

**2015-2016 Hawai'i Large Whale Entanglements
and Response Efforts
around the Main Hawaiian Islands**

Season-end Report



**Compiled by:
Ed Lyman and Rachel Finn
Hawaiian Islands Humpback Whale National Marine Sanctuary
May 10, 2016**

Summary:

The Hawaiian Islands Large Whale Entanglement Response Network (Network) is a multi-agency, community-based effort towards authorized and safe response to entangled large whales around the main Hawaiian Islands. The Hawaiian Islands Humpback Whale National Marine Sanctuary, NOAA Fisheries' Pacific Islands Regional Office and NOAA Fisheries' Office of Protected Resources oversee the effort at different levels. The entire effort is part of NOAA Fisheries' Marine Mammal Health and Stranding Response Program. This past season was the Network's 13th and was marked by a lower number of reports and associated responses than many past seasons. The differences may have been a result of fewer animals near the islands as fewer sightings were reported, especially earlier and later in the season. Only 6 whales were confirmed seen entangled in gear and none of the animals were ever re-sighted. One animal self-released, while another likely did as well. Another whale had a non-life threatening entanglement involving a small amount of monofilament line on its fluke tip. Of the remaining 3, multi-platform and multi-agency responses were mounted. Two of the animals were not re-located. A response was mounted to the 6th animal, but the team was unable to get a hold of the deep-lying line that represented the entanglement. The Network has now freed 22 large whales from life threatening entanglements, either removed or recovered over 9,500 feet of line and netting, and has gathered a great deal of information (more than 50 sets of gear identified) towards reducing the threat in the future.

Background:

The Hawaiian Islands Humpback Whale National Marine Sanctuary (Sanctuary) 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 Services' (NOAA Fisheries) Office of Protected Resources (OPR), Pacific Islands Regional Office (PIRO), Pacific Islands Fisheries Science Center (PIFSC), NOAA Corps, and Office of Law Enforcement (OLE); Hawai'i's Department of Land and Natural Resources (DLNR); the United States Coast Guard (USCG); and others. The Sanctuary coordinates response efforts involving entangled large whales around the main Hawaiian Islands, under the Hawaiian Islands Large Whale Entanglement Response Network (Network), which is a collaborative effort between the state and federal agencies already mentioned, local whale researchers, the tour industry, fishers, and many private citizens. The primary objectives of the Network are to provide safe and authorized response to entangled large whales; free some from life threatening entanglements; increase awareness; and to gather valuable information that may mitigate the threat (risks) of entanglements for large whales and the risks associated with response. It is for risk reduction that all Network efforts involving close approach to large whales are authorized, overseen, and permitted, under NOAA Fisheries' Office of Protected Resource's Marine Mammal Health and Stranding Response Program (MMHSRP; permit # 18786).

The Hawaiian Islands Large Whale Entanglement Response Network, now in its 14th season, comprises over 300 members who have received various levels of training in order to support large whale response efforts statewide. More than 480 hours of training have been conducted since 2002. Caches of specially designed equipment have been established on the islands of Hawai'i, Maui, O'ahu, and Kaua'i to support entanglement response efforts (see Figure 1).



Figure 1: Confirmed entanglement reports from Hawai'i between 2002 and 2016.

Since 2002, the Sanctuary has received more than 325 reports of large whales entangled in gear. The earliest confirmed report of a humpback whale observed entangled on their Hawaiian breeding/ calving grounds was November 1 (2007), while the latest was April 25 (2008). Confirmed reports generally start in December, increase in frequency into February, and then decline into April (see Figure 2). The number of reports has fluctuated from season to season (see Figure 3). Overall, 166 reports were confirmed as truly involving entangled large whales, representing as many as 107 different individuals (see Figure 4). All but three of these reports – a sei whale and two sperm whales, were humpback whales.

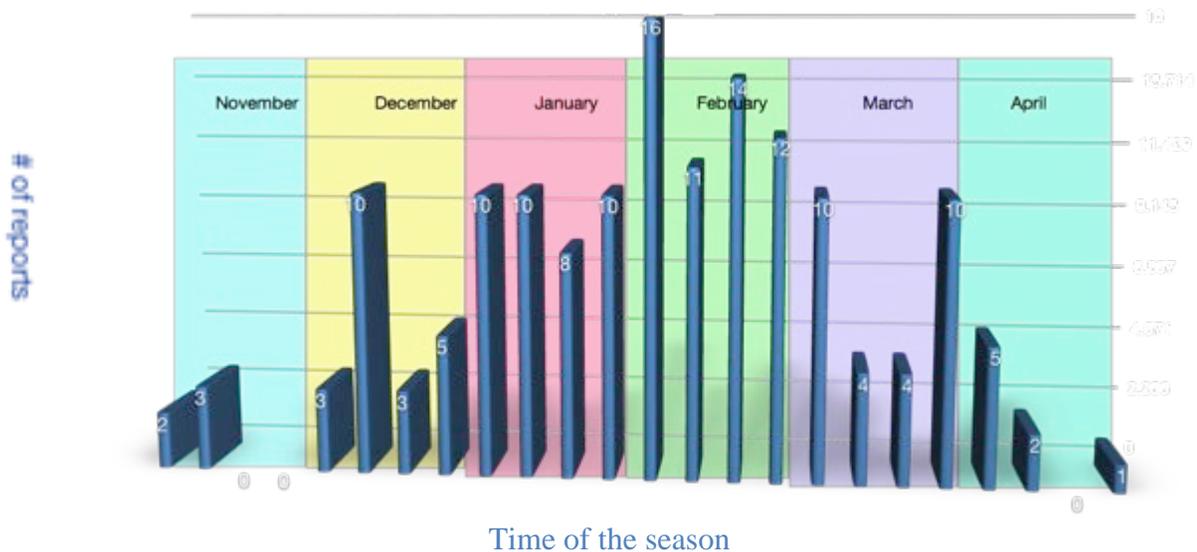


Figure 2: Entanglement reports throughout the season (2002 – 2016).

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 (48.0%) of reports here in Hawai'i have been misreported or cannot be confirmed (Lyman *et al*, 2007; HIHWNMS data, 2014). Today that value is 48.9%. 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.

Since 2002, the Network has mounted over 150 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. Over the years standby support has increased, resulting in a greater success rate. In addition to agency partners, the tour industry and whale researchers have been extremely valuable towards monitoring animals until additional help can arrive.

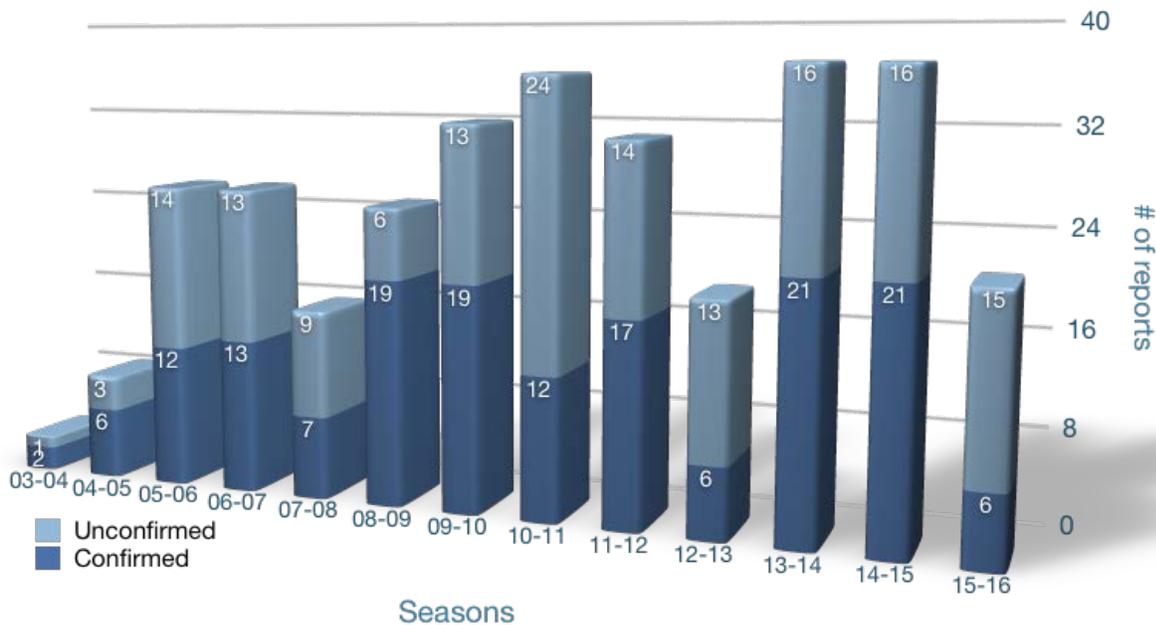


Figure 3: Large whale entanglement reports in Hawai'i between 2002 and 2016 seasons.

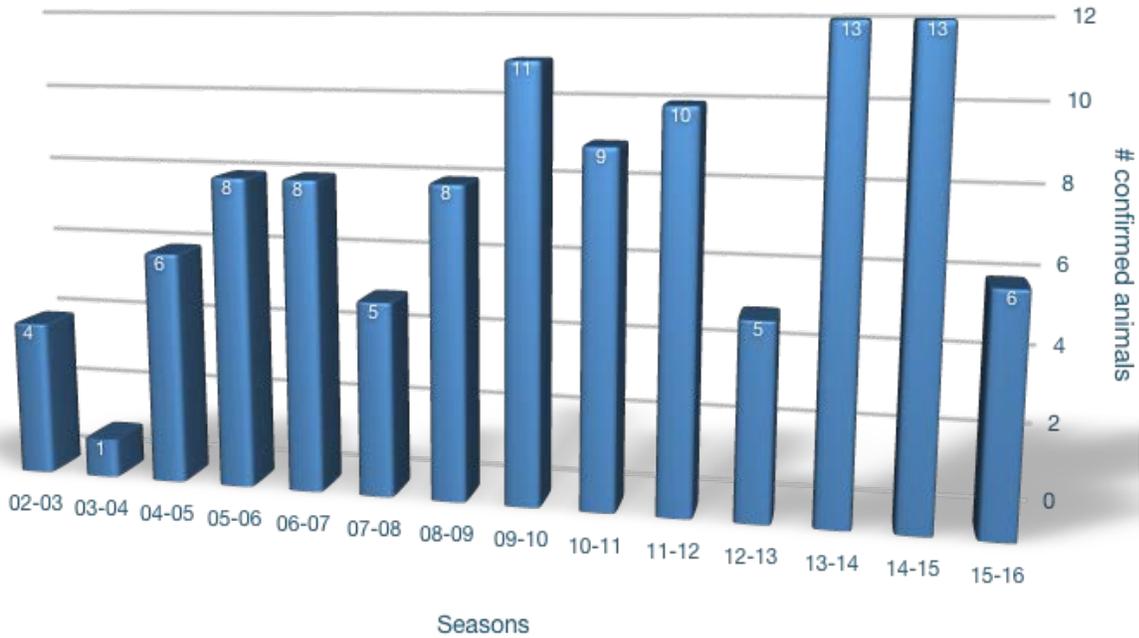


Figure 4: Number of confirmed animals reported entangled in between 2002 and 2016

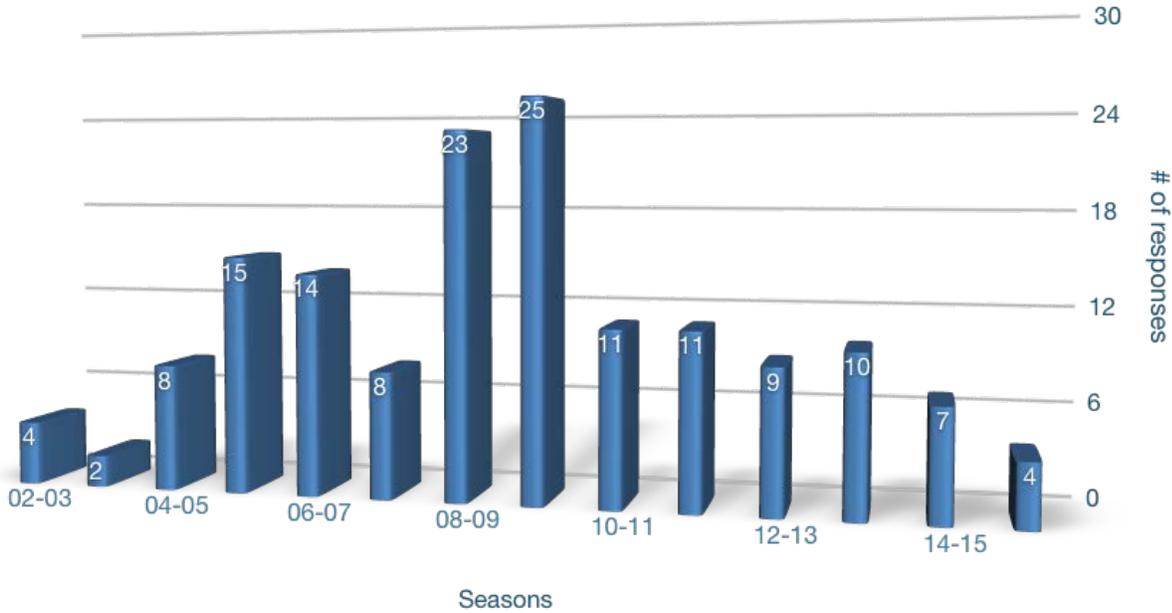


Figure 5: Number of responses to entangled whales in between 2002 and 2016 seasons.

Since 2002, the Network has removed or recovered over 9,500 feet of entangling gear¹ from 22 large whales (21 humpbacks and 1 sei whale) around the main Hawaiian Islands. Animals have been confirmed entangled in local fishing gear (traps, longline and monofilament), mooring gear, marine debris, and actively fished gear set as far away as Alaska. To date, 12 humpback whales reported entangled in Hawai‘i have been confirmed to have gear from Alaska. Nine (9) of the

reports of Alaska gear were commercial trap gear. The greatest known straight-line distance (accounting for obstacles) a whale has carried gear is over 2,450 nm (between Wrangell, Alaska and the island of Maui). Over the last several years the number of entanglements reported in local pot gear has increased. To date, at least 10 animals have been reported entangled in trap gear set around the main Hawaiian Islands.

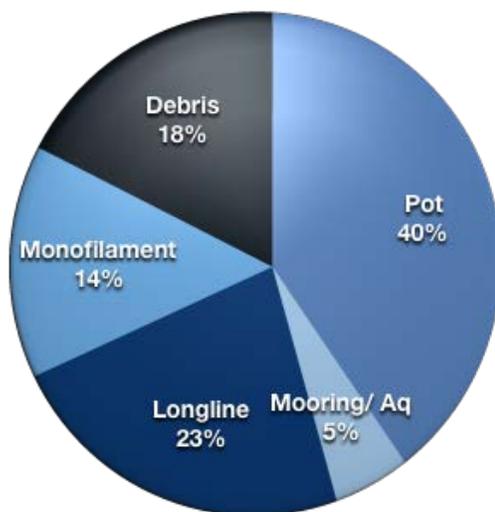


Figure 6: Percentage of gear types removed from, or documented on entangled humpback whales off Hawai'i between 2003 and 2016.

Since 2002 nearly half of the animals confirmed entangled have been juveniles (n=42). 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). Only 6 calves have been confirmed entangled in Hawai'i since 2001 (see Figure 7).

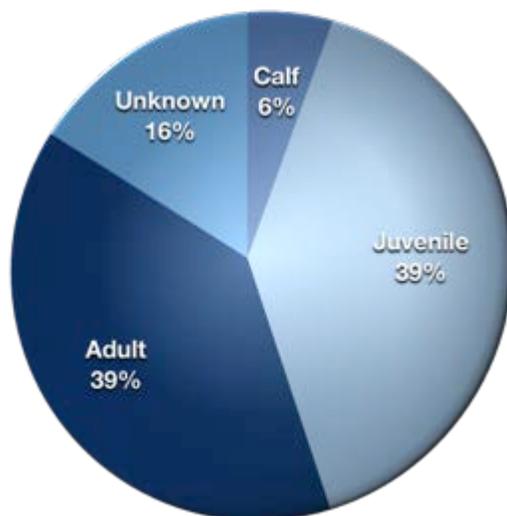


Figure 7: Age class² reported entangled in Hawai'i between 2002 and 2016.

The 2015-2016 humpback whale season (November 1, 2015 – May 15, 2016) matched the lowest number of confirmed large whale entanglement reports received in a season since 2003. Only 6 confirmed reports, representing 6 different animals, were received.



Figure 8: Location of confirmed entanglement reports during 2015 - 2016 season.

The Network mounted 4 on-water response efforts to 4 different entangled whales. Three (3) animals were never re-located, one (1) animal self-released, one (1) report represented a non-life threatening entanglement, and one (1) disentanglement effort to free a whale was unsuccessful. Maui Nui (waters leeward of the island of Maui) had the most confirmed cases of entangled large whales this season with 3 cases, but O‘ahu’s waters were a close second with 2 reports. There was also a confirmed case off of Kauai and several unconfirmed cases off the island of Hawai‘i (see Figure 8).

Of the gear removed or documented on the animals this season, 1 was marine debris, 1 was monofilament and 4 were not identified. Four (4) of the entangled humpback whales were adults and 2 were juveniles.

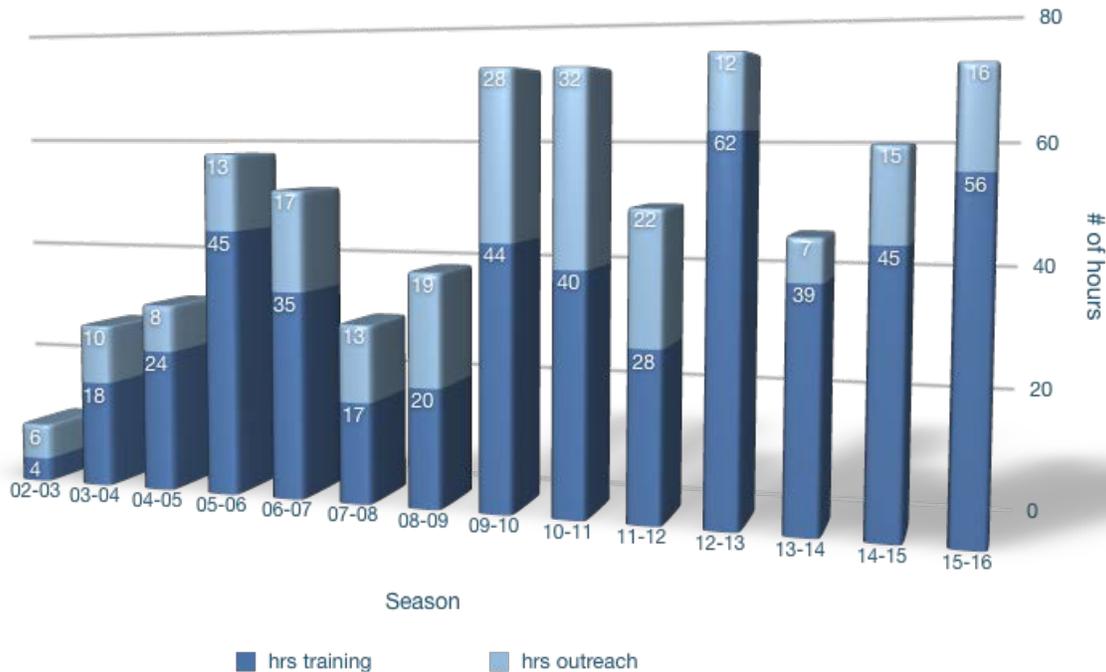


Figure 9: Amount of outreach and training targeted towards entanglement threat and response (2002 – 2016) in Hawai‘i.

The season was unique in several ways:

1. It was a very quiet season, with only the 6 confirmed reports, the 3 on-water (and in air) responses and no successful disentanglement outcomes. Only the 2003-04 and the 2012-13 seasons have resulted in comparable low numbers.
2. Only one confirmed entanglement report was received prior to the peak months of January through March. Typically during this time frame 2 to 4 reports are received, typically representing subadults, and may be the reason the age class ratio was skewed towards adults this season.
3. The season was also marked by its brevity. The first confirmed report wasn’t received until December 29 and the last was received on February 29 - a span of only 63 days. This was the first time that there were no confirmed reports during the month of March.
4. There were no re-sights of any of the entangled animals. Of course, one animal self-released and another is thought to likely have freed itself, another animal had minimal amount of cryptic monofilament around its fluke tip, and yet another was entangled in sinking line with no buoys trailing.
5. More than 56 hours of large whale entanglement response trainings were performed across the main Hawaiian Islands in preparation for the whale season. This represents the second highest training effort since 2003. Much of the additional hours were a result of extra effort put towards preparation and training by Bob Gladden and others on the island of Hawai‘i.

It is becoming more and more apparent the important role the on-water and in-air community plays towards the large whale entanglement response effort. Reporters are not just reporting, but providing initial assessment, documentation, and standby support. These actions are the foundation of the effort that not only helps us save a whale, but at the same time, gain valuable information towards threat reduction, which might help us save many more animals in the future.

4. Reports were received from a continued variety of sources, including tour operators, fishers, the observer program, researchers, helicopter pilots, the U.S. Coast Guard Auxiliary, and private citizens.

Summary of 2015-2016 season disentanglement reports and efforts:

- Twenty-one (21) reports of entangled whales were received this season (15 unconfirmed and 6 confirmed).
- As many as 6 humpback whales were confirmed entangled in gear.
- Four (4) of the entangled whales were initially sighted within Sanctuary waters.
- Maui Nui waters had the most reports (3, compared to 2 off O‘ahu, and 1 off Kauai).
- Four (4) reports involved adults and 2 were juveniles
- There were 3 multi-agency, multi-asset responses mounted to three different animals.
- Research and response organizations, Hawai‘i Marine Mammal Consortium, Hawai‘i Whale Research Foundation, Jupiter Research Foundation, NOAA’s Pacific Islands Fisheries Science Center, West Hawai‘i Marine Mammal Response Network, and Ke Kai Ola, assisted with response efforts.
- Tour industry platforms from Ultimate Whale Watch, Pacific Whale Foundation, Wild Hawai‘i Ocean Adventures, Atlantis Excursions (Navitek I), Trilogy Excursions, Gemini Cruises, Blue Hawaiian Helicopters, Blue Water Rafting, Extended Horizons, Hawai‘i Ocean Rafting, Sea Fox, and others assisted and were instrumental in providing sightings, documentation, and monitoring of entangled animals.
- Aerial reporting was provided by Blue Hawaiian Helicopter and the U.S. Coast Guard.
- Support was also provided by the United States Coast Guard (Sector Honolulu, Air station Barbers Point Air Station and stations O‘ahu and Maui); Hawai‘i’s Department of Aquatic Resources (DAR), [Kaho‘olawe](#) Island Reserve Commission (KIRC), and Division of Conservation and Resources Enforcement (DOCARE); and NOAA’s National Marine Fisheries Services’ Pacific Islands Regional Office, Pacific Islands Fisheries Science Center, NOAA Corps, and the West Maui Rapid Response, West Hawai‘i Marine Mammal Response Network, and NOAA office of Law Enforcement (in an entanglement response role, not an enforcement role).

Case reports of disentanglement efforts:

1/23/2016 Response to an entangled adult humpback whale off Maui:



Davis, NOAA MMHSRP (permit# 18786)

1/23/2016:

13:30 The crew on the tour vessel, *Cane Fire*, reports an adult humpback whale entangled in gear 3/4 nm off Lahaina, Maui moving slowly to the north towards Molokai and into the Pailolo Channel. The entanglement involves moderate-gauge, yellow, likely poly line, in the animal's mouth, forming a bridle under the flippers and under the flukes where it twists together to trail to a bundle of gear at least 75 feet behind and around 8 feet deep. Two large metal rods, which likely contributed to the low lying depth (even at speed), are part of the trailing gear and likely represent the remnants of a large pot/ trap. No buoys were observed. The animal is in fair to poor condition, being light-colored, with carpets of orange and red cyamids (whale lice), moderately emaciated, and rough-skinned.

14:00 The West Maui response team, led by Ultimate Whale Watch, using their dedicated response vessel, *Aloha Kai*, provided initial assessment and monitors the animal.

Authorized response team assembled and arrives at Ma'alaia Harbor. Team includes: Ed Lyman and Rachel Finn of the Hawaiian Islands Humpback Whale National Marine Sanctuary, Nicole Davis and Eden Zang of NOAA Fisheries Pacific Islands Regional Office, Lyle Leber with USCG Reserve, Cheryl King, and Grant Thompson of Kaho_olawe Island Reserve Commission Team performs vessel orientation and mission brief.

14:20 Team departs harbor on board the sanctuary's response vessel, *Koholā*. David Schofield of NOAA Fisheries acts as shore-side Incident Commander. Ed Lyman is on-site IC.

15:20: Response team aboard *Koholā* arrives on scene. *Aloha Kai* shifts role to become support vessel.

15:34: Team uses a GoPro camera on the end of a carbon-fiber pole and goggles to live feed the assessment of the animal's condition and entanglement. Imagery obtained indicates that the entanglement involves moderate-gauge, yellow, likely poly line in the animal's mouth, forming a bridle over the flippers and under the flukes where it twists together to trail to a bundle of gear at least 50 feet behind, with another single trailing line another 50 feet behind.

15:50: Considering the time of day (after 15:30), the team attempts to attach a telemetry buoy to the deep-lying line. Multiple attempts were made to grapple into the gear (Lyman at point, Thompson on buoy, Leber at helm); however, the trailing line was at a depth of 6 to 8 feet, the animal was now moving at 4 to 6 kts, and an escort present during the response continued to place itself between the response boat and the entangled animal. All of these factors complicated the effort to grapple into the trailing gear.



Davis, NOAA MMHSRP (permit# 18786)

16:41: The team adds 3 lbs to the heaviest grapple and throws over the animal's back to allow the grapple to get to the deep line. A grapple attempt was successful; however, for unknown reasons (perhaps too close to the frayed end) the grapple did not remain attached for long.

16:51: The team rotates roles (Leber on point making throws and Lyman at helm) and

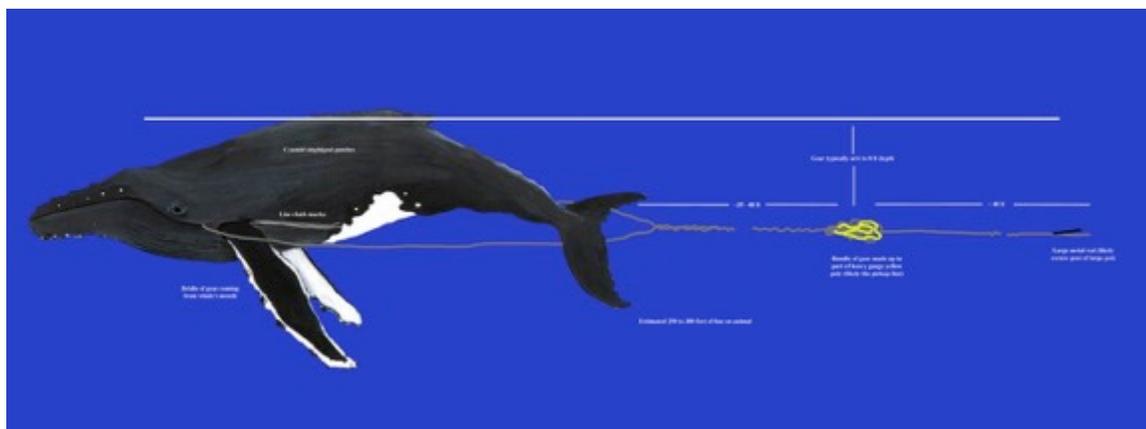
tries adding 3 lb weight to the line instead approximately 20 feet behind the grapple in an attempt to allow the grapple more time to sink. Three grapple attempts were made, however they were also unsuccessful at catching the line. The animal continued to become more evasive, speeding up prior to surfacing and taking single breaths prior to diving.



Davis, NOAA MMHSRP (permit# 18786)

18:00: The animal became more difficult to work and with diminishing light, the effort was terminated.

After reviewing the underwater images it was found that two large metal rods, which likely contributed to the low lying depth (even at speed), were part of the trailing gear and likely represent the remnants of a large pot/ trap. Review also indicated that the authorized response team did attach to the deep trailing gear twice, but on both incidences the grapple did not hold. As of the end of the season, the animal has not been re-sighted. Its status is presently unknown.



Lyman, Hawaiian Islands Humpback Whale National Marine Sanctuary

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 novaeagliae*, in the North Pacific. Abstract for SPLASH Symposium. at 18th Biennial Conference of the Biology of Marine Mammals. October 11, 2009. Quebec, Canada

Lyman, E. G., J. Kenney, S. Landry, D. Mattila, and J. Robbins. Reliability of Eyewitness Reports of Entangled Large Whales: what do formal disentanglement programs tell us about the global problem? Abstract in the Proceedings of the 17th Biennial Conference of the Biology of Marine Mammals. Nov. 29 – Dec 3, 2007 Cape Town, South Africa.

Robbins, J., J. Kenney, S. Landry, E. Lyman, and D. Mattila. Reliability of eyewitness reports of large whale entanglement. International Whaling Commission Paper. SC/59/BC2

Acknowledgements:

As in past seasons, credit goes to the on-water community of tour boat operators, fishermen, biologists, and others. They report, assess, help document, and many times stand by the animals until additional help can arrive. Ed Lyman of the Hawaiian Islands Humpback Whale National Marine Sanctuary coordinates large whale entanglement response effort around the main Hawaiian Islands, while David Schofield of NOAA Fisheries Pacific Islands Regional Office coordinates overall marine mammal response efforts for the greater Pacific Islands region. NOAA Fisheries' Office of Protected Resources' Marine Mammal Health and Stranding Response Program oversees all marine mammal response efforts throughout the U.S.. However, it is the efforts of the on-water community that make the difference on whether an entangled whale is ultimately saved, and valuable information collected to reduce the threat of entanglement. This season the captains and crew aboard tour vessels, Blue Hawaiian Helicopters, Ultimate Whale Watch vessels, *Aloha Kai* and *Wiki Wahine*, Pacific Whale Foundation's *Ocean Discovery*, *Ocean Intrigue*, *Ocean Voyager*, and *Ocean Odyssey*, Dive vessel, *Sea Fox*, Captain Steve's *Cane Fire 2*, Gemini Cruises, Adventure X Rafting, *Extended Horizons*, *Navitec II*, Trilogy Excursions, Hawai'i Ocean Rafting, Wild Hawai'i Ocean Adventures, fishing vessel *Marjorie Ann*, and likely others that we may have missed, were all instrumental to our response efforts, and as such deserve a great deal of credit. Our efforts are much more likely to be successful when the on-water community reports, assesses, documents, and monitors the animal(s) until trained and well-equipped teams arrive.

Acknowledgements also go to the efforts of the Network's State and Federal partners, including the U.S. Coast Guard, the U.S. Coast Guard Auxiliary and Reserve, Hawaiian Islands Humpback Whale National Marine Sanctuary, Hawai'i's Department of Land and Natural Resources (DLNR, DOCARE, DAR, Ocean Safety), Hawai'i's police departments, NOAA's Pacific Islands Fisheries Science Center, NOAA Corps, and NOAA Fisheries' Pacific Islands Regional Office and Office of Protected Resources.

While there are many individuals and organizations to acknowledge, several warrant special mention. Once again, Rachel Finn, the Sanctuary's Research and Response Assistant, who

works tirelessly in maintaining our preparedness, the website, being on call for response efforts, and assisting in many other efforts, deserves a great deal of credit. As does Bob Gladden and many members of the West Hawai'i Marine Mammal Response Network, whose efforts at maintaining readiness should be an example to us all. Lee James and the captains of Ultimate Whale Watch, as well as, the rest of the gang making up the West Maui Response Team also deserve a great deal of credit for their efforts toward reporting and response. The same goes for the captains and the crew of the Pacific Whale Foundation vessels. Between them they typically account for over half of all our confirmed reports statewide. Acknowledgement also goes to Jason Moore, a professional photographer, who has continued to donate a great deal of his time not only toward our response efforts, but our research as well. Then there is Grant Thompson, who took the lead to design and fabricate a Facebook page for the Network. Several people were instrumental in maintaining and operating our response vessel, including Lee and Grant, but also Carmen DeFazio, the NOAA Corps Officer assigned to the sanctuary and Lyle Leber, a reservist with the U.S. Coast Guard. Lastly, there is the staff of the Hawaiian Islands Humpback Whale National Marine Sanctuary, especially Jean Souza, Paul Wong, Bo Petty, Derek (Mac) McGuire, and Denise Shiraki; the staff from the regional office of NOAA Fisheries Protected Resources Nicole Davis; and the staff Office of Protected Resources who assist in so many ways and yet typically remain behind the scenes. The fact is all these people, and many more, go above and beyond. Everyone should be commended.

Large whale entanglement response also requires funding, and I would like to acknowledge and thank those that have contributed support. First, the Office of National Marine Sanctuaries, including their small boat program, have provided funding, personnel (salaries), and contributed both a response boat, the *Koholā*, and approach inflatables – all critical to our response program. NOAA Fisheries' Office of Protected Resources, Pacific Islands Regional Office, and Alaska Protected Resources (through shared resources) have supplied additional funds towards the costs of training and response, equipment and services, such as those required for the satellite tags. The National Marine Sanctuary Foundation, including the local chapter, have contributed to the cause and supported the response vessel. In the past, grants from the Hawai'i Tourism Association, Sea Grant program, and Whale Tales have provided support. Private donors, like Jerry Stowell (Maureen Stowell Memorial Fund), Jackie Lyons, Kate Eifler, Mara Kerr, Mark DiOrio, Don Burns from Sea Fire Jodie Antilla and students from Pacific High school in Oxnard, CA, and other individual donations have provided much needed financial support. Businesses, like Ultimate Whale Watch, MacGillivray Freeman Films, Oceanology LLC/ Whalers Village Museum, Hawai'i Surf and Sport, Second Wind, and B&B SCUBA have provided funds, merchandise (equipment) at cost and/or contributed in-kind support. The Maui Nui chapter of the National Marine Sanctuary Foundation, as well as, the National Marine Sanctuary Foundation has helped with merchandise sales and donations. This past season grants were received from Whale Tales and Orange County Community Foundation. Lastly, network members have contributed to the cause, either directly or through in-kind contributions, like covering fuel costs or providing a piece of equipment. In short, and in addition to their time, many people and organizations have contributed funding support, and it is greatly appreciated.

Lastly, special thanks go to those who each and every year attend trainings, otherwise prepare themselves, and remain on-call, even when they may not be called or not have the

opportunity to respond directly, especially this past season. Large whale entanglement response is not only dependent on receiving reports, but being able to mount a response that demands risk assessment and strict protocols. Trained and appropriately prepared network members are extremely valuable toward meeting protocols and fulfilling roles that make response efforts possible. Their efforts, and especially those of volunteers, are greatly appreciated.

MAHALO

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

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