

Large Whale Entanglement 2010-2011 Season Summary

**Compiled by:
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**Hawaiian Islands Humpback Whale National Marine Sanctuary
July 8, 2011**

Background:

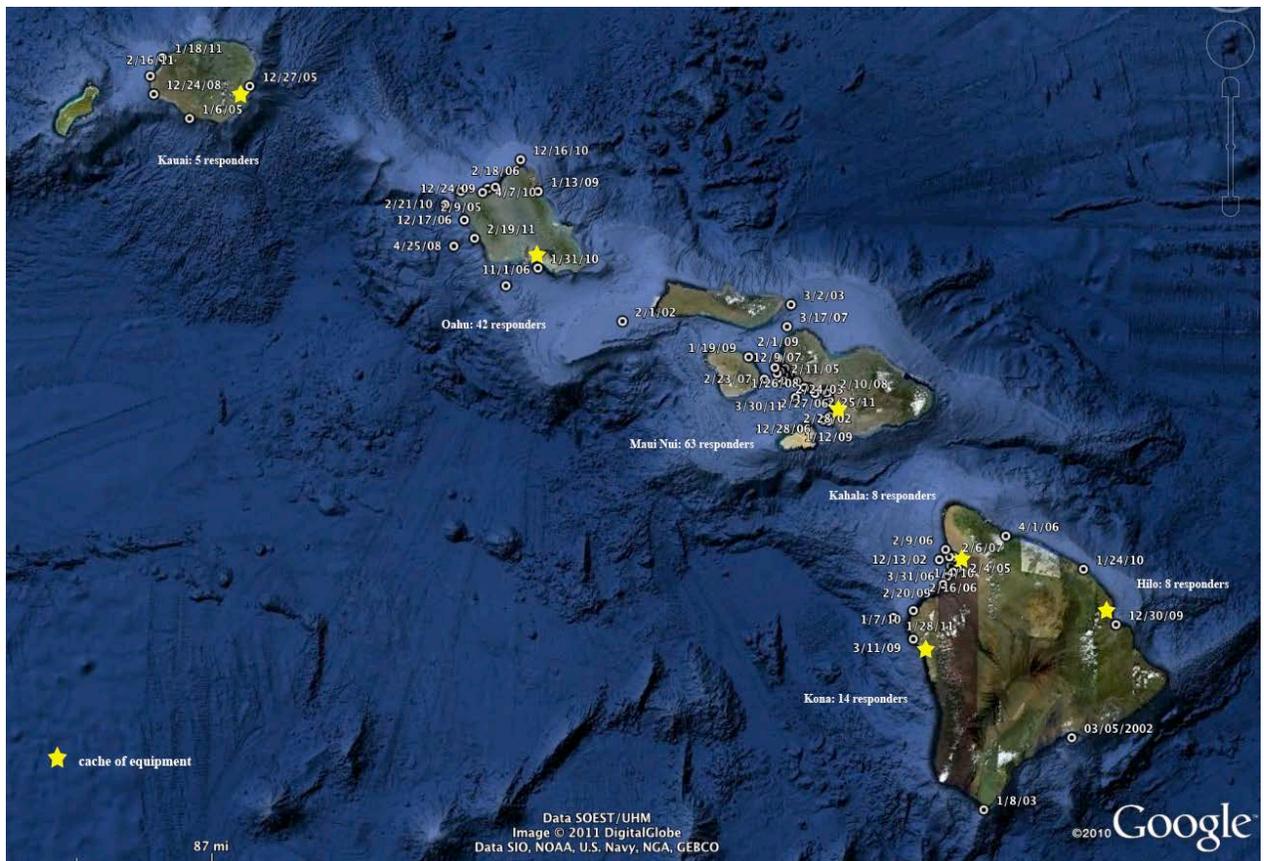
The Hawaiian Islands Humpback Whale National Marine Sanctuary (HIHWNMS) receives, and when appropriate, responds to, reports of humpback whales, and other marine animals in distress. The Sanctuary works closely with NOAA's National Marine Fisheries Service (NOAA Fisheries) Pacific Islands Regional Office (PIRO), Office of Protected Resources (OPR), Pacific Islands Fisheries Science Center (PIFSC), and Office of Law Enforcement (OLE); Hawaii's Department of Land and Natural Resources (DLNR); and the United States Coast Guard (USCG). The Sanctuary coordinates response efforts involving entangled large whales around the main Hawaiian Islands. The Hawaiian Islands Large Whale Entanglement Response Network (HILWERN) is a collaborative effort between, the state and federal agencies already mentioned, local whale researchers, the tour industry, fishermen, and many private citizens. The primary objectives of the Network are to provide safe and authorized response to entangled large whales (hopefully freeing some from life threatening entanglements in the process), and to gather valuable information from these response efforts that may mitigate entanglement threat and other threats, like ship strikes, in the future. All Network efforts involving close approach to large whales are authorized, and permitted, under NOAA Fisheries' Marine Mammal Health and Stranding Response Program (MMHSRP; permit # 932-1905).

The Hawaiian Islands Large Whale Entanglement Response Network, now in its 10th season, comprises over 230 members who have received various levels of training in order to support large whale response efforts statewide. More than 230 hours of training have been provided since 2002. To support the Network's response efforts, caches of specially designed equipment have been established on the islands of Hawaii, Maui, Oahu, and Kauai (see Figure 1).

Since 2002, the Sanctuary has received more than 179 reports of whales entangled in gear. The earliest confirmed report of a humpback whale entangled based on the breeding/ calving season was Nov 1 (2007), while the latest was April 25 (2008). Confirmed reports generally start in December, increase in frequency through February, and then decline into April. Only one confirmed large whale entanglement report (a sperm whale reported entangled north of Layson Island on May 27, 2011) has been received in May (See Figure 2). The number of reports has generally increased each season, with this past season having the greatest number of reports (N = 36) (see Figure 3). Over all, 95 reports were confirmed as truly involving entangled large whales, representing as many as 66 different animals (see Figure 4). All, but two of these reports – a sei whale entangled in heavy gauge line and a sperm whale in longline (both this past season), were humpback whales.

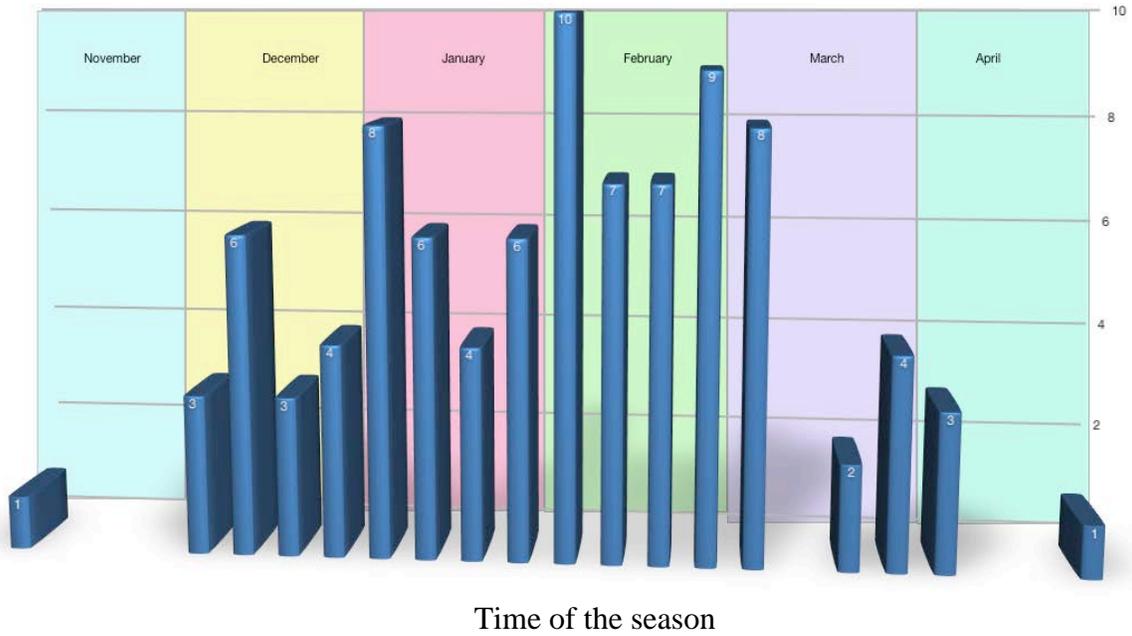
The Network does not or cannot respond to every report of an entangled whale. Past responses and thorough vetting of initial entanglement reports has shown that approximately half (48%) of reports here in Hawaii have been misreported or cannot be confirmed (Lyman et al, 2007). Continued outreach and efforts into reporting have decreased the number of misreported and unconfirmed reports over the last several seasons. However, this last season the number of unconfirmed reports spiked to 68% (N=24). Examples of misreports include: white-flipped humpback whales interpreted as carrying gear; animals in the proximity of gear, but not entangled; reflections off the wet backs of animals interpreted as buoys; calves being interpreted as gear; and surface behaviors, like breaching, being interpreted as animals trying to throw an entanglement. Figure 3 shows the total number of reports received each season broken down by confirmed and unconfirmed reports.

Figure 1: Location of confirmed humpback whale entanglement reports from Hawaii between 2002 and 2011, and network preparedness.



Since 2002, the Network has mounted over 110 on-water or in air responses. In those cases when an on-water response should and could be mounted, the network has a 40% success rate freeing entangled large whales of all or significant amounts of gear. Many reports come in too late in the day, represent animals too far offshore, or in conditions that are not conducive (e.g. rough sea state) for mounting rescue efforts. However, the biggest contributor to an unsuccessful response is simply not re-locating the animal. If there is no standby vessel, then an entangled whale ends up being a rather large needle in an even larger haystack.

Figure 2: Entanglement reports throughout the season (2002 – 2011).



* Excludes a report of an entangled sperm whale off Layson Island on May 27, 2011.

Figure 3: Large whale entanglement reports from Hawaii between 2002 and 2011.

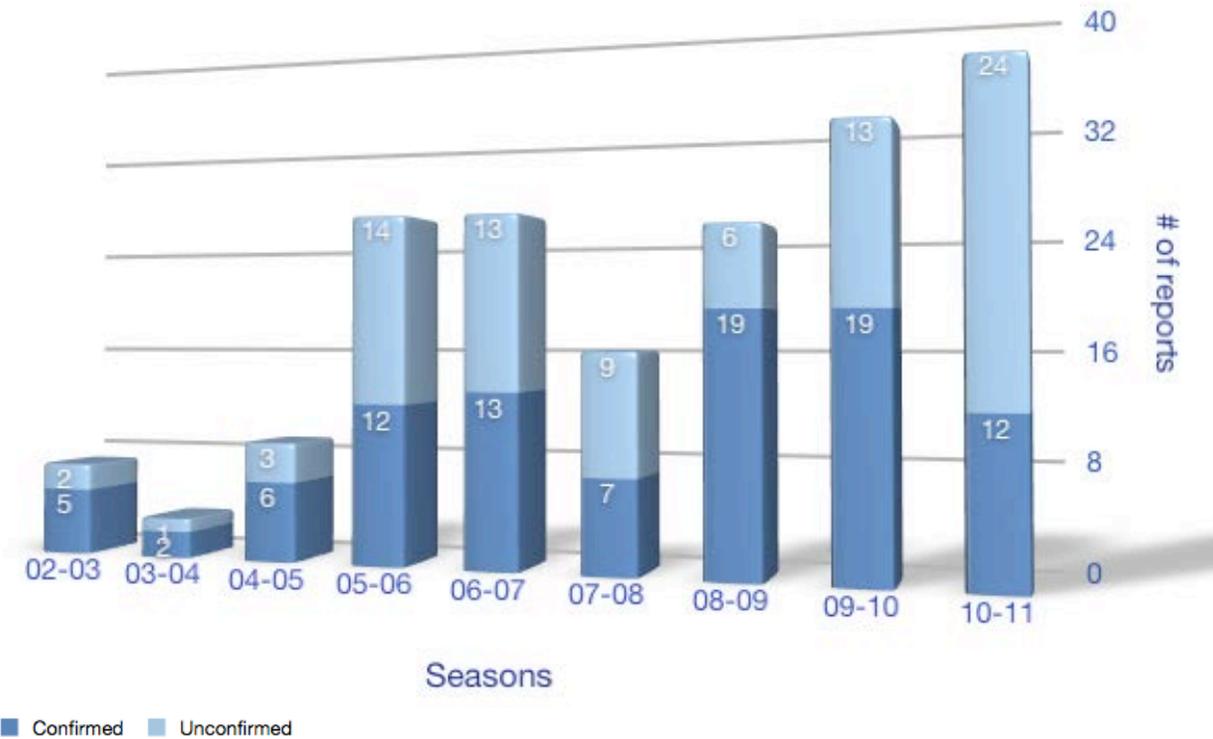


Figure 4: Number of confirmed animals reported entangled from Hawaii between 2002 and 2011.

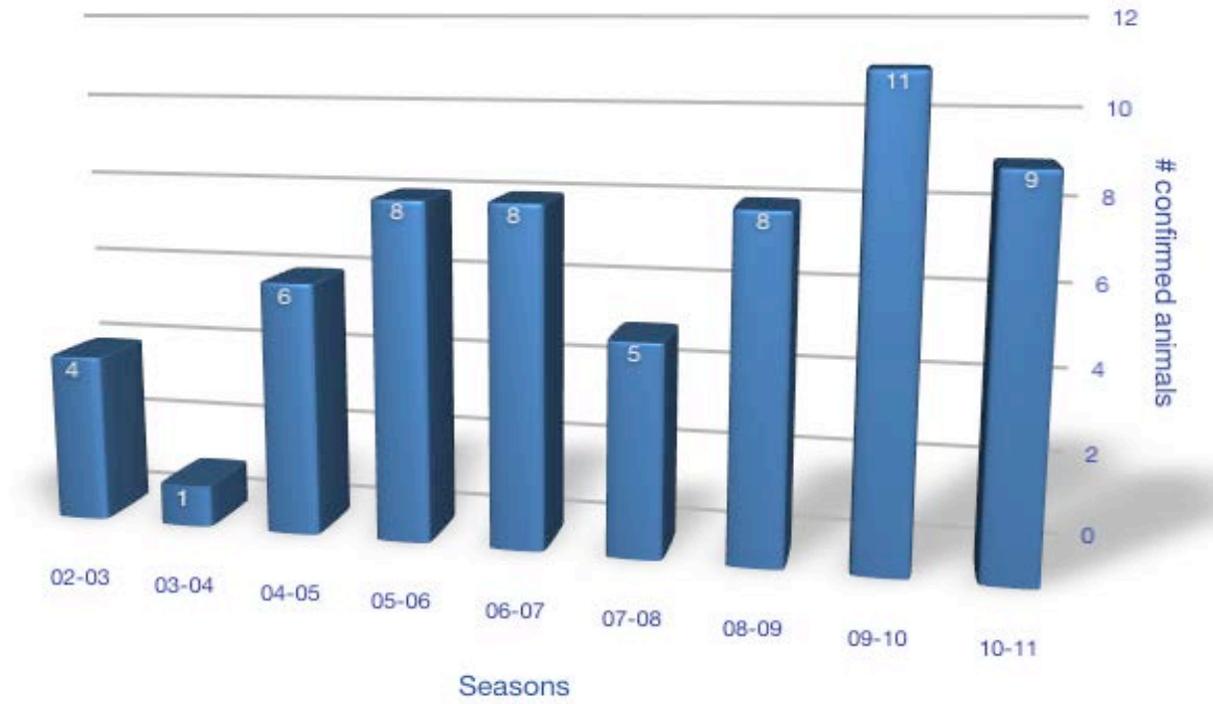
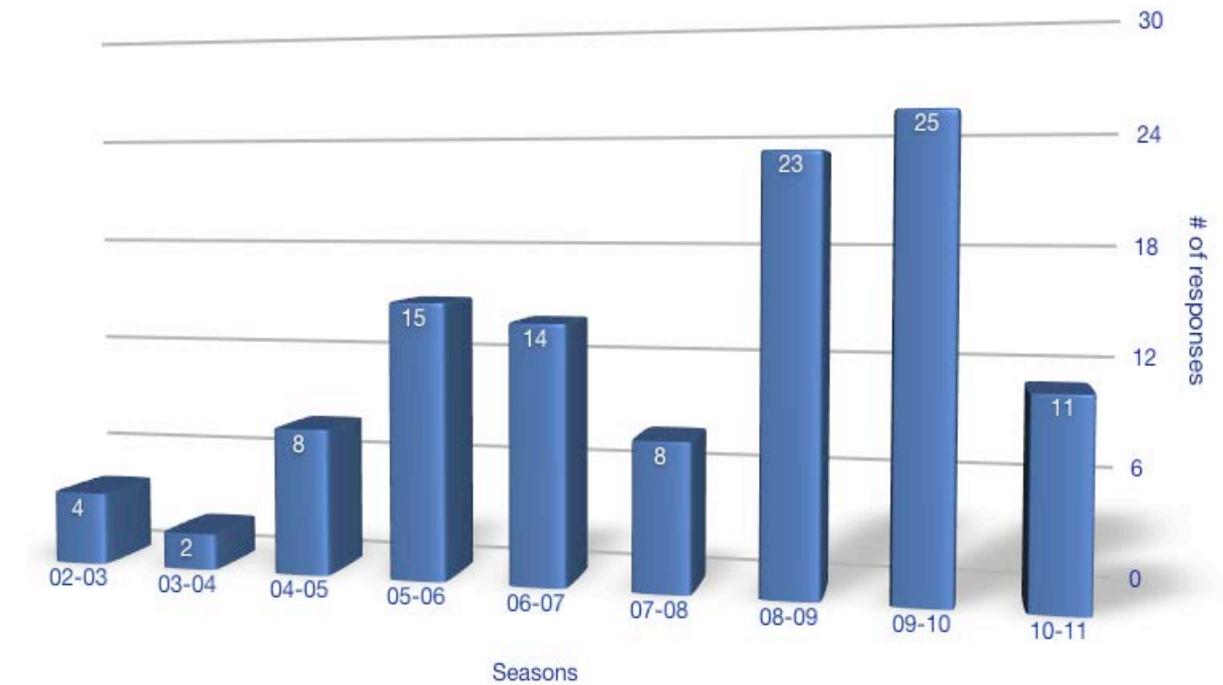
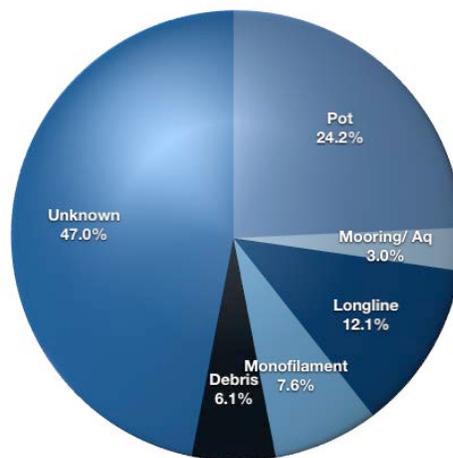


Figure 5: Number of responses to entangled whales in Hawaii between 2002 and 2011.



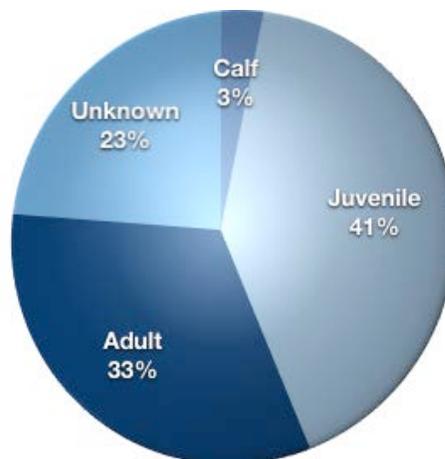
Since 2003, the Network has removed over 6,700 feet of entangling gear¹ from 16 whales (15 humpbacks and 1 sei whale) off the Hawaiian Islands. Animals have been confirmed entangled in local fishing gear (traps and monofilament), mooring gear, marine debris, and actively fished gear set as far away as Alaska. To date, 9 humpbacks reported entangled in Hawaii have been confirmed to have gear from Alaska. Seven (7) of the reports of Alaska gear were commercial trap gear. The greatest known straight-line distance (accounting for obstacles) a whale carried gear is over 2,450 nm (between Wrangell, Alaska and the island of Maui). Over the last several years the number of entanglements involving local pot gear has increased. To date, at least 7 animals have been reported entangled in trap gear set around the main Hawaiian Islands.

Figure 6: Percentage of gear types removed from or documented on entangled humpback whales off Hawaii between 2003 and 2011.



Since 2001 the largest percentage of animals confirmed entangled have been juveniles (N=26). Many of these reports were received early in the season. Reports of juveniles are based on size, and thus may represent a degree of error (e.g. a small adult male may be reported as a juvenile). Adults were the next most frequent age class at 33% (N=21). Only 2 calves have been confirmed entangled in Hawaii since 2001 (see Figure 7).

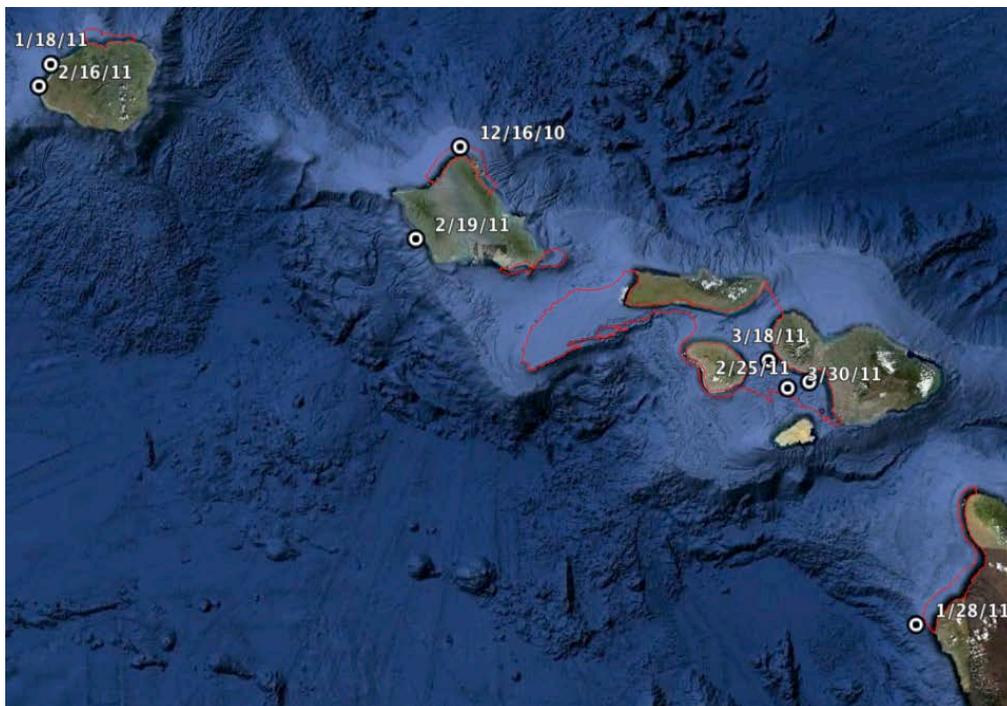
Figure 7: Age class² of humpback whales reported entangled in Hawaii between 2001 and 2011.



2009-2010 season:

The 2010-2011 humpback whale season (November 1, 2010 – May 27, 2011) had the greatest number of large whale entanglement reports of any season since 2002. Thirty-six (36) reports were received; however, only 12 reports were confirmed and these amounted to 9 different animals. The larger difference between confirmed and unconfirmed reports (12 v. 24) was likely associated with greater non-targeted (public) outreach request for re-locating an entangled animal and the higher number of unresolved reports/ cases at the time. This can be seen from the spike of unconfirmed reports in late January and early February in Figure 9, and by the large number of unconfirmed reports from the general public as seen in Figure 10.

Figure 8: Location of initial confirmed large whale entanglement reports from Hawaii during the 2010- 2011 season (sperm whale off Layson excluded).



The network mounted 8 on-water responses, which resulted in 1 animal – a sei whale, likely being freed of its entanglement. One animal freed itself of what was very likely marine debris, and another had the trailing buoy removed by a Good Samaritan. Without the trailing buoy, the standby vessel was unable to maintain a visual on the animal and the initiated response effort was aborted. One animal was not a candidate for disentanglement, only having a small amount of moderate gauge monofilament on it. Late in the season a sperm whale was partially freed by fishermen tending their longline. Four animals were never re-located. This represented a success rate this season of 20% for those animals that were candidates for disentanglement (i.e. a life threatening entanglement), and in which a response could be mounted (i.e. weather, time-of-day, how far offshore). Reports were more evenly distributed among the main Hawaiian Islands this season. There were 3 reports off Maui, 2 off Oahu, 2 off Kauai, 1 from the island of Hawaii, and 1 report off the Northwestern Hawaiian Islands (see Figure 8).

Figure 9: Number of entanglement reports by month for the 2010-2011 season

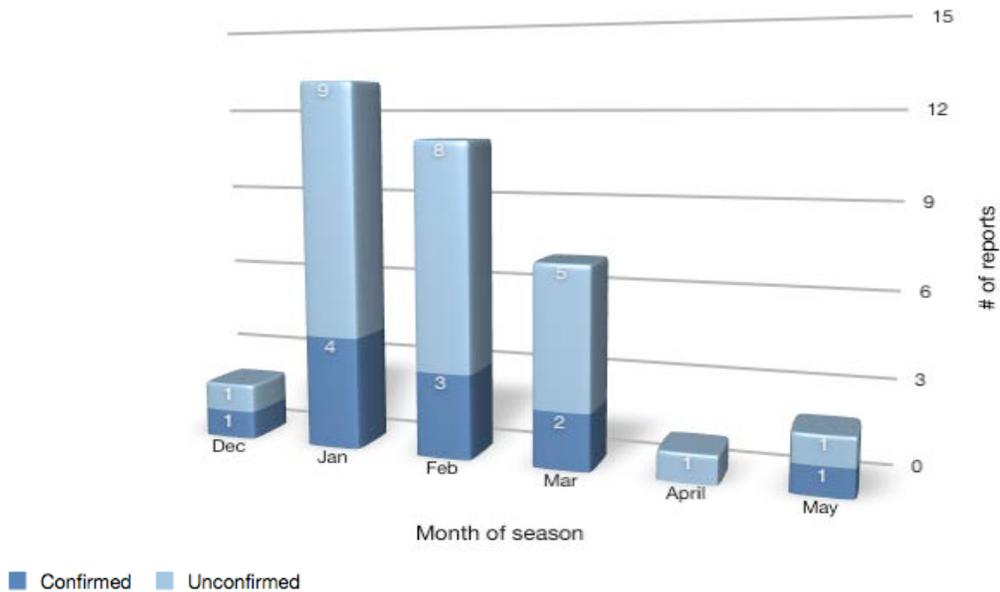
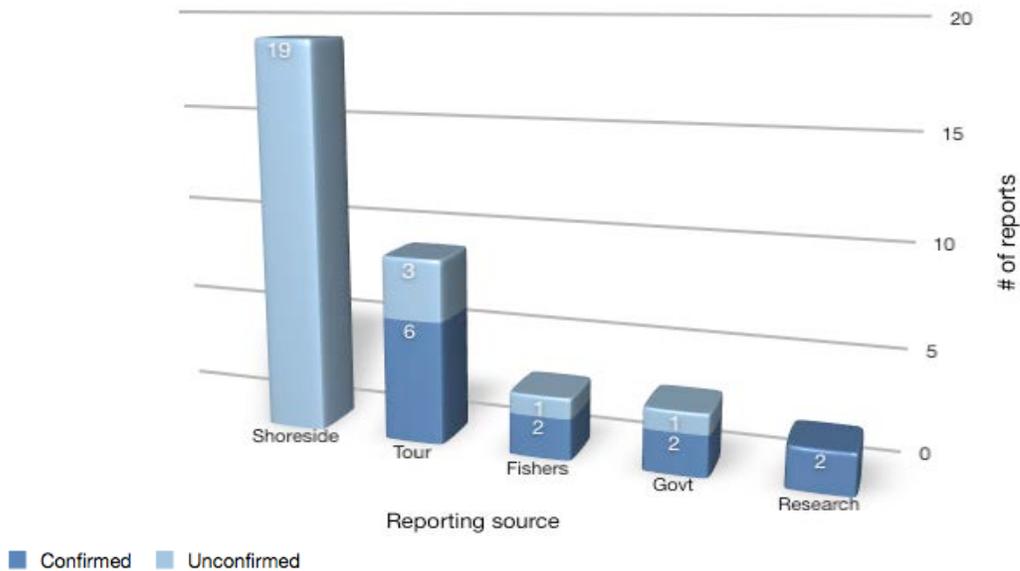


Figure 10: Number of entanglement reports by reporting source



Of the gear removed or documented on the animals this season, 2 was longline, 1 monofilament (hook and line), 1 local crab pot (trap) gear, 1 was crab pot gear from Alaska, 1 was marine debris, and 3 were not identified (see Figure 11). This season 4 of the reports involved juveniles, 4 were adults, and 1 was unknown.

Figure 11: Percentage of gear types found entangling whales during the 2010-2011 season.

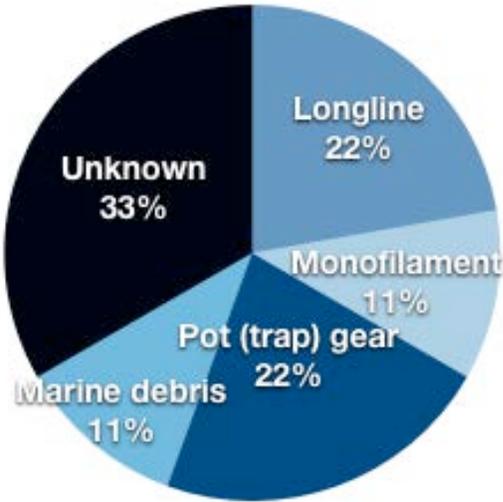
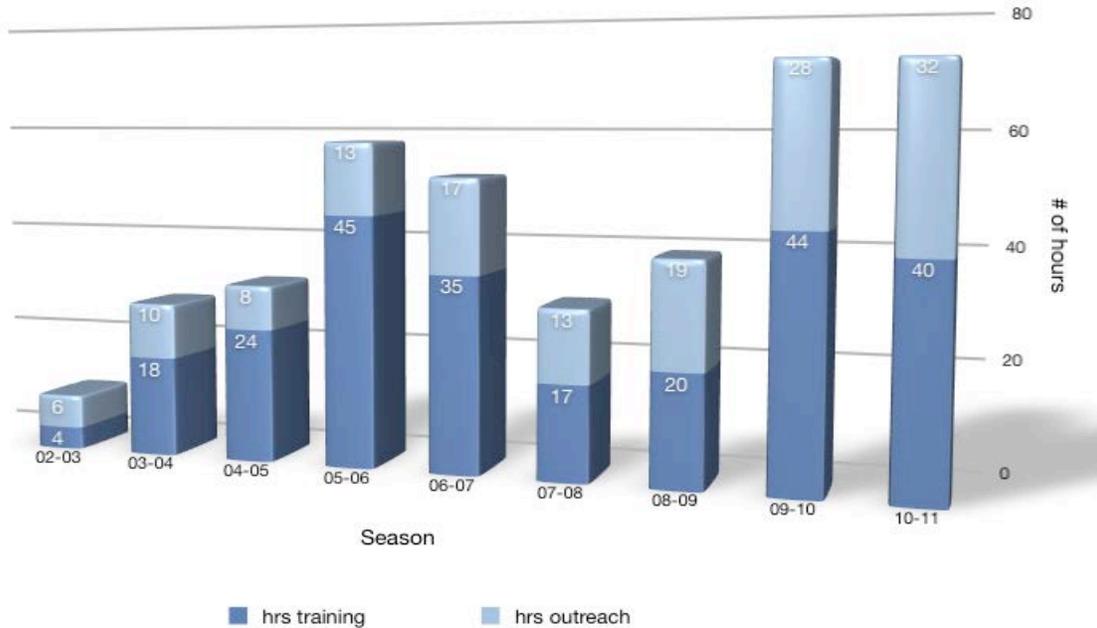


Figure 12: Amount of outreach and training targeted towards entanglement threat and response (2002 – 2011) in Hawaii.



The season was unique in several ways:

1. Over the last several years the number of unconfirmed reports had been decreasing. This had been attributed to an increase in outreach (See Figure 12). However, as already mentioned, this year was different as the number of unconfirmed reports spiked, likely a result of an unresolved and greater publicized case off Kauai. While not a large number, Kauai did

have 2 confirmed reports, which is more than has been received in the past. This also likely contributed to the increase in unconfirmed reports, which were also received from Oahu and even Maui.

2. Many of the confirmed reports that were received lacked standby support. This, along with other factors like, time of day and remoteness, contributed to fewer response efforts. Additionally, one response effort had to be aborted when a well-intentioned mariner cut the trailing buoy from a line entangling a whale off Oahu that later resulted in the animal being lost by the standby vessel. There was standby support for all 3 of Maui's confirmed reports and in all 3 cases a response was mounted. One animal was not a candidate for disentanglement, 1 animal freed itself and another – a sei whale, may have been freed of gear.

3. Only one animal may have been actively freed of gear through network efforts and this was a sei whale, which is unique in itself. This was the first sei whale reported entangled in Hawaii and may be the first confirmed entanglement in the North Pacific.

4. The sei whale entanglement was particularly difficult in that the gear was extremely heavy gauge line with a heavy fouling of gooseneck barnacles. While accessible (i.e. at the animal's tail), the gear overwhelmed the cutting blades that were part of the disentanglement arsenal.

5. The tagged sei whale represents the longest time an entangled whale has been monitored by telemetry for disentanglement purposes in the North Pacific. It is also one of the few times a sei whale has been tagged (though albeit it indirectly). It is believed that the animal was tracked for at least 14 days before the tag, and likely entangling gear, became detached. The tag package continued to operate and be monitored for 109 days, over 1407.1 nm, and 2516 GPS fixes before the battery failed.

Finally, much credit goes to the on-water community of tour boat operators, fishermen, biologists, and others that report, assess, help document, and many times stand by the animals until additional help can arrive. Ed Lyman and David Mattila of NOAA's Hawaiian Islands Humpback Whale National Marine Sanctuary, and David Schofield of NOAA Fisheries Pacific Islands Regional Office coordinate the large whale entanglement response effort. However, it is the efforts of the on-water community that makes the difference on whether an entangled whale is ultimately saved, and information gained to reduce the entanglement threat to these magnificent animals in the future.

Summary of 2010-2011 season disentanglement reports and efforts:

- Thirty-six (36) reports of entangled whales were received this season (24 unconfirmed and 12 confirmed).
- As many as 7 humpback whales, a sei whale, and a sperm whale were confirmed entangled in gear.
- Four of the entangled animals were initially sighted within Sanctuary waters.
- Reports were fairly evenly distributed throughout the islands (2 of Kauai, 2 off Oahu, 3 off Maui, 1 off Big Island, and 1 off NWHI).
- Four reports involved juveniles, 4 were adults, and 1 unknown.
- There were 11 responses mounted, representing 8 on-water and 3 aerial response efforts.

- The United States Coast Guard mounted at least 7 responses towards entangled whales. On one occasions Coast Guard transported crew and provided standby support towards rescue efforts.
- DLNR were involved in 2 response efforts.
- Six (6) trained network members got hands-on experience in large whale entanglement response (e.g. disentanglement or tagging efforts).
- Research organizations, Hawaii Whale Research Foundation, Marine Mammal Research Program (HIMB), Hawaii Marine Mammal Consortium, Hawaii Association for Marine Education and Research (HAMER), and Liquid Robotics, assisted on response efforts.
 - Tour industry platforms from Pacific Whale Foundation, Blue Hawaiian Helicopters, Jack Harter's Helicopters, Capt. Andy's Tours, Star of Honolulu, Blue Dolphin Tours, Napili Explorer, Prince Kuhio, Pro Divers, and Pacific Passion assisted and were instrumental in providing sightings and monitoring of animals.
- Three fishing vessels reported and/or supported efforts.
- Support was also provided by Hawaii's Division of Aquatic Resources (Kona office), the Department of Conservation and Recreation (DOCARE) and Ocean Safety, Kahoolawe Island Reserve Commission (KIRC), the US Navy (PMRF), Ni'ihau Helicopters, and NOAA's Pacific Islands Fisheries Science Center and Office of Law Enforcement.
- NOAA's Office Law Enforcement was instrumental in investigating the identity of a set of gear recovered from a humpback whale off of Oahu.
- Many people and organizations played a key role in tracking an entangled sei whale and subsequently assisted in the attempted recovery of the detached transmitter package. They were: Marine Wildlife Associates (Robert Bowman), NOAA Fisheries Observer Program (Joe Arceneaux), NOAA Fisheries PIRO (David Schofield), NOAA Office of Law Enforcement (Greg Wong), United States Coast Guard (Eric Roberts), Hawaiian Islands Humpback Whale National Marine Sanctuary (Jean Souza), International Pacific Research Center, School of Ocean and Earth Sciences (Niklai Maxamenko and Jan Hafner), University of Hawaii – Oceanography Dept., NOAA research vessels, and many fishermen.

Case report of disentanglement efforts:

3/18/2011 Response to juvenile sei whale entangled in heavy gauge line off Lahaina, Maui:

On March 18, 2011 a juvenile sei whale was reported entangled by Hawaii Whale Research Foundation late in the day (14:25). The animal was entangled in heavy gauge, likely 1" diameter, yellow, polypropylene line, with one, possibly two, wraps around the tailstock before trailing 30 feet behind to a large bundle of line. The entangling line had a heavy growth of gooseneck barnacles making it appear even larger. There were multiple line scars around the body both forward and behind the level of pectoral flippers. The animal was in poor condition/ emaciated, and in short, the entanglement was life threatening.

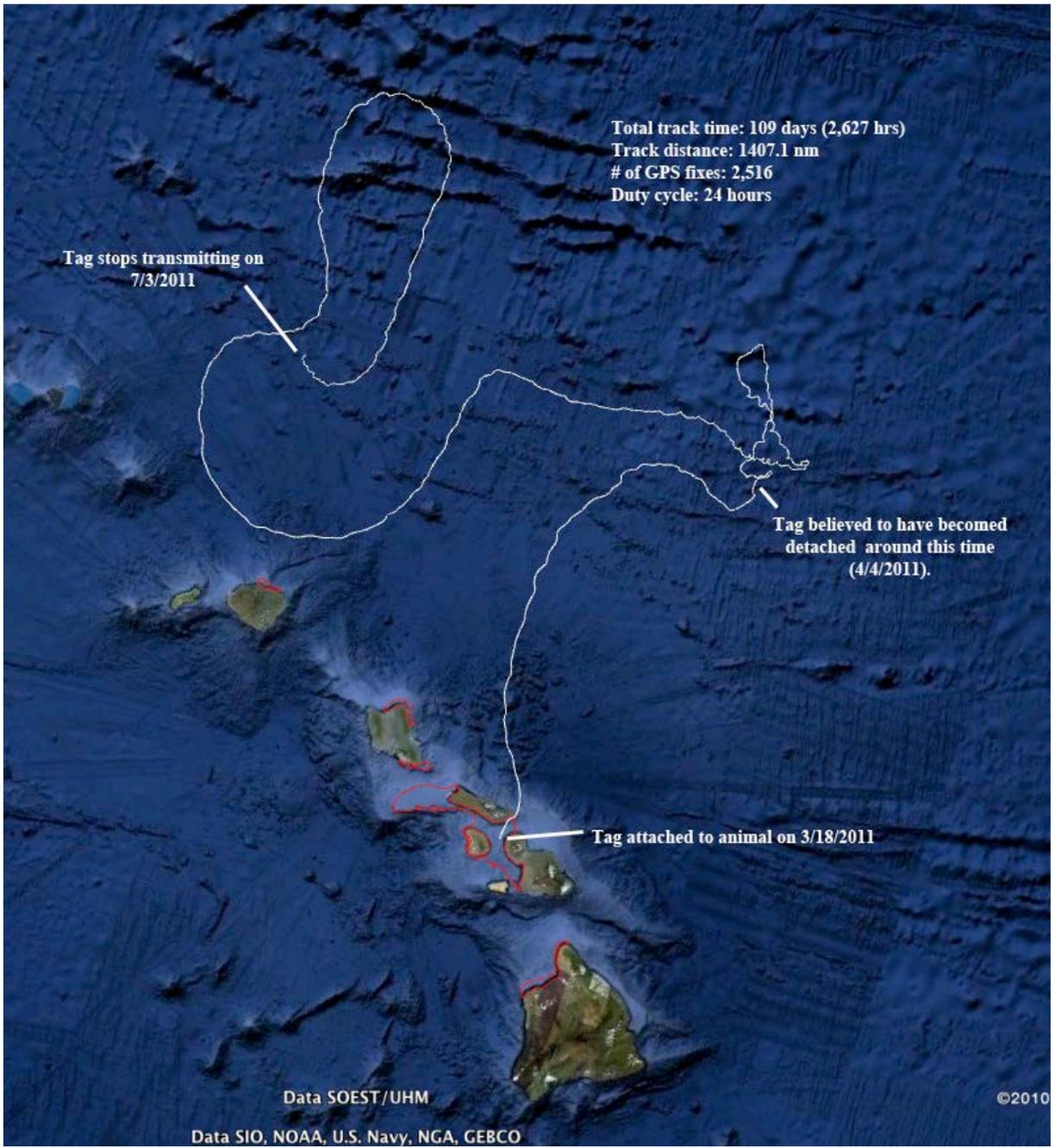


Photo courtesy of Hawaii Whale Research Foundation

The Hawaiian Islands Humpback Whale National Marine Sanctuary (HIHWNMS), NOAA Fisheries, and Hawaii Whale Research Foundation (HWRF) mounted a response, with trained personnel from Kaho'olawe Island Reserve Commission (KIRC), Pacific Whale Foundation (PWF), and ProDivers. Several cuts may have been made within the limited time available and under less than optimal condition, but the animal remained entangled at end of the day. In order to track the animal to mount a follow-up effort when conditions and resources allowed, the animal was tagged with a tethered telemetry buoy. Unfortunately, the animal headed offshore, north of the islands, where a follow-up effort was not prudent. However, 14 days into the tracking it is believed that the telemetry buoy, and possibly the entangling gear it was attached to, became detached from the animal – possibly a result of the cuts that had been made 2 weeks earlier. If so, the animal is free of its entanglement. At the time of this report, the telemetry buoy had not been recovered and confirmation of the animal's status was still uncertain. The buoy was tracked for more than 109 days and had traveled over 1400 nm. NOAA's Fisheries Observer Program, Office of Law Enforcement, research vessels, and Marine Debris Program, along with the US Coast Guard, the University of Hawaii's research vessels, and local fishermen have all assisted in or were part of the effort towards the recovery of the tracking buoy.



Flying knife attached to loop of gear around tail (HIHWNMS)



Track of tagged sei whale and detached telemetry buoy.

References:

Lyman, E., J. Cordaro, K. Jackson, A. Jensen, D. Mattila, B. Norberg, L. Spaven, S. Wilkin, K. Wilkinson. A preliminary investigation of gear entangling humpback whales, *Megaptera novaeangliae*, in the North Pacific. Abstract for SPLASH Symposium. at 18th Biennial Conference of the Biology of Marine Mammals. October 11, 2009. Quebec, Canada

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¹ Represents line greater than or equal to 3/8” diameter

² Age class determination based on size, rather than known age of animal.