Soundings

AMERICAN CETACEAN SOCIETY
Monterey Bay Chapter

MAY 2015

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

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, May 28, 2015
Time: 7:30 PM
PLEASE JOIN US AT 7:00 FOR REFRESHMENTS

Speaker: **Dr. Birgitte McDonald**
Vertebrate Ecologist, Assistant Professor, Moss Landing Marine Labs

Pushing the Limit: Diving Physiology and Energetics of Marine Mammals

Dr. Birgitte McDonald, who came to Moss Landing Marine Labs in January to take a position as an assistant professor of vertebrate ecology, will talk to us about the diving physiology and capabilities of marine mammals and their roles in the ecosystem. Specifically, she will discuss her recent research with California sea lions and harbor porpoises.

Using bio-loggers attached to animals, Dr. McDonald investigates how breath-hold divers manage their oxygen stores during natural dives. The research suggests that diving animals have the ability to regulate heart rate in relation to dive type, dive duration and activity. "Understanding the physiological mechanisms that determine the diving ability will allow us to predict how they will respond to changes in prey availability," she told a recent interviewer for the labs' Wave magazine.

Dr. McDonald started at Moss Landing after finishing studies of harbor porpoises in Denmark as a National Science Foundation International Research Fellow. She earned her master's from Sonoma State University, doctorate from UC Santa Cruz, and did post-doctoral research at Scripps Institution of Oceanography, studying oxygen management in sea lion foraging dives, before going to Denmark as an NSF researcher.

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

Next month: Scott Benson**,** leatherback sea turtle researcher for NOAA's Southwest Fisheries Science Center, will be our speaker at the June 25th meeting.

INSIDE THIS ISSUE

CALENDAR

May 2 - Jun. 14: 2015 Illustrating Nature Exhibit at the Pacific Grove Museum of Natural History. The work on display is by students in the Science Illustration program at CSUMB, one of the nations most prestigious science illustration programs.

May 15: Fishermen Selectivity: The Science of How to Engage the Best Fisheries for Bycatch Solutions. Presentation by Kiki Jenkins of the University of Washington. 12 PM – 1 PM at Hopkins Marine Station Boatworks Hall.

May 26: Imaging Saltwater Intrusion Along the Monterey Coast. Presentation by Rosemary Knight and Adam Pidlisecky. Talk and panel discussion at 7:30 pm at Hopkins Marine Station Boatworks Hall. Event is free, but registration is required. Please call 831-655-6200 to reserve a seat.

May 29: What's Ahead? A Look at a Few Big Issues for a Sustainable Ocean Future. Presentation by Denny Takahashi of the Moore Foundation. 12 PM – 1 PM at Hopkins Marine Station Boatworks Hall.

Jun. 15 – 21: Bio 348 - Techniques and Theories of Animal Training. SLEWTHS 2015 Summer Marine Mammal Course. This interactive class is designed to provide students with an in-depth understanding of animal training in both aquatic and terrestrial ecosystems. For more information please go to http://slewths.mlml.calstate.edu/

Jun. 29 – Jul. 4: Bio 347: Working with Marine Mammals. SLEWTHS 2015 Summer Marine Mammal Course. This course is designed to assist people who are interested in developing a career in marine mammalogy.

Jul. 11: International Save the Vaquita Day. Special events taking place worldwide, and ACS Monterey Bay will host event locally. Contact Diane Glim for more information at 831-214-1016.

Aug. 29: ACS National and ACS LA host Summertime Blues Whale Watch Fundraiser. This all day whale watch will search the Santa Barbara Channel aboard the *Condor Express* in search of both blue and humpback whales. For more info please contact Diane Alps at 310-597-0449.

BOOK RECOMMENDATIONS

The Biology and Ecology of Giant Kelp Forests, by David R. Schiel and Michael S. Foster. 2015 UC Press.

Marine Mammals Evolutionary Biology, 3rd Edition, by Annalisa Berta, James Sumich, and Kit M. Kovacs. 2015 Academic Press.

Sharing the Sea with Sharks, article by Ceridwen Dovey in the April 26, 2015 New Yorker Magazine.

American Cetacean Society
Monterey Bay Chapter

Annual Blue Whale Fundraiser

Saturday, June 27, 2015

This annual search for the world's largest animal will also be on the lookout for humpback whales, killer whales, dolphins, porpoises, pinnipeds and various early summer marine seabirds.

Cost: $55
Time: 9:00 am - 2:00 pm
Boat: *Sea Wolf 2* or *Black Fin*
Location: 84 Fisherman's Wharf, Monterey

For reservations call Monterey Bay Whale Watch at 831-375-4658.

All proceeds benefit ACS Monterey Bay

Mexico Finally Announces Gillnet Ban

New Optimism for the Future of the Vaquita

April 2015 — In July 2014, at the 5th Meeting of the International Committee for the Recovery of the Vaquita (CIRVA), it was estimated that the vaquita population had decreased to only 97 individuals, and the rate of decline had accelerated to an estimated 18.5% annually (CIRVA 2014). Recent evidence indicates that about 28 vaquitas (29% of the 2014 population) were killed in gillnets in the 2013/2014 period (Urrutia-Osorio et al. 2014). Despite CIRVA's strong and urgent call for an immediate ban on all gillnets in the vaquita's range, the Mexican government had not acted until recently. The shrimp gillnet fishery continued legally, and in 2013, it was discovered that illegal fishing with gillnets inside the Vaquita Refuge was taking place. In addition, the illegal gillnet fishery for totoaba, itself an endemic and endangered species, has apparently expanded (with demand coming mainly from China and exporting through the US), and is now fueling an even more drastic decline in vaquita numbers.

The vaquita population is now estimated at less than 83 individuals (perhaps much less), and is rapidly heading toward extinction. Valuable time has been lost, but there is finally some good news! In December 2014, the Mexican government announced a plan for a two-year ban on gillnets in the vaquita's range, following the recommendations of CIRVA. This was a critical step towards saving the vaquita from extinction. VIVA Vaquita! applauds Mexico for this, and strongly supports the measure! After several months of delays and what seemed like stalling, Mexican President Nieto held a press conference in San Felipe on 16 April. The establishment of the gillnet ban was announced and he showed off the new enforcement vessels and drones that will be used to enforce the ban by fisheries officials and the Mexican Navy.

This is the best news on vaquita conservation in years, and has brought renewed optimism to those of us working on the vaquita's survival. It means that a boycott and embargo on Mexican seafood may not be needed. However, it still remains to be seen whether the ban can be enforced effectively. Mexico depends on US seafood exports (which are a multi-billion dollar industry), and if the ban is not effective, then the US may still need to use its economic power to force their hand.

But for now, we should do everything we can to support the new initiative (while remaining cautiously optimistic). Support for fishermen who are willing to use alternative gear (i.e., less damaging than gillnets) is essential for the long-term survival of the vaquita, as well as other marine life in the Gulf of California. There are still questions to be dealt with, like what will happen after the two-year ban is over, and how can fishermen make a living in the long-term, once the payouts are expended? We believe the gillnet ban must be permanent, and enforcement must be swift and strong, so that the vaquita can recover. Only with such bold and decisive actions, can extinction of the vaquita in the next couple of years be averted.

http://www.vivavaquita.org/urgent-announcement.html

American Cetacean Society
Monterey Bay Chapter

Annual Chapter BBQ

Saturday, July 25, 2015

After last year's hiatus, we are ready to celebrate cetaceans at a new venue this year. Please join us for a fun afternoon with great people, good food and a fabulous raffle & silent auction at George Washington Park in Pacific Grove.

What: BBQ and Raffle
Menu includes grilled tri-tip, chicken, sausage, salads, beans, rolls and cake.
Water, soft drinks and coffee
BYOB and table setting

Where: George Washington Park picnic grounds in Pacific Grove

Time: 3-6pm

Cost: Please send payment of $20 per person to ACSMB, P.O. Box HE, Pacific Grove, CA 93950

Questions? Call the Ternullos at 831-373-4281

Blue Whales Lack the Ability to Avoid Cargo Ships, Says Stanford Biologist

By Bjorn Carey

May 4, 2015 — For millions of years, blue whales have cruised the world's oceans with hardly a care, their sheer size making them largely free from predator attacks. The downside to being the largest animals in history, however, is that the species was never pressured to evolve defensive behaviors.

Now, the first direct observations of blue whales attempting to avoid cargo ships suggest that this lack of an evasive response might make the whales particularly susceptible to deadly collisions.

"It's not part of their evolutionary history to have cargo ships killing them, so they haven't developed behavioral responses to this threat," said Jeremy Goldbogen, an assistant professor of biology at Stanford's Hopkins Marine Station, and the senior author on the study. "They simply have no compelling response to avoiding these dangerous ships."

The study, published in *Endangered Species Research*, could help improve methods to protect blue whales and other marine animals from deadly ship collisions.

Collisions with ships are a major threat to whales and pose a significant threat to the recovery of some endangered populations. Efforts to reduce collisions have mostly involved placing speed limits on ships passing through busy whale habitats or rerouting shipping channels around these areas altogether.

However, a critical piece of information needed to make these decisions and evaluate their effectiveness is currently lacking: direct knowledge of how whales behave once they sense an oncoming ship.

To fill that gap, Goldbogen and colleagues from several academic institutions headed to Long Beach, California, home of one of the busiest shipping ports in the world and also a hotspot for blue whales. Just a few miles offshore, the continental shelf drops off and there is a huge upwelling of nutrients that attract krill, a favorite food of blue whales.

The scientists used suction cups to adhere GPS (global positioning system) and dive-logging units to blue whales, and then tracked their movements for 24-hour periods. The scientists then cross-referenced this data with boat traffic, including the tonnage and speeds of ships passing through the area.

In this first run of the experiment, the researchers observed 20 ship passages with nine individual whales, at distances ranging from 60 meters to more than 3 kilometers. In each of these instances, the whales exhibited behavior similar to the "startle response" that scientists observe during the tagging process, in which the whales essentially "play dead."

"Blue whales have a subtle and not very convincing ability to get out of the way of oncoming ships," said Goldbogen. "Instead of diving, where the animal kicks tail up and goes down vertically, they just sink horizontally. This results in a slow dive and leaves them susceptible to ship strikes."

A whale must dive 30 meters below the surface to escape the suction created by a ship's propeller. In the study, the whales sank at about a half a meter per second and showed no evidence for swimming laterally to avoid the ship. In most cases, this was barely fast enough to get out of the ship's way.

This is just the first step in figuring out the behavior of whales in the context of heavy shipping traffic, Goldbogen said. The research team is already planning a second round of tests in which the GPS units will remain attached to the whales for several weeks, and will extend to species such as humpback whales. With more data about both whale behavior and the frequency of near misses, Goldbogen hopes to be able to make a compelling recommendation to pleasure boaters and the shipping industry for how to minimize the risk of collisions.

http://news.stanford.edu/news/2015/may/whales-ships-collisions-050415.html

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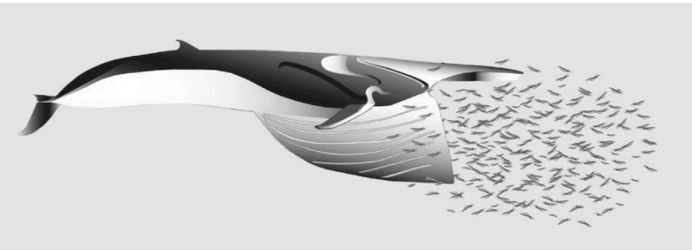
Gigantic Whales Have Stretchy 'Bungee Cord' Nerves

May 4, 2015 — University of British Columbia (UBC) researchers have discovered a unique nerve structure in the mouth and tongue of rorqual whales that can double in length and then recoil like a bungee cord.

The stretchy nerves explain how the massive whales are able to balloon an immense pocket between their body wall and overlying blubber to capture prey during feeding dives.

"This discovery was totally unexpected and unlike other nerve structures we've seen in vertebrates, which



Expansion of the ventral grooved blubber during a fin whale lunge is shown. (Credit: University of British Columbia).

are of a more fixed length," says Wayne Vogl of UBC's Cellular and Physiological Sciences department.

"The rorquals' bulk feeding mechanism required major changes in anatomy of the tongue and mouth blubber to allow large deformation, and now we recognize that it also required major modifications in the nerves in these tissues so they could also withstand the deformation."

In humans, stretching nerves usually damages them. In these whales, the nerve cells are packaged inside a central core in such a way that the individual nerve fibers are never really stretched, they simply unfold.

"Our next step is to get a better understanding of how the nerve core is folded to allow its rapid unpacking and re-packing during the feeding process," says UBC zoologist Robert Shadwick.

The researchers don't know yet whether anything similar will turn up in other animals -- the ballooning throats of frogs, for example, or the long and fast tongues of chameleons.

"This discovery underscores how little we know about even the basic anatomy of the largest animals alive in the oceans today," says Nick Pyenson, a UBC postdoctoral fellow currently curator of fossil marine mammals at the Smithsonian's National Museum of Natural History. "Our findings add to the growing list of evolutionary solutions that whales evolved in response to new challenges faced in marine environments over millions of years."

The findings are reported in *Current Biology. R*orquals are the largest group among baleen whales, and include blue whales and fin whales. Specimens the researchers studied were obtained at a commercial whaling station in Iceland.

http://www.sciencedaily.com/releases/2015/05/150504130512.htm

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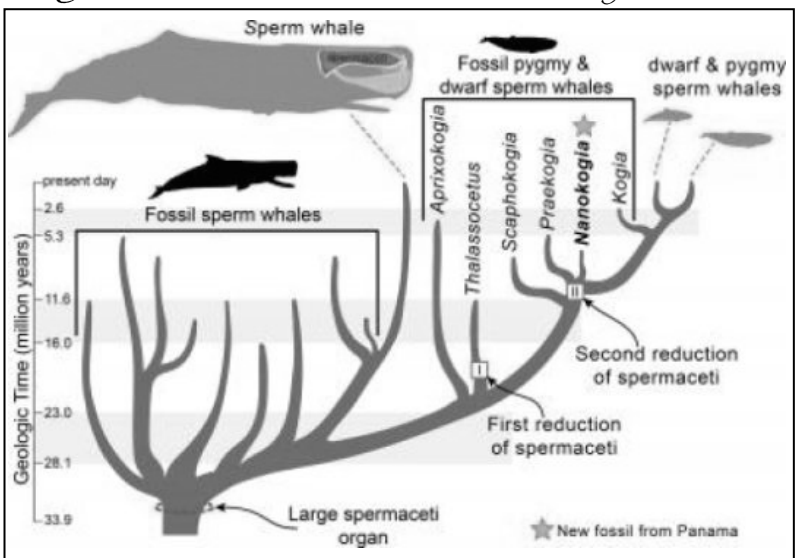
Rare Whale Fossil Found in Panama Clarifies Evolution of Sperm Whale

Apr. 29, 2015 — Almost since the time of Melville's epic hunt, scientists have been fascinated by the remarkable attributes of the sperm whale and its kin, the smaller pigmy and dwarf whales. Capable of diving to great depths and gifted with an acute sense of echolocation, these animals have remained inseparable from maritime lore.

An international team of scientists, led by the Natural History Museum of Los Angeles County's Curator of Marine Mammals Dr. Jorge Velez-Juarbe,



This is the evolutionary tree of sperm whales, showing the relationships of extinct and living species, and when reduction of the spermaceti organ took place. (Credit: Natural History Museum of Los Angeles County).

has discovered a new species of an extinct pigmy sperm whale from Panama that clarifies key aspects of the evolution of these magnificent animals. The report published in the journal *PLOS ONE* reveals an unexpected level of complexity in the evolution of the spermaceti of these whales, an organ located within the head that plays a key role in the generation of sound and in the whale's capacity for echolocation.

Whales, dolphins, and porpoises have a long fossil record, which documents the evolutionary journey from terrestrial ancestors to the fully marine organisms of today. Such a record has enabled scientists to better understand how changes in climate and continental distribution have transformed the marine ecosystems and the diversity life forms that they host. Yet, the poor fossil record of the smaller relatives of the well-known sperm whale, the 8- to 12-foot-long pigmy and dwarf sperm whales, has limited our understanding of the evolution of these mysterious animals.

Discovered and studied by a team of scientists from the NHM, Iowa State University, and the Smithsonian Tropical Research Institute, the new Panamanian fossil whale affords fresh evidence to this old problem.

"The new discovery gives us a better understanding of the ancient distribution of these poorly known relatives of the sperm whale," said Dr. Velez-Juarbe. "Previously we knew of similarly-aged pigmy and dwarf whales from Baja California and Peru, but this new fossil fills in an important geographic gap in the group's ancient distribution."

The new whale species, named *Nanokogia isthmia* after the Isthmus of Panama, is known from the well-preserved skulls of two individuals, which remains were unearthed at a sea cliff along the Caribbean coast of Panama and from rock layers dated to about 7 million years ago. "Our study is part of a larger scientific effort aimed at understanding the changes in the marine habitats that resulted from the complete closure of the Isthmus of Panama," said Dr. Velez-Juarbe, referring to the separation between the eastern Pacific Ocean and the Caribbean Sea that took place sometime within the last 10 million years.

These rare fossils are among a handful other fossil whales known from Panama, where fossil hunting is often difficult due to the dense vegetation and thick soils that often covers the surface. Resurrected from their million-year-old entombment, the new fossils tell us that the evolution of characteristics related to sound emission and echolocation was far more complex than previously envisioned. The new study shows that at one time, these small sperm whales had a much larger spermaceti organ, which got downsized at least twice during the evolutionary history of these animals (including the evolutionary event that gave origin to the living pigmy and dwarf sperm whales). The reasons of this size reduction remain unclear; scientists would have to find more complete skeletons of Nanokogia and other closely related species to untangle the question. For now, Dr. Velez-Juarbe continues to explore the prehistoric seas of Central America--Captain Ahab would have been proud. *http://www.sciencedaily.com/releases/2015/04/150429145405.htm*

Longest Mammal Migration Raises Questions About Distinct Species of Whales

Apr. 15, 2015 — A team of scientists from the United States and Russia has documented the longest migration of a mammal ever recorded -- a round-trip trek of nearly 14,000 miles by a whale identified as a critically endangered species that raises questions about its status.

The researchers used satellite-monitored tags to track three western North Pacific gray whales from their primary feeding ground off Russia's Sakhalin Island across the Pacific Ocean and down the West Coast of the United States to Baja, Mexico. One of the tagged whales, dubbed Varvara (which is Russian for Barbara), visited the three major breeding areas for eastern gray whales, which are found off North America and are not endangered.

Results of their study are being published this week by the Royal Society in the journal *Biology Letters.*

"The fact that endangered western gray whales have such a long range and interact with eastern gray whales was a surprise and leaves a lot of questions up in the air," said Bruce Mate, director of the Marine Mammal Institute at Oregon State University and lead author on the study. "Past studies have indicated genetic differentiation between the species, but this suggests we may need to take a closer look."

Western gray whales were thought to have gone extinct by the 1970s before a small aggregation was discovered in Russia off Sakhalin Island -- with a present estimated population of 150 individuals that has been monitored by scientists from Russia and the U.S. since the 1990s.

Like their western cousins, eastern gray whales were decimated by whaling and listed as endangered, but conservation efforts led to their recovery. They were delisted in 1996 and today have a population estimated at more than 18,000 animals.

Not all scientists believe that western gray whales are a separate, distinct species. Valentin Ilyashenko of the A.N Severtsov Institute for Ecology and Evolution, who is the Russian representative to the International Whaling Commission, has proposed since 2009 that recent western and eastern gray whale populations are not isolated and that the gray whales found in Russian waters are a part of an eastern population that is restoring its former historical range. He is a co-author on the study.

"The ability of the whales to navigate across open water over tremendously long distances is impressive and suggests that some western gray whales might actually be eastern grays," Mate said. "But that doesn't mean that there may not be some true western gray whales remaining.

Western gray whales are shown. (Credit: Photograph by Craig Hayslip).

"If so, then the number of true western gray whales is even smaller than we previously thought."

Since the discovery that western and eastern gray whales interact, other researchers have compared photo catalogues of both groups and identified dozens of western gray whales from Russia matching whale photographs taken in British Columbia and San Ignacio Lagoon in Baja California, Mexico.

Protecting the endangered western gray whales has been difficult -- five whales have died in Japanese fishing nets within the last decade. Their feeding areas off Japan and Russia include fishing areas, shipping lanes, and oil and gas production -- as well as future sites oil sites. Their largely unknown migration routes may include additional hazards.

The study was coordinated by the International Whaling Commission, with funding provided by Exxon Neftegas Limited, the Sakhalin Energy Investment Company, the U.S. Office of Naval Research, and OSU's Marine Mammal Institute.

http://www.sciencedaily.com/releases/2015/04/150415125854.htm

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SIGHTINGS

Sightings are compiled by Monterey Bay Whale Watch. For complete listing and updates see *www.gowhales.com/sighting.htm*

Date	#	Type of Animal(s)
4/30 pm	3 1 2	Killer Whales (predation on Gray Whale calf) Humpback Whale Gray Whales
4/30 am	25	Humpback Whales
4/29 am	15	Humpback Whales
4/28 am	15	Humpback Whales
4/27 all day	26 600 2	Humpback Whales Long-beaked Common Dolphins Harbor Porpoise
4/27 pm	16 4	Humpback Whales Harbor Porpoise
4/27 am	11 700 12	Humpback Whales Long-beaked Common Dolphins Risso's Dolphins
4/26 all day	11 200 3	Humpback Whales Long-beaked Common Dolphins Northern Right Whale Dolphins
4/26 am	9 600	Humpback Whales Long-beaked Common Dolphins
4/25 am	14	Humpback Whales
4/24 am	6 100	Humpback Whales Long-beaked Common Dolphins
4/23 am	4	Killer Whales
	5 800	Humpback Whales Long-beaked Common Dolphins
4/22 am	12 5	Humpback Whales (one breaching 30 mintues) Risso's Dolphins
4/21 pm	38 15	Humpback Whales Risso's Dolphins
4/21 am	7 20	Humpback Whales (double breacher) Risso's Dolphins
4/20 pm	5 7 530 4	Killer Whales Humpback Whales Long-beaked Common Dolphins Harbor Porpoise
4/20 am	2 24 400 15 5	Blue Whales Humpback Whales Long-beaked Common Dolphins Risso's Dolphins Harbor Porpoise
4/19 pm	14	Humpback Whales
4/19 am	21 400	Humpback Whales Long-beaked Common Dolphins
4/18 pm	3 16 1	Blue Whales Humpback Whales Harbor Porpoise
4/18 am	3 21 450 1	Blue Whales Humpback Whales Long-beaked Common Dolphins Laysan Albatross
4/17 pm	15	Humpback Whales
4/17 am	4 17 200	Blue Whales Humpback Whales Long-beaked Common Dolphins
4/16 pm	3 7 3 300	Blue Whales Humpback Whales Gray Whales Long-beaked Common Dolphins
4/16 am	4 3 3 30	Killer Whales (51A's) Blue Whales Humpback Whales Long-beaked Common Dolphins
4/15 am	21 50 50	Humpback Whales (lunge feeding) Long-beaked Common Dolphins Risso's Dolphins
4/13 am	13 400 3 15 2	Humpback Whales Long-beaked Common Dolphins Bottlenose Dolphins Risso's Dolphins Harbor Porpoise
4/12 pm	30 400 20 2	Humpback Whales (3 friendly) Long-beaked Common Dolphins Pacific White-sided Dolphins Harbor Porpoise
4/12 am	28 400	Humpback Whales Long-beaked Common Dolphins

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Membership Levels and Annual Dues

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