

Workshops and community consultations provide valuable information to empower local communities to conserve sea turtles.



Left: Sea Turtle Association of Japan, helping an injured loggerhead nest. Right: ProCAGUAMA team members, Baja California, Mexico, collecting information on foraging habitats utilizing a turtle outfitted with satellite transmitter.

Promote Conservation Measures

The Council recognizes that effective solutions must encompass a species' entire life history, and address both terrestrial and oceanic impacts. Promoting internationally-based conservation measures at nesting beaches and coastal foraging grounds may provide greater benefits than fishery mitigation measures focusing only in the pelagic environment.

Consequently, a number of sea turtle conservation projects have been supported and/or implemented since 2004 in Indonesia, Papua New Guinea, Japan, and Baja California, Mexico to bolster population recovery of North Pacific loggerheads and West Pacific leatherbacks.



Left: Local community members collect data and monitor nesting beaches in PNG and Indonesia. Right: Kamiali community, Papua New Guinea, deploying satellite telemetry to collect migratory information.

Transfer "Best Practice" Technologies

- International and domestic partnerships among government, industry, and non-governmental organizations are essential to develop effective fishery management solutions.
- Mitigation measures must not only be practical and convenient, but be cost-effective and provide crew with incentives to employ them consistently and effectively.
- Collaboration provides a forum to disseminate tools and strategies that have been developed and implemented in US longline fisheries. These approaches can then be refined and adapted as necessary for foreign fleets.
- Support for bycatch solutions is growing. Longline mitigation projects have been launched in variable capacities in longline fisheries of Japan, Indonesia, Philippines, Papua New Guinea, Ecuador, Peru, Colombia, Costa Rica, El Salvador, Guatemala, Mexico and Panama.



Longline fisher safely releasing a hooked sea turtle.



The patience and understanding of fishers, and their willingness to help find solutions, is a source of motivation and encouragement. Workshops facilitate the exchange of information and build a network of stakeholders working to reduce sea turtle bycatch.



THE WESTERN PACIFIC REGIONAL FISHERY MANAGEMENT COUNCIL

is one of eight Councils in the United States established by the Magnuson Fishery Conservation and Management Act of 1976. The Council oversees the nations' fisheries in the 200 mile U.S. Exclusive Economic Zone of the Pacific Islands Region (an area as large as the continental U.S.).

Management objectives for the Council are to achieve optimum yield, without jeopardizing the long-term existence of protected species, while at the same time operating a "best practice" and environmentally responsible longline fishery.

Photo credits: ProPeninsula; National Marine Fishery Service; Karol Kisokau, KICDG, PNG; WWF-Indonesia; Secretariat of the Pacific Community; Projecto-TAMAR; Sea Turtle Association of Japan; and Japan National Research Institute of Far Seas Fisheries.



Integrated Management

for the Conservation of Protected Species in Longline Fisheries



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Fishery Mitigation Strategies

Collaboration between fishing industry, scientists and resource managers has identified a number of mitigation strategies which can successfully reduce seabird and sea turtle interactions. These efforts have developed cost-effective techniques that reduce interactions without impeding fishing operations.

Recognizing The Issues

- The incidental catch of protected species such as seabirds and sea turtles in pelagic longline fisheries is of primary concern.
- Most longline fishery interactions occur when the line is set shallow (between the surface and 100m) to target swordfish (SPREP 2001).
- The global pelagic longline fleet has expanded continuously since the 1950's to meet consumer demand for high quality pelagic fish. Currently, 30 nations operate approximately 6,000 vessels in the Pacific Ocean (SPC 2003).
- Although it is not the largest in terms of catch volume, pelagic longlining has become one of the most economically important fisheries in the Pacific (Williams 2004). Finding cost-effective solutions to reduce bycatch of non-target species is a priority at both the national and international level.
- Successful mitigation measures must significantly reduce or eliminate interactions without making fishing operations difficult or unprofitable. These measures can then be "exported" to other fisheries.



Examples of mitigation measures used on Hawaii-based longline boats

SEABIRDS:

- Configure boats to use side-setting (with bird curtain)
- OR:
- Use a line shooter so gear sinks faster
 - Attach weights to each branch line so baited hooks sink faster
 - Thaw and dye bait blue so it sinks faster and the birds are less likely to see it
 - Throw out fish or fish parts while setting or hauling to distract birds from baited hooks.
 - Use tori lines (towed device) to scare birds away from hooks
 - Set at night

SEA TURTLES:

- Use circle hooks size 18/0 or larger (with a 10° offset) and mackerel-type bait
- Use proper handling procedures: Carry and use dip nets, line clippers, wire or bolt cutters, and dehookers to safely handle and release turtles
- Carry observers on 100% of shallow-sets (swordfish) and 20% of deep-sets (tuna)
- Fleet limit of 2,120 shallow-sets per year
- "Hard" limit on loggerhead (17) and leatherback (16) interactions (shallow-set fishery closes if limit is reached)
- Mandatory gear restrictions and configurations for deep-set fishery



Seabirds:

Successful seabird mitigation quickly removes baited hooks from the surface, conceals baited hooks when they are being set, or scares birds away when hooks are being set and hauled. Night setting of longlines is also effective in certain areas, as albatrosses are mainly daytime feeders. Recent research indicates that setting the longline from the side of the vessel can reduce seabird bycatch to almost zero (Gilman et al. 2003)

Sea turtles:

Sea turtle mitigation measures which significantly reduce interaction rates can be achieved by setting hooks deeper than where turtles normally occur in the water column (Polovina et al. 2003), by using a combination of circle hooks and mackerel-type bait (Watson et al. 2004), or by reducing soak times and removing gear earlier in the day (Bolten et al. 2004).

Bycatch of sea turtles tends to occur with increasing frequency near the surface and decreasing frequency at progressively greater depths. Hence, longlines set below the water layer in which turtles are concentrated (< 100m) tend to interact with turtles far less frequently.



Proper handling can significantly reduce mortality.



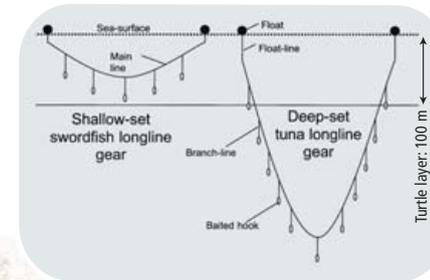
Operators of Hawaii-based longline vessels must carry and use dehooking devices to remove gear and release incidentally caught turtles.



The larger the hook, the less likely a turtle will be able to swallow it. Circle hooks result in less lethal hookings, and reduce interaction rates with turtles while maintaining target catch rates.



Using fish as bait instead of squid provides additional protection to keep turtles off hooks.



Configuration of shallow-set pelagic longline gear to target swordfish and deep-set pelagic longline gear to target tuna species. Note that hooks on shallow-set longlines lie within the depths most frequented by turtles, while hooks on deep-set longlines lie mainly below this critical depth.



Illustration showing side setting with a bird curtain, versus conventional stern setting. When side setting, baited hooks are set close to the side of the vessels' hull where seabirds are unable or unwilling to attempt to pursue them. By the time the stern passes the hooks, hooks are too deep for seabirds to see or reach them.