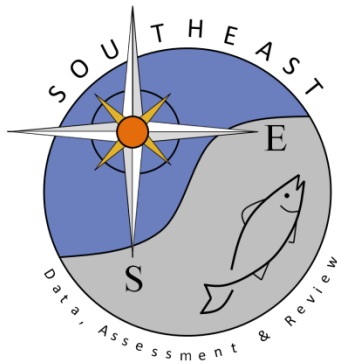


Preliminary Observations of Fishery Stakeholder Priorities in The U.S. Caribbean

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Preliminary Observations of Fishery Stakeholder Priorities in The U.S. Caribbean
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SEDAR 103: US Caribbean Application of Alternate Assessment Methods

Summary

This working paper presents preliminary results from an ongoing NOAA-funded project investigating the fishery management priorities of fishery stakeholders in the US Caribbean with the goal of informing future Management Strategy Evaluation (MSE) work by NOAA Fisheries. Between August 2024 and August 2026, over 60 semi-structured interviews were conducted with commercial fishers, recreational fishers, charter vessel license holders, pescadería owners, dive shop owners/employees, and other stakeholders across Puerto Rico and the US Virgin Islands.

Preliminary findings indicate that stakeholder attitudes toward fishery management vary considerably by island, sector, and regulation type. However, virtually all stakeholders stated that insufficient enforcement undermines the effectiveness of existing management measures. Some specific findings include the following: All fishers we interviewed in Puerto Rico are in favor of seasonal closures and support restrictions on nets. Many commercial fishers in both Puerto Rico and the USVI expressed interest in revisiting certain long-standing regulations (e.g., Mutton Snapper and Nassau Grouper closures, Red Hind area closures) to assess their continued necessity. Feelings toward catch limits and bag limits are complex, with these limits being popular for some species and for only some sectors. Charter fishers and commercial fishers frequently expressed concern about one another's fishing practices. Most expressed support for Fish Aggregating Device (FAD) installations, though motivations and concerns differed by sector. Stakeholders across all sectors emphasized a desire for greater communication and transparency around how and why regulations are developed.

As data collection and analysis are ongoing, these findings are preliminary and will be revised and elaborated on; the authors welcome feedback from readers.

I. Introduction

These are the preliminary results of an ongoing NOAA-funded project that seeks to answer the question: What are the fishery management priorities of fishery stakeholders in the US Caribbean? The primary goal of the project is to inform future Management Strategy Evaluation (MSE) work by NOAA Fisheries. Management strategy evaluation (MSE) involves “using simulation to compare the relative effectiveness for achieving management objectives of different combinations of data collection schemes, methods of analysis and subsequent processes leading to management actions” (Punt et al. 2014) and can help resource managers choose between different strategies or gauge performance of an existing strategy (ibid). MSE success hinges on stakeholders’ active engagement at each stage of MSE development (Goethel et al. 2019).

Key topics of discussion with stakeholders included fishery concerns, priorities for fishery management, attitudes toward previous management efforts, attributes of successful management, experience with management institutions (territorial, federal, and international), and changing fishing practices. Here we discuss areas in which various fishery sectors and

islands (Puerto Rico, St. Thomas and St. John, and St. Croix) align or differ, in particular regarding types of management actions and fishery regulations.

Interviews were conducted with over 60 participants including commercial fishers, recreational fishers, charter vessel license holders, pescadería owners, dive shop owners and employees, and others, with an emphasis on those often “left out” of the fishery management process. Non-commercial, often referred to as “recreational” fishing, was identified by US Caribbean stakeholders as an important driver of the US Caribbean fishery ecosystem (Seara et al. 2024) but is not often included as a stakeholder group in studies about stakeholder priorities in the US Caribbean. This project complements recent efforts to document fishery stakeholder perspectives in the U.S. Caribbean. Whereas previous participatory modeling workshops focused on the ecological, social, and economic dimensions of the Puerto Rican and U.S. Virgin Islands lobster fisheries (e.g., Agar et al. 2024a, 2024b), the present study explores stakeholder priorities regarding fisheries management more broadly across sectors and management issues.

Given that this project is ongoing, we do not have statistics about sectors of stakeholders.

II. Sampling Method

Participants for interviews are recruited through a variety of channels, including: current NOAA contacts, local recommendations, publicly available information (websites), and interviewee connections. We encourage participation of all fishery stakeholders who are interested in sitting for an interview. The stakeholders interviewed to date can be categorized into the following sectors: Commercial Fishers, Charter Fishers, Recreational Fishers, Pescadería Owners/Operators, Dive Shop Owners/Employees, and Other Stakeholders.

A. Sampling Years

August and November 2024; June to August 2026

B. Geographic Range

St. Croix, St. Thomas, St. John, San Juan, Arecibo, Guánica, Playa Santa, La Parguera, Puerto Real, Vieques, Culebra, Rincón, Fajardo, Ceiba, Cataño, Salinas, Carolina

C. Sample Size

Over 60 interview participants

D. Variables or Data Types Collected

This study employed an open-ended interview format to facilitate multi-topic conversations with stakeholders. Relevant data points are then extracted from conversations to highlight trends. A final analysis of all data points and responses will be used to answer our primary research question as well as additional topics that have been highlighted and added to discussions as a result of the interview process. Interviews are typically 30 minutes to an hour in length and are recorded using audio only or notes.

III. Results

While interviews are ongoing, we have noted preliminary trends, themes, and observations. Here we provide a bulleted list of these which we plan to explore further. Additionally, we have noted the following attitudes toward specific regulation types (in tables below). Attitudes toward regulations will be further discussed in section IV of this report (Discussion). As we continue to process data and conduct additional interviews, we plan to update these preliminary results and address specific topics in greater detail.

Trends, Themes, and Observations:

- Community fishing dynamics (including communication and interactions) vary in relation to location/island. In Puerto Rico, many fishers belong to a “fishing village” or *pescadería* ‘fish shop’. Fishers bring their catch directly to the *pescadería* who then sells it for them. In St. Croix, the fishers seem to work independently, often selling their catch the same day from their trucks on the side of the road. In St. Thomas and St. John fishers sell in five fish markets or directly to restaurants and hotels.
- In the USVI, overall, fishers both catch species “to order” and also try to catch a variety of (reef) species to have on hand for local buyers. In St. Thomas (and not St. Croix), it also seems that there are a few fishers who catch larger amounts of lobster specifically for the larger hotels.
- In Puerto Rico, the effects of demand on fishing vary more. Some “fishing villages” focus primarily on catching high value species such as lobster and conch. Other fishing villages and *pescaderías* have a variety of species, including lower value ones such as sharks. Many fishers sell to a wholesale dealer who then sells the fish to restaurants.
- Almost all fishers know of someone who “breaks the rules” - some *pescaderías* in Puerto Rico refuse to sell “illegal catch.” All fishers however, prefer outside enforcement over local action.
- Virtually all stakeholders, across sectors and islands, feel a lack of enforcement makes management unsuccessful.
- Stakeholders are mixed on perceived abundance of various species over time.
- Almost all fishery stakeholders are in favor of Fish Aggregating Devices (FAD) installations, but stakeholders vary in motivations for wanting them as well as reservations regarding potential negative consequences.
- Reef fishers believe FADs take pressure off reefs. Pelagic fishers would like to catch more fish. Dive shop owners/employees are uncertain. Almost all fishers compared FAD policy in the US Caribbean to policy related to FADs in the Dominican Republic, stating that the DR provides many FADs for fishers.
- Some stakeholders worry about the environmental impact of “lost FADs.”
- Charter fishers are concerned about commercial fishers’ fishing practices.
- Commercial fishers are concerned with charter fishers’ fishing practices and perceived sales.
- Fishers across islands and stakeholder groups greatly vary in their preference for how to learn about new regulations and other management changes (social media, posters, websites, local contact, etc.).

- Fishers across islands and stakeholder groups greatly vary in species they would prioritize for management.
- Fishers across islands and stakeholder groups would like more communication about how and why regulations are created.
- Fishers across islands and stakeholder groups would like current regulations to be “revisited” to determine if still necessary. For example: current prohibition on fishing Nassau Grouper.
- Fishers in the USVI are pessimistic about the future of the fishing industry because young people are not becoming fishers.
- Changes in seafood preferences have greatly changed demand for fish, for example some stakeholders state that younger people in some areas eat less seafood and/or prefer fillets to whole fish.
- The vast majority of stakeholders perceive threats to the fishery. Pollution (e.g., river runoff, development close to shore, sewage, dredging, dumping in marinas, boat waste including oil in marinas) is often cited as the most common threat amongst all stakeholders. Other threats include overfishing, young people's lack of interest in fishing, specific fishing practices (gill nets), increasing water temperature, foreign industrial fishing, invasive species, increasing shark pressure, and more.

Attitudes toward regulation types:

In Tables 1-4, we have ranked these using the following scale: none, few, many, most, all (denotes level of agreement amongst fishery stakeholders). An asterisk denotes an additional comment and/or caveat which is discussed in the following section. We do not yet have enough recreational fisher stakeholders in our study to include a table for them.

Table 1: Commercial Fishers

Perceived as effective/positive feelings towards	Puerto Rico	USVI
<i>Limits including bag limits, catch limits (ACLs or daily quotas), trip limits</i>	<i>Many *(for recreational sector) but few (for commercial sector)</i>	<i>Many *(for recreational sector) but few (for commercial sector)</i>
<i>Size Limits</i>	<i>Most</i>	<i>Many *revisit size restrictions</i>
<i>Seasonal Closure (called Veda in Puerto Rico)</i>	<i>All *revisit Mutton Snapper</i>	<i>Few *revisit Mutton Snapper</i>
<i>Gear Restriction</i>	<i>All *nets</i>	<i>Some</i>
<i>Location Restriction</i>	<i>Many</i>	<i>Some *revisit Red Hind bank closure</i>
<i>Species Restriction</i>	<i>Many</i>	<i>Many *revisit Nassau Grouper prohibition</i>

<i>Bait Restriction</i>	<i>Few</i>	<i>Few</i>
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Table 2: Charter Fishers

Perceived as effective/positive feelings towards	Puerto Rico	USVI
<i>Limits including bag limits, catch limits (ACLs or daily quotas), trip limits</i>	<i>Most *(especially for commercial fishers), (additionally decrease Mahi limits for all fishers)</i>	<i>(small sample size - more data required)</i>
<i>Size Limits</i>	<i>All *increase for Mahi and (other species as well)</i>	<i>(small sample size - more data required)</i>
<i>Seasonal Closure (called Veda in Puerto Rico)</i>	<i>All</i>	<i>(small sample size - more data required) *revisit Mutton Snapper</i>
<i>Gear Restriction</i>	<i>All</i>	<i>(small sample size - more data required)</i>
<i>Location Restriction</i>	<i>Some *see section IV</i>	<i>(small sample size - more data required) *revisit Red Hind</i>
<i>Species Restriction</i>	<i>All</i>	<i>(small sample size - more data required)</i>
<i>Bait Restriction</i>	<i>Few</i>	<i>(small sample size - more data required)</i>

Table 3: Pescadería Owners/Operators

Perceived as effective/positive feelings towards	Puerto Rico	USVI
<i>Limits including bag limits, catch limits (ACLs or daily quotas), trip limits</i>	<i>Few</i>	<i>N/A *Pescaderías or similar “fish houses” are not found in the USVI</i>
<i>Size Limits</i>	<i>All</i>	<i>N/A</i>
<i>Seasonal Closure (called Veda in Puerto Rico)</i>	<i>All</i>	<i>N/A</i>
<i>Gear Restriction</i>	<i>No preference</i>	<i>N/A</i>

<i>Location Restriction</i>	<i>No preference</i>	<i>N/A</i>
<i>Species Restriction</i>	<i>Most</i>	<i>N/A</i>
<i>Bait Restriction</i>	<i>No preference</i>	<i>N/A</i>

Table 4: Dive Shop Owners/Employees

Perceived as effective/positive feelings towards	Puerto Rico	USVI
<i>Limits including bag limits, catch limits (ACLs or daily quotas), trip limits</i>	<i>All</i>	<i>(small sample size - more data required)</i>
<i>Size Limits</i>	<i>All</i>	<i>(small sample size - more data required)</i>
<i>Seasonal Closure (called Veda in Puerto Rico)</i>	<i>All</i>	<i>(small sample size - more data required)</i>
<i>Gear Restriction</i>	<i>All</i>	<i>(small sample size - more data required)</i>
<i>Location Restriction</i>	<i>All</i>	<i>(small sample size - more data required)</i>
<i>Species Restriction</i>	<i>All</i>	<i>(small sample size - more data required)</i>
<i>Bait Restriction</i>	<i>No preference</i>	<i>(small sample size - more data required)</i>

IV. Discussion

Each conversation with stakeholders included questions about their attitudes toward specific regulation types. Stakeholders often share additional details which qualify their responses. Below is a brief discussion of trends we have noticed regarding their opinions toward specific regulation types. Attitudes are often in conflict across stakeholder groups.

- Many commercial fishers in both Puerto Rico and the USVI would like to see bag limits and/or trip limits imposed on recreational and charter fishers. Many commercial fishers believe that other fishing sectors are catching too many fish, including specific species that are perceived as high value (Mahi, Wahoo, certain types of Snapper, Lobster).
- Many commercial fishers in the USVI would like size limits on specific species to be “revisited.” (As an example, many would like lobster to be 3 inches instead of 3.5 and some mentioned that the limit for Mahi should be smaller).

- Commercial fishers in both Puerto Rico and the USVI would like to revisit the Mutton Snapper seasonal closure and/or area closure. Many commercial fishers perceive an abundance of Mutton Snapper and would like to fish for other species in the closed area. They would also like to have the timing of some other seasonal closures revisited, to confirm whether it is, e.g., actually during the spawning time of the species.
- All commercial fishers in Puerto Rico would like to see a total ban and enforcement against the use of gill nets and nets with openings under four inches (especially at “river mouths”). Commercial fishers in the USVI were more varied regarding gear restrictions. Commercial fishers in both Puerto Rico and the USVI would like to see monetary incentives for ceasing net usage. (See Agar et al 2019 for a discussion of net buyback and ban in St. Croix).
- Some commercial fishers in the USVI would like to see a re-evaluation of the Red Hind area closure to determine if it is still necessary. Many commercial fishers feel area closures should be re-evaluated on a routine basis.
- Commercial fishers in Puerto Rico and the USVI indicated that they would like to see regulations routinely re-evaluated to determine whether each one is currently necessary. Commercial fishers feel that once a regulation is enacted, it is hard to reverse.
- Many commercial fishers in the USVI would like the species prohibition on Nassau Grouper to be re-evaluated. Many commercial fishers perceive an abundance of Nassau Grouper.
- Most charter fishers in Puerto Rico agree with bag limits for some species, and some would like to see catch limits decreased for commercial fishers for some species.
- Some charter fishers in Puerto Rico would like to see additional limits to Mahi for all fishers (commercial, recreational, and charter) because they feel that Mahi is overfished.
- Some charter fishers in Puerto Rico would like to see area closures revisited. These charter fishers would like to fish in closed areas without targeting the species the area closure is intended to protect. They assert fishing for another species within a closed area is possible without disrupting the area's ecosystem.
- *Pescadería* owners favor size, season, and species restrictions. They assert these restrictions are enforceable at the “*pescadería* level.”
- Most dive shop owners/employees are in favor of all restrictions and they emphasize that they also “rely on fish as their livelihood.”

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