COLLEGE OF AGRICULTURAL SCIENCES

MARINE MAMMAL INSTITUTE

MMI.OREGONSTATE.EDU — 2020

In this issue:

MMI Is Going Places!

I write this as my first-year anniversary with the Marine Mammal Institute approaches. Despite these unprecedented times, it has been a fabulous year for me and for the Institute. And it has been an historic one. After more than 45 years with OSU, Dr. Bruce Mate retired from his full-time positions as Director of MMI, Principal Investigator of the Whale Telemetry Group, and Professor in the Department of Fisheries and Wildlife. Thankfully, he remains with MMI as Professor Emeritus and continues to work with MMI on research and donor development. I invite you to read his letter on page 11. There have been significant changes in status of our scientists and students this past year.

(Director's message continues inside.)

Oregon State University

COVER: **Two Pacific white-sided dolphins *(Sagmatias obliquidens)* display aerial behavior, photographed while MMI researchers conducted whale tagging off the central California coast in 2016. Photo by Craig Hayslip under NMFS Permit No. 14586.**

Dr. Leigh Torres was promoted to Associate Professor and granted indefinite tenure. Dr. Daniel Palacios accepted a position as tenure-track Associate Professor. Minda Stiles accepted a promotion to Administrative Manager & Communications Coordinator. Dr. Renee Albertson was promoted to Senior Instructor 1. Jim Rice accepted a new position as Program Coordinator of the Oregon Marine Mammal Stranding Network. And MMI has formally established MMI Affiliates, who are Principal Investigators from departments, colleges, and centers throughout OSU who collaborate with MMI scientists in cross-cutting ways.

Marine Mammal Institute Director, Dr. Lisa T. Ballance.

This year also saw the creation of new programs and practices in MMI. The Whale Telemetry Group, led by Dr. Bruce Mate up to his retirement, has become the Whale Habitat, Ecology & Telemetry (WHET) Lab under the leadership of Dr. Daniel Palacios. The WHET Lab will honor Professor Emeritus Mate's legacy by maintaining a strong focus on whale tracking, while expanding its interests to habitat characterization and ecological risk assessment to inform mitigation and management strategies for whale populations. MMI has established a new Graduate Student Awards Program to provide support for MMI graduate student travel, publication costs, and research needs.

The Gladys Valley Marine Studies Building on the Hatfield Marine Science Center campus, Newport. Photo by Mark Farley.

We have implemented a monthly e-newsletter as a platform for communicating the activities and accomplishments of our faculty, staff, and students. And MMI now holds monthly meetings, which provide updates on research, scholarship, education, outreach, and other notable activities and opportunities pertaining to the Institute.

In the wake of an eventful year, the future is bright for MMI. Even as we continue to work largely from home offices in our strong efforts to mitigate the spread of COVID-19, we have completed our move into the new Gladys Valley Marine Studies Building. Much more than a building, this structure combines state-of-the-art technology, architectural and artistic components, and engineering excellence to enhance transdisciplinary research, scholarship, education, and outreach. (It also provides a vertical evacuation center for more than 900 people at the Hatfield Marine Science Center and the greater South Beach community in the event of a Cascadia-level earthquake and tsunami event.) This is the first time in the history of the Institute that MMI faculty, staff, and students will be located in a single building, and it represents an unparalleled opportunity for new synergies. Our research vessel *Pacific Storm* has completed an extensive shipyard repair period and is once again working on the open ocean in support of MMI and the greater OSU. And finally, MMI has completed an extensive search for new faculty members, and we anticipate that two new tenure-track professors, each with their own laboratories, research staff, and students, will join us by the end of calendar year 2021. This will make MMI among the largest centers of excellence in marine mammal science in the world.

I invite you to read the updates from our research laboratories and get to know our graduate students and faculty affiliates and their areas of research expertise and focus. I am deeply proud of these accomplishments and am reminded of the pleasure and privilege it is to serve as Director of this amazing Institute. I ask that you share in this pride, for what we do is a product of your engagement and support. Together, we are making a difference in research, education, and community outreach toward the betterment of marine mammals and healthy marine ecosystems.

L. T. Ballance

Lisa T. Ballance, PhD, Director

The Future of Marine Science Is Here.

Dawn Barlow

PhD Student (Leigh Torres)
Research: Ecology and distribution of blue whales in New Zealand, incorporating spatial ecology, bioacoustics, oceanography
Tidbit: When she's not working, you can find her near the water — swimming, freediving, sailing, or at the beach with her dog, Quin.

Karen Lohman

MS Student (Scott Baker)
Research: Using conservation genetics/genomics to better understand the migratory connections and feeding ground use of eastern North Pacific humpback whales
Tidbit: Karen got her start in the marine system working with sea turtles and has previously worked with six of the seven species of sea turtles in the world.

Lisa Hildebrand

MS Student (Leigh Torres)
Thesis: Mysids, gammarids, and more: An examination of the zooplankton prey of Oregon gray whales and its impact on individual foraging patterns
Tidbit: When she's not doing her research, Lisa is probably climbing at Smith Rock State Park or skiing down a mountain in central Oregon.

Rachel Kaplan

PhD Student (Leigh Torres)
Research: Using species distribution models to understand how oceanographic factors and prey patches shape the distribution of whales in Oregon waters
Tidbit: Rachel has lived at both 64.8 degrees north latitude and 64.8 degrees south latitude.

Clara Bird

PhD Student (Leigh Torres)
Research: Using drone footage to study gray whale body condition and behavior across space, time, and the individual
Tidbit: Clara has received the Duke Nicholas School of the Environment Marine Science and Conservation Award.

Charles Nye

MS Student (Scott Baker)
Research: Metabarcoding and eDNA methods applied to cetacean conservation
Tidbit: Charles spends his free time creating paleoart, scientifically informed reconstructions of extinct organisms.

Kaimyn O'Neill

MS Student (Scott Baker)
Research: Developing an epigenetic aging clock for Hector's and Māui dolphins
Tidbit: Kaimyn has been awarded an MMI graduate fellowship

Dom Kone, MS

December 2019 (Leigh Torres)
Thesis: An Ecological Assessment of a Potential Sea Otter *(Enydra lutris)* Reintroduction to the Oregon Coast
Tidbit: Dom is now a Science Officer with California Ocean Science Trust.

Leila Lemos, PhD

March 2020 (Leigh Torres)
Thesis: Body Condition and Hormone Assessment of Eastern North Pacific Gray Whales *(Eschrichtius robustus)* and Associations to Ambient Noise
Tidbit: Leila is now a Postdoctoral Associate at Florida International University. ***MMI***

Applied Collaboration and Innovation

Geospatial Ecology of Marine Megafauna (GEMM) Laboratory

By Leigh Torres, PhD

Four times each month, Craig Hayslip or I (Leigh Torres) climb aboard a United States Coast Guard (USCG) helicopter and soar across the ocean following set survey tracklines, collecting marine mammal sightings data. We have conducted these surveys since February 2019, flying more than 58 flights with our Coast Guard partners. These flights are exciting, including amazing aerial observations of breaching humpbacks, large groups of killer whales, and foraging blue and fin whales. Most important, the data we have collected have already changed management of fishing practices to reduce whale entanglement risk.

Since 2014, entanglements of blue, humpback, and gray whales in fishing gear along the west coast of the USA have dramatically increased, particularly in Dungeness crab fishing gear. Many forces are likely involved, including changes in whale populations, fishing fleet dynamics, and distribution patterns of whales and their prey. While we cannot pin-point one cause, many people and groups recognize that we must reduce whale entanglement rates, otherwise whales will suffer, whale populations will decrease, and the fishery will decline. Hence, in 2017, the Oregon Whale Entanglement Working Group was formed by Oregon Sea Grant to address this issue. It is composed of diverse stakeholders including members of the Dungeness crab fishery and commission, the Oregon Department of Fish and Wildlife (ODFW), marine mammal scientists — including MMI's Jim Rice and me — and conservation groups.

Intense discussions occurred at these working group meetings aimed at finding ways to reduce whale entanglements. A frequent approach discussed was to reduce risk by avoiding setting crab gear where and when we expect whales to be. Yet, this idea flagged a very critical knowledge gap: We do not have a good understanding of whale distribution patterns in Oregon. Thus, a highly collaborative research effort was initiated to describe whale distribution patterns in Oregon and identify areas of co-occurrence between whales and fishing effort.

Through an effective partnership with the USCG sectors in North Bend and Columbia River, we are able to cost effectively survey large portions of Oregon's coastal waters on a regular basis (weather permitting, of course). Our plan is to conduct four survey flights each month for two full years, generating enough data to develop species distribution models that will allow us to predict whale distribution patterns relative to ocean conditions, such as temperature, depth, upwelling conditions, and El Niño cycles.

Since February 2019, we have recorded more than 150 sightings of humpback and blue whales, which is filling a critical

Getting up in the air to lower the risk for whales: Flying aboard USCG helicopters off the Oregon coast.

FAR LEFT: **Craig Hayslip conducts aerial surveys of whales.**

TOP RIGHT: **Leigh Torres records survey data during a flight.**

BOTTOM RIGHT: **A blue whale surfaces during a survey flight (taken under NOAA permit #21678).**

knowledge gap about when and where these vulnerable whales occur in Oregon waters. Although these results are preliminary (we have not yet accounted for observation effort through models), our data show that humpback whales occurred in higher numbers during June through September, typically between 75- and 100-m water depths. Through our strong collaboration with ODFW, these results have already influenced management decisions to save whales.

On September 11, 2020, ODFW presented proposed regulatory changes to the Oregon Fish and Wildlife Commission regarding management of the Dungeness crab fishery based on our preliminary findings. The Commission considered ODFW's proposal and testimony from community members regarding the perceived positive and negative impacts of such regulatory changes aimed at reducing the risk of whale entanglements. After many hours of discussion over Zoom, the commission approved ODFW's proposed regulations: Beginning May 1 of each year (starting in 2021), the amount of Dungeness crab gear in the water must be reduced by 20%, and no gear will be allowed deeper than 40 fathoms (73 m).

The new regulations will impact the lives of some crab fishermen and should not be considered negligible. ODFW aims for balanced management practices that can sustain healthy whale populations and Oregon's iconic Dungeness crab fishery, and our research directly supports this effort to simultaneously reduce risks to whales while also minimizing burden to fishermen. Through our continued USCG helicopter surveys and data analyses, we will improve our understanding of whale distribution patterns in Oregon waters; our goal is to enable ODFW to implement more informed and resolved fishery regulations that ensures the co-existence of thriving whale populations and the Dungeness crab fishery. ***MMI***

Multiple Tools, Multiple Clues

Studying whale ecology and physiology is a challenging business. We cannot capture these animals to collect biological samples, and they spend most of their lives underwater. Yet, knowledge about how whales live and respond to disturbance events is critical to the development of management strategies that can effectively set limits on human activities before individual whales and populations suffer.

Hence, we have developed multiple non-invasive and complimentary tools to study whales that help us piece together clues about their mysterious lives. We use drones to measure changes in the body condition of whales; we collect and analyze whale fecal samples to describe their stress and reproductive hormone levels; we drop GoPro cameras in the water to document foraging habitat and prey availability; we use a theodolite to track the movements and behavior of whales from shore; we collect zooplankton prey samples and assess their caloric content; and we use cameras above and below water to document unique foraging tactics whales use to capture prey.

Through these methods, we have learned that as gray whale body condition deteriorates, their stress levels increase; New Zealand (NZ) blue whales often use their right eye to locate prey patches; gray whales use a variety of feeding tactics like headstands, bubble blasts, and upside-down swimming; gray whales forage close to kelp-covered reefs on calorically rich zooplankton; NZ blue whales coordinate body maneuvers to maximize prey engulfment; and gray whale body condition typically increases throughout a foraging season but is impacted by oceanographic processes that influence prey availability.

With these tools we are gaining important clues about the lives of whales. Through continued innovation, we will further expand our knowledge to improve conservation efforts.

GEMM Lab tools in action *(TOP TO BOTTOM)*: catching the drone; GoPro image of a gray whale feeding; using a theodolite to track a whale; drone image of a blue whale lunge feeding on krill; a light trap full of zooplankton.

Counting on New Zealand's Māui dolphins

Cetacean Conservation and Genomic Laboratory (CCGL)

By Debbie Steel and Scott Baker, PhD

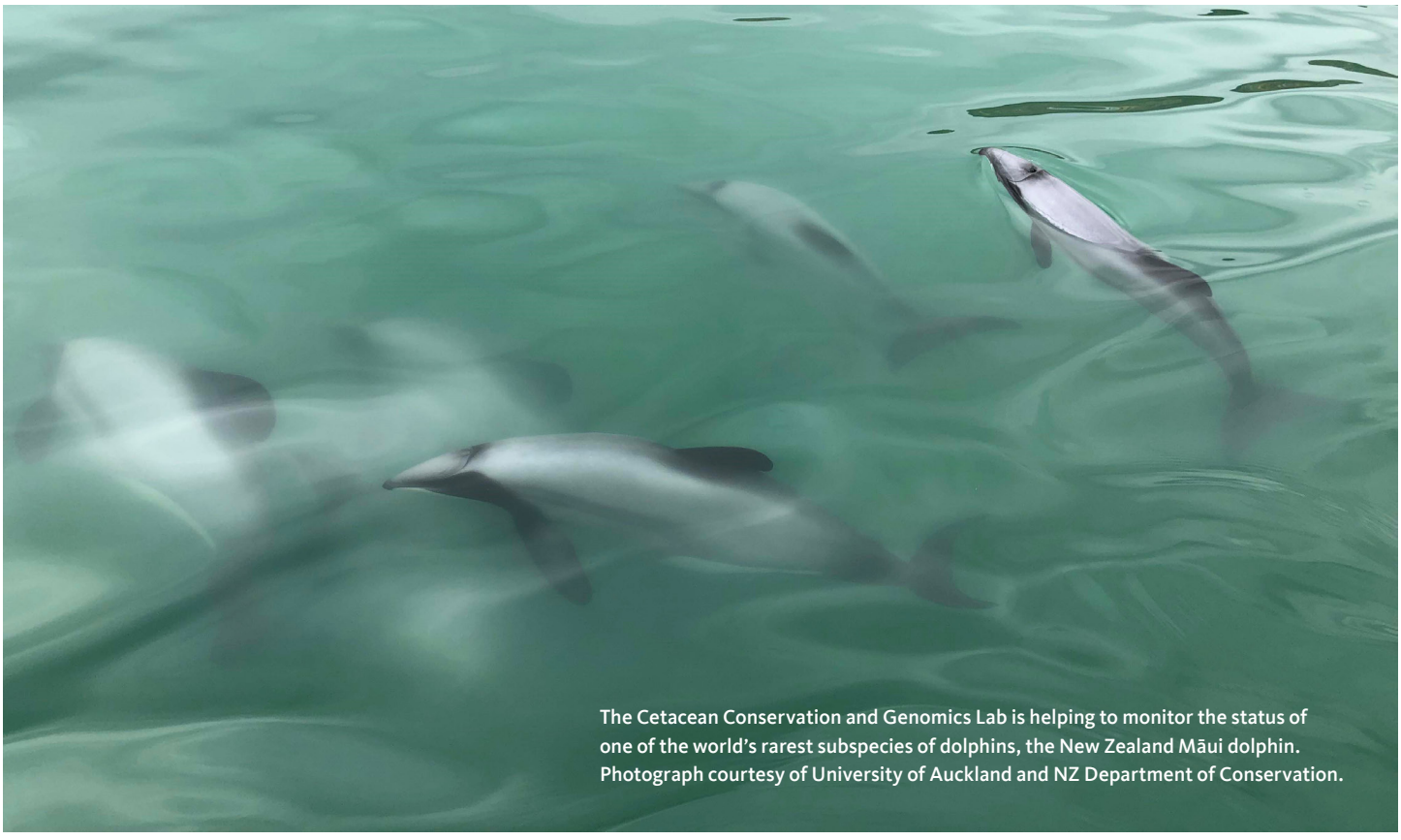
Māui dolphins and their sister subspecies, the Hector's dolphin, are endemic to coastal waters of New Zealand. Although similar in appearance, the two subspecies are reproductively isolated and can be identified by a set of genetic markers used routinely in our laboratory. Māui dolphins are currently found in only a small remnant of their former range along the west coast of New Zealand's North Island. The subspecies is considered critically endangered.

Previous assessments suggested a substantial decline in Māui dolphin abundance over the last several decades due to fisheries-related mortality. These studies led the New Zealand government to enact a series of fisheries restrictions throughout most of the current range of Māui dolphins. More recently, mortality from disease, primarily toxoplasmosis and brucellosis, has emerged as a threat.

As part of an ongoing effort to monitor trends in Māui dolphins, we have been working with the New Zealand Department of Conservation and Dr. Rochelle Constantine at the University of Auckland to improve estimates of abundance using DNA profiling for individual identification. For this we collect small biopsy samples during boat-based surveys conducted within the known range of Māui dolphins. These surveys are conducted across two years, at five-year intervals (beginning 2010–11) and build on surveys begun in 2001 by Scott and his graduate students at the University of Auckland.

Using DNA extracted from the biopsy sample, we generate a DNA profile for each individual sampled and then compare this to a DNA register of profiles from all samples collected previously. We then use this individual recapture information to generate an abundance estimate and to model the changes in abundance across the five-year intervals.

Using these methods, we estimated that there were 55 individuals alive in 2010–11 and 63 individuals alive in 2015–16. Although this small increase in estimated abundance seems promising, it is not sufficient to conclude that the population is increasing. A third paired-year survey is needed to improve confidence in the trend.



The Cetacean Conservation and Genomics Lab is helping to monitor the status of one of the world's rarest subspecies of dolphins, the New Zealand Māui dolphin. Photograph courtesy of University of Auckland and NZ Department of Conservation.

In February of this year, a team of researchers and rangers conducted the first year of this third paired survey. During surveys broadly covering the range of Māui dolphins, the team encountered 26 groups and collected 50 biopsy samples. DNA from these samples were subsequently sent to our lab for profiling, allowing us to identify 30 individual Māui dolphins. After matching the profiles of the 30 Māui dolphins to our DNA register, we found that 15 of the individuals had been sampled during previous surveys. One male was first sampled as an adult in 2001, confirming that he is now at least 20 years old.

The DNA profiling also allowed us to identify two Hector's dolphins among the samples collected in 2020, a female and a male. Although it came as a surprise to us when former MMI PhD student Rebecca Hamner first identified two Hector's dolphins in the 2010–11 surveys, we have now documented four living Hector's dolphins in the Māui range. Some of these individuals appear to be "vagrants" that are identified in only one survey, but the female sampled in 2020 was sampled previously in 2010 and again in 2015. Given this 10-year residency, we have searched the DNA register for evidence of interbreeding between the two subspecies but, to date, have found no evidence of individuals with a mixed heritage.

Planning is now underway for the 2021 surveys. With this second year, we hope to get a real sense of the trend in the critically endangered population of Māui dolphins and maybe find some evidence of genetic interchange with their more abundant sister subspecies. ***MMI***

Whales Return to South Georgia Island

Scott Baker

"I see them in hundreds and thousands," reported Norwegian whaler, Carl Anton Larsen, on establishing the first whaling station on South Georgia in 1904.

Following the advent of modern commercial whaling in the early 20th century, more than 2,000,000 whales were killed in the Southern Hemisphere alone. The center of this slaughter was South Georgia Island, a key summer feeding ground for humpback, blue, and fin whales.

Over a period of 60 years, records show that more than 176,000 whales were killed and processed at the many whaling stations established after Larsen's pioneering venture. When the whalers had finished, the local abundance of whales had vanished.

It has now been more than 50 years since the last whale was taken from the waters of South Georgia. Have the whales begun to return to South Georgia, or were they truly extirpated?

To help answer this question, I joined other scientists and crew from the UK, the US, Canada, Brazil, New Zealand, and Tonga, aboard the R/V *Braveheart*, a former Japanese fisheries research vessel under charter by the British Antarctic Survey.

For more than three weeks in January 2020, we surveyed the waters around South Georgia to collect sighting records, acoustic records, photographs for individual identification, and biopsy samples for genetic and biochemical analyses.

The expedition was a great adventure and a remarkable success. After two days flying, I arrived at our port of departure in the Falkland Islands (Islas Malvinas). After four more days steaming aboard the *Braveheart*, we arrived to an abundance of humpback and blue whales, two of the species that had disappeared from South Georgia.

For me, the highlight of the surveys was the opportunity to collect the first biopsy samples from living blue whales in the waters off South Georgia. The genetic information of living whales can be compared with the DNA from the bones of blue whales that are still scattered around the shoreline of South Georgia (see "Reconstructing the Past" by Angie Sremba in MMI's 2016 newsletter).

Much remains to be learned from these results but we now have an answer to our question about whether whales are returning to this former center of whaling: *Yes!*

PHOTO: **Scott Baker on the bow of the R/V *Braveheart* collecting a biopsy sample of a blue whale offshore of South Georgia Island. Photo courtesy of Paul Ensor and the British Antarctic Survey.**

Enhancing the Power of Whale Tagging with Citizen Science

Whale Habitat, Ecology, and Telemetry (WHET) Laboratory

By Craig Hayslip, Tomás Follett, Ladd Irvine, Barb Lagerquist, and Daniel Palacios PhD

Meet Cabernet Sauvignon, a female humpback whale first seen by the WHET Lab in Frederick Sound, Southeast Alaska, in 2015 *(Figure 1)*. "CabSav" was feeding with a group of whales when she was instrumented by our team with a satellite tag on November 17, 2015, during an expedition funded by Pacific Life Foundation and MMI donors. The tag allowed us to follow her movements for more than 28 days, during which she spent seven days in Southeast Alaska before heading toward Hawaii. In all, CabSav was tracked for 22 days and 3,640 km during her migration and came within 950 km of Maui before the tag stopped transmitting on December 16.

This information alone was extremely valuable for identifying CabSav's critical habitats in Alaska, her migratory route, and her winter destination. Indeed, tagging allows us to track the movements and dive behavior of individual whales anywhere in the world for periods of weeks to months, thus providing vital data for the management and conservation of these animals. However, all but the very longest-lived tags exhaust their batteries and stop functioning in less than a year, so we rely on other means to augment the information we learn from our tags.

Fortunately for us, studying whales can sometimes be as easy as taking a picture! Humpback whales famously lift their tail out of the water when diving, providing a stunning opportunity for photographs. The unique shape and color pattern of their tail flukes make those photographs

FIGURE 1: **"Cabernet Sauvignon" with her calf in Southeast Alaska in September 2020. Photograph in Happywhale.com by Mindy Huston, licensed under CC BY 4.0.**

a great way to identify individuals. Researchers collect catalogs of fluke photographs (called ID photos) to keep track of where individuals have been seen across multiple years. By looking into her sighting history from photo-ID records, CabSav's story became even richer. Not only has she been seen in Southeast Alaska a whopping 70 times in 11 years (from 2008 to 2020), but she has also been seen in Hawaii in four years dating back to 2006. This year, CabSav was seen near Maui in January and again near Chatham Strait, in the summer, both times with her new calf *(Figure 1)*. These connections can have huge conservation implications by telling us, for example, whether a whale using an area is part of the non-endangered Hawaiian population (more than 11,000 individuals) or the critically endangered Central American population (fewer than 800 individuals).

Our ability to access CabSav's rich sighting history was made possible by an online photo-ID resource called Happywhale that compares ID photos to detect matches that would be very difficult and time consuming for humans. In using Happywhale, we get more bang for our buck from our field efforts by generating additional information from the whales we photograph (both tagged and untagged). To date, we have uploaded 5,217 ID photos of 1,168 unique individuals from locales as remote as Antarctica and the Bering Sea and spanning multiple decades *(Figure 2)*. This benefits the broader research community by linking difficult-to-reach places to areas where whales are more commonly photographed, like Monterey Bay or the Hawaiian Islands.

The best part is that anyone can be a whale scientist! In addition to researchers, hundreds of citizen scientists around the globe are submitting their photos to Happywhale. They can then discover where their whales have been seen and by whom, all while helping researchers better understand and conserve these great animals. The public nature of

Happywhale has also connected us with citizen scientists and other researchers who have sighted our tagged whales months and even years after tagging, allowing us to better monitor a whale's long-term health and celebrate milestones like the birth of CabSav's calf.

Photo-ID matching allows us to better connect local and regional movements obtained from tracking data to different humpback whale population segments. During the spring-through-fall feeding season, whales from different breeding populations and with different conservation statuses mix off the western coast of North America, so it is important to understand which whales are using an area *(Figure 2)*. Wildlife management agencies can then prioritize efforts to reduce the impacts from potentially harmful human activities like vessel traffic, fisheries, and noise in places where it matters most (i.e., where endangered populations occur). ***MMI***

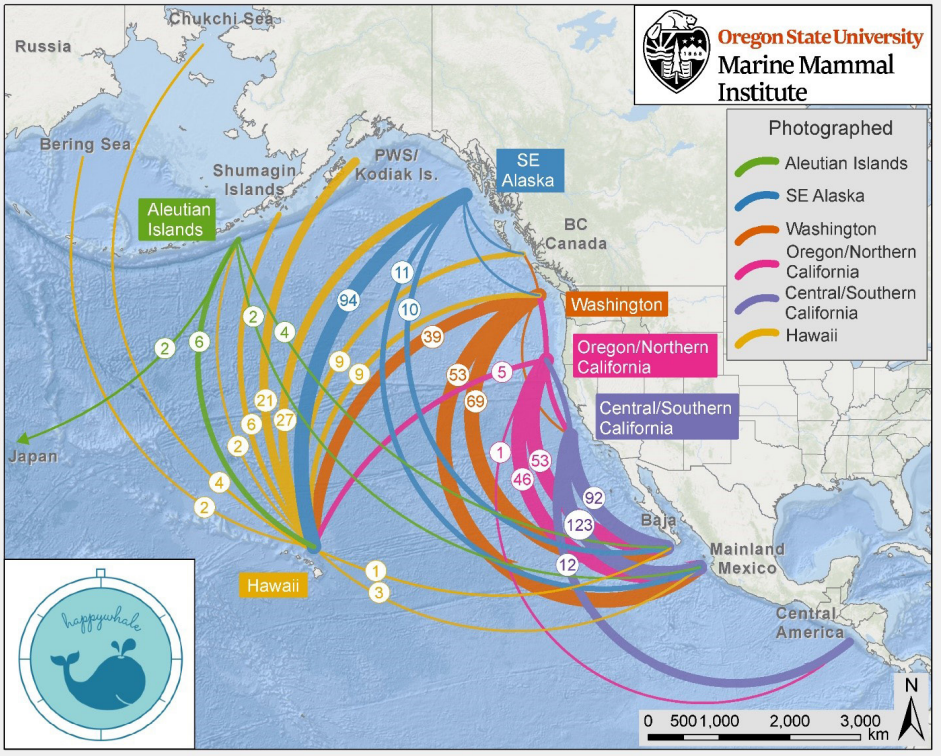


FIGURE 2: **Photo-ID matches for 582 humpback whales photographed by the WHET Lab between 2004 and 2019 at six North Pacific locations, as revealed through Happywhale. The numbers in circles indicate the number of connections to known migratory destinations, with the oldest connection dating back to 1981!**

BELOW: **Photographs taken by the WHET Lab in 2004 and 2017 of the whale cataloged as MnCA04-029 show changes over time that can result in missed matches by scientists but are successfully matched by Happywhale. When resighted in 2017 off Half Moon Bay, CA, this whale was within 2 miles of its first encounter 13 years earlier and only 4 days later in the year!**

WHAT IS HAPPYWHALE?

Happywhale is an online photo-ID resource that uses artificial intelligence and machine learning to automatically compare and match ID photos of humpback whales.

To date, Happywhale contains photos of over 40,000 individual humpback whales from around the world. Using the unique coloration patterns and serrations on the trailing edge of the flukes, Happywhale can match whales 40 times faster and more accurately than the human eye. The algorithm has a 99% success rate (even with lesser-quality images), and in many instances has discovered matches that researchers missed.

For the WHET Lab's page on Happywhale, please visit https://www.happywhale.com/org/169.

An Unexpected Benefit of Family Ties During a Pandemic

Oregon Marine Mammal Stranding Network (OMMSN)

By Jim Rice

Responding to the stranding of a large whale typically requires a prompt collaborative effort in order to properly document the event, to discover clues to better understand the factors responsible for an animal's demise, and to collect biological specimens of value to the broader research community. In most situations this requires a team of dedicated staff and volunteers to collect a suite of metrics (photographs, body measurements) and tissue samples in a timely manner while a carcass remains accessible and relatively fresh (especially if it had recently died). In the best of times these situations often involve logistical challenges, necessitated by accessing remote beaches with responders and equipment within narrow time windows, as higher tides preclude safe access. Moreover, the urgency to respond to whale strandings has increased since 2019 due to our role in an ongoing Unusual Mortality Event investigation (https://beav.es/o6H) involving gray whales *(Eschrichtius robustus)* along the entire West Coast.

Sophie Goodwin-Rice records morphometric data (body size measurements) at a gray whale stranding at Bayocean spit, Tillamook County, May 15, 2020.

For most of this past year, the drastic limitations imposed on all of us from the COVID-19 pandemic have made responses to whale strandings all the more challenging. In order to minimize the risk of spreading the novel coronavirus, OSU policy has prevented many of us from working together, particularly in shared enclosed environments, including while driving in vehicles, making it difficult to muster a group for stranding response in remote locales. Moreover, 2020 has been a very busy year for whale strandings. There have been six of them so far this year on the Oregon coast, five since the pandemic was declared in March. These include three gray whales, one humpback whale *(Megaptera novaeangliae),* and one sei whale *(Balaenoptera borealis).*

Noah Goodwin-Rice assists with gray whale stranding response near Heceta Head April 1, 2020. Access to this remote beach requires the use of ropes on a steep cliff face.

This unique situation presented me with a conundrum: how to effectively respond to large whale strandings without the help of co-workers and volunteers? Fortunately, I didn't have to look far for an obvious solution. Realizing that people living together in the same household are exempt from the need to "socially distance" from each other, I invited my wife Cait (a marine educator with Oregon Sea Grant), daughter Sophie (at the time a junior at Willamette University studying at home), and son Noah (at the time a high school senior with a strong interest in biology) to join me in stranding responses this year. I have discovered in each of these situations wonderful opportunities for me to engage with them, not only as family members but also as colleagues. They have been more than happy to share in the work I that do with the Marine Mammal Institute. ***MMI***

Donor Corner Bruce Mate

Moving to halftime in October 2019, when Lisa came to lead MMI (hooray!), and packing up to eventually move into the spectacular new Gladys Valley Marine Studies building has allowed me to realize how truly blessed I am. My growth as an OSU marine scientist and the growth of MMI could never have been so successful without the financial gifts and emotional support of so many friends! While I was pretty successful getting grants and contracts for research, individuals like you made significant and timely gifts, usually unexpected, that have made a huge difference in the course of my development and MMI.

The Valley Foundation and matching gift requirements established the initial MMI endowment that provides partial salary support for our professors, and subsequent gifts have established two partially endowed positions, two graduate student fellowships (Brown and Schamp), and dedicated research funding. Your generosity has been foundational in growing MMI to the international center of excellence that it is today. We are all deeply grateful.

Looking forward, Mary Lou and I have made our own estate arrangements to support MMI. Like most of you, our ability to give is dependent upon how much of our resources we use during our lives. What is "left" when we pass will include some support of family and other charities, but our central focus is on the animals we love and know will continue to face challenges. Government funding has dwindled, and there are very few stable research organizations that will assuredly be there to help them. MMI stands out among academic research groups to work for the improved management and conservation of marine mammals, while educating the next generation of experts. Can you help further secure that MMI commitment to the future of the oceans?

If so, I would like to help you think about this further. I have helped many folks walk through their estate planning process. I would be happy to meet with you (socially distanced) to think about your plan or a special gift. We have access to excellent OSU Foundation specialists available to answer your specific questions.

I know you feel passionate about the future of marine mammals. I am so pleased to have been part of your introduction to that excitement. I look forward to seeing you and helping you assure the future survival of these amazing animals through MMI research and graduate student education. Please call me (541-272-1175) or email (bruce.mate@oregonstate.edu), so we can chat about how your interests align with MMI's priorities. Thanks so much for your support and continued interests. Together we can really make a huge difference.

Welcome MMI Affiliates

MMI is pleased to introduce our affiliate faculty members. We are proud of the diversity these professionals bring to our research portfolio by strengthening collaborations.

Rachael Orben, PhD

Lead, Seabird Oceanography Lab
Research: Movement ecology of seabirds and pinnipeds
At MMI: Fine-scale drivers of albatross–vessel interactions with GEMM Lab

Angie Sremba, PhD

Research Associate, NOAA PMEL
Research: Blue whale population structure
At MMI: Developing eDNA and acoustic methods for detecting migratory whales with CCGL and WHET Lab

Bob Pitman, PhD

Marine Ecologist, OSU
Research: Killer whale feeding ecology
At MMI: Co-authoring a publication on Eden's whale foraging behavior in China with Lisa Ballance

Renee Albertson, PhD

Research Associate & Senior Instructor
Research: Harbor seal habitat use and abundance (photo-ID); dolphin social structure (genetic markers).
At MMI: Humpback whale abundance in French Polynesia with CCGL

Holger Klinck, PhD

Director, Center for Conservation Bioacoustics, Cornell University
Research: Tools for passive-acoustic monitoring of marine mammals
At MMI: Development of eDNA with CCGL; distribution of NZ blue whales with GEMM Lab

Shea Steingass, PhD

Marine Mammal Program Leader, Oregon Dept. of Fish and Wildlife
Research: Applied ecology and informed management of marine mammals, primarily seals and sea lions in Oregon, and Pacific walrus
At MMI: Strengthening ties among ODFW, OMMSN, and OSU

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Oregon State University
Marine Mammal Institute

As Populations Rebound, Killer Whales Rediscover a Lost Resource

During the last century, industrial whaling killed almost 3 million large whales, and the slow recovery process continues to this day. Among the questions that remain, about how marine ecosystems functioned prior to the devastation of whale populations worldwide, is whether killer whales ever preyed upon the largest whale species. This has been impossible to answer — after large-whale populations were decimated, the killer whales that might have fed on them would have either died out or been forced to find new prey resources. Either way, the culturally transmitted hunting practices for taking down these large and potentially dangerous prey would have been lost. Recently, however, some populations of large whales are showing clear signs of recovery, and killer whales, after some lag time, seem to be rediscovering a lost resource.

MMI affiliate Bob Pitman has been conducting killer whale research with collaborators (Cetacean Research Centre, Australia) off Western Australia. In spring 2019, the team observed killer whales killing and eating two blue whales, 16 days apart. These were the first lethal attacks on blue whales by killer whales ever reported and perhaps a glimpse of predator–prey interactions from a bygone, and possibly future, era.

Pictured here is a killer whale from one of the observed attacks, with its head in the mouth of the still-living blue whale and feeding on its tongue; killer whales prefer the tongue of large whales, and it is often the only part that they eat.

PHOTO: **John Daw, Australian Wildlife.**