

Current Methods for Determining Serious Injury

HAWAII (Karin Forney & Bud Antonelis)

Nature of interactions

Cetaceans: The majority of interactions involve small cetaceans hooked in the mouth or with an ingested hook, presumably because they are taking catch or bait off the gear. Most of these animals are released when the line breaks or is cut, trailing variable amounts of gear ranging from about 1m of line to tens of meters of line and some floats or weights. There were a few cases of animals hooked in the fluke or other body part; some of these died but others were released with some trailing line. Humpback and sperm whales were observed entangled in mainline and/or branchline, and all but one were released with some trailing gear (variable lengths of line, at times with floats and weights) wrapped around their bodies or flukes/pectoral fins.

Hawaiian monk seals: The majority of interactions involve monk seals becoming hooked, usually in the mouth, presumably because they are taking bait from the gear. NMFS rarely receives reports of the actual hooking event, but later documents seals hauled out with hooks and some trailing line or gear. Most hooked animals are captured by NMFS personnel who remove the hook, although some hooks fall out without intervention. In one instance, a deeply ingested hook and attendant gear were removed surgically. Seals also become entangled in nearshore lay nets in the Main Hawaiian Islands (MHI). Finally, seals become entangled in derelict fishing gear and other flotsam, primarily in the Northwestern Hawaiian Islands (NWHI). NMFS field personnel remove the gear whenever possible. Injuries and mortalities have been documented.

Cause of Injuries

Cetaceans- Pelagic longline: Includes shallow sets targeting swordfish and deep sets targeting tunas. Cetacean species observed (with # killed/ # injured) in this fishery during 1994-2004 were: False killer whale (1/17), short-finned pilot whale (2/4), Risso's dolphin (0/7), bottlenose dolphin (1/2), short-beaked common dolphin (0/1), pantropical spotted dolphin (1/0), spinner dolphin (0/2), Blainville's beaked whale (1/0), humpback whale (0/3), sperm whale (0/2), unidentified cetaceans (0/14). False killer whale takes in this fishery are of the greatest concern, because they are a strategic stock (takes exceed Potential Biological Removal under MMPA).

Hawaiian monk seals:

Nearshore recreational shorecasting: Most interactions have occurred from a type of shorecasting known as slide-rig fishing, which targets primarily carangids (ulua), and 'whipping', which targets scad (akule). From 1994 through July, 2007, 42 hooking incidents were reported in the MHI, with one mortality.

Nearshore lay net: This fishery involves setting underwater gill nets on nearshore reefs of the MHI for nonselective catch. From 1994 through July, 2007, 6 entanglement incidents have been documented, with 3 mortalities.

Debris entanglement: Entangling debris comprises items of fishery and non-fishery origins, and occurs primarily in the NWHI. During 1982-2006, 268 entanglements occurred, with 36 injuries and 8 mortalities.

Methods of determining serious injury

Based on the guidelines developed at the 1997 serious injury workshop (Angliss and DeMaster 1998), cetaceans are considered seriously injured if one or both of the following applies: 1) they are hooked in the mouth/head or have ingested a hook; and/or 2) they are released with trailing gear that is likely to impair feeding or locomotion. Serious injury determinations are made on a case-by-case basis using the observer's description of the interaction, the behavior and body size of the animal, the amount and types of gear attached when the animal was released, and where on the body the animal was hooked/entangled. Monk seals are considered seriously injured if: 1) they are hooked in the mouth deeper than the lip (i.e. inside the mandible, at base of tongue, or having swallowed the hook); 2) they are entangled in an actively fishing lay net; 3) they are entangled in debris which has cut through the skin of the animal; 4) they are entangled in debris and are subsequently disentangled, and the intervenor(s) specifically state in a field report that the animal could not have escaped unaided; and/or 5) they are entangled in debris which is in turn caught on shallow substrate, effectively immobilizing the animal.

Key issues/questions

Cetaceans: Hooked cetaceans are often very active, complicating an assessment of where and how the animals are hooked. Many animals break the line and swim away with varying amounts of gear attached before they are close enough for the observer to see details. Tuna sets (the majority) are hauled after dark, making it difficult for observers to identify species and observe details of the interaction events. To increase the collection of data relevant to serious injury determinations, new forms are currently being tested that have check boxes allowing observers to quickly record information on location and type of hook or entangled gear, amount and types of gear left attached to the animal, and the animal's behavior. Questions include:

- What is fate of small cetaceans released with a hook in their mouth (lip? jaw? skull?) or with an ingested hook? Is there any evidence they shed the hook on their own? Would a hook in the mouth significantly impair feeding, cause infection, or lead to death?
- At what point does trailing gear become a problem likely to cause death for small cetaceans (how much and what type of gear)?
- How does the impact of trailing gear differ:
 - ... when an animal is hooked in the mouth, head, body, pectoral fin, fluke?
 - ... when an animal has line entangled around the head, body, pectoral fins, fluke?
- What types of additional data would be useful to try to collect regarding the nature of the injury or the types and amounts of gear involved?
- Can any behaviors appropriately be used to indicate that an animal has sustained a serious injury (e.g., 'swimming abnormally', 'squealing', active/lethargic)?

Hawaiian monk seals: Seals are presumed to become hooked by taking bait rather than catch, but additional data need to be collected to confirm this. Moreover, interviews with fishermen who have inadvertently hooked & released seals can provide information on what types of bait may be more or less likely to be taken by seals. A key issue is that the subpopulation of seals in the MHI is increasing, so fishery interactions are likely to increase. Some steps have been taken to mitigate the effects of hookings. PIFSC personnel have been advocating the use of barbless hooks in the shorecasting fishery, a practice which would not diminish hookings, but would lead to a hooked animal more likely to lose the hook without human intervention.

In determining serious injuries, the effect of human intervention has not been considered, and perhaps this warrants further discussion, at least on the management side. If humans remove a deeply embedded (or ingested) hook, or release an animal from a lay net, and the animal survives, should the event still be considered a serious injury?