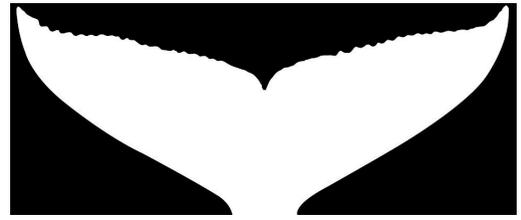


Soundings



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

MARCH 2014

**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, March 27, 2014

Time: 7:30 PM

PLEASE JOIN US AT 7:00 FOR REFRESHMENTS

Speaker: Dr. Steve Webster

Title: The Natural History of Cephalopods

Dr. Steve Webster, one of our favorite speakers, will discuss the evolution and natural history of octopuses, squid and other cephalopods, giving us a taste of a Tentacles exhibit opening in April at The Monterey Bay Aquarium.

Our presentation will include video clips and stills from Steve's 50 years of underwater photography as well as clips from Sea Studios' Shape of Life series on PBS's Nature program. In addition to tropical species in Indonesia, Steve will highlight local octopuses and Humboldt squid. He'll discuss the evolution, diversity, vision, behavior, reproduction and predation of the octopuses, squids, nautiloids and cuttlefishes.

Steve is one of the four friends who conceived the idea of an aquarium on Cannery Row and became its first project coordinator, then director of education and senior marine biologist. He was a Stanford graduate (doctoral work at Hopkins Marine Station 1965-71) teaching invertebrate zoology at San Jose State when the aquarium idea was born in 1978. Since it opened in 1984, more than 54 million people have gone in to learn about Monterey Bay and marine life. Steve retired from the Aquarium in 2004 but stays as a volunteer guide and teacher for the other volunteers and staff.

He is a past chair of the Monterey Bay National Marine Sanctuary Advisory Council and is currently on the boards of YorkSchool, the Sea Studios Foundation, the Elkhorn Slough Foundation and the Friends of Hopkins Marine Station.

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

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Coming in April: Our next program will be with Milos Radakovich at 7:30pm on Thursday, April 24, with refreshments at 7 p.m. A former president of our chapter, Milos has been traveling the world in recent years as a naturalist onboard for Celebrity Cruises/Royal Caribbean.

CALENDAR

Mar. 16: Science Sunday: The Albatrosses of Midway. Join Breck Tyler for a discussion on the ecology and conservation of Pacific Albatrosses. 1pm at the Seymour Marine Discovery Center, Santa Cruz. For info call (831) 459-3800 or go to <http://seymourcenter.ucsc.edu/>

Mar. 29: Join ACS/LA's 2014 Ultimate Whale Watch – an all day adventure! Trip will head toward Catalina Island searching for northbound gray whales, humpback whales, fin whales and various species of dolphins. For more info including cost, boat, and departure location contact ACS/LA.

Friends of Hopkins Marine Station Lectures Tuesdays, 7:30pm

Apr. 8: Dr. Susan Shillinglaw, San Jose State University
On Reading the Grapes of Wrath on its 75th Anniversary: Deep Ecology and Layered Fiction

May 13: Dr. Jim Harvey, Director, Moss Landing Marine Laboratories
It's Not the Cheese: Why Predators Eat in Monterey Bay

Apr. 10-17: 34th Annual Symposium on Sea Turtle Biology and Conservation, New Orleans, LA. *More information to follow.*

Apr. 26: Monterey Bay National Marine Sanctuary Currents Symposium 2014 at CSUMB in Seaside, CA: Marine Debris: How Do You Pitch In?

May 2-3: Southern California Academy of Sciences Annual Meeting at Cal State University Channel Islands. Scheduled Symposia will include programs on marine mammals and marine science. For more info go to scas.nhm.org

Special Killer Whale All-Day Trips!

Join Monterey Bay Whale Watch on a quest for Killer Whales with California's Leading Killer Whale Experts (Nancy Black and Alisa Shulman Janiger). Trips depart from Monterey Bay Whale Watch at 7:00 am and will return sometime around 5:00 pm. Cost is \$145.00 per person. Dates include: Wed. Apr. 9, Thurs. Apr. 10, Fri. Apr. 11, Sun. Apr. 20, Mon. Apr. 21, Thurs. Apr. 24, Fri. Apr. 25, and Sat. Apr. 26. For more dates call Monterey Bay Whale Watch at 375-4658 or go to montereybaywhalewatch.com

May 3-4: Moss Landing Marine Laboratories Open House, 9:00am-5:00pm both days

May 19-22: 65th Tuna Conference at UCLA Lake Arrowhead Conference Center: How Do Large Pelagics Work and What Do They Want? Contact Tuna Conference Coordinator Stephanie Flores at (858) 334-2877.

Sep. 22-26: The 5th Bio-logging Science Symposium, Strasbourg (France).

Nov. 7-9: American Cetacean Society 14th International Conference at the Hyatt Regency in Newport Beach, CA: Tuned in to Whales, Conservation, Research and Education.

BOOK RECOMMENDATIONS

The Extreme Life of the Sea, by Stephen R. Palumbi and Anthony R. Palumbi. 2014 Princeton University Press.

The Sixth Extinction: An Unnatural History, by Elizabeth Kolbert. 2014 Henry Holt Publishing.

Stung! On Jellyfish Blooms and the Future of the Ocean, by Lisa-ann Gershwin with a forward from Sylvia Earle. 2013 University of Chicago Press.

MASS STRANDINGS OF MARINE MAMMALS BLAMED ON TOXIC ALGAE: CLUES UNEARTHED IN ANCIENT WHALE GRAVEYARD

Feb. 25, 2014 — Mass strandings of whales have puzzled people since Aristotle. Modern-day strandings can be investigated and their causes, often human-related, identified. Events that happened millions of years ago, however, are far harder to analyze -- frequently leaving their cause a mystery. A team of Smithsonian and Chilean scientists examined a large fossil site of ancient marine mammal skeletons in the Atacama Desert of Northern Chile -- the first definitive example of repeated mass strandings of marine mammals in the fossil record. The site reflected four distinct strandings over time, indicating a repeated and similar cause: toxic algae. The team's findings will be published Feb. 26 in the *Proceedings of the Royal Society B*. The site was first discovered during an expansion project of the Pan-American Highway in 2010. The following year, paleontologists from the Smithsonian and Chile examined the fossils, dating 6-9 million years ago, and recorded what remained before the site was paved over.

The team documented the remains of 10 kinds of marine vertebrates from the site, named Cerro Ballena -- Spanish for "whale hill." In addition to the skeletons of the more than 40 large baleen whales that dominated the site, the team documented the remains of a species of sperm whale and a walrus-like whale, both of which are now extinct. They also found skeletons of billfishes, seals and aquatic sloths.

What intrigued the team most, however, was how the skeletons were arranged. The skeletons were preserved in four separate levels, pointing to a repeated and similar underlying cause. The skeletons' orientation and condition indicated that the animals died at sea, prior to burial on a tidal flat.

Effects of Toxic Algae

Today, toxins from harmful algal blooms, such as red tides, are one of the prevalent causes for repeated mass strandings that include a wide variety of large marine animals.

"There are a few compelling modern examples that provide excellent analogs for the patterns we observed at Cerro Ballena -- in particular, one case from the late 1980s when more than a dozen humpback whales washed ashore near Cape Cod, with no signs of trauma, but sickened by mackerel loaded with toxins from red tides," said Nicholas Pyenson, paleontologist at the Smithsonian's National Museum of Natural History and lead author of the research.



In this photo, Chilean and Smithsonian paleontologists study several fossil whale skeletons at Cerro Ballena next to the Pan-American Highway in the Atacama Region of Chile in 2011. (Credit: Photo by Adam Metallo / Smithsonian Institution)

"Harmful algal blooms in the modern world can strike a variety of marine mammals and large predatory fish. The key for us was its repetitive nature at Cerro Ballena: no other plausible explanation in the modern world would be recurring, except for toxic algae, which can recur if the conditions are right."

Harmful algal blooms are common along the coasts of continents; they are enhanced by vital nutrients, such as iron, released during erosion and carried by rivers flowing into the ocean. Because the Andes of South America are iron-rich, the runoff that has occurred along the west coast of South America for more than 20 million years has long provided the ideal conditions for harmful algal blooms to form.

From their research, the scientists conclude that toxins generated by harmful algal blooms most likely poisoned many ocean-going vertebrates near Cerro Ballena in the late Miocene (5-11 million years ago) through ingestion of contaminated prey or inhalation, causing relatively rapid death at sea. Their carcasses then floated toward the coast, where they were washed into a tidal flat by waves. Once stranded on the tidal flat, the dead or dying animals were protected from marine scavengers, and there were no large-land scavengers in South America at this time. Eventually, the carcasses were buried by sand. Because there are four layers at Cerro Ballena, this pathway from sea to land occurred four different times during a period of 10,000 to 16,000 years in the same area.

"Cerro Ballena is the densest site for individual fossil whales and other extinct marine mammals in entire world, putting it on par with the La Brea Tar Pits or Dinosaur National Monument in the U.S.," Pyenson said. "The site preserves marine predators that are familiar to modern eyes, like large whales and seals. However, it also preserves extinct and bizarre

marine mammals, including walrus-like whales and aquatic sloths. In this way, the site is an amazing and rare snapshot of ancient marine ecosystems along the coast of South America."

3-D Technology at Cerro Ballena

Because the site was soon to be covered by the Pan-American Highway, time was very limited for the researchers. A major solution came in the form of 3-D technology. Pyenson brought a team of Smithsonian 3-D imaging experts to Chile, who spent a week scanning the entire dig site.

Although all the fossils found from 2010 to 2013 have been moved to museums in the Chilean cities of Caldera and Santiago, the Smithsonian has archived the digital data, including the 3-D scans, from the site at cerroballena.si.edu. There, anyone can download or interact with 3-D models of the fossil whale skeletons, scan Google Earth maps of the excavation quarries, look at a vast collection of high-resolution field photos and videos or take 360-degree tours of the site.

The enormous wealth of fossils that the team examined represents only a fraction of the potential at Cerro Ballena, which remains unexcavated. The scientists conservatively estimate that the entire area preserves several hundred fossil marine mammal skeletons, awaiting discovery. Pyenson's colleagues at the Universidad de Chile in Santiago are actively working to create a research station near the fossils of Cerro Ballena so that those that have been collected and those still covered by sediments can be protected for posterity.

<http://www.sciencedaily.com/releases/2014/02/140225193414.htm>

WHALES, SHIPS MORE COMMON THROUGH BERING STRAIT

Feb. 26, 2014 — The Arctic is home to a growing number of whales and ships, and to populations of sub-Arctic whales that are expanding their territory into newly ice-free Arctic waters.

A study of the narrow passage of the Bering Strait uses underwater microphones to track the whales by their sounds. Three years of recordings reveal more detections of both Arctic and sub-Arctic whales traveling through the narrow choke point.

Kate Stafford, an oceanographer with the University of Washington's Applied Physics Laboratory, will present the results Feb. 26 at the Ocean Sciences meeting in Honolulu.

The recordings show Arctic beluga and bowhead whales migrating seasonally through the region from

the Arctic south to spend winter in the Bering Sea. They also detect large numbers of sub-Arctic humpback, fin and killer whales traveling north through the Bering Strait to feed in the biologically rich Chukchi Sea.

"It's not particularly surprising to those of us who work up in the Arctic," Stafford said. "The Arctic seas are changing. We are seeing and hearing more species, farther north, more often. And that's a trend that is going to continue."

Stafford placed microphones below the water's surface and recorded in summer and early winter from 2009 to 2012 as part of a U.S.-Russian scientific collaboration. Melodious humpback whale songs showed up regularly on recordings into late fall. Fin and killer whales, which are southern species that seldom travel into Arctic waters, were heard into early November.

"These animals are expanding their range," Stafford said. "They're taking advantage of regions in seasons that they may not have previously."

The recordings also picked up ships using the ice-free summers to travel through two international shipping lanes. This poses an increased risk of collisions between whales and ships, and of noise pollution.

"Marine mammals rely primarily on sound to navigate, to find food and to find mates. Sound is their modality," Stafford said. "If we increase the ambient sound level, it has the potential to reduce the communication range of cetaceans and all marine mammals."

The Bering Strait is famous as a land bridge that prehistoric humans used to travel from Russia to North America. Today, the waterway is 58 miles wide and maximum 160 feet deep, with about one-third of its span in U.S. waters and the rest in Russia. The two coasts are quite different, Stafford said, which makes



A fin whale is shown breaching the water's surface. (Credit: Photo by Kate Stafford, University of Washington)

the international collaboration essential to understanding the full environment.

A recent paper by Stafford and other scientists includes visual sightings of killer whales, a quieter southern-dwelling whale, just north of the strait in the southern Chukchi Sea. Killer whales are now seen fairly regularly in this area, which is being considered for oil and gas exploration.

"The Arctic areas are changing," Stafford said. "They are becoming more friendly to sub-Arctic species, and we don't know how that will impact Arctic whales. Will they be competitors for food? Will they be competitors for habitat? Will they be competitors for acoustic space, for instance these humpbacks yapping all the time in the same frequency band that bowheads use to communicate? We just don't know."

Stafford supports the idea of slowing ship speeds in the Bering Strait, reducing motor noise and the chance of ship strikes.

Another suggestion to protect whales builds on tagging work showing that bowhead whales tend to travel up the U.S. side on the way north in the spring and on the Russian side on their way back in the fall. The proposal suggests that ships follow the American coast in the fall and the Russian coast in the spring to reduce interactions between ships and whales.

Still to be explored is whether the increased whale travel through the region is due to rising whale populations, expanded ranges, or both. Logbooks from Soviet whaling ships in the mid-to-late 20th century report sub-Arctic whales in the region, but none were seen from about 1980 to 2010.

"The question is, are these whale populations recovering and so they're reoccupying former habitat, or are they actually invading the Arctic because they can, because there is less seasonal sea ice?" Stafford said.

<http://www.sciencedaily.com/releases/2014/02/140226095248.htm>

TUNA: SUPER FISH

by Matt Dozier

Winter 2014 — What's the first thing that comes to mind when you hear the word "tuna"? Is it bland, pinkish sandwich filling? Crimson slivers of velvety sashimi? Or perhaps a cartoon fish with a hat, glasses and a Brooklyn accent? If so, don't worry — you are not alone. Decades of seafood marketing and cultural perception are at work here. But after years of being treated like the "chicken of the sea," it's about time tuna got the respect they deserve.

Athletes of the Sea

Let's clarify one thing up front: Tuna are not ordinary fish. They are athletic freaks of nature, built for raw power, speed and endurance. They can withstand intense cold, dive to crushing depths and swim at speeds approaching 50 miles per hour. The largest species can grow to staggering dimensions: sometimes 10 feet or more in length. The world-record Atlantic bluefin tuna, reeled in off Nova Scotia in 1979, weighed 1,496 pounds and ranks high on the list of the biggest fish ever caught.

"They are the pinnacle of bony fish evolution — they're the 'super fish,'" said Barbara Block, a marine biologist at Stanford University, who is one of the world's leading experts on bluefin tuna.

Block and her team have tagged and tracked more than 2,000 Atlantic and Pacific bluefin during her career. Their research has revealed much about the epic migrations undertaken by these extraordinary fish, such as the Pacific bluefin that swam from California to Japan and back — more than 10,000 miles — in the span of just five months in 2003. Similar to lions and wolves, tuna are apex predators that travel long distances in search of prey, tend to hunt in groups (schools) and play a key role in regulating the ocean food web. While it may seem strange to compare the main ingredients in Fancy Feast with such iconic land mammals, there's more truth in the comparison than you might suspect.

Meet the Thunnini Tribe

So what exactly makes a tuna a tuna? Taxonomically speaking, tunas are predatory ocean-going fish belonging to a "tribe" called Thunnini, a subgroup of the mackerel family (Scombridae). The tribe encompasses the eight "true tunas" of the genus *Thunnus* — albacore, bigeye, longtail, yellowfin, blackfin and three species of bluefin — and seven other tuna species including skipjack, slender and little tunny.

All tunas, from the smaller bullet and frigate species to the giant bluefin, have streamlined, spindle-shaped bodies with a crescent-shaped tail fin, two dorsal fins, pectoral fins that can be tucked in for high-speed swimming and triangular "finlets" running along the upper and lower sides of the tail. Skin coloration varies from species to species but generally fades from metallic blue on top to silvery-white underneath, often with a splash of yellow accents.

Peeking under the hood, we find one of the most impressive pieces of biological machinery in the entire ocean. "When you look at a tuna, you're looking at an animal that's built for very, very high performance," said Randy Kochevar, a marine

biologist who works with Block at Stanford University's Hopkins Marine Station.

Indeed, every aspect of tuna physiology seems to push the limits of what's physically possible, from ultra-high-efficiency gills to a massive heart that can beat up to 200 times per minute. What makes these animals truly special is not just their size, speed or strength but the unique evolutionary adaptations, honed over hundreds of millions of years, that make such incredible performance possible.

Just Keep Swimming — Or Else

The name *Thunnus* comes from the ancient Greek for "to dart" or "to rush" — an apt descriptor for these efficient, powerful swimmers capable of tremendous bursts of acceleration. That power comes at a price though. With high oxygen demands and a muscular physique that's denser than seawater, a tuna can never stop swimming during its lifetime.

Tuna require five to 10 times greater flow of water over their gills than most fishes, which they achieve by swimming with their mouths perpetually open, called "ram ventilation." They fly through the water like fighter jets, their lack of buoyancy offset by lift generated by their pectoral fins. And, like an aircraft, if a tuna stops producing forward thrust, it will sink like a stone.

To keep themselves in perpetual forward motion, tuna have evolved a compact swimming style consisting of short, powerful strokes of the tail with very little head movement. Bundles of deep red, oxygen-burning "slow-twitch" muscle running along the core of the fish enable them to sustain this unique form of locomotion over vast distances.

The "Wonderful Net"

All the constant swimming tuna are forced to do generates a lot of excess heat. For most fish, that

energy would be lost, dissipated quickly into the colder surrounding seawater.

But, as we've established, tuna are not "most fish." One of their remarkable evolutionary adaptations is the rete mirabile (Latin for "wonderful net"), a network of blood vessels that lets them retain body heat and use it to warm their muscles, brain and eyes above the ambient ocean temperature. Members of the genus *Thunnus* can even heat their stomachs to aid digestion after swallowing a meal of ocean-chilled seafood.

That's right — tuna are endothermic, or "warm-blooded," like humans. No other bony fish can claim that distinction. While their cold-blooded cousins are generally limited to a narrow range of temperatures, tuna can move freely around the globe through the dark depths and the sunlit shallows, the sweltering tropics and the frigid higher latitudes.

Different species inhabit various regions around the globe, with some favoring tropical latitudes (yellowfin, skipjack), while others prefer cooler regions (albacore, Atlantic bluefin, Pacific bluefin, southern bluefin). Bigeye in particular are champion divers, known to travel to depths of 3,300 feet or more in pursuit of food, making roller-coaster descents and ascents that would make a divemaster blanch.

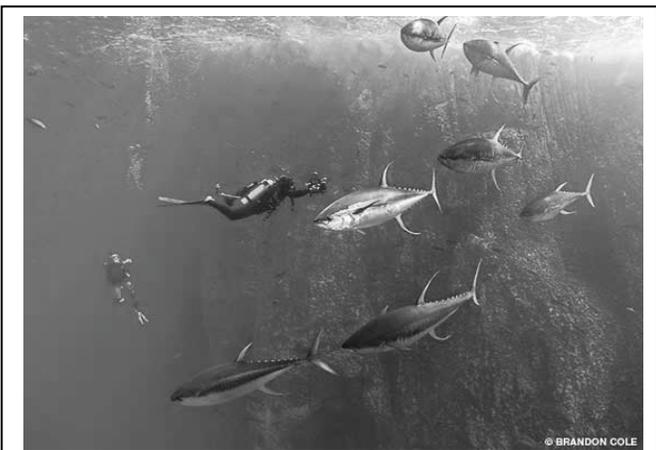
A Wandering Life

Tuna don't turn into these hulking, supercharged speed demons overnight. Almost all tuna species spawn in warm tropical regions, where their larvae start life floating with the currents and dining on zooplankton until they begin to resemble miniature versions of their parents.

They continue to grow rapidly as juveniles, shifting their focus to new prey as they get larger. Tuna are opportunistic feeders and will happily consume a wide variety of prey over the course of their lives depending on their age, location and season. A highly abridged list of tuna prey includes crustaceans, squids and countless small fish species such as anchovies, sardines, menhaden, hake and mackerel.

Groups of tuna will often attack bait balls — huge, swirling schools of smaller fish — sometimes working in concert with other predators such as dolphins and seabirds as they drive their prey into ever-tighter spaces. Think of it as an all-you-can-eat sushi buffet, except in this case it's the sushi that's stuffing its face.

As tuna approach adulthood, the life history varies dramatically among tuna species (and sometimes even within species). Some tunas stick closer to the coast, while others prefer deeper waters. Some never stray



Warm-blooded apex predators that never stop swimming, tuna play a key role in regulating the ocean food web. They are "the pinnacle of bony fish evolution."

far from where they were born. Atlantic bluefin born in the Gulf of Mexico regularly migrate thousands of miles to the Mediterranean Sea, only to return to their birthplace to spawn many years later. "When you think about how they start their lives and are swept very quickly into the open ocean, the fact that they find their way back is truly remarkable," said David Secor, a tuna biologist with the University of Maryland Center for Environmental Science.

Most tunas reach sexual maturity between two and five years of age, with the exception of the bluefin species, which can take anywhere from eight to 15 years to begin spawning. This topic has received considerable attention in recent years in light of widespread concern over the sustainability (or lack thereof) of tuna fisheries and the impact of overfishing on tuna populations around the globe.

Feeding Frenzy

Humans have been catching and eating tuna for thousands of years. In the Mediterranean Sea the earliest evidence of bluefin tuna fishing has been estimated at roughly 7,000 B.C., with large-scale trap fishing developed by the Phoenicians around 2,000 B.C. "Tuna built a lot of civilizations around the globe," Block says. "It's only recent generations that have begun to treat it like a commodity." Within the past hundred years or so, our craving for tuna in its many forms has ballooned into a full-blown addiction. Canned tuna, which debuted in the U.S. in 1903, succeeded in turning these proud fish into a bulk commodity that for decades reigned as the most popular seafood in America.

Then there's the global market for bluefin meat, which is prized in sushi restaurants around the world (especially in Japan, where most top-quality bluefin ends up). Sold under names such as otoro and hon maguro, the rich, fatty flesh ranges in hue from soft pink to deep red, looking more like filet mignon than Filet-O-Fish. Bluefin can fetch astronomical prices at Tokyo fish markets; for example, a 489-pound specimen sold for a mind-boggling \$1.78 million at auction in January 2013 — more than \$3,600 per pound.

This gourmet feeding frenzy has been bad news for the future of bluefin populations, which continue to be overfished despite numerous scientific reports from academic institutions and conservation groups around the world warning that they are on the brink of collapse.

Back from the Brink?

There are some signs, however, that tuna's fortunes could be changing for the better. Block said she is encouraged by recent efforts to influence

governments and consumers to take pressure off the most heavily overfished species such as Atlantic bluefin, which by most estimates has declined by more than 70 percent across all populations since 1970. "I think the tide is changing quickly," she said. "What we need to do is figure out how to produce the tuna that the world needs without depleting wild populations."

Tuna aquaculture, or "ranching," certainly has potential in that regard, although critics say current practices do little to alleviate overfishing and even create greater burden on tuna stocks. Block said she is hopeful that will change as the science and management continue to improve.

For now, though, conservation-minded consumers will want to steer clear of bluefin. And the next time you find yourself scarfing down a spicy tuna roll (almost certainly yellowfin or bigeye) or a tuna fish sandwich (albacore or skipjack), spare a moment to think about all the things that make these fish so amazing.

<http://www.alertdiver.com/Tuna-Super-Fish>

THE SHOCKING REALITY OF THE RISKS TO ASIAN RIVER DOLPHINS

by Helene Marsh

Nov. 12, 2013 — In a few weeks we will be gathered in Dunedin for our 20th Biennial Conference. This year's theme is "Marine Mammal Conservation: Science Making a Difference."

Despite the triple challenges of the Global Financial Crisis, the devastating Christchurch Earthquake and the recent shut-down of the US public sector, the conference organizers have done an amazing job. The conference program includes 357 talks and more than 400 posters. We are expecting between 1000 and 1200 people to attend from more than 30 countries!

My recent visit to Myanmar (formerly Burma) highlighted the importance of the conference theme and the urgent need for the Society to make a difference to marine mammal conservation.

The Ayeyarwady River in Myanmar supports a Critically Endangered population of Irrawaddy dolphins (*Orcaella brevirostris*) and a unique practice of cooperative fishing by dolphins and local cast-net fishermen. The Ayeyarwady River dolphin population is fragmented into three sub-populations by two defiles (rocky river regions with fast flowing water) further increasing its vulnerability to a range of impacts including continuing threats from gillnet

entanglement, electric fishing, habitat degradation and acoustical disturbance caused by gold mining operations plus the threat of extensive dam building in the upper reaches of the river.

As President of the Society, I wrote to Myanmar policy makers in October 2012, concerning an article in the *Myanmar Times* that described a rapid increase in the use of electricity for catching fish in the Ayeyarwady River, despite the efforts of the Government of Myanmar to protect Irrawaddy dolphins and the human-dolphin cooperative fishery. In December 2005 the Department of Fisheries established the Ayeyarwady River Dolphin Protected Area in a 74-km segment of the Ayeyarwady River.

My letter offered technical assistance from the Society, perhaps along the lines of technical advice and support to the Cambodian Government and World Wildlife Fund - Cambodia who are addressing similar conservation challenges with the same species of dolphins. Society members have formed an ad hoc Mekong Dolphin Working Group that includes experts from the United Kingdom, United States, China, Japan, Spain, and Canada.

In November 2012, the then Director of Fisheries, invited me to Myanmar for further discussions on Ayeyarwady dolphin research and conservation. Unfortunately, I was unable to go at that time. I recently made a private visit to Myanmar facilitated by local NGOs. I visited the dolphin habitat in the Ayeyarwady River, talked with fishermen, local NGOs and Fisheries Division staff together with Myanmar dolphin expert Aung Myo Chit (who will be in Dunedin).

We learned that the illegal use of electricity to catch fish is increasing. Chinese-manufactured equipment for electro-fishing now supplements home-manufactured gear. Electric fishing is reportedly now practiced by fishers from most villages adjacent to the Ayeyarwady Dolphin Protected Area.

The electro-fishers are largely non-traditional fishers who have obtained sub-contracts to fish from the fisheries concession holders by using bullying tactics such as threatening to poison the fish inside village fish-fences using agricultural chemicals. The fishers have adapted the electro-technology to several fishing technologies including drift gill nets, cast nets and beach seines. They also exploit the mutualistic relationship between traditional fishers and dolphins by using the technique in association with some of the techniques practiced by the co-operative fishers such as banging on the water to attract the dolphins.

There are reportedly more than 10 gangs of illegal electro-fishers (80 - 100 boats) who range widely

along the Dolphin Protected Area, without respecting any rules including the concession areas. The activities of the electro-fishers are acknowledged by local staff of the Fisheries Division and the Wildlife Conservation Society. Attempts by Fisheries Division staff to enforce the law against electro-fishing have been unsuccessful.

I have written to the Minister in a private capacity expressing my concerns about this situation. I promised to write to him separately as President of the Society for Marine Mammalogy reiterating the Society's offer of technical support and suggesting technical areas in which such support might be useful. I shall be seeking the advice of the Conservation Committee on the wording of this letter.

The extirpation of the baiji in the early years of this century is a stark reminder of reality of the vulnerability of small isolated river dolphin populations. The Ayeyarwady River dolphin population is but one of several populations of river dolphins and porpoises in Asia that are listed as Critically Endangered by IUCN. The widespread practice of electro-fishing is only of many threats to these populations. I believe that as experts in marine mammalogy, we need to use our technical expertise to help save the other populations from the same fate. We also need to collaborate with experts in solutions to the root causes of these problems: poverty and limited enforcement capacity.

I look forward to talking to you further about these important matters in Dunedin.

http://www.marinemammalscience.org/index.php?option=com_content&view=article&id=712:the-shocking-reality-of-the-risks-to-asian-river-dolphins&catid=62:presidents-blog&Itemid=133

RARE WHALE SKULL FOSSIL FOUND AT CALIFORNIA SCHOOL

by *Stephanie Pappas*

Jan. 30, 2014 — A whale fossil that's been sitting on the grounds of a Southern California school for perhaps 80 years may be a previously unknown species.

The fossil, a skull embedded in a boulder, is set to go to The Natural History Museum of Los Angeles for cleaning and analysis. However, museum paleontologist Howell Thomas believes the skull belongs to a new species of extinct sperm whale.

"It's a pretty remarkably complete skull," said Martin Byhower, a 7th-grade science teacher who first noticed the skull and alerted Thomas.



The boulder containing a whale skull thought to belong to a new species. (Credit: Photo by Martin Byhower)

Surprise discovery

Chadwick School is a private K-12 school in Palos Verdes, not far from Long Beach, Calif. Almost 80 years ago, when the campus was constructed, builders left boulders of hard sedimentary rock, known locally as Palos Verdes stone, sitting around, sometimes incorporating them into the school buildings.

Byhower, who has taught at the school for 30 years, long ago noticed fossils embedded in the stones. A former whale conservationist, Byhower recognized that some of them looked like marine mammal fossils.

Finally, he began looking for a paleontologist who could tell him more. Howell came out to inspect the fossils and identified some baleen whale ribs and vertebrae that may have belonged to a sea lion or seal. Then Byhower showed him a boulder that surprised him.

"Within about four seconds, he looked at this one and said, 'Whoa, this is really special,'" Byhower said.

New whale

The fossil is embedded in a boulder 32 inches (81 centimeters) long, 26 inches (66 cm) wide and 14 inches (36 cm) deep. At one end of the boulder, Byhower said, is the base of a skull. At the other end, a lower jaw juts out. It will take a year to chip away the rock surrounding the fossil, but so far, Howell believes the skull belongs to an ancient sperm whale never described by science.

Sperm whales (*Physeter macrocephalus*) are the largest toothed whales alive today. Researchers aren't sure if the new skull represents a new species or even a new genus of this group.

The rock comes from the Monterey formation, a layer set down in the Miocene epoch about 12 million to 20 million years ago. At the time, Southern California was under a shallow sea.

The museum is set to remove the fossil from the school grounds on Feb. 5; paleontologists plan to make a cast of the skull after it is prepared to return to the school for educational purposes. For his part, Byhower plans to integrate the surprise fossil find into the curriculum — and to use it to encourage in his students both observation of, and curiosity about, the natural world.

"People have walked by these fossils for decades and never even seen them," he said. "Others have seen them but never really wondered."

<http://www.scientificamerican.com/article/rare-whale-skull-fossil-found-at-california-school/>

FOUR-TUSKED WALRUS, NEW WHALE AND 19 OTHER FOSSIL MAMMALS DISCOVERED AT CALIFORNIA SURF SPOT

by Blake de Pastino

Feb. 7, 2014 — Ten years after a surfer first tipped him off to some bones eroding out of a sandy bank, a paleontologist says he has uncovered a massive cache of marine mammal fossils in the Bay Area, some of which appear to be new to science.

Excavated at Half Moon Bay, a choice surf spot about a half-hour drive south of San Francisco, the deposit includes fossil evidence of a new species of whale, a walrus with four tusks, a relative of the recently extinct Chinese river dolphin, and a porpoise that appeared to have a "serious underbite."

"The mix of marine mammals I ended up uncovering was almost completely different to that found in the North Pacific today, and to anywhere else at that time," said Robert Boessenecker, a Ph.D. candidate in Geology at New Zealand's University of Otago, in a statement.

Among the hundreds of fossil bones and teeth, the



An artist's rendering of *Balaenoptera bertae*, a newly discovered species of baleen whale from a fossil deposit in Northern California. (Credit: Artwork by RW Boessenecker)

clearest picture to emerge so far is that of a diminutive species of baleen whale that, at about 5 meters long, was slightly smaller than today's minke whales.

The newly identified whale, given the name *Balaenoptera bertae*, lived more than 3 million years ago, Boessenecker said, with other fossils in the cache dating back as much as 5 million years.

Boessenecker describes the new species in the latest issue of the journal *Geodiversitas*, along with details of his other findings, such as a fossil walrus from the genus *Dusignathus*, which grew four short tusks — two coming down from the top row of teeth and two erupting upward from the jaw.

There's also evidence of other mammals with "strange adaptations," he writes, like a still-unnamed porpoise whose lower jaw extended far beyond the upper, giving it a rather excessive underbite.

Also among the remains are fur seals, a pilot whale, two species of dwarf baleen whales, and two right whales, he says.

This fossil menagerie suggests that, in the pre-Ice Age North Pacific, early species of marine mammals lived alongside more derived species that have persisted into the present day.

"At the same time as this eclectic mix of ancient and modern-type marine mammals was living together, the marine mammal fauna in the North Atlantic and Southern Ocean were already in the forms we find today," he said.

As the climate changed and land masses shifted, he explained, new migratory paths opened that allowed marine mammals to disperse, and the profile of life in the North Pacific to change.

"Once the Bering Strait opened and the equatorial Pacific cooled during the Ice Age, modernised marine mammals were able to migrate from other ocean basins into the North Pacific, leading to the mix we see today," he said.

<http://westerndigs.org/four-tusked-walrus-new-whale-and-19-other-fossil-mammals-discovered-at-california-surf-spot/>

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)
3/6 pm	11	Gray Whales
	200	Pacific White-sided Dolphins
	300	Risso's Dolphins
	150	Northern Right Whale Dolphins
3/6 am	7	Gray Whales
	4	Humpback Whales (breaching)
	150	Pacific White-sided Dolphins
	300	Risso's Dolphins
3/5 pm	6	Gray Whales
	15	Risso's Dolphins
3/5 am	5	Gray Whales
	500	Risso's Dolphins
3/4 pm	5	Gray Whales
	150	Pacific White-sided Dolphins
	25	Risso's Dolphins
3/4 am	7	Gray Whales
	2	Humpback Whales
	600	Pacific White-sided Dolphins
	350	Risso's Dolphins
3/3 pm	11	Gray Whales (4 southbound, 7 northbound)
	25	Risso's Dolphins
3/3 am	4	Gray Whales (1 southbound, 3 northbound)
	1	Blue Whale
	6	Killer Whale
3/2 pm	8	Gray Whales
	20	Pacific White-sided Dolphins
	1	Laysan Albatross
	2	Black-footed Albatross
3/2 am	8	Gray Whales
	1	Blue Whale
	20	Pacific White-sided Dolphins
	20	Risso's Dolphins
	1	Laysan Albatross
	1	Black-footed Albatross
2/25 am	8	Gray Whales (4 southbound, 4 northbound)
	150	Pacific White-sided Dolphins
2/24 pm	9	Gray Whales

		(5 southbound, 4 northbound)
2/24 am	3	Gray Whales (northbound)
	7	Killer Whales
	200	Pacific White-sided Dolphins
	80	Risso's Dolphins
2/23 pm	5	Gray Whales
	250	Risso's Dolphins
2/23 am	11	Gray Whales
	350	Risso's Dolphins
2/22 pm	5	Gray Whales
2/22 am	10	Gray Whales
	300+	Risso's Dolphins
2/22 early am	12	Gray Whales
	300+	Risso's Dolphins
2/21 pm	10	Gray Whales
	50	Risso's Dolphins
2/21 am	9	Gray Whales
	2	Killer Whales
	200	Risso's Dolphins
2/20 pm	6	Gray Whales
2/20 am	8	Gray Whales
2/19 am	600	Pacific White-sided Dolphins
	700	Risso's Dolphins
	50	Northern Right Whale Dolphins
2/18 am	9	Gray Whales (4 southbound, 5 northbound)
	250	Pacific White-sided Dolphins
2/17 am	1	Gray Whales (southbound)
2/16 pm	4	Gray Whales
2/16 am	18	Gray Whales
2/15 pm	4	Gray Whales
	150	Pacific White-sided Dolphins
	10	Risso's Dolphins
2/15 am	5	Gray Whales
	600	Pacific White-sided Dolphins
2/15 early am	7	Gray Whales
	400	Pacific White-sided Dolphins
	50	Risso's Dolphins
	2	Bottlenose Dolphins
2/14 pm	6	Gray Whales
	150	Risso's Dolphins

2/14 am	17	Gray Whales
	150	Risso's Dolphins
2/13 am	9	Gray Whales (2 southbound, 7 northbound)
	150	Risso's Dolphins
2/12 am	1	Gray Whale
	1	Humpback Whale
	100	Pacific White-sided Dolphins
	30	Risso's Dolphins
2/11 am	1	Humpback Whale
	35	Pacific White-sided Dolphins
	400	Risso's Dolphins
2/10 am	7	Gray Whales
	8	Pacific White-sided Dolphins
	400	Risso's Dolphins
2/9 pm	7	Gray Whales
	30	Pacific White-sided Dolphins
	300	Risso's Dolphins
2/9 am	8	Gray Whales
	300	Risso's Dolphins
2/8 am	15	Gray Whales
2/7 pm	8	Gray Whales
	40	Risso's Dolphins (including calves)
2/7 am	12	Gray Whales
	40	Risso's Dolphins (including calves)
2/5 pm	11	Gray Whales
	1	Humpback Whale
	100	Pacific White-sided Dolphins
2/5 am	17	Gray Whales
	2	Humpback Whales
	50	Pacific White-sided Dolphins
2/4 am	11	Gray Whales
	15	Risso's Dolphins
2/3 am	4	Gray Whales
	40	Pacific White-sided Dolphins
2/1 pm	17	Gray Whales
	10	Pacific White-sided Dolphins
2/1 am	10	Gray Whales
		Risso's Dolphins

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