2014-2015 Hawai'i Large Whale Entanglements and Response Efforts around the Main Hawaiian Islands

Season-end Report

NOAA MMHSRP (permit# 932-1905)

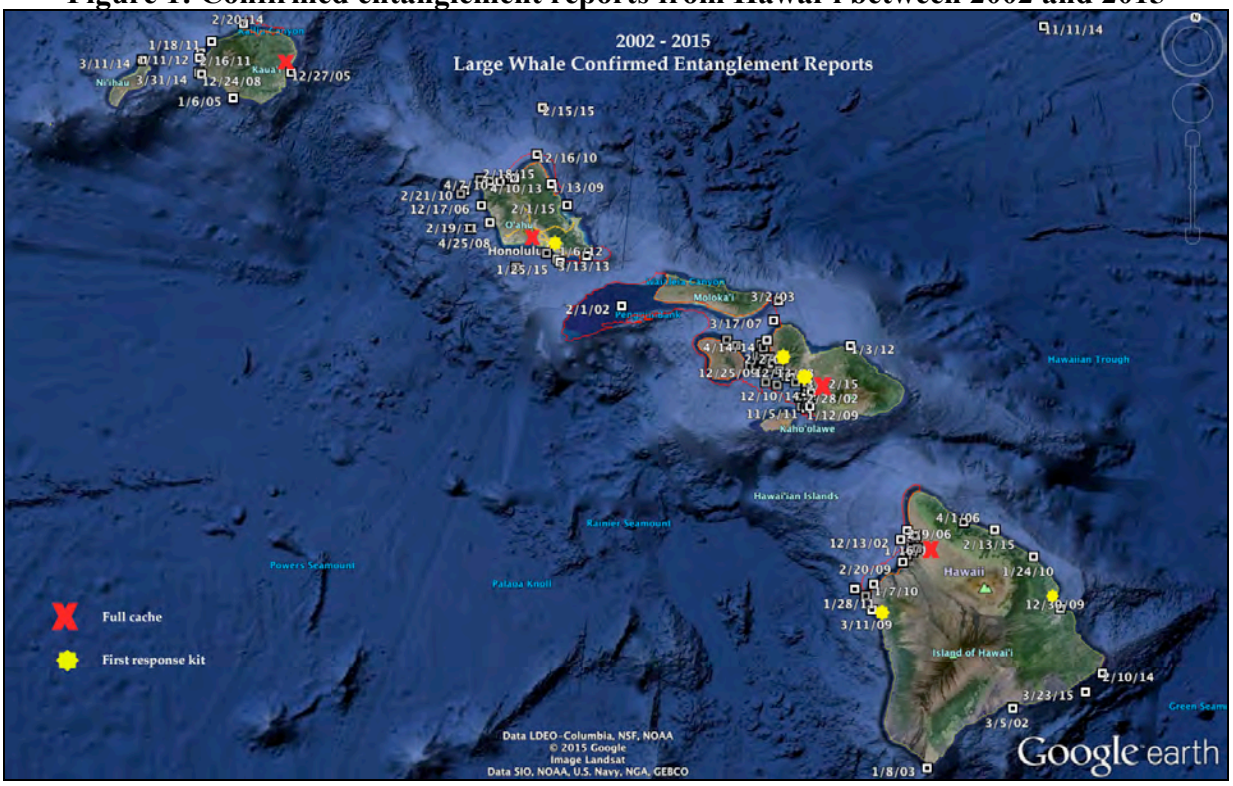
Compiled by:
Ed Lyman
Hawaiian Islands Humpback Whale National Marine Sanctuary
May 10, 2015

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); and the United States Coast Guard (USCG). 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; 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 # 932-1905).

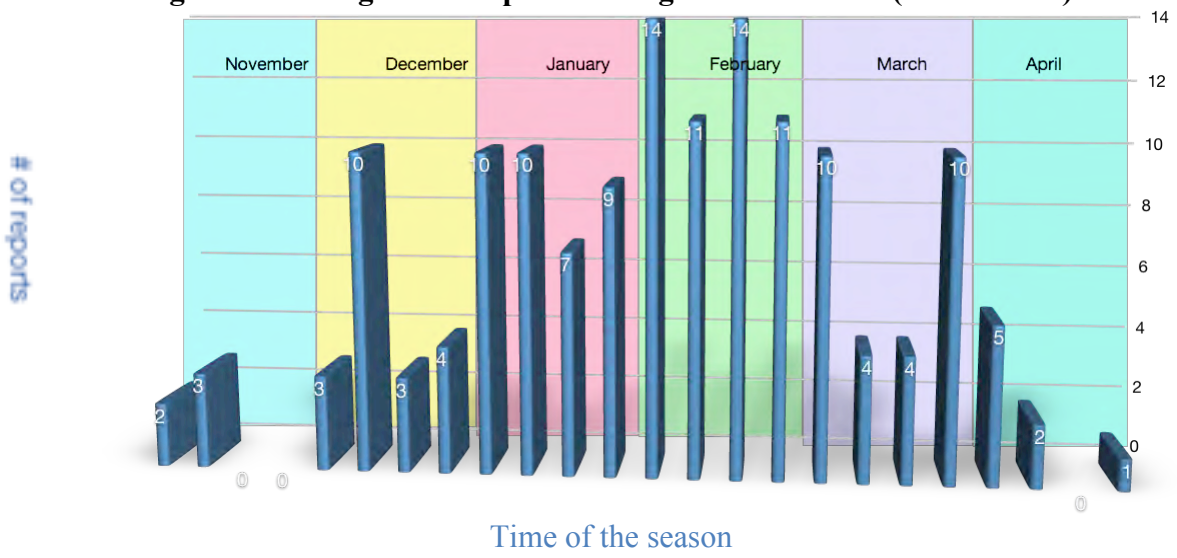
The Hawaiian Islands Large Whale Entanglement Response Network, now in its 13th season, comprises over 250 members who have received various levels of training in order to support large whale response efforts statewide. More than 420 hours of training have been conducted since 2002. Caches of specially 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 2015



Since 2002, the Sanctuary has received more than 310 reports of large 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 (see Figure 2). The number of reports has generally increased each season (see Figure 3). Overall, 160 reports were confirmed as truly involving entangled large whales, representing as many as 101 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 – 2015).



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 48.4%. This last season the percentage of unconfirmed reports (i.e. unable to confirm or confirmed as not representing an entangled whale) was 43.2% (N=37). Examples of misreports include: white-flippered 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 a mounted over 147 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 the Network, the tour industry and whale researchers have been extremely valuable towards monitoring the animals until additional help can arrive.

Figure 3: Large whale entanglement reports in Hawai'i between 2002 and 2015 seasons.

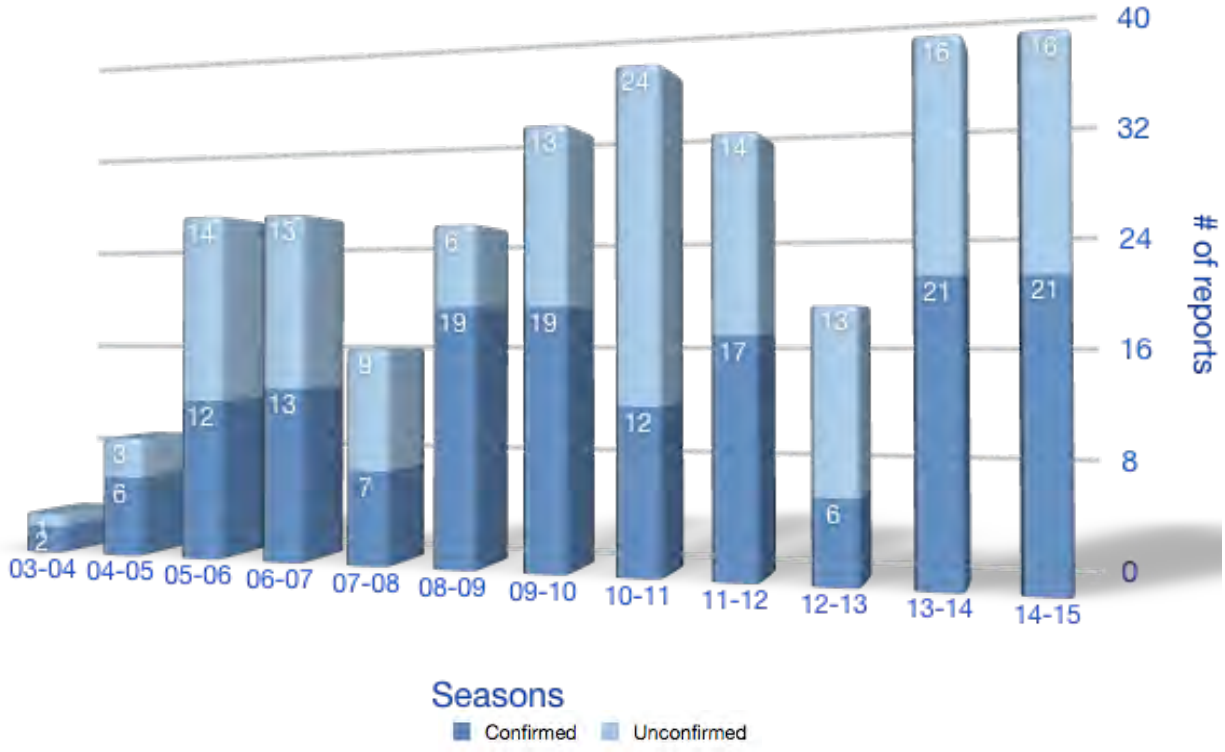


Figure 4: Number of confirmed animals reported entangled in Hawai'i between 2002 and 2015 seasons.

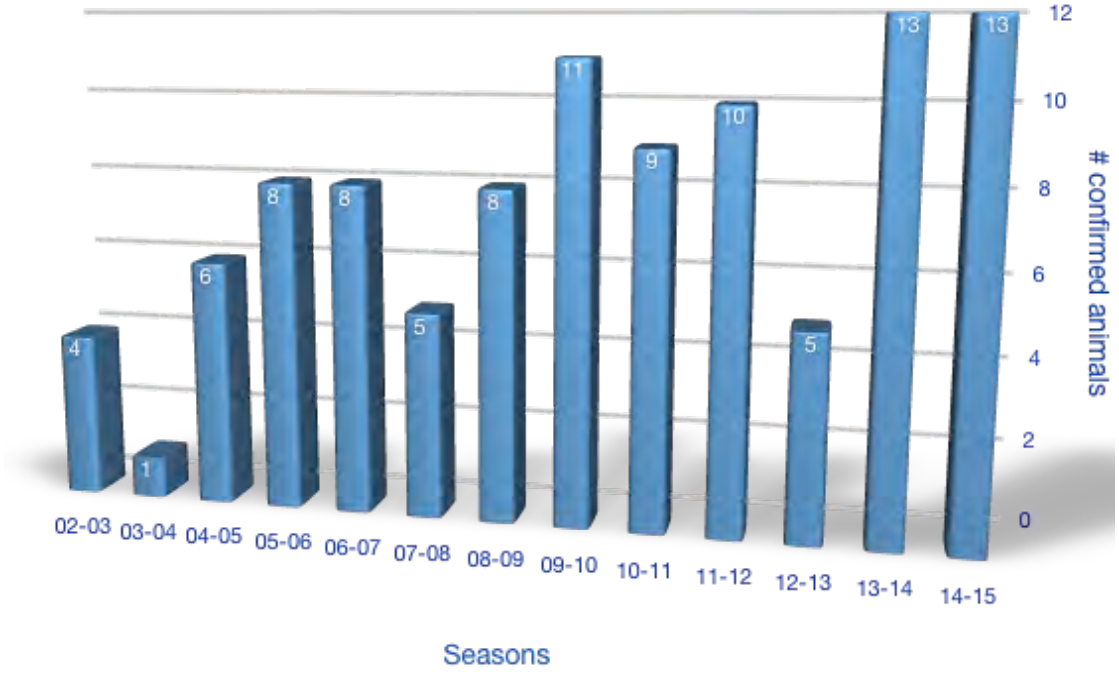
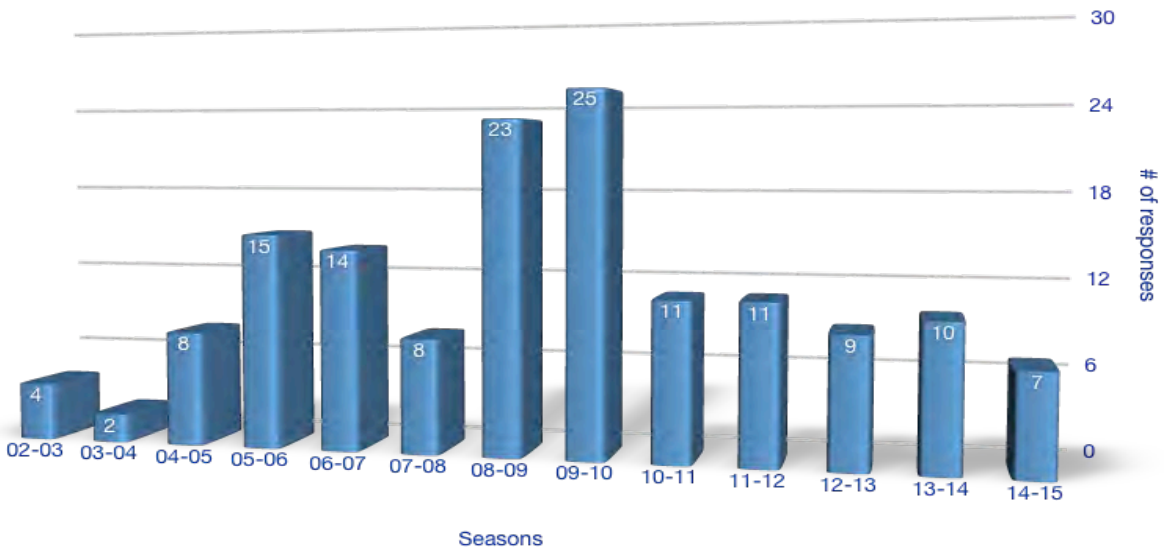
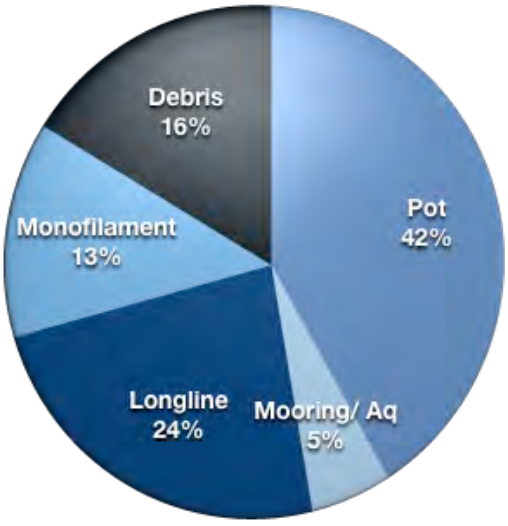


Figure 5: Number of responses to entangled whales in Hawai'i between 2002 and 2015 seasons.



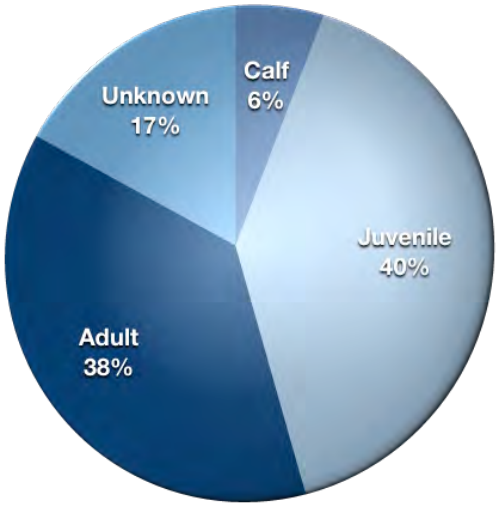
Since 2002, the Network has removed or recovered over 9,000 feet of entangling gear[1] from 22 large whales (21 humpbacks and 1 sei whale) around the main Hawaiian Islands. Animals have been confirmed entangled in local fishing gear (traps, longline and monofilament), mooring gear, marine debris, and 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 2015.



Since 2002 the largest percentage of animals confirmed entangled have been juveniles (n=40). 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 37.6% (n=38). Only 6 calves have been confirmed entangled in Hawai'i since 2001 (see Figure 7).

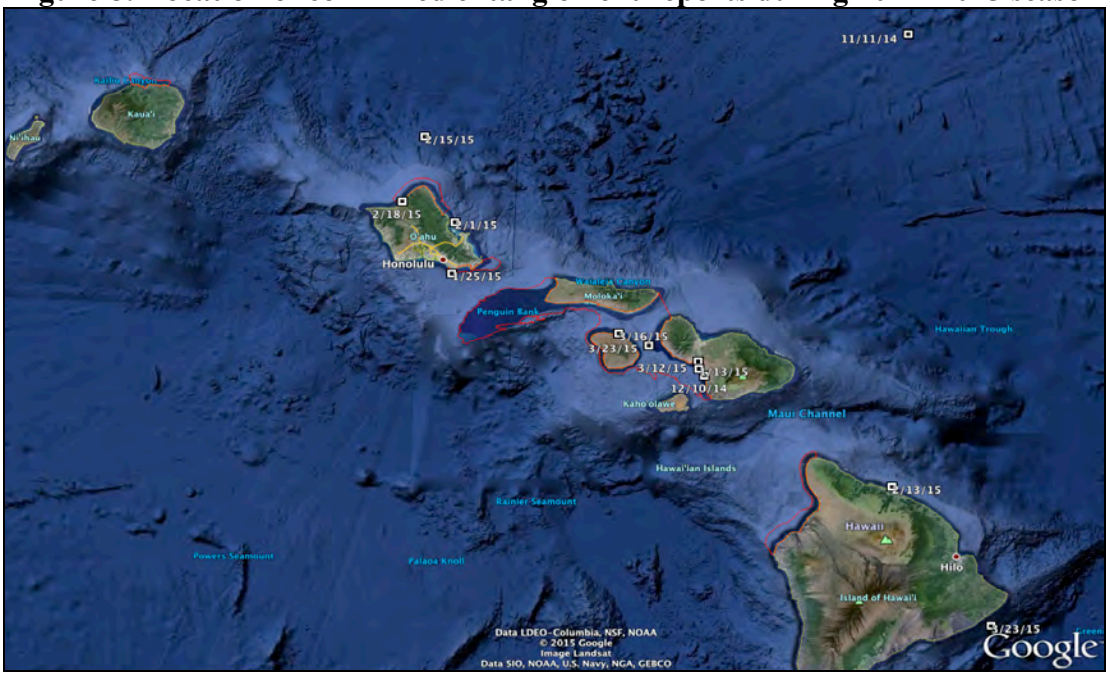
Figure 7: Age class[2] reported entangled in Hawai'i between 2002 and 2015.



2013-2015 season:

The 2014-2015 humpback whale season (November 1, 2014 – May 15, 2015) matched the highest number of confirmed large whale entanglement reports received in a season since 2002. Twenty-one (21) reports were received. The large number of reports represented at least 13 different animals.

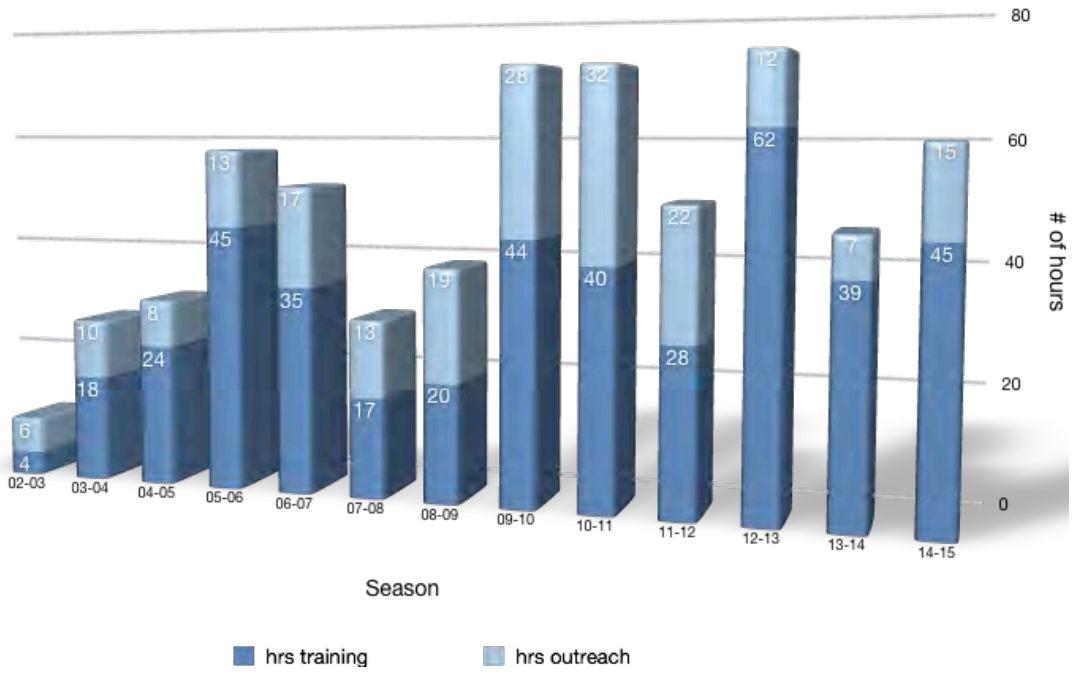
Figure 8: Location of confirmed entanglement reports during 2014- 2015 season



The Network mounted 7 on-water response efforts to 6 different entangled whales. Three (3) animals were never re-located or lost during response efforts. One (1) disentanglement effort to free a whale was unsuccessful. One (1) entangled humpback was tagged and subsequently disentangled. One (1) other humpback whale, a subadult, was freed of all entangling gear. Maui Nui (waters leeward of the island of Maui) had the most confirmed cases of entangled large whales this season with 5 cases, but O'ahu water's were a close second with 4 reports. There were also 2 confirmed cases off the island of Hawai'i and 2 cases reported in offshore waters well north of the islands (see Figure 8).

Of the gear removed or documented on the animals this season, 1 was crab pot (trap) gear from Alaska, 3 were longline gear, 1 was unidentified net, 1 was monofilament and 7 were not identified. Eight (8) of the entangled humpback whales were adults, 3 juveniles, 1 was a calf, and 1 was of unknown age class. This was the third consecutive season in which calves have been reported entangled.

Figure 9: Amount of outreach and training targeted towards entanglement threat and response (2002 – 2015) in Hawai'i.



The season was unique in several ways:

1. It was a busy season, with a large number of reports, responses and 2 successful outcomes. The season started the same day as last season - November 11, 2013 but ended early with the last report being March 24, 2015. There were no reports in April.

2. There were a large number of longline-entangled whales reported, three cases confirmed.

3. 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.

5. While Hawai‘i’s waters might be conducive to mariners wanting to jump in the water to observe or otherwise assist an entangled whale, reports of such actions have been few over the years. Since the Network‘s inception, a large amount of outreach has focused on reducing, or better yet, eliminating, instances of in-water responses. This past season, extra outreach was conducted to address this concern, and perhaps as a result, no cases were recorded.

6. This season, the largest numbers of appropriate Network members were provided opportunities to have hands-on experience with core large whale entanglement response actions. These included throwing grab and cutting grapples, wielding knives on poles, attaching buoys (kegging and telemetry), and piloting approach vessels. Twelve (12) trained responders got valuable hands-on experience.

Summary of 2014-2015 season disentanglement reports and efforts:

- Thirty-seven (37) reports of entangled whales were received this season (16 unconfirmed and 21 confirmed).
- As many as 13 humpback whales were confirmed entangled in gear, which matched the highest number of animals reported within a season.
- Seven (7) of the entangled whales were initially sighted within Sanctuary waters.
- Maui Nui waters had the most reports (5, compared to 4 off O‘ahu, 2 off Hawai‘i, and 2 offshore).
- Eight (8) reports involved adults, 3 were juveniles, 1 was a calf, and 1 was a of unknown age class.
- There were 7 responses mounted to six different animals.
- Twelve (12) trained Network members got hands-on experience in large whale entanglement response (e.g. disentanglement or tagging efforts).
- Research organizations, Hawai‘i Marine Mammal Consortium (Chris Gabriele and Suzanne Yin), Hawai‘i Whale Research Foundation (Doug Perrine), Jupiter Foundation (Beth Goodwin, Murray Taylor, Joe Kreuger) and NOAA’s Pacific Islands Fisheries Science Center (Chad Yoshinaga and others), assisted with response efforts.
- Tour industry platforms from Ultimate Whale Watch, Pacific Whale Foundation, Wild Hawai‘i Ocean Adventures, Atlantis Excursions (Navitek I), Pride of Maui, Captain Zodiac, and others assisted and were instrumental in providing sightings, documentation, and monitoring of entangled animals.
- Aerial reporting was provided by Blue Hawaiian Helicopter, Sunshine Helicopters, U.S. Coast Guard Auxiliary, and the U.S. Coast Guard.
- Support was also provided by the United States Coast Guard (Sector, O‘ahu and Maui stations); Hawai‘i’s Department of Aquatic Resources (DAR) and Ocean Safety; Kaho‘olawe Island Reserve Commission (KIRC); and NOAA’s National Marine Fisheries Services’ Pacific

Islands Regional Office, NOAA's Observer Program, Pacific Islands Fisheries Science Center, NOAA Corps, and the West Maui Rapid Response, West Hawai'i Marine Mammal Response Network, and the University of Hawai'i's East Hawaii Marine Mammal Response Networks.

Case reports of disentanglement efforts:

12/10/2014 Response to an entangled subadult humpback whale off Maui:

Lyman, NOAA MMHSRP (permit# 932-1905)

12/10/2014:

09:10 Nicole Davis of NOAA Fisheries receives report of entangled animal from Maui County Ocean Safety lifeguards and Maui police. Animal is just offshore of Kamaeole Beach Park I, in central Kihei, Maui, and was originally sighted by a stand-up-boarder. Lifeguards provide initial assessment, and offer to monitor animal and public while a response gets underway.

Zang, NOAA MMHSRP (permit# 932-1905)

09:45 Authorized response team assembled and arrive at Ma'alaea Harbor. Team includes: Ed Lyman and Derek MacGuire of the Hawaiian Islands Humpback Whale National Marine Sanctuary, Lt. Joseph Carrier of NOAA Corps, Nicole Davis and Eden Zang of NOAA Fisheries Pacific Islands Regional Office, Cheryl King of Hawaii Wildlife Fund, and Jason Moore a professional photographer and network member. Team performs vessel orientation and mission brief.

10:55 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.

11:10 Koholā arrives on scene. Debriefs with Ocean Safety. Both Koholā and Ocean Safety continue to assess animal and entanglement. Koholā crew starts getting documentation and equipment (e.g. telemetry) is prepared.

11:40 Response team has determined that the entangling gear is heavy gauge monofilament line that was part of a longline set. Decision made to, one, not handle line while attached to animal, and, two, not "keg" the animal. Neither warranted due to increase risk to animal and rescue team members.

12:00 Team attempts to use a flying knife on the end of a 28-foot pole. Several attempts made, but sea state and wind on pole make it difficult to make contact with gear. In the meantime the animal is becoming more evasive.

12:45 Team decides to remove some of the trailing gear using a cutting grapple. Logic is that the trailing gear would not be used towards removing additional gear. With trailing gear removed, the larger response boat can safely approach and perhaps make additional cuts.

12:58 Nicole Davis of NOAA Fisheries successfully deploys cutting grapple. Telemetry buoy deployed as drag force. Within one minute, buoys went stationary and first cut believed to have been made; however, gear remains.

13:14 Roles rotated. After several throws with cutting grapple, Jason Moore cuts a large portion of the trailing gear away from animal. Some of the gear remains hooked on the cutting grapple and is recovered. The remaining gear quickly sinks out of reach.

13:22 Entanglement re-assessed and confirmed that there is no gear trailing. Team switches to 15-foot pole with fixed knife on end. Response boat now safely positioned behind animal by Lt Joseph Carrier and several cut attempts successfully remove lines around tailstock.

Zang, NOAA MMHSRP (permit# 932-1905)

13:26 Several cuts. One cut results in recovery of more gear.

13:47 Cuts made

13:48 Three lines cut right at wound

14:00 In latter cuts, wraps appear to loosen. Also, on-site assessment (reviewing digital imagery) indicated that nearly all gear is removed (review of imagery later on larger screens would show an additional wrap or two). Risk assessment re-evaluated and decision to stand down on cutting attempts.

14:20 Moore, one of three trained biopsy sampler on the team, obtains a biopsy sample from whale. Additional imagery from pole cameras and handheld underwater cameras over side of boat document post effort entanglement/ impact. Believed that approximately 98% of the gear has been removed and that remaining wraps, if wraps at all, are loose.

14:38 Left animal and departed for Ma‘alaea Harbor.

14:58 Arrive at harbor. De-gear and begin process of preparing for next response, compiling information gained, sending reports, and alerting response community of effort and desire for resights.

NOAA MMHSRP (permit# 932-1905)

12/14/2014:

07:45 Multiple parties, from beachgoers, to people in condos, to canoers sight a small humpback whale several hundred yards offshore of condos along Sugar Beach, Maui. Most observers do not notice wound or anything wrong with the animal. However, two observers from 4th and 7th floors of condos do report seeing the wound.

A shore-side response is mounted to confirm the report. The animal moves to the north and offshore. While report is eventually confirmed, sea state is high, and along with the lack of standby support, no on-water response is mounted.

11:56 A local SCUBA diver diving off Sugar Beach, Maui, gets a close approach from the animal and documents the animal and entanglement. Images show that some of the wraps are now loosely draped over fluke blades and additional gear is trailing, having come unwrapped from tailstock.

Gear removed from animal is measured and configuration determined. Gear represents at least 400 feet of line.

Courtesy of Mike Rineer

1/14/2015 Response to an entangled yearling humpback whale off Maui:

Ladd, NOAA MMHSRP (permit# 932-1905)

1/14/2015:

08:30 Report received from Pride of Maui crew of an entangled humpback whale, that was sighted the previous day (1/13/15) half way between Wailea and Maʻalaea Harbor. Entanglement reported as having rope wrapped around peduncle and trailing 10 to 15 ft behind.

1/14/2015:

14:55 Report received from the Keiki Koholā Project of an entangled yearling humpback whale. Research team aboard the Koholā comprised of Hawaiian Islands Humpback Whale National Marine Sanctuary, and Kaho'olawe Island Reserve Commission was already on the water and able to respond.

Animal located 3.5 nm west of Lahaina. 20º 51.461'N / 156º 44.28'W

The entanglement involves at least five wraps of very small gauge, dark-colored line around the animal's peduncle. Several wraps divert to the notch of the fluke, with a bundle of gear lying just behind the animal's fluke. Remaining line trails approximately 5 feet behind the tail. The line cuts in some 2 " into the leading edge of the fluke. The animal is light colored, has significant line scarring across the dorsal ridge and peduncle, and wounds at the leading edge of the fluke. Cyamids are present on the animal.

15:54 Response team arrives at animal's location and communicates with researcher from the Keiki Koholā Project who stood by the animal until they arrived to receive initial assessment. Response team assesses the entangled animal further and decides, due to the time of day as well as other factors, to use a hooked knife on the end of a carbon fiber pole.

16:40 Trained personnel from the West Maui Rapid Response team arrives to assist in the effort.

Six approaches were made resulting in a possible single cut being made to the entangling wrap(s), however the animal remains entangled.

Winsor NOAA MMHSRP (permit# 932-1905)

17:30 The whale has become evasive, and with failing light, the decision is made to terminate the effort. The team heads to the harbor with remaining daylight to reduce the threat of hitting a whale by operating in darkness.

20:20 Team arrives at harbor.

2/10/2014 Report and response to an entangled adult humpback whale off Big Island and Maui:

Verbeck, NOAA MMHSRP (permit# 932-1905)

2/16/15

Narrative by Bob Gladden.

We launched at Keauhou Bay at 11:20 and headed out to where the whale was last reported.

We arrived on scene, Deron Verbeck & Julie Steelman were already there on board the Wild Hawaii Ocean Adventures boat, having found the whale earlier and had also gotten some really good photos of the whale and its entanglement, which also included a big RED ball buoy, right on its tail. They were keeping an eye on the whale, waiting until we could arrive. Onboard my boat was Bob Gladden, Doug Perrine, Gene Lafferty, Connie Zahalka, and Zain Hicks. We prepped all the gear for deployment, and caught back up with the whale. We motored up along the trailing lines and hooked them, pulling up some of the slack in the rope, and then tied it on to the telemetry buoy, this was about 50-60 ft. behind the tail, and just ahead of a connecting point of one of the other trailing lines (2). This tagging all happened at 12:05 pm., and the location was 19.30.756 N & 155.58.321 W GPS coordinates. The entangled whale was swimming primarily with his pectoral fins rather than his tail. He was traveling, zig-zagging in towards shore than out to deep ocean, but his general heading was in south, south-east direction. There was also another whale swimming along with him also.

We went back for another run after the whale had dove and resurfaced to try to get a better knot on the telemetry buoy, but this did not happen. The knot looked to be very tight through. We hung around for awhile watching the whale and the telemetry buoy for about a half hour, the buoy stays underwater a lot being so close to the tail, after a number of dives we lost sight of the whale and with the wind and swell picking up we turned for home, keeping an eye out for our whale. Saw a number of other whales, but not the one we were looking for. We also contacted several other boats in the area, and asked them to keep an eye out and report any sightings. As we got back to the harbor, we got a call from Ed Lyman that he had gotten a location of the whale from the telemetry.

The animal was moving at approx. 3 kts.

2/16/15

Narrative from Ed Lyman

Yesterday, February 15, 2015, multiple sightings, from shore-side observers and tour vessels, were received of our entangled adult humpback whale carrying the red polyball and a large amount of trailing gear, along the leeward coast of the Big Island south off Kailua-Kona. The first of many reports was received at 08:20 and showed the animal within 1 nm of shore heading south. Local Network responders, many of which had just done a refresher training two days before, were alerted and were able to mount a successful assessment/ tagging effort.

Trained responders, Deron Verbeck and Julie Steelman aboard a Wild Hawaii Ocean Adventures boat were able to locate the animal, obtain excellent documentation and assessment of the entanglement and animal, and monitor the animal, while the authorized and trained responders including Bob Gladden and Doug Perrine on a dedicated vessel were able to secure a satellite tag to the trailing gear. The team tagged the animal just after 12:00 HST, just north of Kealakekua Bay.

The action plan was to monitor the tagged animal and if 1) it stayed within a safe operational range, 2) weather held, and 3) appropriate resources, including personnel, were acquired, a response would be mounted today. Weather conditions were for light winds in the lee of the Big Island, but for NE 15 or higher around South Point. Level 3 or higher responders, Chad Yoshinaga from NOAA Fisheries Science Center and Ed Lyman from the Humpback Whale Sanctuary had made arrangements to fly over to assist the local network, which was well prepared and had undergone multiple trainings recently. David Schofield of NOAA Fisheries Pacific Islands Regional Office would be shore-side IC, and the State of Hawaii Division of Aquatic Resources were standing by to assist if necessary. However, the first requirement was not met, and conditions borderline, as the animal continued south. As of 06:15 HST the animal was approaching South Point, which is more than 50 nm from Kailua-Kona. Even if the animal was to turn around, at present speed, it would not make waters deemed appropriate towards a disentanglement response until approximately 14:00 HST. Considering the above risk assessment, the decision was made to put on-water efforts on hold and remain patient. The animal will continue to be monitored and a response likely mounted when conditions and resources allow.

The additional assessment on the animal indicates that there are at least 5 wraps of heavy gauge line around the animal's tailstock. Lines are partially embedded. Lines trail hundreds of feet behind, and are becoming unraveled. The team was able to secure the transmitter package to an intact portion of the trailing gear. The animal appears in moderate health, and during observation used its pectoral flippers as opposed to its flukes for mobility. During assessment and tagging the animal was making 3 kts. Subsequent tracking indicates the animal has slowed to between 2 and 2.5 kts. Numbers provided off the red polyball attached to the entangling gear confirms that the gear is indeed Alaskan pot gear.

Many thanks to the local West Hawaii response team for their professional and dedicated efforts.

February 16, 18:30 HST the whale is 21 nm east of South Point and traveling easterly. There are no immediate plans towards an on-water response, as the animal is likely to remain in exposed and remote waters.

February 18, 2015 at 05:30 HST the entangled humpback whale is passing Hilo Harbor. Over the last 8 hrs it has done more than 3 kts.

February 18, 2015 at 16:30 HST the entangled humpback whale was off the Hamakua Coast of the Big Island, offshore of Honokaa. It is 28 nm from Upolu Pt. Over the last 8 hrs it has been doing 3.3 kts and if it continues, would make Upolu Pt around 01:30 tomorrow morning. Weather for leeward Kona is for 10 kt easterly winds, going south as day progresses.

February 19, 2015 at 04:50 HST the animal has made Upolu Pt. at north end of the Big Island.

2/20/15

06:30 Authorized response team assembled and arrive at Ma'alaea Harbor. Team includes: Ed Lyman, Liz Stahl, Rachel Finn, and Lance Finfrock of the Hawaiian Islands Humpback Whale National Marine Sanctuary, Carmen DeFazio of NOAA Corps, Nicole Davis of NOAA Fisheries Pacific Islands Regional Office, Grant Thompson of Kaho'olawe Island Reserve Commission, Cheryl King of Hawaii Wildlife Fund, and Lee James and Jake James of the West Maui Rapid Response Team. Team preforms vessel orientation and mission brief.

Finn-Frock, NOAA MMHSRP (permit# 932-1905)

07:15 Team departs harbor on board the sanctuary's response vessel, Koholā. Paul Wong of the Hawaiian Islands Humpback Whale National Marine Sanctuary acts as shore-side Incident Commander. Ed Lyman is on-site IC. The team uses the last fix from the telemetry package attached to the trailing gear of the entanglement to locate the animal. The team starts getting documentation and equipment (e.g., cutting grapple) prepared while underway.

Davis, NOAA MMHSRP (permit# 932-1905)

07:56 Koholā arrives on scene; the entangled whale is in the company of another whale. The team starts getting documentation and decides to remove a large amount of the trailing gear using a cutting grapple. With trailing gear removed, the larger response boat, and inflatable if it is deployed, can safely approach the animal to make cuts.

Finn, NOAA MMHSRP (permit# 932-1905)

08:23 Cheryl King successfully uses cutting grapple to remove hundreds of feet of line, which is recovered by the team.

09:23 An inflatable boat carrying King, Ed Lyman, and Grant Thompson is deployed to approach the whale and attach a kegging buoy into the trailing line. The kegging buoy will help to slow the whale and keep it at the surface, allowing the team the opportunity to make cuts to the line wrapped around the flukes.

09:10 The first kegging buoy is attached.

09:37 Nicole Davis takes King's position in the inflatable. A second kegging buoy is attached.

09:58 A third kegging buoy is attached.

10:16 The buoy farthest from the animal is moved forward.

10:23 One buoy is removed.

10:43 A sea anchor is deployed to assist with slowing the animal down. The animal continues to dive following this, taking all gear below the surface on short (1-2 minute) dives.

11:09 Lee James takes Davis's position in the inflatable and a third buoy is attached to the trailing line.

11:35 A second sea anchor is deployed and the animal continues to dive with all gear submerged for short intervals.

12:15 A second line with a buoy is attached using a turtle grapple. This will allow the team to continue the disentanglement effort without being impacted by the existing kegging buoys and sea anchors on the original working line.

12:25 Ed Lyman uses a flying cutter in an attempt to hook into the wrap(s) on the flukes. Two wraps are cut in the first attempt.

Finn, NOAA MMHSRP (permit# 932-1905)

Lyman, NOAA MMHSRP (permit# 932-1905)

12:29 Lee James then makes two more cuts without the knife detaching from the pole; each cut removes a single wrap. The fifth wrap was pulled free. The trailing line parts from the animal and it is believed that the animal has been freed.

12:32-12:45 The gear is recovered and brought on board the Koholā. Tissues samples are obtained from the gear removed from the animal.

King, NOAA MMHSRP (permit# 932-1905)

12:35 A third whale joins and competitive behavior is observed with the previously entangled animal being pursued by the two others.

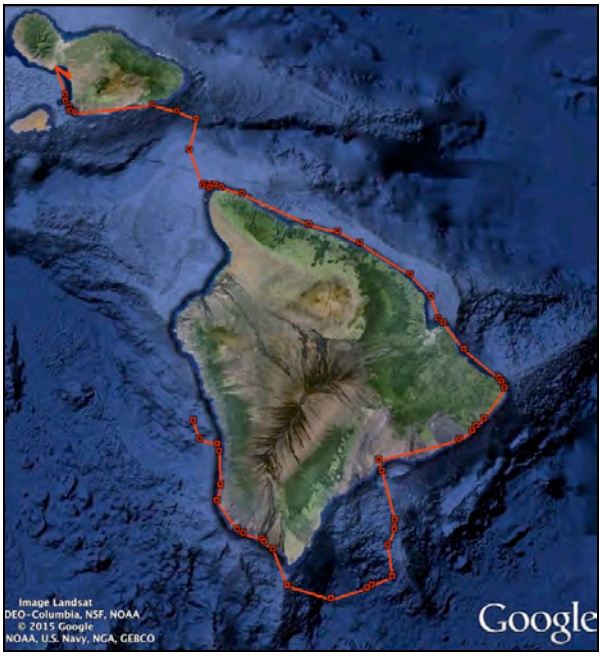
12:40 Using a GoPro on the end of a pole, the team obtains underwater footage of the entangled animal to document the post-effort entanglement/ impact and determines that the animal is in fact free of all but six feet of line that is embedded in the wound on the leading edge of the right fluke. It is believed that this will be expelled from the wound over time.

Lyman, NOAA MMHSRP (permit# 932-1905)

13:21 The team departs for Ma'alaea Harbor

Lyman, NOAA MMHSRP (permit# 932-1905)

14:30 The team arrives at the harbor. They de-gear and begin the process of preparing for the next response, compiling information gained, sending reports, and alerting the response community of the effort.



Information based on high-quality fixes

Animal traveled with telemetry package for at least 287 nautical miles (based on telemetry track) over a little more than 119 hrs (just under five days). This represents an average speed of at least 2.42 kts. Over 450 ft of line removed/recovered.

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 has been the case since the inception of the sanctuary's and our partner agencies' efforts, 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 the large whale entanglement response effort, and David Schofield of NOAA Fisheries Pacific Islands Regional Office coordinates the overall marine mammal response efforts for the Pacific islands region. 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 entanglement threat. This season the captains and crew aboard tour vessels, Navitek I, Sunshine Helicopters, Blue Hawaiian Helicopters, Ultimate Whale Watch vessels, Aloha Kai and Wiki Wahine, Captain Zodiac, Pacific Whale Foundation's Ocean Discovery, Pride of Maui, Maui and Kihei canoe clubs; and Wild Hawai'i Ocean Adventures, were all instrumental to the rescue efforts, and 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 Hawaiian Islands Humpback Whale National Marine Sanctuary, U.S. Coast Guard, the U.S. Coast Guard Auxiliary, Hawai'i's Department of Land and Natural Resources (DLNR, DOCARE, DAR, Ocean Safety), NOAA's Pacific Islands Fisheries Science Center, NOAA Corps, and NOAA Fisheries' Pacific Islands Regional Office and Office of Protected Resources. DLNR's DAR office on the Big Island was standing by to provide support vessel support, should it be required during the February entanglement response effort. Once again, tour operation-Ocean Sports, based out of Kawaihae, provided additional assistance by storing and tending the local rescue gear at their warehouse. Jupiter Foundation out of Puako has also provided added support towards storage and technical support. Bob Gladden, Doug Perrine, Julie Steelman, and many others from the West Hawaii Marine Mammal Response Network provided a great deal of support, and laid the foundation for the adult female humpback whale being freed of entangling gear in February.

While there are many individuals and organizations to acknowledge, several warrant special mention. Rachel Finn, the Sanctuary's Research and Response Assistant, who once again volunteered her time, worked tirelessly in maintaining our preparedness, and assisted in many efforts. Grant Thompson with KIRC, who assists wherever and whenever needed. Lee James of Ultimate Whale Watch deserves special credit for his efforts in maintaining an authorized "West Maui" rapid response capability off Lahaina, Maui, and in helping keep our response vessel running. Acknowledgement also goes to Jason Moore, a professional photographer, who has continued to donate a great deal of his time, and help us better document our response efforts and increase our assessment capabilities. Lt. Joseph Carrier, the NOAA Corps Officer assigned to the sanctuary and primary captain of the response Koholā deserves a great deal of credit. Over his 3 years of duty with the Sanctuary and the large whale response program, Joe became quite adept at maneuvering the boat around the animals – an extremely valuable role for response and research. His expertise at the helm on his last rescue of an entangled yearling humpback whale off Kihei, was the determining factor on the success of the operation. Lastly, the responders of the West Hawai'i Marine Mammal Response Network, especially Bob Gladden, deserve much credit towards their efforts on the Big Island.

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 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 (e.g. poles, goggles, knives), and services, such as those required for the satellite tags. Grants from the Hawai'i Tourism Association, Sea Grant program, and Whale Tales have provided support in the past. Whale Tales, and Wayne and Laurie Nunez of Whalers Village Museum provided support this past season. Private donors, like Jerry Stowell (Maureen Stowell Memorial Fund), Jackie Lyons, Mara Kerr, Mark DiOrio, and other individual donations have provided much needed financial support. Businesses, like Maui Surf and Sport, and Second Wind have provided merchandise (equipment) at cost. 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. 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. Large whale entanglement response is not only dependent on receiving reports, but being able to mount a response that demand 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.