

Soundings



SEPTEMBER 2014

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

**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, September 25, 2014
Time: 7:30 PM**

PLEASE JOIN US AT 7:00 FOR REFRESHMENTS

**Speaker: Dr. Fred Sharpe, Principal Investigator,
Alaska Whale Foundation**



A humpback whale researcher from the northern waters will be our featured speaker this month. Dr. Fred Sharpe, principal investigator for the Alaska Whale Foundation, has concentrated on the humpbacks' bubble netting during his 20 years of research.

In bubble netting, pods of humpbacks release columns of bubbles from their blowholes so that the rising air produces nets to corral herring for lunge feeding. Dr. Sharpe's tenacious observations of social behavior has found not all

the 3,000 humpbacks that frequent Southeast Alaska off Juneau during the summer foraging season participate in bubble netting. He has identified about 60 and assigned some names, such as Captain Hook and Melancholy.

The research has found that different individuals in the pod have different tasks, and those cooperative teams work together for decades. Underwater hydrophones have recorded singers in the pods issuing "feeding calls" to drive the prey into the waiting nets.

Dr. Sharpe earned his doctorate from Simon Fraser University in British Columbia. In his off time, he explores the hills and forests of the Pacific Northwest, recording bird calls and collecting plant specimens. He has authored two books – *Birding in the San Juan Islands* and *Wild Plants of the San Juan Islands*.

Please join us for refreshments before the program begins. More information is available on our website, www.acsmb.org.

Our next program will be at 7:30pm on Thursday, October 30, when documentary videographer Skyler Thomas updates us on white shark behavior.

INSIDE THIS ISSUE

CALENDAR2

SIGHTINGS.....7

SCIENTISTS NAME NEW SPECIES OF CETACEAN: THE AUSTRALIAN HUMPHACK DOLPHIN.....2

STANFORD RESEARCHER GETS FIRST-TIME LOOK AT ANTARCTIC MINKE WHALES FEEDING.....4

FIRST PATIENTS ARRIVE AT OUR NEW HAWAIIAN MONK SEAL HOSPITAL.....5

BANNER DAY FOR BLUEFIN.....6

MEMBERSHIP.....8



A pod of humpback whales bubble netting.

CALENDAR

Sep. 20: California Coastal Cleanup Day. Find a location to participate in this statewide cleanup here:
<http://www.coastal.ca.gov/publiced/ccd/locations.html>

Sep. 21: Science Sunday at the Seymour Center in Santa Cruz. Join Steve and Anthony Palumbi at 1pm for "The Extreme Life of the Sea" and hear unforgettable stories of some of the most marvelous life forms on earth.

Sep. 28: Channel Islands Adventure: Santa Rosa Island with the Cabrillo Marine Aquarium. Sunday, September 28, 2014, from 7:30 AM to 6:30 PM. For more info and reservations call 310-548-7562

Nov. 7-9: ACS 2014 Conference: "Tuned In To Whales: Conservation, Research and Education." The conference will take place in Newport Beach, California at the Hyatt Regency Newport Beach. The Program Lineup will include world experts on Cetaceans, an all day whale watching expedition from Dana Point, CA, a Marine Life Photo Contest, Book Signings, and Student Workshops. Registration and Program Lineup are available at <http://2014acsconference.eventbrite.com>

Nov. 13-16: 95th Annual Meeting of the Society of Western Naturalists in Seattle-Tacoma, WA. For more info and registration please go to westsonat.com

Jan. 24-25, 2015: 5th Annual Whalefest Monterey. In 2015, Whalefest will take place at Monterey's Old Fisherman's Wharf from 10:00 AM – 5:00 PM on the weekend of January 24-25. This event celebrates the annual migration of gray whales and is designed to educate and inspire the public not only about gray whales but about Monterey's magnificent marine ecosystem.

Dec. 13-18, 2015: 21st Biennial Conference on Marine Mammals in San Francisco, CA at the Hilton San Francisco in Union Square.

BOOK RECOMMENDATIONS

California Coastal Access Guide, 7th Edition, California Coastal Commission (author). 2014 UC Press.

The Passenger Pigeon, by Errol Fuller. 2014 Princeton University Press.

A Visitor's Guide to South Georgia, 2nd Edition, by Sally Poncet and Kim Crosbie. 2012 Princeton University Press.

SCIENTISTS NAME NEW SPECIES OF CETACEAN: THE AUSTRALIAN HUMPBACK DOLPHIN

Aug. 1, 2014 — Scientists examining a taxonomically confused group of marine mammals have officially named a species new to science: the Australian humpback dolphin, *Sousa sahulensis*, according to the Wildlife Conservation Society and Clymene Enterprises.

The study describing the newly named species is the culmination of a 17-year long systematic examination of all available historical records, physical descriptions, and genetic data of humpback dolphins -- a widespread group of coastal cetaceans ranging from the coast of West Africa to the northern coast of Australia. The Australian humpback dolphin becomes the fourth recognized humpback dolphin species.

The study appears online today in the journal *Marine Mammal Science*, and will appear in the journal's October edition. The authors are: Thomas A. Jefferson of Clymene Enterprises and Howard C. Rosenbaum of the Wildlife Conservation Society.

"We've finally managed to settle many long-standing questions about humpback dolphins -- particularly how many species actually exist -- using a huge body of data collected over two centuries and analyzed with the latest scientific tools," said Dr. Jefferson.

"The formal recognition and naming of a new species brings with it a need to formulate or update plans for protection of these dolphins," said Dr. Rosenbaum, Director of WCS's Ocean Giants Program. "Humpback dolphins throughout their range are threatened with fisheries interactions, vessel impacts, and development in their coastal habitats. Efforts to protect humpback dolphins and other



Scientists examining a taxonomically confused group of marine mammals have officially named a species new to science: the Australian humpback dolphin. (Credit: R.L. Pitman).

coastal dolphins, and their most important habitats are essential for the survival of these species."

The process of describing a species new to science requires a systematic analysis of all species most closely related to the animal in question. The humpback dolphins in particular have vexed researchers and taxonomists for decades until researchers from the Wildlife Conservation Society and a number of other institutions provided the most definitive results in late 2013.

Noteworthy naturalists such as Richard Owen (who coined the word "Dinosaur"), Georges Cuvier, and Richard Lydekker have added to the literature on humpback dolphins over the centuries. In recent years, scientists have disagreed with one another about the number of species, with some considering all humpback dolphins the same species and others postulating as many as nine different ones.

The new study contains detailed reviews and descriptions of the currently recognized four humpback dolphin species, using external and skeletal measurements, coloration, molecular genetics, and geographic distribution. The study is the next step building upon recent studies that first detected the existence of a unique humpback dolphin species inhabiting the waters of northern Australia and the island of New Guinea, using genetics and morphological characters.

The Australian humpback dolphin species joins the current assemblage of three other closely related species: the Atlantic humpback dolphin (*Sousa teuszii*), the Indo-Pacific humpback dolphin (*Sousa chinensis*), and the Indian Ocean humpback dolphin (*Sousa plumbea*). The new dolphin's scientific name --

Sousa sahulensis -- is derived from the Sahul Shelf, an underwater shelf stretching between northern Australia and southern New Guinea, where the Australian humpback dolphin occurs.

Aside from slight differences in overall length, number of teeth and vertebrae, and geographic distribution, the Australian humpback dolphin differs in appearance from the other three humpback species. Its

dorsal fin is lower and more wide-based than the dorsal fins of *Sousa teuszii* and *S. plumbea*, and its coloration is dark gray, as opposed to the distinctly white (often with a pink tinge) coloration of its closest humpback neighbor, *Sousa chinensis*. The Australian humpback dolphin also possesses a distinctive dark dorsal "cape."

Another interesting finding with the designation of the Australian humpback dolphin is the support its distribution provides to a zoogeographical barrier described by Alfred Russell Wallace, one of the first naturalists to examine in detail the life of the Malay Archipelago. He identified a barrier now known as the Wallace Line. To the west of the line, terrestrial animal species are mostly of Asian origin; to the east, animal species largely descend from Australasian ancestors. Researchers have also found the Wallace Line to be a barrier for marine species as well, and the divide between Indo-Pacific and the Australian humpback dolphins seems to coincide with this border.

There is currently no population estimate for the Australian humpback dolphin, but the authors warn that it is unlikely that more than a few thousand dolphins of that species exist, based on available sighting data. Potential threats to all humpback dolphins include coastal development, accidental capture by fishermen, vessel collisions, and in a few cases direct hunting.

<http://www.sciencedaily.com/releases/2014/08/140801125052.htm/>

STANFORD RESEARCHER GETS FIRST-TIME LOOK AT ANTARCTIC MINKE WHALES FEEDING

AN INTERNATIONAL TEAM OF RESEARCHERS THAT INCLUDED A STANFORD SCIENTIST USED DIGITAL TAGGING TECHNOLOGY TO STUDY THE UNIQUE FEEDING HABITS OF ANTARCTIC MINKE WHALES. UNDERSTANDING HOW MINKE WHALES FEED MAY EXPLAIN HOW WHALES BECAME THE LARGEST ANIMALS OF ALL TIME – AND ALSO LEAD TO BETTER PROTECTION FOR THEM.

by Shara Tonn

Aug. 14, 2014 — The fossil record holds many secrets, but the largest animal in history – the whale – is not one of them. Dwarfing dinosaurs, mammoths and elephants, whales are the giants of both the past and present animal realms. But how did they get to be such behemoths?

Using improved technology, an international team of researchers – including a Stanford scientist – was able to tag and study the minke whale, a wily species whose feeding behavior could hold the key to understanding the evolution of a unique whale family called rorquals, which range in size from 16-foot-long minke whales to 92-foot-long blue whales. Their research was recently published in the *Journal of Experimental Biology*.

To put it into basketball terms, minke whales would reach from the basket to the free throw line, whereas blue whales would reach roughly the whole length of the court.

"If you look through the fossil record, you don't see anything bigger than a blue, fin or humpback whale," said Jeremy Goldbogen, assistant professor of biology at Stanford's Hopkins Marine Station and a member of the research team.

'Lunge feeding' characteristic

Minke whales and other species in the rorqual family are characterized by a feeding strategy called lunge feeding. During a lunge, rorquals accelerate to a high speed and ram the water with their mouths open, gulping down massive amounts of water and prey in just a few seconds.

Then, they filter the water out through baleen plates, which form a mat of keratin – the same fibrous protein in hair, feather and hooves – that hangs down from the top of their mouths, leaving the krill and other suspended zooplankton inside to swallow.

"There's no other animal that feeds like it, and it's thought to be why baleen whales have been able to get so big," Goldbogen said. "They're able to be



Digital tagging technology allows Stanford biologist Jeremy Goldbogen to study the feeding behavior of minke whales in the Antarctic. (Credit Ari Friedlaender).

energetically efficient so they can process and eat a lot of animals in a small amount of time."

According to Goldbogen, this feeding method evolved in rorqual ancestors that were similar in size to the minke whales of today.

"We do see anatomical evidence that suggest lunge feeding capability in small minke-size rorqual fossils," he explained. "Understanding how minke whales feed can tell us a lot about how lunge feeding evolved and how that innovation may have facilitated the evolution of the largest animals of all time."

Small size helps

Though minkes are one of the most common baleen whale species in the ocean, they are difficult to study because they're fast, they spend a great majority of their time under the sea surface and their feeding haunts change from year to year.

Due to their agility and small size, they have developed a niche feeding around and underneath sea ice – a habitat that other whales (and sometimes ships) are too big to access and one that is rapidly disappearing.

Goldbogen and his team chose digital tags to track the minke whales. The multi-sensor tags can record pressure, temperature, acceleration and orientation relative to the magnetic field, helping researchers understand what the whales are doing at depth. With a smart phone, one can interact with some of this technology when the phone is turned 90 degrees and the screen switches its orientation.

But the challenge is attaching the tags to the slippery whale blubber of the minkes. To overcome that, Goldbogen and his team used digital tags with suction cups on the bottom. With persistence, they

managed to tag two Antarctic minke whales and track them for a combined total of 27 hours before the tags fell off and the scientists could retrieve them. They found that in one dive – defined as anytime the whale leaves the surface – a minke whale can ram-feed up to 24 times, which is five to eight times more than a blue or fin whale.

It makes sense, Goldbogen said, because larger whales have to spend a disproportionate amount of energy to propel themselves forward to take relatively bigger gulps. For the smaller minke whale, a lunge is the energetic equivalent of steady swimming.

But how often do they feed and how much caloric fuel do they consume? What are the upper and lower body size limits for whales that practice this type of suspension feeding strategy?

Those are questions that Goldbogen hopes longer-term tagging technology with better marine adhesives will be able to answer. And by piecing together the underwater life of the minke whale, Goldbogen said this research could be applied to conservation strategies in the future.

"If there are major changes in the ocean, that does affect sea ice, for example," he explained. "We might be able to project how that might affect minke whale foraging success. That might help us manage those populations."

But for now, Goldbogen wants to continue studying the filter feeding of minke whales and explore how it is related to the evolution of Earth's titans.

"We're really living in the time of giants," Goldbogen said. "It's a spectacular opportunity for biologists because now we have the technology in the form of these tags that we can use in order to study the biggest animals of all time."

<http://news.stanford.edu/news/2014/august/minke-whales-feeding-081414.html>

FIRST PATIENTS ARRIVE AT OUR NEW HAWAIIAN MONK SEAL HOSPITAL

FOUR YOUNG HAWAIIAN MONK SEALS WILL GET A SECOND CHANCE AT SURVIVAL AS THE FIRST PATIENTS ADMITTED TO THE WORLD'S ONLY FACILITY DEDICATED TO THE RESCUE AND CARE OF THIS CRITICALLY ENDANGERED SPECIES.

Jul. 10, 2014 — After years of dreaming, planning, fundraising and building, we've finally opened our doors to patients at our Hawaiian monk seal hospital, Ke Kai Ola (The Healing Sea). Thanks to people like you, this \$3.2 million facility near Kailua-Kona on the Big Island of Hawaii will now

provide vital rehabilitative care to seals who cannot survive on their own.

And for a species as critically endangered as the Hawaiian monk seal, a population estimated at fewer than 1,100 individuals, every animal counts.

Meet Our Patients

Four young, malnourished monk seals were admitted to Ke Kai Ola on July 9:

- **Kūlia**, a female pup whose Hawaiian name means "to strive"
- **Ikaika**, a male pup whose Hawaiian name means "strong"
- **Hāla'i**, a one-year-old female whose Hawaiian name means "calm, peaceful"
- **Maka'ala**, a one-year-old female whose Hawaiian name means "watchful, alert"



Kūlia is a female Hawaiian monk seal pup that was rescued at Pearl and Hermes Reef in the Northwestern Hawaiian Islands. (Credit © Jon Brack, NMFS Permit 16632-00 and 932-1905-01MA-009526-1).

Researchers from The Marine Mammal Center and the National Oceanic and Atmospheric Administration (NOAA) rescued the seals during a 26-day research mission in the Northwestern

Hawaiian Islands. This 1,200-mile archipelago of small islands and atolls is home to about 900 Hawaiian monk seals.

Unfortunately, that population is in decline primarily due to poor juvenile survival. Alarmingly, fewer than one in five Hawaiian monk seal pups in the Northwestern Hawaiian Islands survive their first year due to threats like entanglement in ocean trash, changes in the food chain and predation.

Every year, researchers monitor the Hawaiian monk seal population and intervene when necessary by disentangling seals from debris or moving them to areas of higher survival. This year, aerial surveys helped researchers identify seals on the beach and in the water that might need help.

The four young monk seals they rescued—two from Pearl and Hermes Reef and one each from Midway Atoll and French Frigate Shoals—were all underweight for their age and unlikely to survive on their own. After being fed and cared for at Ke Kai Ola, the seals will be returned to the Northwestern Hawaiian Islands.

Up to 30 percent of the Hawaiian monk seal population is alive today because of efforts by the NOAA National Marine Fisheries Service and their partners, like The Marine Mammal Center, to help recover monk seals over the past few decades. Our new facility will allow even more young monk seals to be helped.

“This is an incredibly exciting time for monk seal recovery,” says Dr. Charles Littnan, lead scientist for NOAA Fisheries Hawaiian Monk Seal Research Program. “In the past, we would have had to leave these animals behind in the Northwestern Hawaiian Islands, and they would have almost certainly died. Now they get a second chance to live, grow and ensure the future of their species.”

A Healing Environment

Our monk seal patients were transported to the hospital on the Big Island via the NOAA Research Vessel *Hi‘ialakai* and then ferried to shore two by two.

“The excitement was palpable as we put these first seals into our pools at Ke Kai Ola,” says Dr. Shawn Johnson, Director of Veterinary Science at The Marine Mammal Center. “It was incredibly satisfying to see the hard work of so many people finally come to fruition.”

The Ke Kai Ola facility includes two rehabilitation pool areas for newborn seals and two larger pools for juveniles, plus quarantine pen areas.

A medical lab, staff office, patient food prep kitchen and education pavilion are in the final stages

of construction. An official grand opening will take place later this year, but we didn’t want to wait another moment to start providing care for these seals in need.

“Time is of the greatest essence, and these seals will have a steep road ahead if they are to survive,” says Dr. Michelle Barbieri, a marine mammal veterinarian working with The Marine Mammal Center and NOAA. “Care for our new patients began the moment they were brought aboard the ship, and Ke Kai Ola will provide the healing environment to help them make it through the difficult weeks ahead.”

Kūlia, Ikaika, Hāla‘i and Maka‘ala will be cared for by veterinary experts from The Marine Mammal Center and NOAA, as well as a strong community volunteer base in Hawaii. While our hospital will not be open to the public, we will be conducting public outreach programs to provide education about Hawaiian monk seals and conservation efforts.

http://www.marinemammalcenter.org/about-us/News-Room/2014-news-archives/hawaiian-monk-seal-patients.html#.U_vDjRxGiqk

BANNER DAY FOR BLUEFIN

Aug. 29, 2014 — A bright new chapter for bluefin tuna has begun. NOAA Fisheries just issued a strong final amendment Aug. 29 for protecting these giants of the ocean. With the promulgation of implementing regulations, the new amendment will help stop western Atlantic bluefin—and approximately 80 other types of marine wildlife—from unnecessarily dying on surface longlines, fishing gear that is intended primarily for yellowfin tuna and swordfish, but indiscriminately kills other species.

“NOAA Fisheries deserves great praise for significantly increasing protections for bluefin while allowing fishing for yellowfin tuna and swordfish to continue,” said Lee Crockett, director of U.S. ocean conservation for The Pew Charitable Trusts. “This historic action will help western Atlantic bluefin tuna rebuild to healthy levels.”

Bluefin tuna command respect. They’re as fast as racehorses, bring fishermen to their knees, and grow to the size of a small car. These “superfish” make transoceanic migrations, can dive deeper than 4,000 feet, and live up to 40 years. But bluefin are no match for wasteful fishing methods. The population of western Atlantic bluefin tuna is just 36 percent of its already depleted 1970 level. This decline is caused in part by surface longlining.

Surface longlines average 30 miles in length, use hundreds of baited hooks, and often remain in the water untended for up to 18 hours. This gear catches

and kills bluefin along with many other species, including hammerhead sharks, blue marlin, and leatherback sea turtles.

For the past half-century, surface longlines in the Gulf of Mexico have been a serious danger to western Atlantic bluefin tuna. The Gulf is the fish's only known spawning area. The same fishing gear poses a similar threat to bluefin feeding off the coast of North Carolina.

NOAA Fisheries has tried for decades to reduce the incidental catch, or bycatch, caused by surface longlines. Fishermen have been prohibited from directly targeting bluefin tuna in the Gulf since 1982. The agency also required gear modifications and bait restrictions. None of those options has provided the comprehensive solution this problem demanded.

The agency realized it needed a different approach. It spent five years developing new management measures to help protect bluefin tuna while also supporting fishermen who use highly targeted methods.

Today's final amendment restricts the use of surface longline fishing in certain areas of the Gulf of Mexico and off Cape Hatteras, North Carolina, while promoting highly selective gear such as greensticks for yellowfin tuna and buoy gear for swordfish. Ensuring that surface longlines are not used when and where bluefin gather in great numbers to spawn and feed will dramatically reduce the amount needlessly caught and killed.

This amendment also establishes a new annual limit on the incidental catch of bluefin on surface longlines and 100 percent electronic monitoring of the surface longline fleet. Thanks to these and other changes, the agency will now be able to hold individual surface longline vessels accountable for their incidental bluefin catch. NOAA Fisheries will also be able to prevent the fishery from exceeding its total allowable bluefin catch. This limit is needed: Surface longlines catch more bluefin tuna now than before 1982. In 2012 alone, surface longline vessels in the Gulf and western Atlantic Ocean discarded 445,338 pounds of dead bluefin tuna. This quantity was more than 20 percent of the entire U.S. bluefin quota for that year.

"The two new gear-restricted areas in the Gulf are a tremendous achievement," said Crockett. "For more than 10 years, scientists, fishermen, and other stakeholders have urged the agency to protect western Atlantic bluefin in their only known spawning area. NOAA Fisheries clearly demonstrated its dedication and commitment to restoring bluefin tuna."

One disappointing aspect of the amendment, however, is the reallocation of bluefin tuna quota away from selective fishermen using rod and reels and harpoons to the surface longline fleet. Providing more bluefin to the surface longline fleet does not promote conservation of the species and reduces fishing opportunities for traditional bluefin fishermen.

"Despite this reallocation, this final amendment is stronger than the draft and will help put depleted bluefin tuna on the road to recovery," said Crockett.

<http://www.pewtrusts.org/en/about/newsroom/news/2014/08/29/banner-day-for-bluefin>

SIGHTINGS

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

Date	#	Type of Animal(s)
8/31 pm	12	Humpback Whales
	100	Long-beaked Common Dolphins
	25	Risso's Dolphins
8/31 am	44	Humpback Whales
	200	Long-beaked Common Dolphins
	50	Risso's Dolphins
8/30 pm	1	Humpback Whale
	8	Killer Whale
8/30 am	26	Humpback Whales
	200	Long-beaked Common Dolphins
8/29 pm	35	Humpback Whales
	120	Long-beaked Common Dolphins
8/29 am	40	Humpback Whales
	300	Long-beaked Common Dolphins
8/28 pm	23	Humpback Whales
	250	Common Dolphins
8/28 am	20	Humpback Whales
	300	Pacific White-sided Dolphins
	300	Risso's Dolphins
	60	Dall's Porpoise
8/27 late pm	35	Humpback Whales
8/27 pm	31	Humpback Whales
	1	Blue Whale
	30	Pacific White-sided Dolphins
8/27 am	100	Common Dolphins
	42	Humpback Whales
	15	Pacific White-sided Dolphins
8/26 pm	500	Risso's Dolphins
	30	Dall's Porpoise
	25	Humpback Whales
8/26 am	60	Common Dolphins
	39	Humpback Whales
8/25 late pm	18	Humpback Whales
	1	Gray Whale
	1	Minke Whale
	200	Long-beaked Common Dolphins

American Cetacean Society
Monterey Bay Chapter
P.O. Box H E
Pacific Grove, CA 93950



RETURN SERVICE REQUESTED

Nonprofit
Organization
U.S. Postage
PAID
Monterey, CA
Permit No. 338

**MONTEREY COUNTY HOTLINES for
Marine Mammals**

Strandings/Entanglements/Distress
24-hour toll-free
877-767-9425

Harassment
NOAA Enforcement, Monterey
831-853-1964

American Cetacean Society Membership Application Chapter#24

New Membership/Subscription _____ Gift Membership/Subscription _____
Renewal _____

Name _____

Address _____ Email _____

City, State, Zip _____

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	

Subscription only * \$15/11 issues (*not entitled to membership benefits)

Check ___ Mastercard ___ Visa ___ Expiration date _____

Signature _____

Make checks payable to: ACS/Monterey Bay Chapter
Return to: Membership Secretary, ACS Monterey Bay Chapter
P.O. Box H E Pacific Grove, CA 93950

**Monterey Bay Chapter
Officers & Chairs, 2014**

Richard Ternullo, *President*
Tony Lorenz, *Vice President*
Randy Puckett, Jerry Loomis,
Past Chapter Presidents
Thom Akeman, *Publicity*
Katy Castagna, *Treasurer*
Sally Eastham, *Membership*
Jennifer Thamer, *Secretary*
Tim Thomas, *Historian*
Carol Maehr, *Conservation*
Melissa Galieti, *Programs*
Rene Rodriguez, *Education*
David Zaches, Art Haseltine,
Debbie Ternullo *Members at Large*
Diane Glim, *ACS National President*

Evelyn Starr, *Webmaster*
Tony Lorenz, Oren Frey, *Editors*
Email: tonylorenz@bigbluebay.com
soundingsnewsletter@gmail.com