

MAKE FOR THE PLANET BORNEO

Kuching, Sarawak, Malaysia
June 24-28, 2018

REDUCING GHOST GEAR

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The Problem

Marine animals, like large whales, as well as sea birds, turtles, sharks, and species important to fisheries are getting entangled in discarded fishing gear – this includes active fishing gear, like traps and pots for crustaceans, and “ghost” gear that is abandoned in oceans and estuaries (e.g. gillnets, traps/pots, and fish aggregating devices). For endangered marine mammals, entanglement is a major cause of mortality. In the United States, researchers found evidence of trap entanglement in 83 percent of the endangered North Atlantic right whales photographed along the east coast (see [Knowlton et al. 2012](#)). More recently, researchers observed zero newborns in the monitored North Atlantic right whale population along the east coast of the U.S. during the last calving season (see [NYT article](#)). In SE Asia, the problem of marine mammal entanglement is less well-documented, and entangled marine mammals may be opportunistically harvested for consumption rather than saved and released back into the wild (see [Porter and Lai 2017](#)). For commercially important fisheries, abandoned traps “keep fishing”, trapping and killing crabs, lobsters, and other commercial and recreational species, creating an invisible take not accounted for in fishing estimates.

For marine mammals, fishing gear entanglement does not usually cause immediate mortality. Marine mammals get entangled in the fishing gear and drag the gear around for months, which causes the animals to gradually lose weight. Ropes dig into the flesh and bone of mammals, a process known as ‘cheese-wiring’ because fishing gear can slice through flesh under increasing pressure in a similar fashion, leading to infections, injuries, and amputations. The injuries, infections, and amputations can impede their ability to breathe, swim, reproduce, and ultimately lead to death.

Core Constraints

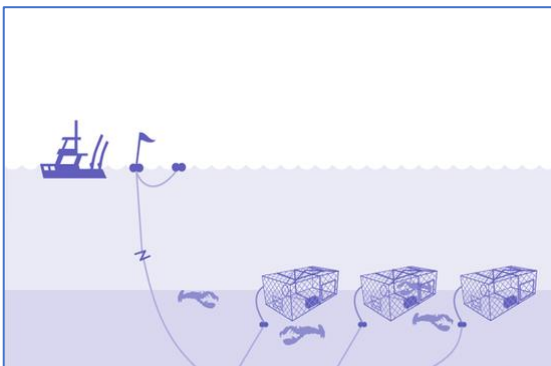


Figure 1. Schematic of fishing gear involving a trap or pot.

- Traps and fishing gear are designed to capture marine life, but they often capture non-target species while operational or if they are abandoned.
- There are few regulatory or financial incentives for fishermen to use innovative gear.
- There are few, if any, incentives for fishers to recover broken gear or remove abandoned gear from the ocean.
- Unreported and unregulated (IUU) fisheries increase the amounts of abandoned gear.
- Fishing gear involving a trap or pot on the seafloor is typically rigged to include a vertical line

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from the trap to a surface float, as well as the marking and retrieval buoy system at the surface, see Figure 1. These types of fishing gear are major contributors to entanglements in large whales and other marine life.

- Fishing gear not marked by a vertical line, may have a reduced threat to large whales, however, this ghost gear continues to capture fish, killing commercially important target species.
- Innovations like lineless or improved fishing gear designed to prevent entanglement of non-target species, or efforts to recycle recovered gear need sustainable business models in order to scale.
- Better designed fishing gear is cost prohibitive and largely inaccessible to small and artisanal fishers in SE Asia leading to many sea turtle deaths, for example.

Challenge Statement

This challenge seeks scalable solutions that prevent non-target capture or entanglement in both operational fishing gear and abandoned (ghost) fishing gear.

There are a few general solution categories to address the problem of unintentional entanglement in fishing gear (see [Ghosts Beneath the Waves](#) report for examples of solutions):

1. Reduce the volume of fishing gear that causes unintentional entanglement in the ocean. Solutions may include fishing gear that is biodegradable, recoverable (traceable), or lineless.
2. Remove & recycle ghost fishing gear. Solutions are tied to the reduction of fishing gear in oceans and estuaries by creating scalable solutions to remove ghost gear and markets and/or products to recycle and reuse materials.

Background Information

Fishing gear is intentionally designed to catch and kill marine life, so when this gear is abandoned in our oceans as “ghost gear”, it is extremely harmful to marine animals. Other types of gear, like pots and traps for crustaceans or fish aggregating devices, unintentionally capture marine life. At least 640,000 tonnes of ghost gear is lost in our oceans annually. This is a significant problem in our oceans as there is evidence that 45% of all marine mammals on the Red List of Threatened Species have been impacted by lost or abandoned fishing gear ([Ghosts Beneath the Waves, 2018](#)).

Along with human error, there are a number of ways that fishing gear is abandoned in the ocean, including:

- Fishing gear is damaged or lost in adverse weather conditions.
- Gear gets caught on marine environments.
- Gear is abandoned at end of life because there are no incentives or facilities to dispose of them.
- Gear is abandoned to avoid detection when fishing illegally.
- Markers become detached from gear and fishermen lose track of them.

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Further reading & examples of potential solutions

Recent New York Times article about zero North Atlantic right whale calves this season & speculation that mortality is caused by fishing lines (February 2018)

<https://www.nytimes.com/2018/02/28/science/north-atlantic-whales-endangered.html?smid=tw-nytimescience&smtyp=cur>

Knowlton et al. 2012. *Monitoring North Atlantic right whale Eubalaena glacialis entanglement rates: a 30 year retrospective*

https://www.int-res.com/articles/meps_oa/m466p293.pdf

Woods Hole Oceanographic Institution - consider the cost of this system & its ability to scale:

<https://www.whoi.edu/oceanus/feature/whale-safe-fishing-gear>

Porter and Lai 2017. *Marine mammals in Asian Societies:*

<https://www.frontiersin.org/articles/10.3389/fmars.2017.00047/full>

Greater Atlantic Regional Fisheries Office (GARFO) paper on vertical lines and turtles

https://www.greateratlantic.fisheries.noaa.gov/protected/seaturtles/docs/vertical_line_summary_final.pdf

How whales swim: <https://dukespace.lib.duke.edu/dspace/handle/10161/232>

Global Ghost Gear Initiative: <https://www.ghostgear.org/>

Global Ghost Gear Initiative resources: e.g. best practice summary for gillnets and traps/pots:

https://www.ghostgear.org/sites/default/files/attachments/may26_gillnet_trap_pot_best_practice_summary_v3.pdf

World Animal Protection's 2018 report: Ghosts Beneath the Waves

https://d31j74p4pxrfp.cloudfront.net/sites/default/files/ca_en_files/ghosts_beneath_the_waves_2018_web_singles.pdf

Current projects associated with the Global Ghost Gear Initiative:

<https://www.ghostgear.org/solutions>

Recent actions by the Canadian government:

https://www.canada.ca/en/fisheries-oceans/news/2018/01/minister_leblancannouncesnewprotectionsforwhales.html
<http://dfo-mpo.gc.ca/fm-gp/mammals-mammiferes/publications/whatweheard-cequenousavons/index-eng.html>