

Draft Recovery Plan for the Oceanic Whitetip Shark: ID453

Peer Review Comments

We solicited review of the *Draft Recovery Plan for the Oceanic Whitetip Shark (Carcharhinus longimanus)* from four potential reviewers. Two people agreed to be reviewers and provided reviews. Reviewer responses to the terms of reference questions compiled below are not in the order of the reviewer identification list below.

Reviewers (listed alphabetically):

Dr. Melanie Hutchinson
Senior Bycatch Mitigation Scientist
Inter-American Tropical Tuna Commission

Dr. Yannis Papastamatiou
Associate Professor
Florida International University

Responses to Charge Statement Questions

Reviewer #1:

1. *Is the threats assessment clear, accurate, and supported by the best available scientific and commercial information (you may refer to the Draft Oceanic Whitetip Shark Recovery Status Review Report, NMFS 2023a)?*

Yes

2. *Are the management units identified appropriately and justified adequately?*

Yes, but I feel recovery plan should include better validation of connectivity or lack of between MUs (especially for the Pacific).

3. *Are the draft recovery criteria scientifically appropriate and adequately justified for the species given the types and level of information available?*

Yes

4. *Are the draft recovery actions appropriate and sufficient?*

Yes

5. *Are there other recovery actions that should be considered for inclusion in the plan?*

Yes, but see above regarding connectivity of Pacific MUs. I would also add under ecotourism another issue is poor ecotourism practices creating additional negative feelings towards sharks. There have been several high profile bites and attacks by OWT on tourist divers due to poorly operated tourism operations and due to the nature of this species, I believe there will be more. Certainly not a major threat but one that is perhaps unique to this species (there are not many pelagic sharks that feature in diving ecotourism and this species is particularly curious towards divers).

6. *Is the estimated time to recovery informed by the best available scientific information?*

Yes

7. *Do recovery action priorities presented in the plan's Implementation Schedule reflect a biologically sound conservation approach for oceanic whitetip shark recovery?*

Yes

Reviewer #2:

1. *Is the threats assessment clear, accurate, and supported by the best available scientific and commercial information (you may refer to the Draft Oceanic Whitetip Shark Recovery Status Review Report, NMFS 2023a)?*

No answer.

2. *Are the management units identified appropriately and justified adequately?*

No answer.

3. *Are the draft recovery criteria scientifically appropriate and adequately justified for the species given the types and level of information available?*

No answer.

4. *Are the draft recovery actions appropriate and sufficient?*

No answer.

5. *Are there other recovery actions that should be considered for inclusion in the plan?*

No answer.

6. *Is the estimated time to recovery informed by the best available scientific information?*

No answer.

7. *Do recovery action priorities presented in the plan's Implementation Schedule reflect a biologically sound conservation approach for oceanic whitetip shark recovery?*

No answer.

Editorial Comments

Reviewers provided various editorial comments focused on providing minor clarifications, additional information and corrections to certain pieces of information throughout the document, including potential typos, grammar corrections, corrections to citations, etc. These were incorporated into the final document as appropriate. In addition, the following substantive comments were provided and are presented by section of the document:

1.1 ESA Listing of the Oceanic Whitetip Shark

Reviewer 1: Regarding population structure, as cited in Camargo et al. 2016: Seems to me that movement data also support that it is highly unlikely there is one single population.

1.2 Threats to the Species' Viability and Other Stressors

Table 1. Oceanic Whitetip Shark Threats Assessment Summary Table

Reviewer 2 provided the following comments on the threat rankings presented in the threats assessment table:

Atlantic Ocean Management Unit

- Commercial fisheries bycatch: purse seine
 - Severity: High - The reviewer states: "Should probably be high-moderate if longline is high-moderate. There is only one study that has post release survival data on OCS and they show 100% survival (Bush et al 2021 Indian Ocean)."
 - Trend: Unknown - The reviewer states: "Why is this unknown? I thought that purse seine fisheries had the best observer data coverage and reporting rates. I would think it would be stable to decreasing as effort is regulated. While longline would be stable to increasing as effort seems to be increasing."
- Commercial fisheries bycatch: longline
 - Certainty: Moderate - The reviewer states: "Per the definition of certainty I would have classified longlines as High."
- Artisanal fisheries

- Frequency: Uncommon - The reviewer states: “I think we should define artisanal fisheries somewhere – Also there is very little data on catch and effort for most ‘artisanal’ fisheries so I’m curious how this was determined.”

Eastern Pacific Management Unit

- Commercial fisheries bycatch: purse seine
 - Frequency: Common - The reviewer states: “Catch rates are pretty low in the EPO class 6 PS fishery and pales in comparison to the longline and what may be considered artisanal in some areas.”
- Illegal retention
 - Frequency: Common - The reviewer states: “Where does this classification come from? IATTC has a no retention measure.”
- Inadequacy of fisheries regulations
 - Severity: Moderate - The reviewer states: “Because there is very little monitoring or enforcement across RFMOs and range states it seems like we should use precautionary metrics here.”

Western and Central Pacific Management Unit

- Illegal retention
 - Frequency: Common - The reviewer states: “Same comment, what is the justification here? WCPFC also has a no retention measure.”

Other Threats or Stressors (applies to global population)

- Climate change
 - Certainty: Low - The reviewer states: “I think moderate might be more appropriate since this species is relatively restricted to the mixed layer which will be affected the most by warming oceans. Additional impacts may affect their physiological response to stress during capture since many reactions are temperature dependent.”

3.2 Management Units

Reviewer 1: In reference to the statement that the scope and magnitude of threats in the Indian Ocean are potentially higher than some regions due to higher at-vessel mortality rates in pelagic longlines and wider use and impacts of gillnets, the reviewer asks whether it is known why.

Reviewer 2: In reference to the statement that longline fishing mortality is likely not as significant in the Eastern Pacific Ocean MU as in the WCPO MU, the reviewer asks whether this could be due to the fact that the little observer data available is not representative of the whole fleet and/or that this population has already been overfished? The reviewer provided a link to the following report for further information: [BYC-10 INF-D LL Data Summary and expansion \(iattc.org\)](#)

3.3 Objectives and Criteria

3.3.1 Demographic Objectives and Criteria

Reviewer 2: The reviewer acknowledged the usefulness and level of detail in the explanations of the criteria and justifications.

Justification of Criteria 1a and 1b

Reviewer 1: Regarding the sentence, “This apparent unifying principle of population dynamics is independent of phenomena related to body size since the rate of population growth is not correlated with body size,” the reviewer asks, “But metabolic ecology shows that it is?”

Reviewer 1: In reference to the value “K,” the reviewer asks for clarification whether this refers to “carrying capacity.”

3.3.2 Threats-based Objectives and Criteria

Factor A: Present or Threatened Destruction, Modification, or Curtailment of Habitat or Range

Reviewer 1: Reviewer asked for a citation for the following sentence: “Recent information suggests that climate change effects (e.g., ocean warming) may negatively affect oceanic whitetip sharks via shifts in vertical and horizontal movements and distribution due to physiological intolerance to warming temperatures, as well as shifts in primary prey distribution.”

Factor D: Inadequacy of Existing Regulatory Mechanisms

Reviewer 2: The reviewer suggested there needs to be some discussion regarding the inadequacy of no retention measures if they are not accompanied by mandatory best handling and release measures and increased monitoring to ensure discarded animals have the highest probability of post-release survival. For example, gaffing, shooting, bludgeoning, or rolling animals through the block prior to gear recovery or removal from gear needs to be discouraged in a meaningful way. The reviewer noted this is particularly important in fisheries where at-vessel survival rates are high and post-release survival rates are also high if best handling practices are used and enforced (i.e., all hook and line and purse seine fisheries). The reviewer also noted that no retention may discourage targeting, but it may not reduce mortality if poor practices are used.

4.1 Recovery Action Outline

Recovery Actions

Reviewer 1: In reference to Population Dynamics, Recovery Action #2, “Improve knowledge and understanding of oceanic whitetip shark distribution, movement, and habitat use,” reviewer comments, “Can we focus on evaluating connectivity between management zones? Atlantic is one zone so fairly easy but there are assumptions that Pacific zones may be connected. This should be quantifiable with satellite tagging efforts.”

Reviewer 2: In reference to Fisheries Interactions, Recovery Action #4, “Reduce fisheries bycatch and mortality of oceanic whitetip sharks by determining and addressing the frequency of capture, and severity of fishing interactions in commercial, artisanal, and recreational fisheries,” the reviewer asked for clarification on whether this applies only to U.S. waters. The reviewer also noted that what we really need are data on catch rates, an understanding of fishing strategies that may influence catch rates, and whether or not the animals are going to survive the interaction, so increased monitoring is of utmost importance across their range.

Reviewer 2: In reference to Monitoring and Reporting, the reviewer commented, “Interaction rates are underreported in legal fisheries particularly in the EPO where observer coverage is less than 5%. I believe enhanced monitoring of ALL fisheries is imperative to this endeavor and deserving of an action point here outside of the IUU point. I suggest breaking this up into two actions, ‘7. Improve species-specific monitoring and reporting of oceanic whitetip sharks in commercial and artisanal fisheries by RFMOs and individual countries to provide a better understanding of the effects of fishing, improve estimates of catch and discards, and measuring progress towards recovery. 8. Improve monitoring and international collaborations to generate estimates on magnitude of impacts from IUU fishing’.”

4.2 Recovery Action Narrative

Fisheries Interactions

4. Reduce Fisheries bycatch and mortality of oceanic whitetip sharks by determining and addressing the frequency of capture and severity of fishing interactions in commercial, artisanal, and recreational fisheries.

Reviewer 1: Regarding the sentence, “This could include, for example, the potential use of time-area closures in areas used by oceanic whitetip sharks, various deterrent methods, research on best methods to increase at-vessel and post-release survivorship (e.g., gear configurations), and development and implementation of species and gear-specific safe handling and release guidelines,” the reviewer commented, “What about better quantifying the overlap between sharks and fishing activity? This was done for the Atlantic (well for sharks tagged in The Bahamas) but needs better representation and remains unknown for the Pacific. Satellite tagging of sharks overlaid with ALS tracking of boats (Quenoz et al. Nature).”

Reviewer 2: The reviewer suggested an additional reference (Francis et al. 2023) regarding post-release survivorship in longline fisheries.

5. Reduce fisheries bycatch and mortality of oceanic whitetip sharks in international fisheries and trade through enhanced international coordination and collaboration with relevant international organizations, such as RFMOs.

Reviewer 2: Regarding the sentence, “Activities include encouraging Parties to implement domestic regulations to comply with RFMO measures (especially retention prohibitions), increasing observer coverage to minimum requirements, and increasing data collection on oceanic whitetip sharks to better understand the impact of fishing on the species,” the reviewer notes that the minimum requirements for observer coverage are insufficient and cited Griffiths et al. 2021.

Reviewer 2: The reviewer suggested adding the Marine Stewardship Council to the list of example organizations with whom it would be beneficial to enhance coordination.

Reviewer 2: With regard to the sentence, “Therefore, this recovery action includes investing in capacity building programs in these key countries or regions, which will be critical for reducing the main threat of overfishing on the oceanic whitetip shark,” the reviewer noted that this is critical.

Monitoring and Reporting

7. Improve species-specific monitoring and reporting of oceanic whitetip sharks in commercial and artisanal fisheries by RFMOs and individual countries to provide a better understanding of the effects of IUU fishing, improve estimates of catch and discards, and measure progress toward recovery.

Reviewer 2: The reviewer commented, “I think this needs to be broken into two points as I delineated above. There needs to be data on interaction rates in all fisheries full stop. There is a need for international collaborations to understand the scale and impacts of IUU fishing as well. The content below also doesn’t really address IUU fishing. There are several FAO reports on IUU fishing that will help illustrate why it is concerning for OCS population recovery and why it needs to be addressed with international collaborations.”

Regulatory Mechanisms and Enforcement

8. Reduce fishing mortality of oceanic whitetip sharks through effective development, implementation, and enforcement of international and domestic measures, such as legislation and regulations.

Reviewer 2: The reviewer noted that the reference to Musyl et al. 2011 is not an appropriate reference, as the study was from scientific charters on a NOAA whiteship. Also, in normal commercial operations, around one third of oceanic whitetip sharks are dead at the vessel, so they really are not that robust to capture in longline fisheries and they seem to tire easily and quickly.

Reviewer 2: With regard to the sentence, “The United States should also work through other international mechanisms such as CITES to ensure that any trade occurring (legal or illegal) is not impeding recovery of the species,” the reviewer commented, “The U.S. could also implement bans on imports of fish from nations that do not have similar or

more exhaustive conservation regulations as U.S. fisheries do (as they have done for the MMPA).

Other Stressors

10. Identify, evaluate, and minimize any other stressors that may be impeding recovery of oceanic whitetip sharks.

Reviewer 1: Regarding the example of the operation of an aquaculture pen off the coast of Kona, Hawaii as a potential emerging stressor to oceanic whitetip sharks, the reviewer commented, “Seems like a bigger issue here is humans being injured by sharks through some very poor tourism practices which will counteract education efforts for this species.”

Reviewer 2: The reviewer commented, “What about plastics? They get entangled in plastic, microplastics are piercing the gut cavities of the basis of their food chain. It’s a monkey wrench but needs to be a part of the conversations on ocean health.”

Reviewer 2: Regarding the sentence, “The species’ broad distribution and ability to move to areas that suit their biological and ecological needs may buffer effects from climate change,” the reviewer commented, “Or climate change can eradicate corridors between essential habitats and areas of biological significance.”