Conversion of Hawaii-Based Deep-Set Longline Fishery to Monofilament Leaders

Submitted by the Hawaii Longline Association
For Consideration by the WPRFMC and Scientific and Statistical Committee
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It is widely recognized that the use of monofilament nylon leaders in pelagic longline fisheries reduces the bycatch and mortality rates of sharks as compared to using "steel trace" wire leaders (Figure 1).[1] Additionally, the Hawaii Longline Association (HLA) believes that the use of monofilament nylon leaders versus wire leaders can reduce impacts on other large protected species that incidentally interact with longline fisheries such as leatherback sea turtles, giant manta rays, and false killer whales. Due to the size of these animals, handling and cutting through the wire leader to remove gear close to the hook from deck height can be difficult; therefore, switching to monofilament leader material with long-handled line cutters will allow for more gear to be removed from the animal in an efficient manner.[2]

As set forth below, HLA proposes, on behalf of the Hawaii-based commercial deep-set longline fishery (the "Deep-Set Fishery"), a voluntary conversion in the Deep-Set Fishery from using wire leaders to using monofilament nylon leaders in 2021. This transition is believed to significantly reduce the Deep-Set Fishery's impacts on oceanic whitetip sharks and other protected species.

The Deep-Set Fishery currently consists of approximately 140 active longline vessels that target bigeye tuna and is federally observed at a coverage rate of approximately 20%. The Deep-Set Fishery is subject to a number of requirements aimed at reducing impacts on protected species, including: (1) the use of 4.5 mm or smaller wire diameter circle hooks and 2.0 mm or larger diameter branch lines (false killer whales); (2) detailed handling, resuscitation, and release protocols (sea turtles and seabirds); and (3) line shooters, weighted branch lines, blue-dyed bait, and strategic offal discard protocols (seabirds). Deep-Set Fishery vessels currently use steel trace wire leaders to reduce the risk of crew injuries resulting from the "flyback" of weighted branch lines.

HLA will work to ensure that all Hawaii-based active vessels in the Deep-Set Fishery will convert from steel trace wire leaders to monofilament nylon leaders. This conversion will begin

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[1] Ward, P., Lawrence, E., Darbyshire, R., & Hindmarsh, S. (2008). Large-scale experiment shows that nylon leaders reduce shark bycatch and benefit pelagic longline fishers. *Fisheries Research*, *90*(1-3), 100-108. --
Gilman, E., Chaloupka, M., Swimmer, Y., & Piovano, S. (2016). A cross-taxa assessment of pelagic longline by-catch mitigation measures: conflicts and mutual benefits to elasmobranchs. *Fish and Fisheries*, *17*(3), 748-784.

[2] Existing handling guidelines for false killer whales aim to straighten hooks lodged within the animal's mouth. To straighten the hook, tension is required which can be dangerous for both crew and the animal. In HLA's view, cutting a mono leader line at or near the hook promotes greater false killer whale survivability than attempting to straighten the hook out of the whale's jaw, which sometimes results in the line breaking and the animal left significant amount of trailing gear.

in the first quarter 2021, with all Hawaii-based active vessels using monofilament nylon leaders by July 1, 2021. The key elements of this transition are as follows:

1. Leader material: All active deep-set vessels will exclusively use monofilament nylon leaders (or similar materials) and eliminate use of steel trace wire leaders in fishery.

2. Line cutters: Long-handled line cutters will be utilized to maximize gear removal as close to hook as possible for oceanic whitetip sharks and other species. Other types of line cutters may also be used pending further development.

3. Crew Safety: In making this transition, crew safety is the fleet's top priority and HLA will work with vessels owners, captains, and crew on best practices including deploying fly-back prevention devices (Figure 2) and branchline weight configurations and materials.

4. OWT Handling guidelines: In coordination with NMFS and the Council, HLA will assist in the dissemination of handling guidelines applicable to oceanic whitetip sharks and giant mantra rays. The guidelines describe techniques for safely releasing sharks and rays with as little as possible trailing gear attached.[3]

5. Training: HLA will partner with NMFS to lead captain and crew training on how to properly handle oceanic whitetip shark and giant mantra rays according to existing handling guidelines.

6. Leatherback Handling: HLA will work with NMFS to update the existing sea turtle handling protocols as necessary to instruct crew on how to release turtles with the least possible trailing gear attached, in light of the fleet's transition to monofilament leaders. Particular focus will be on handling leatherback sea turtles which are rare events and due to their size make it difficult to bring on board to remove fishing gear.

7. Research: HLA will collaborate in, and encourage research targeted at evaluating the effectiveness of the Deep-Set Fishery's transition to monofilament nylon leaders in reducing impacts to protected species and the ways in which the effectiveness of this gear transition can be improved.

The best available science supports the expectation that the gear conversion will substantially reduce the impact of the Deep-Set Fishery on oceanic whitetips and other shark species. These reductions are due, in part, to the fact that sharks can more easily bite through monofilament line, resulting in early release, and that crews can efficiently release sharks that are brought to the vessel with less gear attached. There is also scientific evidence that oceanic whitetip sharks have higher post-release mortality when caught and released on wire leaders as compared to caught

[3] Justel-Rubio, A., Y. Swimmer, and M. Hutchinson. 2019. Graphics for Best Handling Practices for the Safe Release of Sharks. 15th Session of WCPFC Scientific Committee. Pohnpei, FSM. August 12-19, 2019. WCPFC-SC15-2019/EB-WP-14

and released on monofilament leaders. HLA believes the gear change will also have significant conservation benefit to giant manta rays, leatherback sea turtles, and false killer whales by facilitating gear removal. Moreover, this shift will further cement the Hawaii longline fishery as a global leader in responsible fishing practices and further distinguish Hawaii longline vessels from foreign longline fleets that are subject to low levels of monitoring and continue to use wire leaders.

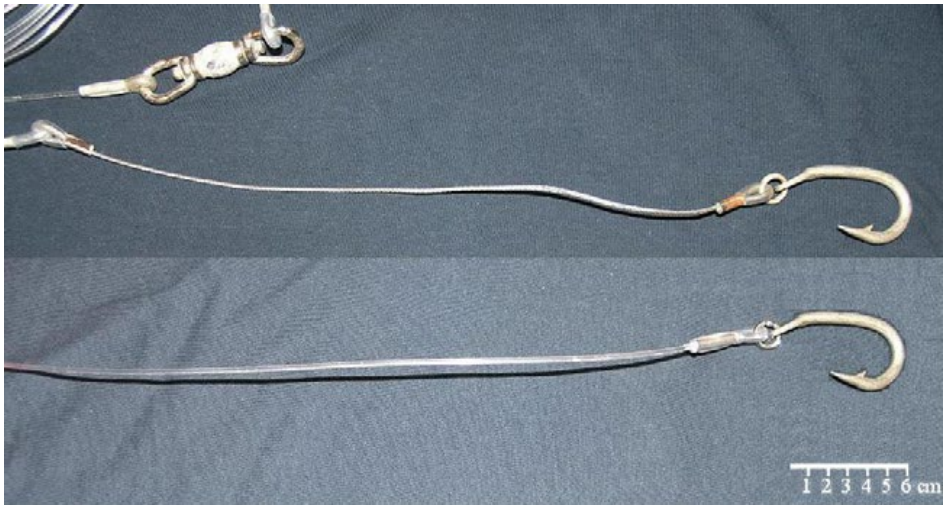

Figure 1: Image showing steel trace wire leader (top), monofilament nylon leader (bottom) and weighted swivel.
Source: Ward et al. 2008
Note: Hook type in the above image are "J" tuna hooks, and not circle hooks that are used in the Hawaii Deep-Set fishery.

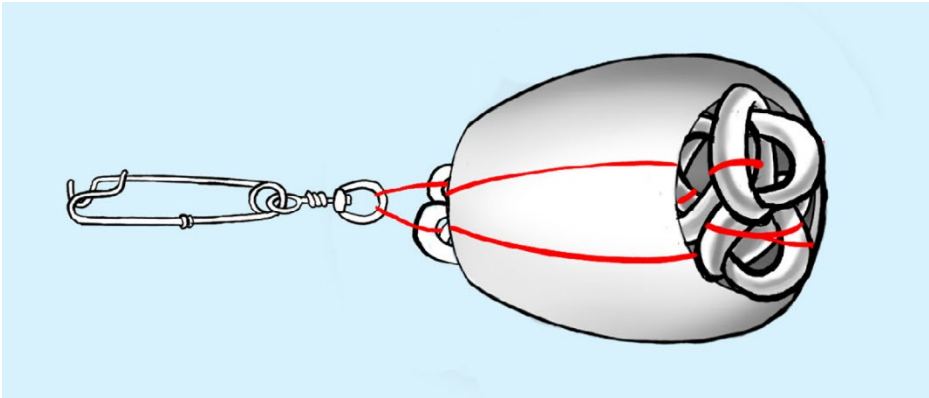

Figure 1: Fly-back prevention device
Source: Colby Brady, NOAA Fisheries PIRO

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