

Northeast Distant Fishery Sea Turtle Bycatch Reduction Project

Project Results: Avoiding Interactions & Reducing Harm

FACT SHEET

National Oceanic and Atmospheric Administration (NOAA) scientists and partners have developed cutting-edge longline fishing techniques that can reduce unintentional leatherback and loggerhead turtle catches in pelagic longline gear by 65 – 90 percent.

The new techniques help reduce encounters and the ensnarement of sea turtles and can increase post-release survival rates of threatened and endangered leatherback and loggerhead sea turtle populations around the world. These findings are results of a three-year gear research project recently completed by NOAA, in partnership with Blue Water Fishermen's Association and Fisheries Research Institute, and recognized by the international environmental advocacy group, the World Wildlife Fund.

Thirteen longline fishing vessels were contracted between 2001 and 2003 to make 1,214 sets consisting of approximately 1.2 million hooks. The program engineered and tested specific treatment hooks, hooking time recorders, time/depth recorders, and numerous careful handling and release tools and protocols. Among several important secondary projects, the first successful leatherback lift was designed and tested to bring larger turtles onboard, allowing fishermen to remove all gear from the turtles.

Results of the project show that longline vessels can avoid sea turtles:

- Circle hooks (18/0 size or larger) and mackerel bait were found to significantly reduce both loggerhead and leatherback sea turtle interactions when compared with industry standard J hooks and squid bait.
- Circle hooks significantly reduced the rate of hook ingestion by the loggerheads, which could reduce the post-hooking mortality associated with the interactions.
- The combination of 18/0 circle hooks and mackerel bait was found to be the most efficient mitigation measure for both loggerhead and leatherback turtles. Mackerel bait alone was as effective for leatherbacks as the combination.
- Mackerel bait was found to be more efficient for swordfish than squid bait and circle hooks were more efficient for tuna than J hooks.



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Large circle hooks avoid and reduce harm to loggerhead turtles because they do not fit down the throats of small juveniles, and they tend to hook in the corner of the jaw where they can be removed.

These new technologies provide incentive to fishermen because:

- The large circle hooks with large finfish bait increased the size and quantity of the targeted swordfish catch by up to 30 percent, and
- The circle hook lodges in the corner of a fish's mouth, allowing catches to remain alive and fresher, resulting in higher quality product.
- The survival of released bycatch likely is greater because a smaller percentage ingest the hook and because gear can be removed.

The project resulted in the development of practical tools that allow fishermen to quickly and efficiently remove all entangled gear and hooks from sea turtles, increasing post-release survivability:

- Turtle holding tethers (for turtles too large to be brought aboard the boat).
- A variety of long and short handled dehookers and line cutters, (different tools for different hooking circumstances).
- Devices to hold a turtle's mouth open while a hook is removed.
- Tested guidelines for the careful handling and release of turtles from longline fisheries.