

Hawai'i Marine Mammal Consortium Field Report

MARINE MAMMAL RESEARCH, EDUCATION AND CONSERVATION



HMMC Board Members (left to right): Adam Frankel, Susan Rickards, Chris Gabriele and Suzanne Yin.

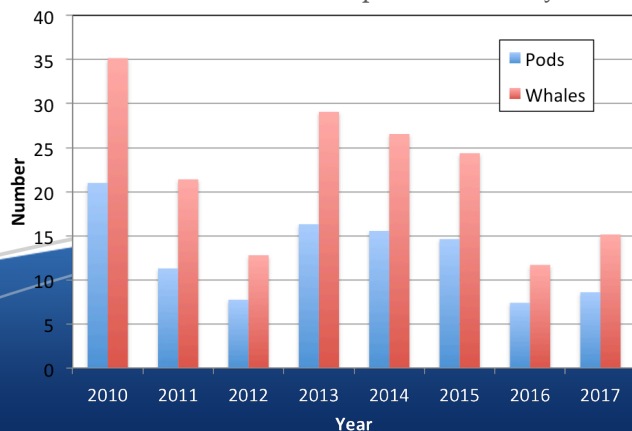
SHORE-BASED RESEARCH



After researchers documented dramatically low numbers of humpback whales across the Pacific in winter 2016 (see Hakai Magazine "No-Show Pacific Ocean Humpbacks Stump Scientists"), the question on our minds in 2017 was ...will the whales show up this year?

The preliminary results are in. To recap: HMMC conducted 20 shore-based scans from the "Old Ruins" shore station located along the Kohala Coast. In those scans, with data from four time blocks during five weeks, we saw 172 humpback whale pods with a total of 301 whales. Eight pods had a calf. As you can see in the graph below, counts fluctuate year to year. We saw more whales in 2017 than 2016, including more calves, but nowhere near the numbers of whales we saw in many previous years. So the answer is...whales *did* show up—sort of.

The 2017 data have been added to our existing database. These are being analyzed now and will be submitted for publication this year.



Top left: Kate Stafford and HMMC Board Member Chris Gabriele scan for whales using marine binoculars. The theodolite measures the positions of whales and vessels. Above: Kim New enters data into a laptop at shore station.

HMMC Scan Sample Whale Counts 2010-2017. Data represent the mean of ~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. Blue bars are pod numbers; red bars are whale numbers.

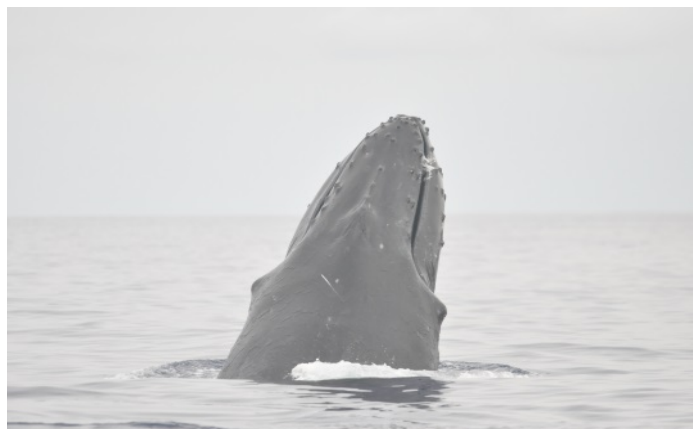
ON THE WATER

The HMMC team spent 17 days on the water carrying out a variety of research projects between February 10th and March 12th, 2017. It helped that we had a nice long stint of favorable weather. Thanks to exceptional returning volunteers Kim New and Dr. Kate Stafford, who worked their tails off in the name of science, we approached over 170 whales in 93 different groups that included 15 calves. We were quite relieved to see calves, as they had been rare the previous winter (see table below). One worrisome observation was that a number of whales were noticeably thin, like the whale shown lower right. Thin whales have been unusual over the course of our studies, but have become common in the past few years.

The main focus of HMMC boat-based research in 2017 was to document and sample whales with “bumpy” vs. “non-bumpy” skin. This was the fourth year of this study in collaboration with the National Institute of Standards and Technology (NIST). We now estimate that at least 80% of whales have bumps (a.k.a. nodular dermatitis). Even so, we sampled six non-bumpy whales this year. This means that we have collected equivalent numbers of “bumpy” and “normal” skin and blubber biopsy samples. Dr. Colleen Bryan joined us for part of this year’s research season. She and her NIST team will be assessing the samples for levels of trace elements and organic pollutants. We hope to have the laboratory results in the next few months and then write up our findings for publication.

(Story continues on the next page)

	2010	2011	2012	2013	2014	2015	2016	2017
# Days on the Water				11	15	17	14	17
# pods	419	226	156	261	315	278	160	93
# whales	700	428	259	465	547	463	239	173
# calves	31	15	16	29	31	29	3	15
% calf pods	7.4	6.6	10.3	11.1	9.8	10.4	1.9	16.1



All humpback whales have sensory nodules on their head (above) but the whale below also has obvious signs of the bumpy skin condition we are studying.



At right: The angular shape of this whale’s back suggests that it is not well nourished.

ON THE Water, continued



In 2017, we conducted two offshore surveys for toothed whales, to complement the work of Dr. Robin Baird of the Cascadia Research Collective. Over the course of 10 hours of survey effort, we covered 81 nautical miles in total and found no large odontocetes. We did find two bottlenose dolphins (see photo to right). We surveyed areas where we've seen melon-headed and false killer whales in previous years.



We also collected two water samples containing whale feces (we scientists call it “poop”) as part of a new collaboration with researchers at the University of Vermont and Harvard University. The photo at left shows Chris using a plankton net to collect a poop sample that consists mostly of sea water with some particulate matter. The samples collected in Hawai‘i will be used to look at the ecology of the whale gut microbiome.



Humpbacks mostly fast on their winter breeding grounds, and we are examining the shift in microbiota and the transport of nutrients from the whales' feeding grounds in Alaska to low latitude, low nutrient areas around Hawai‘i. We await lab results from our colleagues. For a cartoon-illustrated guide on how whales might serve as “ecosystem engineers”, see Robert Krulwich’s NPR blog “The Power of Poop: a Whale Story.”



2017 was not a big year for sighting seabirds. Interestingly, while in 2016, we had multiple sightings of storm petrels, 2017 brought no sightings of them. However, we had several sightings of noddies, a species we didn't see at all in 2016. Left to right: Black Noddy and Hawaiian Petrel. We submit our opportunistic seabird observations to Peter Pyle of the Institute for Bird Populations. HMMC bird data have been included in the monograph site for the B.P. Bishop Museum (<http://hbs.bishopmuseum.org/birds/rfp-monograph/>).

Photos by Suzanne Yin and Chris Gabriele.

BLACK-TIPPED REEF SHARKS

The HMMC 2016-2017 shark field observations didn't turn up a lot of sharks in Pelekane Bay. In 12 surveys, we saw 22 sharks, with most observed in June and July. As we reported in 2016, there are still large tree trunks and other debris in the bay, washed down during a big 2015 storm. However, we don't know if this is contributing to the comparatively low encounter rate in 2016 and 2017. If you are in the area and see sharks in Pelekane Bay, please let us know!



Left: Kim New and Kate Stafford look for sharks.

Right: Two of our intrepid shark watchers - Noa Rickards and his friend, Zeke Allison. Photos by Suzanne Yin



Do you think these two images are of the same shark?
Email us at info@hmmc.org with your answer!



HELP FROM OUR FRIENDS – MAHALO NUI LOA



Yin posing with donated items from our Amazon wish list (safety whistles for our life jackets, laser printer for data sheets, new beach chairs for shore station and a new mooring line!) Thanks to Stacy, Amy and Sonia for their support!



To help support HMMC's ongoing research, go to: Onepercentfortheplanet.org



Long-time volunteer Kim New arranged for a donation from Thrivent Financial to the HMMC via their "Seed Money" action campaign. Their \$250 donation went toward purchasing new binoculars for shore-based whale counts and a digital audio recorder to record whale and dolphin sounds. Photos by Adam Frankel and Chris Gabriele.



Check out our Amazon Wish List at www.hmmc.org

Shop at AmazonSmile
and Amazon will make
a donation to:
Hawaii Marine Mammal
Consortium

[amazon smile](https://www.amazon.com/amazonsmile)

EDUCATION

In March, Adam taught a group of students from the Cornell Ocean Research Apprenticeship for Lynch Scholars (CORALS) program. They were on Hawai'i Island studying corals, water quality and whales before heading north to further their studies in Puget Sound. While they were on island, HMMC staff lectured and led outings focused on humpback whale biology, sound production, sound recording and analysis techniques. Because CORALS emphasizes fieldwork, the students joined HMMC at the shore station and learned how to collect scan sample data. With help from Blue Wilderness divers, we deployed a SoundTrap acoustic recorder (see image at right, device is covered in barnacles) for seven days near a previous recording site. Students analyzed these data. Their projects included examining the thematic structure of humpback whale song, as well characterizing butterflyfish pulse trains and snapping shrimp sounds. Finally, two students measured the diurnal pattern of song production.

Adam also joined a trip to Kealahou Bay. After the students snorkeled to survey the corals, we went looking for whales. Not only did we find humpbacks down south, but also a mixed species group including pilot whales. Dorsal fin pictures were sent to Cascadia Research Collective for individual identification.



In February 2017, Chris spoke with about 60 students interested in whale biology during the Waimea Middle School Career Day. She discussed potential careers in biology and guided students in a fluke matching activity using HMMC's whale fluke ID poster. They caught on fast!

See page 6 to order Fluke ID posters!

Adam Frankel was invited to give the 2017 Wildlife Lecture at Quiet Waters Park, in Annapolis, MD. His lecture described humpback whale biology as well as HMMC's ongoing research.

To invite HMMC members to talk to your group or class, send us an email: info@hmmc.org

In Memoriam



On February 16, 2017, our close friend and colleague, Dr. Jonathan Stern, passed away after a short illness. Jon was a giant in the marine mammal community and an expert on minke whales. In 2008, Jon discovered that harbor porpoise had returned to San Francisco Bay for the first time in 60 years. Jon was also one of the scientists during the early formative period of HMMC and served on HMMC's scientific board. We will miss him. Photograph by Frances Robertson, used with permission. For more on Jon, please read the obituary written by Dr. Graham Worthy and colleagues:

<https://lists.uvic.ca/pipermail/marmam/2017-February/008623.html>



Kim New and Chris Gabriele at work.

HMMC posters and note cards only \$10!

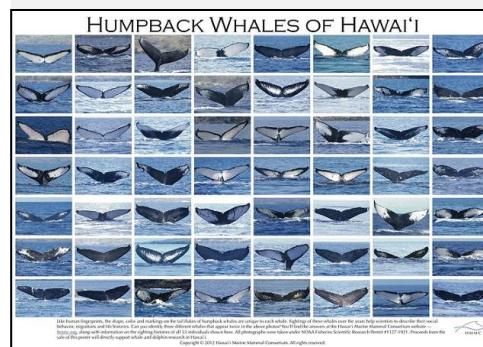
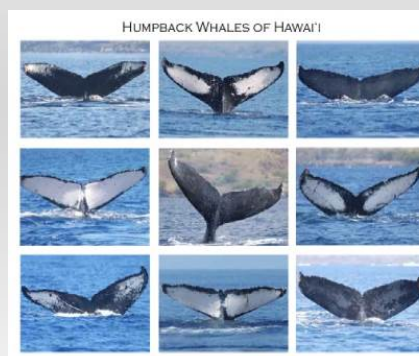
HMMC's humpback "Whale Tale" note cards tell the stories of nine distinct individuals recognized by their unique fluke markings. Cards are blank on the inside.

HMMC's fluke poster displays 56 images of 53 different whales. Challenge: find the three matching whales!

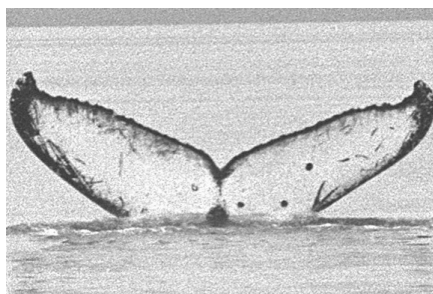
ORDER ONLINE TODAY!

All proceeds go to support the HMMC!

<http://www.hmmc.org/Store/StorePage.html>



LONG TIME NO SEE



On February 14th, we photographed a humpback whale (image above left) that inspired Yin to check the online fluke catalogs for British Columbia and Southeast Alaska. She successfully matched it to whale 479, a whale in the Southeast Alaska online catalogue (image above right) <http://www.alaskahumpbacks.org/Sightings.html>. Researcher Jan Straley told us that Southeast Alaska database records indicated that this whale was first sighted in 1980 off Hawai'i Island and its most recent sighting was in Frederick Sound, Alaska in 1985.

CONSERVATION

Marine debris – a new fact of life

We had stories about marine debris in both our 2015 and 2016 newsletters. Unfortunately, during our 2017 season, we again found plenty of marine debris. There were several days when we found a 'patch' of debris and spent valuable research time trying to pick up all the bits with our little net. Once we brought the debris on board, we always checked for 'hitchhikers' and released any crabs, fish or other marine life found clinging to the litter.

One trip, we found a big mess of different types of line (see image at right). A ball like this could easily entangle marine life, so it's critical to remove it and dispose appropriately. In March off Maui, the tour boat *Safari Explorer* pulled about 1,000 lbs of line and abandoned fishing net out of the water. In the center of the mass, a juvenile green sea turtle was found dead. In late March, Maui researchers Meagan Jones and Flip Nicklin found a live turtle entangled in an abandoned fishing net. They recovered the net and released the turtle unharmed.

We ALL have a part in helping to keep the oceans clean.



*Above: Various items of marine debris collected by HMMC.
Photo by Kate Stafford.*

*Below: Chris Gabriele pulls marine debris from the water.
Photos by Suzanne Yin.*



Mahalo!!! We couldn't do it without you!

OUR PARTNERS

HMMC is grateful to our many

fundors and supporters, as well as trusty field volunteers who make the fieldwork fun and productive! A Whale Trust Maui grant supports our shore-based scans and retrospective data analysis. Erin Oleson (NOAA Pacific Islands Fisheries Science Center) and Robin Baird (Cascadia Research Collective) allowed us to work under their research permits. Gabriela Serra-Valente and Annette Henry (NOAA Southwest Fisheries Science Center) loaned us biopsy equipment that made sampling possible. Colleen Bryan's (NIST) ongoing collaboration and financial help supports humpback whale health studies. Thrivent Financial provided funds for much needed equipment. Thanks to Kai Ke Ola monk seal hospital for tissue sample storage and logistical support. Debbie Steel and Scott Baker's laboratory support and spirit of discovery is so welcomed. Thanks to Michael Force for bird species ID. Chuck Greene, Joleah Lamb and Drew Harvell of Cornell University plus Blue Wilderness divers—Thanks! Joe Mobley (University of Hawai'i), Honda Motor Corporation of America, Kona Coast Marine and Daniel Mersburgh: You help keep us on the water. Special thanks to Marilyn Wright, Annette Henry, Mike Morton, Sonia Groves, Amy Wood, Stacy and Virginia Tormey for donations that help make our field season possible. The National Park Service supports our shark observations. The Puako General Store sells our fundraiser whale note cards and posters — much appreciated. Cetacean photos were taken under the authority of scientific research permits issued by the National Marine Fisheries Service and the State of Hawai'i.

OUR AWESOME 2017 VOLUNTEERS!

