Soundings

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

JULY 2017

Don't Miss ACSMB's Annual BBQ!

Growing into our 38th year

Saturday, July 29th, 2-5 pm
Indian Village in Del Monte Forest
(off 17 Mile Drive* near the Bird Rock Vista Point)

Please join us for a fun afternoon with great people, good food and a fabulous raffle & silent auction!

Menu includes grilled tri-tip, chicken, sausage, salads, beans, rolls and cake. We will have water, soft drinks and coffee. BYOB and table setting.

Send payment of $25 per person to:
ACSMB, P.O. Box HE, Pacific Grove, CA 93950,
or pay at the event.

Questions? Contact Katlyn Taylor at
katlyn.taylor.oc@gmail.com

*Please note that the 17 Mile Drive entrance fee will be waived for BBQ attendees.

The BBQ replaces our regular monthly meeting at Hopkins Boatworks Hall. Join us for the BBQ and then join us for our next meeting on Thursday, August 31st.

INSIDE THIS ISSUE

Your local ACS chapter needs you!

Consider serving on the Board of Directors as Membership Chair or Publicity Chair.

Please talk to any board member for more information.

CALENDAR

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

Jul. 16: Science Sunday at the Seymour Science Center in Santa Cruz. Presentation by Jeremy Goldbogen, Ph.D, of Hopkins Marine Station: "The Ultimate Mouthful: How The Largest Baleen Whales Feed." 1:30-2:30 PM.

Jul. 29: ACSMB Summer BBQ at Indian Village in Del Monte Forest (off 17 Mile Drive near the Bird Rock Vista Point). 2pm - 5pm. Tickets are $25, BYOB & Table Setting. The 17 Mile Drive entrance fee will be waived for BBQ attendees. There will also be a silent auction and raffle. To RSVP contact Katlyn Taylor at katlyn.taylor.oc@gmail.com or mail check to ACSMB, P.O. Box H.E., Pacific Grove, CA 93950.

American Cetacean Society
Monterey Bay Chapter

Annual Summer Whale Watching Fundraiser

Saturday, August 26, 2017

9:00 am – 2:00 pm

This annual fundraiser will explore the marine mammal rich waters of Monterey Bay in search of Blue and Humpback Whales.

Humpback Whales have been seen daily for weeks and Blue Whales have already been observed on several occasions in both March and April of this young feeding season.

We will also be on the lookout for Fin Whales, Killer Whales, and various species of dolphin.

Cost: $45

Hosted by Discovery Whale Watch

Reserve online at www.discoverywhalewatch.com, call 831-372-7064, or mail check to ACSMB, P.O. Box H.E., Pacific Grove, CA 94950.

Questions: Contact Katlyn Taylor at katlyn.taylor.oc@gmail.com

Jul. 29: 2017 ACS / Summertime Blues (and Humpbacks) Whale Watching Fundraiser in Santa Barbara, CA. For information and reservations go to www.eventbrite.com.

Aug. 20: Science Sunday at the Seymour Science Center in Santa Cruz. Presentation by Hayley Neutzel, Ph.D Student in Ocean Sciences at UC Santa Cruz: "The Bait and Switch: A Discussion of Seafood Fraud in Los Angeles and Santa Cruz." 1:30-2:30 PM.

Aug. 26: ACSMB Summer Whale Watching Fundraiser with Discovery Whale Watch. This annual fundraiser will explore the marine mammal rich waters of Monterey Bay in search of Blue and Humpback Whales. 9 am – 2 pm. $45. For reservations contact Katlyn Taylor at katlyn.taylor.oc@gmail.com or mail check to ACSMB, P.O. Box H.E., Pacific Grove, CA 93950.

Oct. 23-27: 22nd Biennial Marine Mammal Conference in Halifax, Nova Scotia, Canada. Conference theme: "A Marine Mammal Odyssey: Marine Mammals and the People Who Study Them." For more information please go to www.marinemammalscience.org.

BOOK RECOMMENDATIONS

The Killer Whale Who Changed The World, by Mark Leiren-Young. 2016 Greystone Books.

The Wild In You: Voices From The Forest And The Sea, by Lori Crozier and Ian McAllister. 2015 Greystone Books.

Coastal Trails of Northern California: Including Best Dog Friendly Beaches, by Linda and David Mullally. 2017 Falcon Guides.

ANCIENT SOUTH CAROLINA WHALE YIELDS SECRETS TO FILTER FEEDING'S ORIGINS

Jun. 29, 2017 — The blue whale is the largest animal that has ever lived. And yet they feed almost exclusively on tiny crustaceans known as krill. The secret is in the baleen, a complex filter-feeding system that allows the enormous whales to strain huge

volumes of saltwater, leaving only krill and other small organisms behind. Now, researchers who have described an extinct relative of baleen whales in Current Biology on June 29 offer new insight into how baleen first evolved.

The findings shed light on a long-standing debate about whether the first baleen whales were toothless suction feeders or toothed whales that used their teeth like a sieve to filter prey out of water, the researchers say. The teeth of the newly discovered species of mysticete, called *Coronodon havensteini*, lend support to the latter view.

"We know from the fossil record that the ancestors of baleen whales had teeth," says Jonathan Geisler of the New York Institute of Technology College of Osteopathic Medicine. "However, the transition from teeth to baleen is controversial. Our study indicates that early toothed whales used spaces between their large complex teeth for filtering and that baleen gradually replaced teeth over millions of years."

The new whale species was found in the early 2000s by a scuba diver in South Carolina's Wando River. He was looking for shark teeth and found the fossilized whale instead. The whale, which lived some 30 million years ago, was later recognized as a representative of a new transitional species.

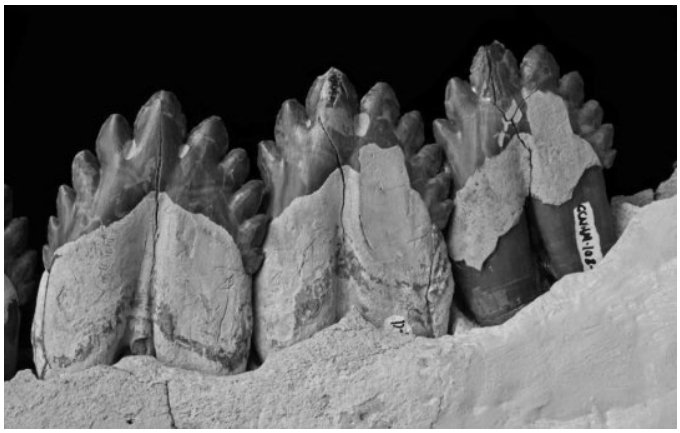
"The skull of this species indicates that it split off very early in mysticete whale evolution, and our analyses confirm that evolutionary position," Geisler says.

Geisler and his colleagues realized that meant the whale could offer important clues about the teeth to baleen transition. The whale under study also had other interesting features. It was larger than other toothed mysticetes, with a skull nearly one meter long. Its large molars in comparison to other whales further suggested an unusual feeding behavior.

Closer examination of the shape and wear on the whale's teeth led the researchers to conclude that the whale used its front teeth to snag prey. But the whale's large, back molars were used in filter feeding, by expelling water through open slots between the closed teeth.

"The wear on the molars of this specimen indicates they were not used for shearing food or for biting off chunks of prey," he says. "It took us quite some time to come to the realization that these large teeth were framing narrow slots for filter feeding."

As confirmation, the researchers found wear on the hidden cusps bordering those slots between the teeth.



This photograph shows *Coronodon havensteini* teeth. (Credit: Geisler et al.).

The findings offer another example of a broader evolutionary pattern in which body parts (in this case teeth) that evolved for one function are later co-opted for another function. The researchers say they are now examining closely related species from the Charleston, SC, area in search of additional evidence.

https://www.sciencedaily.com/releases/2017/06/170629143018.htm

Previously Unknown Extinction of Marine Megafauna Discovered

Jun. 26, 2017 — The disappearance of a large part of the terrestrial megafauna such as saber-toothed cat and the mammoth during the ice age is well known. Now, researchers at the University of Zurich and the Naturkunde Museum in Berlin have shown that a similar extinction event had taken place earlier, in the oceans.

New extinction event discovered

The international team investigated fossils of marine megafauna from the Pliocene and the Pleistocene epochs (5.3 million to around 9,700 years BC). "We were able to show that around a third of marine megafauna disappeared about three to two million years ago. Therefore, the marine megafaunal communities that humans inherited were already altered and functioning at a diminished diversity," explains lead author Dr. Catalina Pimiento, who conducted the study at the Paleontological Institute and Museum of the University of Zurich.

Above all, the newly discovered extinction event affected marine mammals, which lost 55 per cent of their diversity. As many as 43 per cent of sea turtle species were lost, along with 35 per cent of sea birds and 9 per cent of sharks. On the other hand, the following new forms of life were to develop during

the subsequent Pleistocene epoch: Around a quarter of animal species, including the polar bear Ursus, the storm petrel Oceanodroma or the penguin Megadyptes, had not existed during the Pliocene. Overall, however, earlier levels of diversity could not be reached again.

Effects on functional diversity

In order to determine the consequences of this extinction, the research team concentrated on shallow coastal shelf zones, investigating the effects that the loss of entire functional entities had on coastal ecosystems. Functional entities are groups of animals not necessarily related, but that share similar characteristics in terms of the function they play on ecosystems. The finding: Seven functional entities were lost in coastal waters during the Pliocene.

Even though the loss of seven functional entities, and one third of the species is relatively modest, this led to an important erosion of functional diversity: 17 per cent of the total diversity of ecological functions in the ecosystem disappeared and 21 per cent changed. Previously common predators vanished, while new competitors emerged and marine animals were forced to adjust. In addition, the researchers found that at the time of the extinction, coastal habitats were significantly reduced due to violent sea levels fluctuations.

Large warm-blooded marine animals are more vulnerable to global environmental changes

The researchers propose that the sudden loss of the productive coastal habitats, together with oceanographic factors such as altered sea currents, greatly contributed to these extinctions. "Our models have demonstrated that warm-blooded animals in particular were more likely to become extinct. For example, species of sea cows and baleen whales, as well as the giant shark Carcharocles megalodon disappeared," explains Dr. Pimiento. "This study shows that marine megafauna were far more vulnerable to global environmental changes in the recent geological past than had previously been assumed." The researcher also points to a present-day parallel: Nowadays, large marine species such as whales or seals are also highly vulnerable to human influences.

https://www.sciencedaily.com/releases/2017/06/170626124431.htm

Fossils from the Pliocene: shark tooth from carchahinus leucas on the left, from negaprion on the right. (Credit: UZH).

Trap-Feeding – A New Humpback Feeding Behaviour!

By Nicholas St. Fleur

Jun. 17, 2017 — One of the best things about researching individual whales is that, no matter how long we study them, we keep being reminded of how much more there is to learn…

In 2011, MERS researchers observed a humpback whale named "Conger" (BCY0728), a whale that we have documented off northeastern Vancouver Island since 2009, doing something that we had never seen a humpback do before. Conger was remaining at the water's surface with his mouth wide open, and he stayed like this for an extended period of time.

With his mouth open, he spun slowly in place for about a minute, and then used his flippers to push fish toward his mouth!

After observing this feeding behaviour several more times, we named it "trap-feeding", because it reminded us of the way that Venus flytraps catch flies. Humpbacks were remaining stationary and waiting for prey to enter their mouths. By studying the behaviour further, we have learned that, in addition to often using their long flippers to direct fish toward their mouths, humpbacks also benefit from diving birds that are chasing the same prey. While trying to escape the birds, the small fish appear to school in or next to the whales' mouths.

We know of only two whales who used this trap-feeding behaviour in 2011 – Conger and "Moonstar" (BCY0768), who was three years old at the time. But by the end of 2015, sixteen of the humpback whales that feed off northeastern Vancouver Island had been documented using this strategy at least once. In some cases, humpbacks even trap-fed side-by-side!

Aided by the many people that have contributed photos, videos, and sightings of trap-feeding over the past six years, MERS researchers have concluded that when whales trap-feed, they are feeding in the same locations and on the same prey species (juvenile herring) as when they lunge-feed. BUT there is a big difference in the size and density of the schools of fish that humpbacks consume when they trap-feed vs. when they lunge-feed…

The schools of herring that humpback whales trap-feed on are much smaller and less dense than the

Humpback whale "Conger" (BCY0728) trap-feeding. (Credit: Jared Towers, www.mersociety.org).

schools that they lunge-feed on. We believe that trap-feeding is an energetically efficient way to feed on these smaller schools of fish. When whales are lunge-feeding, they accelerate toward their prey, then open their mouths – an energy-intensive strategy that only makes sense if schools of fish are large and dense enough to result in a net energy gain for whales. But while trap-feeding, whales open their mouths while stationary or near-stationary, and therefore use much less energy.

If you see humpback whales exhibiting this feeding behaviour, we would love to know! Sightings and photos can be sent to info@mersociety.org

Additionally, MERS researchers are in the process of publishing a study focused on trap-feeding – so a lot more information about this new humpback whale feeding strategy will be available soon!

https://mersociety.wordpress.com/2017/06/17/trap-feeding-a-new-humpback-feeding-behaviour/

Study Links Killer Whales' Woes to Salmon Shortage that Causes Pregnancies to Fail

By Alan Boyle

Jun. 28, 2017 — What's killing the killer whales? After following the whales and analyzing their poop for years, scientists say the Pacific Northwest's population is dwindling primarily due to a chronic lack of Chinook salmon.

The killer whales, also known as orcas, aren't dying of starvation. Rather, the scientists say the stress of not getting enough to eat is causing orca pregnancies to fail.

Other factors, such as marine pollutants and disruptive ship traffic, contribute to the whales' woes as well. But in a paper being published in Thursday's issue of the journal PLOS ONE, the researchers say the data point most directly to nutritional stress.

"I think our study is quite conclusive about the role that lack of prey is having on the killer whales," lead author Samuel Wasser, a biologist at the University of Washington and director of UW's Center for Conservation Biology, told GeekWire today.

Wasser and his colleagues painstakingly built up a chain of evidence by observing the orcas that spend their summers in the sheltered waters around northwest Washington state and southwest British Columbia. This body of water, known as the Salish Sea, includes Puget Sound and the Strait of Juan de Fuca, which are magnets for whale-watchers.

The orca population that hangs out in the Salish Sea from May to October, known as the southern resident killer whales, has declined from 98 whales in 1995 to 78 at last count, despite stepped-up efforts to protect the endangered species.

Biologists from UW, the National Oceanic and Atmospheric Administration's Northwest Fisheries Science Center and the Center for Whale Research started gathering data in 2007 to look into the causes of the decline.

Every spring, orcas would arrive from their wintering grounds in the open Pacific Ocean off the West Coast. The research team noted how many orcas returned and how many calves were born, and kept tabs on all the orcas until they headed back out to the Pacific in the fall.

To take readings on the whales' health, the researchers trained dogs to ride on boats trailing the killer whales and sniff out blobs of fresh orca poop. The scat was retrieved and analyzed to determine what the whales were eating, what hormones they were secreting, and what toxins they were absorbing.

Even the DNA in the poop was decoded, to determine which orcas were responsible for which leavings.

The team took a particularly close look at hormones linked to stress and to pregnancy. The hormonal readings showed that there were a total of 35 pregnancies over a period ranging from 2007 to 2014. But only 11 new calves were spotted during that time frame, suggesting that the 24 other pregnancies failed.

Scientists have long known that the southern resident killer whales have a lower birth rate than other orca populations – but there's been a long-running debate over the reason why. Was it a lack of salmon, which is the dominant fare in the orcas' diet? Was it the prevalence of pollutants such as

polychlorinated biphenyls, or PCBs? Or was it the disturbances caused by passing ships?

To seek an answer, researchers compared the levels of two hormones that were extracted from the scat of the pregnant orcas – a thyroid hormone, as well as a glucocorticoid hormone (also known as cortisol) which is more strongly linked to nutritional stress.

The comparison showed that the stress indicator was dramatically elevated in the scat from orcas whose pregnancies ended up failing. What's more, the pattern of the rise and fall in hormone levels pointed to poor nutrition rather than ship traffic as the dominant stress factor.

"The lack of fish is a much stronger signal," Wasser said.

Wasser said pollutants could be a contributing factor, potentially related to the orcas' nutritional state.

"Those toxins are stored in fat, and they accumulate over their entire lifetime," he said. "Dumping the toxins out of fat exacerbates the abortion rate. … But if you keep the fish high, the toxins stay locked up in the fat."

The study suggests that the fate of the southern resident killer whales is strongly linked to the fate of Chinook salmon runs, which have been hard-hit by environmental factors ranging from overfishing and dam construction to pollution and invasive species.

"It's all about the fish, and we have to do something about how to increase fish runs," Wasser said. "One of the things we need to look at seriously is, what is the impact of the Snake River dams on the Chinook?"

He said the whales' woes may shed light on wider woes as well.

"Some of the Native American tribes … we know that a number of them have had reproductive problems that parallel what happens to the killer whales," Wasser said. "So there's a lot of reason to think that bringing the fish back would help a lot more than the killer whales."

https://www.geekwire.com/2017/scientists-link-killer-whales-woes-salmon-shortage-causes-pregnancies-fail/

Discovery of a Fossil in the Wando River Gives Clues to a New Kind of Whale

Jun. 29, 2017 —College of Charleston alumnus Mark Havenstein discovered a whale fossil in the Wando River that is estimated to be 30 million years old. It's thought to be a transitional species, somewhere between primitive whales with hind legs and a modern baleen whale.

College of Charleston adjunct professor of geology Robert W. Boessenecker and the discovered fossil in the College's Mace Brown Museum of National History. (Credit: Reese Moore).

College of Charleston adjunct professor of geology Robert W. Boessenecker says the discovery of the whale fossil offers important clues about whales' transition from teeth to baleen, a filter-feeding system inside the mouths of certain species of the aquatic mammal.

The newly discovered species of toothed baleen whale is named Coronodon havensteini. The genus name refers to the mammal's crown-shaped teeth, and the species name is in honor of discoverer.

The fossil is on display at the Mace Brown Museum of Natural History at the College of Charleston.

Researchers say the Charleston area is one of the few areas on earth where fossils of the earliest baleen whales can be found.

http://abcnews4.com/news/local/discovery-of-a-fossil-in-the-wando-river-gives-clues-to-a-new-kind-of-whale

SIGHTINGS

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

Date	#	Type of Animal(s)
6/30 10 am	2	Humpback Whales
	10	Black-footed Albatross
	1	Tufted Puffin
6/30 9 am	8	Humpback Whales
	3	Harbor Porpoise
	3	Fur Seals
	1	Mola Mola (Ocean Sunfish)
	3	Black-footed Albatross
6/30 8 am	14	Humpback Whales
	800	Pacific White-sided Dolphins
	200	Risso's Dolphins

	200	Northern Right Whale Dolphins
	1	Mola Mola (Ocean Sunfish)
	1	Black-footed Albatross
6/29 2 pm	6	Humpback Whales
	1	Mola Mola (Ocean Sunfish)
	1	Black-footed Albatross
6/29 9 am	19	Humpback Whales
	1	Killer Whale (Fat Fin)
	800	Pacific White-sided Dolphins
	40	Northern Right Whale Dolphins
6/29 8 am	25	Humpback Whales
	1	Killer Whale (Fat Fin)
	1000	Pacific White-sided Dolphins
	2	Mola Mola (Ocean Sunfish)
	20	Black-footed Albatross
6/28 2 pm	6	Humpback Whales (2 breaching)
	1	Harbor Porpoise
	3	Mola Mola (Ocean Sunfish)
6/28 9 am	10	Humpback Whales
	1	Blue Whale
	1	Killer Whale (Fat Fin)
	40	Pacific White-sided Dolphins
	60	Risso's Dolphins
	1	Mola Mola (Ocean Sunfish)
	2	Black-footed Albatross
	2	Rhinoceros Auklets
	1	Tufted Puffin
6/28 8 am	11	Humpback Whales
	1	Blue Whale
	20	Pacific White-sided Dolphins
	60	Risso's Dolphins
	1	Mola Mola (Ocean Sunfish)
	1	Black-footed Albatross
6/27 2 pm	2	Humpback Whales
6/27 9 am	15	Humpback Whales
	720	Pacific White-sided Dolphins
	3	Risso's Dolphins
	50	Northern Right Whale Dolphins
	2	Mola Mola (Ocean Sunfish)
	3	Black-footed Albatross
6/27 8 am	5	Humpback Whales
	1000	Pacific White-sided Dolphins
	50	Risso's Dolphins
	50	Northern Right Whale Dolphins
6/26 5:30 pm	10	Humpback Whales
	1	Tufted Puffin
6/26 2 pm	12	Humpback Whales
	1	Blue Whale
	3	Harbor Porpoise
	4	Mola Mola (Ocean Sunfish)
	2	Black-footed Albatross
6/26 9 am	15	Humpback Whales
	1	Fin Whale
	5	Harbor Porpoise
	2	Mola Mola (Ocean Sunfish)
6/26 8 am	9	Humpback Whales
	1	Fin Whale
	3	Harbor Porpoise
	4	Mola Mola (Ocean Sunfish)
	2	Black-footed Albatross
6/26 8 am	13	Humpback Whales

All Day	2	Blue Whales
	150	Pacific White-sided Dolphins
6/25 5:30 pm	25	Humpback Whales
6/25 2 pm	14	Humpback Whales
	8	Harbor Porpoise
	1	Mola Mola (Ocean Sunfish)
6/25 1 pm	6	Humpback Whales
	11	Killer Whales
	1	Mola Mola (Ocean Sunfish)
	2	Black-footed Albatross
6/25 9 am	8	Humpback Whales
	11	Killer Whales
	2	Harbor Porpoise
	4	Mola Mola (Ocean Sunfish)
	9	Black-footed Albatross
6/25 8 am	6	Humpback Whales
	11	Killer Whales
	1	Pacific White-sided Dolphins
	150	Risso's Dolphins
	1	Mola Mola (Ocean Sunfish)
	2	Black-footed Albatross
6/25 8 am All Day	12	Humpback Whales
	30	Killer Whales
	25	Risso's Dolphins
6/24 5:30 pm	17	Humpback Whales
	3	Mola Mola (Ocean Sunfish)
6/24 2 pm	12	Humpback Whales
6/24 1 pm	9	Humpback Whales
	1	Black-footed Albatross
6/24 9 am	13	Humpback Whales
	1	Blue Whale
	6	Risso's Dolphins
6/24 8 am	18	Humpback Whales
	1	Blue Whale
	20	Harbor Porpoise
	2	Mola Mola (Ocean Sunfish)
6/23 5:30 pm	15	Humpback Whales
	2	Mola Mola (Ocean Sunfish)
6/23 2 pm	20	Humpback Whales
	20	Risso's Dolphins
	1	Northern Fur Seal
6/23 1 pm	14	Humpback Whales
	20	Risso's Dolphins
	1	Mola Mola (Ocean Sunfish)
	1	Black-footed Albatross
6/23 9 am	25	Humpback Whales (lunge feeding)
	1	Fin Whale
	100	Risso's Dolphins
	2	Mola Mola (Ocean Sunfish)
6/23 8 am	8	Humpback Whales
	25	Pacific White-sided Dolphins
	1	Mola Mola (Ocean Sunfish)
	1	Black-footed Albatross
	1	Tufted Puffin
6/22 2 pm	18	Humpback Whales
	6	Harbor Porpoise
6/22 9 am	25	Humpback Whales
	4	Harbor Porpoise
6/22 8 am	9	Humpback Whales
	3	Bottlenose Dolphins

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