Soundings

American Cetacean Society – Monterey Bay Chapter
PO Box H E, Pacific Grove, CA 93950

NOVEMBER / DECEMBER 2017

INSIDE THIS ISSUE

MONTHLY MEETING AT HOPKINS MARINE STATION, LECTURE HALL BOAT WORKS BUILDING (ACROSS FROM THE AMERICAN TIN CANNERY OUTLET STORES) MEETING IS OPEN TO THE PUBLIC

Thursday, December 7, 2017
Time: 7:30 PM

PLEASE JOIN US AT 7:00 FOR REFRESHMENTS

Speaker: Dr. Robert Schmieder

Title: Natural History of the Cordell Bank: California's Least Known National Marine Sanctuary

Over nearly 10 years, Dr. Schmieder and his group explored and described a rocky bank in the eastern Pacific (Cordell Bank), in support of its protection by designation as a national marine sanctuary. The Cordell Bank National Marine Sanctuary was designated in 1989 by an Act of Congress, signed by Pres. George H. W. Bush. In the course of this work, he published papers on the geological structure of the bank, on morphology and speciation of a resident gastropod, and on the impact of human activities on the community, culminating with the book Ecology of an Underwater Island. A second monograph, Edward Cordell and the Discovery of Cordell Bank, is in press.

During 1986-87, his team carried out a series of explorations of an unnamed bank off Pt. Sur, south of Monterey, California, resulting in the discovery of previously unknown topographic features and the largest known colonies of hydrocoral. This work resulted in the inclusion of sensitive areas within the proposed Monterey Bay National Marine Sanctuary. In the late 1980s, his team explored the North Farallon Islands, resulting in the discovery of many new biological records and a previously unknown (natural) submarine tunnel. Dr. Schmieder holds a Ph.D. in Nuclear Physics from Columbia University and is the founder of Cordell Expeditions.

Please join us for refreshments before the program begins. More information is available on our website, www.acsmb.org.

Next month: We will return to our regular monthly meeting schedule in January, meeting at Hopkins Marine Station on the last Thursday of the month, January 25. Please save the date and join us!

ACS Monterey Bay chapter needs you!

Please consider volunteering to serve on the ACS Board of Directors. Current openings include President, Membership Chair and Publicity Chair.

If you enjoy learning about whales and sharing your passion with others, we'd like to speak with you. Please contact any board member for more information. ACS is celebrating 50 years of whale conservation: 1967-2017.

CALENDAR

Nov. 19: Science Sunday at the Seymour Marine Discovery Center in Santa Cruz: A Seal Named Patches: What Waddell Seals Taught Us About Life At The Bottom Of The World. Family friendly lecture by Roxanne Beltran, Ph.D. student at the University Of Alaska Fairbanks and Patrick Robinson, Ph.D., Año Nuevo Island Director. 1:30 – 2:30 PM.

Dec. 7: Lecture by Dr. Richard King at the Pacific Grove Museum of Natural History: The Natural History Of Moby Dick: Ishmael, The Marine Biologist, The Environmentalists, And A Climate Refugee. 6:00 – 7:30 PM.

Jan. 26-27, 2018: Southern California Marine Mammal Workshop. This two-day workshop will be held at the Marriott Hotel in Newport Beach, CA. More information will be forthcoming in the January newsletter.

Jan. 27-28, 2018: 8th Annual Whalefest Monterey! This two-day symposium will be held at Old Fisherman's Wharf in Monterey. More information will be forthcoming in the January newsletter.

Jan. 28, 2018: Gray Whale Adventure fundraiser with Princess Monterey Whalewatching from 8-10am. Mark your calendar and contact Katlyn Taylor for more info at 971-322-8425 or katlyn.taylor.oc@gmail.com.

BOOK RECOMMENDATIONS

Cruisin' The Fossil Coastline, Exhibition by Ray Troll and Kirk Johnson at the Anchorage Museum.

Squid Empire: The Rise and Fall Of Cephalopods, by Danna Staaf. 2017 ForeEdge.

The Rise Of Marine Mammals: 50 Million Years of Evolution, by Annalisa Berta, with illustrations by James L. Sumich. 2017 Johns Hopkins University Press.

Encyclopedia of Marine Mammals, 3rd Edition, by Bernd Würsig, J.G.M Thewissen, and Kit Kovacs (Eds). 2017 Academic Press.

A Seal Named Patches, by Roxanne Beltran and Patrick Robinson. 2017 University of Alaska Press.

NEW MODEL PREDICTS PRECISE LOCATIONS OF OCEAN HOTSPOTS

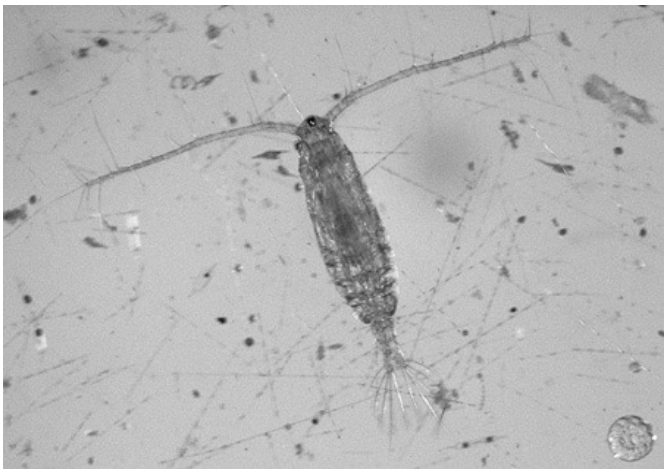
By Kim Fulton-Bennett

Oct. 26, 2017 — Each year thousands of people come to Monterey Bay to watch the feeding frenzies of seabirds, sea lions, and humpback whales. But why do certain coastal areas, such as Monterey Bay, become meccas for both humans and wildlife? A new computer model by MBARI researchers Monique Messié and Francisco Chavez can predict the locations of biological hotspots around the world, using only basic information about the local winds, currents, and concentrations of nitrate, which acts like a fertilizer for marine algae. Messié and Chavez recently published a description of their new model in the journal *Geophysical Research Letters*.

Monterey Bay is a hotspot for whales and other marine animals in part because of its vast swarms of anchovies and krill. Anchovies and krill are abundant because this area supports lots of smaller animals such as copepods, as well as microscopic algae such as diatoms. Diatoms grow prolifically in spring, when there is a lot of nitrate in the water. This nitrate come from deep water that is carried up toward the surface when strong northwest winds push surface water away from shore—a process known as upwelling.

Even though upwelling events typically last just a few days, their biological impacts can continue for weeks or months, as diatom blooms allow zooplankton such as copepods and krill to feed, grow, and reproduce. During this time, ocean currents can carry both the diatoms and the zooplankton dozens of kilometers away from the coast.

So the short answer about Monterey Bay is that it is a hotspot because of upwelling. This much can be



The model is designed to predict the geographic distribution of copepods such as this one, which was collected near Monterey Bay. (Credit: Julio Harvey © 2010 MBARI).

predicted using existing models. But Messié's model is unusual because it shows in great detail where animals (in this case, copepods) are likely to congregate in and around upwelling areas.

Using a computer model to reproduce this process is a huge challenge. Most computer models of the ocean are extremely complex, incorporating many different factors about physical and sometimes biological processes that occur at various depths.

In contrast, Messié's new model is relatively simple. Yet it does a surprisingly good job at predicting the detailed locations of known hotspots around several of the world's most important upwelling areas.

At the core of the model is nitrate, an essential nutrient for diatoms and many other microscopic marine algae (also known as phytoplankton). Many phytoplankton need nitrate to grow. But diatoms proliferate only when there is a lot of nitrate in the sunlit surface waters.

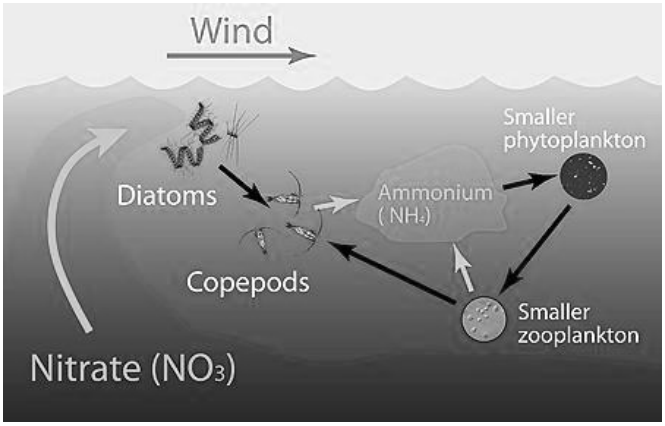
Lacking detailed data on nitrate concentrations at remote upwelling centers, Messié and her colleagues used generalized information about the amount of available in deep water in the various upwelling areas, combined with information about the local winds that bring this nitrate up toward the surface.

The model also takes into consideration ocean currents. "One of the things we learned in creating this model," Messié noted, "was how important ocean currents were in moving nitrate and algae within the ocean. At first we tried to do our own calculations of currents from generalized information about winds, but we eventually used an existing data repository that provided estimates of ocean currents based on satellite data."

The researchers first checked the model's results against field data collected off the coast of Central California by MBARI, the National Oceanic and Atmospheric Administration (NOAA), and the California Cooperative Oceanic Fisheries Investigations (CalCOFI).

According to Messié, "The model did a good job simulating overall patterns of phytoplankton succession, and differences between onshore and offshore populations." For example, the model predicted peak concentrations of copepods about 50 to 100 kilometers away from the coast–a phenomenon that was observed by CalCOFI zooplankton surveys in the region.

The copepod hotspots predicted by the model also matched krill hotspots identified during NOAA's field surveys. Krill tend to live in deeper water than copepods, where they might not be as affected by surface currents. For this reason, the researchers were initially surprised that krill would end up in the areas predicted as hotspots for copepods. But the finding makes sense when you consider that biological hotspots often host many different types of animals (seabirds, sea lions, and humpbacks, for example).



This diagram shows the key elements of Messié's hotspot model. Wind-driven upwelling brings nitrate to the surface, where it is consumed by diatoms and other phytoplankton (microscopic algae). Diatoms are in turn consumed by copepods, which excrete ammonium. This ammonium feeds smaller phytoplankton, which are consumed by smaller zooplankton (drifting animals). During this process, wind-driven ocean currents carry both the algae and the animals away from the shore. (Credit: Kim Fulton-Bennett © 2017 MBARI).

Messié notes that, as long as they can accurately simulate real-world conditions, smaller, simpler models have several advantages over larger models. For one thing, they take much less computer time to run (some large models take days or weeks to run, even on supercomputers). Smaller models can be run more or less in real time to study existing conditions and events while they are still occurring. They are also relatively easy to modify to test competing scientific hypotheses.

On the downside, Messié's current model is only designed to simulate conditions over an entire upwelling season (spring and summer in Central California). In addition, it cannot identify hotspots that form because of nitrate sources other than local upwelling. (The Gulf of the Farallones, just offshore of San Francisco Bay, might be such a place).

Messié, Chavez, and several collaborators at the University of California, Santa Cruz, recently received a $700,000, three-year grant from NASA to extend the existing model so that it can track or predict the evolution of hotspots on a month-by-month basis.

They also hope to find out how well their modeled zooplankton hotspots match with known hotspots for whales and seabirds. If the answer is "very well" then the model might be used to predict where whales and

seabirds aggregate at different times of year. This could help scientists studying the animals and conservation groups hoping to protect them, not to mention members of the public who want to know the best times and places for wildlife viewing.

Messié and Chavez's recent paper shows that, even in computer models, small can sometimes be beautiful!

https://www.mbari.org/new-model-predicts-locations-biological-hotspots-ocean/

Hundreds of Humpback Whales are Massing in a Tiny Spot of Ocean. Here's Why

By Elizabeth Pennisi

Oct. 27, 2017 — In the fall of 1990, a few humpback whales showed up off the coast of western South Africa where they had rarely been seen before. Over the next couple years, a few more showed up, then a few more. Today, nearly 200 of the giant ocean mammals mill around a piece of ocean smaller than a U.S. football field for several months out of the year. Now, scientists think they know what's luring what may be the largest global gathering of these cetaceans: masses of free food. Hungry humpbacks travel thousands of kilometers to feast on a rich buffet of tiny crustaceans called krill, researchers reported here this week at the biennial meeting of the Society for Marine Mammalogy.

Many animals are loath to change their behavior, particularly when it comes to food. But this—and several other studies reported here—reveals how readily humpbacks around the world come up with new hunting strategies, says Alexander Werth, a marine biologist at Hampden-Sydney College in Virginia who was not involved with the work. It also speaks to the ability of these animals to learn from each other and to develop efficient ways to eat.

Marine biologists Mduduzi Seakamela of the National Department of Environmental Affairs in Cape Town, South Africa, and Kenneth Findlay at the Cape Peninsula University of Technology, also in Cape Town, didn't know all this for sure when they recruited graduate student David Cade to help them pin down what the whales were doing off their coastline. With the proper permits in hand, Cade—a Stanford University student who works at the Hopkins Marine Station in Pacific Grove, California—helped them outfit a dozen whales in the area with the research equivalent of a Go-Pro, a video camera that came with a motion detector and a depth finder. Together, these instruments revealed what the whales were doing underwater. What's more, the ship where the researchers were working could monitor the density of prey in the water underneath it, so Cade could figure out what the whales were eating.

Most of the time, the density of krill was random, and the whales' feeding activity was slow and steady. But one afternoon, the whales all converged on one place where there was a really high density of prey—a 40-meter-thick swath of water with 107 grams of krill per cubic meter, as opposed to the average density of 66 grams per cubic meter, Cade reported at the meeting.

Once the whales had homed in on this smorgasbord, they did something no one had witnessed before. Under normal circumstances, groups of two or three whales tend to dive in synchrony across tens of square kilometers to hunt for food. During such dives, they lunge about 32 times per hour, accelerating quickly to suck in all the food and then spending about a minute between each lunge underwater. But in this dense patch of food, a free-for-all ensued. The whales were practically on top of each other, lunging about 53 times an hour and with barely half a minute's rest.

"Basically they are just opening their mouths," Cade said. The whales fed for a few hours that way, then split up into smaller groups and dispersed, he reported. That a simple change in the concentration of food could lead to such unusual behavior speaks to how prey density can drive the evolution of new hunting strategies, Cade suggested. It also suggests that some interesting communication is going on among the whales, as somehow ever more have learned that—for stuffing their faces—South Africa is the place to be.

Humpbacks elsewhere have gathered for other types of feasts, says Martin Biuw, a marine biologist at the Institute of Marine Research in Tromsø, Norway. Since 2010, he's noticed groups of two dozen humpbacks temporarily in the local fjord, where herring have swum up in huge numbers to stock up for subsequent migrations south. "It could be that any time you have this mass abundance of prey," he says, "we have supergroups and we just haven't seen them before."

Several other unusual feeding behaviors were discussed at the meeting: Working with Japanese researchers, Biuw documented humpbacks that hang out under fishing boats to nab dead fish. And Christie McMillan, a marine biologist at the Marine Education and Research Society in Vancouver Island, Canada, has been tracking the spread of a new feeding behavior among humpbacks living off Vancouver Island. In 2011, two were seen hanging out at the

surface with their mouths open, seeming to flick in small fish. As of 2015, 16 individuals are practicing this "trap feeding," she reported at the meeting.

"It never ceases to amaze me how full of surprises humpbacks are," Werth says. "They are so incredibly resilient."

http://www.sciencemag.org/news/2017/10/hundreds-humpback-whales-are-massing-tiny-spot-ocean-here-s-why

How Not to Kill an Albatross

By Ashley Braun

Nov. 13, 2017 — On April 11, 2011, a seabird drowned in fishing gear off the coast of Oregon. While this happens quite often, the death of this particular bird—an endangered short-tailed albatross inadvertently hooked by commercial fishermen—set off an alarm bell heard by researchers and regulators alike.

"It kind of woke everybody up," says Edward Melvin, a fisheries scientist with Washington Sea Grant. It also eventually led researchers to recognize that fishermen held one surprisingly simple solution to an ongoing by-catch problem—albatrosses getting caught in fishing gear.

Albatrosses are known to swoop into the sea to steal bites off a descending fishing line's baited hooks. The birds get snagged and drown, often enough to be a worrisome trend. Between 2010 and 2013, an estimated 50 to 215 of a different albatross species—the black-footed albatross—were hurt or killed each year by commercial fisheries off the Washington, Oregon, and California coasts. Most of the deaths were caused by the black cod fishery's longline hooks, confirming what Melvin and his colleagues had previously predicted.

But when a black cod fishing boat hooked a short-tailed albatross, it spurred regulators in the United States to take a closer look at ways to avoid seabird deaths in this fishery.

Melvin and his colleagues figured they were already on the right path. The year before the short-tailed albatross's death, they had begun a bird-deterrent study with seven black cod longline fishing vessels. The focus was on a technology known as streamer lines that is already required on fishing vessels in Alaska.

Streamer lines hang from a high point on a boat and drag behind it. Thin, orange tubes dangle from the lines and deter the seabirds. These frilly streamers are "sort of a mobile scarecrow," Melvin says. In Alaska, research shows that towing a pair of streamer lines can drop seabird by-catch by 88 to 100 percent.

Bringing this technique south seemed like a no-brainer, and in 2014, the US National Oceanic and Atmospheric Administration (NOAA) proposed requiring streamer lines on larger vessels in the black cod longline fishery. NOAA and its partners also held workshops to hand out free streamer lines and teach fishers how to avoid accidentally catching albatrosses.

But just because a solution works in one place doesn't mean it will transfer to another. In Alaska, fishers deploy longlines with weights that quickly pull hooks to the seafloor where black cod and other ground fish live. The few hooks that are near the surface are protected by streamers. But in Oregon, some fishermen intersperse those weights with floats along their lines to keep the hooks just above the seafloor, and away from pesky hagfish and sand fleas. Unfortunately, these floats also cause the hooks to sink more slowly—keeping them within albatross striking distance for longer than with a weighted line alone.

Tony Pettis, a black cod fisher of roughly 20 years, attended one of Melvin's workshops in Newport, Oregon, in 2014. Like most fishermen there, Pettis used floated longlines on his vessel, the *Heidi Sue*, and he knew a better, easier way to avoid albatross by-catch.

"I stressed to Ed that we've been doing this a long time and we've already found ways to avoid catching the albatross," Pettis said. "We just set [our gear] at night."

Albatrosses are visual hunters that mainly search for food during the day. By dropping their baited longlines before dawn, Pettis and other fishermen would dodge peak albatross mealtimes. Intrigued, Melvin's team turned to by-catch data gathered by fisheries observers aboard west coast vessels to see whether Pettis's approach held up. It did.

Birds interpret streamer lines as a barrier separating them from the baited hooks below. (Credit: Ed Melvin/Washington Sea Grant).

"The by-catch rates were 30 times lower at night than during the day," says Melvin, who was surprised by the difference. In addition to catching fewer albatrosses, the black cod they caught were more often the right target weight. In all, fishers kept 40 percent more catch when they set their hooks at night. Plus, researchers didn't see a jump in by-catch of other species, or an increased risk to the safety of fishermen from working in the dark. As Melvin puts it, this one simple shift achieved "the rare win-win that everybody dreams about in the conservation world."

Pettis is glad the science proved him and his fellow nighttime fishermen right. He says he'd rather fish at night than use streamer lines, which can sometimes become tangled in his gear. And he may soon have his way. Based on Melvin's research, NOAA and the US Fish and Wildlife Service are now recommending that fishermen have the option of fishing at night instead of towing streamers to avoid hooking albatrosses. At a November 18 meeting, the Pacific Fishery Management Council will consider turning that recommendation into regulation.

Still, Pettis doesn't want to push any one technique on fishermen elsewhere. Instead, he emphasizes the importance of giving fishermen like him a voice—because they just might know something the researchers don't.

https://www.hakaimagazine.com/article-short/how-not-kill-albatross

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WHALE STRIKES FAR EXCEED BODIES

By Anna Guth

Aug. 31, 2017 — Most whales sink when they die, disappearing without leaving researchers a clue as to the cause of their death. But a study published last week by Point Blue found that the number of whales dying in West Coast waters due to ship strikes is far greater than scientists previously estimated.

Using a new naval encounter model and focusing on three species, the study identified the exact locations and probabilities of fatal ship strikes—which are the number one cause of death for blue and fin whales and the second for humpback whales in the coastal region.

"Shipping moves 90 percent of the world's commerce, and it's an industry that's only growing," Cotton Rockwood, a marine ecologist and the senior author of the study, said. "We are not suggesting that we need to stop all shipping or even eliminate the occurrence of ship strikes, but we certainly need to understand this problem better. If the strikes are as high as our model predicts and shipping continues to increase, there's a chance it could lead to declines."

Point Blue scientists found that each year, 18 blue, 22 humpback and 43 fin whales die off the West Coast from strikes during peak feeding time, from June to November. Those numbers are far greater than the average number of whales found washed ashore as the result of collisions.

They are also far above the maximum numbers that the National Marine Fisheries Service says can die of unnatural causes without impacting their optimal population sizes. The so-called potential biological removal numbers are 2.3 individuals for blue whales, 11 for humpbacks and 16 for fin whales.

Researchers also discovered that although shipping lanes are the areas of greatest risk for the three species, the majority of strikes happen outside of those lanes. "We did not have that data before, and it means that we can't just focus on shipping lanes to mitigate whale deaths. This data shows that efforts have to be much more comprehensive," Mr. Rockwood said.

Five or six years ago, the Cordell Bank and Greater Farallones National Marine Sanctuaries spearheaded efforts to alter shipping routes based on known whale habitat and to establish voluntary speed reductions in and out of San Francisco Bay.

Between May and November, through published and broadcast notices to mariners, NOAA asks vessels of a certain size—300 gross tons or larger—to slow down. By reducing speed to 10 knots from the usual 15 or 20 knots, whale mortality rates go down significantly—even when an individual is hit.

In 2016, 27 percent of the shipping companies the sanctuaries contacted were cooperating, up from 18 percent the year before. "And this year, we are experimenting with monetary incentives," Maria Brown, superintendent of the Greater Farallones Marine Sanctuary, said. A ship can receive $250 for slowing down as it transits between Long Beach and San Francisco and $1,000 when approaching or leaving each port for a maximum total of $2,500, she said.

"Yet there's still room for protective action to be taken on the part of managers and of industry," said John Calambokidis, a research biologist with Cascadia Research Collective, which collaborated on the study. Dr. Calambokidis began documenting blue whale behaviors and populations in the Greater Farallones in 1986 and then expanded his efforts across the entire West Coast.

Thanks to Cascadia Research's photo database, over 3,000 blue whales in California can be identified

just by distinguishing markings. One of those photographs identified the blue whale that washed up on Agate beach in Bolinas three months ago, based on distinguishing markings on her fluke. The female was first identified off California in 1999 and was subsequently seen in 11 different years, mostly in the Santa Barbara channel.

"By tracking these whales over so much time, you start not just seeing the larger issue of ship strikes, but rather individuals that you have encountered on many different occasions. There's a more personal connection," Dr. Calambokidis said. He added that the Point Blue study was much more comprehensive than anything attempted previously in the West Coast.

The model developed for the study had three essential parts—encounter risk, strike risk and mortality estimation—and each part was predicated on the previous part. Though Point Blue's past marine research has related primarily to the areas within the two local marine sanctuaries, this study included waters offshore from California, Oregon and Washington.

Researchers used a combination of databases from multiple sources. To calculate spatial patterns of ship speed, draft, count and track distance, they used automatic identification system data from the Bureau of Ocean Energy Management and NOAA. For whale data, they used habitat density models developed by NOAA that demonstrate the distribution and concentration of whale populations.

Within the most biologically signifigant marine areas that were studied, they found that ship strikes have the greatest impact on humpbacks from the Greater Farallones to Monterey Bay, while the greatest strike risk for blue whales is between Santa Monica Bay and Long Beach. Fin whales tend to be less concentrated and swim the waters that are further offshore. The report noted that fin whales may present challenges in balancing mitigation strategies with the other two species because shifting vessel traffic could elevate fin whale strike risk.

While more specific priority areas exist for each species, a portion of the studied area has a high mortality rate for all three: the vast majority of whale deaths fall within certain areas of Central and Southern California. Focusing on avoiding these areas in particular could be a good first step in reducing strikes for all the species.

Now, Point Blue plans to test how to minimize ship strikes and reduce whale mortality by modifying shipping lanes, developing shipping reduction guidelines for areas further offshore and suggesting areas to be avoided around feeding hotspots. It will also study the impact of the speed reductions within the next year.

https://www.ptreyeslight.com/article/whale-strikes-far-exceed-bodies

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Our Southern Resident Orcas are Headed for Extinction

By Brian Preston

Oct. 27, 2017 — On Sept. 19, 2017 a young orca, J52, born in 2015 and in orca terms still a toddler, disappeared from the J pod of the southern resident killer whales who make their summer home in the Salish Sea. The last time he was observed was with his mother and presumed father off Port Renfrew on Vancouver Island's southwest coast. He was suffering from severe "peanut head," a condition associated with imminent death from malnutrition. At this time of year, he and his pod should have been further up the Strait of Juan de Fuca feasting on the annual run of Chinook salmon that account for 80 per cent of the their diet. But the Chinook run failed utterly to appear this year, driving the whales far afield to the open ocean to look for food.

On Sept. 25, a brief Canadian Press story, serving as an obituary of sorts, appeared in the Vancouver Sun to mark J52's passing. Of the six whales born in 2015 — creating optimistic talk of a "baby boom" — he was the third to die. Three adults have also died since then, and no new babies have survived. The southern residents are now reduced to 76 members. A longer story about J52 appeared in the online Seattle Post-Intelligencer, under a headline drained of all optimism: "Another orca calf is dead — these killer whales are in the sunset of their existence." The PI article was essentially a rewrite of a press release from Ken Balcomb, founder and lead scientist at the Center for Whale Research on San Juan Island. The Center has been studying whales intensely for 42 years, and according to its website has created an "unprecedented baseline information on the whales' population dynamics, health, demography, social structure, and individual life histories." Thanks to the Center's research, more detail is known about the endangered southern resident killer whales than any other group of marine mammals in the world.

The Center's homepage radiates positivity and hopefulness, with a stunning photo of a breaching whale overlaid with the slogan "Research + Action = Recovery," but the media release below it is much more doom and gloom. Balcomb writes, "This population cannot survive without food year-round — individuals metabolize their toxic blubber and body

Granny, the matriarch of the J pod and thought to be more than a century old, died nearly a year ago. Without action to protect its food supply, the rest of the pod might not survive the current century. (Credit: Stefan Jacobs/Alamy Stock Photo).

fats when they do not get enough to eat to sustain their bodies and their babies. Your diet doctor can advise you about that. All indications… are pointing toward a predator population that is prey limited and non-viable. Our government systems steeped in short-term competing financial motives are processing these whales and the salmon on which they depend to extinction…. If something isn't done to enhance the SRKW prey availability almost immediately (it takes a few years for a Chinook salmon to mature and reproduce, and it takes about twelve years for a female SRKW to mature and reproduce), extinction of this charismatic resident population of killer whales is inevitable in the calculable future."

Reached by phone at his home in Friday Harbor, Balcomb sounds heavy-hearted and weary when discussing the whales' chances of recovery. Asked if he's seeing malnutrition across the board in the southern population, he says it's hardest on the females and babies. "They have the highest energetic demand, and they're the ones that are showing the problems first, either with lactation or in gestation. Only two males are reproductively active in this population for the past 25 years, I mean very active — they produce over 80 per cent of the calves. All the rest of the males are just mouths to feed. With mothers and offspring dying, the bias toward males is getting greater, and this is not helpful."

Asked if the press release about J52 is the most pessimistic thing he ever wrote, he says, "It's not a pleasant scenario, and we're going to try not to bum everybody out, but I really don't know what to do. The Fraser River, even 10 years ago, was still supporting enough fish so that killer whales were coming in here from May to September, and even into the fall, but that Fraser River stock, and especially the Chinook, have just been decimated. More than decimated."

Due to what? "The clarity of that is obfuscated by agendas: first we have the fishing interests, sport fishing and commercial, which are huge, and those people are the ones that vote, and have money, and they want to catch fish. Then there's the Tribes, the First Nations, who also want to keep the pressure on for catches. Then you have the energy companies that want to lay pipelines and further degrade habitat. In fact, that's what's driving the DFO [the Department of Fisheries and Oceans], with all their workshops and ministerial announcements, where they state that 'We are going to have no more net loss of habitat.'" He laughs ruefully. "Well, having no more net loss isn't going to accomplish recovery. It's already not doing it, the fish are already not making it, so these are platitudes."

In Vancouver in mid-October the DFO, as part of the federal Liberal government's "Oceans Protections Plan," hosted a symposium to discuss the plight of the southern resident orcas. The main upshot from the government's point of view was a plan to spend $7.2 million studying the effect of ship noise on the whales' ability to hunt for food. Balcomb is not impressed. "That is one of the obfuscating issues," he says. "The whales don't give a shit about noise, they want fish. Noise does not interfere with them catching fish. The whales are not catching fish because the fish aren't there. The whales will ride the bow waves of oil tankers. Noise is not the issue. Its an issue that gets money right now because you have it brought up as 'Oh well, these whales can't find food in a noise field.' Well that's a crock of shit. They can find fish under a seiner when a seiner is making a hell of a lot of racket, if the fish are there… This is just the crowning pile of crap, pointing to hydrophone systems listening to whales, and no net noise increase, as a solution, as a way they're going to spend all this money to save the southern residents. Well that's just *wasting* the money."

So what does need to be done? "Habitat restoration of the Fraser River ought to be seriously looked at. They need to recover that system." He mentions a recent Simon Fraser University study showing agricultural floodgates along the river are being left shut when they should be open, severely impeding the movement of juvenile salmon. The floodgates "are so rusted-up that they don't even work any more, so basically we're going to piss away X million dollars on sound issues, and not fix floodgates that are part of the problem in the salmon habitat. We're going to

keep on issuing permits for shoreline developments, including industrial ones, even though we know the salmon are not surviving in the current situation."

At the end of the DFO's killer whale symposium in Vancouver, seven Canadian environmental groups, including the David Suzuki Foundation, the West Coast Environmental Law Association, the World Wildlife Fund Canada and the Raincoast Conservation Foundation, issued a joint statement accusing the federal government of failing "to identify concrete actions to ensure the recovery of the endangered killer whales." The groups listed six actions that need to be taken, among them closing Chinook fisheries and creating marine refuges that restrict human access to key whale feeding grounds. Also called for is action to restrict and reduce noise levels. Misty MacDuffee of the Raincoast Conservation Foundation agrees with Balcomb that food supply is the number one issue, but when food is scarce, then boat noise can interfere with the whales' ability to find and catch it.

MacDuffee gives some credit to the government for bringing stakeholders together at the Vancouver symposium, but chides them for "putting all these issues on the table and acting as if they are all new. We know DFO researchers have released papers and submitted findings to the Pacific Salmon Commission, showing how closing fisheries can increase survival rates. We know that even closing fisheries on the Fraser River and Puget Sound can take whales from a declining annual growth rate to a growing annual growth rate. That's their own scientists, but they have hidden this stuff." She sees new government money for noise studies as "a tactic to delay." She says DFO knows that fishery closures are needed, but "the holdup is political will. We need to be talking compensation for fishing communities that are going to see closures, and there isn't the political will to do it. Those are very powerful industry lobbies, both the whale watching associations and the commercial and recreational fishing lobby. The whale watchers are all about food supply, and the fishing community wants them to look at noise and disturbance. As long as there is no agreement they can just keep delaying."

Raincoast announced today the release of a peer-reviewed paper in the journal Scientific Reports, estimating that the southern residents have a 25 per cent chance of going extinct in the next 100 years, and suggesting that a 30 per cent increase in Chinook populations is required for their survival. Various other scenarios are also estimated: for example, a 15 per cent increase in Chinook coupled with a 50 per cent reduction in marine noise might also be sufficient.

DFO did not respond in time to a request for comment on this story, but the Tyee did connect with Richard Beamish, an emeritus scientist listed on the DFO website as head of salmon interactions, coastal and oceanic ecosystems. Beamish is a Coho specialist, but knows enough about Chinook to say they've been in serious decline everywhere, including Russia, which accounts for 10 per cent of the world's Chinook catch and more than 50 per cent of the overall Northern Pacific salmon catch (Canada accounts for only three per cent overall). In other words, it's not just the Fraser River and Puget Sound that are seeing Chinook declines, it's planet-wide. Others have suggested that among salmon species, Chinook may be more susceptible to climate change, and our warming, acidifying oceans. Oddly enough, as Beamish points out, "Pacific salmon in general are probably doing better than they have in recorded history. We are getting record catches of pink salmon in the North Pacific, especially in odd numbered years. [Pink and Chum] are doing quite well, but that's not what the general public understands."

Beamish remains optimistic the Chinook fishery can be "rebuilt to higher abundances." Asked to respond to those who suggest complete closure of the fishery is required, he says, "That's a social issue, really. There are other people who depend on Chinook salmon, so I can't comment on that."

Orcas are long-lived animals. Asked to imagine, given current human behaviors continuing into the future, what the southern resident population is likely to look like in 50 years, Balcomb says, "This is a slow-motion extinction program. Fifty years from now you might have 26 whales around, and they're all either unable to reproduce or post-reproductive."

One can imagine a day, decades from now, when the Salish Sea is largely barren of salmon, that the whale watching boats will pull up at the feeding grounds and dump a bunch of fish over the side to sustain a dependent remnant of whales, much like the staff at Sea World do now for captive orcas. Tourists will snap photos of the last of the southern residents, and the government of the day will call for further study.

https://thetyee.ca/News/2017/10/27/Southern-Resident-Orcas-Extinction/

WHALES, SEA TURTLES THREATENED BY TRUMP ADMINISTRATION PROPOSAL TO FEDERALIZE WEST COAST DRIFT GILLNET FISHERY

Oct. 31, 2017 — The Trump administration proposed a rule today to federalize regulation of drift gillnets used to catch swordfish on the West Coast. The rule would end California's right to prevent the deadly entanglements of sea turtles, whales and dolphins in these underwater, mile-long nets.

The Obama administration last year proposed a rule that would shut down the fishery for two years if two large whales or sea turtles were harmed by the nets, but the Trump administration withdrew that proposed rule in June. Legislation to phase out drift gillnets was introduced in California in 2014 and 2016, and the new federal rule would preempt such efforts in the future.

"The Trump administration is seizing control of this fishery to stymie efforts to protect sea turtles, whales and dolphins from these deadly nets," said Catherine Kilduff, a senior attorney with the Center for Biological Diversity. "This cynical move perpetuates the status quo. Leatherback sea turtles, humpback whales and sperm whales have to dodge this dirty fishery when they need to feed in the rich waters off California."

The new proposal to federalize oversight was recommended in March by the Pacific Fisheries Management Council, which manages fisheries in California, Oregon and Washington. The recommendation was opposed by the California Department of Fish and Wildlife, Lt. Gov. Gavin Newsom, U.S. Rep. Jared Huffman (D-San Rafael) and a coalition of more than 15 environmental groups, including Turtle Island Restoration Network and the Center.

"Trump's move to federalize the drift gillnet fishery is irresponsible and puts reasonable resource management and the well-being of our ocean ecosystem at serious risk," said Cassie Burdyshaw, advocacy and policy director at Turtle Island Restoration Network. "Drift gillnets are walls of death that need to be phased out, not shielded from reasonable state regulations."

https://seaturtles.org/newssection/whales-sea-turtles-threatened-by-trump-administration-proposal-to-federalize-west-coast-drift-gillnet-fishery/

Killer Whale catching Common Murre on Oct. 5, 2017. (Credit: Daniel Bianchetta).

SIGHTINGS

Sightings are compiled by Monterey Bay Whale Watch. For complete listing and updates see *http://www.montereybaywhalewatch.com/slstcurr.htm*

Date	#	Type of Animal(s)
10/31 9 am	19	Humpback Whales
10/30 9 am	16 35 2	Humpback Whales Risso's Dolphins Harbor Porpoise
10/29 1 pm	12 10	Humpback Whales Harbor Porpoise
10/29 9 am	22 5 100	Humpback Whales Pacific White-sided Dolphins Risso's Dolphins
10/29 8 am	15	Humpback Whales
10/28 2 pm	6	Humpback Whales
10/28 1 pm	5	Humpback Whales
10/28 9 am	5	Humpback Whales
10/28 8 am	2	Humpback Whales
10/27 2 pm	9	Humpback Whales (lunge-feeding and breaching)
10/27 9 am	2 100	Humpback Whales Risso's Dolphins
10/27 8 am	13 200	Humpback Whales Risso's Dolphins
10/26 2 pm	11	Humpback Whales
10/26 9 am	15 2	Humpback Whales Harbor Porpoise
10/26 8 am	26	Humpback Whales

10/25 2 pm	11 12	Humpback Whales Risso's Dolphins
10/25 9 am	18 12	Humpback Whales Risso's Dolphins
10/24 2 pm	11	Humpback Whales
10/24 9 am	19 1 40	Humpback Whales Gray Whale Risso's Dolphins
10/23 2 pm	10 40	Humpback Whales Risso's Dolphins
10/23 9 am	15 110	Humpback Whales Risso's Dolphins
10/23 8 am All Day	37 50	Humpback Whales Risso's Dolphins
10/22 2 pm	7	Humpback Whales
10/22 1 pm	4	Humpback Whales
10/22 9 am	12	Humpback Whales
10/22 8 am	8	Humpback Whales
10/21 2 pm	12	Humpback Whales
10/21 1 pm	8	Humpback Whales
10/21 9 am	13 4 175 2	Humpback Whales Killer Whales Risso's Dolphins Black-footed Albatross
10/21 8 am	4 125 1	Humpback Whales Risso's Dolphins Black-footed Albatross
10/20 9 am	12	Humpback Whales
10/19 2 pm	12	Humpback Whales
10/19 9 am	13 2	Humpback Whales Harbor Porpoise
10/19 8 am	11 7	Humpback Whales Harbor Porpoise
10/18 2 pm	7	Humpback Whales (double breach)
10/18 9 am	15 10 150 1	Humpback Whales Pacific White-sided Dolphins Risso's Dolphins Mola Mola (Ocean Sunfish)
10/18 8 am	15 15 45	Humpback Whales Pacific White-sided Dolphins Risso's Dolphins
10/17 2 pm	3	Humpback Whales (friendly juvenile rolling by the boat and lunge feeding)
10/17 9 am	20 150	Humpback Whales Risso's Dolphins
10/17 8 am	30 6	Humpback Whales Risso's Dolphins
10/16 2 pm	13 2	Humpback Whales Harbor Porpoise
10/16 9 am	2 4 60 5	Humpback Whales Killer Whales Risso's Dolphins Harbor Porpoise
10/15 2 pm	26 4	Humpback Whales Killer Whales
10/15 9 am	17 40	Humpback Whales Risso's Dolphins
10/15 8 am	17 30	Humpback Whales Risso's Dolphins

10/14 2 pm	11 14	Humpback Whales Risso's Dolphins
10/14 1 pm	11	Humpback Whales
10/14 9 am	28 15	Humpback Whales Risso's Dolphins
10/14 8 am	23	Humpback Whales
10/14 7:30 am All Day	39 100 45 1	Humpback Whales Risso's Dolphins Dall's Porpoise Mola Mola (Ocean Sunfish)
10/13 2 pm	7	Humpback Whales
10/13 9 am	35 350 1000s	Humpback Whales Risso's Dolphins Sea Lions
10/13 8 am	22 50	Humpback Whales Risso's Dolphins
10/12 9 am	12	Humpback Whales
10/12 8 am	8 2 1	Humpback Whales Harbor Porpoise Sea Lion eating salmon
10/12 8 am All Day	7	Humpback Whales
10/11 9 am	14 3	Humpback Whales Harbor Porpoise
10/11 8 am	15 3 1	Humpback Whales Harbor Porpoise Elephant Seal
10/10 2 pm	11	Humpback Whales
10/10 9 am	20	Humpback Whales
10/10 8 am	26	Humpback Whales
10/9 2 pm	12 2	Humpback Whales Harbor Porpoise
10/9 9 am	16 50 7	Humpback Whales Risso's Dolphins Harbor Porpoise
10/9 8 am	14	Humpback Whales
10/8 9 am	7 5	Humpback Whales Harbor Porpoise
10/8 8 am	8	Humpback Whales
10/7 2 pm	6 3	Humpback Whales Harbor Porpoise
10/7 1 pm	6 2	Humpback Whales Harbor Porpoise
10/7 9 am	8 1 180 40 10	Humpback Whales Killer Whale Risso's Dolphins Long-beaked Common Dolphins Northern Right Whale Dolphins
10/7 8 am	10 1 95 100 10	Humpback Whale Killer Whale Risso's Dolphins Pacific White-sided Dolphins Harbor Porpoise
10/7 8 am All Day	21 1 1,500 500 250 20 5	Humpback Whales Killer Whale Risso's Dolphins Pacific White-sided Dolphins Long-beaked Common Dolphins Northern Right Whale Dolphins Dall's Porpoise

American Cetacean Society
Monterey Bay Chapter
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