

American Cetacean Society – Monterey Bay Chapter P.O. Box HE, Pacific Grove, CA 93950 **MARCH 2022** 

**INSIDE THIS ISSUE** 

**BOOK RECOMMENDATIONS....2** 

EAVESDROP ON WHALES......2

WORLD-FIRST MAP EXPOSES GROWING DANGERS ALONG

WHALE SUPERHIGHWAYS......3

AT RISK: 'EMACIATED' RIVER

TRENG PROVINCE......5

**DOLPHIN SPOTTED IN STUNG** 

SIGHTINGS ......7

MEMBERSHIP ......8

**SOUND PROVIDES NEW** 

**SCIENTISTS ARE RECRUITING** 

**ELEPHANT SEALS TO** 

## VIRTUAL MONTHLY MEETING THURSDAY, MARCH 24 AT 7:00 PM PRESENTER: DR. MATTHEW SAVOCA TITLE: QUANTIFYING BALEEN WHALE PREY CONSUMPTION AND ITS EFFECTS ON OCEAN ECOSYSTEMS

Matthew Savoca is an ecosystem ecologist whose research focuses on anthropogenic change in marine systems. Most recently, Matthew has quantified the prey consumption and nutrient recycling services that baleen whales provide to marine ecosystems. In fertilizing pelagic environments, whales enhance primary and secondary productivity and carbon storage.

Matthew is currently a National Science Foundation postdoctoral research fellow at the Hopkins Marine Station of Stanford University. He is also a visiting researcher at the National Museum of Natural History, Smithsonian Institution, in Washington, DC. Matthew received his PhD in Ecology at the University of California, Davis and has worked as a science-policy fellow for the National Oceanic and Atmospheric Administration. He is also passionate about science communication and has written numerous articles for The Conversation, which have been republished in outlets including the San Francisco Chronicle, Scientific American, and the Washington Post. More information about Dr. Savoca is available on his website: https://matthewsavocaecology.weebly.com



Next month: Our next meeting will be on Thursday, April 28 at 7 PM. Please save the date and join us! More information is available on our website, acsmb.org.

# **CALENDAR**

**Mar. 17:** MLML Virtual Seminar by Alexis Pasulka, CalPoly SLO: "Phytoplankton Compositional Shifts as Indicators of Oceanographic Change in Central California." 4 PM.

**Mar. 19-20:** 12<sup>th</sup> Annual Whalefest Monterey. Complete schedule of speakers and activities is available at whalefest.org. 11 AM - 5 PM both days. Visit the ACSMB booth.

**Mar. 20:** Science Sunday at the Seymour Center in Santa Cruz. Presentation by Elliot Hazen, Ph.D., UCSC: Changing Oceans and Altered Ecosystems: The Role of Dynamic Ocean Management. 1:30 - 2:30 PM

**Mar. 21-25:** V International Symposium on Killer Whales. Tarifa, Strait of Gibraltar, Cadiz, Andalusia, Spain.

**Apr. 7-10:** 19th Annual International Ocean Film Festival at the Cowell Theatre, Fort Mason Center, San Francisco.

**Apr. 20 - May 21:** California Ocean Alliance Marine Mammal Naturalist Program. Available to all ages and experience levels. Course Fee: \$500. For more information please go to caoceanalliance.org

**Apr. 22, 23, 24:** Whalenerds Spring trips to support ACS Monterey Bay. Single day tickets \$300, includes lunch and 6 hour experience from Moss Landing. Tickets: www.thewhalenerds.com/trips

**May 23-26:** 72<sup>nd</sup> Tuna Conference: "Technological Advances in Large Pelagic Fisheries Science: Applications, Benefits, and Challenges." Meeting location: UCLA's Lake Arrowhead Conference Center.

**Aug. 1-5:** 24<sup>th</sup> Biennial Conference on the Biology of Marine Mammals in Palm Beach, FL. This conference will be the first fully hybrid, live-

virtual conference of the Society of Marine Mammalogy.

**Nov. 4-6:** ACS International Conference at the Kona Kai Resort in San Diego.

**Fall 2022 (dates TBA):** 10<sup>th</sup> California Islands Symposium at the Ventura Beach Marriott in Ventura, CA.

# **BOOK RECOMMENDATIONS**

The Treeline: The Last Forest and the Future of Life On Earth, by Ben Rawlence. 2022 St. Martin's Press.

To Speak for the Trees: My Life's Journey from Ancient Celtic Wisdom to a Healing Vision of the Forest, by Diana Beresford-Kroeger. 2021 Timber Press. The Earth: A Biographer of Life: The Story of Life On Our Planet through 47 Incredible Organisms, by Dr. Elsa Pancirolli. 2022 Greenfinch.

<u>Why Sharks Matter: A Deep Dive with the World's</u> <u>Most Misunderstood Predator</u>, by David Shiffman. 2022 Johns Hopkins University Press.

## SCIENTISTS ARE RECRUITING ELEPHANT SEALS TO EAVESDROP ON WHALES

#### by Benji Jones

Feb. 24, 2022 — Roughly a decade ago, a team of biologists glued audio recording devices onto the backs of a handful of elephant seals on the California coast. They wanted to know if the seals — identified as males by their cartoonish faces with trunk-like noses — make noises as they swim out to sea in search of food.

The recordings they brought back caught the researchers by surprise. There was no evidence of seals vocalizing while foraging, but the devices did pick up something else: the eerie, clicking calls of sperm whales, which sound like someone walking up a creaky staircase. Some of the calls also seemed to get louder, leading the researchers to believe that the seals were swimming toward the whales, and maybe even eavesdropping on them to find food.

Nothing much came of that discovery, but it has inspired marine biologists to use seals as a tool to eavesdrop on other marine life. Elephant seals spend about nine months each year at sea and travel across far reaches of the Pacific that would otherwise be difficult for scientists to survey. And like migratory birds, the seals return to the same spot year after year, so researchers can equip them with recording devices and retrieve them relatively easily.

As soon as next week, marine biologists at the University of California Santa Cruz (UCSC) will test out this slippery technique. They'll attach acoustic monitors to a few northern elephant seals before the animals depart for a little over two months.

If all goes as planned, it will be the first time scientists use animals — rather than a network of underwater microphones — to spy on marine life in the deep ocean for longer than a few days. What they overhear could help scientists unlock the mysteries of elusive marine mammals, such as beaked whales, and understand how poorly known ecosystems are changing as the planet warms.

#### Why seals make such good spies

Scientists have used audio recording devices to monitor marine life for decades. It's a common way to survey species like the rare vaquita porpoise. What makes this project unique, however, is that these devices won't be fixed in place or dangling from a

American Cetacean Society - Monterey Bay

Page 3

#### March 2022





Male elephant seals in San Simeon, California. Credit: Getty Images.

boat —they're attached to living, moving, breathing animals.

Elephant seals might look clumsy on land, but they're agile underwater creatures that make ideal marine sentinels. They spend months at a time foraging far offshore, not even returning home to sleep. The animals likely take naps while drifting a few hundred meters underwater, said Roxanne Beltran, an assistant professor at UCSC who's coleading the project.

Elephant seals descend as much as a mile underwater when hunting for small fish, squid, and even sharks, and that brings them within earshot of whales and other marine mammals. Conveniently enough, seals themselves don't make much noise. "They're not contaminating the data," said Holger Klinck, an expert in bioacoustics at Cornell University who's co-leading the project with Beltran. "They're really only measuring what's going on in their surroundings."

Perhaps most importantly, the seals return to the same beach each year, which reduces the risk of losing equipment. For the project at UCSC, each recording device is roughly the size of an old cellphone and costs about \$5,000. It isn't capable of beaming acoustic data back to shore, Beltran said, so if you lose the device, you lose everything.

Using an epoxy adhesive, Beltran and Allison Payne, a doctoral researcher at UCSC, will glue recording devices onto three female seals at Año Nuevo Reserve in Northern California. (Females have a much higher survival rate and reliably head out to sea right after weaning their pups.) Beltran is building on research led by UCSC's Dan Costa, who heads a project to monitor local seals that dates back to the 1960s.

Then they'll wait. The seals will make it about a quarter of the way to Japan before turning back, in a trip that takes roughly 75 days. The device will record about 40 days of audio before the batteries run out, while other tags measure things like location, depth,

American Cetacean Society – Monterey Bay

and water temperature, leaving the scientists with lots of clues to what's happening in a largely unknown stretch of ocean.

#### Uncovering mysteries of the deep

When the animals return, scientists will meet them on the beach and retrieve the devices before sending the seals on their way. (The devices don't harm the seals or change their behavior, Beltran said.) Then they'll run the audio through computer algorithms that separate out the unique sounds made by each species. A humpback whale can sound a bit like a whining puppy crossed with Chewbacca, for example, while orcas often sound like a metal detector gone haywire.

Payne will be listening closely for the echolocating clicks of beaked whales. This group of toothy marine animals, often gray or black and white, have eluded scientists for decades. "We know almost nothing about them," she told Vox.

Beaked whales make up more than a quarter of living cetaceans (a group that includes dolphins, porpoises, and whales), but scientists don't know where they go in the ocean or what they do, she said. They spend most of their time deep underwater and rarely surface for air, Payne added. There are more than 20 species of beaked whales, and much of what we know about them comes from carcasses that occasionally wash up on shore.

It's hard to protect a species you don't understand, Payne said. For example, researchers think that noise from shipping traffic harms beaked whales, but scientists can't say for sure — because they simply don't know what these animals are doing.

Researchers also hope to build an auditory archive of the ocean over years to understand how marine communities are changing, especially as the planet heats up. How, for example, is the giant patch of warm water in the Pacific Ocean, dubbed "the blob," affecting marine communities? "The elephant seals can help us collect information where we have little to no data," Klinck told Vox.

For now, Beltran and her team are just trying to prove that it can work. If it does, she hopes to scale it up and start collecting sounds in all kinds of marine environments — not just far offshore, but near the coast and even under Arctic ice. Perhaps in the future, legions of elephant seals will unwittingly survey the ocean in the name of science.

https://www.vox.com/down-to-earth/22945867/elephantseals-listening-beaked-whales-ocean

### WORLD-FIRST MAP EXPOSES GROWING DANGERS ALONG WHALE SUPERHIGHWAYS

Feb. 17, 2022 — A new report from WWF and partners provides the first truly comprehensive look at whale migrations and the threats they face across all

oceans, highlighting how the cumulative impacts from industrial fishing, ship strikes, pollution, habitat loss, and climate change are creating a hazardous and sometimes fatal obstacle course for the marine species.

Protecting Blue Corridors, released today by WWF, has, for the first time, visualized the satellite tracks of over 1000 migratory whales worldwide. The report outlines how whales are encountering multiple and growing threats in their critical ocean habitats areas where they feed, mate, give birth, and nurse their young - and along their migration superhighways, or 'blue corridors'.

"Cumulative impacts

from human activities – including industrial fishing, ship strikes, chemical, plastic and noise pollution, habitat loss, and climate change – are creating a hazardous and sometimes fatal obstacle course," said Chris Johnson, Global Lead for whale and dolphin conservation at WWF. "The deadliest by far is entanglement in fishing gear – killing an estimated 300,000 whales, dolphins, and porpoises each year. What's worse, this is happening from the Arctic to the Antarctic."

The report is a collaborative analysis of 30 years of scientific data contributed by more than 50 research groups, with leading marine scientists from Oregon State University, the University of California Santa Cruz, the University of Southampton and others.

"Contributing years of data from Oregon State's satellite tracking studies, we see migrations across national and international waters creating conservation challenges for populations to recover," said Dr. Daniel M. Palacios of the Marine Mammal Institute, Oregon State University.

Case studies highlight hotspots and risks that whales navigate on their migrations, some of which can be thousands of kilometers each year.

As a result of these hazards, six out of the 13 great whale species are now classified as endangered or vulnerable by the International Union for Conservation of Nature, even after decades of protection after commercial whaling. Among those populations most at risk is the critically endangered North Atlantic right whale, a species that migrates between Canada and the United States. It is at its lowest point in 20 years – numbering only 336 individuals.

An alarming 86% of identified right whales are estimated to have been entangled in fishing gear at least once in their life. Just one death jeopardizes this population's survival. Between 2017 and 2021, 34 North Atlantic right whales died off the Canadian and United States coasts from ship strikes and entanglement in fishing gear.

<u>Protecting Blue Corridors</u> calls for a new conservation approach to address these mounting threats and safeguard whales, through enhanced cooperation from local to regional to international levels. Of particular urgency is engagement with the United Nations, which is set to finalize negotiations on a new treaty for the high seas (Areas Beyond National Jurisdiction) in March 2022.

"As a researcher, this report provides a visual science-based guide to help inform effective management and decisions to create networks of marine protected areas to ensure whales have every opportunity to thrive," says Dr. Ari Friedlaender, a whale ecologist from University of California Santa Cruz.

The benefits from protected blue corridors extend far beyond whales. Growing evidence shows the critical role whales play maintaining ocean health and our global climate – with one whale capturing the same amount of carbon as thousands of trees. The International Monetary Fund estimates the value of a single great whale at more than US\$2 million, which

www.acsmb.org





totals more than US\$1 trillion for the current global population of great whales.

Page 5

"This report presents some of the most comprehensive data to date on large scale movements of whales through the world's oceans. The emerging picture underscores the need for swift, concerted action and investment of resources from national governments, international bodies, local communities, industry and conservation groups like WWF to stop this underwater assault on whales and protect these critical blue corridors," said Dr. Margaret Kinnard, WWF Global Wildlife Practice Lead.

<u>Protecting Blue Corridors: Challenges and</u> <u>solutions for migratory whales navigating national</u> <u>and international seas</u> is being published ahead of World Whale Day on 20 February. The full report is available here.

https://wwfwhales.org/news-stories/protecting-bluecorridors-report

#### AT RISK: 'EMACIATED' RIVER DOLPHIN SPOTTED IN STUNG TRENG PROVINCE

Feb. 2, 2022 — Fears are growing over an 'emaciated' river dolphin that was spotted yesterday in Cambodia, near the Laos border.

The dolphin was spotted near Chheuteal Island in Anlong Koh Chheuteal in Preah Rumkel commune, Borey Ou Svay Sen Chey district, Stung Treng province, on February 1, 2022.

It is reported to be more than two meters long and is in a state of emaciation.

A fishing net caught on its tail is causing ulceration and adding to the physical and mental distress of this rare mammal, of which less than 100 are believed to survive in Cambodia.

Mr. Phoy Vanna, a member of the Preah Rumkel dolphin ecotourism community, stated that this dolphin could die due to being unable to catch food.

He said that in this area, there is currently only one dolphin left, so the community should call on fisheries officials to help find a way to save its life.

Mr. Un Po Soeun, Director of Stung Treng Provincial Department of Tourism, confirmed that this has happened because the Lao side near the dolphin conservation canyon did not participate in conservation and engaged in dangerous net fishing, regardless of the impact on dolphins in the area.

He added that he will make a report on this dolphin case to the relevant professional officers and to the Fisheries Administration and ask for guidelines from the provincial governor to find a solution and rescue it.

According to the WWF, The Irrawaddy dolphin (Orcaella brevirostris) symbolizes the magnificence of the Mekong River and its continued high biodiversity.



Irrawaddy river dolphin. Credit: Khmer Times.

The Mekong River, the largest in South East Asia, has its last ecologically intact and 180 km long section in northeastern Cambodia.

This stretch of the river is the last refuge for the 89 remaining Mekong dolphins and is one of the 35 WWF priority conservation areas across the globe. Even this low number would make the Mekong subpopulation the largest of only five remaining critically endangered freshwater populations of this species in the world.

https://www.khmertimeskh.com/501017814/at-riskemaciated-river-dolphin-spotted-in-stung-treng-province

### Sound Provides New Insight into the Lives of Blue Whales

by Raúl Nava, MBARI

Feb. 18, 2022 — The blue whale (*Balaenoptera musculus*) is the largest animal ever to inhabit Earth. Despite its gargantuan size, many aspects of its biology, behavior and ecology still elude us. This magnificent mammal spends most of its time below the ocean's surface, out of sight from scientists seeking to unlock its mysteries.

But even when we cannot observe blue whales by sight, we can hear their powerful vocalizations that travel hundreds of kilometers. Using sound recordings from the heart of Monterey Bay National Marine Sanctuary, MBARI researchers and their collaborators have discovered new dimensions of blue whales' lives. We have learned how blue whales cooperate to forage and how they tune into the productivity of their ecosystem to decide when to embark on their annual long-distance migration for breeding.

An underwater microphone (hydrophone) on MBARI's cabled observatory has been a valuable tool for studying whales that gather seasonally in the fertile waters of Monterey Bay. The microphone records the calls of whales—acoustic data that offer insight into the animals' behavior.

"Because whales and other marine mammals use sound in the essential life activities of communicating, www.acsmb.org

foraging, navigating, socializing, and reproducing, there is a wealth of expressed consciousness in the ocean soundscape. We aim to tap that wealth to better understand and protect ocean life," said John Ryan, a biological oceanographer at MBARI.

Previous research by Ryan and collaborators at Stanford University—including incoming MBARI Postdoctoral Fellow William Oestreich—coupled the hydrophone's extensive archive of acoustic data with field studies to better understand blue whale behavior.

Now MBARI's acoustic data have contributed to two new research studies about blue whales led by graduate students at Stanford University's Hopkins Marine Station in Pacific Grove, California.

A study by David Cade, published in *Animal Behaviour* in December, examined feeding aggregations of blue whales in Monterey Bay. Cade was recently a postdoctoral researcher in Ari Friedlaender's Bio-Telemetry and Behavioral Ecology Lab at University of California, Santa Cruz, and is now a postdoctoral researcher in Jeremy Goldbogen's lab at Hopkins Marine Station.

Leveraging biologging tags, acoustic prey mapping, hydrophone recordings of social cues, and remote sensing of ocean currents, the research team, including Oestreich and Ryan, investigated the ecosystem dynamics underlying unusually dense aggregations of blue whales—up to 40 of the giants within a one-kilometer radius area.

"We are only just beginning to study the role of these giant, but ephemeral, krill patches that can feed a super-group of blue whales. These 'hotspots' likely play a critical role overall in a blue whale's ability to find enough food before it swims south for the winter. The MBARI hydrophone is giving us new insights into not only blue whale behavior, but what that behavior can tell us about the prey conditions in Monterey Bay that are critical for the entire ecosystem," said Cade.

The combination of oceanographic conditions and seafloor terrain (bathymetry) concentrated large numbers of shrimp-like crustaceans called krill, which are the primary food of blue whales. The immense size of the krill swarms allowed these "supergroups" of blue whales to forage together without exhausting the food supply.

Ryan and Oestreich were studying all types of blue whale vocalizations, including one that is associated with foraging.

"In the hours immediately preceding these remarkable aggregations of foraging blue whales, MBARI's hydrophone recorded anomalously dense clusters of a specific blue whale call type. This exciting finding raised a number of questions and hypotheses concerning the role that these vocalizations play in blue whales' foraging and sharing of information," recalled Oestreich.

The hydrophone recordings revealed that, counterintuitively, the whales exhibited a social

American Cetacean Society - Monterey Bay

foraging strategy. The research team observed that rather than competing for food, blue whales called to other whales to signal food was present. The blues' bellows invited others to join the feast.

Modeling of social interactions indicated that using social information from other whales reduced the time required for individual whales to discover and exploit the dense patches of food that they need to survive. The whales' foraging became more efficient, without any apparent costs to the caller who first found the patch of food.

A second study, led by Oestreich and published this month in *Functional Ecology*, also utilized MBARI's acoustic archive to gain new insight into blue whale behavior.

In 2020, Oestreich and a team of researchers from MBARI and Stanford University documented distinct seasonal changes in blue whale vocalizations that reveal when these gentle giants begin their annual migration. During summer and early fall, blue whales sing more during the night. Later in the fall and into winter, the whales begin singing more during the day. This change coincides with the time of year when the whales reduce feeding and begin their annual southward migration. Data from biologging tags confirmed that the acoustic signature detected by the hydrophone reflected changes in the whales' behavior.

Now, Oestreich and his collaborators have used MBARI hydrophone data to understand how blue whales change the timing of their migration back to breeding areas from year to year.

The data, collected from summer 2015 through spring 2021, recorded the bellowing vocalizations of blue whales in the Monterey Bay region. Sound signaled when whales stopped foraging on the local abundance of krill to begin their southward breeding migration. To the team's surprise, the start of the whales' migration could vary up to four months from year to year.

Considering that the blue whale breeding season itself spans only approximately four months, this large variation in the timing of migration was initially puzzling. Here, data about ecosystem changes from year to year offered important clues.

Migration timing closely followed conditions within the whales' foraging habitat. Specifically, blue whales lingered longer off central California when the ecosystem provided more opportunity for them to build energy stores. A later transition from foraging to migration occured in years with an earlier onset, later peak, and greater accumulation of biological productivity.

These findings suggest that in years of the highest and most persistent biological productivity, blue whales wait to begin their southward migration. Researchers believe the whales do not simply depart toward their southern breeding grounds as soon as sufficient energy reserves are accumulated. Rather, the whales delay their migration when food is plentiful to

maximize their energy intake on their foraging grounds.

"We previously showed that blue whales use longterm memory to time their arrival on foraging grounds based on when they expect food to be available because they don't have advanced information about what foraging conditions will be like when they arrive. Yet when making the decision of when to depart foraging grounds, they have much more immediate information to rely on to determine whether it's best to stay or leave. This allows these whales to be incredibly flexible in when they initiate their southward migration to return to breeding areas," explained Briana Abrahms, an assistant professor in the Department of Biology at the University of Washington and a coauthor on the study on migration timing. "It's really exciting to learn so much more about how and when these animals decide to make such massive movements in the ocean."

The use of flexible cues—likely including foraging conditions and long-distance acoustic signals—in timing a major life history transition may be key to the persistence of this endangered population as it navigates an ecosystem that experiences large natural and anthropogenic changes.

"This research indicates that blue whales are more flexible in their foraging and migratory behavior than previously realized. Such flexibility is critical for adaptation to an era of rapid global change—whether this behavioral flexibility allows blue whales to adapt to long-term changes in their foraging habitat remains to be seen," said Oestreich.

Open access to scientific data is a fundamental value for MBARI and part of the institute's mission. As part of MBARI's commitment to open collaboration, the original audio recordings for the entire study period are available through the Pacific Ocean Sound Recordings project via the Registry of Open Data on the Amazon Web Services (AWS) cloud.

MBARI also streams live underwater audio to the Soundscape Listening Room to share the wonder and excitement of the ocean soundscape with the public. The live soundscape can be full of ocean "voices" from the complex song compositions of humpback whales to the chatter of dolphin pods. The listening room also includes archived sounds for listening when the live stream is quiet.

MBARI will expand these efforts in 2022 with the new Blue Whale Observatory. This new project—led by Oestreich and Ryan with marine ecologist Kelly Benoit-Bird and researcher Chad Waluk—will examine blue whale ecology in depth by integrating interdisciplinary sensing of the whales, krill, and their ecosystem. The observatory will leverage an array of technologies to bring together the pieces of a complex, important, and beautiful puzzle.

https://phys.org/news/2022-02-insight-blue-whales.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)
2/28 10 am	5 7 24	Gray Whales Humpback Whales (friendly) Black-footed Albatross
2/27 9 am	1 2 2 1 30	Gray Whale Humpback Whales Killer Whales Minke Whale Risso's Dolphins
2/26 8 am All Day	24 4 2 18 1000	Gray Whales Humpback Whale Killer Whales (CA171B & CA169) Pacific White-sided Dolphins Risso's Dolphins (incl. Casper)
2/25 10 am	14 1 2 850	Gray Whales (northbound) Humpback Whale Killer Whales (CA171B & CA169) Risso's Dolpins (incl. Casper)
2/24 2:30 pm	5 2 5	Gray Whales Humpback Whales Bottlenose Dolphins
2/23 10 am	16 5 380	Gray Whales Pacific White-sided Dolphins Risso's Dolphins
2/20 10 am	3 3 500 200 300	Gray Whales Humpback Whales Pacific White-sided Dolphins Risso's Dolphins Northern Right Whale Dolphins
2/19 9 am	11 1	Gray Whales Humpback Whale (tail lobbing)
2/18 10 am	5 1 100 280 150 1 1	Gray Whales Humpback Whale Pacific White-sided Dolphins Risso's Dolphins Northern Right Whale Dolphins Black-footed Albatross Short-tailed Albatross (rare)
2/17 10 am	6 50 150 1	Gray Whales Pacific White-sided Dolphins Risso's Dolphins Mola Mola
2/16 10 am	1	Humpback Whale (breaching and feeding)
2/14 10 am	4 2	Gray Whales Humpback Whales
2/13 3 pm	11	Gray Whales
2/12 10 am	7 2 1 1	Gray Whales Humpback Whales (breaching) Elephant Seal Northern Fur Seal

### Page 8

Membership Application - American Cetacean Society, Monterey Bay Chapter Join or renew online at <u>acsonline.org</u> Or mail membership form to ACS Monterey Bay, P.O. Box HE, Pacific Grove, CA 93950	AMERICAN CETACEAN SOCIETY
Membership Type: New Renewal Gift	MONTEREY BAY CHAPTER
Name	Monterey Bay Chapter
Address	Officers & Chairs, 2022
City, State, Zip	Brian Phan President
PhoneEmail	Katlyn Taylor, Immediate Past President
Membership Level Membership Levels and Annual Dues   Lifetime \$1000 Patron \$500 Contributing \$250   Supporting \$85 International \$55 Family \$55   Individual \$45 Student \$35 Teacher \$35   Senior (62 plus) \$35 Family \$55	Katy Castagna, <i>Treasurer</i> Jennifer Thamer, <i>Secretary</i> Sally Eastham, <i>Membership</i> Tony Lorenz, <i>Programs</i> Terry Feinberg, <i>Publicity</i> Emilie Fiala, <i>Education &amp; Events</i> Humphrey Williams, <i>Research Grants</i> Debbie Ternullo, <i>At-Large</i> Diane Glim, <i>ACS National Secretary</i> Tony Lorenz, Oren Frey, <i>Editors</i>
Check Mastercard Visa Expiration Card Number Security Code	Email: tonylorenz831@gmail.com soundingsnewsletter@gmail.com
DONATE The American Cetacean Society is the world's oldest whale conservation organization, established in 1966. Dedicated to research, conservation and education about whales, dolphins and porpoises and their environment, the American Cetacean Society is volunteer-run and consists of 8 chapters within the national organization. As a 501 (c)(3) non-profit organization, donations are welcome and necessary to continue our work. To donate to the Monterey Bay Chapter of ACS, please visit www.acsmb.org or mail payment to ACS MB, PO Box HE, Pacific Grove, CA 93950. For more information about the American Cetacean Society, please visit www.acsonline.org Thank you!	MONTEREY COUNTY HOTLINES for Marine Mammals Strandings / Entanglements / Distress 24-hour toll-free 877-767-9425 Harassment NOAA Enforcement, Monterey 831-853-1964

Killer Whale CA45B with distinctive curved dorsal fin on February 3, 2022. Credit: Daniel Bianchetta / MBWW.

www.acsmb.org