

# Soundings



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

**MAY 2019**

**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**

**Thursday, May 30, 2019  
Time: 7:30 PM**

**Speaker: Chase Dekker**

Chase was born and raised in Monterey, California, where he was immediately introduced to the natural world. With whales, sea otters, seals, birds, and wildlife right on his doorstep, it wasn't hard for him to fall in love with nature.

He eventually moved to Washington State, where his passion for the outdoors took him to a brand new environment, filled with dense forests and mountains. Chase attended Western Washington University, where he earned degrees in Organismal Biology and Zoology to help him understand the species he would be photographing for the rest of his life. Immediately after college, Chase moved to Jackson Hole, Wyoming where he spent nearly every day out in Grand Teton and Yellowstone National Parks photographing the spectacular wildlife and landscapes.

He has since moved back to Monterey so that he could be closer to the water and his family. Today, Chase has traveled across a good portion of the globe, from the high Arctic to the rainforests of Africa and the tropical waters of the South Pacific, all while bringing along his camera in an effort to document the invaluable wildlife and the land they call home. While not traveling or leading workshops, Chase works as a naturalist and guide aboard a whale watching vessel helping others experience the wonders of the ocean.

During his photography career, he has been published in multiple magazines, articles, and newspapers, while also having some of his images shown on television networks such as ABC, PBS, and BBC. Some of his print publications include National Geographic, Lonely Planet, National Wildlife Federation, Nature's Best Photography, and many others. Chase was also a winner in the Windland Smith Rice International Awards where his images were hung in the Smithsonian's National Museum of Natural History in Washington D.C.

Chase believes every photo tells a story and every story can inspire someone to make a change that will allow these great places and creatures a chance to last for generations to come.

**Next month:** Our next meeting will be on Thursday, June 27 at Hopkins Marine Station. Please save the date and join us! More information is available on our website, [www.acsmb.org](http://www.acsmb.org).

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## **CALENDAR**

**May 14:** Presentation by Jodi Frediani: “Abundance in the Bay: Anomaly, Anachronism, or Wave of the Future.” 6:30 – 8:30 PM at the Patrick J. Fitz Wetlands Education Resource Center, 500 Harkins Slough Road in Watsonville.

**May 19:** Science Sunday at Seymour Center at Long Marine Lab in Santa Cruz: “What We Gain from What Was Lost: Eelgrass Restoration Success in Elkhorn Slough.” Presentation by Kate Beheshti, Ph.D candidate, UCSC. 1:30 PM.

**May 23:** Hardcore Natural History Series: Why Animals Eat Plastic and the Curious Case Of the Cuvier’s Beaked Whale. Presentation by Dr. Andrew Savoca. 6:30 – 8:30 PM at the Pacific Grove Museum of Natural History.

**May 24:** Hopkins Marine Station Friday Seminar: Global Penguin Conservation, presentation by Pablo Borboroglu of the Global Penguin Society in Argentina. 12:00 - 1:00 PM at the Boat Works Lecture Hall.

**May 28:** ACSSF Monthly Lecture: “Examining Southern Hemisphere Humpback Whale Migratory Routes from Foraging to Breeding Grounds.” Presentation by Michelle Modest. 7:00 – 9:00 PM at The Bay Model Visitor Center in Sausalito.

**Jun. 13:** Hardcore Natural History Series: Saving the Ocean One Golf Ball at a Time, with Mike and Alex Weber. 6:30-8 PM at the Pacific Grove Museum of Natural History.

**Jul. 6:** International Save the Vaquita Day. Events are scheduled worldwide. ACS Monterey Bay will table at Fisherman’s Wharf from 10 AM – 4 PM to provide information and hope for the vaquita. Volunteers needed for 2-hour shifts. Please call Diane Glim at 831-214-1016 to help.

**Jul. 15-21:** Course at Moss Landing Marine Labs taught by Jennifer Zeligs: Working With Marine Mammals: Bio 347. 9:30 AM – 5 PM daily. Option to earn 3 college credits. For more information contact the instructor at jzeligs@mlml.calstate.edu.

**Jul. 20:** American Cetacean Society, Monterey Bay Chapter, Annual Summer BBQ Fundraiser. 2 – 5 PM at Indian Village in Pebble Beach. \$25 per person. Send checks to ACSMB, P.O. Box HE, Pacific Grove, CA, 93950 or call to reserve at 971-322-8425.

**Oct. 5:** Hopkins Marine Station Open House 2019 from 10 AM – 4 PM.

## **BOOK RECOMMENDATIONS**

Genesis: The Deep Origin of Societies, by Edward O. Wilson. 2019 Liveright.

Horizon, by Barry Lopez (National Book Award winning author of Arctic Dreams). 2019 Knopf.

The Adventures of Alexander Von Humboldt, by Andrea Wulf and Lilian Melcher (illustrator). 2019 Pantheon.

Fishing: How the Sea Fed Civilization, by Brian Fagan (author of the Great Warming). 2018 Yale University Press.

Upheaval: Turning Points for Nations in Crisis, by Jared Diamond. (Pulitzer Prize winning author of Guns, Germs, and Steel and Collapse). 2019 Little, Brown and Company.

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## **LAWSUIT FORCES FEDERAL PROTECTION FOR ENDANGERED ORCAS' WEST COAST HABITAT**

Apr. 12, 2019 — The Center for Biological Diversity has won a victory in the legal battle to force the Trump administration to protect the West Coast habitat of the last remaining Southern Resident killer whales.

The National Marine Fisheries Service has committed to proposing a rule acting on the Center’s 2014 petition for orca habitat protection off Washington, Oregon and California. An expanded designation of critical habitat has to be proposed by early October to help the critically endangered orcas, which are starving for lack of salmon and being hurt by boat traffic and water pollution.

The Center sued the administration last year for delays in protecting orcas in their full habitat range, a violation of the Endangered Species Act. The Southern Resident population dropped to just 75, the lowest number in more than 30 years, as the federal government delayed decisions on expanding protections for the orcas.

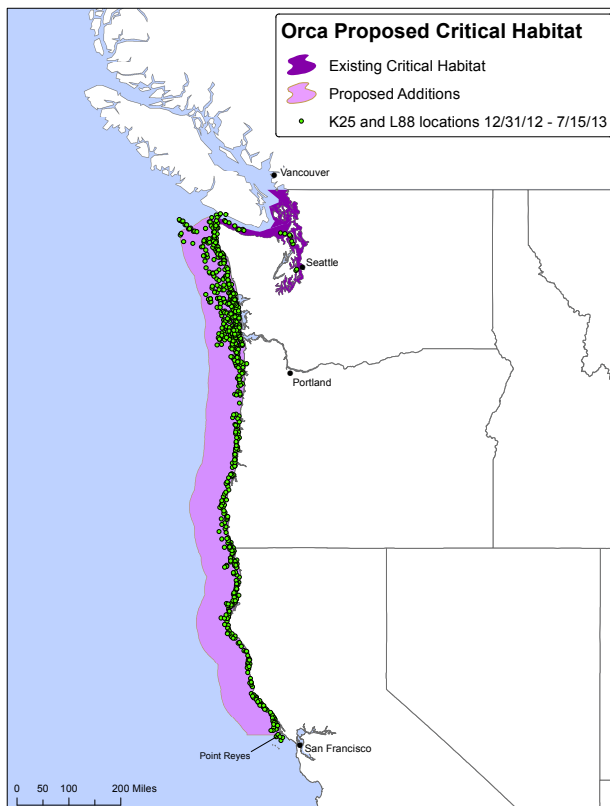
“The Trump administration has to move forward with giving these critically endangered orcas the protections they need and deserve,” said Miyoko Sakashita, the director of the Center’s oceans program. “These magnificent killer whales are in real trouble. Protecting their feeding grounds is more

important than ever, especially with the birth of a new baby.”

In January 2019 scientists in Washington confirmed the birth of a baby orca named Lucky. The calf was spotted with its pod recently in Monterey Bay, Calif. The first calf to survive past birth since 2015, Lucky underscores the urgent need to improve feeding opportunities for Southern Resident killer whales along their whole West Coast habitat. Currently only their summer feeding grounds in Washington’s Puget Sound are designated as critical habitat.

The Center petitioned in 2014 to better protect areas off the coasts of Washington, Oregon and California (see map). The Endangered Species Act prohibits federal agencies from authorizing activities that will destroy or harm a listed species’ critical habitat. Animals with federally protected critical habitat are more than twice as likely to be recovering as species without it, a Center study found.

“This legal victory might save the day for these endangered orcas,” Sakashita said. “Keeping the oceans healthy for orcas isn’t only a legal mandate, but a moral one. We owe that to our children and the next generation of orcas.”



[https://www.biologicaldiversity.org/news/press\\_releases/2019/southern-resident-killer-whale-04-12-2019.php](https://www.biologicaldiversity.org/news/press_releases/2019/southern-resident-killer-whale-04-12-2019.php)

## BLUE WHALES: A MEMORY FOR FINE FOOD SUPPLY

by Priyanka Runwal

Mar. 30, 2019 — When swimming along California’s coast, blue whales, the largest known animals on earth, act like veteran tourists. Year after year, they choose to eat at the same spots that have given them a consistent fine dining experience.

Monterey Bay is one such dining hotspot that blue whales frequent on their migratory journey from Mexico and Costa Rica to British Columbia. But what’s guiding them back to these exact same sites? A recent study suggests that it’s their exceptional memory.

Instead of chasing unreliable bursts of food, blue whales have timed their movements based on consistent food availability. “They’re making decisions based on experiences they’ve gained over a long time scale,” said Briana Abrahms, lead author of the study and marine ecologist at the National Oceanic and Atmospheric Administration. Blue whales live up to 90 years, and are known to migrate seasonally. “They are consistently hitting foraging areas at the most predictable times of the year rather than necessarily at the peak time.”

Blue whales primarily feed on tiny crustaceans called krill. In Monterey Bay there are two time periods when krill numbers peak — May and August. In May, krill abundance is typically the highest, but this quantity fluctuates on a year-to-year basis. In August, on the other hand, krill numbers are relatively low, but there is a consistent supply that keep the whales coming back.

In the future, climate change will dictate whether these historic krill reserves continue to remain steady. What remains to be seen is whether creatures like blue whales, which rely heavily on past conditions to find food, will cope.

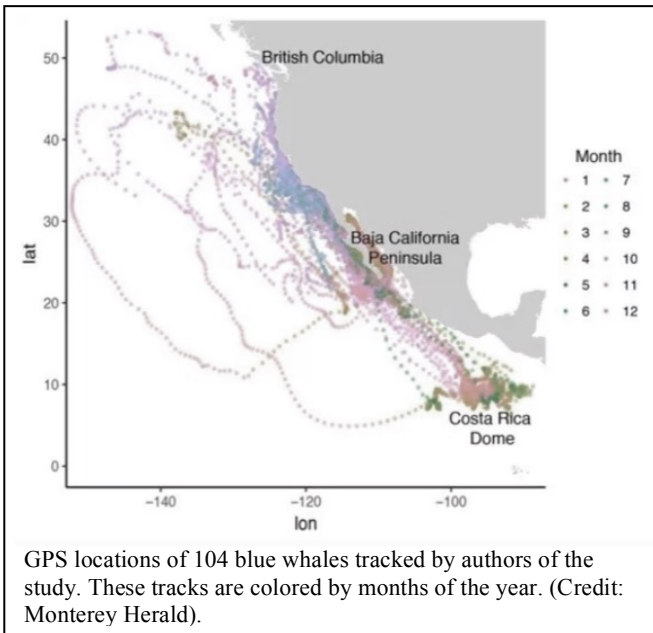
### A decade of following blue whales

Before the 1990s, very little was known about the basic ecology of blue whales — where they migrated to, how long were they gone for, where they bred. A research team at Oregon State University started putting satellite tags on these whales and tracking their movement.

Most tags didn’t last longer than a year. So, the team had to tag individuals, old or new, every year.

They began to learn a lot about the whale’s migration patterns. But Abrahms wanted to understand what influenced their decisions about where to go and when to go.

On land, studies of elk and deer migration had indicated that these animals were tracking seasonal



bursts of highly nutritive food. Scientists were able to use satellite images to estimate how much plant matter was available for the animals to eat. Chlorophyll, the photosynthetic pigment that gives plants their distinct green color, made this estimation possible.

But blue whales devour krill, which are zooplankton, and naturally don't photosynthesize. "It is much harder to measure their (blue whales) feed," Abrahms said. "We have to rely on proxies."

Krill feed on phytoplankton, the marine equivalent to plant matter on land, and make for ideal proxies. By mapping chlorophyll in these marine algae, Abrahms measured phytoplankton abundance in the ocean. She used this measure to indirectly estimate how much krill was available for returning blue whales.

Then, she matched over 10,000 blue whale GPS locations obtained between 1999 and 2008 with chlorophyll maps corresponding to those years.

It appeared that blue whales weren't responding to real-time food availability. Instead of going to a food-rich location that may have popped up in a given year, whales seemed to be returning to sites that served them well historically.

"At first that surprised us," Abrahm said. But when compared to their terrestrial counterparts, marine systems are a lot less predictable on a year-to-year basis. "In a really variable environment in the ocean, I think that the whales are just hedging their bets," she said.

#### Climate change and the future of blue whales

Until the early 20th century, blue whales were abundant in nearly all oceans of the world. They were then hunted down at an extraordinary scale for their meat and blubber. Today, only 10,000 blue whales are

estimated to survive in the wild, and about 2,500 of those spend time off the west coast of the Americas.

Whale watching boats go out in the summer to catch a glimpse of these enormous living legends, spanning one third the size of a football field. But something changed between 2014 and 2016. "The blue whale sightings were generally a little less reliable than they had been previously," said Kate Spencer, owner of Fast Raft Ocean Safaris operating in Monterey Bay.

The warm water blob that sat off California's coast helped divert wet storms and winter and spring winds. These winds are crucial for churning ocean waters and bringing nutrients from the deep sea to life near the surface. "With warm water just sitting there, we didn't get a lot of krill production for several years," Spencer said.

Extreme events are likely to become more frequent in the future with climate change. Food hotspots that were once steady may not necessarily continue to be the same. With blue whale migration stops timed by their knowledge of past conditions, finding food may become challenging. "If the timing is off, that would be as bad as going to the wrong location," Abrahms said.

#### Improved technology to track whales

In the late winter of 2017, Spencer remembers spotting nearly 60 blue whales in Monterey Bay. The timing was unusual, Spencer recalled, given that these whales weren't known to be seen at that time of the year. According to Abrahms, this may be a situation where whales hung out for an extended period of time, anticipating more food to arrive.

Jeremy Goldbogen at Stanford University's Hopkins Marine Station in Pacific Grove thinks that the last couple of years may be anomalous. "There was so much krill," he said.

To understand what's so special about Monterey Bay, his team started mapping krill patches and tracking movements of blue whales in 2017. "We're trying to figure out what happened in the ocean that led to so much krill in these particular summers and less in other years," he said.

Unlike previously used satellite tags, advanced tags are now tracking blue whales. Instead of a single GPS location, the new tags record at least 100 GPS locations each day. Any fine-scale movement patterns that might have been missed earlier, may now become apparent.

"It's the predictability that the whales might be shooting for," said Goldbogen, "but may be the ocean is changing in a way that is less predictable now; maybe there are super dense (krill) hotspots now that

blue whales are able to find and hang out for most of the summer.”

“There is a lot more we need to learn about these animals,” he reckons.

<https://www.montereyherald.com/2019/03/30/blue-whales-a-memory-for-fine-food-supply/>

## **CASCADIA'S LONG TIME RESEARCH BIOLOGIST, GRETCHEN STEIGER, PASSED AWAY APRIL 12, 2019**

Apr. 16, 2019 — We are sad to report that Cascadia's long time (37 years) research biologist and President of the Board, Gretchen Steiger, passed away in her home last Friday, 12 April 2019. Her final days were with her family and close friends in her home where she finally succumbed to ovarian cancer she had fought for more than 4 years. She and her partner in research and life, John Calambokidis met on a research expedition studying seals, porpoise, and geese in Glacier Bay in 1982. She was an integral part of Cascadia's development from a fledgling living room operation to a successful non-profit research organization. In the early years she did a lot of the leg work with John and Jim Cabbage writing and submitting some of the initial competitive proposals that got Cascadia started. Especially in the early years she worked in many far flung challenging areas from being an observer on Russian fishing boats, conducting acoustic monitoring of bowhead whales in the Arctic (including a face to face encounter with a polar bear), and studying the movements and behavior of ringed seals not far from the magnetic North Pole. In the early years at Cascadia she focused on mortality of seals including spending weeks on her own on remote islands, or joining John in their early surveys offshore in 14-foot inflatables. As her work shifted

with raising their two children, Alexei and Zoe, she focused her work closer to home, authoring and editing articles and books (like *Blue Whales*) and taking on more of the administrative duties required of a growing organization. She was author on more than 50 scientific publications, technical reports, and presentations and lead the write up on publications related to humpback whales, seal mortality, and killer whale predation. A memorial celebration of her life will be scheduled for the coming weeks and will be posted here.

<http://www.cascadiaresearch.org/article/cascadias-long-time-research-biologist-gretchen-steiger-passed-away-april-12-2019>

## **WHITE SHARKS FLEE FEEDING AREAS WHEN ORCAS PRESENT**

Apr. 16, 2019 — New research from Monterey Bay Aquarium and partner institutions published today in *Nature Scientific Reports* challenges the notion that great white sharks are the most formidable predators in the ocean. The study "Killer Whales Redistribute White Shark Foraging Pressure On Seals" shows how the great white hunter becomes the hunted, and the elephant seal, the common prey of sharks and orcas, emerges as the winner.

"When confronted by orcas, white sharks will immediately vacate their preferred hunting ground and will not return for up to a year, even though the orcas are only passing through," said Dr. Salvador Jorgensen, senior research scientist at Monterey Bay Aquarium and lead author of the study.

The research team -- which included Jorgensen and Monterey Bay Aquarium scientist Scot Anderson, and research partners from Stanford University, Point Blue Conservation Science and Montana State University -- documented four encounters between the top predators at Southeast Farallon Island in the Greater Farallones National Marine Sanctuary, off San Francisco, California. The scientists analyzed the interactions using data from 165 white sharks tagged between 2006 and 2013, and compiled 27 years of seal, orca and shark surveys at the Farallones.

"The research in this paper combines two really robust data sources," said Jim Tietz, co-author of the study and Farallon Program Biologist at Point Blue Conservation Science. "By supplementing the Aquarium's new shark tagging data with Point Blue's long-term monitoring of wildlife at the Farallon Islands National Wildlife Refuge, we were able to conclusively show how white sharks clear out of the area when the orcas show up."



Gretchen Steiger. (Credit: Cascadia Research Collective).

In every case examined by the researchers, white sharks fled the island when orcas arrived and didn't return there until the following season.

Elephant seal colonies in the Farallones also indirectly benefited from the interactions. The data revealed four to seven times fewer predation events on elephant seals in the years white sharks left.

"On average we document around 40 elephant seal predation events by white sharks at Southeast Farallon Island each season," Anderson said. "After orcas show up, we don't see a single shark and there are no more kills."

Each fall between September and December white sharks gather at the Farallones to hunt for young elephant seals, typically spending more than a month circling Southeast Farallon Island. Transient orcas also feed on elephant seals, but only show up occasionally at the island.

To determine when orcas and sharks co-occurred in the area, researchers compared data from the electronic shark tags with field observations of orca sightings. This made it possible to demonstrate the outcome on the rare instances when the predators encountered each other.

Electronic tags showed all white sharks began vacating the area within minutes following brief visits from orcas. Sometimes the orcas were only present for less than an hour. The tags then found the white sharks either crowded together at other elephant seal colonies farther along the coast or headed offshore.

"These are huge white sharks. Some are over 18 feet long (5.5 meters), and they usually rule the roost here," Anderson said. "We've been observing some of these sharks for the past 15 to 20 years -- and a few of them even longer than that."

The study's findings highlight the importance of interactions between top predators, which aren't well-documented in the ocean.

"We don't typically think about how fear and risk aversion might play a role in shaping where large predators hunt and how that influences ocean ecosystems," Jorgensen said. "It turns out these risk effects are very strong even for large predators like white sharks -- strong enough to redirect their hunting activity to less preferred but safer areas."

The researchers drew no conclusions about whether orcas are targeting white sharks as prey or are bullying the competition for the calorie-rich elephant seals.

"I think this demonstrates how food chains are not always linear," Jorgensen said. "So-called lateral interactions between top predators are fairly well known on land but are much harder to document in

the ocean. And because this one happens so infrequently, it may take us a while longer to fully understand the dynamics."

<https://www.sciencedaily.com/releases/2019/04/190416085525.htm>

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## BIOLOGIST DANIEL COSTA APPOINTED DIRECTOR OF THE INSTITUTE OF MARINE SCIENCES

by Tim Stephens

Mar. 21, 2019 — Daniel Costa, distinguished professor of ecology and evolutionary biology, has been appointed to serve as the next director of the Institute of Marine Sciences (IMS), beginning in July 2019.

Costa is an internationally recognized expert on the physiology, ecology, and behavior of marine mammals, with work founded on a deep understanding of oceanography and Earth history. He has been a pioneer in the development and use of electronic tags to track the movements and behavior of marine mammals and to gather oceanographic data. He has also served in leadership positions at the campus, national, and international level.

After earning a B.A. in zoology at UCLA and his Ph.D. in biology at UC Santa Cruz, Costa was a postdoctoral scholar at Scripps Institution of Oceanography before returning to UC Santa Cruz as an IMS research biologist in 1983. He was appointed to the faculty as an associate professor in 1991.

"Given his history, Dan has a profound knowledge of the key role that IMS plays in fostering and amplifying interdisciplinary marine and coastal research at UC Santa Cruz," said Paul Koch, dean of physical and biological sciences, in a message announcing the appointment.

Costa said he wants to continue developing the collaborative atmosphere that has long been a strength of the IMS.

"The IMS brings together the marine science expertise we have across departments and creates tremendous opportunities to share and collaborate," he said. "My career really developed within the IMS, so it's a great honor for me to continue the legacy built by people like Bill Doyle and Gary Griggs and Pete Raimondi."

Costa will take the helm from Raimondi, professor of ecology and evolutionary biology, who served as interim director of the IMS from 2017 to 2019. Koch noted that Raimondi, having served as department chair for over a decade, had made it clear he was not interested in a long-term appointment as IMS director.



Established in 1976 as the Center for Coastal Marine Studies, the IMS is an interdisciplinary research unit supporting a diverse group of faculty and researchers working on marine biology, coastal ecology, fisheries and fishery management, ocean processes, marine toxicology, and marine geology. IMS researchers have earned international recognition as experts on marine mammals and seabirds, coastal ecosystems, marine protected areas, harmful algal blooms, climate change, sea level rise, and other topics.

The institute provides state-of-the-art facilities both on the main UCSC campus and at the Coastal Science Campus, which has grown dramatically since Long Marine Laboratory opened in 1978.

"It's a really vibrant place now, and the whole marine mammal facility is brand new and gorgeous," said Costa, who came to UCSC as a graduate student before Long Marine Lab and the IMS even existed. "I've watched it grow and develop from the start, and I look forward to helping the IMS move to the next stage."

A fellow of the California Academy of Sciences, Costa held the Ida Benson Lynn Chair in Ocean Health at UC Santa Cruz from 2008 to 2013. He has served on the U.S. Ocean Resources and Research Advisory Panel and as a program manager for the Office of Naval Research. Costa has also held leadership positions on large multi-institutional projects and research consortia, such as the Tagging of Pacific Predators (TOPP) program, which he co-founded, the Southern Ocean Observing System, and the Central and Northern California Ocean Observing System. He received the Antarctica Service Medal, and Costa Spur in Antarctica was named in his honor in 2006.

<https://news.ucsc.edu/2019/03/costa-ims-director.html>

## **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)
4/30 8 am	25	Humpback Whales (breaching and tail throwing)
All Day	15	Killer Whales (CA-51s and CA-140s; elephant seal predation, breaching, spy hopping)
	1	Elephant Seal
4/29 8 am	28	Humpback Whales (breaching, tail throwing, tail lobbing)
All Day	200	Risso's Dolphins
	1	Northern Fur Seal

4/28 8 am	27 5 25 3 4	Humpback Whales Killer Whales Risso's Dolphins Harbor Porpoise Black-footed Albatross
4/27 8 am All Day	25 5  2 100 100	Humpback Whales Killer Whales from CA-51A group (attacked and killed Gray Whale calf) Gray Whales (cow/calf pair) Pacific White-sided Dolphins Risso's Dolphins
4/26 9 am	4 60 15 7	Killer Whales Risso's Dolphins Harbor Porpoise Black-footed Albatross
4/25 8 am	51  50 5 4	Humpback Whales (lunge-feeding, tail slaps) Risso's Dolphins Harbor Porpoise Black-footed Albatross
4/24 8 am	3 4  1 1	Humpback Whales (breaching) "Exotic" transient Killer Whales (T165, T166, T166A, and a juvenile previously sighted in British Columbia) Guadalupe Fur Seal (rare sighting) Harbor Porpoise
4/23 8 am All Day	57 2 70 5	Humpback Whales Gray Whales Risso's Dolphins Harbor Porpoise
4/22 1 pm	20 1 20	Humpback Whales (lunge-feeding) Gray Whale (feeding) Risso's Dolphins
4/21 8 am All Day	124 5 20	Humpback Whales (lunge-feeding, breaching) Pacific White-sided Dolphins Risso's Dolphins
4/20 8 am All Day	25 5	Humpback Whales (breaching) Harbor Porpoise
4/19 9 am	10 1 60 50 150 4 3	Humpback Whales Gray Whale Pacific White-sided Dolphins Northern Right-whale Dolphins Risso's Dolphins Harbor Porpoise Black-footed Albatross
4/18 8 am All Day	65 2 200	Humpback Whales (lunge-feeding, tail throwing) Gray Whales Risso's Dolphins
4/17 9 am	30 100 300 80 1	Humpback Whales Pacific White-sided Dolphins Risso's Dolphins Northern Right-whale Dolphins Black-footed Albatross
4/16 8 am	24 8 150 200	Humpback Whales Killer Whales Pacific White-sided Dolphins Risso's Dolphins

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**Monterey Bay Chapter  
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