplight, redband, striped, redfin
- **Surgeonfishes:** blue tang, ocean surgeonfish, doctorfish
- **Triggerfishes:** queen
- **Wrasses:** hogfish
- **Angelfishes:** queen, grey, French
- **Grunts:** white grunt, bluestriped, margate
- **Jacks:** Blue runner
- **Porgies:** jolthead, saucereye, sheepshead, sea bream

**New to management*

St. Thomas and St. John Pelagics

**All new to management*

- **Dolphinfish:** dolphin
- **Mackerels and Tunas (Scombridae):** wahoo

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Appendix B. Authorized Gear Types under each of the Island-based Fishery Management Plans and Amendment 1 (Buoy Gear)

Fishery	Authorized gear types
* * * * *	
V. Caribbean Fishery Management Council	
1. Exclusive Economic Zone around Puerto Rico	
A. Puerto Rico Reef Fish Fishery (federally managed):	
i. Commercial fishery	i. Automatic reel, bandit gear, buoy gear, handline, longline, rod and reel, trap, pot, spear.
ii. Recreational fishery	ii. Dip net, handline, rod and reel, slurp gun, spear, trap, pot.
B. Puerto Rico Pelagic Fishery (federally managed):	
i. Commercial fishery	i. Automatic reel, bandit gear, buoy gear, handline, longline, rod and reel, gillnet.
ii. Recreational fishery	ii. Spear, handline, longline, rod and reel.
C. Puerto Rico Spiny Lobster Fishery (federally managed):	
i. Commercial fishery	i. Trap, pot, dip net, hand harvest, snare.
ii. Recreational fishery	ii. Trap, pot, dip net, hand harvest, snare.
D. Puerto Rico Coral Reef Resources Fishery (FMP):	No harvest or possession in the EEZ.
E. Puerto Rico Queen Conch Fishery (federally managed):	No harvest or possession in the EEZ.
F. Puerto Rico Commercial Pelagic Fishery (non-federally managed):	Gillnet, automatic reel, bandit gear, buoy gear, handline, longline, rod and reel.
G. Puerto Rico Recreational Pelagic Fishery (non-federally managed):	Spear, handline, longline, rod and reel.
H. Puerto Rico Commercial Fishery (non-federally managed)	Automatic reel, bandit gear, buoy gear, handline, longline, rod and reel, trawl, gillnet, cast net, spear.
I. Puerto Rico Recreational Fishery (non-federally managed)	Automatic reel, bandit gear, handline, longline, rod and reel, spear, powerhead, hand harvest, cast net.
2. Exclusive Economic Zone around St. Croix	

Fishery	Authorized gear types
A. St. Croix Reef Fish Fishery (federally managed):	
i. Commercial fishery	i. Automatic reel, bandit gear, buoy gear, handline, longline, rod and reel, trap, pot, spear.
ii. Recreational fishery	ii. Dip net, handline, rod and reel, slurp gun, spear, trap, pot.
B. St. Croix Pelagic Fishery (federally managed):	
i. Commercial fishery	i. Automatic reel, bandit gear, buoy gear, handline, longline, rod and reel, gillnet.
ii. Recreational fishery	ii. Spear, handline, longline, rod and reel.
C. St. Croix Spiny Lobster Fishery (federally managed):	
i. Commercial fishery	i. Trap, pot, dip net, hand harvest, snare.
ii. Recreational fishery	ii. Trap, pot, dip net, hand harvest, snare.
D. St. Croix Coral Reef Resource Fishery (federally managed):	No harvest or possession in the EEZ.
E. St. Croix Queen Conch Fishery (federally managed):	
i. Commercial fishery	i. Hand harvest.
ii. Recreational fishery	ii. Hand harvest.
F. St. Croix Commercial Pelagic Fishery (non-federally managed)	Gillnet, automatic reel, bandit gear, buoy gear, handline, longline, rod and reel.
G. St. Croix Recreational Pelagic Fishery (non-federally managed)	Spear, handline, longline, rod and reel.
H. St. Croix Commercial Fishery (non-federally managed)	Automatic reel, bandit gear, buoy gear, handline, longline, rod and reel, trawl, gillnet, cast net, spear.
I. St. Croix Recreational Fishery (non-federally managed)	Automatic reel, bandit gear, handline, longline, rod and reel, spear, powerhead, hand harvest, cast net.
3. Exclusive Economic Zone around St. Thomas and St. John	
A. St. Thomas and St. John Reef Fish Fishery (federally managed):	
i. Commercial fishery	i. Automatic reel, bandit gear, buoy gear, handline, longline, rod and reel, trap, pot, spear.

Fishery	Authorized gear types
ii. Recreational fishery	ii. Dip net, handline, rod and reel, slurp gun, spear, trap, pot.
B. St. Thomas and St. John Pelagic Fishery (federally managed):	
i. Commercial fishery	i. Automatic reel, bandit gear, buoy gear, handline, longline, rod and reel, gillnet.
ii. Recreational fishery	ii. Spear, handline, longline, rod and reel.
C. St. Thomas and St. John Spiny Lobster Fishery (federally managed):	
i. Commercial fishery	i. Trap, pot, dip net, hand harvest, snare.
ii. Recreational fishery	ii. Trap, pot, dip net, hand harvest, snare.
D. St. Thomas and St. John Coral Reef Resource Fishery (federally managed):	No harvest or possession in the EEZ.
E. St. Thomas and St. John Queen Conch Fishery (federally managed):	No harvest or possession in the EEZ.
F. St. Thomas and St. John Commercial Pelagic Fishery (non-federally managed)	Gillnet, automatic reel, bandit gear, buoy gear, handline, longline, rod and reel.
G. St. Thomas and St. John Recreational Pelagic Fishery (non-federally managed)	Spear, handline, longline, rod and reel.
H. St. Thomas and St. John Commercial Fishery (non-federally managed)	Automatic reel, bandit gear, buoy gear, handline, longline, rod and reel, trawl, gillnet, cast net, spear.
I. St. Thomas and St. John Recreational Fishery (non-federally managed)	Automatic reel, bandit gear, handline, longline, rod and reel, spear, powerhead, hand harvest, cast net.
* * * * *	

Appendix C. Marine Managed Areas in the U.S. Caribbean Exclusive Economic Zone

There are seven Caribbean Fishery Management Council marine managed areas in federal waters that prohibit the use of certain gear types within their boundaries.

Area	Island	Seasonal Closure	Year-round Prohibition
Hind Bank Marine Conservation District	St. Thomas	Year-round	Fishing for any species and anchoring by fishing vessels are prohibited year-round.
Grammanik Bank	St. Thomas	February 1 - April 30	Fishing with pots, traps, bottom longlines, gillnets or trammel nets is prohibited year-round.
Mutton snapper spawning aggregation area	St. Croix	March 1 - June 30	Fishing with pots, traps, bottom longlines, gillnets or trammel nets is prohibited year-round.
Lang Bank	St. Croix	December 1 - February 28	Fishing with pots, traps, bottom longlines, gillnets or trammel nets is prohibited year-round.
Tourmaline Bank	Puerto Rico	December 1 - February 28	Fishing with pots, traps, bottom longlines, gillnets or trammel nets is prohibited year-round.
Abrir La Sierra	Puerto Rico	December 1 - February 28	Fishing with pots, traps, bottom longlines, gillnets or trammel nets is prohibited year-round.
Bajo de Sico	Puerto Rico	October 1 - March 31	Fishing with pots, traps, bottom longlines, gillnets or trammel nets is prohibited year-round. Anchoring by fishing vessels is prohibited year-round.

Appendix D. Economic Description of the Fishery

D.1 Puerto Rico

D.1.1 General Commercial Fishery Information and Landings Statistics

The fisheries of Puerto Rico provide a desired source of food to the local population and tourists in addition to an important source of income to the local population. This income is derived from purchases associated with both commercial and recreational activities (e.g., fuel, ice, food) as well as the sale of landed products by the commercial sector.

As is well documented, the nature of the Puerto Rican commercial fishing industry is one of multiple gears with multiple species being harvested. In a recent study of the Puerto Rican fishery, Shivilani (2022) noted that 837 fishermen reported landings in 2018. More than three-quarters of interviewed fishermen (687 surveyed fishermen in total) identified themselves as full-time with almost 90% reporting that they had fished year-round.⁵⁸ On average fishermen reported making 3.6 trips per week. Just under 85% of the interviewed fishermen reported fishing exclusively in territorial waters (i.e., < nine nautical miles from shore) while another 12.1% reported fishing in both territorial and federal waters. Finally, 4.4% of the interviewed fishermen stated that they fished only in federal waters in 2018.

The relatively low percentage of interviewed fishermen reporting fishing activities in federal waters may be due, in part, to the relatively small platforms from which they operate. Specifically, Shivilani (2022) found that the average length of vessel was just over 20 feet with 97% of the vessels falling in the 10 to 29.9-foot range. Given this to be the case, one would not expect extensive fishing activities in federal waters.⁵⁹

Based on trip ticket data, an estimated \$9.0 million of seafood products was landed in 2014 based on 2.33 million pounds (**Table 1**)⁶⁰. In general, landings during the 2014-19 period were relatively stable with the exception of 2017 when landings fell about 25% (to 1.77 million

⁵⁸ Shivilani (2022) notes that full-time fishermen may have been oversampled in his study given that almost a third of those reporting landings in 2018 (via the trip ticket) took less than ten trips.

⁵⁹ This, of course, does not address the issue of the reasons for the relatively small vessels. One might hypothesize that the costs of fishing in federal waters are high relative to revenues and, thus, there is little desire to fish in federal waters (and larger vessels). Alternatively, financing constraints may be a limiting factor.

⁶⁰ These landings are considered 'estimates' because not all landings are reported and landings that are reported are thus adjusted using an expansion factor determined by DNER staff at the Fisheries Research Laboratory. In addition, as noted by Shivilani (2022) "[a]part from the obvious dearth of fisheries information, a major issue facing data-poor fisheries is often the quality (and often veracity) of the underlying data. A factor that compounds the data-poor situation for most of Puerto Rican fisheries is the unlicensed effort that occurs outside the (albeit limited) reporting system (p.4). To the extent that this is substantial, the estimates may be a 'poor' reflection of actual activity.

pounds) from the previous year.⁶¹ Landings rebounded the following year, however, to 2.41 million pounds with 2019 landings only slightly exceeding the estimated total for 2018.⁶²

Table 1. Estimated Annual Landings (Pounds, Value, and Price) of Seafood Harvested in Puerto Rico Territorial and Federal Waters, 2014-2019.

Year	Landings	Value		Price	
	Pounds	Current	Deflated ^a	Current	Deflated
	-----\$1,000s-----			-----\$/Lb.-----	
2014	2,330.6	9,018.0	10,538.5	3.87	4.52
2015	2,370.5	9,594.2	11,123.2	4.05	4.70
2016	2,369.5	10,001.6	11,431.1	4.22	4.82
2017	1,770.9	7,988.2	8,948.4	4.51	5.05
2018	2,408.7	11,326.9	12,504.3	4.70	5.15
2019	2,466.9	12,051.0	12,984.5	4.88	5.26

^a Values and prices are deflated based on the 2021 Implicit Price Deflator (GDP Deflator by Year)

Source: SERO 2023

The value of these landings, which averaged \$10.0 million during the period of analysis, gradually increased during the six-year period. The increased value primarily reflects an increase in per pound price given stability in pounds landed. As indicated, the price per pound equaled \$4.88 in 2019 compared to \$3.87 in 2014 and the price exhibited a large increase even after adjusting for inflation (**Table 1**). Overall, the increased price may reflect an increase in demand, a change in composition of the landed product, or some amalgam.

Premised on the assumption that underreporting of catches in Puerto Rico is the result of fishers underreporting harvests on their respective submitted trip tickets rather than a sizeable number of commercial fishermen not submitting trip tickets, one can evaluate the number of fishers, trips, and revenues per fisher per year. During the 2014-2019 period, the number of fishers fluctuated from a low of 720 to a high of 854 while the number of trips ranged from less than 22 thousand to almost 31 thousand (**Table 2**). Revenues per fisher, adjusted to 2021 dollars, averaged about \$9.1 thousand annually during 2014-2019 while revenues per trip, adjusted to 2021 dollars, averaged about \$255 annually.⁶³ The gradual increase in adjusted revenues per fisherman and trip, as indicated in **Table 2**, largely represents the increase in adjusted (i.e., deflated) dockside price (**Table 1**).

⁶¹ The decline in 2017 landings is undoubtedly related, at least in part, to the impacts of Hurricane Maria which made landfall in Puerto Rico on September 20th.

⁶² Trip ticket data for Puerto Rico beyond 2019 is incomplete and therefore data for later years are not included in the economic description of the fishery.

⁶³ There was a total of 1,200 licensed fishermen in Puerto Rico as of April 5, 2022 (DNER). This would suggest, assuming the number of fishermen as reported in the trip ticket system is accurate, that a large proportion of the licensed fishermen are not active participants in the fishery.

Table 2. Estimated Number of Commercial Fishermen, Trips, and Revenues Per Fisherman and Trip in Puerto Rico, 2014-2019.

Year	Fishermen	Trips	Revenue per Fisher	Deflated Revenue per Fisher ^a	Revenue per Trip	Deflated Revenue per Trip ^a
	----- Number-----		----- \$-----			
2014	854	30,899	7,137	8,340	197.2	230.5
2015	830	31,209	7,655	8,875	203.6	236.0
2016	811	29,345	7,687	8,786	212.5	242.8
2017	760	21,884	6,621	7,417	229.9	257.6
2018	720	26,370	9,185	10,059	250.8	274.7
2019	800	30,746	10,271	11,068	267.3	288.0

^a Revenues are deflated based on the 2021 Implicit Price Deflator (GDP Deflator by Year).

Source: SERO 2023

D.1.2 Commercial Landings from Catches in Territorial and Federal Waters

Seafood produced from the waters surrounding Puerto Rico is harvested from both territorial and federal waters. Fishermen, when completing trip tickets, are asked to state whether landings represent catch taken from territorial or federal waters. Though requested, this information is not always provided. Landings for which area of catch (i.e., territorial or federal waters) was not reported fell from in excess of 400 thousand pounds in 2014 to about 60 thousand pounds in 2019 (**Table 3**). Landings for which territorial waters was stated as the area fished averaged 1.73 million pounds annually during the 2014-19 period and accounted for more than 80% of those landings where area of catch was given (i.e., territorial or federal waters). Estimated landings where the designated fishing area was federal waters averaged about 365 thousand pounds annually during 2014-19 or about 18% of total landings. It is thus clear that the vast majority of seafood produced in Puerto Rico is taken from territorial waters. Finally, the annual percentages derived from reported area of catches can be used, under the assumption that unreported landings follow the same ratio as that of catches where the area of catch is reported, to proportion the ‘unknown’ catch between territorial and federal waters. These estimates are also presented in **Table 3**. Based on this partitioning, 2014-2019 landings from territorial waters have approximated 1.9 million pounds annually while landings from federal waters have approximated 400 thousand pounds.⁶⁴

⁶⁴ A comparison of the 20% estimate (i.e., the proportion of harvest, in pounds, coming from federal waters) with the findings reported by Shivilani (i.e., only 4.4% of the interviewed fishermen fished exclusively in federal waters while another 12.1% reported some fishing in federal waters) leads one to hypothesize that catch per trip in federal waters exceeds that in territorial waters and/or those fishermen reporting trips in federal waters make, on average,

Table 3. Estimated Annual Commercial Landings (Pounds) Associated With Catch From Territorial and Federal Waters in Puerto Rico for 2014-2019.

Year	Territorial Waters	Federal Waters	Unknown Waters	Total Landings	Expanded Territorial Waters	Expanded Federal Waters
	-----1,000 Lbs-----					
2014	1,511.9	390.8	428.0	2,330.6	1,852.0	478.7
2015	1,573.2	398.4	398.8	2,370.5	1,891.4	479.0
2016	1,861.5	346.8	161.2	2,369.5	1,997.4	372.1
2017	1,485.5	233.1	52.4	1,770.9	1,530.7	240.2
2018	2,021.7	314.7	72.3	2,408.7	2,084.3	324.5
2019	1,901.7	505.1	60.1	2,466.9	1,949.3	517.7

Source: SERO 2023

The value of landings associated with the poundage information presented in **Table 3** is given in **Table 4**. In general, the same patterns observed with poundage occur also with value. Specifically, the vast majority of the value of harvested product is taken in territorial waters. Estimated value of landings where the designated fishing area was federal waters averaged about \$1.91 million annually (adjusted to 2021 dollars) during 2014-19 or about 21% of total value of landings where area of catch was reported on the trip ticket. The value of landings from territorial waters, by comparison, averaged \$8.4 million annually (adjusted to 2021 dollars) or about 81% of the total value of landings where area of catch was reported on the trip ticket. Finally, partitioning of the ‘unknown’ landings value (i.e., trips where area of catch is not reported) resulted in an estimate of value of landings from territorial waters equal to \$9.14 million annually (expressed in 2021 dollars) during 2014-2019 compared to an estimate of \$2.09 million from federal waters.

more annual trips than those fishermen fishing exclusively in territorial waters. Both of these hypotheses appear plausible. Specifically, the larger boats likely used in federal waters allows for higher per trip catches for a multitude of reasons (e.g., a larger crew). Likewise, the larger boats allow for fishing in more unfavorable conditions which would result in an increased number of trips and, hence, annual catch in federal waters.

Table 4. Estimated Annual Value of Commercial Landings (Adjusted to 2021 Dollars^a) Associated with Catch from Territorial and Federal Waters of Puerto Rico for 2014-2019.

Year	Territorial Waters	Federal Waters	Unknown Waters	Total Landings	Expanded Territorial Waters	Expanded Federal Waters
	-----\$ 1000s-----					
2014	6,773	1,924	1,841	10,538	8,207	2,331
2015	7,316	1,955	1,852	11,123	8,777	2,346
2016	8,914	1,784	733	11,431	9,525	1,906
2017	7,412	1,251	285	8,948	7,656	1,292
2018	10,391	1,671	344	12,405	10,687	1,718
2019	9,771	2,898	326	12,984	10,062	2,928

^a Values are deflated based on the 2021 Implicit Price Deflator (GDP Deflator by Year).

Source: SERO 2023

D.1.3 Commercial Landings of Managed and Non-managed Species

A large number of species (in excess of 100) are landed in Puerto Rico. Many of these species are managed under the auspices of the Caribbean Fishery Management Council, which has jurisdiction in federal waters.⁶⁵ Annual landings of managed and non-managed species for the 2014-2019 period are presented in **Table 5**. As indicated, the overwhelming majority of landings, expressed on either weight or value basis, represent managed species (by the Caribbean Fishery Management Council). In terms of poundage, 83% of landings during 2014-2019 represent managed species with almost 90% of value during the period representing species, which can be managed under the auspices of the Caribbean Fishery Management Council. The higher percentage by value reflects, undoubtedly, some of the higher priced species (e.g., lobster) being managed.

Table 5. Estimated Landings (Pounds and Value) of Managed and Unmanaged Species in Puerto Rico, 2014-2019.

Year	Managed Species		Non-managed Species		Percent Managed Species	
	-----1,000s Lbs. and \$1000s-----				-----%------	
	Pounds	Value ^a	Pounds	Value ^a	Pounds	Value
2014	1,922.9	9,531.1	407.7	1,007.3	82.5	90.4
2015	1,951.6	9,880.3	418.9	1,242.8	82.3	88.8
2016	1,976.2	10,343.8	393.3	1,087.4	83.4	90.5
2017	1,455.1	7,950.7	315.8	997.7	82.2	88.9
2018	2,020.8	11,213.0	388.0	1,192.2	83.9	90.4
2019	2,052.9	11,484.6	414.0	1,499.9	83.2	88.4

^a Values are deflated based on the 2021 Implicit Price Deflator (GDP Deflator by Year).

Source: SERO 2023

⁶⁵ In addition to federal management of species, Puerto Rico also manages some species.

D.1.4 Economic Description of the Recreational Fishery in Puerto Rico

The estimated number of recreational angler trips taken in Puerto Rico during 2012-2017 averaged almost 509 thousand annually and ranged from a low of 336 thousand in 2017 to a high of 668 thousand in 2015 (**Table 6**). The low number of trips in 2017 undoubtedly reflects, in part, the impacts of Hurricane Maria, which made landfall in Puerto Rico on September 20.⁶⁶

Table 6. Recreational Angler Trips in Puerto Rico by Mode and in Total, 2012-2017.

Year	Shore	Charter	Private	Total
	-----1,000 trips-----			
2012	140.3	1.8	208.5	350.6
2013	275.1	6.5	228.7	510.3
2014	275.6	.	258.9	534.5
2015	368.5	2.4	296.7	667.6
2016	309.5	.	344.1	653.6
2017	209.7	.	126.6	336.3

Recreational angler trips, as collected under the MRIP program, are segmented by whether the trip is from shore, private boat, or charter. Shore and private boats dominate the total number of trips with shore-based angler trips accounting for 52% of total trips and angler trips on private boats accounting for 48% of total trips.

Of the estimated 509 thousand angler trips taken annually in Puerto Rico waters during 2012-2017, about 9.1% of these trips were reportedly taken in Federal waters. Catch in federal waters appears to be highly dominated by dolphin.

⁶⁶ Surveying would have ended about the time of the hurricane and has yet to be resumed. Hence, recreational data for Puerto Rico ends in 2017.

D.2 St. Croix and St. Thomas/St. John

D.2.1 General Commercial Fishery Information and Landings Statistics

The number of commercial fishermen reporting landings in St. Croix between 2012 and 2021 averaged 62 annually and ranged from a high of 85 in 2012 to a low of 44 in 2018 (**Table 7**). These fishermen reported an average of 2,195 trips annually during this period with a range from 804 (2018) to 3,791 (2012). Reported annual landings during this period ranged from a high of more than 500 thousand pounds in 2012 to a low of just over 100 thousand pounds in 2018.

Table 7. Reported Number of St. Croix Commercial Fishermen, Trips, and Landings, 2012-2021.

Year	Number of Fishermen	Reported Number of Trips	Reported Landings	Value of Landings ^a	Price per Lb. ^a
			Lbs.	\$1000s	\$/Lb.
2012	85	3,791	511,745	3,746.0	7.32
2013	78	3,331	469,895	3,306.1	7.04
2014	62	2,666	398,856	2,836.9	7.11
2015	59	2,369	379,839	2,894.2	7.62
2016	74	2,489	433,874	3,129.5	7.21
2017	65	2,134	389,504	2,505.2	6.43
2018	44	804	107,333	663.4	6.18
2019	48	962	114,983	582.1	5.06
2020	51	1,292	258,746	ND ^b	ND
2021	58	2,116	342,310	ND	ND

^a Values are deflated based on the 2021 Implicit Price Deflator (GDP Deflator by Year).

^b Data are not available for prices after 2019.

Source: SERO 2023

Reported harvest per fisherman averaged close to 5,300 pounds annually during the 2012-2021 period while catch per trip averaged 154 pounds (**Table 8**). Revenues per fisherman, expressed in 2021 dollars, averaged about \$36 thousand annually during 2012-2019 but would have been considerably higher if not for abnormally low revenues in the last two years.

Table 8. Reported Harvest and Revenues per St. Croix Commercial Fisherman and Trip, 2012-2021.

Year	Harvest Per Fisherman	Harvest Per Trip	Revenues Per Fisherman ^a	Revenues Per Trip ^a
	-----Lbs-----		-----\$-----	
2012	6,021	135	44,071	988
2013	6,024	141	42,386	993
2014	6,433	150	45,757	1,064
2015	6,438	160	49,055	1,222
2016	5,863	174	42,291	1,257
2017	5,992	183	38,541	1,174
2018	2,439	133	15,078	825
2019	2,395	120	12,127	605
2020	5,073	200	ND ^b	ND
2021	5,901	162	ND	ND

^a Values are deflated based on the 2021 Implicit Price Deflator (GDP Deflator by Year).

^b Data are not available for prices after 2019 and, hence, revenues cannot be calculated.

With respect to St. Thomas/St. John, the reported number of fishermen averaged 68 annually during 2012-2021 (**Table 9**). The annual number of reported trips during the period averaged about 2,000, which equates to slightly less than 30 trips per fisherman. Annual landings averaged 365 thousand pounds and ranged from just over 300 thousand pounds in 2021 to more than 430 thousand pounds in 2016. The value of landings, adjusted for inflation to 2021 dollars, averaged \$2.64 million over the 2012-2019 period.

Table 9. Reported Number of St. Thomas/St. John Commercial Fishermen, Trips, and Landings, 2012-2021.

Year	Number of Fishermen	Reported Number of Trips	Reported Landings	Value of Landings ^a	Price ^a
			Lbs.	\$1000s	\$/Lb.
2012	74	2,440	392,581	2,807.1	7.15
2013	67	2,021	339,272	2,681.3	7.90
2014	72	2,013	414,511	3,124.0	7.54
2015	65	2,144	394,075	3,066.6	7.78
2016	65	2,482	433,055	3,295.3	7.61
2017	64	1,918	346,010	2,430.1	7.01
2018	67	1,756	346,801	2,315.4	6.68
2019	71	1,685	342,224	1,434.6	4.19
2020	70	1,775	325,421	ND ^b	ND
2021	63	1,752	313,464	ND	ND

^a Values are deflated based on the 2021 Implicit Price Deflator (GDP Deflator by Year).

^b Data are not available for prices after 2019.

Source: SERO 2023

On a per trip basis, the retained catch per trip fell within the range of about 160 pounds to about 200 pounds and averaged about 185 pounds annually during 2012-2021 while the harvest per trip fell within the relatively narrow range of about 160 pounds to 200 pounds (**Table 10**). Revenues per fisherman, expressed in 2021 dollars, ranged from a low of about \$20 thousand in 2019 to a high of more than \$50 thousand in 2016.

Table 10. Reported Harvest and Revenues per St. Thomas/St. John Commercial Fisherman and Trip, 2012-2021.

Year	Harvest Per Fisherman	Harvest Per Trip	Revenues Per Fisherman ^a	Revenues Per Trip ^a
	-----Lbs.-----		-----\$-----	
2012	5,305	161	37,933	1,150
2013	5,064	168	40,020	1,327
2014	5,757	206	43,389	1,552
2015	6,063	184	47,179	1,430
2016	6,662	174	50,697	1,328
2017	5,419	181	37,970	1,267
2018	5,176	197	34,559	1,319
2019	4,820	203	20,205	851
2020	4,649	183	ND ^b	ND
2021	4,976	178	ND	ND

^a Values are deflated based on the 2021 Implicit Price Deflator (GDP Deflator by Year).

^b Data are not available for prices after 2019.

Source: SERO 2023

D.2.2 Commercial Landings from Catches in Territorial and Federal Waters

Landings associated with catches from territorial waters, federal waters, and unknown waters in St. Croix are presented in **Table 11**. Using the procedure adopted for Puerto Rico, the harvest from unknown waters was portioned between territorial waters and federal waters with these estimates being denoted as ‘Expanded Territorial Waters’ and ‘Expanded Federal Waters’. Landings associated with catch from territorial waters (expanded) averaged almost 156 thousand pounds per year while landings associated with catch from federal waters averaged about 181 thousand pounds per year. According to Kojis et al (2017), 14.6% of the St. Croix fishermen fished exclusively in federal waters while another 26.4% fished about equally in territorial and federal waters. The remaining 59.1% fish primarily in territorial waters.

Table 11. Reported Commercial Landings Associated with Catch From Territorial and Federal Waters in St. Croix, 2012-2021.

Year	Territorial Waters	Federal Waters	Unknown Waters	Total Landings	Expanded Territorial Waters	Expanded Federal Waters
	-----Lbs.-----					
2012	247,920	263,005	Conf	510,925 ^a	247,920	263,005
2013	322,615	134,595	12,687	469,896	331,567	138,329
2014	230,140	147,158	21,558	398,856	243,290	155,566
2015	121,438	191,552	66,848	379,839	147,375	232,464
2016	149,678	242,645	41,551	433,874	165,530	268,344
2017	130,172	235,654	23,678	389,504	138,597	250,907
2018	40,635	65,278	1,420	107,333	41,180	66,153
2019	53,364	47,676	13,944	114,983	60,728	54,255
2020	76,288	166,336	16,123	258,747	81,357	177,390
2021	97,212	202,896	2,065	302,173	97,881	204,292

^a This figure excludes some confidential landings (likely very small) which also suggests that expanded landings from territorial and federal waters for 2012 may be slightly underestimated.

Landings associated with catches from territorial waters, federal waters, and unknown waters in St. Thomas/St. John are presented in **Table 12**. Catch from federal waters of St. Thomas/St. John (expanded) accounted for almost two-thirds of total landings during the 2012-2021 period with average annual production approximating 234 thousand pounds. Catch from territorial waters (expanded), by comparison, averaged about 131 thousand pounds annually during 2012-21. According to Kojis et al. (2017), about 4.6% of St. Thomas commercial fishermen fish exclusively in federal waters while another 42.5% fish both territorial and federal waters about equally. The remaining 52.9% fish primarily in territorial waters.

Table 12. Reported Commercial Landings Associated with Catch From Territorial and Federal Waters in St. Thomas/St. John, 2012-2021.

Year	Territorial Waters	Federal Waters	Unknown Waters	Total Landings	Expanded Territorial Waters	Expanded Federal Waters
	-----Lbs.-----					
2012	132,680	258,680	1,776	392,581	132,726	259,855
2013	69,312	234,230	44,730	348,272	79,525	268,747
2014	92,036	282,491	39,984	414,511	101,861	312,649
2015	124,429	247,655	21,991	394,075	131,783	262,292
2016	164,693	244,587	23,775	433,055	174,260	258,795
2017	162,102	181,110	2,798	346,010	163,423	182,586
2018	176,543	168,974	1,284	346,810	177,199	169,602
2019	132,898	207,278	2,047	342,224	133,698	208,526
2020	105,320	216,335	3,766	325,421	106,553	218,868
2021	105,657	199,681	1,735	307,073	106,528	200,815

Source: SERO 2023

D.2.3 Commercial Landings of Managed and Non-managed Species

Catches of managed and unmanaged species by territorial and federal waters for St. Croix is presented in **Table 13** with similar information for St. Thomas/St. John given in **Table 14**. As was the case in Puerto Rico, commercial landings in St. Croix are dominated by species managed by the Caribbean Fishery Management Council. Specifically, more than 85% of landings in St. Croix are derived from federally managed species. Furthermore, the majority of these landings are reportedly caught in federal waters (about 52% during the ten-year period ending in 2021).

Table 13. Reported Commercial Landings of Managed and Non-managed Species in St. Croix, 2012-2021.

Year	-----Managed Species-----				-----Non-managed Species-----			
	Territorial Waters	Federal Waters	Unknown Waters	Total	Territorial Waters	Federal Waters	Unknown Waters	Total
2012	219,467	239,102	Conf	458,569 ^a	28,453	23,903	.	52,356
2013	249,462	126,928	8,253	384,643	73,152	7,667	4,434	85,253
2014	178,978	125,616	15,367	319,961	51,162	21,542	6,191	78,895
2015	111,600	158,435	49,636	319,670	9,839	33,118	17,212	60,169
2016	133,604	187,072	32,525	353,202	16,073	55,573	9,026	80,672
2017	118,332	181,118	20,795	320,245	11,840	54,536	2,883	69,259
2018	35,262	46,964	1,246	83,472	5,373	18,314	174	23,861
2019	48,959	42,446	12,811	104,215	4,405	5,230	1,133	10,768
2020	71,763	130,787	12,708	215,258	4,525	35,549	3,415	43,489
2021	90,228	142,156	1,264	233,647	6,984	60,740	801	68,526

^a This figure excludes some confidential landings (likely very small).

Source: SERO 2023

As was the case for both Puerto Rico and St. Croix, landings of managed species in St. Thomas/St. John dominate total landings; about 86% during 2012-2021 (**Table 14**). About two-thirds of managed-species landings are caught in federal waters. By comparison, about 55% of the landings of non-managed species represent catches from federal waters.

Table 14. Reported Commercial Landings of Managed and Non-managed Species in St. Thomas/St. John, 2012-2021.

Year	-----Managed Species-----				-----Non-managed Species-----			
	Territorial Waters	Federal Waters	Unknown Waters	Total	Territorial Waters	Federal Waters	Unknown Waters	Total
2012	110,434	232,877	1,244	344,555	21,691	25,803	532	48,026
2013	59,380	209,804	35,859	305,043	9,932	24,426	8,871	43,229
2014	69,751	251,508	23,923	345,183	22,285	30,983	16,060	69,328
2015	102,774	220,582	18,778	342,134	21,655	27,073	3,212	51,941
2016	140,716	213,436	20,516	374,667	23,978	31,152	3,259	58,388
2017	136,200	159,221	1,839	297,260	25,902	21,889	959	48,749
2018	146,996	142,957	659	290,612	29,547	26,017	625	56,189
2019	112,674	181,300	1,110	295,084	20,225	25,978	937	47,140
2020	89,507	193,001	1,590	284,097	15,814	23,335	2,176	41,324
2021	90,399	177,979	1,735	270,113	15,258	21,701	Conf	36,959

Appendix E. Landings for all species harvested by gillnets and trammel nets in Puerto Rico

Table E.1. Adjusted landings in pounds for all species (Managed and Non-Managed) reported for gillnet gear and trammel net gear in Puerto Rico Commercial Landings for 2014-2019 by State, Federal, or Unknown waters.

Management Status	Species	GILL NET			TRAMMEL NET		
		State	Federal	Unknown	State	Federal	Unknown
Managed	Barracuda	2,251	Conf	429	.	.	.
Managed	Conch,Queen	1,195	.	Conf	3,500	Conf	211
Managed	Dolphinfish	Conf	.	.	Conf	.	Conf
Managed	Grouper,Coney	836	Conf	98	Conf	.	.
Managed	Grouper,Misty	Conf	.	.	.	.	.
Managed	Grouper,Red Hind	1,022	212	Conf	47	.	.
Managed	Grouper,Yellowfin	Conf	Conf	.	.	.	.
Managed	Grouper,Yellowmouth	Conf	.	.	.	.	.
Managed	Grunt,White	4,731	Conf	Conf	894	.	Conf
Managed	Hogfish	1,160	Conf	82	2,407	Conf	564
Managed	Lobsters,Spiny	20,649	384	2,399	99,216	2,785	4,757
Managed	Mackerel,Cero	11,641	733	593	Conf	.	.
Managed	Mackerel,King	8,756	1,117	933	62	.	Conf
Managed	Parrotfishes,Unspecified	17,212	1,205	3,418	35,511	Conf	1,244
Managed	Pompano,African	Conf	.	Conf	.	.	.
Managed	Snapper,Black	Conf	196	Conf	.	.	Conf
Managed	Snapper,Blackfin	Conf	Conf	Conf	.	.	.
Managed	Snapper,Cardinal	1,818	Conf	652	Conf	.	.
Managed	Snapper,Cubera	1,856	Conf	316	438	.	Conf
Managed	Snapper,Lane	30,003	2,478	1,696	624	.	.
Managed	Snapper,Mutton	7,571	300	1,056	335	.	31
Managed	Snapper,Queen	Conf	Conf	.	Conf	.	Conf
Managed	Snapper,Schoolmaste	Conf	.	.	.	.	.
Managed	Snapper,Silk	809	504	Conf	1,307	Conf	Conf
Managed	Snapper,Vermilion	Conf	Conf	Conf	72	.	Conf
Managed	Snapper,Yellowtail	14,644	327	1,260	3,107	.	75
Managed	Triggerfish,Queen	3,866	172	442	4,666	Conf	158
Managed	Tuna,Blackfin	1,222	.	241	.	.	Conf
Managed	Tunny,Little	1,460	Conf	Conf	449	.	Conf
Managed	Wahoo	Conf	.	.	.	.	.
Not-managed	Ballyhoo	214,720	2,608	42,371	832	Conf	Conf
Not-managed	Barbu	142	.	.	.	.	.
Not-managed	Barracuda,Southern	Conf	.	.	.	.	.
Not-managed	Boxfish,Unspecified	12,640	89	1,334	32,683	322	4,100

Management Status	Species	GILL NET			TRAMMEL NET		
		State	Federal	Unknown	State	Federal	Unknown
Not-managed	Chub,Bermuda	Conf	.	.	.	.	.
Not-managed	Crab,Blue Land	117	.	Conf	278	.	Conf
Not-managed	Crab,Coral	Conf	.	Conf	476	.	.
Not-managed	Crab,Unspecified	277	.	71	1,669	.	Conf
Not-managed	Drummer,Whitemouth	6,685	Conf	388	.	.	.
Not-managed	Fishes,Bony,Unspecified	4,421	Conf	36	Conf	.	.
Not-managed	Goatfish,Spotted	801	Conf	Conf	Conf	.	.
Not-managed	Goatfish,Yellow	250	.	.	.	.	Conf
Not-managed	Grouper,Unspecified	193	Conf	.	.	.	Conf
Not-managed	Grunt,Bluestriped	Conf	Conf	.	Conf	.	.
Not-managed	Grunt,Margate	Conf	.	.	.	.	.
Not-managed	Grunt,Unspecified	13,924	346	2,824	7,398	Conf	158
Not-managed	Herring,Sardinella	12,139	806	2,863	.	.	.
Not-managed	Jack,Bar	36,374	1,767	3,907	530	.	38
Not-managed	Jack,Horse-Eye	3,845	105	796	.	.	.
Not-managed	Jack,Yellow	258	.	83	.	.	.
Not-managed	Jacks	7,002	297	821	200	.	.
Not-managed	Lionfish	332	Conf	Conf	54	.	.
Not-managed	Lobster,Ridged Slip	Conf	.	Conf	.	.	.
Not-managed	Mangrove Oyster	Conf	.	.	.	.	.
Not-managed	Mojarra,Yellowfin	1,014	.	750	.	.	.
Not-managed	Mojarras,Unspecified	26,100	1,136	1,725	Conf	.	.
Not-managed	Mullet,White	42,196	1,164	4,875	Conf	.	Conf
Not-managed	Octopus,Unspecified	167	.	Conf	49	.	.
Not-managed	Porgy,Unspecified	21,417	411	2,043	1,386	Conf	107
Not-managed	Shark,Hammerhead,Great	466	.	.	Conf	.	Conf
Not-managed	Shark,Lemon	942	.	Conf	1,851	Conf	Conf
Not-managed	Shark,Reef	465	.	Conf	233	.	Conf
Not-managed	Shark,Sharpnose Sev	Conf	.	.	.	.	.
Not-managed	Shark,Tiger	3,289	Conf	Conf	5,096	.	Conf
Not-managed	Sharks,Requiem, Unspecified	3,441	.	736	9,280	Conf	289
Not-managed	Shellfish,Unspecified	Conf	.	.	Conf	.	.
Not-managed	Shrimp,Penaeus, Unspecified	208	Conf	Conf	.	.	.
Not-managed	Snapper,Gray	Conf	.	.	.	.	.
Not-managed	Snapper,Unspecified	11,840	351	2,288	7,964	Conf	295
Not-managed	Snook,Common	55,871	2,733	4,966	Conf	Conf	Conf
Not-managed	Squids,Unspecified	519	.	121	.	.	.
Not-managed	Squirrelfish	1,542	Conf	133	340	.	Conf
Not-managed	Stingrays,Unspecified	Conf	Conf	Conf	3,115	.	Conf

Management Status	Species	GILL NET			TRAMMEL NET		
		State	Federal	Unknown	State	Federal	Unknown
Not-managed	Triggerfish,Unspecified	Conf	.	.	.	.	.
Not-managed	Tuna And Mackerels	312	.	.	.	.	.
Not-managed	Tuna,Albacore	2,792	.	Conf	.	.	.
Not-managed	Tuna,Skipjack	725	Conf	.	.	.	.
Not-managed	Tuna,Yellowfin	Conf	.	Conf	.	.	.

Conf = confidential information

*The values for the federal waters and unknown categories may include landings from waters around Puerto Rico jurisdictional offshore islands that are within the 9-200 nm.

Appendix F. Other Applicable Law

The Magnuson-Stevens Fishery Conservation and Management Act (Magnuson-Stevens Act) (16 U.S.C. 1801 et seq.) provides the authority for fishery management in federal waters of the exclusive economic zone. However, fishery management decision-making is also affected by a number of other federal statutes designed to protect the biological and human components of U.S. fisheries, as well as the ecosystems that support those fisheries. Major laws affecting federal fishery management decision-making are summarized below.

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, the 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, which can be waived in certain instances.

The proposed rule associated with this amendment will include a request for public comment, and if approved, upon publication of the final rule, there will most likely be a 30-day wait period before the regulations are effective in compliance with the APA.

Coastal Zone Management Act (CZMA)

The CZMA of 1972 (16 U.S.C. 1451 et seq.) encourages state and federal cooperation in the development of plans that manage the use of natural coastal habitats, as well as the fish and wildlife those habitats support. When proposing an action determined to directly affect coastal resources managed under an approved coastal zone management program, NMFS is required to provide the relevant State agency with a determination that the proposed action is consistent with the enforceable policies of the approved program to the maximum extent practicable at least 90 days before taking final action. NMFS may presume State agency concurrence if the State agency’s response is not received within 60 days from receipt of the agency’s consistency determination and supporting information as required by 15 C.F.R. §930.41(a).

Upon submission to the Secretary of Commerce, NMFS will determine if this amendment is consistent with the Coastal Zone Management programs of Puerto Rico and the U.S. Virgin Islands (USVI), to the maximum extent possible. Their determination will then be submitted to the responsible agencies under Section 307 of the CZMA administering approved Coastal Zone Management programs.

Information Quality Act (IQA)

The IQA (Public Law 106-443) effective October 1, 2002, requires the government to set standards for the quality of scientific information and statistics used and disseminated by federal agencies. Information includes any communication or representation of knowledge such as facts or data, in any medium or form, including textual, numerical, cartographic, narrative, or audiovisual forms (includes web dissemination, but not hyperlinks to information that others disseminate; does not include clearly stated opinions).

Specifically, the IQA directs the Office of Management and Budget (OMB) to issue government wide guidelines that “provide policy and procedural guidance to federal agencies for ensuring and maximizing the quality, objectivity, utility, and integrity of information disseminated by federal agencies.” Such guidelines have been issued, directing all federal agencies to create and disseminate agency-specific standards to: (1) ensure information quality and develop a pre-dissemination review process; (2) establish administrative mechanisms allowing affected persons to seek and obtain correction of information; and (3) report periodically to OMB on the number and nature of complaints received.

Scientific information and data are key components of fishery management plans (FMP) and amendments and the use of best available information is the second national standard under the Magnuson-Stevens Act. To be consistent with the IQA, FMPs and amendments must be based on the best information available. They should also properly reference all supporting materials and data, and be reviewed by technically competent individuals. With respect to original data generated for FMPs and amendments, it is important to ensure that the data are collected according to documented procedures or in a manner that reflects standard practices accepted by the relevant scientific and technical communities. Data will also undergo quality control prior to being used by the agency and a pre-dissemination review.

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 destroy or adversely modify the habitat designated as critical habitat (habitat essential to the species’ conservation). The ESA requires NMFS 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 critical habitat. Consultations are necessary to determine the potential impacts of the proposed action. They conclude 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 designated critical habitat.

NMFS completed a biological opinion on September 21, 2020, evaluating the impacts of the Puerto Rico, St. Thomas and St. John, and St. Croix fisheries on ESA-listed species. Refer to Section 3.2.3 for additional information.

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 walruses). The Secretary of the Interior is responsible for walruses, sea otters, polar bears, manatees, and dugongs.

In 1994, Congress amended the MMPA, to govern the taking of marine mammals incidental to commercial fishing operations. 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. To legally fish in a Category I and/or II fishery, a fisherman must obtain a marine mammal authorization certificate by registering with the Marine Mammal Authorization Program (50 CFR 229.4) and accommodate an observer if requested (50 CFR 229.7(c)) and they must comply with any applicable take reduction plans.

The primary gear types used in the island-based fisheries are classified in the 2023 List of Fisheries as a Category III fishery (88 FR 16899), which is unchanged from the 2022 List of Fisheries as a Category III fishery (86 FR 43491). This classification indicates the annual mortality and serious injury of a marine mammal stock resulting from any fishery is less than or equal to one percent of the maximum number of animals, not including natural mortalities, that may be removed from a marine mammal stock, while allowing that stock to reach or maintain its optimum sustainable population. The amendment is not expected to alter existing fishing practices in such a way as to alter the interactions with marine mammals.

Paperwork Reduction Act (PRA)

The PRA of 1995 (44 U.S.C. 3501 et seq.) regulates the collection of public information by federal agencies to ensure that the public is not overburdened with information requests, that the federal government's information collection procedures are efficient, and that federal agencies adhere to appropriate rules governing the confidentiality of such information. The PRA requires NMFS to obtain approval from the Office of Management and Budget before requesting most

types of fishery information from the public. This action does not contain a collection-of-information requirement for purposes of the PRA.

Small Business Act

The Small Business Act of 1953, as amended, Section 8(a), 15 U.S.C. 634(b)(6), 636(j), 637(a) and (d); Public Laws 95-507 and 99-661, Section 1207; and Public Laws 100-656 and 101-37 are administered by the Small Business Administration. The objectives of the act are to foster business ownership by individuals who are both socially and economically disadvantaged; and to promote the competitive viability of such firms by providing business development assistance including, but not limited to, management and technical assistance, access to capital and other forms of financial assistance, business training and counseling, and access to sole source and limited competition federal contract opportunities, to help the firms to achieve competitive viability. Because most businesses associated with fishing are considered small businesses, NMFS, in implementing regulations, must assess how those regulations will affect small businesses.

Essential Fish Habitat (EFH)

The Magnuson-Stevens Act includes EFH requirements, and as such, each existing and new FMPs must describe and identify EFH for the fishery, minimize to the extent practicable adverse effects on that EFH caused by fishing, and identify other actions to encourage the conservation and enhancement of that EFH.

The areas affected by the proposed action have been identified as EFH for managed species, as described under the Puerto Rico, St. Thomas and St. John, and St. Croix FMPs. As specified in the Magnuson-Stevens Act, EFH consultation is required for federal actions, which may adversely affect EFH. Any required consultation requirements will be completed prior to implementation of any new management measures.

National Environmental Policy Act (NEPA)

The NEPA of 1969 (42 U.S.C. 4321 et seq.) requires federal agencies to consider the environmental and social consequences of proposed major actions, as well as alternatives to those actions, and to provide this information for public consideration and comment before selecting a final course of action. This document contains an Environmental Assessment to satisfy the NEPA requirements.

Executive Orders

E.O. 12630: Takings

The Executive Order on Government Actions and Interference with Constitutionally Protected Property Rights, which became effective March 18, 1988, requires that each federal agency prepare a Takings Implication Assessment for any of its administrative, regulatory, and legislative policies and actions that affect, or may affect, the use of any real or personal property. Clearance of a regulatory action must include a takings statement and, if appropriate, a Takings Implication Assessment. The NOAA Office of General Counsel will determine whether a Takings Implication Assessment is necessary for this amendment.

E.O. 12866: Regulatory Planning and Review

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

E.O. 12898: Federal Actions to Address Environmental Justice in Minority Populations and Low Income Populations

This Executive Order mandates that each Federal agency shall make achieving environmental justice part of its mission by identifying and addressing, as appropriate, disproportionately high and adverse human health or environmental effects of its programs, policies, and activities on minority populations and low-income populations in the United States and its territories and possessions. Federal agency responsibilities under this Executive Order include conducting their programs, policies, and activities that substantially affect human health or the environment, in a manner that ensures that such programs, policies, and activities do not have the effect of excluding persons from participation in, denying persons the benefit of, or subjecting persons to discrimination under, such, programs policies, and activities, because of their race, color, or national origin. Furthermore, each federal agency responsibility set forth under this Executive Order shall apply equally to Native American programs. Environmental justice considerations are discussed in Chapter 3.

The actions in this amendment are not expected to negatively impact minority or low-income populations.

E.O. 12962: Recreational Fisheries

This Executive Order 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 including, but not limited to, developing joint partnerships; promoting the restoration of recreational fishing areas that are limited by water quality and habitat degradation; fostering sound aquatic conservation and restoration endeavors; and evaluating the effects of federally-funded, permitted, or authorized actions on aquatic systems and recreational fisheries, and documenting those effects. Additionally, it 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 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.

E.O. 13089: Coral Reef Protection

The Executive Order on Coral Reef Protection (June 11, 1998) requires federal agencies whose actions may affect U.S. coral reef ecosystems to identify those actions, utilize their programs and authorities to protect and enhance the conditions of such ecosystems; and, to the extent permitted by law, ensure that actions they authorize, fund or carry out not degrade the condition of that ecosystem. By definition, a U.S. coral reef ecosystem means those species, habitats, and other national resources associated with coral reefs in all maritime areas and zones subject to the jurisdiction or control of the United States (e.g., federal, state, territorial, or commonwealth waters).

The Comprehensive Amendment to the FMPs of the U.S. Caribbean (CFMC 2005) designated habitats of particular concern in Puerto Rico and St. Croix for managed corals and established management measures to minimize, to the extent practicable, adverse effects caused by fishing on those habitats. There are no implications to coral reefs by the actions proposed in this amendment.

E.O. 13132: Federalism

The Executive Order on Federalism requires agencies, when formulating and implementing policies, to be guided by the fundamental Federalism principles. The Order serves to guarantee

the division of governmental responsibilities between the national government and the states that was intended by the framers of the Constitution. Federalism is rooted in the belief that issues not national in scope or significance are most appropriately addressed by the level of government closest to the people. This Order is relevant to FMPs and amendments given the overlapping authorities of NMFS, the states, and local authorities in managing coastal resources, including fisheries, and the need for a clear definition of responsibilities. It is important to recognize those components of the ecosystem over which fishery managers have no direct control and to develop strategies to address them in conjunction with appropriate international, state, tribal, and local entities.

No federalism issues have been identified relative to the actions proposed in this amendment.

E.O. 13112: Invasive Species

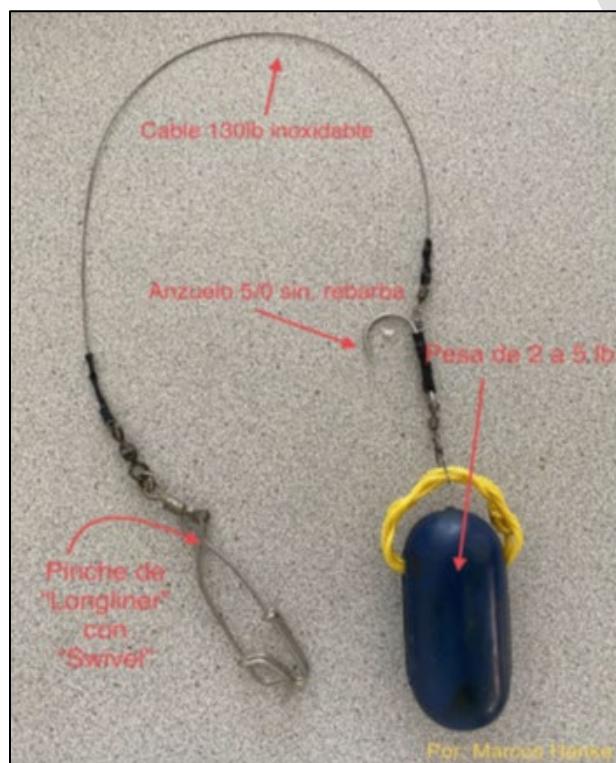
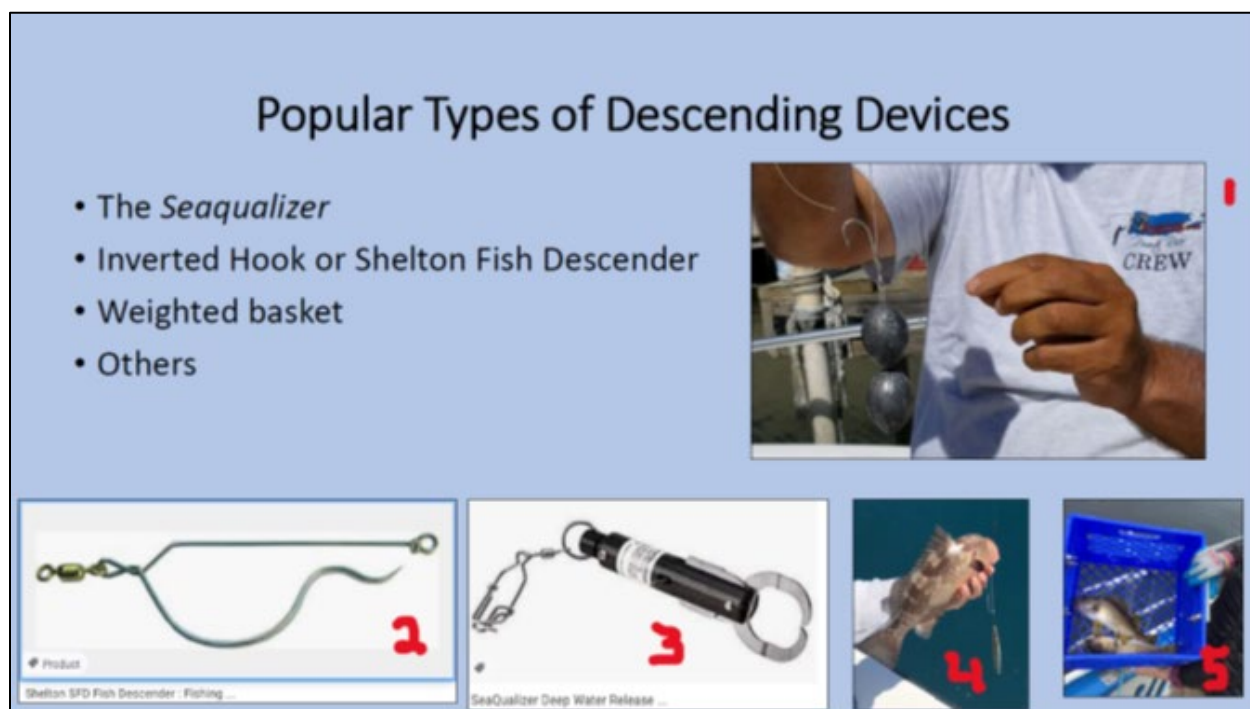
This Executive Order requires agencies to use their authority to prevent introduction of invasive species, respond to and control invasions in a cost effective and environmentally sound manner, and to provide for restoration of native species and habitat conditions in ecosystems that have been invaded. Further, agencies shall not authorize, fund, or carry out actions that are likely to cause or promote the introduction or spread of invasive species in the U.S. or elsewhere unless a determination is made that the benefits of such actions clearly outweigh the potential harm; and that all feasible and prudent measures to minimize the risk of harm will be taken in conjunction with the actions.

This action will not introduce, authorize, fund, or carry out actions that are likely to cause or promote the introduction or spread of invasive species in the U.S. or elsewhere.

E.O. 13158: Marine Protected Areas (MPA)

Executive Order 13158 (May 26, 2000) requires federal agencies to consider whether their proposed action(s) will affect any area of the marine environment that has been reserved by federal, state, territorial, tribal, or local laws or regulations to provide lasting protection for part or all of the natural or cultural resource within the protected area. This action will not affect negatively any MPAs in federal waters off Puerto Rico, St. Thomas and St. John, or St. Croix.

Appendix G. Examples of Descending Devices



Source: M. Hanke, fishermen, presentation at 178th Caribbean Council Meeting