Lawai□a Pono: Engaging Recreational Fishers in Sea Turtle Conservation and Evaluating Impacts

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Abstract

Maui Ocean Center Marine Institute (MOCMI), coordinates response to sick, injured, or expired sea turtles on the island of Maui, Hawai‘i in partnership and coordination with NOAA Fisheries. Recreational fishing gear is identified by NOAA as the primary cause of strandings of sea turtles in Hawai‘i. To prevent pollution and decrease harmful interactions between sea turtles and fishing line, MOCMI launched the Fishing Line Recycling Program (FLRP) in June 2018. The FLRP provides an accessible method for fishers to take a proactive approach to prevent pollution and reduce entanglement hazards by properly discarding their line. Fishing line recycling bins and educational signage are installed at 24 high-traffic fishing locations along Maui’s shoreline, and on three sites in Hilo, Hawai‘i Island. The fishing line is routinely collected, sorted of hooks and weights, and shipped to the Berkley Conservation Institute where it is melted down and repurposed. Since July 2018, a total of 17,507.16 meters of fishing line has been collected from MOCMI fishing line recycling bins. MOCMI staff and interns conduct surveys each week to gather baseline knowledge of fishers’ awareness of proper methods for discarding line and willingness to participate in a conservation initiative. To date 101 fishers have been surveyed. With more targeted outreach and increased contact with the recreational fishing community, we have been able to improve our understanding and engagement. As we evaluate the impacts of the FLRP, we hope that our findings will help determine best management practices in regards to fishing gear.

Entanglements

Fig. 1. Entangled juvenile Green sea turtle rescued from a gill net along the south shore of Maui.

Recreational fishing gear is identified by NOAA as the primary cause of sea turtle strandings in Hawai‘i. Entanglement affects the survival of the endangered Green sea turtles. For individual turtles, the effects of entanglement are injuries, such as abrasions or loss of limbs; a reduced ability to avoid predators; or forage efficiently due to drag leading to starvation or drowning.

Fig. 2. Hot spot map of sea turtle stranding cases caused by entanglement on the island of Maui.

Methods

Fig. 3. Map of Fishing Line Recycling Bins on Maui, HI.

Fig. 4. Map of Fishing Line Recycling Bins in Hilo, Hawai‘i Island, HI.

FLRP bins were installed at high-traffic, recreational fishing locations. The bins are monitored bi-weekly. The line is routinely collected, measured, sorted from fishing gear like hooks and weights, and shipped to the Berkley Conservation Institute where it will be melted and made into fish habitat structures and other repurposed equipment.

Fig. 5. PVC pipes were used to build FLRP bins.

Fig. 6. FLRP bins and signage were installed along Maui and Hilo, Hawai‘i Island shorelines.

Fig. 7. Monofilament line collected from the FLRP bin at McGreggor Point on Maui.

Fig. 8. Monofilament line being sorted, measured, and weighed.

Community Outreach


Fig. 9. Interactions with local fishers.

Since the FLRP bins have been implemented, our team has surveyed fishers from around Hawai‘i and recorded their responses when asked how they feel about the program.
• 101 fishers were surveyed
• 96% of the fishers "liked" the program
• 99% were "either very likely or somewhat likely to use the bins"


Fig. 10. Volunteers sorting and measuring fishing gear after a underwater beach cleanup.

MOCMI hosts monthly underwater and beach cleanups on Maui for the public to participate in. From previous beach cleanups in 2018-2019, the top items collected included:
• Cigarette butts
• Plastic pieces
• Food wrappers


Fig. 11. Marine debris that was collected at a beach cleanup in June, 2019.


Fig. 12. Fishing gear that was sorted from a underwater beach cleanup in July, 2018.

Rescue, Rehab, Release

MOCMI provides a turtle response hotline for the island of Maui.
Sick or injured sea turtles can be reported, assessed, and addressed.
Team members are trained to respond to turtle related strandings.
Response protocol includes:
• Answering hotline
• A brief assessment is made over the phone (location, size of the turtle, condition, reported stranding type : entanglement, stuck in rocks, disease etc.)
• Team member(s) will head over to the location of the reported stranding
• The turtle is assessed and a decision is made on how to proceed (remove net, line, or hook, freed from rocks, etc.)
• Depending on the condition of the turtle our team will determine its final disposition (left on the beach, returned to the ocean, transported to MOCMI, etc.)
• In some cases, the turtle may be sent to a NOAA facility in Honolulu where it may undergo surgery and further assessment
• If the turtle is fit to return to the ocean it is shipped back to us to be released
• A report is made and uploaded to our database
All turtle related work is conducted under NOAA permit 21260.


Fig. 13. Rescued adult sea turtle, Jane, receiving surgery for an amputation on its right flipper after being entangled in fishing line.


Fig. 14. Adult sea turtle being assessed at the MOCMI rehabilitation facility.

Results

Maui 2018
• 174 total confirmed turtle strandings
Maui (as of June 26) 2019
• 52 total confirmed turtle strandings


Fig. 15. Sea turtle stranding causes on Maui in 2018 (a) and 2019 (b).


Fig. 16. Results of all reported sea turtle strandings on Maui: 62.64% in 2018 (a) and 67.31% in 2019 (b) were due to fisheries interactions.


Fig.17. Total amount of line (m) that was collected from July 2018 - February 2019 on the islands of Maui and Hawai‘i Island.