CANADIAN WILDLIFE HEALTH COOPERATIVE

This project was undertaken with the financial support of:
Ce projet a été réalisé avec l'appui financier de :

Environment and Climate Change Canada
Environnement et Changement climatique Canada

ENTANGLEMENT OF MARINE ANIMALS IN PLASTIC MATERIALS

Photo Credit: NEFSC taken under SARA Permit #DFO-MAR-2016-02 (Amendment 1) and NMFS Permit # 17355

CAUSE

Entanglement of marine animal species is a global problem which has severe repercussions for the conservation of marine wildlife. The vast majority of entanglements occur in manmade materials of which plastics are the most common. Plastic waste is the most abundant and persistent material in the marine environment and it is estimated that between 4.8 and 12.7 million tons of plastic waste enters the world's oceans every year from both terrestrial and marine based human activities (Agamuthu *et al*. 2019).

HOW DO ENTANGLEMENTS OCCUR?

Any type of plastic material may result in entanglement, however plastics which are manufactured in "loops", or those plastics which are produced as linear filaments, straps, or ropes are most commonly implicated in entanglement. Plastic loops or lines readily become hooked around the neck, body, limbs, or through the mouth of marine animals and, if not removed either by the animal or via human intervention, can cause long term suffering and/or death. The most common plastic involved in marine animal entanglement is gear used in various fishing activities. There are many types of fisheries and each have their own unique set of gear. Depending on the fishery and the marine animal in question, entanglements may occur in parts of fishing gear which are actively used to fish for target species (i.e., netting, hooks, trap; termed "bycatch"), or in the structural/anchoring parts of the gear which are not involved in target species capture. Marine animals may accidentally become entangled when fishing gear is deployed within their habitat or migratory routes, or when they deliberately prey upon the target fish or invertebrate species that are caught in the gear (termed depredation). Entanglements may also occur in abandoned, lost, or discarded fishing gear (ALDFG) which is referred to as "ghost fishing" as it continues to capture or "fish" marine life long after the gear has been lost at sea (termed 'ghost gear'). Many variables lead to the generation of ghost gear including (but not limited to): Conflicts with other maritime industries, entanglement with other fishing gear, rough weather, poorly charted ocean floors, old/worn out gear, malfunction, and deliberate at sea disposal. In many species, it is difficult to determine the relative contributions to marine animal entanglement in ALDFG compared to active gear due to inconsistency in regional reporting of the types of gear found on entangled animals.

HEALTH AND WELFARE IMPACTS

There are many factors which can affect the outcome of entanglements including entanglement severity, duration, and the species and signalment of the individuals involved. For air breathing species, entanglements which inhibit access to the surface (via anchoring to an immovable structure or reduction in the individual's range of motion) will result in asphyxiation or drowning. Plastics from which the animal is not able to escape and that do not immediately result in death will most likely become a chronic entanglement. For many species that become chronically entangled early in life, individuals may initially suffer no significant repercussions if the plastic loops are loose. However as aging progresses, loose plastic loops gradually constrict and cut deeply into the underlying soft tissues of the affected body part. Chronic entanglements almost always progress in severity the longer the individual is entangled, both in terms of tissue trauma and overall physiologic health. Drag forces that are applied to trailing plastics combined with the repetitive motions of the animal's body and limbs as it moves through the water results in constant abrasion of the skin, which can eventually cause ulceration and deep laceration of underlying soft tissues. Ultimately, chronically entangled marine wildlife experience prolonged pain and suffering, secondary infections, starvation, emaciation, and, eventually, death.

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LARGE WHALE ENTANGLEMENT

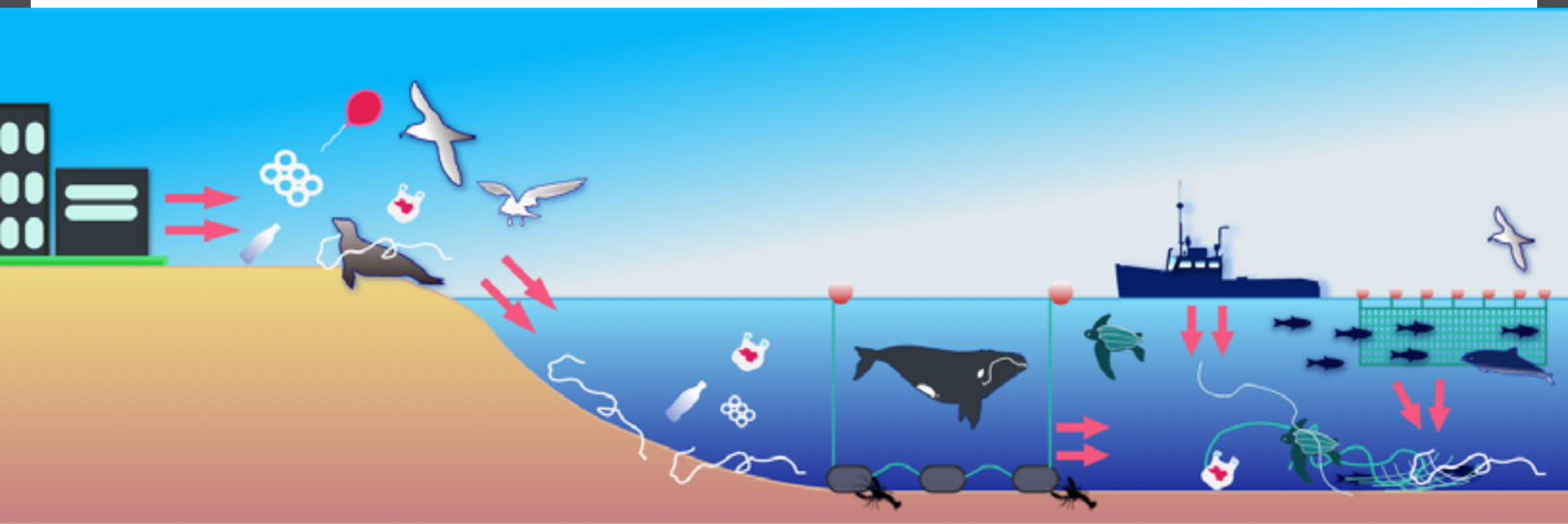
Large baleen whales present a unique entanglement scenario. Coastal migratory species such as the North Atlantic right whale frequently become entangled in the vertical buoy lines of fixed (i.e., anchored) fishing gear which are common along the North Atlantic seaboard. Due to their large size and inherent strength, right whales can drag hundreds of kilograms of gear long distances for months at a time. This not only results in severe soft tissue trauma and prolonged suffering, but it imposes unnatural energy demands upon the whale which are equal in magnitude to key life history events such as migration and reproduction. This is manifested in a reduction in blubber thickness and body condition, increased stress, reduced fecundity, and overall inadequate population growth. For the North Atlantic right whale (an endangered species) entanglement in fishing gear, along with vessel strikes, is considered the primary cause of population decline.

POPULATION IMPACTS

It is difficult to estimate the total annual entanglement rate for all marine animals as most reports are species specific and are not necessarily translatable between the many different situations in which entanglements occur (example fisheries bycatch vs ALDFG). It has been reported in marine mammals that for bycatch alone, the total estimated mortality rate is 650,000 per year (Lent and Squires, 2017). For numerous critically endangered marine mammals, such as the vaquita porpoise and the Hawaiian monk seal, fisheries related entanglement is listed as the number one threat to their species recovery. For smaller species such as sea birds, fish, and marine invertebrates, the total annual entanglement mortality rate is likely to be many times the above stated number.

WHAT CAN YOU DO?

- Report dead or entangled wildlife to your local marine animal stranding network or CWHC node
- Monitor live entangled animals from a safe and legal distance
- Provide photo and video documentation of entanglements to response networks
- Spread awareness of the impacts of plastic entanglement and support sustainable fisheries
- Dispose of plastics responsibly and “lose the loop”



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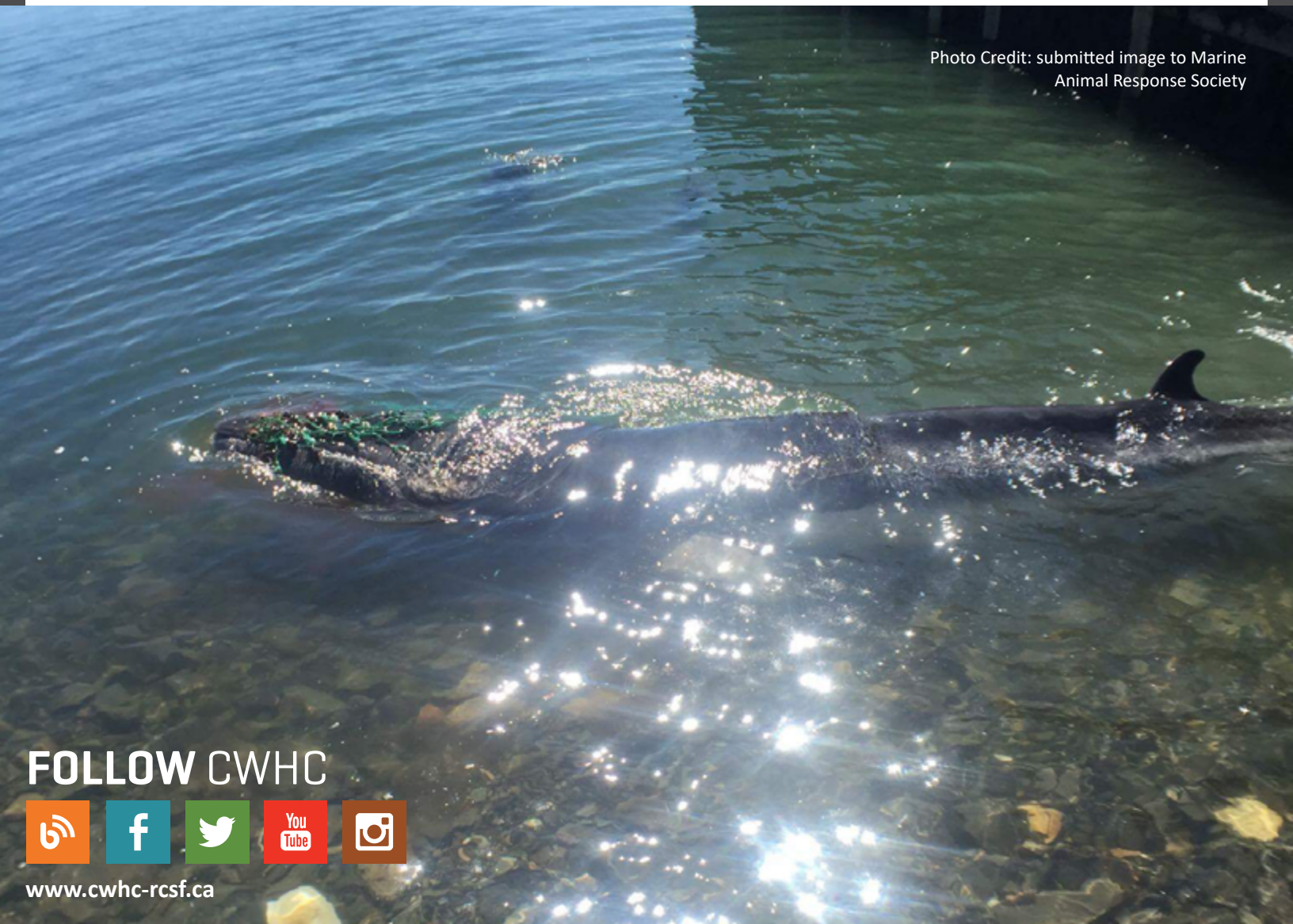

Photo Credit: submitted image to Marine Animal Response Society

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