

Soundings



American Cetacean Society- Monterey Bay Chapter

February 2012

PO Box H E, Pacific Grove, CA 93950

AMERICAN CETACEAN SOCIETY- MONTEREY BAY CHAPTER

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

Date: Thursday, February 23, 2012 Time: 7:30 PM.

PLEASE JOIN US AT 7:00 FOR REFRESHMENTS

Speaker: Michael Stocker, Ph.D,
Director of Ocean Conservation Research

Subject: Marine Bio-Acoustics and Scientific Solutions to the
Impacts of Human Generated Noise on the Marine Habitat

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Humans use hearing as well as vision and smell to navigate our environment, and because light transmits so efficiently through air many of us depend heavily on our visual sense. Water on the other hand transmits light poorly so animals submerged more than a few hundred feet are always in a dark world – illuminated only by bioluminescence. Fortunately sound transmits very efficiently through water, so most marine life has adapted to their acoustic environment with an amazing array of sound-perceptual mechanisms. The cetaceans, whales, dolphins, and porpoises, have evolved complex bio-sonars that the odontocetes (toothed whales) use to perceive very fine details of their surroundings, and the mysticetes may use to navigate across ocean basins. Because sound is so important to these animals, marine noise pollution from shipping, seismic surveys (for oil and gas), and a growing array of sonars and acoustical communication systems is seriously compromising their bio-acoustic habitat.

Our speaker is a bio-acoustician and Director of Ocean Conservation Research – a research and policy development organization focused on understanding and finding solutions to the impacts of human generated noise on marine animals and their habitats. He will share with us his work and present some of the latest thinking on the bio-acoustic modalities of baleen and toothed whales.

Please join us to learn more about this ever growing problem of noise pollution in the bio-acoustically complex marine environment.

Michael Stocker, Ph. D., Ocean Research Conservation
Bob Mannix and Donna Beckett, ACS MB Programs Committee

CALENDAR

Feb 12: International Darwin Day: Celebrating Darwin, Science, and Humanity. For more info and Darwin day events go to www.darwinday.org

Feb 11th-12: 10am-5pm Shark Days Celebration at the Monterey Bay Aquarium. Shark artist and conservationist Jim Toomey will be present to sign books and perform art demonstrations.

Mar. 8-12: 9th Annual San Francisco Ocean Film Festival. Films will be shown at the Bay Theatre Pier 39 in San Francisco. For more info 415-501-6251

April 12-13: 9am-5pm Moss Landing Marine Laboratory Open House. Itinerary will include lectures, open labs, sea lion presentations, puppet shows, marine themed art projects and much more. For more info openhouse.mlml.calstate.edu

April 14: MBNMS Sanctuary Currents Symposium: From Lions to Luminescence. Linking Land to Sea Conference to be held at CSUMB. For program schedule go to montereybay.noaa.gov/currsymp2012

May 21-24: 63rd Tuna Conference Lake Arrowhead, CA. Natural and Anthropogenic Effects on Highly Migratory Fish Populations. For more info including program info go to www.tuna.conference.org

May 22-June 3: Marine Mammal and Seabird Behavioral Ecology of New Zealand. Class will be taught in Kaikoura, New Zealand with marine mammalogist Bernd Wursig. 13 days immersion in marine mammal and seabird ecology and behavior. For more info go to wuersig@sbcglobal.net

Media Recommendations

Sharks and Rays of Australia by P.R. Last and John Stevens

Field Notes on Science and Nature by Michael Canfield. Forward by Edward O. Wilson.
2011 Harvard University Press

The Sounding of the Whale: Science and Cetaceans in the Twentieth Century By Dr. Graham Burnett
University of Chicago Press

DVD-Charles Darwin and the Tree of Life: by David Attenborough (DVD) 2009 BBC Earth

Message from ACS

Executive Director

After many months of planning, it gives me great pleasure to unveil our newly-redesigned website! Knowing that you depend on ACS for critical information that advances the protection of whales, dolphins, and porpoises worldwide, we've rebuilt our site to make it much easier to find and share resources. Check it out at: www.acsonline.org

In addition to smart navigation and a clean, contemporary look, we've added stunning images contributed by some of the world's most renowned marine photographers, made it easier to join, donate, and purchase merchandise, included a gallery of beautiful images contributed by our members and supporters, and shared strategic organizational and governance documents that will guide us toward a bright, highly-effective vision for the future.

That's a lot, but there's much more to come, including 2012 conference updates, Action Alerts, advocacy campaigns, whale watch trips... *and more!* And while the website is 'live', we're continually perfecting the content, so be sure to check the site frequently to see what's new.

2012 is going to be our best year yet, and I'll share a sneak preview with you. If you enjoyed the last issue of *Whalewatcher*, devoted to killer whales, then you're going to *love* the next issue, dedicated entirely to sperm whales. Featuring Dr. Hal Whitehead as our guest editor, it promises to be one of the very finest editions we've produced. *Enjoy it...* and tell your friends about this wonderful publication, recently nominated for a 2012 Maggie Award by the Western Publishing Association, and an exclusive benefit of membership in the American Cetacean Society.

In this 45th anniversary of our founding, we continue to be inspired by the passion and dedication we see in our members, volunteers, conservation practitioners, and researchers – all working on behalf of cetaceans everywhere! We hope that you, too, will join us and be inspired to act on behalf of the whales, dolphins, and porpoises you care about.

Thank you for your support -tell a friend about us!

Cheryl

Cheryl M. McCormick, Ph.D.
Executive Director
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WANDERING ALBATROSS ALTERS ITS FORAGING DUE TO CLIMATE CHANGE

Wandering albatrosses have altered their foraging due to changes in wind fields in the southern hemisphere during the last decades. Since winds have increased in intensity and moved to the south, the flight speed of albatrosses increased and they spend less time foraging. As a consequence, breeding success has improved and birds have gained 1 kilogram. These are the results of the study of an international research team published in the latest issue of the *Science* journal. However, these positive consequences of climate change may last short if future wind fields follow predictions of climate change scenarios, researchers warn.

For this study, biologists had combined data on the duration of foraging trips and breeding success over the last 40 years, as well as foraging and body mass over the last 20 years of wandering albatross (*Diomedea exulans*) breeding in Crozet Islands. This archipelago lies approximately in the heart of the southern Indian Ocean (halfway between Madagascar and Antarctica). It belongs to the French Southern Territories and it is located in the windiest part of the Southern Ocean. The new findings are the result of an international research team from the French National Centre for Scientific Research (CNRS-CEBC) and the German Helmholtz-Centre for Environmental Research (UFZ).

Thanks to miniaturized tracking devices, researchers were able to track the foraging movement of albatrosses at a distance of 3500 kilometers from the colony. They found that albatross have altered their search patterns following changes in wind conditions over the past two decades. Females used increasingly more poleward and windy areas for foraging. As a consequence their travel speed increased while the total distance covered during foraging flights did not change. “This means that they spend less time at sea while incubating the egg and thus the breeding success increases” explains Dr. Henri Weimerskirch of the French National Centre for Scientific Research (CNRS-CEBC). Researchers were surprised that both females and males have increased their body mass in one kilogram, which corresponds approximately to one tenth of their total body weight. This could be not only a result of shorter incubation periods on the nest, but also an adaptation to windier conditions.

“The wandering albatross Crozet population has decreased as a result of adult mortality on long-



line fishing in subtropical waters, especially females since they favor warmer subtropical waters in the north compared to the more southerly distribution of males” says Dr. Maite Louzao Arsuaga, who has been modeling albatross movement from 2009 to 2011 at the UFZ. “Due to the changing wind conditions, females are now foraging in more southward areas where such fishing is not that widespread”. However, the positive effects of changing environmental conditions of the last decades will not last in the future. Climate scenarios predict that westerly winds will move even further south by 2080 and wandering albatrosses might have to fly further to find optimal conditions for flying.

The total population of the wandering albatross is currently estimated at around 8,000 breeding pairs. All populations have shown a decrease at some stage over the last 25 years. This endangered species is threatened primarily by incidental catch in fisheries, especially longline fishing at sea, whereas the introduction of alien species (such as rats or cats) are a key conservation threat for the species on breeding colonies. Additionally, the accumulation of anthropogenic debris such as plastic and fishing hooks on albatrosses have negative effects on their populations. Thus, it is important to continue with monitoring programs of population trends and distribution at sea, as well as to undertake effective conservation measures. The foraging habitat of wandering albatrosses is managed by more than one Regional Fisheries Management Organizations, which makes it difficult to implement conservation measures for the species.

The wandering albatross has fascinated people for centuries. With a wingspan of over three meters and a half, it is the largest seabird in the world, surpassing just the Andean condor

(*Vultur fulvus*). This elegant sailor, which spends most of its life flying, breeds on remote sub-antarctic islands over the Southern Ocean. They travel thousand of kilometers searching for fish and cephalopods like squids, often following ships and feeding on offal. The plumage of wandering albatrosses is variable, whitening with age. The maximum known age is 55 years old. Since the rearing of chicks takes a whole year, they breed only every second year.

Apart from the study published in the latest Science issue, the research team has identified the key marine areas for the conservation of wandering albatrosses in the southern Indian Ocean published in 2011 in the Journal of Applied Ecology. This study provided the first map to support the future development of a network of priority protected areas in the southern part of the Indian Ocean, which are based on habitat predictions. "Because the species has no natural enemies and is at the top of the food web, it is particularly well suited as an indicator of the health of marine ecosystems," says Dr. Thorsten Wiegand from the UFZ, who supervised the work of Dr. Maite Louzao. "This could help not only a single species, but the underlying biodiversity associated with pelagic key habitats to protect Southern Ocean. Moreover, we have developed methods of habitat modeling broadly applicable and can be used to assess changes in species distribution within the current global change scenario."

Publications: Henri Weimerskirch, Maite Louzao, Sophie de Grissac, Karine Delord (2012): Changes in Wind Pattern Alter Albatross Distribution and Life-History Traits. *Science*. 335: 221. 13 January 2012

DOI: 10.1126/science.1210270

<http://dx.doi.org/10.1126/science.1210270>

<http://www.sciencemag.org/cgi/content/full/335/6065/211/DC1>

Louzao, M., Pinaud, D., Péron, C., Delord, K., Wiegand, T., Weimerskirch, H. (2011): Conserving pelagic habitats: seascape modeling of an oceanic top predator. *J. Appl. Ecol.* 48 (1), 121 – 132

<http://dx.doi.org/10.1111/j.1365-2664.2010.01910.x>

The investigations were funded e.g. by the French Polar Institute (IPEV), the Prince Albert II of Monaco Foundation, the Spanish Ministry of Education and Science as well as a Marie Curie Fellowship of the EU.

MARINE MAMMALS ON THE MENU IN MANY PARTS OF WORLD

ScienceDaily (Jan. 24, 2012) — The fate of the world's great whale species commands global attention as a result of heated debate between pro and anti-whaling advocates, but the fate of smaller marine mammals is less understood, specifically because the deliberate and accidental harvesting of dolphins, porpoises, manatees and other warm-blooded aquatic denizens is rarely studied or monitored. To shed more light on the issue, researchers from the Wildlife Conservation Society and Okapi Wildlife

Associates have conducted an exhaustive global study of human consumption of marine mammals using approximately 900 sources of information.

The main finding: since 1990, people in at least 114 countries have consumed one or more of at least 87 marine mammal species. In addition to this global review, Wildlife Conservation Society scientists work in remote countries around the world to assess and actively address the threat to dolphin populations with localized, applied conservation efforts. The new global study appears in the most recent edition of *Biological Conservation*. The authors include: Dr. Martin D. Robards of the Wildlife Conservation Society; and Dr. Randall R. Reeves of Okapi Wildlife Associates.

"International bodies such as the International Whaling Commission were formed specifically to gauge the status of whale populations and regulate the hunting of these giants," said Robards, lead author of the new study. "These species, however, represent only a fraction of the world's diversity of marine mammals, many of which are being accidentally netted, trapped, and -- in some instances -- directly hunted without any means of tracking as to whether these harvests are sustainable."

In order to build a statistically robust picture of human consumption rates of marine mammals around the world, Robards and Reeves started with records on small fisheries focused on small whales (i.e. pilot whales), dolphins, and porpoises from 1975 and records of global marine mammal catches between 1966 and 1975. From there, the authors consulted some 900 other sources and consulted with numerous researchers and environmental managers, an exhaustive investigation that took three years to complete. The team only counted information with actual evidence of human consumption of marine mammals, omitting instances where marine mammals were caught (either intentionally or not) for fishing bait, feed for other animals, medicines, and other uses.

The list of marine mammals killed for human consumption includes obscure species such as the pygmy beaked whale, the South Asian river dolphin, the narwhal, the Chilean dolphin, the long-finned pilot whale, and Burmeister's porpoise. Seals and sea lions are on the list as well, including species such as the California sea lion and lesser known species such as the Baikal seal. The polar bear (a bear that is considered a marine mammal) also makes the list. Three species of manatee and its close relative the dugong,

considered a delicacy in some parts of the world, are also widespread targets of human consumption.

Overall, the historical review reveals an escalation in the utilization of smaller cetaceans, particularly coastal and estuarine species since 1970, often caught as accidental "bycatch" in nets meant for fish and other species. Once caught, however, small cetaceans are being increasingly utilized as food in areas of food insecurity and/or poverty, what the authors call "fishing up the food chain."

"Obviously, there is a need for improved monitoring of species such as the Atlantic and Indo-Pacific humpback dolphins and other species," said Dr. Howard Rosenbaum, Director of WCS's Ocean Giants Program. "In more remote areas and a number of countries, a greater immediate need is to understand the motivations behind the consumption of marine mammals and use these insights to develop solutions to protect these iconic species that lead to more effective management and conservation."

WCS's Ocean Giants Program works in a number of seascapes of critical importance to small cetaceans in particular. These efforts are focused on the local level to address local impacts on coastal dolphin populations, providing on-the-ground practical conservation actions to compliment the global investigative work highlighted above.

In Congo, Gabon, and Madagascar, WCS conservation scientists Dr. Salvatore Cerchio and Tim Collins are conducting scientific studies to assess the status of impacted dolphin populations, and work with local communities of traditional fishermen to reduce accidental bycatch and deliberate hunting of dolphins. In these regions, the scientists are documenting a worrying trend in increased captures and use of dolphins for food, and they are sometimes also being sold in markets better known for their association with terrestrial bushmeat.

In response, Cerchio and the WCS Madagascar team have worked with local communities to establish a local conservation association composed of fishermen, local traditional laws protecting dolphins, and development of community-based whale and dolphin watching as an alternative livelihood. On the other side of the African continent, the coasts of Gabon and Congo represent one of the last strongholds for the rare Atlantic humpback dolphin. Catches by fishermen in Gabon are extremely rare, but groups of dolphins that cross the border (a finding of recent WCS work) risk capture in coastal gillnets set by artisanal fisherman. "The Atlantic humpback dolphin may well be the

rarest mammal in the Congo basin region," said Tim Collins. "Unfortunately, few have ever heard of it, least of all the fisherman eating them out of existence."

A WHALE'S VIRTUAL REALITY

by Elizabeth Pennisi

Charleston, South Carolina—A surfacing whale is a sight to see, but it would be even more dramatic to watch one ply the ocean depths. Researchers have taken a step closer to doing just that with sophisticated radio-tagging technology and a new computer program that uses the data to recreate a whale's path underwater. The results, presented at the annual meeting of the Society for Integrative and Comparative Biology, are helping scientists understand how the school bus-sized beasts are able to take in enough food to sustain their great girth, and how underwater noises, such as sonar, might affect their well-being.

Comparative physiologist Jeremy Goldbogen of the Cascadia Research Collective in Olympia, Washington, studies feeding in blue fin and other so-called rorqual whales. For almost a decade, he and his colleagues have been attaching suction cup radio tags onto the backs of the cetaceans. The tags record depth, sound, and other parameters as the whales swim. After a set amount of time, they fall off, float to the surface, and send out a radio signal so they can be retrieved and their data analyzed.

The work showed that in one giant gulp, a blue whale—the biggest creature on Earth—takes in 125% of its body weight in water and krill. During their dives, the cetaceans ram into patches of krill, opening their mouths wide and wrapping their jaws around prey-laden water, a move that stops them short. Next, they close their mouths and push water through their baleen, a system of plates that filter out the food, then speed up for another feeding bout.

But details about this feeding strategy had been lacking. This past summer, Goldbogen monitored several blue and fin whales with new tag technology that detects the changes in the whales' orientation in space, much like smart phones "know" whether they're held in a horizontal or vertical position and adapt screens accordingly. For the 6 to 24 hours they are attached to the whale, the tags also record depth and sound; from the loudness of the water rushing past a diving whale, researchers can calculate its speed. "We use these sensors to reconstruct what the whales are doing," Goldbogen said.

The new tags show that as they gulp, the whales often twirl around like a corkscrew with surprising agility, Goldbogen reported at the meeting. They also will lunge from all different angles, not just horizontally, as previously thought. "We see these amazing maneuvers," Goldbogen said.

He showed those maneuvers to the audience using video animations made possible by new software from Colin Ware, a computer scientist at the University of New Hampshire in Durham who specializes in visualizing very large amounts of information. The program, "Track Plot," incorporates the tag data and approximates the path of the whale underwater. In the video, a tagged blue whale dives twice over the course of 19 minutes. The movie shows the whale moving at about 50 times its cruising speed. The first dive, to about 15 meters, takes about 2.5 minutes in real life; the second one, which includes feeding bouts, lasts more than 12 minutes and reaches down to 180 meters, where the whale lunges five times in quick succession, as if it were on a roller coaster.

"It's great that they are doing this," says Douglas Altshuler, an integrative biologist at the University of British Columbia, Vancouver, in Canada. But Altshuler has reservations about the accuracy of the computed paths because there is a dearth of positional data to confirm the whales' course. Goldbogen points out, however, that the course does incorporate GPS coordinates recorded when the whale does surface.

Goldbogen and his colleagues are now using the same approach to better understand whales' responses to sonar, which some believe disorients the animals, causing them to strand on beaches. With a grant from the U.S. Navy, they tag a whale, expose it to simulated military sonar frequencies and another noise within the same frequency band, and watch the whale's reaction, Goldbogen explained.

Preliminary data indicate that the "ping" can make a feeding whale stop its lunge, turn toward the sound, then move away from it, Goldbogen reported. But the effect is temporary, and soon the whale is back prowling for krill, suggesting the animals adapt quickly. "Many experiments will have to be done to determine whether the Navy's use of sonar has an impact," says Michael Dickinson, a neuroscientist at the University of Washington, Seattle. "But the infrastructure is in place that they can gather more data."

WEST COAST WATERS PROTECTED FOR ENDANGERED PACIFIC SEA TURTLES

NEW SAFE HAVEN PROTECTS FEEDING AREAS BUT NOT MIGRATORY ROUTES TO CALIFORNIA, OREGON, AND WASHINGTON

SAN FRANCISCO— Nearly 42,000 square miles of ocean along the coasts of California, Oregon and Washington that are critical feeding grounds for the endangered Pacific leatherback sea turtle were granted new protections by the National Marine Fisheries Service. The final federal regulation establishes critical habitat where leatherbacks feed on jellyfish after swimming 6,000 miles across the ocean from nests in Indonesia. This is the first permanent safe haven for leatherbacks designated in continental U.S. waters and is the largest area set aside to protect sea turtle habitat in the United States or its territories. The new protections take effect Feb. 26, 2012.

Any new wave energy, offshore drilling or coastal projects in the designated critical habitat would require the Fisheries Service to assess and prevent harm to leatherback feeding areas and jellyfish. Species with critical habitat protected under the Endangered Species Act are twice as likely to be recovering as those without.

"Leatherbacks finally have a safe haven along our coast, but still face extinction due to growing threats from fisheries, pollution and ship strikes," said Teri Shore, program director at SeaTurtles.org in West Marin, California. However, the 41,914 square miles of ocean designated for protection covers far less than the 70,000 square miles originally proposed for critical habitat. Today's rule covers 16,910 square miles along California's coast from Point Arena to Point Arguello out to a depth of 3,000 meters. The remaining area stretches from Cape Flattery, Washington to Cape Blanco, Oregon seaward to 2,000 meter depth contour.

The final rule overlooks the need to protect migratory pathways from commercial fishing, water pollution and marine vessel traffic. The new regulation excludes any protections for the turtles' migratory pathways leading into these habitats; it excludes any consideration of fishing impacts, such as mile-long drift nets used to target swordfish off California.

"Though it is commendable that critical ocean habitats along the west coast are now being protected for the leatherback sea turtle, it fails to recognize the laborious journey these animals travel,"

said California Assemblyman Paul Fong, who authored the state’s new shark fin ban. “In order to better educate the public and bring awareness to the conservation efforts needed to protect these remarkable creatures, I will be introducing legislation that will name the Pacific Leatherback Sea Turtle as California’s State Marine Reptile.”

“Habitat protections are vital to the survival of leatherbacks. We urgently need migration safeguards for these ancient animals as they make the longest, most epic journey of any creature on the planet to get to our West Coast every year,” said Catherine Kilduff with the Center for Biological Diversity in San Francisco.

“This is a major decision to protect feeding hotspots for endangered leatherback sea turtles, but the federal government failed to acknowledge that the turtles need safe passage to get there,” said Ben Enticknap, Oceana’s Pacific project manager.

This final protection comes in response to a petition submitted in 2007 by SeaTurtles.org, Oceana and the Center, followed by two years of delay by the agency, missing multiple legal deadlines specified in the Endangered Species Act.

Mile-long drift gillnets and longline gear used to catch swordfish, sharks and tunas are the two types of fishing gear most commonly known to capture and kill leatherback sea turtles. While current regulations restrict fishing to protect these sea turtles, the Fisheries Service is currently developing proposals to expand the use of these fishing gears into areas important to the leatherback.

The largest of all sea turtles, leatherbacks can grow up to nine feet long and weigh up to 2,000 pounds. Pacific leatherback sea turtles have declined more than 95 percent since the 1980s; as few as 2,300 adult female western Pacific leatherbacks remain. The species dates from the time of the dinosaurs, having survived for 100 million years virtually unchanged; now their kind risks disappearing from the planet.

The leatherback sea turtles feeding off the U.S. West Coast make the longest known migration of any reptile, across the Pacific Ocean where they nest on beaches in Papua, Indonesia. They make this great migration to feed on jellyfish in the productive ocean waters of the American Pacific. They are generally found off the West Coast in the summer and fall months.

SeaTurtles.org (Turtle Island Restoration Network) is an international marine conservation organization headquartered in California whose 35,000 members and supporters work to protect sea turtles and ma-

rine biodiversity in the United States and around the world. For more information, visit www.SeaTurtles.org.

The Center for Biological Diversity is a national, nonprofit conservation organization with more than 320,000 members and online activists dedicated to protecting endangered species and wild places. For more information, please visit www.biologicaldiversity.org.

Oceana is the largest international advocacy group working solely to protect the world’s oceans. Oceana wins policy victories for the oceans using science-based campaigns. Since 2001, we have protected over 1.2 million square miles of ocean and innumerable sea turtles, sharks, dolphins and other sea creatures. More than 500,000 supporters have already joined Oceana. Global in scope, Oceana has offices in North, South and Central America and Europe. To learn more, please visit www.oceana.org.

SIGHTINGS Compiled by Monterey Bay Whale Watch. For Complete listing and updates see gowhales.com/sighting.htm

Date	#	Type of Animal(s)
1/25 a.m.	10	Gray Whales
1/24 p.m.	2	Gray Whales
1/24 a.m.	8	Gray Whales
	8	Dall's Porpoise
1/22 a.m.	2	Gray Whales
	20	Risso's Dolphins
1/20 a.m.	13	Gray Whales
1/19 a.m.	10	Gray Whales
1/18 a.m.	15	Gray Whales
	5	Risso's Dolphins
1/17 p.m.	6	Killer Whales
	20	Harbor Porpoise
1/17 a.m.	25	Gray Whales
	200	Risso's Dolphins
1/16 p.m.	6	Gray Whales
1/16 a.m.	40	Gray Whales
	12	Risso's Dolphins
1/15 p.m.	15	Gray Whales
1/15 a.m.	45	Gray Whales
	200	Pacific White-sided Dolphins
	300	Long-beaked Common Dolphins
	500	Risso's Dolphins
1/14 p.m.	23	Gray Whales
	5	Risso's Dolphins
1/14 a.m.	21	Gray Whales
	40	Risso's Dolphins
1/13 p.m.	13	Gray Whales
1/13 a.m.	25	Gray Whales
	150	Long-beaked Common Dolphins
1/12 p.m.	12	Gray Whales
1/12 a.m.	5	Gray Whales
1/11 a.m.	14	Gray Whales
	15	Risso's Dolphins

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