

Bycatch of West African Cetaceans (whales, dolphins and porpoises):

Outline of the problem and suite of available solutions

Capture and entanglement in fishing gear is the biggest threat to whales, dolphins and porpoises worldwide, killing more than 300,000 animals per year. When caught in fishing gear, small cetaceans often die because they aren't strong enough to break free and come to the surface to breathe. Large whales can usually break free, but may continue to tow some of the gear for long periods, causing debilitating injuries and even slow death. Fishing line, for example, can coil around an animal's head or lodge in its baleen, interfering with feeding.

Fishing gear that poses the biggest danger to cetaceans includes: gillnets, set nets, trammel nets, seines, trawling nets and longlines. Because of their low cost and widespread use, gillnets are responsible for a very high proportion of global cetacean bycatch. Experts agree that wherever there are gillnets, there is cetacean bycatch.

In some cases, relatively simple and inexpensive alterations of fishing methods and gear are all that is needed to solve the problem. In other cases, it may be necessary to change gear type or even temporarily suspend fishing activities at specific times and places. However, the crucial point is that there are a variety of solutions available – solutions that are working well in many places across the globe. The challenge now is to find the right solution for the right place, and ensure effective implementation before it's too late.

What is the specific problem in West Africa?

One of the biggest problems in West Africa is a dearth of basic bycatch information to the point that it is even difficult to currently predict which species are most susceptible to bycatch. However with the knowledge available to date, it can be assumed that the following species and fishing gears require immediate attention with respect to bycatch:

(i) Cetacean species in West Africa likely to be most affected by bycatch

- Atlantic hump-backed dolphin, *Sousa teuszii*. This species is endemic to the region and distributed along the coasts. It is likely to be significantly exposed to the activities of inshore fishing.
- Bottlenose dolphin, *Tursiops truncatus*.
- Long-snouted common dolphin, *Delphinus capensis*.
- Short-snouted common dolphin, *Delphinus delphis*.
- Atlantic spotted dolphin, *Stenella frontalis*.

(ii) Fishing gears in West Africa likely to cause the most bycatch

Gillnets, drift nets, bottom set nets, purse seines, trawls, longlines, and beach seines.

Big pelagic fishing vessels employing trawl and seine techniques are active off the coast of West Africa. The inshore fisheries are often exploited by net, gear in which one can expect takes of inshore cetacean species.

Effects of off-shore foreign fishing and mangrove destruction on small cetaceans are not well documented. Although the bycatch implications of foreign fishing fleets still require scrutiny, it is likely that the quantities of fish taken present a real problem in terms of reducing the prey available for cetaceans and the fish available to support local artisanal fisheries.

(iii) Specific associated problems

- Traditional local consumption and traditional cultural practices (in some countries) which are difficult to change.
- Weakness of scientific knowledge.
- Illegal commerce.
- Weakness of political will.

Weakness of regional cooperation regarding threat reduction is a real problem in the region. Strategies for reduction of threats are difficult to implement due to lack of political will and means (financial and technical).

What solutions are available?

The below sections outline methods of modifying fishing gear, or the way the gear is fished, to reduce cetacean bycatch. Whilst these techniques can be effective, it is important to note that in some circumstances, particularly with gill nets, gear modifications may not be practical or effective enough to truly resolve the problem. In these situations gear exchanges may need to be considered. Here an alternative fishing gear is identified that will cause less bycatch but still allow the fishers to catch enough fish to earn a living. For example, fishers who normally use gillnets could change to longlines and still maintain an economically viable livelihood. In such instances, it is important that the new fishing method employs the latest methods to reduce bycatch, so the problem is not displaced from one species to another.

In extreme scenarios, where neither gear modifications or gear exchanges are suitable, closure of fisheries in particular locations may be required – although not necessarily on a permanent basis. In cases where whales and dolphins migrate in and out of fishing areas, fisheries can be closed temporarily when the animals arrive and reopened when they leave. These measures are often unpopular with fishermen and can be difficult to enforce. However, if information on patterns of bycatch and movement of animals is significant and the closure area is large enough and time period long enough, this can be a viable mitigation option.

Although the examples listed below refer mainly to reducing cetacean bycatch, in certain instances examples of gear modifications that reduce the bycatch of other species are given. These demonstrate how imaginative thinking applied to fishing gear technology can lead to practical solutions.

Each bycatch situation will be different in terms of fishing behaviours, the behaviour of the cetacean species involved, and many other factors. As such, any bycatch solution employed must be accompanied by careful monitoring to assess its efficacy, and allow for modifications as required.

Gillnets / Drift nets / Bottom set nets

Pingers: Pingers are small acoustic devices that emit low-intensity sounds at frequencies cetaceans can detect with their sonar. They do not scare or harm the cetacean, rather, they alert the cetacean to the presence of gillnets and either discourage the animal from approaching the net, or encourage it to swim more carefully near the net.

Glowing Floatlines: By altering the chemical properties of the floatlines leading to the net so that it glows, it is possible that cetaceans can be visually deterred from approaching the net.

Alteration of Chemical Properties of the Net: Impregnating the nylon of gillnets with a dense material, such as barium sulphate and iron oxide may increase the acoustic reflectivity of the net and allow cetaceans to detect gillnets with their sonar and avoid becoming entangled.

Night sets: Fishing over-night may reduce the risk of dolphin encounters, for those species that are less active during the night hours.

Weights: Weights attached to the top of fishing nets allow small cetaceans to swim over the nets and have proved effective in some fisheries.

Deep sets: Setting fishing gear in deeper water - an inexpensive and simple strategy – could potentially also help to reduce bycatch in some cases.

Seine netting

Methods can be employed that reduce the amount of slack netting (large amounts of slack netting increase the likelihood of entanglements) and moving the vessel and net to allow cetaceans to escape. Altering the float-line so the net does not hang directly from it can significantly reduce its tension and allow cetaceans to more easily leave the net. Also, strategically placed panels of fine mesh within the net can reduce the risk of dolphin entanglement as there is a reduced risk of their beak / fins becoming entangled.

Trawling

Methods to reduce the bycatch from trawls include pingers and strategically placed escape panels in the net to allow cetaceans to escape before reaching the cod-end (the bottom of the net where the captured fish are collected). The principal of employing escape panels has proved effective at reducing turtle bycatch in tropical shrimp trawls. The device employed is called a Turtle Excluder Device (TED) – it allows turtles to escape but not the fish.

Longlines

Cetacean bycatch from longlines can be reduced with pingers or by altering the ropes of longlines so the fins of cetaceans do not become entangled. Setting the longlines deeper than the diving / feeding depth of turtles has the potential to significantly reduce marine turtle bycatch, as does the use of large circle hooks (which can reduce both the hooking rate the deep ingestion of hooks by marine turtles). More research is needed to ascertain whether similar techniques could be effective for cetaceans.

Where do we need to go from here?

The following have been determined as the priorities for further action, and WWF urges governments, NGOs and all other stakeholders to join together to focus conservation action on these areas:

Priority: *Commitment to collect basic bycatch data in order to determine priority action areas/gears/species/fisheries.*

Such measures are a critical first step in order to guide and prioritise management responses. Data can be collected through collaborative scientific research programmes and the effective use of observers. It is vitally important to fully engage fishermen in this process as securing their co-operation and expertise will be crucial to the success of any such programme.

Priority: *Awareness raising and alerting fishermen to the magnitude of the problem.*

In many cases, individual fishers may not encounter cetacean bycatch very often. Consequently, there can be a perception that the problem is not that significant. However, when the amount of bycatch encountered by individual boats is multiplied by the entire fleet, and when this is set in the context of the low reproductive rates of cetaceans as compared to other marine animals, then the seriousness of the problem becomes apparent. Educational programmes at local ports are required to fully inform fishermen of the problem and gain their cooperation.

Priority: *Developing management solutions for cetacean bycatch in artisanal gillnet/driftnet/bottom set fisheries*

Solutions: Pingers, night sets and gear swaps

See above for a full description of the solutions available for these fisheries.