NOAA FISHERIES
Office of Protected Resources

RECOVERY OUTLINE

OCEANIC WHITETIP SHARK

The oceanic whitetip shark (*Carcharhinus longimanus*) was listed as threatened under the Endangered Species Act (ESA) on January 30, 2018 (83 FR 4153). The National Marine Fisheries (NMFS) will develop a recovery plan for this species. In the interim, NMFS has developed this recovery outline to provide a preliminary strategy for conservation of the oceanic whitetip shark. The recovery outline guides initial recovery actions while ensuring that future recovery options are not precluded due to a lack of interim planning. As such, this outline is meant to serve as an interim guidance document to direct recovery efforts, including recovery planning, for the oceanic whitetip shark until a full recovery plan is developed and approved. A preliminary strategy for recovery of the species is presented here, as are recommended high priority actions to stabilize and recover the species.

This recovery outline commences our recovery planning process. The recovery outline is intended primarily for internal use by the National Marine Fisheries Service (NMFS) as an interim planning document. Formal public participation in recovery planning for the oceanic whitetip shark will be invited upon the release of a draft recovery plan for the species. However, any new information or comments that members of the public may wish to offer as a result of this recovery outline will be taken into consideration during the recovery planning process. Interested parties may contact Chelsey Young (301-427-8491).

Listing Information:

Species Name: Oceanic whitetip shark, *Carcharhinus longimanus*
Species Range: Global (United States and foreign waters)
Recovery Priority Number: 6C
Listing Status: Threatened; January 30, 2018
Lead Office: NMFS Office of Protected Resources
Lead Contact: Chelsey Young, 301-427-8491, Chelsey.young@noaa.gov

BACKGROUND

Type and Quality of Information to Date:
Available information on the biology, life history, range, and habitat preferences of the oceanic whitetip shark is described in detail in the status review report (Young *et al.*, 2017) and the proposed and final listing rules (81 FR 96304, December 29, 2016; 83 FR 4153, January 30, 2018, respectively). The most significant uncertainties with respect to setting recovery objectives and recovery actions include availability of specific information regarding the species' current and historical abundance, population structure and dynamics, reproductive periodicity and seasonality, locations of breeding and nursery grounds, essential habitat features, migratory patterns/routes, and

bycatch and mortality rates in global fisheries. These uncertainties are acknowledged as playing a limiting role in the early recovery efforts for this species and should be resolved to the extent possible through close coordination with the shark research community and the recovery planning process. Another significant recovery challenge is that the majority of the oceanic whitetip sharks' global distribution occurs primarily outside of U.S. jurisdiction. As such, the United States has limited control on the management measures that are adopted and implemented in other countries, as well as enforcement of those measures.

Life History:
The oceanic whitetip shark is found in tropical and subtropical seas worldwide. The oceanic whitetip is a pelagic species of shark, generally remaining offshore in the open ocean, on the outer continental shelf, or around oceanic islands in water depths greater than 184 m, and occurring from the surface to at least 152 m depth (Backus *et al.,* 1956; Strasburg 1958; Compagno 1984; Bonfil *et al.,* 2008). This species has a strong preference for the surface mixed layer in warm waters above 20°C (Bonfil *et al.,* 2008) and is therefore considered an epipelagic shark. Oceanic whitetip sharks are highly mobile and can travel great distances in the open ocean environment, with excursion estimates of several thousand kilometers. They can show a high level of site fidelity to particular locations such as Cat Island, Bahamas and Northeast Brazil (Howey-Jordan *et al*., 2013; Tolotti *et al.,* 2015). The oceanic whitetip shark is a relatively long-lived, slow-growing, and late maturing species that has low to moderate productivity when compared to other sharks. Like other carcharhinid species, the oceanic whitetip shark is viviparous (i.e., the species gives birth to live young) with placental embryonic development. At present, published literature suggests the reproductive cycle is biennial, with the species giving birth on alternate years after a lengthy 10-12 month gestation period. The number of pups in a litter ranges from 1-14, with an average of 6. Additionally, there is a likely positive correlation between female size and number of pups per litter, with larger sharks producing more offspring in all three ocean basins (Bass *et al.,* 1973; Compagno 1984; Seki *et al.,* 1998; Bonfil *et al.,* 2008; IOTC 2015; Varghese *et al.,* 2016).

Limiting life history characteristics:
The oceanic whitetip shark has low-moderate productivity, including slow growth, a relatively late age of maturity for shark species (ranging from 5–9 years for females depending on geographic location), long gestation periods, small average litter sizes, and potentially biennial reproductive periodicity. All of these characteristics limit the species' ability to compensate for and recover from threats that reduce its abundance and productivity. However, recent, unpublished data obtained via ultrasonography of pregnant females over multiple years suggests that, at least for a portion of the population, reproduction could be annual (Gelsleichter unpublished data, University of North Florida). Breeding frequency can have a significant effect on the productivity of a population and its ability to recover. The oceanic whitetip is also a highly migratory species that travels long distances across jurisdictional boundaries. As such, conservation and recovery of the species will be complicated, as it will rely heavily on regional and international cooperation.

Primary Threats:
The most significant and immediate threat to the oceanic whitetip shark is ongoing and significantly high rates of fishing mortality driven by incidental catch (i.e., bycatch), particularly of juveniles, in numerous commercial fisheries throughout its range, coupled with demands of the international trade in shark fins and illegal fishing activities. Because of the species' strong preference to remain in shallow, warm, tropical surface waters, oceanic whitetip sharks are vulnerable to interactions with

commercial fisheries operating in its core habitat areas globally. Commercial pelagic longline fisheries likely have the most significant impact to oceanic whitetip sharks, followed by commercial purse seine fisheries. Gillnet fisheries, predominantly operating in the Indian Ocean, also impact oceanic whitetip shark populations. Finally, oceanic whitetip sharks are a preferred species in the international trade for shark fins because the species' large, distinctive fins obtain a high price on the international market, which incentivizes finning of the species when caught. Although the species was listed in Appendix II of the Convention on International Trade in Endangered Species of Wild Fauna and Flora (CITES; effective in 2014), compliance issues were noted at the time of listing, with several fin shipments confiscated in Hong Kong due to missing CITES permits from several source countries. Additionally, we noted compliance and enforcement issues with existing conservation and management measures in several of the major tuna Regional Fisheries Management Organizations (RFMOs). Therefore, we determined existing regulations outside of the United States to be largely inadequate for mitigating the aforementioned threats and therefore concluded inadequate regulatory mechanisms to be a contributing factor to the species' extinction risk.

Current Biological Status of the Species:
Numerous lines of evidence from all three ocean basins suggest that that the once abundant and ubiquitous oceanic whitetip shark has likely experienced significant historical population declines throughout its global range and is now considered rare. As summarized in the status review report (Young *et al.,* 2017), multiple data sources and analyses, including a stock assessment and trends in relative abundance, suggest population declines in excess of 50-80% in most areas. Recent evidence suggests that most populations are still experiencing various levels of decline due to continued fishing pressure and associated mortality. In addition to declines in oceanic whitetip catches throughout its range, there is also evidence of declining average size over time in some areas, which suggests growth overfishing is occurring. With such extensive declines in the species' global abundance and the ongoing threat of overutilization, the species' slow growth and low-moderate productivity may limit its ability for compensation and recovery. Related to this, the low genetic diversity (Camargo *et al.,* 2016) of oceanic whitetip is also cause for concern and may pose a risk to the species' viability in the future. This is particularly concerning because it is possible (though uncertain) that a reduction in genetic diversity following the large reduction in population size due to overutilization has not yet manifested in the species, in which case a future reduction would lead to even lower genetic diversity. Loss of genetic diversity can lead to reduced fitness and a limited ability to adapt to a rapidly changing environment, thus increasing the species' overall risk of extinction.

Conservation Actions to Date:
The oceanic whitetip shark occurs both inside and outside U.S. jurisdiction. Foreign countries have varying levels of protective legislation for sharks in general, and oceanic whitetip sharks specifically. Several laws, regulations, and policies governing U.S. waters provide various protections for sharks in general (e.g., Magnuson-Stevens Fishery Conservation and Management Act, Shark Finning Prohibition Act, and Shark Conservation Act, various state level fisheries restrictions, etc.), with some regulations specifically directed towards the conservation of the oceanic whitetip shark. For example, retention of oceanic whitetip sharks is prohibited in the U.S. Northwest Atlantic when using pelagic longline gear and on recreational (HMS Angling and Charter Headboat permit holders) vessels that possess tuna, swordfish, or billfish (76 FR 53652, August 29, 2011). Similar retention prohibitions are applicable in the Pacific Islands

pelagic longline (Hawaii and American Samoa) and purse seine fisheries, as well as any gear type fishing for tuna and tuna-like species in the Eastern Pacific.

Internationally, the oceanic whitetip shark is the only shark species that has a retention prohibition adopted in all major tuna regional fisheries management organizations. As noted previously, the species is also listed under Appendix II of CITES, which regulates trade of the species and its parts. In 2018, the oceanic whitetip was proposed by the government of Brazil for listing on the Convention on Migratory Species-Memorandum of Understanding on the Conservation of Migratory Sharks. As described previously, we noted during the ESA listing process that issues related to compliance and enforcement remain prevalent with regard to the adequacy of these measures to prevent further declines in abundance of the species. Additionally, numerous governmental and non-governmental agencies, institutions, and organizations are involved in conservation awareness for shark species. These entities provide an active conservation constituency and are integral to the conservation and recovery of the oceanic whitetip shark. These regulatory mechanisms and conservation efforts are fully described in the status review report (Young *et al.*, 2017).

Recovery Priority Number:
Based on NMFS Recovery Priority Guidance (84 FR 18243, April 30, 2019), the oceanic whitetip shark should be assigned a recovery priority number of 6C due to the following: 1) the species has a moderate demographic risk; 2) there is an adequate understanding of major threats 3) the United States has a low level of influence for addressing major threats through management or protective actions; and 4) there is moderate certainty that management actions will be effective. The oceanic whitetip shark also received a "C" for conflict, because it is a bycatch species in commercial fisheries and therefore in conflict with economic activity.

INTERIM RECOVERY PROGRAM

Interim Recovery Strategy
In advance of an approved recovery plan, the initial focus of the interim recovery program will be two-fold: 1) to stabilize population trends through reduction of threats, such that the species is no longer declining throughout a majority of its range and 2) to gather additional information through research and monitoring on the species' current distribution and abundance; reproductive periodicity and seasonality; location of breeding and nursery grounds; and mortality rates in commercial fisheries (including at-vessel and post-release mortality). Because the oceanic whitetip shark largely occurs in waters outside of U.S. jurisdiction, international coordination will be critical to ensuring recovery of the species. Therefore, to be effective, all of these actions would need to be undertaken throughout the species' range, both domestically and internationally.

Action Plan

- Maintain existing U.S. laws and regulations that protect sharks and prohibit retention of oceanic whitetip sharks in pelagic longline fisheries and some recreational fisheries
- Improve understanding of bycatch and associated mortality rates (including at-vessel and post-release mortality) in key fisheries, including impacts of various factors such as gear type, hook type and depth, temperature, temporal and spatial fishing effort, interactions

with fish aggregating devices, etc. for informing future fisheries management strategies to reduce fisheries interactions and associated mortality
- Reduce primary threats (e.g., bycatch-related mortality in commercial fisheries) to prevent further declines in species' abundance and stabilize populations, including investigating best methods for handling, gear removal, and safe release of oceanic whitetip sharks in longline fisheries
- Improve understanding of population distribution, abundance, trends, and structure through research, monitoring, and modeling
- Identify and protect key habitat areas, including breeding and nursery grounds through research, monitoring, modeling, and management
- Improve understanding of reproductive periodicity and seasonality to inform future management measures for minimizing impacts to the species during key life history functions
- Review available information to determine if any countries continue to catch significant amounts of oceanic whitetip shark and/or are involved in the trade of oceanic whitetip fins to prioritize outreach and coordination for improving compliance with RFMO and CITES requirements
- Coordinate with relevant Regional Fisheries Management Organizations to improve, where needed, reporting and compliance related to current conservation measures for oceanic whitetip shark to address bycatch mortality

PRELIMINARY STEPS FOR RECOVERY PLANNING

Recovery Plan Development

NMFS will develop a recovery plan for the oceanic whitetip shark within the United States pursuant to section 4(f) of the ESA. The plan will be a single species plan and will include site-specific measures that will lead to recovery of the species, objective and measurable criteria that will enable NMFS to evaluate progress toward recovery and delisting, and estimates of time and costs of recovery.

In lieu of a appointing a formal recovery team, NMFS will host a series of stakeholder workshops and expert elicitation conferences to gather facts, input, and perspectives on how to recover the oceanic whitetip shark from key stakeholders and scientific experts. Recovery planning efforts will be coordinated with the relevant NMFS Fisheries Science Centers and Regional Offices, Office of Sustainable Fisheries Highly Migratory Species Division, Office of International Affairs, and relevant Fishery Management Councils. The draft recovery plan will be made available for public review and comment.

Stakeholder Involvement

While NMFS is ultimately responsible for developing and implementing this recovery plan, the plan will have a greater likelihood of success if it is developed in partnership with key stakeholders, including others who have the responsibility and authority to implement specific recovery actions. As such, we intend to invite representatives of key stakeholder groups to participate in the recovery planning process. As needed, meetings/workshops and/or conference calls will be held to discuss particular issues and stakeholders will be invited to participate.

Key stakeholders include:

- Federal, state, territorial, local, and international agencies
- Domestic and foreign universities and research organizations
- Domestic and foreign conservation organizations
- Domestic and foreign fisheries management organizations
- Domestic and foreign fishermen

Recovery Planning Milestones

2018

Finalize recovery outline; post to NOAA webpage
Continue including oceanic whitetip sharks in relevant ESA Section 7 Consultations
Update status review report with literature published since final rule
Identify experts for oceanic whitetip working group

2019

Continue updating status review report as needed
Hold stakeholder workshops to inform recovery planning
Begin development of the draft recovery plan
Initiate research on oceanic whitetip life history to develop a better understanding of reproduction and birth periodicity

2020

Continue development of draft recovery plan
Continue expert elicitation and engagement with key stakeholders
Begin development of recovery implementation strategy with input from key stakeholders

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