

# Soundings



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

JUNE 2011

**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, JUNE 30, 2011**

**TIME: 7:30 PM. PLEASE JOIN US AT 7:00 FOR  
REFRESHMENTS**

**SPECIAL DOUBLE FEATURE:**

**First: Vaquita Marina, a High Density DVD  
Produced and Directed by Chris Johnson**

**Second: The Fabulous Fabio and Friends:  
Stories of Our Southern Sea Otters,  
a Power Point Presentation by Bob Mannix, Naturalist**

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Our First Feature is a 30 minute DVD about the story of the Vaquita. It contains some of the best shots available of Vaquitas in the wild, several informative interviews and it distills the significant issues surrounding the efforts to save the Vaquita from extinction.

Our Second Feature takes an up close and personal look at some of the Southern Sea Otters from Carmel Bay, Stillwater Cove and Elkhorn Slough.

Bob has been observing sea otters in the wild since 1999. Since 2008 he has taken a closer look at otters through the lens of a camera. His program will feature the story of Fabio, a split-home territory male from Stillwater Cove and Carmel Bay and the stories of some of Fabio's buddies/competitors.

Bob will also take us to Elkhorn Slough and share some photos and observations of the large raft of otters in the North Harbor and the otters in the pickle weed just east of Hwy. 1. Along the way, Bob will investigate one of the sea otter's latest challenges: fresh water blooms of cyanobacteria that produce harmful biotoxins or microcystins that affect otters in their marine habitat.

Please join us for this special Double Feature about the Vaquita and the Southern Sea Otter, two marine mammals fighting for the lives....

## CALENDAR

June 6-10: 6th Triennial Conference on Secondary Adaptations of Tetrapods to Life in Water. San Diego, CA. San Diego Museum of Natural History. Host committee include Annalisa Berta and Tom Demere.

July 19-Aug 18: CSUMB Marine Science Illustration. Tues, Wed, Thur. 9am-12pm. Instructor: Amadeo Bachar. For More Info Please Call 831-582-4500

### ***ACS Monterey Bay Chapter Great Blue Whale Search: Summer Whale Watch.***

***Saturday, July 30, 9 am-2pm***

Boat- Sea Wolf 2. Location- Monterey Bay Whale Watch. Cost-\$50. Join ACS Monterey Bay as we explore Monterey Bay for the biggest animal the earth has ever known-the Great Blue Whale. Blue Whales congregate in Monterey Bay in the summer to forage on the prolific aggregations of krill that aggregate in Monterey's Submarine Canyon. Monterey Bay is one of the best places in the world to observe blue whales with some summer time whale watches producing in excess of 50 individuals. Our trip will be joined by local cetacean experts and Monterey Bay's most knowledgeable captain Richard Ternullo. Other species we may encounter include Humpback Whales, Fin Whales, Minke Whales, Killer Whales, Dolphins, Black Footed Albatross and Leatherback Sea Turtles. For more info and reservations please contact Tony Lorenz at 831-901-7259

July 30th 8am-4pm: ACS LA Chapter Summertime Blues Fundraiser. Search For The Great Blue Whale In The Santa Barbara Channel. Boat-Condor Express, Santa Barbara, CA. For Reservations Please call Kaye Reznick at ACS National 310-548-6279

**Mark your Calendars! Please note that the annual ACS BBQ AT INDIAN VILLAGE will be held this year on SATURDAY AUGUST 6. Special this year will be a Fine Art Silent Auction. So save your spending money for sensational treasures! The regular stupendous RAFFLE will be held as usual with many more great items. See you there!**

Aug. 30th, 8am-4pm: ACS National Fundraiser: Blue Whales: Behemoths Of The Deep. Boat-Condor Express. Santa Barbara, CA. For Info and Reservations Please Call Kaye Reznck at ACS National 310-548-6279

### MLML Summer Marine Mammal Courses:

- 1-Techniques and Theories of Animal Training  
Bio 348. (July 11-17) Tuition \$585.00
- 2-Working with Marine Mammals  
Bio 347. (July 25-31). Tuition \$585.00

For more info about course details please contact Jenifer Zeligs, Ph.D Director of SLEWTHS at 831-771-4191 or go to [slewths.mlml.calstate.edu](http://slewths.mlml.calstate.edu)

Sept, 17<sup>th</sup>: 26th Annual California Coastal Cleanup Day

Nov 27-Dec 2: 19th Biennial Conference on the Biology of Marine Mammals. Tampa, Florida. More info will be forthcoming.

## GEEK SPEAK

ACS Monterey Bay has a new domain address for their website:

[www.acsmb.org](http://www.acsmb.org)

We are grateful to webmaster Evelyn Starr for her outstanding work on the website over the years.

## ***Dolphin Dash***



 American Cetacean Society

ACS Executive Director Cheryl McCormick will be running 50 miles around Monterey Bay on July 6 to raise money for her upcoming trip to the IWC meeting. She departs for the important meeting in Jersey, British Isles, the following day. Cheryl will be blogging from the International Whaling Commission during the 5-day meeting. Find her at [www.iwcblogger.wordpress.com](http://www.iwcblogger.wordpress.com) Donations to the Dolphin Dash are gratefully accepted at [acsonline.org](http://acsonline.org) or can be sent to the American Cetacean Society, PO Box 1391, San Pedro, CA, 90731-1391.

## OCEAN ON SONIC OVERLOAD

By Craig Welch, The Seattle Times

SEATTLE — For a decade, marine biologists have been trying to unravel the subtle ways sonar may harm whales and dolphins, which hunt and travel using echolocation.

But experts peeling back the role of sound in the marine world are making surprising observations.

Alongside a boom in international shipping and deep-sea oil development, the ocean is growing ever-noisier and scientists are increasingly wary of sound's potential to impact sea life beyond just marine mammals.

Herring and cod appear to alter their swimming patterns in response to noise from ships. Schools of bluefin tuna scatter, with some diving and others rising to the surface. Studies suggest even small bumps in ocean noise may affect everything from damselfish and pollock to octopus and squid.

"The new research has been an eye-opener," said Jason Gedamke, who runs the National Marine Fisheries Service ocean-acoustics program. The study of human-caused underwater noise pollution is in its infancy. For most creatures, it's too soon to say how much is too much.

But the issue is capturing attention at high levels. Among the last acts of the top two science advisers in the George W. Bush White House was a report recommending a decade-long research plan to grasp the "biologically significant effects" of marine noise.

Last year, leading experts on the sea's auditory environment compared the potential harm from ocean noise to Rachel Carson's 1962 plea to curb the use of toxic pesticides.

"Studies on the impact of pesticides on birds ... have curbed the prophesy of a 'silent spring,'" they wrote. More noise research will provide "a better alternative to waiting to see what happens to fish in the dim future of a 'noisy spring.'"

The Bush administration was responding largely to gridlock from fights over sonar's impacts on marine mammals. But it recognized that our understanding of sound in the sea was changing rapidly.

In the past decade, beaked whales washed ashore with bleeding around the brain shortly after

exposure to mid-frequency sonar. Researchers figured out that stranded bottlenose and rough-toothed dolphins often were nearly deaf. Dall's porpoises and killer whales were found to alter travel patterns during Navy exercises in Haro Strait.

Environmentalists repeatedly sued the Navy, but the precise science behind the impact on whales was often elusive.

Only this spring did new research finally suggest, for example, that Navy sonar may mimic sounds produced by predatory killer whales. That may drive prey such as beaked whales away from feeding areas — and send them rocketing to the surface, giving them the equivalent of the bends.

But this acoustic war over mid-frequency sonar masked another emerging issue.

At least 800 species of fish hear and produce sounds, either while fighting or competing for food or when courting or spawning. Some, such as herring and shad, can detect ultrasound, which may be how they avoid hungry whales. Even sharks, considered poor listeners, follow sounds, perhaps when they resemble noises made by wounded prey.

The noise pollution emanating from shipping lanes has increased more than tenfold since the early 1960s. While higher-frequency sonar may be harmful to animals nearby, the low-frequency groan from shipping and the deep-sea air guns used to build oil platforms and bridges can travel halfway around the world.

"Navy sonar got our attention, but now we're looking at low-frequency noise and thinking, 'Wow, this could be very important,'" said Aran Mooney, a zoologist with the Woods Hole Oceanographic Institution in Massachusetts.

Marla Holt, a marine biologist at the Northwest Fisheries Science Center in Seattle, said, "We've opened up this whole new area of research and are looking at acoustic exposure in new ways.

"Now, rather than the discreet, damaging event, it's that consistent, ubiquitous exposure that may be the most concerning," she said. The impact of sound varies by species. Goldfish have excellent hearing. Salmon and trout don't. Humpback, fin whales, right whales and bowhead generally flee all types of noise. But how important a sign is that, really? Does it mean animals are driven from

important feeding or mating grounds, or is it merely a nuisance?

A chief concern is the potential for "auditory masking." Killer whales, for example, have been shown to raise their voices when their group-specific calls are being drowned out by noise.

But is that as harmless as humans talking a little louder — or is it the equivalent of regularly screaming at the top range?

"Is there an energetic cost to all of this?" Holt said.

Scientists don't really know.

One of the most dramatic findings came just last month, when Spanish researchers captured cuttlefish, squid and octopus and exposed them to low-frequency sounds at low-intensity — similar to what may be found in shipping lanes. The animals developed lesions in nerve fibers within their sensory systems.

"What was surprising was just how massive the trauma was, and at small levels of exposure," said scientist Michel Andre, at Technical University of Catalonia in Barcelona, Spain.

It was the first evidence of significant harm to an invertebrate species that plays a key role in the ocean food chain.

"It was a cool first step. I think most people didn't really expect that," Mooney said. "But they made some mistakes. It needs to be repeated."

Popper was more blunt. The researchers, he said, made so many errors that he can't trust the findings. But Popper agreed the impact of noise on cephalopods like squid is a significant unanswered question. "It's really important," he said. Popper is focused largely on fish, studying noise impacts on them in lakes and rivers.

"The results I'm getting so far is that fish may be hurt a little, but it's more like getting a cut on your finger," Popper said.

Will that always be the case?

"I don't know," Popper said. "I don't know whether or not to be concerned because I don't have the data." At least not yet.

## SEABIRD FOSSIL FOUND NEAR HALF MOON BAY

David Perlman, Chronicle Science Editor

May 12, 2011

The wing bone of an extinct seabird, discovered only last year near Half Moon Bay, has added new clues to the saga of an ancient avian order that flourished around the world for more than 50 million years.

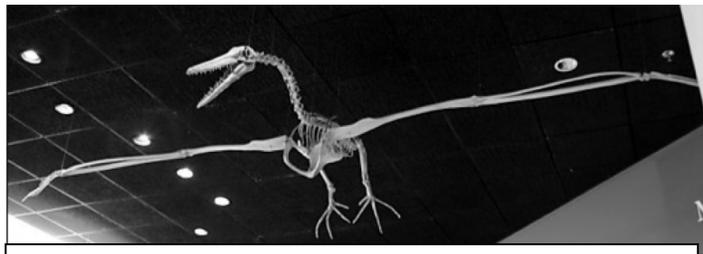
The 3 million-year-old fossil comes from a gigantic bony-toothed bird with an 18-foot wingspan that must have soared in huge numbers over the western edge of a young California, when the mountains of the Coast Range had not yet uplifted, and the Central Valley was still a vast marine embayment teeming with sea life, its discoverer said.

Robert W. Boessenecker, 25, who has hunted fossils throughout the Bay Area since childhood and is now a graduate student at Montana State University, reported his discovery this week in the *Journal of Vertebrate Paleontology* and described it in an

interview

with *The Chronicle* on Wednesday.

"This is the first fossil of this kind of bird younger than 10 million years old that's been reliably dated



*The Smithsonian National Museum of Natural History has a skeletal replica of the Pelagornis, one of the bony-toothed Pelagornithids. A rare bone fossil was found near Half Moon Bay. Photo: Ryan Somma*

anywhere in the world," he said.

The entire order of those birds was apparently driven to extinction by the same "climatic upheavals" and major changes in the world's oceans that had caused many other marine invertebrates to become extinct at the same time, he said.

"This is not just a huge bird, it's one of a really interesting and enigmatic extinct group," said Kevin Padian, a paleontologist at UC Berkeley who is a leading authority on dinosaurs, extinct birds and the origins of flight. "They're usually thought to be related to pelicans and other seabirds, but they have these bony toothlike projections on their jaws that were probably used for spearing fish.

"It's a beautiful fossil, and we're delighted to have it in our collection at the Museum of Paleontology, thanks to Bobby," he said.

The sedimentary rock where Boessenecker discovered the fossil is known as the Purisima Formation, the same shallow-water deposit of sedimentary rock that occurs along the coast from Point Reyes to Santa Cruz that formed roughly between 7 million and 2.5 million years ago.

"We find a lot of fossil whales and other intriguing fossils there," Padian said.

Boessenecker's discovery consists of only a single well-preserved wing bone about 15 inches long, but from its detailed fine structure, he was able to determine the exact type of extinct bird it represented. And because the rock where it lay between two ancient beds of volcanic ash had dates that are known, he could determine it was between 2.5 million and 3.3 million years old.

"It was last June," he said, "and I spotted this large hollow bone sticking out of some soft sandstone at the base of a 200-foot cliff near Half Moon Bay while I was actually looking for the fossils of whales and dolphins.

"It was hard to identify and at first I thought it was part of the lower jaw of a sperm whale - until I was able to clean it, study it and determine what it really was. That was pretty exciting."

The rock also held at least 27 other fossils, including long-extinct species of sharks, toothed whales, baleen whales, ancestral seals and other birds, he said.

His fossil comes from what is known scientifically as one of the Pelagornithids, birds perhaps distantly related to pelicans, cormorants, gannets and albatross. But this bird was far larger than any of them - with its 18-foot wingspan nearly twice the average 10-foot wingspan of modern albatross.

Boessenecker, who lives in Foster City and graduated from San Mateo High School, said he has been collecting and studying fossils since he was a kid - impelled to his fascination by his grandfather, who kept him and his brother digging for bones in their sandbox.

Although his main interest today is in fossil whales and porpoises, and his discovery of the fossil bird was a sidelight, he wrote the journal article with a colleague, N. Adam Smith, a specialist in fossil birds at the University of Texas at Austin..

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## **SHARK FIN BAN PASSES ASSEMBLY**

Marisa Lagos, Chronicle Staff Writer  
May 24, 2011

**Sacramento** -- The California Assembly overwhelmingly approved a ban on the sale and

distribution of shark fins in California, moving the state one step closer to outlawing an ancient Chinese delicacy and keeping alive a debate that has split the ethnic community.

The lower house approved the bill, AB376, on a 62-8 vote Monday afternoon after a long floor debate. If the measure is approved by the state Senate, shark fin soup - a popular tradition at Chinese celebrations including weddings - would be illegal in the Golden State beginning Jan. 1, 2013.

The law takes aim at a practice known as finning, in which a shark's fins and tails are cut off before the animal is thrown back into the ocean to die. Supporters say that businesses in California have skirted a U.S. law banning the practice by buying fins collected in international waters and noted the catastrophic collapse in the worldwide shark population in recent years.

"I knew when I accepted the responsibility (of authoring this bill) - I weighed the cultural implications versus the environmental concerns, and the environmental issues outweighed the cultural," said Assemblyman Paul Fong, D-Cupertino, who cited the sharks' position as a top predator.

"This is like a house of cards. Once we lose the top predator, we will watch the rest of the ocean collapse."

Opponents - including San Francisco Assemblywoman Fiona Ma - argue that the measure unfairly targets the Chinese community and say that existing laws are adequately protecting sharks. Assemblyman Mike Eng, D-Monterey Park (Los Angeles County), noted that California issues permits that allow fishermen to legally kill thousands of sharks each year.

"If sharks are an endangered species and are being imported illegally from abroad, why not start in California and ban the taking of sharks in California?" he said. "This unfairly targets one community, a community I represent ... and that brings into question the issue of fairness."

The measure is being pushed by environmental, animal rights and conservation groups, organizations that, combined, have contributed more than \$186,000 to Assembly lawmakers the past two years, according to information compiled by the nonprofit Maplight.org.

Opponents - including several Asian food and restaurant associations - have given about \$101,000 to Assembly members in recent years, the nonprofit found.

## WHALES HAVE ACCENTS AND REGIONAL DIALECTS: BIOLOGISTS INTERPRET THE LANGUAGE OF SPERM WHALES

ScienceDaily (May 12, 2011) — Dalhousie Ph.D. student Shane Gero has recently returned from a seven-week visit to Dominica. He has been traveling to the Caribbean island since 2005 to study families of sperm whales, usually spending two to four months of each year working on the Dominica Sperm Whale Project. One of the goals of this project is to record and compare whale calls over time, examining the various phrases and dialects of sperm whale communities.

When they dive together, sperm whales make patterns of clicks to each other known as "codas." Recent findings suggest that not only do different codas mean different things, but that whales can also tell which member of their community is speaking based on the sound properties of the codas. Just as we can tell our friends apart by the sounds of their voices and the way they pronounce their words, different sperm whales make the same pattern of clicks, but with different accents.

Caribbean and Pacific whales have different repertoires of codas, like a regional dialect, but the "Five Regular" call -- a pattern of five evenly spaced clicks -- is thought to have the universal function of individual identity because it is used by sperm whales worldwide.

These discoveries were recently published in the journal *Animal Behaviour*, in an article authored by University of St. Andrews PhD student Ricardo Antunes, Dal alumnus Tyler Schulz, Mr. Gero, Dal professor Dr. Hal Whitehead, and St. Andrews faculty members Dr. Jonathan Gordon and Dr. Luke Rendell.

Mr. Gero and Dr. Whitehead explain that the sperm whale's biggest threat is human pollution. Not only do humans introduce toxins into the ocean, but they also generate harmful sound pollution. Increased shipping traffic, underwater explosions caused by searching for oil, and military sonar all contribute to ocean noise that masks communication between whales. "No one wants to live in a rock concert," says Mr. Gero, adding that noise pollution is especially troublesome in the ocean because "it is a totally different sensory world." The sperm whales can dive to depths of over 1000 metres and depend on sound for communication and navigation in the pitch black of the deep water.

The Dominica Sperm Whale Project hopes to understand more about sperm whale society



*Fingers and her baby Thumb swim together off the coast of Dominica. (Credit: Photo courtesy of Shane Gero)*

because, as Mr. Gero says, "it is infuriating that we know more about the moon than the oceans." He hopes to communicate a better understanding of life in the oceans to people by using these beautiful whales as examples, and by placing an emphasis on "how similar their lives actually are to ours."

The whales live in matriarchal social units composed of mothers, daughters, and grandmothers. Once males reach adolescence, they are ostracized from the group and travel towards the poles until they are ready to breed. Consequently, little is known about the males, but the roles of females in relation to their young have been studied extensively by Mr. Gero and Dr. Whitehead. Female whales will baby-sit each other's offspring while mothers are diving, forming a strong community that revolves around the upbringing of calves. "They are nomadic," explains Dr. Whitehead, "so the most important things in their lives are each other."

Dr. Whitehead enjoys researching sperm whales because of their "fascinating and complex social lives." He hopes the Dominica Sperm Whale Project will be able to trace how whale communities change through time.

Part of Mr. Gero's PhD includes studying how calves acquire their dialect. Baby sperm whales babble at first, and Mr. Gero is interested in discovering how the babies' diversity of calls gets narrowed down to the family repertoire.

"One of the most exciting parts [of returning to Dominica] is to go down and see who's around," says Mr. Gero, admitting that he has "become attached to the individual whales." For the first time, sperm whales can be studied as individuals within families, with such lovable nicknames as

"Pinchy" and "Fingers." The family that includes these two whales is recognized as "the best studied social unit of sperm whales in the world."

Mr. Gero would like to continue working with the same groups of whales because a long-term project will offer a better understanding of their social developments. He "feels a responsibility to speak on [the whales'] behalf" and hopes to move toward conservation, while still remaining in the field of biology.

More information about the Dominica Sperm Whale Project can be found at: <http://whitelab.biology.dal.ca/dswp/>

## CURRENT AND FUTURE PATTERNS OF GLOBAL MARINE MAMMAL BIODIVERSITY

Quantifying the spatial distribution of taxa is an important prerequisite for the preservation of biodiversity, and can provide a baseline against which to measure the impacts of climate change. Here we analyse patterns of marine mammal species richness based on predictions of global distributional ranges for 115 species, including all extant pinnipeds and cetaceans. We used an environmental suitability model specifically designed to address the paucity of distributional data for many marine mammal species. We generated richness patterns by overlaying predicted distributions for all species; these were then validated against sightings data from dedicated long-term surveys in the Eastern Tropical Pacific, the Northeast Atlantic and the Southern Ocean. Model outputs correlated well with empirically observed patterns of biodiversity in all three survey regions. Marine mammal richness was predicted to be highest in temperate waters of both hemispheres with distinct hotspots around New Zealand, Japan, Baja California, the Galapagos Islands, the Southeast Pacific, and the Southern Ocean. We then applied our model to explore potential changes in biodiversity under future perturbations of environmental conditions. Forward projections of biodiversity using an intermediate Intergovernmental Panel for Climate Change (IPCC) temperature scenario predicted that projected ocean warming and changes in sea ice cover until 2050 may have moderate effects on the spatial patterns of marine mammal richness. Increases in cetacean richness were predicted above 40° latitude in both hemispheres, while decreases in both pinniped and cetacean richness were expected at lower latitudes. Our results show how species distribution models can be applied to explore broad patterns of marine biodiversity

worldwide for taxa for which limited distributional data are available.

Kaschner K, Tittensor DP, Ready J, Gerrodette T, Worm B (2011) Current and Future Patterns of Global Marine Mammal Biodiversity. *PLoS ONE* 6(5): e19653. doi:10.1371/journal.pone.0019653

**SIGHTINGS** compiled by Monterey Bay Whale Watch. For complete listing and updates see [www.gowhales.com/sighting.htm](http://www.gowhales.com/sighting.htm)

Date	#	Type of Animal(s)
6/2 a.m.	3	Humpback Whales
	25	Pacific White-sided Dolphins
	200	Risso's Dolphins
	1000	Northern Right Whale Dolphins
6/1 a.m.	8	Bottlenose Dolphins
	3	Humpback Whales
	65	Pacific White-sided Dolphins
5/31 a.m.	5	Risso's Dolphins
	3	Humpback Whales
5/30 p.m.	100	Risso's Dolphins
	3	Humpback Whales
5/30 a.m.	2	Humpback Whales
	1	Blue Whale
5/28 p.m.	100	Pacific White-sided Dolphins
	200	Risso's Dolphins
	20	Northern Right Whale Dolphins
5/28 a.m.	2	Humpback Whales
	20	Pacific White-sided Dolphins
	30	Risso's Dolphins
5/27 p.m.	5	Humpback Whales
	20	Pacific White-sided Dolphins
	100	Risso's Dolphins
5/27 a.m.	2	Humpback Whales
	75	Risso's Dolphins
	50	Northern Right Whale Dolphins
5/26 a.m.	2	Humpback Whales
	40	Pacific White-sided Dolphins
	100	Risso's Dolphins
5/25 p.m.	6	Humpback Whales
	3	Risso's Dolphins
	15	Humpback Whales
5/25 a.m.	50	Pacific White-sided Dolphins
	300	Risso's Dolphins
	20	Northern Right Whale Dolphins
5/24 a.m.	2	Humpback Whales
	100	Pacific White-sided Dolphins
	500	Risso's Dolphins
5/22 a.m.	100	Northern Right Whale Dolphins
	20	Risso's Dolphins
	30	Risso's Dolphins (4 calves)
5/21 p.m.	1	Large Mola Mola

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