# Soundings AMERICAN CETACEAN SOCIET

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

> MONTHLY MEETING - PLEASE NOTE NEW TEMPORARY LOCATION -SALLY GRIFFIN ACTIVE LEARNING CENTER (700 JEWELL AVE IN PACIFIC GROVE) MEETING IS OPEN TO THE PUBLIC

> > Thursday, October 25, 2018 **Time:** 7:30 PM

PLEASE JOIN US AT 7:00 PM FOR REFRESHMENTS

Speaker: Dr. Dan Costa

Title: Elephant Seals in the North Pacific to Leopard Seals in Antarctica: Movement Patterns of Marine Mammals, an Important Conservation Tool

Daniel Costa is a Distinguished Professor of Ecology and Evolutionary Biology at the University of California at Santa Cruz. He completed a B.A. at UCLA, a Ph.D. at U.C. Santa Cruz and a post doc at the Scripps Institution of Oceanography. He has served on the editorial board of a number of journals and is currently an Editor for Proceedings of the Royal Society B. His research focuses on the ecology and physiology of marine mammals and seabirds, taking him to every continent and almost every habitat from the Galapagos to Antarctica. He has worked with a broad range of animals including turtles, penguins, albatross, seals, sea lions, sirenians, whales and dolphins and has published over 500 scientific papers. His current work is aimed at recording the movement and distribution patterns of marine mammals and seabirds in an effort to understand their habitat needs. This work is helping to identify biodiversity hotspots and the factors that create them. He has been developing tools to identify and create viable Marine Protected Areas for the conservation of highly migratory species. In addition his research is studying the response of marine mammals to underwater sounds and developing ways to assess whether the potential disturbance may result in a population consequence. With Barbara Block he co-founded the Tagging of Pacific Predators program, a multidisciplinary effort to study the movement patterns of 23 species of marine vertebrate predators in the North Pacific Ocean. He is an internationally recognized authority on tracking of marine mammals and birds.

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

Next month: Our November and December meetings are combined because of the seasonal holidays, so our final program this year will be on Thursday, Dec. 6. We will be returning to our regular location of Hopkins Boatworks Hall for the Dec. 6 meeting. Thank you for your patience and flexibility as we held meetings at other locations until renovations were completed. Our speaker will be Danna Staaf, author of Squid Empire and a graduate of Hopkins. Please save the date and join us!

#### **OCTOBER 2018**

Monterev Bav Chapter

<b>INSIDE THIS ISSUE</b>	
CALENDAR	2
WHAT DO KILLER WHALES	
DO AT NIGHT?	2
Mysterious Great White	
SHARK LAIR DISCOVERED IN	I
PACIFIC OCEAN	?
NEW EFFORT WILL ANALYZ	Е
GENES OF ENDANGERED	
NORTHWEST ORCAS	.5
ORCA 'APOCALYPSE': HALF	OF
KILLER WHALES DOOMED T	0
DIE FROM POLLUTION	6
SIGHTINGS	7
MEMBERSHIP	8

#### **ACS Monterey Bay chapter** needs you!

Please consider volunteering to serve on the ACS Board of **Directors.** Current openings include Membership Chair and Publicity Chair.

If you enjoy learning about whales and sharing your passion with others, we'd like to speak with you. Please contact any board member for more information.

Page 2

# Soundings BOOK RECOMMENDATIONS

<u>The Pacific Leatherback</u>, a film by John Dutton. Features work by MLML Research Affiliate Scott Benson. 2018.

<u>Emperor: The Perfect Penguin</u>, by Sue Flood, with forward by Michael Palin. 2018 Acc Art Books.

The Overstory, by Richard Powers. 2018 W. W. Norton.

Wild Orca: The Oldest, Wisest Whales in the World, by Brenda Peterson, with paintings by Wendell Minor. 2018 Henry Holt.

# CALENDAR

Now through Nov. 22, 2019: Albatross Exhibit at the Seymour Center at Long Marine Lab: "A Perfect Day for an Albatross." Features Caren Lobel-Fried's book and artwork. The exhibit also features videos, albatross facts and hands-on activities about this remarkable seabird.

**Oct. 17-20:** Society for Vertebrate Paleontology 78<sup>th</sup> Annual Meeting at the Albuquerque Convention Center in Albuquerque, New Mexico.

**Oct. 19**: Hopkins Marine Station Friday Lecture by Lauren Wild: Perspectives of Depredation from Fishermen, Scientists, and Whales. 12 PM – 1 PM.

**Oct. 21:** Science Sunday at the Seymour Center at Long Marine Lab. Presentation by Andrew DeVogelaere, Ph.D: Mysteries of the Davidson Seamount and Sur Ridge Revealed: Exploring ancient deep- sea coral communities. 1:30 – 2:30 PM.



Nov. 2-4: American Cetacean Society 16<sup>th</sup> International Conference at the Hyatt Regency in Newport Beach, CA. Conference Theme: Whales & Us: The Next Generation. Speakers include Bernd Wursig, Kate Stafford, John Calambokidis, Denise

Herzing, Jeremy Goldbogen, Ari Friedlaender, Joy Reidenberg, Thomas Jefferson, and Ted Cheeseman. Conference registration at acsonline.org. **Nov. 2:** Conference Whale Watch aboard the *Ocean Explorer* with Davey's Locker Whale Watch out of Newport Beach, CA. 8 AM - 4 PM. Check ACS Conference website for more details.

**Nov. 8-11:** Western Society Of Naturalists Annual Meeting in Tacoma, WA.

**Feb. 16 – Mar. 5, 2019:** Antarctic Peninsula Whales and Landscape Expedition, in partnership with ACS. Itinerary, ship details and how to signup at cheesemans.com/Ant-Whales-Feb2019.

**Feb. 27 – Mar. 2, 2019:** Pacific Seabird Group 46<sup>th</sup> Annual Meeting in Kauai, Hawaii at the Aqua Kauai Beach Resort. For more information please go to www.pacificseabirdgroup.org

# WHAT DO KILLER WHALES DO AT NIGHT?

By Larry Pynn

Oct. 3, 2018 — Scientists know much about the imperiled, fish-eating resident killer whales that live off the west coast of North America, but some facets of these marine mammals' lives are mysterious. For instance, what do they do at night?

Think about nocturnal animals and bats and owls probably come to mind. Most animals, humans included, are diurnal and on the go during the day. Killer whales, however, follow a diel cycle—they're active both day and night. The puzzle for researchers is to determine how the whales' behavior—their foraging, socializing, traveling, resting, and sleeping habits—changes from day to night.

Understanding the intricacies of whale behavior is difficult at the best of times, even more so when they slip below the ocean's surface at night. "We hear them on the hydrophones at night," explains Sheila Thornton, a research scientist with Fisheries and Oceans Canada who is overseeing a study into the shadowy lives of killer whales. "They're active in their vocalizing, but we want to take that one step further and see what they're actually doing."

In August, four researchers took to the water in Telegraph Cove, off the northeast coast of Vancouver Island, British Columbia, armed with the latest in whale-tracking technology. Their targets were the threatened northern resident killer whales, whose population is growing but still totals only an estimated 309 individuals across their entire range from southeast Alaska to southern Washington State.

Armed with decades of data on the whales' movements, along with real-time information from other researchers and whale watching boats, Thornton's team had little problem locating the whales. As evening approached, they moved close to the pod and used a six-meter pole to attach digital acoustic recording tags just below the whales' dorsal fin using four suction cups.

Thornton and her team use a pole to attach a digital acoustic recording tag to a northern resident killer whale. Video courtesy of DFO

Thornton says that compared with other types of tracking tags, which penetrate the skin, the suction cup tags are low impact. Occasionally, a whale might slap its tail or roll in response to the intrusion, but most just dive and come back up, she says.

Each tag is about the size of a large chocolate bar, and provides detailed, three-dimensional data about the whales' movements. The tags show when and how a whale is swimming or diving, and even whether a hunting attempt is successful.

Hydrophones on the tags provide another level of detail—right down to the crunch of a captured chinook salmon and the sound of a whale rubbing itself on the beach. "You can hear the pebbles rolling, and vocalizations of the animals, and vessels in the background," Thornton says.

After several hours, the suction cups lose their grip and the tag floats to the surface, emitting a radio signal that helps the researchers find it. "It can be very challenging," she says. The signal can echo off the land, turning an archipelago into a pinball machine. "You can spend a lot of time waving an antenna around."

Thornton's team tagged 17 whales this past summer, obtaining more than 70 hours of data—half at night. The study is expected to continue for another two years; analysis of the information is a huge undertaking that should yield a treasure trove of information on killer whale behavior.

Previous research using less sophisticated technology showed that southern resident killer whales—a distinct, endangered population—swim slower and dive less often at nighttime. Robin Baird of the Cascadia Research Collective in Washington State suggests that the southern residents use more than echolocation to hunt their prey.

"When they're catching these large, evasive fish, such as chinook, they also probably use vision, at least in the final moments of the chase," he says. "When it's dark, they're just less likely to forage."

Thornton's ongoing research will determine how Baird's results stack up against the northern residents,



Killer whales keep busy day and night—but what exactly they get up to at night is not well known. (Credit: Interfoto/Alamy Stock Photo).

while shedding light on how killer whales are affected by noise from nearby vessels. "It's quite surprising the way just one vessel can obliterate their vocalizations," she says.

Farther south, researchers with the US National Oceanic and Atmospheric Administration are undertaking similar studies on the southern resident killer whales.

Thornton says the results of this and related studies will be useful for informing agencies such as Transport Canada on whether restrictions on vessel activity could mitigate impacts on the struggling killer whales.

https://www.hakaimagazine.com/news/what-do-killerwhales-do-at-night/

### MYSTERIOUS GREAT WHITE SHARK LAIR DISCOVERED IN PACIFIC OCEAN

#### By Peter Fimrite

Sep. 16, 2018 — A scientific mission into the secret ocean lair of California's great white sharks has provided tantalizing clues into a vexing mystery — why the fearsome predators spend winter and spring in what has long appeared to be an empty void in the deep sea.

A boatload of researchers from five scientific institutions visited the middle-of-nowhere spot between Baja California and Hawaii this past spring on a quest to learn more about what draws the big sharks to what has become known as the White Shark Cafe, almost as if they were pulled by some astrological stimulus.

The sharks' annual pilgrimage to the mid-Pacific region from the coasts of California and Mexico has baffled scientists for years, not just because it is so far away — it takes a month for the sharks to get there — but because it seemed, on the surface, to be lacking the kind of prey or habitat that the toothy carnivores prefer.

But the researchers made a remarkable discovery. Instead of blank, barren sea, the expedition, led by scientists with Stanford University and the Monterey Bay Aquarium, found a vast community of tiny lightsensitive creatures so tantalizing that the sharks cross the sea en masse to reach them.

The primary lure, scientists believe, is an extraordinary abundance of squid and small fish that migrate up and down in a little understood deep-water portion of ocean known as the "mid-water," a region skirting the edge of complete darkness that could provide an immeasurably valuable trove of information about the ocean ecosystem and climate change.

"The story of the white shark tells you that this area is vitally important in ways we never knew about," said Salvador Jorgensen, a research scientist for the Monterey Bay Aquarium and one of the expedition's leaders. "They are telling us this incredible story about the mid-water, and there is this whole secret life that we need to know about."

The researchers' focus, a 160-mile-radius subtropical region about 1,200 nautical miles east of Hawaii, was essentially unknown to science until marine scientist Barbara Block, of Stanford University's Hopkins Marine Station, began attaching acoustic pinger tags to white sharks 14 years ago.

Block discovered that the local sharks, known as northeastern Pacific whites, feed on elephant seals and other marine mammals in the so-called Red Triangle, between Monterey Bay, the Farallon Islands and Bodega Head, from about August to December. She also tracked their movements into San Francisco Bay and around Guadalupe Island, in Mexico.

But then, each December, the acoustic tags showed a mass movement out to sea that was as confusing to the researchers as it was surprising.



Block found that the sharks were leaving the food-

rich waters along the West Coast to spend spring and most of the summer in a patch of open ocean about the size of Colorado, a place that looked in satellite images like an empty, oceanic Sahara desert.

She named it the White Shark Cafe even though she wasn't sure whether the sharks went there for food or sex.

To find out, Block organized the monthlong expedition in April and May aboard the Schmidt Ocean Institute's research vessel Falkor, which was equipped with high-tech instruments, sail drones and a remotely operated submarine. Last fall, before departure, her team of scientists tracked down 36 local sharks using acoustic signals and fitted them with high-tech satellite monitoring tags with locator beacons programmed to pop off and float to the surface during the cafe expedition.

The scheme worked. The researchers got data from 10 of the 22 tags that floated up and signaled the Falkor that they had detached and were bobbing around ready to be collected, an exercise that Jorgensen called "a white shark treasure hunt." The scientists also obtained recorded information on shark movements and behavior over the previous months from six other great whites through radio uplinks. The rest only transmitted their location or were not recovered.

The data on the recovered tags documented highly unusual diving behavior at depths scientists had rarely before seen in white sharks.

On the way to the cafe, the sharks made periodic dives 3,000 feet deep, a surprising discovery given that the big fish normally wouldn't be able to stay warm enough to digest food in such cold, pressurized depths. The sharks, researchers found, were using warm circular currents to get down the water column, suggesting they were following prey. Still, it isn't clear what they were eating.

Once they reached their destination in late winter and early spring, the animals engaged in "bounce dives" down to 1,400 feet below the surface during the day and 650 feet at night, Jorgensen said.

In April, the male sharks started behaving very differently from the females, moving individually up and down the water in a V-shape as many as 140 times a day, Jorgensen said. The females, on the other hand, continued their previous behavior, diving deep during the day and shallow at night, he said.

The scientists still haven't figured out the disparate gender behaviors.

"Either they are eating something different or this is related in some way to their mating," Jorgensen said.

American Cetacean Society - Monterey Bay

www.acsmb.org

What's clear so far is that, like the hidden community of specialized wildlife in the Sahara, the shark cafe is a swirling mass of tiny phytoplankton, fish, squid and jellies. They move up and down in a soupy layer deep under water, a kind of twilight zone just below where sunlight stops penetrating the ocean depths.

"It's the largest migration of animals on Earth -a vertical migration that's timed with the light cycle," Jorgensen said. "During the day they go just below where there is light and at night they come up nearer the surface to warmer, more productive waters under the cover of darkness."

It's a surreal deep water world populated by bioluminescent lantern fish and other species that have evolved amazing adaptations to darkness, Jorgensen said.

Scientists in recent years have discovered hundreds of new species in deep water zones like this one. The uniquely abundant mass of fish draws all kinds of predators, like small cookiecutter sharks, which have evolved light-emitting organs called photophores on the underside of their bodies that act, to prey, like invisibility cloaks.

The white sharks aren't the only large predators tracking the mid-water creatures. Squid-eating bigeye tuna, blue and mako sharks also frequent the cafe. Jorgensen said these larger fish may be what the white sharks eat, but there isn't any definitive evidence of that.

"What we've learned through the progression of our research is that this mid-water layer is extremely important for white sharks," he said. "They are swimming in these layers, tracking (prey) day and night. ... It's a game of hide-and-seek."

Scientists say this little understood mid-water zone is a biological laboratory that, with more research, could lead to biomedical breakthroughs and yield clues to how the ocean absorbs carbon dioxide and how species adapt to climate change. There is also concern that it is ripe for exploitation, particularly long-line and drift net fishing.

Triggered by some crypic mechanism, the sharks leave their mid-ocean sanctum during the summer and begin to gather along the coast of California around August.

Block said researchers will not know whether the sharks were feeding, mating or doing both during their time in the White Shark Cafe until the analyses are completed.

"We now have a gold mine of data. We have doubled the current 20-year data set on white shark diving behaviors and environmental preferences in just three weeks," Block said. This "will help us better understand the persistence of this unique environment and why it attracts such large predators."

https://www.sfchronicle.com/news/article/Mysteriousgreat-white-shark-lair-discovered-in-13234068.php

# NEW EFFORT WILL ANALYZE GENES OF ENDANGERED NORTHWEST ORCAS

By Phuong Lee

Oct. 8, 2018 — A new scientific effort will sequence the genomes of critically endangered Pacific Northwest orcas to better understand their genetics and potentially find ways to save them from extinction.

The collaboration announced Thursday involves scientists with the National Oceanic and Atmospheric Administration's Northwest Fisheries Science Center, the nonprofit Nature Conservancy and BGI, a global genomics company.

The project will sequence the genome — the entire genetic code of a living thing — of more than 100 southern resident killer whales using skin or other samples collected from live and dead orcas over the past two decades. Initial results are expected next year.

Scientists said the information could help explain, for example, whether internal factors such as inbreeding or genetic variation in immune systems are preventing the whales from rebounding.

The distinctive black-and-white fish-eating orcas have struggled with pollution, boat noise and a dearth of their preferred prey, chinook salmon. The death of a young orca last month — despite a weekslong international effort to save her — leaves only 74 in a group that has failed to reproduce successfully in the past three years. That's the lowest number in over 30 years.

"This will help us fill in some really critical gaps in our understanding about why the population is not recovering," Mike Ford, director of conservation biology at the Northwest Fisheries Science Center in Seattle, said during a news conference in BGI's Seattle office. "As we fill in those gaps that will lead us to potentially better solutions."

Ford was lead author on a study published earlier this year that found that just two males in the small population fathered half of the calves that were born and sampled by scientists since 1990.

"Inbreeding could be a problem but we don't have enough data to study that in-depth," Ford said.



Split-view of a killer whale at sunrise off the coast of northern Norway. (Credit: Audun Rikardsen/Science).

Inbreeding, for example, could affect whether a female orca will become pregnant, whether she'll have a calf or how likely that calf would be to survive.

Female orcas have been having pregnancy problems because of nutritional stress linked to lack of salmon. A multi-year study last year by University of Washington and other researchers found that twothirds of the orcas' pregnancies failed between 2007 and 2014.

BGI will sequence the orcas' genomes and provide analyses and results to U.S. fisheries biologists and other scientists. They'll compare that research to the genomes of the Alaska population of killer whales that have been thriving, as well as mammal-eating transient whales.

Yiwu He, CEO of BGI Groups USA in Seattle, said that like so many others in the region, he and his family have been captivated by the iconic whales that spend time in the inland waters of Washington state.

"We very much want to do something to help," he said, adding the genome sequencing could help unravel questions about why the animals are not reproducing. He noted that BGI has extensive experience sequencing whole genomes of humans, plants and animals.

Kevin Werner, science and research director for the Northwest Fisheries Science Center, said the project enlists more experts outside of government to work on the problems.

Ford said the results could put other problems faced by the whales, such as lack of prey or contamination, into context and could lead to different solutions. Whales found to have weaker immune systems because of lack of genetic diversity of immune-system genes, for example, could warrant more active treatment or management in the future. "We don't know what we're going to find," Ford said, adding: "Maybe we'll learn something new about the population that we don't already know."

https://www.michigansthumb.com/news/science/article/ New-effort-will-analyze-genes-of-endangered-13282142.php

## ORCA 'APOCALYPSE': HALF OF KILLER WHALES DOOMED TO DIE FROM POLLUTION

#### By Damian Carrington

Sep. 27, 2018 — At least half of the world's killer whale populations are doomed to extinction due to toxic and persistent pollution of the oceans, according to a major new study.

Although the poisonous chemicals, PCBs, have been banned for decades, they are still leaking into the seas. They become concentrated up the food chain; as a result, killer whales, the top predators, are the most contaminated animals on the planet. Worse, their fatrich milk passes on very high doses to their newborn calves.

PCB concentrations found in killer whales can be 100 times safe levels and severely damage reproductive organs, cause cancer and damage the immune system. The new research analysed the prospects for killer whale populations over the next century and found those offshore from industrialised nations could vanish as soon as 30-50 years.

Among those most at risk are the UK's last pod, where a recent death revealed one of the highest PCB levels ever recorded. Others off Gibraltar, Japan and Brazil and in the north-east Pacific are also in great danger. Killer whales are one of the most widespread mammals on earth but have already been lost in the North Sea, around Spain and many other places.

"It is like a killer whale apocalypse," said Paul Jepson at the Zoological Society of London, part of the international research team behind the new study. "Even in a pristine condition they are very slow to reproduce." Healthy killer whales take 20 years to reach peak sexual maturity and 18 months to gestate a calf.

PCBs were used around the world since the 1930s in electrical components, plastics and paints but their toxicity has been known for 50 years. They were banned by nations in the 1970s and 1980s but 80% of the 1m tonnes produced have yet to be destroyed and are still leaking into the seas from landfills and other sources.

The international Stockholm Convention on Persistent Organic Pollutants came into force in 2004

to tackle the issue, but Jepson said the clean-up is way behind schedule. "I think the Stockholm Convention is failing," he said. "The only area where I am optimistic is the US. They alone produced 50% of all PCBs, but they have been getting PCB levels down consistently for decades. All we have done in Europe is ban them and then hope they go away."

The researchers said PCBs are just one pollutant found in killer whales, with "a long list of additional known and as yet unmeasured contaminants present". Further problems for killer whales include the loss of key prey species such as tuna and sharks to overfishing and also growing underwater noise pollution.

The new research, published in the journal Science, examined PCB contamination in 351 killer whales, the largest analysis yet. The scientists then took existing data on how PCBs affect calf survival and immune systems in whales and used this to model how populations will fare in the future. "Populations of Japan, Brazil, Northeast Pacific, Strait of Gibraltar, and the United Kingdom are all tending toward complete collapse," they concluded.

Lucy Babey, deputy director at conservation group Orca, said: "Our abysmal failures to control chemical pollution ending up in our oceans has caused a killer whale catastrophe on an epic scale. It is essential that requirements to dispose safely of PCBs under the Stockholm Convention are made legally binding at the next meeting in May 2019 to help stop this scandal." Scientists have previously found "extraordinary" levels of toxic pollution even in the 10km-deep Mariana trench in the Pacific Ocean.

"This new study is a global red alert on the state of our oceans," said Jennifer Lonsdale, chair of the Wildlife and Countryside Link's whales group. "If the UK government wants its [proposed] Environment Act to be world-leading, it must set ambitious targets on PCB disposal and protect against further chemical pollution of our waters."

The research shows that killer whale populations in the high north, off Norway, Iceland, Canada and the Faroes, are far less contaminated due to their distance from major PCB sources. "The only thing that gives me hope about killer whales in the longer term is, yes, we are going to lose populations all over the industrialised areas, but there are populations that are doing reasonably well in the Arctic," said Jepson.

If a global clean-up, which would take decades, can be achieved, these populations could eventually repopulate empty regions, he said, noting that killer whales are very intelligent, have strong family bonds and hunt in packs. "It is an incredibly adaptive species

American Cetacean Society - Monterey Bay

- they have been able to [live] from the Arctic to the Antarctic and everywhere in between."

He praised the billion-dollar "superfund" clean-ups in the US, such as in the Hudson River and Puget Sound, where the polluter has paid most of the costs: "The US is going way beyond the Stockholm Convention because they know how toxic PCBs are."

https://www.theguardian.com/environment/2018/sep/27/ orca-apocalypse-half-of-killer-whales-doomed-to-die-frompollution

#### 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)		
	44	Humpback Whales		
9/30 9 am	1	Minke Whale		
	50	Long-beaked Common Dolphins		
0/20 8 am	83	Humpback Whales		
9/29 6 alli 8 hour All Day	20	Pacific White-sided Dolphins		
8 Hour All Day	400	Risso's Dolphins		
	100	Humpback Whales (breaching, pec		
9/28 8 am		slapping, and lunge feeding)		
8 hour All Day	70	Risso's Dolphins and 3 calves Blue Shark		
	1			
	33	Humphack Whales (lunge feeding		
9/27 8 am	55	breaching and pec slaps)		
<i>3121</i> 0 um	15	Harbor Porpoise		
	15	Harbor Forpoise		
	17	Humpback Whales (breaching and		
9/26 8 am		lunge feeding)		
	20	Harbor Porpoise		
	12	Humpback Whales (lunge feeding,		
		tail slaps, breaching, pec slaps)		
	10	Pacific White-sided Dolphins		
9/25 8 am	100	Risso's Dolphins Harbor Porpoise		
	50			
	1,000	California Sea Lions		
	1	Mola Mola (ocean sunfish)		
9/24 8 am	47	Humpback Whales (lunging, breaching, pec slaps, tail slaps)		
8 hour All Day				
o nour 7 in Duy	2	Mola Mola (ocean sunfish)		
	29	Humpback Whales		
9/23 8 am	2	Risso's Dolphins		
	17	Harbor Porpoise		
9/22 9 am	22	Humpback Whales		
9/21 8 am	26	Humpback Whales		
	45	Humpback Whales (lunge feeding)		
9/20 8 am	1	Killer Whale		
8 hour All Day	200	Risso's Dolphins (one albino!)		
	2	Harbor Porpoise		
9/19 8 am	43	Humpback Whales (breaching)		
	1	Black-footed Albatross		
	19	Humpback Whales		
9/18 8 am	30	Pacific White-sided Dolphins		
	150	Risso's Dolphins (breaching)		

American Cetacean Society Monterey Bay Chapter P.O. Box H E Pacific Grove, CA 93950



**RETURN SERVICE REQUESTED** 

#### MONTEREY COUNTY HOTLINES for Marine Mammals

Page 8

Strandings / Entanglements / Distress 24-hour toll-free 877-767-9425

Harassment NOAA Enforcement, Monterey 831-853-1964

American Cetacean Society Membership Application Chapter#24							
Membership/Subscription	n Type:	New	Gift	Renewal			
Name							
Address			Email				
City, State, Zip							
Phone							
Membership Level							
Membership Levels and Annual Dues							
Lifetime \$1000	Patron \$	500	Contributin	g \$250			
Supporting \$85	Internat	ional \$55	Family \$55				
Individual \$45	Student	\$35	Teacher \$3.	5			
Senior (62 plus) \$35							
Subscription only * \$15/11 issues (*not entitled to membership benefits)							
Check Mastercard	Visa	Card Nun	nber				
Expiration	_ Secu	rity Code					
Mail checks to ACS Monterey Bay Chapter, PO Box H.E, Pacific Grove, CA 93950							

Nonprofit Organization U.S. Postage PAID Monterey, CA Permit No. 338

#### Monterey Bay Chapter Officers & Chairs, 2018

Katlyn Taylor, President Brian Phan, Vice President Katy Castagna, Treasurer Jennifer Thamer, Secretary Sally Eastham, Membership Tony Lorenz, Programs Emilie Fiala, Education & Events David Zaches, Debbie Ternullo, At-Large Diane Glim, ACS National Secretary Melissa Galieti, Immediate Past President Randy Puckett, Jerry Loomis, Emeriti

> Tony Lorenz, Oren Frey, *Editors* Email: tonylorenz@bigbluebay.com soundingsnewsletter@gmail.com