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ISSF – GUIDE FOR NON-ENTANGLING FADS

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ISSF GUIDE FOR NON-ENTANGLING FADs

These guidelines were created in consultation with the ISSF Bycatch committee.

Thousands of Fish Aggregating Devices (FADs) are built and deployed by purse-seine vessels at sea each year and virtually all include old netting in their construction. FADs can produce unwanted bycatch due to sharks and/or turtles becoming entangled in the netting that is used to make FADs. To prevent “ghost fishing”, non-entangling FADs need to be designed and adopted by the fishing industry. This document presents recommendations on FAD designs and selection of materials that can help reduce this type of unwanted bycatch.

Many fish species, including tuna, naturally associate with objects floating at the surface of the ocean. There are two main types of floating object; natural and manmade. Man-made floating objects specifically constructed to attract fish (and also natural objects that are found by fishermen, modified and redeployed) are called fish aggregating devices (FADs). They can be anchored or drifting. Drifting FADs are often equipped with a radio or satellite transmitter to aid in their relocation. Anchored FADs (called payaos in some regions) are commonly used by artisanal and sport fishing fleets but also by industrial pole-and-line and tuna purse seine vessels in some regions such as the Western Pacific Ocean and Maldives in the Indian Ocean. However, the mainstay of the world's industrial purse seine fleets is drifting FADs and the rest of this document will concentrate on drifting FADs.

WHAT IS A FAD?

Most drifting FADs have some basic similarities, including floating and underwater components. The floating component is usually constructed of bamboo canes laced together and/or other buoyant materials such as cork floats and sealed PVC piping. These are often wrapped in surplus purse-seine netting. The surface structure is often rectangular (4 to 6 m2 area) and commonly referred to as a raft, but other shapes (e.g. cylinders) are also used. The second component is an underwater structure hanging down from the surface float. This hanging component commonly consists of a panel of purse-seine netting suspended from the surface structure and weighed down with chain or cable so as to remain submerged and nearly vertical underwater. These net panels can vary between a few meters to over a hundred meters in depth depending on ocean and fleets. In addition, a floating satellite buoy is tethered to the floating object so its position can be remotely monitored. Satellite buoys are sometimes equipped with echo-sounders to provide information on the presence of fish associated with these drifting FADs, along with location and drift trajectory.

SHARK AND TURTLE INTERACTIONS WITH FADS

Among the numerous species of marine life that are often found associated with drifting FADs are sharks and turtles. In some instances, those animals become entangled in the netting on the raft (turtles) or in the netting suspended under the raft (turtles, sharks and other fishes).

The main shark species that often associate with floating objects is the silky shark *(Carcharhinus falciformis)*, and to a lesser extent, the oceanic white tip shark *(Carcharhinus longimanus)*. Sharks can become accidentally entangled in the submerged netting of the FAD (Figure 1.a).

Several turtle species can be found around floating objects depending on area, the most common being the Olive Ridley Turtle (*Lepidochelys olivacea)*. While turtles can get trapped in the submerged netting, they can also entangle when they climb on the floating structure. (Figure 1.b). The turtle's claws can easily become entangled in the mesh panels covering the raft. The proportion of turtles that come into contact with FADs and are able to swim away and those that become permanently entangled is currently unknown. In the eastern Pacific, only around 1% of FADs that are set on by purse seiners have turtles entangled, and of these some are alive and released.

Figure1.a

Shark entangled in underwater FAD netting

Figure1.b

Turtle enmeshed in conventional FAD raft's net.


Figure 2.a

BEST PRACTICE RECOMMENDATIONS

The development of specific designs should be left to industry and the expertise of fishermen. However, basic guidelines for non-entangling environmentally friendly FADs are presented below:

- To reduce entanglement of turtles on the FAD itself, the surface structure should not be covered (Fig. 2.a.) or only covered with non-meshed material (Fig. 2.d, 2.e, 2.g).
- If a sub-surface component is used, it should not be made from netting but from non-meshed materials such as ropes or canvas sheets (Fig.2.a, 2.d, 2.f).
- To reduce the amount of synthetic marine debris, and to promote environmentally friendly FADs, the use of natural or biodegradable materials should be promoted (Fig. 2.d, 2.e).


Figure 2.b


Figure 2.c

During a transition period when netting might still be used by fishermen, the following guidelines would significantly help reduce the potential for the unintentional mortality of sharks and turtles, but would not eliminate the risk of entanglement:

- For the surface structure only smaller mesh netting of 2.5 inch (7 cm) stretched mesh or less should be used for wrapping it up tight. Log-shaped (i.e. cylindrical; Fig. 2.b., 2.c) or spherical floats naturally deter turtles from climbing onto the device, and should be used in preference to flat rafts.
- For the underwater structure, the netting should be rolled up and securely tied in to "sausages" (Fig. 2g). These 'sausages' should be constructed from netting of 2.5 inch (7 cm) stretched mesh or less so that, if the sausages unwind, the netting will not entangle marine life. If panels are preferred, only a single panel should be used and the panel should be, weighted to keep it taut. The panel should consist of either a solid sheet (e.g., canvas) or netting with a stretched mesh of 2.5 inches (7 cm) or less.


Figure 2.d


Figure 2.e


Figure 2.f


Figure 2.g