

# Soundings



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

**SEPTEMBER 2017**

**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, September 28, 2017  
Time: 7:30 PM**

PLEASE JOIN US AT 7:00 FOR REFRESHMENTS

**Speaker: Erica Cirino**

**How Plastic in the Oceans is Killing Whales  
(and Plenty of Other Sea Creatures)**

Erica Cirino is an international science writer and artist interested in exploring the human connection to nature – wild creatures in particular — in both her writing and art. In her work she explores the topics of wildlife and the environment; specializing in biology, conservation and policy.

One of her major inspirations is her role as a licensed wildlife rehabber who has spent several years in the clinical setting. Through her writing, art and wildlife rehabilitation work, Erica hopes to foster human thought, conversation and, perhaps, admiration for the natural world.

Erica has lived all over the world—on sailboats, and in apartments, tents, houses and cabins—in Denmark, Sweden, Italy, Hawaii, Thailand and more to cover varied international science stories. But she was born and raised in Long Island, New York, where she still has an apartment. Her immediate family includes her mother and 23-year-old brother, who are artists; her 9-year-old sidekick Foosa, an Alaskan malamute; and the lovable Rocky, a one-eyed 16-year-old tabby cat Erica has had since childhood.

**Please join** us for refreshments before the program begins. More information is available on our website, [www.acsmb.org](http://www.acsmb.org).

**Next month:** Our next meeting will be at Hopkins Marine Station at 7:30 PM on Thursday, October 26, 2017. Please save the date and join us!



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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

**Sep. 23:** Monterey Birding Festival. Festival will include field trips, workshops, and lectures. For registration and more information go to [montereybaybirding.org](http://montereybaybirding.org).

**Oct. 3-4:** Fall Migration Immersion at the Point: This special bird migration class will take place at the Point Reyes Headlands from 9 AM on Oct. 3 to 3 PM on Oct. 4. For more information go to [ptreyes.org](http://ptreyes.org).

**Oct. 13:** Hopkins Marine Station Friday Seminar by Karina Nielsen of San Francisco State University: "Diversity of Sandy Beach Ecosystem Structure and Function in Northern California." 12 – 1 PM.

**Oct. 20:** Hopkins Marine Station Friday Seminar by David Johnston of Harvard University: "Up, Up, and Away! Drones in Marine Science and Conservation." 12 – 1 PM.

**Oct. 22-27:** 22<sup>nd</sup> Biennial Marine Mammal Conference in Halifax, Nova Scotia, Canada. Conference theme: "A Marine Mammal Odyssey, Eh!" This conference is about reflecting on the journey that marine mammals and the people who study them have taken together over the years! For more information please go to [www.marinemammalscience.org](http://www.marinemammalscience.org).

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## BOOK RECOMMENDATIONS

Oceans of Kansas, Second Edition: A Natural History of the Western Interior Sea, by Michael J. Everhart. 2017 Indiana University Press.

Encyclopedia of Marine Mammals, Third Edition, by Bernd Wursig, J.G.M. Thewissen, and Kit M. Kovacs (Eds.). 2017 Academic Press.

Baja's Wild Side: A Photographic Journey Through Baja California's Pacific Coast Region, by Daniel Cartamil, Ph.D. 2017 Sunbelt Publications.

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## DOLPHIN THAT EXISTED ALONG SOUTH CAROLINA COAST LONG AGO

Aug. 23, 2017 — Continuing to uncover fossil evidence along the coast of South Carolina,

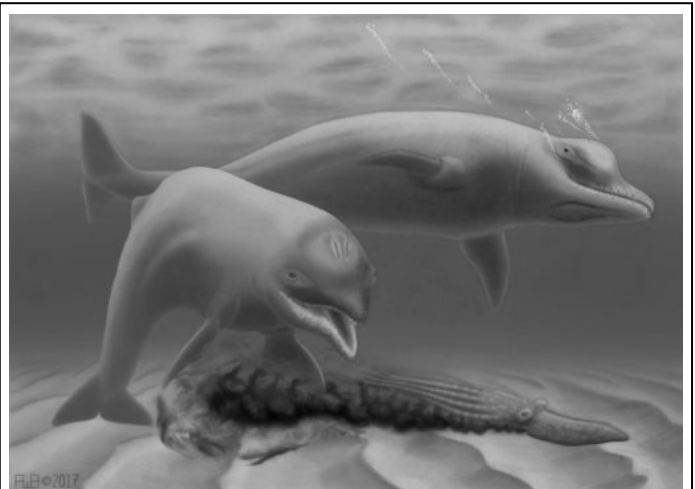
researchers, led by a faculty member at College of Charleston, have discovered a species of extinct dolphin. The toothless dolphin, which lived about 28-30 million years ago, provides new evidence of the evolution of feeding behavior in whales (which includes dolphins).

The species, named *Inermorostrum xenops*, lived during the same period as *Coronodon havensteini*, a species of ancient whale announced recently by investigators at New York Institute of Technology College of Osteopathic Medicine and College of Charleston in Current Biology.

The skull of *Inermorostrum* was discovered by a diver in the Wando River in Charleston, just miles from the location where *Coronodon*'s remains were found, and presents the first clear evidence of suction feeding in echolocating sea mammals. The researchers estimate that the dolphin grew to be only four feet long, smaller than its closest relatives, and significantly smaller than today's bottlenose dolphins, which measure seven to twelve feet in length.

The study has been released in the journal *Proceedings of the Royal Society B*.

According to College of Charleston adjunct geology professor Robert W. Boessenecker, Ph.D., the dwarf dolphin had a short snout and entirely lacked teeth. The genus name, *Inermorostrum xenops*, means "defenseless snout," referring to its toothless condition. Boessenecker, the lead author of the study, believes that the suction-feeding dolphin fed primarily on fish, squid, and other soft-bodied invertebrates from the seafloor, similar to the feeding behavior of a walrus. Furthermore, a series of deep channels and holes for arteries on the snout indicate the presence of extensive soft tissues, likely enlarged lips, and also



A rendering of the toothless dwarf dolphin, according to the researcher's findings. (Credit: Copyrighted by Robert Boessenecker).

perhaps even whiskers.

"We studied the evolution of snout length in cetaceans, and found that during the Oligocene (25-35 million years ago) and early Miocene epochs (20-25 million years ago), the echolocating whales rapidly evolved extremely short snouts and extremely long snouts, representing an adaptive radiation in feeding behavior and specializations," says Boessenecker. "We also found that short snouts and long snouts have both evolved numerous times on different parts of the evolutionary tree -- and that modern dolphins like the bottlenose dolphin, which have a snout twice as long as it is wide, represent the optimum length as it permits both fish catching and suction feeding."

Research team member, Jonathan Geisler, Ph.D., chair of the Anatomy Department and associate professor at NYITCOM, says the discovery is an important step in understanding why the South Carolina Coast provides unique insights into cetacean evolution.

"Coronodon, a filter feeder whale, and Inermorostrum, a suction feeding dolphin, may well have fed on the same prey. Their feeding behaviors not only help us understand their vastly different body sizes, but also shed light on the ecology of habitats that led to Charleston's present-day fossil riches," says Geisler.

Dr. Danielle Fraser, a paleontologist at the Canadian Museum of Nature and also part of the research team, notes that the identification of Inermorostrum opens up new questions about the evolution of early whales. "The discovery of a suction feeding whale this early in their evolution is forcing us to revise what we know about how quickly new forms appeared, and what may have been driving early whale evolution" she explains. "Increased ocean productivity may have been one important factor," she says.

Many species of Oligocene whales have been described from South Carolina, with several discovered in and around Charleston. The area is among a few in the world, including others in New Zealand, Japan, and the Pacific Northwest, to offer a window into early toothed whale evolution.

*Inermorostrum xenops* is now on display in the Mace Brown Museum of Natural History at College of Charleston, reunited with its prehistoric neighbor *Coronodon havensteini*.

<https://www.sciencedaily.com/releases/2017/08/170823142447.htm>

## ENDANGERED WHALES WON'T REACH HALF OF PRE-HUNTING NUMBERS BY 2100, STUDY SAYS

By Calla Wahlquist

Aug. 22, 2017 — Populations of the endangered blue and fin whales, which were hunted nearly to extinction in the 20th century, will not have recovered to even half of their pre-whaling numbers by 2100, according to a new Australian study.

The research, published in the Fish and Fisheries journal next month, analysed 122 years of whaling data from the International Whaling Commission (IWC) and current population survey data to project future population growth, based on predicted food availability in the southern oceans.

It found that three species – the Antarctic blue (*Balaenoptera musculus intermedia*), fin (*Balaenoptera physalus*) and southern right (*Eubalaena australis*) whales – will have recovered to less than half of their 19th-century numbers by the start of the 22nd century, despite bans on hunting those species being introduced in the 1960s, 1970s and 1930s respectively.

Humpack whales (*Megaptera novaeangliae*), which are currently at 32% of their pre-whaling population, and Antarctic minke (*Balaenoptera bonaerensis*) are expected to return to pre-whaling levels by 2050, primarily because they breed more quickly.

The study said numbers of minke were slightly more difficult to calculate because of a "data deficiency" around the "scientific" whaling undertaken by Japan. A Japanese whaling fleet that spent the Antarctic summer in the southern ocean this year killed more than 300 whales.



Fin whales will have recovered to less than half of their 19th-century numbers by 2100, despite a ban on hunting the species being introduced in the 1970s. (Credit: Ullstein Bild / Getty Images).

It is the first time this kind of analysis, known as a model of intermediate complexity for ecosystem assessments, or Mice, has been used to predict future whale numbers.

“What our study has shown from historical whaling is that there were many species that were vulnerable to significant impact from hunting,” said the study’s lead author, Viv Tulloch, a PhD student with the University of Queensland. “Even a couple of hundred individuals hunted

a year over a number of years has been shown to significantly affect populations and significantly impact their numbers.

“In the case of blue whales, they were really impacted quite significantly and because of that they created a small population bottleneck, and we’re just getting out of that now.”

Tulloch said researchers used climate modelling to determine the productivity of the southern oceans, which determined the availability of krill and copepods, a type of zooplankton eaten by southern right whales.

“We have tied the krill to primary productivity and we have tied the whales to the krill,” Tulloch said.

Krill populations in the Southern Ocean are predicted to increase in the next 100 years, while krill numbers in the southern Indian and Pacific oceans are expected to decline “quite considerably”.

Tulloch said the modelling did not consider other climate-related factors, like ocean acidity, declining sea ice and warming surface temperatures. The last two are predicted to have an impact on blue whale numbers in particular and will be looked at in a later study.

The CSIRO principal research scientist Dr Eva Plaganyi, who supervised the study, said the information on historical whaling included recently released catch information for 100,000 whales illegally killed in the Southern Ocean by the Soviet Union between 1947 and 1973.

The catch data ran from 1890 to 2012 and included more than two million records detailing the species and location of the catch.

Tulloch said that of the species in the study, only the southern right whale was hunted extensively before 1900 and information about the numbers caught was scant.

[https://www.theguardian.com/environment/2017/aug/22/ endangered-whales-wont-reach-half-of-pre-hunting-numbers-by-2011-study-says?CMP=share\\_btn\\_link](https://www.theguardian.com/environment/2017/aug/22/ endangered-whales-wont-reach-half-of-pre-hunting-numbers-by-2011-study-says?CMP=share_btn_link)

## **GOLDEN GATE HUMPBAC WHALES TAGGED IN RESEARCH EFFORT**

*By Mark Prado*

Jul. 31, 2017 — Researchers have gathered first-of-its-kind data on humpback whales swimming in the shadow of the Golden Gate Bridge in a “thrilling” mission from Fort Baker.

Two federally permitted scientists from the Cascadia Research Collective tagged three humpback whales with suction cup recorders near the Golden Gate Bridge late last month, the first time data has been collected in such a way since an increase in humpback whale activity there in recent years.

The pair were keen on collecting data on the dives and behavior of the federally endangered whales in one of the busiest shipping channels on the West Coast as concern grows about ship strikes. Researchers John Calambokidis and James Fahlbusch set out from Fort Baker near Sausalito on July 23 to place the multi-sensor, time-depth recorder tags on the multi-ton whales to record diving behavior.

“We have to get pretty close to the whales, about 5 feet away,” said Calambokidis, senior research biologist with the Olympia, Washington-based Cascadia Research Collective. “You have to be sure to be in the right position. It’s all a bit nerve-racking and thrilling.”

Dramatic video shows the pair maneuvering their 19-foot inflatable craft to a swiftly swimming humpback; then Fahlbusch deploys the data recorder with a pole. The suction tags transmitted the whales’ movements for the next two to six hours, then popped off as they are designed to do. All three tags were recovered later that day and the next day.

The data provided the first detailed information on diving and feeding habits of humpback whales inside the Golden Gate and San Francisco Bay, researchers said.

Some of the information showed the humpbacks are not diving deep. While they have the capacity to dive hundreds of feet, the Golden Gate humpbacks were only going down 100 feet or less as they chased anchovies. Water under the Golden Gate is as deep at 360 feet. The shallow dives are worrisome for researchers, who fear collisions with commercial and other craft that populate the area.

“It’s a major concern of ours,” said Mary Jane Schramm, spokeswoman for the Gulf of the Farallones National Marine Sanctuary, off Marin’s coast. “This is one of the busiest shipping lanes on the West Coast and to have wildlife in such close proximity, it’s a challenge.”



James Fahlbusch, a scientist with Cascadia Research, uses a pole to attach a data recorder on a humpback whale near the Golden Gate Bridge. Researchers say the whales are not diving deep, which makes them vulnerable to being struck by ships. (Credit: John Calambokidis / Cascadia Research).

The U.S. Coast Guard has put out warnings to mariners to be on the lookout for the humpbacks, Schramm noted.

All the activity in the shipping lane may be desensitizing the whales to vessel movement, Calambokidis noted.

“They had little response to us, it was a little too easy,” said Calambokidis, who has conducted hundreds of similar tag operations along the West Coast. “They seem to be tuning out the noise around them. They seem less aware, which makes them vulnerable to ship strikes.”

The team also photo-identified several humpbacks, whose fluke patterns are individually unique. Cascadia has compiled a catalog of individual humpback whales for the eastern North Pacific Ocean.

This is the second year the humpbacks have been seen in larger than normal numbers in and around San Francisco Bay; on some days, more than a dozen can be seen. The humpbacks are migrating north and for some, the food-rich coastal waters off Marin are a final destination for the summer before they head south to Mexico and beyond for the winter. The working theory is that they are chasing food sources in the Golden Gate on high tides.

The whales can weigh as much 40 tons — 80,000 pounds — and newborns weigh about a ton. They measure up to 60 feet long, with females larger than males, and live about 50 years. Aside from anchovy and other small fish, the whales eat krill and plankton. They can eat up to 3,000 pounds of food per day. About 1,400 humpbacks feed along the California coast in the summer and fall.

In June 1970, humpbacks were designated as endangered under the Endangered Species Conservation Act after the species was hunted for

decades. In 1973, the Endangered Species Act replaced the conservation act and continued to list humpbacks as endangered. But populations have rebounded.

“As they have come back we see an increase with human interaction and there have been entanglement (net) issues,” Calambokidis said. “We want to better understand their behaviors, especially in high-risk areas like San Francisco Bay.”

<http://www.marini.com/environment-and-nature/20170731/golden-gate-humpback-whales-tagged-in-research-effort>

## THE POWER OF COMPASSION

By Elin Kelsey

Aug. 15, 2017 — Ascribing Buddhist-like qualities to humpbacks seems particularly apt in light of recent revelations about how these large baleen whales use their superpowers for good. Humpbacks, it turns out, deliberately interfere with attacking killer whales to help others in distress. They don’t just defend their own babies or close relatives. They intervene on behalf of other species—a gray whale calf with its mother, a seal hauled out on an ice floe, even an ocean sunfish. Humpbacks act to improve the welfare of others; the classic definition of altruism.

First-person accounts of animals saving other animals are rare. Robert Pitman, a marine ecologist with the US National Oceanic and Atmospheric Administration, describes a pivotal encounter he witnessed in Antarctica in 2009. A group of killer whales washed a Weddell seal they were attacking off an ice floe. The seal swam frantically toward a pair of humpbacks that had inserted themselves into the action. One of the huge humpbacks rolled over on its back and the 180-kilogram seal was swept up onto its chest between the whale’s massive flippers. When the killer whales moved in closer, the humpback arched its chest, lifting the seal out of the water. And when the seal started slipping off, the humpback, according to Pitman, “gave the seal a gentle nudge with its flipper, back to the middle of its chest. Moments later, the seal scrambled off and swam to the safety of a nearby ice floe.”

“That incident convinced me on the spot,” says Pitman. “Those humpbacks were doing something that we couldn’t explain with what we knew at the time about humpbacks and killer whales.”

Pitman started asking people to send him similar accounts. Soon he was poring through observations of 115 encounters between humpbacks and killer whales, recorded over 62 years. “There are some pretty

astonishing videos these days of humpbacks charging in on killer whales,” he says.

In a 2016 article in *Marine Mammal Science*, Pitman and his coauthors describe this behavior and confirm that such acts of do-gooding are widespread. They have been occurring for a long time and have been seen in locations all over the world. “Now that people know what to look for, especially people out on whale watch boats, they see it fairly regularly,” Pitman says. “So now, even for the people who didn’t believe, which initially included some of the coauthors on the paper, I think everybody now understands that this is going on.”

But knowing that something is happening and understanding why are two different things. Pitman and his coauthors openly ponder the meaning of these encounters. “Why,” they write, “would humpback whales deliberately interfere with attacking killer whales, spending time and energy on a potentially injurious activity, especially when the killer whales were attacking other humpbacks that may not be related, or even more perplexingly, as in the majority of cases reported, when they were attacking other species of prey?”

Mammal-eating killer whales attack young humpbacks, so it’s possible that humpbacks mob them as a generalized antipredator behavior, just as crows will mob a perched bald eagle. In 95 percent of the cases studied, the interactions were between humpbacks and mammal-eating killer whales. These include transient killer whales, also known as Bigg’s killer whales, that range along the west coast of North America hunting seals, sea lions, porpoises, dolphins, and the calves of larger whale species.

It could also be that specific humpbacks, individuals that may have survived a killer whale attack when they were young or lost a calf to killer whale predation, respond to these traumas by going on the offensive. Sharpe concurs that the severity of a past interaction could affect an individual.

A full-grown 23- to 36-tonne humpback presents a formidable force against a killer whale. Each enormous flipper can measure half the length of a telephone pole. Razor-sharp barnacles encrust the knobby leading edge of these appendages, and the whales brandish them with great dexterity. Humpbacks are the only species of baleen whales to carry their own offensive and defensive weaponry. Though killer whales have teeth, and are smaller and more agile, a blow from the massive humpback tail or flipper could be fatal.

Killer whales recognize the danger. When confronted by a ferociously bellowing mob of adult

humpbacks, killer whales will eventually flee. Humpbacks usually work in pairs to fend off killer whales, but lone humpbacks have been observed taking on 10 or more individuals. These battles can be hard won. Humpbacks sometimes spend hours mobbing killer whales, never stopping to rest and feed.

Intriguingly, humpbacks don’t just stumble upon killer whale attacks. They race toward them like firefighters into burning buildings. And like these brave rescue workers, humpbacks don’t know who is in danger until they get there. That’s because the sound that alerts them to an attack isn’t the plaintive voice of the victim. It’s the excited calls of the perpetrators.

Transient killer whales tend to be silent when they are hunting, but when they finally attack they get really noisy. Pitman believes humpbacks have one simple instruction: “When you hear killer whales attacking, go break it up.”

But humpbacks also display remarkable capacities for subtlety. Sharpe calls them “hypercultural beings,” pointing out how adaptable and good they are at learning from each other. “Their ability to pick up on social nuance in some ways far surpasses ours,” he says. When I ask if humpbacks are aware of the suffering of others—one of the defining characteristics of compassion—he shares a story of a humpback that died in Hawai‘i about a decade ago. “The whale was head down in the water no longer breathing. It attracted a lot of unusual interest from other humpbacks. You know how elephants fondle the bones and skulls of deceased individuals? Their response had that feel to it.”

Sharpe laments how difficult it is to test what’s going on in the minds of whales. “There is part of the human brain that is associated with prosocial behavior,” he explains. “But we are so limited because we can’t put EEGs or PET scans on free-ranging larger whales.”

So are humpbacks compassionate? Scientists, Sharpe tells me, shy away from using the same descriptors we use for humans. “What is exciting about humpbacks is that they are directing their behavior for the benefit of other species,” he says. “But there’s no doubt there are important differences between human compassion and animal compassion.” When I pose the same question to Pitman he concurs. “No editor is going to let me use the word compassion. When a human protects an imperiled individual of another species, we call it compassion. If a humpback whale does so, we call it instinct. But sometimes the distinction isn’t all that clear.”

Compassion, it turns out, is innate. Human beings and other animals have what Dacher Keltner, a professor of psychology at the University of California, Berkeley, calls a “compassionate instinct.”

I wonder what humpback whales care deeply enough about to actively swim into battle with killer whales. When I pose this to Pitman, he tells me they are selfish. “They are getting something out of this.” He believes that the fact that they occasionally save a humpback calf is a strong enough motive for them to rush in to help, even if it means they end up saving sunfish and sea lions and dolphins and a gray whale calf every now and then. “It’s the net effect that is working for them,” he explains.

All altruism involves some benefit for the helper, Cole agrees. He says it’s biologically difficult to call anything “true altruism” because “helping others almost always doses us with some kind of dopaminergic reward. From the standpoint of empirical biology, the notion of altruism may be a misnomer, if not outright illogical.”

Sharpe says it’s important to step back and appreciate the wonder of the act itself. “It’s easy to get lost in the nuance and to come up with high standards of how you interpret this behavior,” he says. “But the fact is you have seals on the bellies of humpbacks. You know, it’s just a really cool phenomenon and that’s reason enough.”

<https://www.hakaimagazine.com/features/power-compassion>

## 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)
8/31 10 am	27 3	Humpback Whales Harbor Porpoise
8/30 9 am	14 3	Humpback Whales Harbor Porpoise
8/29 8 am	25 60	Humpback Whales Pacific White-sided Dolphins
8/28 9 am	22 1 35	Humpback Whales Blue Whale Risso’s Dolphins
8/27 9 am	9 3 10 8	Humpback Whales Blue Whales Risso’s Dolphins Mola Mola (Ocean Sunfish)
8/26 8 am All Day	46 18 5 2	Humpback Whales Blue Whales Pacific White-sided Dolphins Mola Mola (Ocean Sunfish)
8/25 9 am	23	Humpback Whales

	5 7 15 1	Killer Whales Blue Whales Harbor Porpoise Black-footed Albatross
8/24 8:30 am	20 4 100 1 1	Humpback Whales Blue Whales Pacific White-sided Dolphins Mola Mola (Ocean Sunfish) Black-footed Albatross
8/23 9 am	21 1 40	Humpback Whales Killer Whales (“Richie”) Risso’s Dolphins
8/22 9 am	27 3 10 80 5	Humpback Whales Killer Whales Pacific White-sided Dolphins Risso’s Dolphins Harbor Porpoise
8/21 8 am	41 1 3	Humpback Whales Blue Whale Harbor Porpoise
8/20 9 am	20 6 10	Humpback Whales Blue Whales Harbor Porpoise
8/19 9 am	41 2 5 1 1	Humpback Whales Blue Whales Harbor Porpoise Mola Mola (Ocean Sunfish) Black-footed Albatross
8/18 8 am All Day	72 32 300 12 10	Humpback Whales Blue Whales Risso’s Dolphins Harbor Porpoise Dall’s Porpoise
8/17 8 am All Day	69 22 30 80 2 1 1	Humpback Whales Blue Whales Pacific White-sided Dolphins Risso’s Dolphins Harbor Porpoise Mola Mola (Ocean Sunfish) Black-footed Albatross
8/16 8 am All Day	73 7 30 5 2 1 2	Humpback Whales Blue Whales Risso’s Dolphins Harbor Porpoise Mola Mola (Ocean Sunfish) Leatherback Sea Turtle Black-footed Albatross
8/15 9 am	45 1	Humpback Whales Buller’s Shearwater
8/14 9 am	47 8 1	Humpback Whales Harbor Porpoise Black-footed Albatross
8/13 8 am All Day	48 2	Humpback Whales Dall’s Porpoise
8/12 8 am All Day	45 2 15 20	Humpback Whales Blue Whales Pacific White-sided Dolphins Harbor Porpoise
8/11 9 am	13 35 1	Humpback Whales Harbor Porpoise Mola Mola (Ocean Sunfish)

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