

Soundings



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

FEBRUARY 2017

**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**

**MEETING DATE:
Thursday, February 23, 2017
Time: 7:30 PM**

PLEASE JOIN US AT 7:00 FOR REFRESHMENTS

Speaker: Dr. Baldo Marinovic

Dr. Baldo Marinovic, a research biologist at UCSC's Institute of Marine Sciences, studies zooplankton ecology and the dynamics of ocean food webs. Since 1997, he has been conducting surveys in Monterey Bay to understand what determines the distribution, abundance, and species composition of krill, tiny shrimp-like invertebrates that are a crucial link in the Bay's food web.

Krill are an important food source for many species of fish and seabirds, as well as for the Bay's largest visitors, the majestic blue, fin, and humpback whales.

Marinovic's research has led to a better understanding of what makes Monterey Bay such a productive and biologically rich ecosystem.

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

Next month: Our next meeting will be at Hopkins Marine Station Boatworks Hall at 7 PM on Thursday, March 30. Please save the date and join us!



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A blue whale's feeding lunge captures a swarm of krill. (Credit: Doc White/Seapics.com).

Specialist for The Greater Farallones NMS. 2017 Self Published.

Go Deeper: The Seven Ages of Water, by Dr. Wallace J. Nichols. 2017.

Thoreau and the Language of Trees, by Richard Higgins (Author) and Robert D. Richardson (Foreword). 2017 University of California Press.

WHY DO KILLER WHALES GO THROUGH MENOPAUSE? MOTHER-DAUGHTER CONFLICT IS KEY

Jan. 12, 2017 — Killer whales are one of only three species that are known to go through menopause, surviving long after they've stopped reproducing. Those older females play an essential role in helping their younger family members to find food and survive even in lean times. But, researchers report in *Current Biology* on January 12, the reason older females stop reproducing has more to do with conflict between mothers and their daughters than it does with cooperation.

According to the new evidence, when older females do reproduce alongside their daughters, their young calves are more likely to die. Under those circumstances, it's better evolutionarily speaking for older females to stop reproducing themselves and invest in helping their younger family members succeed.

"Our previous work shows how old females help, but not why they stop reproducing," says Darren Croft of the University of Exeter. "Females of many species act as leaders in late life but continue to reproduce. Our new work provides a mechanism that can explain why old females stop [reproducing] -- they lose out in reproductive competition with their daughters."

Female killer whales typically start reproducing by age 15. They stop reproducing in their 30s or 40s, but they can live to be more than 90. Earlier studies by the research team from the University of Exeter, University of York, and Center for Whale Research showed that older (post-reproductive) females play an important leadership role that benefits the family group. But the benefits of helping younger, related females alone didn't seem to be enough to fully explain why those older whales would go through menopause and stop reproducing themselves.

Earlier theoretical work by study co-authors Mike Cant, University of Exeter, and Rufus Johnstone, University of Cambridge, suggested that conflict between generations may help to explain why humans go through menopause. According to the

Feb. 11: Presentation by Photographer Frans Lanting and his partner Chris Eckstrom: Journeys To The Ends Of The Earth. Two shows: 3:00 PM and 7:00 PM, at the Rio Theatre in Santa Cruz. Tickets on sale at Brown Paper Tickets at: <http://seymourcenter.brownpapertickets.com/>.

Feb. 19: Science Sunday at the Seymour Center in Santa Cruz. Presentation by Nick Holmes, Director of Science, Island Conservation: "Island Conservation: Preventing Extinctions by Removing Invasive Species." 1:30 PM - 2:30 PM.

Feb. 21: Presentation at the Bay Model Visitor Center in Sausalito, CA by Dr. Wallace Nichols: "Go Deeper: The Seven Ages of Water." Hosted by ACS San Francisco Bay Chapter. 7:00 PM - 9:00 PM.

Feb. 22-25: Pacific Seabird Group 44th Annual Meeting in Tacoma, Washington: "Sound to Sea: Marine Birds Across the Seascape."

Feb. 24: Talk by David Lentink at Hopkins Marine Station: "Biological Flight as an Inspiration for Engineering Design." 12:00 PM - 1:00 PM.

Mar. 16: Presentation by Salvador Jorgensen of the Monterey Bay Aquarium, from 4:00 PM to 5:00 PM: Tracking Great White Sharks in the White Shark Café. Presentation will take place at Moss Landing Marine Labs. For more information go to: mlml.calstate.edu.

Apr. 13: Presentation by Douglas McCauley at the Channel Islands National Park Robert J. Lagomarsino Visitor Center in Ventura, CA: "Marine Defaunation: Animal Loss in the Global Ocean." 7:00 PM.

Jul. 13: Presentation by John Calambokidis McCauley at the Channel Islands National Park Robert J. Lagomarsino Visitor Center in Ventura, CA: "Whale Protection and Vessel Speed Reduction in the Santa Barbara Channel." 7:00 PM.

BOOK RECOMMENDATIONS

The Giant Ocean Coloring Book: What the Ocean Taught Me About Art, by Peter Winch, Education

American Cetacean Society – Monterey Bay



This photograph shows two killer whales. (Credit: Kenneth Balcomb, Center for Whale Research).

"reproductive conflict" hypothesis, women in ancestral human social groups become more closely related to those around them with age. That trend predisposed older females to stop reproduction and invest in late-life helping. In contrast, young women are predicted to invest in competitive effort to reproduce. Cant and Johnstone later suggested that the same might be true among killer whales.

To test the "reproductive conflict" hypothesis in the new study, Croft, Cant, Johnstone, and their colleagues from the University of York, Center for Whale Research, and Fisheries and Oceans Canada relied on a unique long-term dataset on wild resident killer whales of the Pacific Northwest. The empirical data confirmed that older females are more closely related to their kinship group than younger females are. New theoretical work by the authors predicted that this imbalance between generations means that -- when older and younger females breed at the same time -- selection will favor younger females that invest more in competition. Likewise, it's better for older females -- those younger females' mothers and grandmothers -- to compete less and cooperate more.

Using 43 years of demographic data on resident killer whales, Croft and colleagues found evidence in support of this prediction. When mothers and daughters breed at the same time, the calves of the old-generation females are 1.7 times more likely to die than the calves of younger females.

The bottom line, Croft says, is that menopause is no accident. Rather, it's an evolved trait driven by both cooperation and conflict in family groups. The findings help to explain factors that are driving the whales' survival and reproductive success, which is essential information given that the Southern Resident killer whales -- one of the whale populations under

study -- is listed as endangered and at risk of extinction.

Croft says they now plan to use drones to look more closely at the behavioral interactions among individuals.

"We want to understand how old and young females are behaving in ways that impact the survival of their calves," he says. "For example, who are individuals sharing food with and when are they sharing it? Who is doing the babysitting? By getting a bird's eye view, we will be able to transform our understanding of the social lives of these amazing animals."

Support for this research was provided by a grant from the Natural Environment Research Council, and data collection was supported in the Southern resident population by funding from Earthwatch Institute and NOAA Fisheries, and in the Northern resident population by the Fisheries and Oceans Canada Species at Risk Program.

<https://www.sciencedaily.com/releases/2017/01/170112130137.htm>

NATIONAL SEAFOOD RULE COULD PREVENT MARINE MAMMAL DEATHS...IF IT'S NOT REVOKED

By Carl Safina and Erica Cirino

Jan. 27, 2017 — When fishers dip their nets, trawls, traps and hooks into the sea they often catch a lot more than the seafood they intended: All types of sea creatures, mostly fish but also marine mammals, are caught and killed in fishers' gear. By some estimates, up to forty percent of what is hauled out of the sea each year is unintentionally caught "bycatch," totaling 63 billion pounds.

This month the world's largest seafood importer—the United States—is strengthening its seafood import policy with a new rule in an effort to reduce the impact of bycatch on global marine ecosystems. The U.S. National Oceanic and Atmospheric Administration (NOAA) is tasked with enacting this rule, which requires countries exporting seafood to the United States to prove their seafood was caught using approved commercial fishing technologies designed to prevent bycatch.

"By asking other countries to meet standards that are equivalent in effectiveness to U.S. standards (with respect to marine mammal bycatch in fisheries), rather than lowering U.S. standards to remain competitive in a global marketplace, this rule is good for U.S. fisherman and good for conservation," says Rob Williams, marine mammal conservation biologist at

University of Saint Andrews' Sea Mammal Research Unit and author of a new paper evaluating the new rules.

In his paper, Williams and his co-authors argue the new rule has the potential to significantly diminish the present bycatch of marine mammals globally. They argue that the new rule regulating bycatch of marine mammals has the potential of "spilling over to other areas of marine governance." Researchers say this rule will only help if other countries have the enforcement capacity to comply.

Exporting countries will have five years to develop a plan for complying and apply for a permit to ship fish to the U.S.

Williams and his co-authors point out that the success or failure of the new rule is reliant on the accuracy of exporting countries' fisheries reports.

"If NOAA places the burden of proof too low, the rule may be meaningless," says Williams. "If placed too high (e.g., requiring surveys, monitoring and mitigation programs that countries cannot afford), this rule may create an incentive for countries to simply shift their seafood markets to countries with lower environmental standards than the US."

Despite a few possible snags in the new rule, fisheries experts largely agree if it's implemented properly it will provide an overall benefit to ocean conservation. According to Elizabeth Brown-Hornstein, former Safina Center Research Scientist and Sustainable Seafood Program Director, it's an opportunity for the U.S. to "level the playing field" in bycatch policy worldwide.

"Countries that want to import seafood to the U.S. will need to monitor fisheries interactions with marine mammals and when needed, develop bycatch reduction plans," says Brown-Hornstein. "It will provide benefits to marine mammal populations

across the globe."

With the new Trump administration promising to halt and defund many federal environmental programs, the fate of this new conservation rule is uncertain. It has great potential to prevent unnecessary marine mammal deaths if it's not revoked.

<http://voices.nationalgeographic.com/2017/01/27/national-fishing-rule-could-prevent-marine-mammal-deaths-if-its-not-revoked/>

WORLD'S MOST ENDANGERED MARINE MAMMAL DOWN TO 30 INDIVIDUALS

By Virginia Morell

Feb. 1, 2017 — The vaquita, a small porpoise found only in Mexico's Gulf of California, now faces extinction, scientists say in a report published today. Only about 30 individuals remain, according to an acoustic survey that counted the animals' clicking noises last summer. The report dashes hopes that naval patrols and Mexico's emergency gillnet ban, authorized in May 2015, would halt the vaquita's precipitous decline. The numbers also add new urgency to a controversial plan to capture some of the remaining animals for a captive breeding program, scientists say.

"The situation is completely out of control," says Lorenzo Rojas-Bracho, a cetacean expert at the National Institute of Ecology and Climate Change in Ensenada, Mexico, and member of the International Committee for the Recovery of the Vaquita, an international advisory group to the Mexican government. "Of course, there's a risk in capturing the vaquitas. But it's clear now that they will be killed [in gillnets] anyway."

A 2015 survey estimated the vaquitas at about 60 individuals. They're dying out because they get trapped in illegal gillnets, many set to catch another endangered species, the totoaba fish. The fish's swim bladder commands extraordinarily high prices (sold for as much as \$100,000 on the black market, according to a report last year from the Environment Investigation Agency) in China and some other Asian markets, where it is erroneously thought to help with a range of ailments from liver disease to arthritis. The demand has so far proved impossible to control, says Rojas-Bracho, adding that criminal organizations now control the totoaba fishery.

Efforts to develop alternative gillnets that the vaquitas could escape (as exist now for sea turtles) have also failed, largely because of opposition from and sabotage by suspected totoaba fishers, Rojas-Bracho says. And the 2016 agreement between Mexican President Peña Nieto and former U.S. President Barack Obama to permanently ban gillnets



Trawling vessel pulling up its catch in the high Arctic. (Credit: Carl Safina).

throughout the vaquitas' range has not changed local fishers' behavior so far.

Vaquitas are shy and rarely seen, but they make clicking noises while hunting. To track their numbers, scientists deployed a grid of 46 click detectors for 60 days throughout the animals' range in the summer of 2016, using the same sites they'd monitored in 2015. The team also added detectors at 47 new sites in areas where vaquitas spend most of their time. In the 46 standard sites, the number of recorded vaquita clicks per day dropped by 44% from 2015 to 2016, indicating a 49% decline in the cetaceans' population. The clicks recorded at the additional sites did not alter this grim statistic, or the final conclusion: Vaquitas will be extinct in a few years.

In a last-ditch effort to save the species, the scientists will attempt to capture an unspecified number of vaquitas in October. Hoping to avoid frightening the porpoises, the recovery team plans to use bottlenose dolphins from the U.S. Navy Marine Mammal Program to spot them in the gulf's dark waters. The vaquitas are familiar with dolphins, which also inhabit the gulf.

Although details remain to be worked out, the naval trainers say through a spokesperson that they will use standard operant conditioning techniques (think clicker-trainer with your dog) to teach the dolphins to locate the vaquitas. The training will teach the dolphins to use their sonar to seek out "air-filled lungs." After a dolphin identifies a target, it will learn to touch a plate on the side of the boat to alert its handler, and then swim in the direction of the animal and leap in the air. The dolphins have already completed a successful test run, locating harbor porpoises, which are about the same size as vaquitas, in San Francisco Bay.

In the real event, after a dolphin spots a vaquita, members of the recovery team will head toward the porpoise in a small boat, equipped to bring the animal on board. "We have no idea of how they will react," says Jonas Teilmann, a cetacean biologist at Aarhus University in Denmark, who helped develop methods for working with harbor porpoises, another species that scientists had difficulty keeping alive when captured because they often stopped breathing. "Based on our work with harbor porpoises, we know we must watch their blowhole, and monitor their heart rate." When porpoises dive, Teilmann explains, the water pressure on their breastbone, which is softer than ours, tells them to stop breathing so that they do not drown. Unfortunately, when removed from the water and placed on a hard surface, the cetaceans also experience this pressure through gravity—a sensation



Vaquitas die when trapped in gillnets. (Credit: Flip Nicklin / Minden Pictures / National Geographic Creative).

they've never felt before—and often automatically stop breathing. Teilmann's team discovered that putting the porpoise on a stack of thick baby changing pads somehow removes that pressure, and the cetaceans begin breathing normally again.

Rojas-Bracho and the team wish that they could begin the capture and breeding program sooner. Unfortunately, the legal curvina fishing season is to open shortly. Between 600 and 1000 permits may be given, says Rojas-Bracho, who calls the action "madness," particularly because it is not yet clear whether the gillnet ban will continue to be enforced. Illegal totoaba nets remain a danger, too. Indeed, already this year, a fisherman showed Rojas-Bracho a photo of another dead vaquita in a gillnet. "If there were 30 at the end of last summer, there are probably fewer now," he says.

"We wish we could leave them in the wild," Teilmann adds. "But right now there's no other way to stop their extinction."

<http://www.sciencemag.org/news/2017/02/world-s-most-endangered-marine-mammal-down-30-individuals>

SOUTHERN RESIDENT KILLER WHALE POPULATION IS RUNNING OUT OF SALMON, RUNNING OUT OF TIME

By Carl Safina

Jan. 31, 2017 — The Southern Resident killer whales are starving to death. Seven members of the critically endangered population died in 2016, including Granny, the oldest killer whale in the world and the leader of the Southern Residents. This unique community of whales only eats fish, a cultural tradition passed down for thousands of years from mother to young. At an estimated 105 years old, Granny was the keeper of knowledge; she knew where to find salmon in times of plenty, and where to look for them in leaner years. Recently, every year has

been a lean year, and the Southern Resident whales have been spread far and wide in search of salmon, but Granny was always in the lead.

Southern Resident killer whales evolved side-by-side with salmon in the Pacific Ocean. They learned to select the best and fattiest of fish, the Chinook salmon, and discovered the best locations and times to find these Kings, committing that knowledge to memory and passing it along down generations. Even as Chinook salmon populations have plummeted in the Northwest, the Southern Resident killer whales stick to their traditions and follow their elders, and continue to visit the mouths of specific rivers when the salmon are running.

But now, they're running out of fish, and running out of time. Critically endangered and faced with a multitude of threats, and now without their venerated leader, this population of killer whales lives on the brink of extinction. The Southern Residents need an abundant and widely available distribution of Chinook salmon throughout the year, in the entire extent of their range, not just in the fraction that federal agencies have designated as summer critical habitat.

The Columbia River Basin used to provide those abundant Chinook runs for the Southern Residents. The whales were, and still are, regular visitors to the mouth of the Columbia from January to April, ready for the historic huge runs of Spring Chinook to begin their upstream battle to return to the place of their birth. The Snake River Basin once produced half of the nearly two million Spring Chinook that flooded through the mouth of the Columbia every year. The habitat they were returning to, thousands of miles of wilderness and cold, spring-fed rivers and streams, is still in excellent condition. But now the salmon can't get there. Their access is hindered, by four dams on the lower Snake River, now the focus of salmon advocates throughout the Northwest. The historic productivity of the habitat behind these dams and its protected status gives scientists hope for salmon recovery, even in a world of climate change. But this habitat doesn't do the salmon any good if they can't get there. These four dams must be removed to give Snake River salmon their best shot at recovery.

And for the Southern Residents to have *their* best shot at recovery, they need those salmon. Killer whales don't have freezers; they can't stock salmon away for leaner times. If you're a killer whale looking for food, timing is everything, and over thousands of years they learned when and where the best salmon runs in the region were happening.

Snake River Spring Chinook, with their formerly huge run sizes and high fat content, used to provide

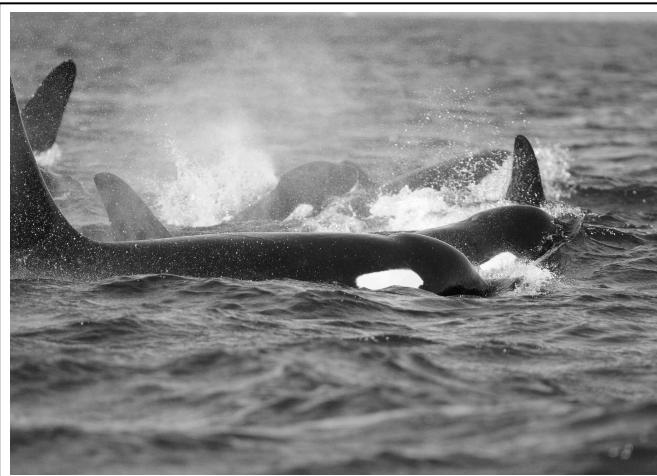
the Southern Residents with much-needed winter food. But today, the numbers for Spring Chinook are way down, even when hatchery fish are added in.

At best, hatcheries are keeping the problem from getting worse, but they're not meeting the Southern Residents' nutritional needs. The Southern Resident killer whale population is in dangerous decline, and current salmon numbers are nowhere near enough to help them even start to recover.

The narrow focus of the federal agencies on simply maintaining current salmon numbers – far below the historic runs of millions of salmon that the Southern Residents evolved alongside of – ignores the critical question of what these whales actually need, which is "a lot more Chinook than we have now." With seven whales lost last year, the status quo is already failing these whales.

That's where those four lower Snake River dams come in. A new court ruling, handed down last May, ordered federal agencies to re-examine hydropower operations on the Columbia and Snake Rivers. Scientists and advocacy groups across the nation and throughout the Northwest are calling for action on those four salmon-killing dams. To save the salmon, we must restore access to that pristine, protected wilderness behind the lower Snake River dams. To save the Southern Residents, we need that salmon. Two icons of the Northwest, their identities linked to each other, and to the place they call home. It's up to us to make sure they can keep calling it home for the next thousand years. Granny may be gone, but her library of knowledge was passed on to her family, and they'll continue to visit the Columbia River in search of salmon, remembering the once vast quantities like an echo from the past.

The federal agencies need to hear from you on



Killer whales off San Juan Island, Washington State. (Credit: Carl Safina).

this issue. Tell them to consider the science, stop relying on outdated information, and step up to save salmon and killer whales, before it's too late for both.

Sign a petition from Whale and Dolphin Conservation (WDC) at <http://us.whales.org/campaigns/migration-nation-0> to demand that the federal agencies consider the Southern Residents and their need for healthy, abundant, and available salmon runs from the Snake River:

<http://voices.nationalgeographic.com/2017/01/31/southern-resident-killer-whale-population-is-running-out-of-salmon-running-out-of-time/>

NORTH COAST STELLER IPA

In Support of Marine Mammal Research

Our location, on the northern California coast, is in close proximity to the migratory path of gray whales and the southern habitat of orcas. The plight of Steller sea lions and their declining populations is an issue that resonates with us. This is also the birthplace of whale activism. In the spirit of the Mendocino Whale Wars of the late 1960s and early 70s, North Coast Brewing is pledging our support to marine mammal research conducted in coastal areas throughout the Pacific.

For every case of North Coast Steller IPA sold, North Coast Brewing makes a contribution to marine mammal research. For information on the organizations we support, please visit our website.

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<http://www.northcoastbrewing.com/beers/year-round-beers/north-coast-steller-ipa/>

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)
1/6 1:30 pm	15	Gray Whales
1/6 10 am	6	Gray Whales
	2	Humpback Whales

1/5 10 am	6	Gray Whales
1/4 10 am	4	Gray Whales
	4	Humpback Whales
1/3 10 am	8	Gray Whales
1/2 1:30 pm	6	Gray Whales
1/2 10 am	6	Gray Whales
1/1 10 am	2	Humpback Whales
12/31 1:30 pm	11 6-8 1 1	Gray Whales Fin Whales Mola Mola (Ocean Sunfish) Black-footed Albatross
12/31 11:30 am	3 9 1	Humpback Whales Gray Whales Fin Whales
12/31 10 am	13 2 1	Humpback Whales Gray Whales Mola Mola (Ocean Sunfish)
12/31 8 am	5 5 500	Humpback Whales Gray Whales Pacific White-sided Dolphins
12/30 1:30 pm	17 1 50	Gray Whales Blue Whale Risso's Dolphins
12/30 10 am	3 3 300 40	Humpback Whales Gray Whales Pacific White-sided Dolphins Risso's Dolphins
12/30 7 am	1 6 80 40 25	Humpback Whale Gray Whales Pacific White-sided Dolphins Risso's Dolphins Northern Right Whale Dolphins
12/29 1:30 pm	6 6 450 20	Humpback Whales Gray Whales Pacific White-sided Dolphins Risso's Dolphins
12/29 10 am	3 6 1000	Humpback Whales Killer Whales Pacific White-sided Dolphins
12/29 7 am	7 300	Gray Whales Pacific White-sided Dolphins
12/28 1:30 pm	13	Gray Whales
12/28 10 am	11	Gray Whales
12/27 1:30 pm	4 1 1 300 100 1	Humpback Whales Gray Whale Fin Whales Pacific White-sided Dolphins Northern Right Whale Dolphins Black-footed Albatross
12/27 10 am	6	Gray Whales
12/22 1:30 pm	6 3 100	Humpback Whales Gray Whales Pacific White-sided Dolphins
12/22 10 am	8 2 150	Humpback Whales (2 breaching) Gray Whales Risso's Dolphins
12/21 1:30 pm	3 150	Humpback Whales Risso's Dolphins

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