

Hawai'i Marine Mammal Consortium Field Report

MARINE MAMMAL RESEARCH, EDUCATION AND CONSERVATION



HMMC Board members (left to right) Susan Rickards, Suzanne Yin, Chris Gabriele and Adam Frankel at shore station. Photo by Kim New.

RESEARCH

SHORE STATION RESULTS

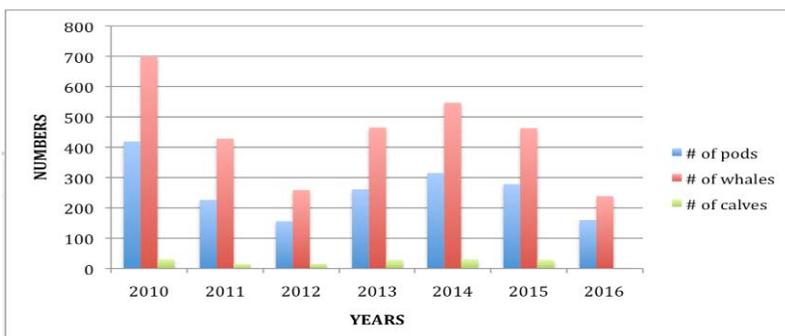
During the 2016 HMMC field season in February-March, humpback whales were on everyone's mind. Everywhere we went, people asked us, "Where are the whales?" or "Are there less whales this year?" Based on preliminary analysis of our 2016 observations, the answer to the second question is yes.

As in previous years, HMMC conducted shore-based scans from the "Old Ruins" shore station located along the Kohala Coast. These are the only annual standardized counts in the Hawaiian Islands, with equivalent effort from year to year. Preliminary analysis indicates that fewer whales were seen from shore in 2016. In our full allotment of 20 scans, with data from four time blocks during five weeks, we saw 160 humpback whale pods with 239 whales, of which only 3 had a calf. See the table below for comparison with other years (numbers may change a bit in the final analysis). As you can see, counts fluctuate year to year.

What does it mean? We've seen variations in numbers of whales over the years, in part because the whales move among the Hawaiian islands and in some years they concentrate somewhere besides the Kohala Coast. However, this year, conversations with Maui researchers indicated low numbers of whales and calves there as well. Our data show the importance of a long-term data set for comparison between years. Thanks to a grant from Maui-based Whale Tales, we'll be analyzing and writing up our entire time series of data for publication in 2016.



From top: Adam uses binoculars to scan for whales, Chris uses a theodolite to mark positions of whales and vessels, Yin enters data into a laptop (note fancy cardboard box sun shield!) and Susan takes notes during a scan. Photos by Suzanne Yin.



HMMC Scan Sample Whale Counts 2010-2016. These counts are based on 20 independent shore based counts by a single trained observer in peak whale season each February and March. A pod is a group of one or more whales.

HMMC On the Water

Thanks to the help of our stellar volunteers, the HMMC team made the very best of our 14 days out on the water between February 11 and March 8. Due to a few stints of windy weather, our vessel-based effort was a bit lower than we would have liked. We approached 125 whales in 59 groups, resulting in 76 fluke identifications, four biopsy samples and 2 recordings of humpback whale song.

The biopsy samples were collected as part of the study that HMMC is doing to isolate the cause of “nodular dermatitis” (a.k.a. skin bumps) found on humpback whales, in collaboration with the National Institute of Standards and Technology (NIST). Our study design calls for analysis of an equal number of samples from whales with and without bumps. It is challenging work because finding and photographically documenting whales with no bumps on their skin is difficult. On roughly 80% of the 277 whales for which we photographically documented, we confirmed the presence of bumps. We have collected 41 skin and blubber biopsy samples so far (24 bumpy and 17 normal), although not all of these had sufficient blubber for analysis. Laboratory analysis is ongoing, and we hope to have results from trace element and organic pollutants analysis this year.

Similar to the shore scan data, whale numbers were noticeably lower than usual, and we encountered very few cow/calf pairs. The table below shows 2016 in comparison to the previous three seasons in which we were following the protocols for the skin condition study. Colleagues in Maui and Mexico noted oddities in their study areas as well. We also noted a number of whales which were obviously thin (photos at right), which is saying a lot for a creature known for being rotund! In combination, these findings made us wonder about prey availability on the feeding grounds last summer, and if a higher number of whales had stayed up north rather than migrating to Hawai‘i. If that is what happened in 2016, it was an event of unprecedented magnitude. The North Pacific was much [warmer than usual](#) starting in September 2014, which created an ecological upset that fortunately seems to be dissipating. Whales have the advantage of being mobile as they adapt to a changing ocean. We look forward to the next chapter in winter 2017.



Above, Chris Gabriele photographs a whale fluke. Photo by Suzanne Yin.

With a trained eye, HMMC researchers could tell that the singer photographed on March 4th (below) was in poor body condition, because his ribs and shoulder blades were visible and his overall body shape was angular instead of rounded.



2013 photo illustrating humpback whale skin bumps.

Year	# Days On the Water	# Groups Approached	Total # Whales Approached	# Groups Containing a Calf	% Groups Containing a Calf
2013	11	91	258	36	39.6
2014	15	128	267	26	20.3
2015	17	88	223	36	40.9
2016	14	59	125	5	8.5



Chris recognized two whales that we photographed in 2016 from Southeast Alaska, #1184 and #2318 that you can verify on www.alaskahumpbacks.org. See if you can find whale #1184 on the HMMC whale poster. <http://www.hmmc.org/Poster/Poster.html>

Hey wait, that's not a mammal!

BLACK-TIPPED REEF SHARKS

HMMC continued using marine mammal research techniques with our shore-based photo-identification project on black-tipped reef sharks in Pelekane Bay. We did not see many sharks during this past year, which we suspect is due to changes in their habitat. In July of 2015 there was a wildfire along Kawaihae Road that destroyed vegetation upslope from Pelekane Bay. Then in August, in a recipe for coastal erosion, a large storm passed over Hawai'i Island, washing mud, trees and other debris into the bay, especially in the northern section where we usually see sharks. We don't know if the erosion is a reason that we didn't see many sharks, but we can say that the sharks we did see, were found to the south of the Bay, closer to Spencer Beach. Shark 005 was again our most frequently seen shark, having been seen over 30 times during the course of the nine year study.



View of Pelekane Bay with some of the dead trees that washed in after a big rainstorm in August 2015. Photo courtesy of Pu'ukoholā Heiau National Historic Site.



Shark 005, our current most commonly seen shark. Notice how the left and right sides of the fin have different patterns. All of the sharks we have seen display this asymmetrical patterning.



HMMC saw an unusually diverse array of seabirds while on the water in 2016. Clockwise from top left: Hawaiian Petrel, Leach's Storm Petrel, Brown Booby with fish, Juan Fernandez Petrel. Not shown: white-tailed tropicbird and laughing gull. We submit our opportunistic seabird observations to Peter Pyle for inclusion into the monograph site for the B.P Bishop Museum

(<http://hbs.bishopmuseum.org/birds/rlp-monograph/>)
Photographs by Chris Gabriele and Suzanne Yin.



Yin removes some derelict fishing net from the ocean. See marine debris story on last page. Photo by Margaret Barker.



SPINNER DOLPHINS

We had four encounters with spinner dolphins while on the water this season (a total of perhaps 330 individuals, including several calves) with the biggest group estimated at 165 dolphins on March 4th. We also saw spinners 10 times during the course of our shore-based

scans. While on the water, we carefully approach the dolphins to take photographs of the dorsal fins for identification purposes as the fins often have nicks and notches that distinguish individuals (see collage to right). Some dolphins have 'clean' fins, with no nicks and notches. If they don't have some other identifying characteristics (unusual coloration pattern, scarring), we will not be able to identify them.



Spinner dolphins seen during the 2016 season. Notice the nicks and notches in some of the dorsal fins. Photos by Suzanne Yin.

We photographed one unidentified dolphin, likely a bottlenose dolphin, which swam by as we were drifting to record a singing humpback whale, also on March 4th. We provide copies of our dolphin photos to the Pacific Islands Photo-Identification Network (PIPIN) and to Cascadia Research Collective, which maintain catalogs of individuals so that we can learn more about how these animals use the waters of the Hawaiian Islands.



Leaping spinner dolphin with a remora on its dorsal fin. Photo by Suzanne Yin.

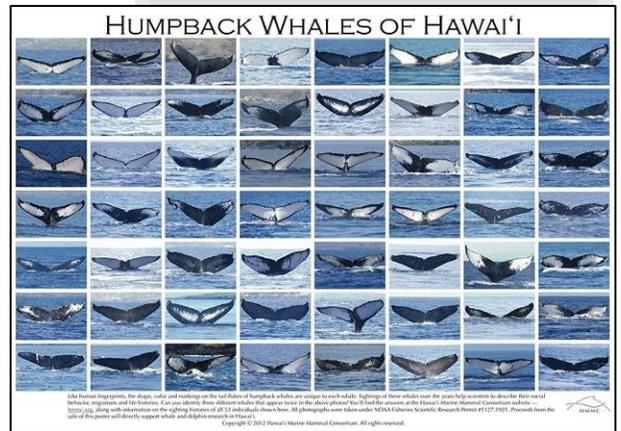
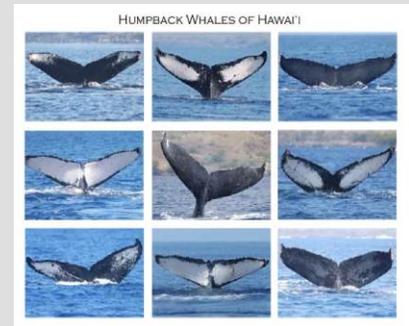


Breaching humpback photographed off the Kohala Coast. Photo by Chris Gabriele.

HMMC posters and note cards only \$10!

HMMC's humpback "Whale Tale" note card tells the stories of nine distinct individuals that are recognized by their unique tail fluke markings. The cards are blank on the inside. The HMMC fluke poster with 56 different images of 53 different whales. Find the three matching whales!

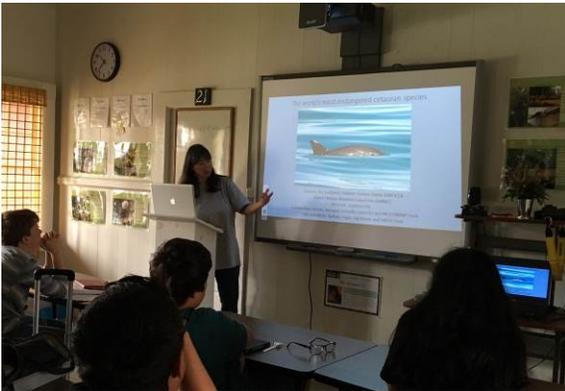
ORDER ONLINE TODAY! All proceeds go to support the HMMC!



EDUCATION

In 2016, there was no Cornell University field semester class, but we are hoping that the class will be back next year.

Yin gave three talks on vaquita, the Gulf of California harbor porpoise, which is currently the most endangered marine mammal, with less than 100 remaining. Yin gave a vaquita talk to an enthusiastic group of volunteers at Ke Kai Ola, The Marine Mammal Center monk seal hospital in Kona. She also gave two talks to Susan Rickards' 9th grade Biology classes at Parker School. The students were really engaged and asked a lot of follow-up questions. Thanks to Deb Wickham and Susan Rickards for hosting the talks!



Yin giving a talk to Susan's 9th grade Biology class at Parker School on vaquita, the most endangered cetacean. Photo by Susan Rickards.



Yin giving an evening program on vaquita to monk seal hospital volunteers at Kai Ke Ola, a beautiful setting, complete with refreshments. Photo by Chris Gabriele.



Everywhere we go, and especially at our beloved home port at Kawaihae, we tell people about our work on humpback whale skin health. Sharing knowledge is a key component of ocean conservation.



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CONSERVATION

Marine debris – still a worrisome problem

Many of you may remember that our 2015 HMMC newsletter had a story about marine debris. Unfortunately, during our 2016 season, we again found plenty of marine debris. Our impression was that, unlike other years, where we mostly seem to pick up 'recent' trash (food wrappers, water bottles, plastic bags), this year we saw a lot of hard plastic that looked like it had been in the water for awhile. We picked up what we could, even though some of it took up a lot of space on our boat! (see images to right).

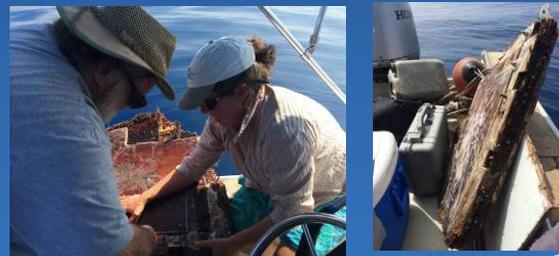
Why does this matter? Marine creatures mistake the plastic for food and eat it. Recently 13 male sperm whales stranded on a German beach. During the necropsy, the stomachs were found to be full of plastic, including one 43 foot long net!

Please do your part to help keep the oceans clean.



Above: Marine debris picked up on just ONE day (except for the sandal in the lower right, for scale).

Below: Adam and Chris look for hitchhiking crabs on a large piece of marine debris. Photos by Suzanne Yin.



Mahalo to all of our 2016 field assistants. We could not have done it without you.



Our Partners

The collaborative spirit of many individuals and organizations played a major role in all that we have reported here. The HMMC owes a debt of gratitude to many funders and supporters, as well as our trusty field volunteers (shown at left) who make the fieldwork fun as well as productive! A grant from Whale Tales in 2015 and 2016 is supporting our shore based scans and retrospective data analysis. Erin Oleson (NOAA Pacific Islands Fisheries Science Center) and Robin Baird (Cascadia Research Collective) allow us to work under their research permits. Gabriela Serra-Valente and Annette Henry (NOAA Southwest Fisheries Science Center) loaned us biopsy equipment that make the sampling possible. Colleen Bryan's (NIST) ongoing collaboration and financial help supports the humpback whale health work. We appreciate Debbie Steele and Scott Baker for their laboratory support and spirit of discovery. Joe Mobley (University of Hawai'i), Honda Motor Corporation of America and Kona Coast Marine help keep us on the water. Sincere thanks to Marilyn Wright, Annette Henry, Mike Morton and Curt Dennett for donations that help make the field season possible. The National Park Service provides support for shark observations. Thanks to Bob Christiansen for a quad-copter demo that may inform our future work with humpbacks and sharks. All cetacean photos shown here were taken under the authority of scientific research permits issued by the National Marine Fisheries Service.