Soundings

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

OCTOBER 2013

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

MEETING DATE:

Thursday, October 24, 2013
Time: 7:30 PM. PLEASE JOIN US AT 7:00 FOR REFRESHMENTS

Speaker: **Dr. Terrie Williams, UCSC chief of Mammalian Physiology Lab**

Title: The Sensitive Cetacean: Are dolphins &whales (& other marine mammals) especially vulnerable to human disturbances?

Dr. Terrie Williams, professor of ecology and evolutionary biology at the University of California at Santa Cruz, has traveled around the world for more than 30 years to work with the largest mammals on earth in an effort to understand how they survive in today's rapidly changing world.

Terrie has done extensive research on marine mammals like killer whales, narwhals, endangered Hawaiian monk seals and sea otters, as well as land mammals like elephants, cheetahs and lions. She describes her work as "the Biology of Big." Terrie has been in charge of the Marine Mammal Program at UCSC for 20 years, which includes The Mammalian Physiology Lab. She recently spent two of those years with an orphaned Hawaiian monk seal that stars in a book published last year, "The Odyssey of KP2: An Orphaned Seal, a Marine Biologist and the Fight to Save a Species."

Terrie will talk to us about the unique biology of cetaceans that makes them both sensitive and robust to human and environmental disturbances. Expect a comparative view of the physiological tipping points in marine mammals, from the effects of noise on dolphins and whales, to dwindling ice on polar bears and narwhals. In addition to her extensive research, Terrie directed the Sea Otter Rescue Center during the Exxon Valdez oil spill and is co-founder of the Center for Ocean Health at UCSC.

INSIDE THIS ISSUE

Next month: Thursday, Dec. 5, at 7 p.m., Cynthia Fernandez, who helps monitor the notorious dolphin captures and slaughters in Taiji, Japan, will be our speaker.

Please note the schedule change as we combine November and December into a single program for the holiday season.

CALENDAR

Oct. 12:Wildlife Conservation Expo. San Francisco, CA. For info go to www.wildnet.org

Oct 30- Julia Stewart, PhD., National Center for Ecological Analysis and Synthesis: Humboldt Squid in the California Current System. Lecture will be held at 3pm in the Pacific Forum at MBARI

Oct 30- Nov 2: Society Of Vertebrate Paleontology Annual Meeting: Westin Bonaventure Hotel and Suite Los Angeles, CA. This meeting will include world experts on the science of vertebrate paleontology and field trips to some of the best paleontological fossil sites in the world. (Sharktooth Hill, CA. La Brea Tar Pits). For more info please go to www.vertpaleo.org

Science Sundays at the Seymour Center
Oct. 20, 1pm-Sharks in Danger: Impacts of the Global Shark Fin Trade. Michael Sutton, Vice President Pacific Flyway, National Audubon Society

Nov.17, 1pm-"Re-Patriation" of Bald Eagles to the Central Coast. Glenn R. Stewart, Director UC Santa Cruz Predatory Bird Research Group

Oct. 31-Nov 3 2013 Sitka WhaleFest: Sitka Sound Science Center. Arctic Sea Change: What's Ahead?

Nov. 7-10 :Western Society of Naturalist 94th Annual Meeting, Oxnard/Ventura, CA Embassy Suites Mandalay Beach Hotel and Resort

Dec 9-13: 20th Biennial Conference on the Biology of Marine Mammals: Dunedin, New Zealand,. Workshops will be held on Dec. 7-8, prior to the conference. For a full list of programs, workshops, and field trips go to marinemammalscience.org

Pacific Seabird Group 41st Meeting
February 19-22,2014 Juneau, Alaska
Centennial Hall Convention Center

Save The Date:
Jan 26th 2014, 8-10 am: ACS Monterey Bay Gray Whale Fundraiser. Cost $40. Boat-Princess Monterey. For reservations and more info please call Jerry Loomis at 831-419-1051

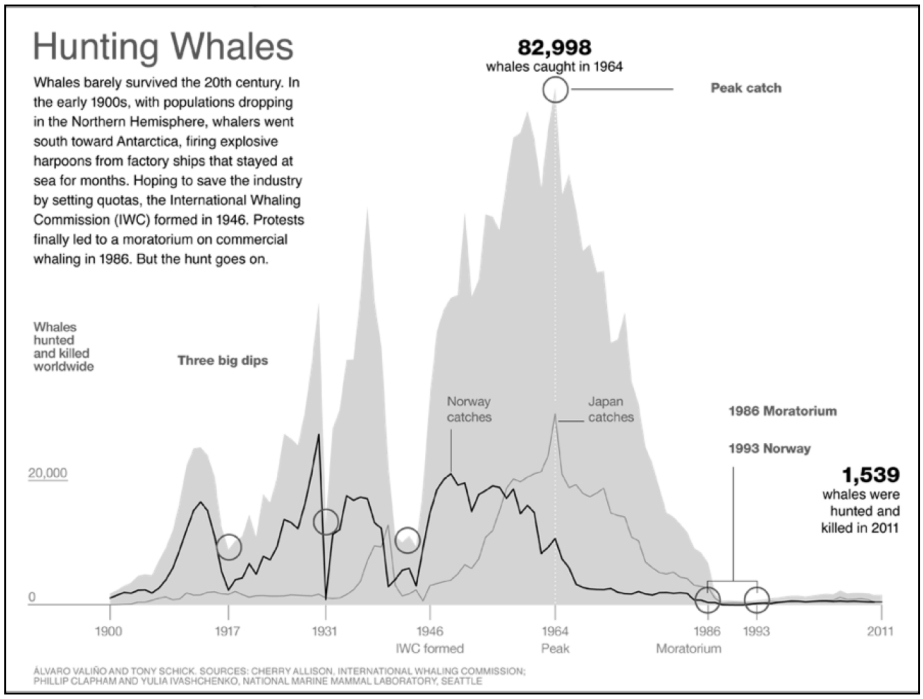
BOOK RECOMMENDATIONS

Tracks and Shadows: Field Biology as Art by Harry W. Greene. 2013 UC Press

How Forest Think: Toward an Anthropology Beyond Human by Eduardo Kohn. 2013 UC Press

A Field Guide to the Wildlife of South Georgia By Robert Burton and John Croxall. Princeton University Press

COUNTDOWN: Our Last Best Hope For A Future on Earth by Alan Weisman



Whale Mass Stranding Attributed to Sonar Mapping for First Time

Sep. 25, 2013 — An independent scientific review panel has concluded that the mass stranding of approximately 100 melon-headed whales in the Loza Lagoon system in northwest Madagascar in 2008 was primarily triggered by acoustic stimuli, more specifically, a multi-beam echosounder system operated by a survey vessel contracted by ExxonMobil Exploration and Production (Northern Madagascar) Limited.

In response to the event and with assistance from IFAW, WCS led an international stranding team to help return live whales from the lagoon system to the open sea, and to conduct necropsies on dead whales to determine the cause of death.

According to the final report issued today, this is the first known marine mammal mass stranding event of this nature to be closely associated with high-frequency mapping sonar systems. Based on these findings, there is cause for concern over the impact of noise on marine mammals as these high-frequency mapping sonar systems are used by various stakeholders including the hydrocarbon industry, military, and research vessels used by other industries.

The report concluded: "The potential for behavioral responses and indirect injury or mortality from the use of similar MBES [multi-beam echosounder systems] should be considered in future environmental assessments, operational planning and regulatory decisions."

The full report can be found at: http://iwc.int/2008-mass-stranding-in-madagascar

The Wildlife Conservation Society (WCS) and the International Fund for Animal Welfare (IFAW) welcomed the report and praised all those involved in the process, including governments, NGOs, and industry.

"WCS and IFAW support these conclusions that add to a mounting body of evidence of the potential impacts of anthropogenic noise on marine mammals," said Dr. Howard Rosenbaum, Director of the Ocean Giants Program for WCS. "Implications go well beyond the hydrocarbon industry, as these sonar systems are widely used aboard military and research vessels for generating more precise bathymetry (underwater mapping). We now hope that these results will be used by industry, regulatory authorities, and others to minimize risks and to better protect marine life, especially marine mammal species that are particularly sensitive to increasing ocean noise from human activities. "

Added Dr. John G. Robinson, Executive Vice President for Conservation and Science for WCS: "We greatly appreciate the efforts of the U.S. government agencies and authorities and the International Whaling Commission for facilitating and overseeing this process, and we are particularly grateful to the Government of Madagascar for authorizing this work and their continued interest in the outcome. Understanding what causes mass strandings of marine mammals is critical to prevent this in the future. In this case, the cooperation by industry, conservation organizations, and government regulatory authorities led to best science being evaluated by an independent panel, which came up with conclusion based on weight of considerable evidence made available."

"Mass stranding response is challenging under the best of circumstances. Together with local individuals and the government of Madagascar, we provided the expertise to rescue as many animals as possible and medical care to those that stranded alive," said Katie Moore, Director of Animal Rescue at IFAW. "Equally important was to gather as much data as possible from the animals to address the root cause of the stranding. We are pleased to see the ISRP report and its conclusions, which will hopefully be used in shaping future conservation policies."

The report was written after a formalized process was established to investigate the mass stranding. The process was undertaken with endorsement of the Government of Madagascar. Several have contributed to this report including organizations involved in the mass stranding response effort, the International Whaling Commission, and several relevant U.S. federal agencies.

A multi-stakeholder steering committee was established to provide guidance in setting up and structuring the review panel and to ensure completion of the process and public release of the report. Those on this steering committee included: Dr. Howard Rosenbaum (WCS); Dr. Rodger Melton and Dr. Linda Zimmerman (ExxonMobil); Dr. Teri Rowles (NOAA Marine Mammal Stranding Network); Dr. Jason Gedamke (NOAA Ocean Acoustics Program); Dr. Peter Thomas (Marine Mammal Commission); Jill Lewandowski (BOEM); Dr. Greg Donovan (IWC); Dr. Brandon Southall (SEA), also head of the independent scientific review panel.

While aspects of the stranding remain unknown, the panel concluded that a multi-beam echosounder system, operated intermittently by a survey vessel moving down the shelf-break the day before the event was the most "plausible and likely

behavioral trigger for the animals initially entering the lagoon system."
http://www.sciencedaily.com-/releases/2013/09/130925132211.htm#

Research Reveals Bottom Feeding Techniques of Tagged Humpback Whales in Stellwagen Bank Sanctuary

Sep. 26, 2013 — New NOAA-led research on tagged humpback whales in Stellwagen Bank National Marine Sanctuary reveals a variety of previously unknown feeding techniques along the seafloor. Rather than a single bottom feeding behavior, the whales show three distinct feeding approaches: simple side-rolls, side-roll inversions, and repetitive scooping.

A recently published paper, in the journal Marine Mammal Science, indicates that bottom side-roll techniques are common in Stellwagen Bank National Marine Sanctuary and the Great South Channel study area, a deep-water passage between Nantucket, Mass. and Georges Bank-further southeast.

The study further states that the observed feeding behavior also leads to vulnerability to entanglement in bottom set fishing gear, an issue which is a major mortality factor for the species. This finding reaffirms a NOAA Fisheries regulation that mandates the use of sinking line between fishing traps used in the lobster fishery as a way of reducing entanglements.

The new findings follow earlier NOAA-led studies detailing so-called "bubble net" feeding behaviors near and at the surface. Bubble net feeding is a behavior in which humpback whales corral and contain fish into a small area by trapping them in nets of air bubbles so they can more efficiently scoop them up in their large filter-feeding mouths.The behaviors are used by individual animals and as part of coordinated feeding behaviors involving two or more animals.

"Tagging technology is allowing us to observe whales underwater, much as land-based biologists study animal subjects in their specific environments," said David Wiley, sanctuary research coordinator and a co-author on the paper. "The data have allowed us to detect new feeding techniques as well as nuances in those behaviors. We have determined that bottom feeding is a much more commonly used technique than the more well known bubble net behaviors."

Bottom side-rolling feeding was previously hypothesized from observations of scars on the jaws of humpback whales and from earlier tagging projects. In the recent studies, researchers showed that this behavior happens for extensive periods of time at or near the seafloor, that it occurs in the presence of concentrations of sand lance (a preferred prey fish), and that the behavior is accompanied by the expansion of the animal's ventral (throat) pleats.

Information was collected through the use of DTAGs (synchronous motion and acoustic recording tags) and Crittercam™, National Geographic Society's underwater video and audio recording system.

"By visualizing the data with TrackPlot, we can actually see how the whale moves underwater and this enables us to discover different kinds of foraging behaviors," said lead author Colin Ware of the University of New Hampshire's Center for Coastal and Ocean Mapping. TrackPlot is a custom software tool for DTAG data that produces a ribbon-like image in three dimensions. "With these 3-D visualizations, we can follow the path of the whale from surface to seafloor along with all of the pitch, roll and heading changes while underway. By adding Crittercam video, we now get a more complete understanding of these various bottom feeding techniques," Ware said.

A side-roll is defined as a roll of between 45 and 135 degrees from a normal orientation along the seafloor -- the most common version uses a 90 degree roll with a downward head pitch of about 30 degrees, which matches favorably with earlier speculative sketches of bottom feeding. A side-roll inversion involves rolls that continue past the 135 degree orientation position. One humpback used a technique that employed a repetitive sequence of moves approximately every 20 feet during which the animal rolled from a 90 degree position to an inverted position, with some 10 to 17 of these "scoops" per dive.

Sand lance, also known as sand eels, tend to burrow into the sandy sediments at night or form nighttime horizontal schools close to the seafloor. In addition, Crittercam footage indicates that sand lance can form dense mats along the seabed during the day. The side roll feeding technique with extended pleats emphasizes width rather than height, resulting in more efficient feeding when encountering prey at or near the seafloor. Coordinated feeding may also help cluster prey or simply ensure that it does not escape. Crittercam footage also showed for the first time a head-to-head orientation for two animals that were side-rolling at the seafloor.

While this humpback bottom feeding behavior occurs at relatively slow speeds, it does involve the expansion of ventral pleats, which was once thought to require high speeds, as in lunging. The researchers theorize that humpback side rolls may be similar to

the feeding technique of gray whales in the Pacific. The three types of bottom feeding techniques may be due to different prey distributions or may just reflect individual preferences between whales.
http://www.sciencedaily.com/releases/2013/09/130926143238.htm

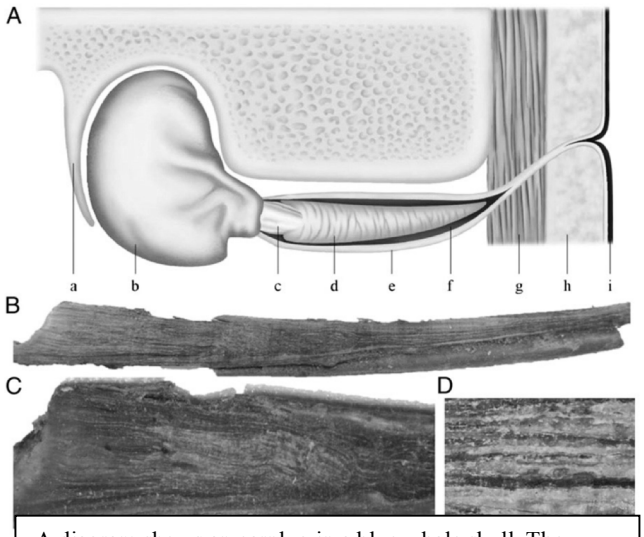
Giant Gob of Earwax Reveals Blue Whale Secrets

Two biologists at Baylor University in Texas, Sascha Usenko and Stephen Trumble, and colleagues have dissected a giant gob of earwax from a blue whale to measure pollutants to which the whale was exposed. The earwax (known as an earplug) can also be used to measure levels of stress and sexual maturity.

It sounds odd to go spelunking for information on chemical contaminants in the inner ear of a dead whale, but Usenko and Trumble say that the method yields more data than previous methods, such as taking samples of whale blubber.

"We could get measurements of what chemicals they were exposed to and the hormones in their body at six-month increments," Usenko said.

Adds Trumble: "We can not only get measurements of different chemical exposures in different time periods, but also from different places around the world."



A diagram shows an earplug in a blue whale skull. The bacon-like image (D) is the earplug. Images courtesy Michelle Berman-Kowalewskic, Santa Barbara Museum of Natural History

Enter the Earwax

Blue whales are the largest living animals today. They weigh up to 190 tons (380,000 pounds) and measure up to 89 feet (27 meters) long. Despite their size, whales, which roam the ocean, are difficult to study. Commercial whaling in the early 19th century caused their numbers to plummet, but they haven't made much of a comeback.

One reason may be organic pollutants that accumulate in the whale's fatty blubber, though the specifics are not understood as yet. Researchers can take a sample of blubber, but that method only reveals the mammal's exposure to contaminants at one point in time. Usenko and Trumble wanted to know how those levels changed over the span of the whale's lifetime. The problem was identifying something fatty like blubber that accumulated over time and allowed scientists to get a historical picture.

Scientists and museums had collected the waxy, fatty deposits of earwax from the ear canals of dead blue whales and other species for hundreds of years. The earplugs were displayed or (more likely) placed into storage for later study. Usenko and Trumble thought this might provide some answers.

"Historically, people had used earplugs from certain baleen whale species to help estimate the age of the whale. You can count the layers [of earwax] like tree rings and basically go back in time. Once we knew this and combined it with the knowledge that contaminants like to accumulate in lipid-rich matrices like the earplug, we could start asking whether earplugs could be used to make these measurements," said Usenko, whose study appears today in the journal *Proceedings of the National Academy of Sciences*.

Harvesting Earwax

When a blue whale was struck and killed by a boat in the waters off Santa Monica, California, researchers harvested a 10-inch (25-centimeter) long piece of earwax. But even the world's largest Q-tip is of no use in removing the earplug.

"You can only get to the earplug after the animal has died," Trumble said, by cutting into the skull with a large, sharp knife.

Analysis of the earplug revealed that the whale deposited one layer roughly every six months. The dead whale had 24 layers of earwax and was estimated to be around 12 years old, which corresponded to other estimates of its age.

In dissecting the layers of earwax, the scientists discovered that during its first year of life the blue whale had a spike in the concentrations of organic pollutants (mainly pesticides like chlordane and PCBs), which they believe occurred during nursing. The high fat content of blue whale milk (scientists estimate that the milk contains between 30 to 50 percent fat) further concentrates these

compounds.

Usenko and Trumble also noticed a spike in mercury in the earplug shortly after the blue whale's fifth birthday, although they don't yet know the significance of the spike.

Lastly, the researchers could track stress levels and reproductive maturity over the course of the whale's life by measuring concentrations of the stress hormone cortisol and testosterone. The whale showed a massive spike in testosterone at ten years of age, corresponding with the animal's sexual maturity. Cortisol levels spiked in the next layer, probably due to breeding and social competition.

The study shows that earplugs can potentially allow researchers to track a whale's exposure to different chemicals over time, as well as some of the physiological changes exposure may have caused, the researchers say.

"We can go back in time and determine when the animal was exposed. If it's undergoing development or sexual maturity or something like that, exposure can be really important," Usenko said.

The hundreds of well-preserved samples in museum collections will enable scientists to gather historical data, as well.

Hopefully, knowledge gained from measuring the effects of contaminants on whale health will lead, in time, to a rebound in population levels.

http://newswatch.nationalgeographic.com/2013/09/16/giant-gob-of-earwax-reveals-blue-whale-secrets/

Feds Clamp Down on Whale Kills in California's Drift Gillnet Fishery

New federal emergency fishing regulations are forcing California's drift gillnet fleet for swordfish and shark to stop fishing for the season if a single endangered sperm whale gets entangled in a net. All vessels that fish offshore will now be required to carry on-board observers at all times.

The emergency measures were finally imposed today after two endangered sperm whales were observed killed in the fishery in 2010. The rules will be enforced by requiring new vessel monitoring systems tracking the locations of all drift gillnet vessels off the U.S. West Coast.

Also today, Turtle Island Restoration Network (SeaTurtles.org) published a new online exposé calling for an end to the gillnet fishery titled, *California's Deadliest Catch*.

"While these emergency measures are supposed to prevent whale deaths in the short term, the real fix is to phase out this obsolete and wasteful fishery once and for all," said Teri Shore, Program Director at Turtle Island Restoration Network, SeaTurtles.org. "The new regulations do nothing to stop the killing of more than 100 dolphins, sea lions, and other marine animals every year. It's time to end this waste of ocean life."

TIRN's new report *California's Deadliest Catch* reveals that the drift gillnet fishery captured and killed 1,300 protected whales, dolphins, and sea turtles animals over 10 years (2001 - 2010) -- and caught and discarded an estimated 100,000 giant ocean sunfish and 10,000 blue sharks, that were dumped overboard dead, dying or injured. "The gillnet fishery is a curtain of death and should be shut down forever," said Todd Steiner, biologist and executive director of SeaTurtles.org. "Why do we allow gillnets to kill endangered marine species to deliver swordfish and shark known to be so high in mercury that the FDA warns women and children never to eat it?"

The emergency regulations on California's swordfish drift gillnet fishery were imposed in response to two endangered sperm whales that were observed killed in the fishery in 2010. Based on low observer coverage in the fleet of 20 percent or less, marine mammal experts estimated that as many as16 individual whales were killed in the CA drift gillnet fishery that year. This number is high above the legal limit allowed under the Marine Mammal Protection Act. Until now, the fishery has been operating for nearly three years without a legal marine mammal take permit. Turtle Island Restoration Network, Center for Biological Diversity, and Oceana requested emergency regulations and filed a notice of intent to sue the federal government under the Endangered Species Act in September 2012 because of the alarming killing and injury of sperm whales — as well as other new information that suggested the government was overlooking the fishery's impact on endangered species. Conservation groups' efforts in prior years have forced the fishery to implement closed areas to protect loggerhead and leatherback sea turtles. Today's regulations will help enforce these closed areas by monitoring all fishing vessel locations.

Federal Emergency Whale Protection for California's Drift Gillnet Fishery — Implements an immediate closure of the California thresher shark/swordfish drift gillnet (mesh size ≥ 14 inches) (DGN) fishery if one sperm whale is observed killed or seriously injured in DGN gear off California — Requires all DGN fishing vessels to carry a NMFS-trained observer from August 15, 2013 to January 31, 2014 in a 100% observer coverage area (Zone). The Zone covers nearly all areas in the U.S. exclusive

economic zone (EEZ) deeper than the 1,100 fathoms (fm) (2,012 meters (m)) depth contour.— Exceptions: an area seaward of the Santa Lucia Escarpment, and any canyons/basins shoreward of the main north-south 1,100 fm (2,012 m) depth contour (regardless of depth) to facilitate monitoring and enforcement— Owners/operators of vessels intending to fish with DGN gear will be required to install, activate, carry and operate a vessel monitoring system (VMS) prior to embarking on a DGN fishing trip after the effective date of this rule.

Top 10 Reasons to End California's Deadliest Catch

1. High bycatch gear
2. Death and injury of whales, dolphins and sea turtles
3. Pacific sea turtles going extinct
4. Waste of blue sharks, sunfish and other fish
5. Swordfish and shark in danger of decline
6. Violates marine conservation laws
7. Drift gillnets banned in Oregon, Washington, on High Seas
8. Only 12 active CA gillnet boats left
9. U.S. swordfish consumption down due to high mercury
10. Fleet observer coverage too low and biased

SIGHTINGS compiled by Monterey Bay Whale Watch. For complete listing and updates see *www.gowhales.com/sighting.htm*

Date	#	Type of Animal(s)
9/30 p.m.	50	Humpback Whales with hundreds of sea lions
9/30 a.m.	75	Humpback Whales
	70	Risso's Dolphins
	4	Harbor Porpoise
9/29 late p.m.	22	Humpback Whales
9/29 p.m.	70	Humpback Whales
9/29 a.m.	150+	Humpback Whales
	25	Bottlenose Dolphins
	30	Harbor Porpoise
9/28 late p.m.	23	Humpback Whales (a full breach next to boat)
9/28 p.m.	65	Humpback Whales
	400	Risso's Dolphins
9/28 a.m.	80+	Humpback Whales
	15	Harbor Porpoise
9/26 a.m.	13	Humpback Whales
	2	Risso's Dolphins
	11	Harbor Porpoise
9/25 a.m.	25	Humpback Whales
9/24 a.m.	50+	Humpback Whales
	20	Risso's Dolphins
9/23 p.m.	40+	Humpback Whales
	2	Harbor Porpoise
9/23 a.m.	80+	Humpback Whales
	10	Risso's Dolphins
	20	Harbor Porpoise
	1000	Sea Lions
9/22 p.m.	25	Humpback Whales surface feeding
9/22 a.m.	45	Humpback Whales surface feeding
9/21 p.m.	50	Humpback Whales
9/21 a.m.	55	Humpback Whales
9/20 p.m.	85	Humpback Whales
9/20 a.m.	85	Humpback Whales
	6	Risso's Dolphins
9/19 p.m.	60	Humpback Whales, one surface feeding with Sea Lions
9/19 a.m.	85	Humpback Whales surface feeding with 1000 Sea Lions
9/18 a.m.	90+	Humpback Whales
	200	Risso's Dolphins
	1	Blue Shark
9/17 a.m.	90+	Humpback Whales
	50	Risso's Dolphins
	2	Bottlenose Dolphins
9/15 a.m.	150	Humpback Whales
	250	Pacific White-sided Dolphins
	12	Harbor Porpoise
9/14 p.m.	6	Humpback Whales
9/14 a.m.	75	Humpback Whales
	3	Blue Whales
	3	Killer Whales
	600	Pacific White-sided Dolphins
	150	Risso's Dolphins
9/13 p.m.	8	Humpback Whales
9/13 a.m.	90	Humpback Whales
	25	Blue Whales
	50	Pacific White-sided Dolphins
	50	Risso's Dolphins
9/12 p.m.	100+	Humpback Whales
	25+	Blue Whales
	20	Risso's Dolphins
9/12 a.m.	50+	Humpback Whales
	10	Blue Whales
	50	Pacific White-sided Dolphins
	350	Risso's Dolphins
	10	Harbor Porpoise

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