

PACIFIC CURRENTS

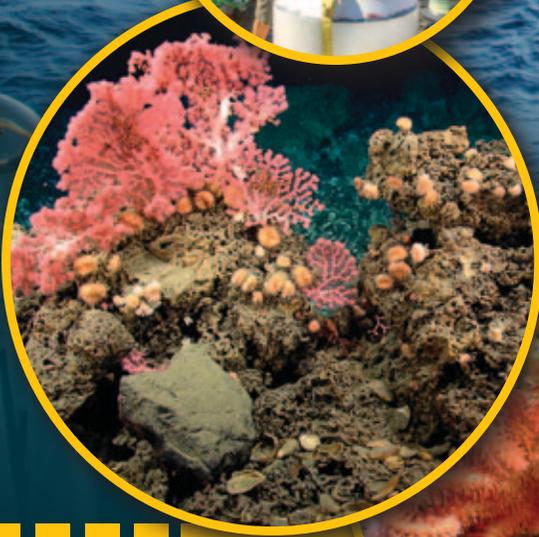
MEMBER MAGAZINE OF THE AQUARIUM OF THE PACIFIC



EXPLORING THE OCEAN



TODAY AND TOMORROW





MEDICINES FROM THE SEA

DAVID BURDICK/NOAA

The ocean is a repository of Earth's biodiversity, much like rainforests. Both are promising sources of medicines to treat human diseases, but unlike the rainforest, the World Ocean is largely unexplored.

ONE OF THE MOST COMPLEX ecosystems on the planet, coral reefs are home to a large variety of species, including fish and invertebrates. Medicines derived from coral reef-dwelling plants and animals have been used to treat cancers, heart disease, and other human ailments. More than half of all new cancer drug research focuses on marine organisms, according to the Coral Reef Alliance. One of the most threatened ecosystems on Earth, coral reefs have an economic value in the billions of dollars, according to the National Oceanic and Atmospheric Administration (NOAA). NOAA is actively exploring coral reefs for new chemical compounds. Many species found on coral reefs produce chemicals as a defense mechanism, especially slow-moving or stationary animals like nudibranchs and sponges. New medicines being developed from these chemicals include treatments for cancer, arthritis, asthma, ulcers, bacterial infections, heart disease, viruses, and other diseases.

There are many interesting examples of chemical compounds derived from the ocean that have already been discovered and developed into drugs or other substances useful to humans, including those listed on the right (source: NOAA's Coral Reef Conservation Program).

- **Toxins produced by reef animals are of particular interest in pharmaceutical research. Stonefish, sea snakes, box jellyfish, cone shells, and pufferfish contain some of the most toxic known compounds. Some have already been used to develop medicines or cosmetics. For example, cone snail neurotoxin is showing promise as a powerful painkiller.**
- **The antiviral drugs Ara-A and AZT and the anticancer agent Ara-C, developed from extracts of sponges found on a Caribbean reef, were among the earliest modern medicines obtained from coral ecosystems.**
- **Chemicals derived from Caribbean sea-whip corals have demonstrated uses for skincare. Painkillers and anti-inflammatory compounds have been derived from a Pacific sponge.**
- **Kainic acid, which is used as a diagnostic chemical to investigate Huntington's chorea, a disease of the nervous system, was isolated from organisms on a Japanese reef.**
- **Australian researchers have developed a sun block from a coral chemical that contains a natural SPF of 50.**

Protecting these fragile ecosystems and conserving the ocean's resources will not only preserve marine life, but also potentially save human lives.



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PACIFIC CURRENTS is published for members of the Aquarium of the Pacific. Please send your comments to our editorial staff at PacificCurrents@LBAOP.org.

OUR MISSION | To instill a sense of wonder, respect, and stewardship for the Pacific Ocean, its inhabitants, and ecosystems.

OUR VISION | To create an aquarium dedicated to conserving and building natural capital (nature and nature's services) by building social capital (the interactions between and among peoples).

PACIFIC CURRENTS STAFF | Editor/Writer: Claire Atkinson | Copy Editor: Cecile Fisher | Designer: Andrew Reitsma | Contributors: Theresa Duncan, Stacey Koupal, Nicole Malina, and Holly Piper.

AQUARIUM HOURS | Open daily from 9:00 a.m.-6:00 p.m. except Dec. 25 and during the Grand Prix of Long Beach.

MEMBERSHIP OFFICE HOURS
8:00 a.m.-5:30 p.m. daily



The Aquarium of the Pacific is a non-profit 501(c)3 institution. To provide exciting and innovative exhibits and educational programs, we rely heavily on the generous donations of individuals, foundations, and corporations.

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Development.....951-1605
Pacific Circle.....951-5387
Lost & Found.....951-1733
Private Event Info.....951-1663
Education Programs.....951-1630
Gift Store.....951-ISEA (1732)
Advanced Ticket Sales...590-3100, ext. 0
(Note: \$2 service charge per ticket, up to \$10.)
Group Reservations.....590-3100

Cover: NOAA conducted expeditions this summer in the U.S. Atlantic Canyons.

COVER IMAGES: COURTESY OF NOAA OKEANOS EXPLORER PROGRAM



Aquarium Founding Sponsor

LETTER FROM THE CEO

DEAR MEMBERS,

THE AQUARIUM'S CALENDAR for fall is packed with educational and entertaining events, from lectures by notable ocean explorers to our vibrant cultural festivals, and Sea Fare, our annual fundraising event that features food, drinks, and dancing.



We will continue to highlight the Aquarium's Ocean Exploration programs that debuted this summer with a series of lectures by ocean explorers. On September 24, Shirley Pomponi will discuss drugs from the deep, focusing on the chemicals produced by sea sponges for defense, communication, reproduction, and preventing infections. John Delaney's lecture, *When the Ocean Comes to Your Living Room* on October 3, will focus on new technologies being used in exploring the ocean. We are thrilled to host Dr. Robert Ballard on October 16, when he will present his lecture, *Using Advanced Technology to Explore the Ocean with Kids in the Pilot's Seat*. On December 5 Jesse Ausubel will share some of the discoveries made during the decade-long Census of Marine Life, of which he is one of the founders. Our Ocean Exploration theme has helped to draw one of the most exciting slates of speakers to date, so I hope you will attend a lecture and to meet these icons in the world of ocean science.

The Aquarium is known for its cultural festivals celebrating our diverse local community and featuring performances, food, and hands-on activities for the whole family. The Baja Splash Cultural Festival on September 28 and 29 celebrates Hispanic Heritage month and features Mexican folkloric and Aztec dance troupes and much more. Southeast Asia Day on October 5 features the cultures of Cambodia, Thailand, Vietnam, Myanmar, Laos, and Indonesia. The Autumn Festival, featuring the cultures of Japan, China, Korea, and the Philippines, will host taiko drum performances, martial arts demonstrations, and crafts. Coming to the Aquarium on a festival weekend always makes for a special visit.

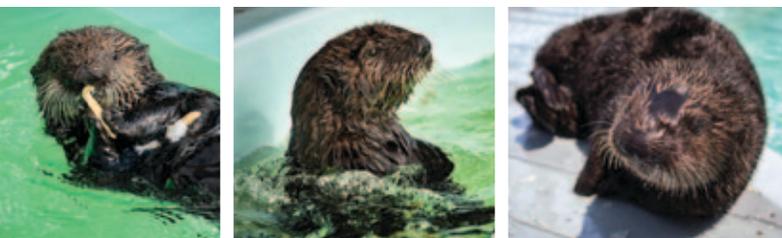
Sea Fare is one of our most popular events and gives guests an opportunity to sample food and beverages from chefs and vendors from across Southern California. Our tenth annual Sea Fare will be held on Saturday, October 19, at 7:00 p.m. This event will also include a live and silent auction, open bar, and a live painting demonstration by marine life artist Wyland.

Finally, I am pleased to invite you to a performance at the Aquarium by the acclaimed Long Beach Ballet, which will reprise its production *Guardians* on November 15 and 16. The company debuted this work at the Aquarium last year, and its message of harmony with the natural world is quite compelling.

Thank you for your ongoing support.

Sincerely,

Jerry R. Schubel



AQUARIUM WELCOMES NEW SEA OTTER PUP, CHLOE

THE AQUARIUM has welcomed a sea otter pup that was found orphaned at just three days old in the Monterey Bay area in December 2012. Monterey Bay Aquarium's SORAC (Sea Otter Research and Conservation) program rescued and rehabilitated the pup.

After she was deemed non-releasable to the wild, she was housed at the Monterey Bay Aquarium for a few months, and then was brought to her new home at the Aquarium of the Pacific in June.

The pup currently weighs close to 33 pounds. Aquarium husbandry staff members report that she is far from a picky eater and enjoys all of the food the otters are fed at the Aquarium, including restaurant-quality shrimp, clams, and squid. Aquarium donor Marla Graham named Chloe.

While adapting to her new home, the young pup is undergoing basic training. Since her arrival to the Aquarium, she has learned stationing—learning how to sit calmly in front of her trainer. She is also working with a target pole, learning to target a shape, and adapting to her formula syringe. This makes it easier for her to take her vitamins. Typically, new otter pups at the Aquarium are moved from a quarantine area to the behind-the-scenes portion of the sea otter exhibit thirty days after their arrival and approval from the veterinarian. Pups are then gradually introduced to the other otters before being added to the main exhibit area. Check the Aquarium's website for Chloe's official debut date.



MEET TOBY, OUR FIRST MALE HARBOR SEAL PUP

THE AQUARIUM WELCOMED the birth of its first male harbor seal pup on May 1, 2013. The pup was born to parents Shelby and Troy and weighed approximately 30 pounds at birth. He is now on exhibit with the other animals in the Seal & Sea Lion Habitat, including his sister Bixby.

Most seals give birth to young starting at four to five years of age. Shelby is seventeen years old and is considered a mature mom. The male harbor seal is her second pup. Bixby was Shelby's first pup. She was born at the Aquarium in April 2012.

Toby's name was selected by eight-year-old Lola Castorina from Los Angeles in a contest held in early summer that was part of a special Adopt an Animal promotion. To learn more about how you can support our new pup, see page 22. Also, use hashtag #AdoptToby on Facebook, Twitter, and Instagram to share stories and photos and read our updates.



ROBIN RIGGS

PENGUIN CHICKS HATCHED THIS SUMMER

TWO MAGELLANIC PENGUIN CHICKS hatched at the Aquarium in June. First-time parents Floyd and Roxy, residents of the Aquarium's June Keyes Penguin Habitat, incubated both eggs, which hatched a week apart. The older chick was nearly twice the size of the other by the time the younger one hatched. Aquarium husbandry staff members cared for the chicks together behind the scenes, providing regular feedings, health checks, and a comfortable enclosure for the young birds.

Magellanic Penguins are a temperate species native to the coasts of Argentina and Chile in South America. It takes between thirty-eight and forty-three days of incubation before a Magellanic Penguin egg will hatch. The chicks are born with their eyes closed, and they open about a week later. Magellanic Penguin parents take turns incubating the eggs on the nest and feeding and raising the chicks after they hatch. Penguin chicks fledge, or replace their downy newborn feathers with water-tight adult feathers, after about ninety days.

The Aquarium's penguin chicks fledged in late summer at which time they joined the other penguins on exhibit in the June Keyes Penguin Habitat.

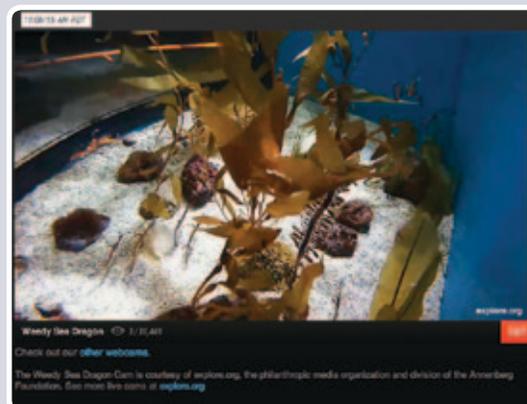


WEEDY SEA DRAGON WEBCAM DEBUTS

A NEW WEBCAM showcasing the inhabitants of the weedy sea dragon exhibit in the Tropical Pacific Gallery has been added to the Aquarium's online offerings. The webcam is live twenty-four hours a day.

Weedy sea dragons in the wild are found only in Australian coastal waters. They are bony fish related to seahorses, pipefish, and seamoths. The Aquarium of the Pacific was the first in the world to successfully breed weedy sea dragons.

To view the weedy sea dragons or any of the Aquarium's five other live webcams, visit aquariumofpacific.org/exhibits/webcams. Support for this webcam was provided by Explore, an initiative of the Annenberg Foundation.





Crew members Kelson Brace, Jerrod Hozendorf, and Doug McKay launch Camera Sled Seirios from NOAA ship *Okeanos Explorer*.



Anthony Sylvester pilots ROV *Deep Discoverer* for the first time while Bobby Mohr watches from the navigator position.

IMAGE COURTESY OF NOAA OKEANOS EXPLORER PROGRAM, 2013 NORTHEAST U.S. CANYONS EXPEDITION

EXPLORING THE OCEAN TODAY AND TOMORROW



Methane bubbles flow in small streams out of the sediment on an area of seafloor offshore Virginia, north of Washington Canyon. Quill worms, anemones, and patches of microbial mat can be seen in and along the periphery of the seepage area.

On Wednesday, July 24, 2013, a remotely operated vehicle (ROV) descended into an ocean canyon on the Atlantic coast of the United States. At 1,110 meters (about 3,642 feet), the limit of the sunlit surface layer of the ocean, the ROV reached a sloped area covered in soft sediment.

Trash and debris from humans, including fishing line and balloons, were spotted. The ROV's operators also saw fish, including cutthroat eels, witch flounder, and rattails. Boulders, broken shells, and coral rubble littered the seafloor. Moving up to a vertical wall, the ROV found additional marine life, including many types of corals. This dive was part of an expedition this past summer by the National Oceanic and Atmospheric Administration's (NOAA) exploration vessel *Okeanos Explorer*. It is an example of the types of exploratory missions currently being conducted in U.S. waters.

CONNECTING WITH EXPLORATION VESSELS

Both government agencies like NOAA and independent organizations are exploring the ocean. Aquarium visitors can follow some of these expeditions by viewing live feeds at the Ocean Exploration Hub. Several exploration vessels are currently at sea, and live feeds allow visitors a glimpse of science and exploration in real time. And because so little of the ocean waters around the United States have been explored, it is highly likely that the marine life and seafloor features displayed on these feeds are being seen by humans for the first time.



The Aquarium is one of several institutions in the country that are connecting with exploration vessels daily, including NOAA's *Okeanos Explorer*, the United States government's only dedicated exploration vessel, commissioned in 2008. Other vessels providing a live feed to the hub include the U.S. Navy's *Thompson*, the *Atlantis* from the Woods Hole Oceanographic Institute, and the Ocean Exploration Trust's *Nautilus*, through a program called Nautilus Live.

Ten-minute shows featuring live interactions with educators on board the exploration vessels take place daily at 10:00 a.m., 11:00 a.m., 12:00 p.m., and 1:00 p.m. at the Ocean Exploration Hub through November 16 (the noon show is not available on week-ends). During these sessions, viewers can ask questions and learn more about the vessels' current expeditions, how ROVs explore, and the marine life being discovered. Aquarium educators are stationed at the hub throughout the day to provide interpretation. Guests can also further their experience by following the activities of the vessels online via explorationnow.org.

The Ocean Exploration Hub uses hiperwall technology—software that organizes input from several sources onto one large array. Visitors to the hub will usually see live footage from an ROV deployed by one of the exploration vessels, a map showing the vessel's current location, and other imagery, like a map of the seafloor at that location or video of marine life spotted earlier in the expedition.

The live feeds are delivered to the Aquarium via satellite to create telepresence, or the use of technology to make remote viewers feel as though they are present. Telepresence makes it possible for not only visitors to the Aquarium to participate in the expedition, but also scientists and other experts anywhere in the world. This greatly reduces the costs associated with exploration. For example, if a vessel carrying mostly biologists comes across a never-before-seen geological feature, they can send live video to a geologist on land to get his or her input.

OKEANOS EXPLORER

NOAA's *Okeanos Explorer* is staffed by twenty-seven dedicated crew members: the engineering department runs all the engines and makes sure the ship can get from A to B; the deck department takes care of ship maintenance and operates the cranes and tethers to deploy the ROVs; the food department staff members cook all the meals; the IT department operates the computers on board as well as the ship's high-speed satellite communications system that sends out the live video feeds; the survey department runs the sonar mapping system; and the command, or officers, drives the ship. It is outfitted with a multibeam sonar system to map the seafloor, two ROVs, and twenty mission berths to house scientists and other crew members who come aboard for expeditions.

The *Okeanos Explorer* carries two ROVs that work in tandem. *Seirios* is the camera sled ROV, which functions as a depressor weight to absorb the ship's up-and-down movements at the ocean's surface. *Seirios* has a few thrusters that allow it to rotate 360 degrees on its cable, but it does not move independently. Its high-definition cameras take in the big picture of the seafloor area being explored by the newly launched *Deep Discoverer* ROV beneath it. Both ROVs are rated to 6,000 meters (19,685 feet or 3.7 miles).

Deep Discoverer, connected to *Seirios* by a 98-foot neutral tether, is the maneuverable exploratory ROV, which captures up-close images of the seafloor and the marine life found there.

Expedition sites for the *Okeanos Explorer* are determined through a series of workshops hosted by NOAA's Office of Exploration and Research. These workshops collect input from community members, scientists, researchers, and the public to determine exploration priorities. Based on this input, NOAA determines geographical targets for expeditions. "We recently had a workshop for Puerto Rico and the Caribbean, and I think we got enough information to last us at least ten years," said Nicola VerPlanck, deputy program manager for the *Okeanos Explorer* program.

Expeditions are geared toward either mapping the seafloor or using the ROVs to explore the seafloor. During a mapping cruise, mapping operations run twenty-four hours a day, with scientists and an intern monitoring the mapping data as it comes in. Any expedition location must be mapped before an ROV is sent down. During ROV expeditions, operations occur in twelve-hour shifts during the day. A navigator communicates with the bridge of the ship and with the ROV pilot and co-pilot to coordinate positions for the ship and ROVs. The pilot drives the ROV while the co-pilot operates the camera platform and assists the pilot. A video technician adjusts the camera to ensure good images. A lead mapper provides maps for the ROV, onboard scientists help lead the expedition, and an expedition coordinator works closely with the ship's crew to coordinate the mission and ensure objectives are met.

RECENT EXPEDITIONS

From May 13 to June 6 this year, the *Okeanos Explorer* was in waters just off the Atlantic coast of New England to conduct field trials with *Deep Discoverer*. From June 11 to 29 the ship's crew conducted an expedition to explore the New England Seamount Chain. One of the discoveries made during the June expedition was due to the use of improved technology connected with the ship's mapping system. The multi-beam sonar system can now process water column data as it is acquired, detecting anything from small bubbles to large whales in the water column. It was small bubbles detected during the June expedition that led to the discovery of several new methane seeps that scientists did not know existed in the underwater canyons off the New England coast. They also discovered deep-sea coral habitats, chemosynthetic mussel beds, and other marine life.

According to VerPlanck, the ship will next visit Puerto Rico and the Caribbean to capitalize on the efforts of NOAA's 2011 workshop focusing on that region. This will also provide an opportunity to test *Deep Discoverer* at its maximum depth capabilities in the Puerto Rico Trench.

Scientists and researchers access live video feeds from the *Okeanos Explorer* via Internet2, a network reserved primarily for educational institutions. NOAA also operates expedition command centers across the country, where experts can participate in expeditions via telepresence. However, anyone can view live feeds from the *Okeanos Explorer* and submit comments and ideas online. To view the feeds, learn more about the ship, and follow current expeditions, visit oceanexplorer.noaa.gov. Live feeds and archived video from other exploration vessels, including the *Nautilus*, *Atlantis*, and the U.S. Navy's research vessel *Thompson*, can be accessed at explorationnow.org.

OCEAN EXPLORATION 2020: A NATIONAL FORUM

Of the entire World Ocean, experts estimate that as little as 5 percent has been explored. With so much remaining to discover, those involved with ocean research at the highest levels are making a push for ocean exploration.

In July the Aquarium of the Pacific and NOAA hosted the first gathering of modern-day ocean explorers to draft a national ocean exploration plan. The forum, Ocean Exploration 2020, was held

at the Aquarium and broadcast live online. Viewers could watch as more than 100 explorers, scientists, government officials, and others engaged in a lively discussion of exploration priorities, innovative new technologies, how best to share data, partnerships and funding, platforms from which to explore, citizen exploration, and public engagement. Those following the forum on the web also contributed to the discussion, sending comments via a dedicated webpage, Twitter, and a live Google Hangout.

Forum attendees included developers of Google Earth and Google Ocean; the proprietors of OpenROV, an open source, crowd-funded remotely operated vehicle (ROV) company; mapping and data management firm Esri; oceanographers from the Woods Hole Oceanographic Institution, Scripps Institution of Oceanography, and Schmidt Ocean Institute; renowned explorers Sylvia Earle, Don Walsh, and Walter Munk; and representatives from exploration and conservation organizations, private foundations, and universities. The group included experts in seafloor mapping, data collection and analysis, observation instruments and platforms, education, biology, oceanography, and policy. Sponsoring partners included NOAA, the Aquarium of the Pacific, the Global Foundation for Ocean Exploration, the Schmidt Ocean Institute, and Google, Inc.

A forum report detailing their proposed national ocean exploration plan for the year 2020 will be available September 24 at aquariumofpacific.org/ocean_exploration_2020_report. Leaders at the Aquarium and NOAA plan to share the report with policy and funding decision-makers at the national level.

THE FUTURE

In addition to providing resources for humans and habitat for marine life, the ocean is the main component of our planet's life support system. Understanding it is critical to our future. Ocean Exploration 2020 forum attendees concurred that the ocean's importance and the need for further exploration cannot be overstated, yet communicating that message to the public has not been easy. Many people first experienced the wonder of ocean exploration by watching Jacques Cousteau's programs on television. During his presentation at the forum, Google's Michael Jones asked, who is the next Jacques Cousteau? Who will take his place in popular culture and help inspire interest in ocean exploration in future generations? Public figures like cosmologist Carl Sagan, physicist Stephen Hawking, and

astrophysicist Neil deGrasse Tyson have helped to drive interest in space exploration. Jones asked forum attendees to ponder who might take on a similar role to help communicate to the public the importance of ocean exploration.

Ocean exploration also holds promise as a source of jobs. Because of the vast area and volume of the unexplored ocean, data sharing will play a critical role in helping explorers set priorities, helping policymakers direct resources, and in helping scientists focus their research. Data and mapping expert Dawn Wright, chief scientist at the Environmental Systems Research Institute (Esri), suggested that an accredited degree in data science should be developed by universities to foster sharing and managing data efficiently among scientists. On Explorers Day, held on July 21, Long Beach City College demonstrated ROVs designed and built by students as part of the Marine Advanced Technology Education program's Underwater Robotics Competition. Programs like these give students skills in robotics and technology to prepare them for technical careers.

Forum participants also discussed the many kinds of existing platforms available for exploration, including historic sailing ships and educational semester-at-sea program vessels, as well as other private and government vessels. The proliferation of opensource software and hardware makes it possible for more people, including the public, to get involved with exploration. All of these resources could potentially contribute to an ocean exploration renaissance, open to all who wish to be involved.

YOUR HELP

With so much to explore and discover in the ocean, the opportunities are endless. But it will take an informed and active public to make ocean exploration a priority for our nation. Everyone can get involved, even if just by offering ideas. If you had a submersible of your own, where would you want to take it to explore beneath the ocean's surface? How should government agencies, private foundations, businesses, and the public share the tasks of ocean exploration? What ocean mysteries spark your curiosity? Send your ideas to oceanexploration@lbaop.org, and discuss your thoughts with your friends and family.



DID YOU KNOW THAT THERE IS A 4 MILLION-SQUARE-MILE PORTION OF THE UNITED STATES THAT REMAINS UNEXPLORED?

The country's exclusive economic zone (EEZ) is the section of the ocean between three and 200 nautical miles from the shoreline, and much of it is unexplored. All countries with a coastline have an EEZ and their governments have control over natural resources, energy production, and conservation research and activities within their respective EEZs. The U.S. EEZ is the largest in the world.

MAP CREATED BY ESRI. ESRI.COM/OCEANS

The Aquarium of the Pacific offers programs and events for all ages and interests. With exclusive events for our members, cultural festivals, a guest speaker series, and educational classes for families and children, there is something for everyone.

GREAT AQUARIUM ACTIVITIES!



SPARK OF LOVE TOY DRIVE

MEMBER EVENTS

Please join us for one of these select events just for our members and their guests.

MEMBER DISCOVERY NIGHT AND SPARK OF LOVE TOY DRIVE

SUNDAY, NOVEMBER 17 | 6:30 p.m.-9:30 p.m.

Have you ever wondered what the Aquarium is like in the evening after the sun sets? At Member Discovery Night, members will have the opportunity to explore, discover, and learn about the animals that call the Aquarium home and witness their behaviors firsthand. The event will also feature music by DJ EZ and special meet-and-greets with Nickelodeon's *SpongeBob SquarePants*® (©2013 Viacom International Inc. All Rights Reserved. *SpongeBob SquarePants* created by Stephen Hillenburg). Members are invited to bring a new and unwrapped toy valued at \$15 for the Long Beach Fire Department's Annual Spark of Love Toy Drive. This drive will directly benefit Long Beach families and children in need this holiday season.

COST | Free for members. Member guests receive 20% off general admission.

RSVP | (562) 437-FISH (3474) by November 14.

MEMBER EVENTS

SENIOR MEMBER AFTERNOON

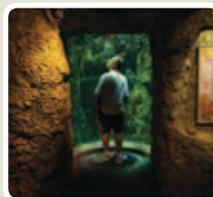
WED., JANUARY 29, 2014 | 2:00 p.m.-3:00 p.m.

Start your year with a special visit to the Aquarium for the next installation of Senior Member Afternoon as we dive into the underwater world of ocean exploration.

Discover and learn about what creatures live beyond the reach of light, including deep-sea isopods, flashlight fish, and chambered nautilus, all of which are part of the Aquarium's new exhibit, *Wonders of the Deep*. Members will also experience firsthand how the Aquarium is able to deliver live feeds from NOAA's *Okeanos Explorer* exploration vessel and explorer Robert Ballard's *Nautilus*. Be sure to look for your postcard invitation in early January for more details.

COST | Free for senior members. Member guests receive 20% off general admission.

RSVP | (562) 437-FISH (3474) by January 24.



SPECIAL EVENTS

The Aquarium of the Pacific hosts a variety of fundraisers, lunches, and other events throughout the year. Check our website for more details and additional events.

SHARK LAGOON NIGHTS

FRIDAYS, SEPT. 27; OCT. 4, 11, 18 & 25; NOV. 1, 8, 15, 22 & 29; DEC. 6, 13, 20 & 27; JAN. 3, 10, 17, 24 & 31 | 6:00 p.m.-9:00 p.m.

Shark Lagoon is open for everyone for free after 6:00 p.m. Guests can touch and learn about sharks, shop at Pacific Treasures, and enjoy live music on select nights.

COST | Free for everyone

INFO | (562) 590-3100, ext. 0

PHOTOGRAPHERS NIGHT

SUNDAY, OCTOBER 6 | 5:30 p.m.-10:00 p.m.

Take the photos you have always wanted at the Aquarium. This night is available exclusively to photographers. It also features workshops and booths by photography companies.

COST | \$19.95 for members and \$25.95 for the public.

INFO | (562) 590-3100, ext. 0

TENTH ANNUAL SEA FARE

SATURDAY, OCTOBER 19 | 7:00 p.m.-11:00 p.m.

Save the date for our tenth annual Sea Fare event, which will raise funds for our education, conservation, and animal care programs. Local restaurant chefs and beverage providers serve tastes of savory entrées, delectable desserts, wine, and more. See back cover for more information.

COST | \$125 per person

INFO | (562) 590-3100, ext. 0

NIGHT DIVE

FRIDAY, NOVEMBER 8 | 7:00 p.m.-11:00 p.m.

This event for ages eighteen and up is a night filled with music and art. Enjoy a cocktail and mingle among fishes and friends.

COST | \$14.95

INFO | (562) 590-3100, ext. 0



JAMES B WOOD

SPECIAL EVENTS

VETERANS DAY

MONDAY, NOVEMBER 11 | 9:00 a.m.-6:00 p.m.

In celebration of Veterans Day, the Aquarium of the Pacific honors veterans, military personnel, police officers, and firefighters. These men and women are invited to enjoy the Aquarium with free admission on Veterans Day.

COST | FREE admission with valid service ID.

INFO | (562) 590-3100, ext. 0



LONG BEACH BALLET PRESENTS GUARDIANS

FRIDAY & SATURDAY, NOV. 15-16 | 8:00 p.m.-9:00 p.m.

Join the Long Beach Ballet as it presents a production inspired by the ocean and the Aquarium. *Guardians* captures the changing relationship between humans and the ocean, particularly along the Southern California coast where the urban ocean hosts uses by both animals and humans. Doors open at 7:30 p.m. for general Aquarium viewing and access to seating.

COST | Section 1: \$30/member, \$35/non-member.

Section 2: \$20/member, \$25/non-member.

INFO | (562) 590-3100, ext. 0

THANKSGIVING LUNCH

THURSDAY, NOVEMBER 28 | 11:00 a.m.-5:00 p.m.

Take the stress out of Thanksgiving, and treat yourself and your family to a day at the Aquarium of the Pacific. Come gobble gobble with the sea otters and the entire Aquarium family. Delight your family with over 11,000 animals from the world's largest ocean, and savor a traditional Thanksgiving buffet in the Aquarium's Café Scuba.

COST | \$26/adult member, \$17/child member, \$36/adult non-member, and \$27/child non-member.

INFO | (562) 590-3100, ext. 0

FESTIVALS

To honor the rich diversity of Southern California, the Aquarium of the Pacific hosts cultural and family festivals throughout the year. Check our website for more details and additional family festivals.

COST | Festival activities are FREE with general admission. FREE for members. Member guests receive 20% off admission

INFO | (562) 590-3100, ext. 0

MOOMPETAM: NATIVE AMERICAN FESTIVAL

SATURDAY & SUNDAY, SEP. 21-22 | 9:00 a.m.-5:00 p.m.

The ninth annual Moompetam Festival will feature traditional cultural crafts, storytelling, educational programs, live demonstrations, music, and dance celebrating California's indigenous maritime cultures, including Tongva, Chumash, Acjachemen, Costanoan, Luiseno, and Kumeyaay.

BAJA SPLASH CULTURAL FESTIVAL

SATURDAY & SUNDAY, SEP. 28-29 | 9:00 a.m.-5:00 p.m.

In celebration of National Hispanic Heritage Month and Mexican Independence Day, the Aquarium will host its twelfth annual Baja Splash Cultural Festival featuring live entertainment, crafts, educational programs, ethnic cuisine, and more. Mariachi music, Mexican folkloric and Aztec dance troupes, interactive mural painting, Salvadoran dance, Guatemalan performances, and other special programs are featured.

SOUTHEAST ASIA DAY

SATURDAY, OCTOBER 5 | 9:00 a.m.-5:00 p.m.

The Aquarium of the Pacific will celebrate its ninth annual Southeast Asia Day. The festival's program will highlight the cultures of Cambodia, Thailand, Vietnam, Myanmar, Laos, and Indonesia. Guests will enjoy live performances, including music, dance, and cultural craft demonstrations. Ethnic dishes will be available for purchase, and children will have the opportunity to partake in arts and crafts.

SCARIUM OF THE PACIFIC

SATURDAY & SUNDAY, OCTOBER 26-27 | 9:00 a.m.-5:00 p.m.

Discover the creatures lurking in the depths of the Pacific at Scarium of the Pacific—a spooktacular educational Halloween event for the whole family. Enjoy facepainting, crafts, a magic show, and a costume contest. Sponsor: L.A. Parent.

FESTIVALS



AUTUMN FESTIVAL

SATURDAY & SUNDAY, NOVEMBER 9-10 | 9:00 a.m.-5:00 p.m.

Delve into the arts, cuisines, cultures, and marine environments of China, Japan, Korea, and the Philippines during the Aquarium of the Pacific's eleventh annual Autumn Festival.

NOAA AND OUR PLANET DAY

SATURDAY, NOVEMBER 16 | 9:00 a.m.-5:00 p.m.

Find out what the National Oceanic and Atmospheric Administration (NOAA) does for you, our nation, and our world at this annual event. The event will feature interactive booths where you can learn more about a variety of NOAA programs, the ocean, and weather. Learn how NOAA, a government agency, works to understand and predict changes in Earth's environment to help protect people and property and to conserve and manage coastal and marine resources.

SPONGEBOB APPRECIATION DAY

SUNDAY, NOVEMBER 17 | 9:00 a.m.-5:00 p.m.

Come see our real-life sea creatures, then stick around to catch a special screening of a *SpongeBob Squarepants* 4-D film, meet *SpongeBob* characters, and indulge in *Bikini Bottom*-themed games and activities on this special day at the Aquarium. (©2013 Viacom International Inc. All Rights Reserved. *SpongeBob SquarePants* created by Stephen Hillenburg.)

HOLIDAY TREATS FOR THE ANIMALS FESTIVAL

SATURDAY & SUNDAY, DECEMBER 7-8 | 9:00 a.m.-5:00 p.m.

In celebration of the holiday season, Santa diver will be delivering gifts to the Aquarium of the Pacific's sea otters, seals, sea lions, birds, fish, and other animals. Also enjoy crafts and holiday music.

THE AQUARIUM WILL BE CLOSED ON CHRISTMAS DAY

WEDNESDAY, DECEMBER 25



Shirley Pomponi, September 24



Robert Ballard, October 16



Bernard David, November 6



Jesse Ausubel, December 5

GUEST SPEAKERS

The Aquarium hosts guest lectures on a variety of topics presented by experts from across the country.

SHIRLEY POMPONI | *Drugs from the Deep**
TUESDAY, SEPTEMBER 24 | 7:00 p.m.

Sponges use chemicals to defend against predators, communicate with other sponges, reproduce, and even prevent infections. These same chemicals are being studied for their potential use in treating human disorders and diseases. Sponge researcher and ocean explorer Dr. Shirley Pomponi has made more than 300 dives in the Johnson-Sea-Link submersibles owned and operated by the Harbor Branch Oceanographic Institution at Florida Atlantic University, where Pomponi is a senior research professor.

JOHN DELANEY | *When the Ocean Comes to Your Living Room**
THURSDAY, OCTOBER 3 | 7:00 p.m.

New technologies are helping oceanographers access and understand the ocean and ocean processes that drive our planet's "life-support system." Robotics, biotechnology, cloud computing, digital imaging, nanotechnology, seismo-acoustic tomography, and universal access to the internet are all having an impact. According to John Delaney, these tools and technologies, among others, will create a pervasive human telepresence throughout the global ocean, making it possible to meet the onset of immense environmental and societal challenges. Delaney is a professor of oceanography at the University of Washington, principal investigator and director of the Regional Scale Nodes Program, and the Jerome M. Paros Endowed Chair in Sensor Networks.

GUEST SPEAKERS

SAMUEL WASSER | *Conservation Canines: Tracking a Subtle Scent, a Dog May Help Save the Whales*
WEDNESDAY, OCTOBER 9 | 7:00 p.m.

Dr. Samuel Wasser, director of the Center for Conservation Biology at the University of Washington, has developed non-invasive wildlife monitoring methods, including genetic, endocrine, and detection dog techniques. His team employs Conservation Canines to track endangered species, including orcas in the Pacific Northwest.

DR. ROBERT BALLARD | *Using Advanced Technology to Explore the Ocean with Kids in the Pilot's Seat**
WEDNESDAY, OCTOBER 16 | 7:00 p.m.

Dr. Robert Ballard is a former United States Navy officer and a professor of oceanography at the University of Rhode Island. He is most known for the discoveries of the wrecks of the RMS *Titanic* in 1985, the battleship *Bismarck* in 1989, and the aircraft carrier USS *Yorktown* in 1998. He will discuss his fifty-three years of involvement in the development and use of undersea vehicles to explore the bottom of the ocean and how he is using new and advanced technologies to bring his explorations in real time to the youth of the world. His explorations have included the first manned exploration of the Mid-Ocean Ridge, the discovery of hydrothermal vents and their exotic life forms, and the discovery of high temperature black smokers that are responsible for the unique chemistry of the world's ocean. He is president of the Institute for Exploration in Mystic, Connecticut, president of the Ocean Exploration Trust, and an explorer-in-residence of the National Geographic Society.

GUEST SPEAKERS

BERNARD DAVID | *Sustainability and Food Waste*
WEDNESDAY, NOVEMBER 6 | 7:00 p.m.

Bernard David will present potential solutions to food waste in the United States, quantifying loss throughout the supply chain, from the agricultural, processing, distribution, food service, and retail industries to households. David is a partner in Energy Management International, Inc. and a senior fellow at The Wharton School's Initiative on Global Environmental Leadership. He currently serves as chairman of ReProduct, Inc. and as an advisor to the Environmental Protection Agency.

LAURENCE MADIN | *Alien Life of Inner Space**
TUESDAY, NOVEMBER 12 | 7:00 p.m.

Laurence Madin will provide an up-close view of common but rarely seen animals, based on his exploration via SCUBA diving, submersibles, and remote vehicles. These animals include macrozooplankton and micronekton, with a focus on gelatinous animals. Madin is the executive vice president, director of research, and a senior scientist at the Woods Hole Oceanographic Institution (WHOI) in Woods Hole, Massachusetts. Previously he served as chair of the WHOI biology department and director of the WHOI Ocean Life Institute. He was among the first biologists to use SCUBA diving and submarines to study these organisms in their natural habitats.

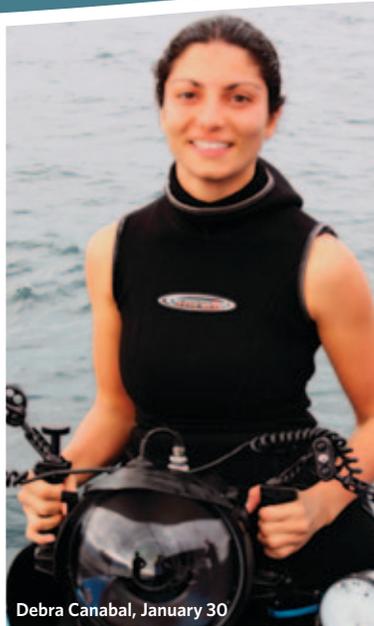


Live Lecture Webcasts

Tune in to a live lecture webcast by visiting aquariumofpacific.org/aquariumlive or capture this QR code with your smartphone.



Vincent Canabal, January 30



Debra Canabal, January 30



AQUARIUM SMARTPHONE APP

NEW

EMBARK on your own mission of discovery by downloading the Aquarium's new Explorer App. Discover and learn more about the Aquarium's animals, as well as the animals and habitats of the deep ocean. The app is currently available for Android in the Google Play store and for iOS devices in the App Store.



GUEST SPEAKERS

SANDY TRAUTWEIN | *Coral Crabs and Reef Biodiversity*
WEDNESDAY, NOVEMBER 20 | 7:00 p.m.

Coral crabs depend on their host colonies for food and protection. Learn how new species are discovered and how these tiny crabs can protect coral reefs from predators like the crown of thorns sea stars and maintain coral diversity. Sandy Trautwein, Aquarium of the Pacific curator of fishes and invertebrates, received her Ph.D. from the University of California, Los Angeles, for her research on coral crabs. She discovered four new coral crab species during her field work in the Indo-West Pacific. She also discovered that these brightly colored crabs defend their territories from members of their own species, but not from different species, leading to a possible new mechanism for maintaining coral crab species diversity.

JESSE AUSUBEL | *The Census of Marine Life**
THURSDAY, DECEMBER 5 | 7:00 p.m.

Jesse Ausubel is one of the founders of the Census of Marine Life, a ten-year scientific initiative to determine the diversity, distribution, and abundance of life in the ocean. From 2000 to 2010, around 2,700 scientists around the world participated in 540 expeditions to produce the most comprehensive inventory of known marine life, from microbes to whales, and catalogue it as a basis for future research. Ausubel currently serves as the director and senior research associate at Rockefeller University's Program for the Human Environment.

GUEST SPEAKERS

LESLIE HARRIS | *The Wonderful World of Worms*
THURSDAY, JANUARY 23 | 7:00 p.m.

Leslie Harris is the collections manager for the Los Angeles County Natural History Museum's polychaete (marine annelid worms) collection, which she has worked with since 1988. She is one of the founders of the Southern California Association of Marine Invertebrate Taxonomists and currently serves as the association's vice president. Harris has worked as a marine biologist for forty-three years, starting at the Southern California Coastal Water Research Project in 1970.

DEBRA AND VINCENT CANABAL | *Plight of the Oceanic Whitetip Sharks*
THURSDAY, JANUARY 30 | 7:00 p.m.

Debra and Vincent Canabal, owners and operators of Epic Diving in the Bahamas, will share photographs of sharks and share their experiences diving with these animals. They will also discuss what steps have been taken to protect oceanic whitetip sharks. The Canabals focus on conservation-minded shark tourism and photography and videography expeditions. Debra Canabal also serves as director of development for the Shark Research Institute.

COST | Free for members, teachers, seniors 62+, and students with valid I.D. and advanced reservations. \$5/non-members.

INFO | (562) 437-FISH (3474)

WEB | All lectures are streamed live on the Aquarium's website at aquariumofpacific.org/aquariumlive

*Ocean exploration themed-lecture

Guest speaker sponsor:



AQUARIUM RELEASES FIRST VIDEO ON HIGH-DEFINITION BLU-RAY



NOW AVAILABLE in our Pacific Collections gift store, *A Sense of Wonder* is a visually stunning, tranquil, and extremely close-up and personal journey through the Aquarium. Find out what it's like to dive into the Tropical Reef and Shark Lagoon. Come face-to-face with a sand tiger shark, glide through the water with graceful sea lions, get lost in the otherworldly beauty of sea jellies, and gaze in wonder at alien-like creatures such as the leafy sea dragon and spiny lumpsucker. The video also includes an exclusive look behind the scenes with staff.

AQUARIUM TOURS

These programs are opportunities to see the Aquarium and its animals in a different light.

BEHIND-THE-SCENES TOURS

DAILY | *times vary*

Venture behind the scenes in this tour and go above our largest exhibit, Tropical Reef, to feed the fish! This tour provides a sneak peek into the daily operations of the Aquarium of the Pacific. Guests will enter the “wet side” of the aquarium, a section not normally open to the public. See what it takes to maintain a world-class aquarium, from water filtration to animal care and feeding. Learn interesting facts about the Aquarium’s 11,000 animals.

COST | \$15/member | \$19/non-member
does not include Aquarium admission. Combo price: \$39.95/adult, \$36.95/senior, \$28.95/child

AGES | 7+ years

LENGTH | one hour

GROUP SIZE | maximum 10 participants

RSVP | (562) 951-1630, online, or sign up on day of visit

ANIMAL ENCOUNTERS

THURSDAYS-SUNDAYS | *see times below*

Join us for a very special experience to learn about feeding and caring for some of our marine animals. Roll up your sleeves, prepare some food, and get ready to be up close and personal for a feeding with a seal, sea lion, sea otter, shark, or penguin. There are lots of surprises along the way, so be prepared to get your hands wet!

THURS. & FRI. | *Penguins* 8:00-10:00 a.m.

SAT. & SUN. | *Seals & Sea Lions* 9:30-11:30 a.m. | *Sharks* 12:30-2:30 p.m. | *Sea Otters* 2:45-4:45 p.m.

COST | \$90/member | \$100/non-member
includes Aquarium admission

AGES | 10+ years: *Seals & Sea Lions, Sea Otters, Penguins* | 13+ years: *Sharks*

Some height restrictions apply. Participants under 16 years must be accompanied by an adult.

RSVP | (562) 951-1630



See behind-the-scenes areas at the Aquarium.

AQUARIUM TOURS

HARBOR TOUR

DAILY | *times vary*

Tour the Long Beach/Los Angeles Harbors with Harbor Breeze Cruises for a 45-minute narrated cruise around one of the most active ports in the world. See the downtown shoreline, ocean vistas, ships from around the world, and even sea lions. Tours are offered throughout the day on a daily basis. Tickets may be purchased in advance or at the ticket window upon arrival. Meet 15 minutes prior to departure at Dock #2. This program is led and staffed by Harbor Breeze Cruises.

COST | Members: \$12/adult, \$10/senior (62+), \$6/child (3-11) | Non-members: \$36.95/adult, \$31.95/senior, \$19.95/child
includes Aquarium admission

RSVP | (562) 951-1630

DIVE IMMERSION

DAILY | 3:00 p.m.-5:30 p.m.

Certified divers can dive in our warm 350,000-gallon Tropical Reef Habitat with over 1,000 animals. Tour the dive program facilities, dive in our exhibit, and receive a certificate of completion, souvenir towel, use of an underwater camera, and a memory card of your photos. All equipment is provided. Requires advance reservations.

COST | \$279/member | \$299/non-member

AGES | 15+ years | ages 15-17 require participating adult chaperone

RSVP | (562) 590-3100

AQUARIUM SLEEPOVERS

Pack your sleeping bag and toothbrush for a night of adventure at the Aquarium of the Pacific. These programs include a pizza dinner, snack, craft, cereal breakfast, and T-shirt.

BIRTHDAY PARTY SLEEPOVER

BASED ON AVAILABILITY | 5:00 p.m.-7:00 a.m.

Join us for an all-night celebration with a special birthday party sleepover featuring animal touch time, a feeding opportunity, presentations, a behind-the-scenes tour, and crafts. Please bring your own birthday cake.

COST | \$70/member | \$80/non-member

AGES | 5+ years | one adult required per 10 children

THEMES | *Sharks, Marine Mammals, or Turtles*

GROUP SIZE | 20-50 participants

RSVP | (562) 951-1630

ADULT SLEEPOVER

BASED ON AVAILABILITY | 6:00 p.m.-9:00 a.m.

Enjoy the tranquility and serenity of the Aquarium at night. Unwind with yoga and meditation before meeting an animal, hearing an informal lecture by a marine educator, taking guided tours, seeing special presentations, and sleeping next to one of our large exhibits. Included are a gourmet pizza dinner with wine, beer, or soda, and a continental breakfast.

COST | \$70/member | \$80/non-member

AGES | 18+ years

GROUP SIZE | 20-60 participants

RSVP | (562) 951-1630



Banded archerfish can be found in the Tropical Pacific gallery.

ROBIN RIEGGS



Sea lions Harpo and Milo perform behaviors during daily shows.

ROBIN RIEGGS

AQUARIUM SLEEPOVERS

YOUTH GROUP SLEEPOVERS

MONDAY OR WEDNESDAY EVENINGS, BASED ON AVAILABILITY | 5:00 p.m.-7:00 a.m.

Anchors aweigh as we become sailors in search of the missing treasures of the sea. Investigate the fascinating aquatic food web and follow a treasure map in search of ocean knowledge!

COST | \$60/member | \$70/non-member

AGES | 5+ years, plus adult chaperone

GROUP SIZE | 20-60 participants

RSVP | (562) 951-1630

HALLOWEEN FAMILY SLEEPOVER

FRIDAY, OCTOBER 25 | 5:00 p.m.-7:00 a.m.

Have a "spooktacular" evening at the Aquarium with creepy crawly critters, pumpkin painting, and a freaky flashlight tour! Included in your sleepover will be a pizza dinner, light snack, animal interactions, cereal breakfast, and more. Family-friendly costumes welcome. Space is limited.

COST | \$60/member, \$70/non-member

AGES | 5+ years, plus adult chaperone

RSVP | (562) 951-1630

WINTER FAMILY SLEEPOVER

SUNDAY, DECEMBER 29 | 5:00 p.m.-7:00 a.m.

Celebrate the winter season, and party with the fishes! Bring your family to the Aquarium for a very memorable experience. Included in this program are a pizza dinner, snack, cereal breakfast, and T-shirt.

COST | \$60/member, \$70/non-member

AGES | 5+ years

RSVP | (562) 951-1630

SPECIAL PROGRAMS

BIRTHDAY PARTIES

AVAILABLE BY RESERVATION ONLY

Let us make your child's next birthday celebration special. The Aquarium will supply all the ingredients for an unforgettable party, including a themed one-hour classroom program featuring animal touch time, biofact discovery, and a take-home souvenir craft project. The party concludes with an additional half hour in the classroom for the birthday celebration. Please bring your own birthday cake. Aquarium admission is included. All you need to do is call us at least two weeks prior to reserve a date (subject to availability), and then invite your guests. We also offer birthday sleepovers.

COST | \$33/member | \$39/non-member | 15 person minimum, includes Aquarium admission

AGES | All ages, one adult required per 10 children

THEMES | Sharks, Marine Mammals, or Turtles

GROUP SIZE | 15-45 participants

INFO | (562) 951-1630

AQUARIUM ON WHEELS

AVAILABLE BY RESERVATION ONLY

The Aquarium on Wheels is dedicated to developing children's appreciation for the wonders of the ocean environment. Along with an educational presentation, hands-on activities, and environmental message, our outreach educational program provides children the chance to touch sharks, sea stars, anemones, urchins, and other marine inhabitants. This mobile tidepool exhibit is not just for schools—it is also great for display at festivals, fairs, and even birthday parties. Aquarium on Wheels will deliver a memorable experience for all!

INFO | (562) 951-1630

OUTDOOR ADVENTURES

Go beyond the Aquarium to participate in offsite experiences in the great outdoors.

DOLPHIN AND SEA LIFE CRUISE

SEASONAL

The Pacific Ocean is home to many wondrous animals year 'round. Join us as we search for dolphins, seals, sea lions, and other marine life on our Dolphin and Sea Life Cruise. This is an experience you and your family will not soon forget!

COST | Members: \$25/adult, \$20/senior (ages 62+), \$15/child (ages 3-11)

Non-members (includes Aquarium admission): \$45.95/adult, \$41.95/senior, \$30.95/child

WHEN | Spring and fall season

LENGTH | 2-2.5 hours

AGES | Children under 16 must be accompanied by an adult

RSVP | (562) 951-1630

GRAY WHALE WATCHING TRIPS

SEASONAL

Take a voyage with Harbor Breeze Cruises in search of whales as they migrate along our coastline. Learn about these gentle giants from an onboard Aquarium educator. A new boat was recently added to the Aquarium's whale watch fleet. The *M/V Triumphant* features a high-efficiency, low-environmental-impact design.

COST | Members: \$25/adult, \$20/senior (ages 62+), \$15/child (ages 3-11)

Non-members (includes Aquarium admission): \$45.95/adult, \$41.95/senior, \$30.95/child

AGES | Children under 16 must be accompanied by an adult

LENGTH | 2-2.5 hours

RSVP | (562) 951-1630



Ruddy ducks live in the Aquarium's Shorebird Sanctuary. ROBIN RIGGS



A mother-and-pup harbor seal pair bonds. ROBIN RIGGS

WINTER PROGRAMS

SEA SQUIRT WINTER CAMP

THURSDAY-SATURDAY, DECEMBER 26-28 | 8:30 a.m.-11:30 a.m.

This three-day camp offers an exciting introduction to marine biology for five- and six-year-olds. Campers will discover an underwater wonderland filled with wiggly fish, furry mammals, and fluffy birds. This camp encourages little ones to interact and explore independently from parents. Through hands-on activities, stories, crafts, and tours, your child will prove that little learners can learn big things!

AGES | 5-6 (children only)

COST | \$90/member, \$115/non-member

RSVP | (562) 951-1630

WINTER DAY CAMP

THURSDAY-SATURDAY, JANUARY 2-4 | 8:00 a.m.-12:00 noon

Join us as we explore the Pacific Ocean and its inhabitants during our three-day Winter Day Camp adventure. Campers will learn about marine life through hands-on activities, games, and crafts. Participants will even get the chance to go behind the scenes at the Aquarium, meet our animal husbandry staff, and help us take care of some of the animals that make their home here at the Aquarium.

AGES | Grades 2-4 (Children only, must be at least 7 to participate)

COST | \$125/member, \$150/non-member

RSVP | (562) 951-1630

YOUTH PROGRAMS

JUNIOR BIOLOGIST PROGRAM

SATURDAYS | 9:30 a.m.-11:30 a.m.

topics vary, see below

Participants will independently investigate marine life during this exploratory program. This class offers hands-on animal touch time, Aquarium animal observation, and activities relating to each topic. Select the topic that is most interesting, or take all the classes to learn about the variety of animals found at the Aquarium.

TOPIC Marine Mammals	October 12
Invertebrates	November 9
Fish	December 7
Birds	January 11

COST | \$19/member | \$24/non-member
does not include Aquarium admission

AGES | 7-12

RSVP | (562) 951-1630

YOUTH PROGRAMS

JOB SHADOW

WEDNESDAYS | 3:30 p.m.-6:30 p.m.

SATURDAYS | 9:00 a.m.-12:00 noon

topics vary, see below

This program is for students who are interested in animal husbandry or marine biology careers. Students will learn what it takes to run a world-class aquarium and get a hands-on opportunity to participate in everyday activities that help maintain the Aquarium. Students will go behind the scenes, shadowing education and husbandry staff members.

TOPIC Veterinarian	October 2 & 5
Marine Biologist	Oct. 30 & Nov. 2
Mammalogist	December 11 & 14
Bird Biologist	January 4 & 8

COST | \$29/member | \$35/non-member
does not include Aquarium admission

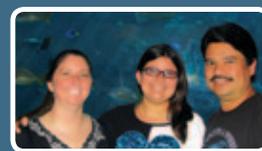
AGES | Grades 7-12

RSVP | (562) 951-1630



We love the Aquarium because there is always something new going on, even if you just visited the day before! We can sit and enjoy the amazing sea life presentations or dive deeper into learning more about a single creature. The staff is wonderful and eager to share experiences with you and assist you to make your visit memorable."

— KELLEY, BRIDGET, AND RICHARD VALDEZ, MEMBERS SINCE 2012



ROBIN RIEGGS



Visit the Aquarium's Magellanic Penguins at the June Keyes Penguin Habitat.

SATURDAY FAMILY FUN PROGRAMS

Children, along with a parent or adult chaperone, will investigate the ocean world in a structured classroom program that includes interactive and hands-on activities. These programs foster the students' discovery as well as interaction with adults and peers.

TOTALLY TURTLES

SATURDAY, OCTOBER 26 | 10:00 a.m.-11:30 a.m.

You may enjoy a sweet treat of Jelly Bellies, but a sea turtle prefers having a belly full of jellies! Discover fun facts and turtle trivia as we explore these reptiles.

SHARK SLEUTHS

SATURDAY, NOV. 23 | 10:00 a.m.-11:30 a.m.

Discover how sharks' amazing adaptations make them excellent predators. Get an up-close view of these creatures and others as we learn all about sharks!

MAGNIFICENT MARINE MAMMALS

SATURDAY, DEC. 28 | 10:00 a.m.-11:30 a.m.

Who is warm-blooded, hairy, breathes air, and lives in the ocean? Marine mammals! Join us as we learn the special ways sea otters, seals, sea lions, whales, and other marine mammals survive in the sea.

SEA JELLIES AND OTHER INCREDIBLE INVERTEBRATES

SAT., JANUARY 25 | 10:00 a.m.-11:30 a.m.

They may be spineless, but they are the backbone of nature. Join us as we learn all about jellies and their invertebrate relatives that inhabit the ocean.

COST | ADULT-CHILD PAIR: \$28/member
\$40/non-member
EXTRA PERSON: \$15/member
\$17/non-member
(includes Aquarium admission)

AGES | 4-6 years, plus adult chaperone

RSVP | (562) 951-1630

AQUA TOTS

Toddlers team up with their parent or chaperone for a first look into ocean life. Each of the Aqua Tots programs focuses and expands on a particular concept while encouraging adult and child interaction.

COLORS OF THE OCEAN

SATURDAY, SEPTEMBER 21 | 10:00 a.m.-11:30 a.m.

Below the surface of the blue ocean are animals with amazing colors. Some are bright and flashy while others blend into the ocean bottom. Discover some of these colorful animals, and search for those that may be hiding.

MOVIN' & GROOVIN' BENEATH THE SEA

SATURDAY, OCTOBER 19 | 10:00 a.m.-11:30 a.m.

Roll like an otter and slide like a snail as we discover animals through movement. Explore the world of sea creatures by taking a closer look at the way they move. Join us as we move and groove like the animals beneath the sea!

SLIPPERY TO PRICKLY

SATURDAY, NOVEMBER 16 | 10:00 a.m.-11:30 a.m.

Whether it's a slippery sea cucumber, soft and velvety bat ray, prickly sea urchin, or simply the smooth shell of a hermit crab, discover the many lovable and touchable creatures that live in the ocean. Learn what

AQUA TOTS

can be explored safely as we use our sense of touch on a journey through the Pacific Ocean.

SHORELINE SHAPES

SATURDAY, DECEMBER 21 | 10:00 a.m.-11:30 a.m.

Did you know a sea jelly is shaped a lot like a bell or that some fishes are as flat as pancakes? In the Aquarium, there are eels so skinny they look like shoestrings! Explore the exciting shapes of ocean life through a craft, songs, and hands-on activities.

SOUNDS OF THE SEA

SATURDAY, JANUARY 18 | 10:00 a.m.-11:30 a.m.

Shake, rattle, and roll as we listen to the sounds of the ocean. Experience the wonderful world of sea sounds, from the songs of a big blue whale to the barking of a sea lion.

COST | ADULT-CHILD PAIR: \$28/member
\$38/non-member | EXTRA PERSON: \$15/
member, \$17/non-member (includes
Aquarium admission)

AGES | 2-3 years, plus adult chaperone

RSVP | (562) 951-1630



We are proud to be charter members of the Aquarium and feel lucky to have such a wonderful attraction practically in our backyard. Most people never have a chance to be underwater and experience the huge variety of interesting creatures. The Aquarium's exhibits are an important way to educate people on marine life and help kids develop wonder and respect for the ocean. Our favorite exhibits are in the Tropical Pacific Gallery because it reminds us of SCUBA diving vacations and the puffins because they are so fun to watch."

— JOEL SWEAT AND MARY MILLER, MEMBERS SINCE 1998





Students pose with their teacher and Aquarium educators in the SAVOR Watershed Classroom.

STUDENTS VISIT DURING GRAND PRIX

SAVOR...Long Beach Provides Scholarship Funding for Eleventh Year

HUNDREDS OF STUDENTS from area schools visited the Aquarium of the Pacific on April 19 because of funding from SAVOR...Long Beach. The corporation donated to the Aquarium's scholarship program for the eleventh consecutive year. This funding allows children to visit during the Grand Prix of Long Beach, when the Aquarium is closed to the general public.

"We are able to introduce thousands of students to ocean learning while inspiring them to become stewards of our planet, thanks to the generosity and ongoing support of SAVOR."

— DAVID BADER, AQUARIUM OF THE PACIFIC DIRECTOR OF EDUCATION

More than 300 students from three Long Beach and Lakewood schools had the opportunity to visit the Aquarium to partake in ocean education programs. The students explored the Aquarium with the entire facility to themselves. Since 2003 SAVOR...Long Beach has donated more than \$140,000 in scholarship funds, providing Aquarium visits for more than 12,000 students.

SAVOR...Long Beach, the food and beverage division of special event venue management company SMG, currently provides food and beverage services as well as catering and special event services to more than 100 facilities around the world, including the Aquarium of the Pacific.



WEBSITE PROVIDES NEW SUSTAINABLE SEAFOOD RESOURCES



Seafood for the Future is working with its partner restaurants to improve transparency and consumer awareness.

SEAFOOD FOR THE FUTURE (SFF) is revamping its partner restaurant webpages. New information has been added to inform users about which seafood dishes feature responsible choices, as well as additional information on the fish and its origins.

The new partner pages are designed to promote transparency and consumer awareness about where and how seafood was caught. Highlights include a "California local" icon, allowing consumers to easily find locally sourced, responsible seafood; species information and the area and method of catch and production; and a link to the detailed information SFF used to determine that the menu items use responsible seafood choices.

The evaluations of partner restaurants are conducted quarterly or semi-annually, depending on the level of partnership, and copies of the most current invoices for each item are required to ensure transparency and compliance. SFF works with each partner to continuously improve upon their sourcing strategies. Some examples include changing sourcing for a species from a country of origin with minimal management to one with well-managed fisheries; integrating more local, seasonal "chalkboard specials" into the menu; and sourcing aquaculture products from certified and well-managed farms and producers.

SFF partners with the new webpages include Bluewater Grill, Captain Kidd's, Gladstone's Long Beach, Jimmy's Famous American Tavern, Market Broiler, Seasalt Fish Grill, and SlapFish. Visit their new partner pages at seafoodforthefuture.org.

AQUARIUM OPENS OUTDOOR DINING SPACE

Rooftop dining space provides additional seating for Café Scuba with a panoramic view of Rainbow Harbor.

THE AQUARIUM OF THE PACIFIC opened a new dining space in late summer, featuring a panoramic view of Rainbow Harbor and the downtown Long Beach waterfront. Located on the Aquarium's second floor above the Ocean Science Center, this dining space adds 2,400 square feet to improve guest experience and provide additional late night and special events space at the Aquarium. It is accessible from the Aquarium's Harbor Terrace and from the second floor bridge at the Honda Blue Cavern exhibit.



This new space adds 2,400 square feet for dining.



The new rooftop dining space offers a dramatic view of Rainbow Harbor.

CALIFORNIA LEADERS VISIT THE AQUARIUM

Members of the California Coastal Commission met with local residents at the Aquarium of the Pacific on June 12, 2013.

California state senators visited the Aquarium of the Pacific as part of their bipartisan Education Policy Conference held in February 2013.



Front row: Esther Sanchez, Charles Lester (executive director), Brian Brennan, Mary Shallenberger (chair), Carole Groom, and Dayna Bochco. Back row: Steve Kinsey (vice-chair), Jana Zimmer, Dr. Robert Garcia, and Mark Vargas.



Pictured: Mark Wyland, Ted Gaines, Fran Pavley, Bill Monning, Bill Emmerson, Mimi Walters, Cathleen Galgiani, Ed Hernandez, Hannah-Beth Jackson, Mark Leno, Bob Huff (minority leader), Darrell Steinberg (president pro tempore), Jim Beall, Ricardo Lara, Ellen Corbett (majority leader), Kevin de León, Ron Calderon, Loni Hancock, Jerry Hill, and Marty Block.

KIDS CORNER

Underwater Viewer Craft

Have you ever wondered what there is to discover under the surface of the water at a beach or lake?

Oceanographers and marine biologists constantly wonder about that, which has led them to explore the deep sea with remotely operated vehicles (ROVs) and submersibles. This craft will allow you to have fun discovering what goes on below the surface of the waters you visit this fall.

WHAT YOU NEED:

- Empty plastic container
- Clear plastic wrap
- Large rubber band
- Scissors or exacto knife

METHOD:

You may need an adult to help you with some of these steps.



1. Find a clean, empty plastic container, such as one for cottage cheese, sour cream, or yogurt.



3. Cover the bottom hole with clear plastic wrap and then attach the plastic wrap to the container with a large rubber band.



2. Have an adult help you cut a circle into the bottom of the container, leaving a quarter- to a half-inch margin around the edge.



4. Push the container halfway into the water, and explore the underwater environment!

UNDERWATER VIEWER TIPS:

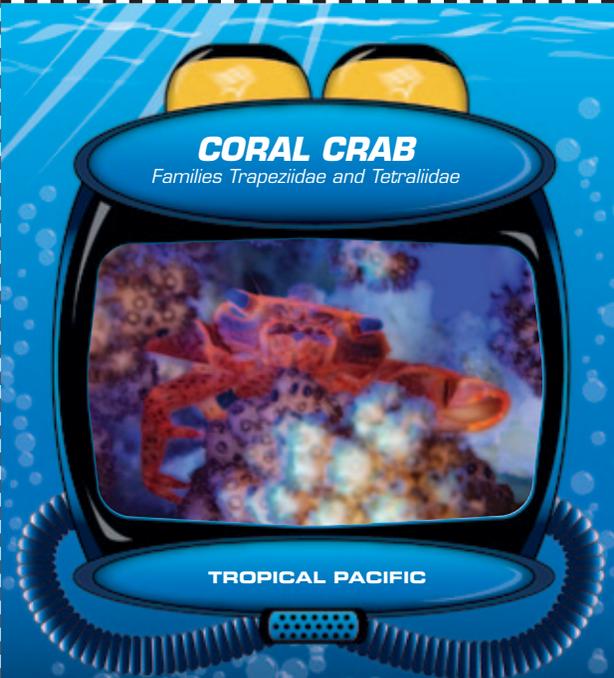
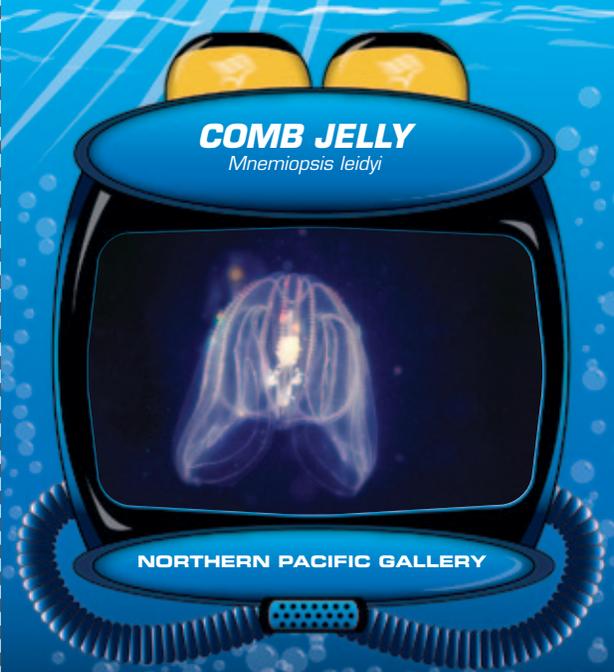
- Try using your underwater viewer in the bathtub or your kitchen sink at home.
- Use it to explore water in your backyard or around your neighborhood or at the park.
- When you visit tidepools, ponds, wetlands, or the beach, be sure to bring your underwater viewer to look for underwater marine life.

Fishing for KNOWLEDGE! ? ? ? ?

1. Scientists aboard the *Okeanos Explorer* use a multibeam _____ system to create maps of the seafloor.
2. The *Okeanos Explorer* carries two remotely operated vehicles (ROVs), both of which are rated to _____ meters.
3. Penguin chicks _____, or replace their downy newborn feathers with water-tight adult feathers, after about ninety days.

Last Issue's Questions and Answers:

1. Experts estimate that as much as **95** percent of the volume of the World Ocean and **99** percent of its seafloor remain unexplored.
2. The deepest place on Earth is in the **Mariana** Trench, located in the Pacific Ocean near Japan.
3. A **sounding** is a measurement of the depth of a given point in a body of water, like the ocean.



COMB JELLY

Mnemiopsis leidyi



PHYSICAL CHARACTERISTICS

Comb jellies have translucent, almost colorless bodies just a few inches long. They have tiny hairs called cilia that bend light, creating colorful stripes.

DIET

Consuming nearly ten times their weight daily, comb jellies eat tiny animals called zooplankton.

HABITAT

Comb jellies live mostly in coastal saltwater habitats near the surface, but can also be found in the open ocean.

FUN FACT

Unlike most sea jellies, comb jellies do not sting.

CONVICT SURGEONFISH

Acanthurus triostegus



PHYSICAL CHARACTERISTICS

Convict surgeonfish have pale, oval-shaped bodies with black vertical stripes. Most are ten inches in length or smaller.

DIET

Convict surgeonfish feed mostly on algae and occasionally on seafloor invertebrates.

HABITAT

These fish prefer inshore lagoon and coral reef areas where their preferred food is plentiful.

FUN FACT

Convict surgeonfish will raid gardens of algae tended by other fishes.

CORAL CRAB

Families Trapeziidae and Tetraliidae



PHYSICAL CHARACTERISTICS

These tiny crabs average around one inch in length. They have five pairs of legs and occur in a variety of colors and patterns.

DIET

Coral crabs feed on the mucus excreted by their coral hosts.

HABITAT

Coral crabs select a particular species of stony branching corals as their hosts.

FUN FACT

Coral crabs defend their host corals by pinching encroaching sea stars' tube feet, causing the sea stars to retreat.

Member Specials

ADOPT OUR HARBOR SEAL PUP, TOBY!

#AdoptToby

Welcome our new harbor seal pup to the Aquarium family by supporting him through the Adopt an Animal program.



Starting at just \$50, your donation earns you a certificate of adoption, a color photo, and plush animal of your adopted species. Additional levels include unique benefits, such as complimentary Aquarium admission tickets, Behind-the-Scenes Tours, and Animal Encounters. Adopt an Animal sponsorships are fully tax deductible, make the perfect gift, and include free shipping! Use hashtag #AdoptToby on Facebook, Twitter, and Instagram to share stories and photos and read our updates!

aquariumofpacific.org/adopt | 562-437-FISH (3474)

LIMITED TIME ONLY

Adopt Toby and receive a limited-edition photo of the pup!

aquariumofpacific.org/adopttoby

*While supplies last.



THANK YOU, AQUARIUM MEMBERS!

As the Aquarium celebrates its 15th anniversary, we'd like to thank you for your generosity and continued support.

Thank you for being a part of the Aquarium's member family. Your membership is vital to all of the animals who call our Aquarium home! We look forward to seeing you at the Aquarium soon!

visit www.aquariumofpacific.org/membership | 562-437-FISH (3474)



AQUARIUM OF THE PACIFIC

SAVE 20% this fall on all merchandise!

Present your membership card along with this coupon to receive an additional 10% discount in conjunction with your member discount, for a total of 20% off merchandise in our gift store.

This coupon is valid through 1/31/14 inside Aquarium gift stores. Valid as a one-time offer. Cannot be combined with any other offer. No cash value. Restrictions may apply. N-13114-A



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Our deepest thanks to our committed charter Pacific Circle members for your fifteen years of dedication and generosity! We treasure you and simply could not be the institution we are today without your valued support.

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RICHARD LOUNSBERY FOUNDATION SUPPORTS EXPLORATION AND DISCOVERY

THE RICHARD LOUNSBERY FOUNDATION of Washington, D.C., has a long history of funding innovative projects that advance science and technology across the nation and the world. In April 2013 the foundation presented the Aquarium with a \$100,000 grant to sponsor two exhibits in the *Wonders of the Deep* gallery—the whale fall and hydrothermal vent exhibits. *Wonders of the Deep* showcases mysterious creatures that live beyond the reach of light in the ocean. The Lounsbury Foundation is aiding the Aquarium by inspiring the next generation of explorers and reminding Aquarium visitors that many discoveries in our ocean are yet to be made.

Include Ocean Conservation in Your Will or Trust

AS AN AQUARIUM MEMBER, you may be looking for new ways to support the Aquarium's mission and vision. Have you considered a bequest? This is a simple way to give a gift to the Aquarium of the Pacific after your lifetime. By adding a few lines of text into your will or trust, you can designate a percentage or a fixed amount of your estate to the Aquarium. All bequests are designated to the Aquarium's Endowment Fund, which is held in perpetuity to ensure that the Aquarium is able to inspire future generations about the importance of ocean conservation.

Simply ask your attorney or estate planner to include the following language in your will or trust:

I give (___dollars)(specific asset) or (___percent of the rest, residue and remainder of my estate) to the Aquarium of the Pacific, 100 Aquarium Way, Long Beach, CA 90802 Tax exempt ID#33-0532354 for its general use and purposes.

Be sure to tell us about your gift, so that we can thank you for your support and welcome you to the Nautilus Society. Members of the Nautilus Society receive invitations to special events, exhibit previews, and many other benefits.

Thank you for supporting the Aquarium of the Pacific! To learn more, contact Theresa Duncan, director of development, at (562) 951-1664, tduncan@lbaop.org, or visit aquariumofpacific.org/alegacy.

FUNDRAISING HIGHLIGHTS

The Aquarium of the Pacific relies on individuals, corporations, foundations, and government partners to support its mission and vision with contributions to the operating budget and to a diverse range of projects.

■ American Honda Motor Company, Inc. Continues its Giving Legacy

Honda recently made a \$350,000 gift to the Aquarium in support of its conservation and education programs. Honda continues to be a valuable Aquarium partner, as the organization sponsors events, makes in-kind gifts, and participates on the Aquarium's Board of Directors. Additionally, Honda has helped reduce the Aquarium's carbon footprint by donating solar panels for exhibits.

■ Target Supports Education

One of America's largest retailers, Target renewed its grant to the Aquarium Scholarship Fund in June. This gift will provide approximately 5,000 students from Title I schools with field trip opportunities. Target has sponsored this program since 2010 and continues to work with the Aquarium in other capacities, including making in-kind donations and hosting regional events at the institution.

■ BCM Foundation Sponsors Whittier Field Trips

The BCM Foundation recently upgraded their annual support to the Aquarium Scholarship Fund with a gift of \$45,000. These funds will sponsor field trips for kindergarteners to twelfth-grade students from the Whittier area at no cost to the school or students. By supporting the scholarship program, the BCM Foundation is ensuring that disadvantaged students from Title I schools continue to have access to high-quality science education during the upcoming school year.

■ BP America Inc. Renews its Commitment to Education

An organization that continues to make consecutive gifts to the Aquarium, BP America Inc. has made a commitment to science education by donating a gift of \$25,000 to the Ocean Science

Education Program. This program provides the resources and materials necessary for the Aquarium's education department to effectively communicate STEM-infused (science, technology, engineering, and math) lesson plans to over 180,000 students across Southern California.

■ Edison International Aids in Expansion

May 2013 marked a pivotal month in the relationship between the Aquarium and Edison International, as Edison submitted its final pledge payment of \$50,000 for education programming for the Aquarium's Ocean Science Center, Molina Animal Care Center, and the future Pacific Visions expansion. These funds have paved the way for the Aquarium to remain at the forefront of informal science education and communication. Through the development of hands-on displays and multimedia experiences, the Aquarium has created inquiry-based programming and a deeper learning experience for children and adults, which can translate into greater environmental stewardship and understanding of the interconnected relationships amongst humans, living creatures, and the ocean.

■ Felix and Susan Williams Fund Explorers Day

Proponents of environmental education, Felix Williams and Susan Slavik Williams of St. Louis made a gift of \$25,000 to help host Explorers Day at the Aquarium this past July in partnership with the National Oceanic and Atmospheric Administration (NOAA). Guests had the opportunity to meet and hear from historical and modern-day ocean explorers, including Sylvia Earle and Don Walsh, see demonstrations of remotely operated vehicles (ROVs) under water, and watch live video feeds from three deep-sea exploration vessels.



In April 2013 Wells Fargo employees helped the Aquarium clean tanks and assemble crafts during Wells Fargo Volunteer Day. A donor to the Ocean Science Education Program, the Wells Fargo Foundation has remained invested in Aquarium programming since 2006. Pictured: Sue Riney, Helen Elsheikh, Gloria Anderson, Marianne Johnston, Erin Hall, Joanne Molzahn, and Machu Latorre.

AQUARIUM ACCOLADES

HERITAGE AWARDS



Perci Flores | Pacific Islander Festival

The Aquarium presented the Heritage Award to Perci Flores for her dedication to providing healthcare services and increasing health awareness within the local Pacific Islander community. Flores grew up on the island of Guam and moved to Garden Grove, California, in 1973. She cofounded the Marianas Club of Southern California, based in Orange County. Through the club, Flores submitted a proposal to the government of Guam to establish a medical referral office in Los Angeles that would facilitate transportation from the islands to the U.S. mainland and coordinate lodging and medical appointments for islanders. Flores also co-established the Cal-Islanders Humanitarian Association (CIHA) in

1994. CIHA functioned alongside the referral network lending local community support to medical referral patients. CIHA is now celebrating nineteen years of serving the Pacific Islander communities. In 2009 Flores became the project coordinator for the Susan G. Komen Foundation of Orange County with the aim of creating awareness about breast cancer among Chamorro women. In this position, she has been involved with the foundation's Race for the Cure and numerous health fairs throughout Orange County.

Pictured: Theresa Duncan, director of development, Aquarium of the Pacific, and Perci Flores, Heritage Award honoree.

Destin Bigsby, Carl Olson & Kieran Reiser

| International Children's Day Festival

The Aquarium presented Young Hero Awards to Destin Bigsby, Carl Olson, and Kieran Reiser. These three young men created a video documentary entitled *Renewable Energy*, which won third place in the high school category in C-SPAN's StudentCam documentary video competition. Their entry was among close to 2,000 submitted by students around the nation. Students were asked to create short video documentaries addressing what they felt is the most important issue that the president should consider in 2013. Bigsby, Olson, and Reiser selected the topic of renewable energy for their video because they feel that converting from fossil fuels to renewable sources of energy is an important step toward protecting our planet. They recorded about twenty-five hours of footage and conducted and recorded interviews with renewable energy experts. Their video can be viewed on studentcam.org by searching under third place winners in the high school category.



Pictured: Carl Olson, Destin Bigsby, and Kieran Reiser, Young Hero Award honorees, and Cecile Fisher, vice president of marketing and communications, Aquarium of the Pacific.

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Aquarium President and CEO Jerry Schubel presented awards to Walter Munk, Sylvia Earle, and Don Walsh, pictured with John Molina, Aquarium Board chairman (second from right).

SCOTT SWEETZER

OCEAN CONSERVATION AWARDS GALA HONORS EXPLORERS

The gala also celebrated the Aquarium's fifteenth anniversary.

THIS YEAR the Aquarium of the Pacific celebrated its fifteenth anniversary and ocean exploration during the annual Ocean

Conservation Awards Gala. More than 360 people attended, and more than \$280,000 was raised to benefit the Aquarium's education, conservation, and animal care programs.

Guests had the opportunity to view the Aquarium's newly opened *Wonders of the Deep* gallery and hear a symphonic work called *Urban Ocean* by Grammy Award-winning composer Steven Mackey commissioned on behalf of the Aquarium by Dennis and Suzanne Poulsen. Award honorees included Sylvia Earle, Walter Munk, and Don Walsh, all of whom have made significant advancements and discoveries in the realm of ocean exploration.

Next year's gala event, renamed the Blue Whale Ball, will take place on June 14, 2014.



Guests at the Ocean Conservation Awards Gala enjoy a reception on the front plaza.



Husbandry staff member Kristin Marshall shows off a wooden nest box for lorikeets sponsored by Animal Care Wish List donors.

THANK YOU!

Our animals say thank you for supporting our Animal Care Wish List!

YOU CAN HELP your favorite animals with toys and treats by funding needed items.



In appreciation of your donation, you'll receive exclusive animal updates, personal stories from the animal care staff, e-photos of your favorite exhibits, and more!

Each month we feature items needed by different animals or exhibits, so check back often, or sign up for our Wish List newsletter. Visit aquariumofpacific.org/wishlist to donate today.

WHAT WILL YOU CHOOSE FROM THE ANIMAL CARE WISH LIST?



Penguin caretakers Sara Mandel and Terri Oba use a stainless steel pail sponsored by Wish List donors for a feeding.



Ollie the sea otter enjoys a treat made in an ice cube tray sponsored by Wish List donors.



DONATE YOUR VEHICLE

Did you know that you can help protect the ocean and its inhabitants by donating your vehicle to the Aquarium?

For more information, visit www.aquariumofpacific.org/give/cars or call (877) 537-5277 and mention that you'd like to donate your car, truck, RV, motorcycle, or boat to the Aquarium of the Pacific. We'll take care of everything from pick-up to receipt. It's easy and tax-deductible!



Volunteers meet monthly to count turtles in thirty-minute sessions at stations along the San Gabriel River.

CITIZEN SCIENTISTS AND OCEAN EXPLORATION

The public can play a role in collecting data in the pursuit of science.

A BC NEWS REPORTED in June 2013 that 61 percent of Americans now own a smartphone. The proliferation of digital cameras, smartphones, underwater cameras, and other devices has led to the rise of remarkable viral videos capturing interactions with marine life, such as the footage circulated this past July showing divers nearly swallowed by feeding humpback whales. This proclivity people have for documenting the natural world could be channeled into a nationwide effort to collect data about the ocean and its inhabitants.

This type of work is known in the policy and research fields as citizen science. It blends a spirit of adventure and curiosity with an interest in helping to further scientific progress, learning about the environment, and aiding in conservation efforts. In this way, the public can help boost the scope and speed of ocean exploration, which is much needed because of the financial and logistical obstacles posed in exploring the vast World Ocean.

Scientists and researchers at universities and government agencies first need to conduct public outreach to inspire people to become citizen scientists. Next, they need to specify what they need for their research: location data, images, or recordings of marine life, or other information. Finally, scientists and researchers need a way to connect with the public so citizen scientists can share the data they collect,

Citizen science blends a spirit of adventure and curiosity with an interest in helping to further scientific progress.

such as through a social network dedicated to citizen science. This concept was part of the discussion during the forum held this past summer, Ocean Exploration 2020, hosted by the Aquarium and the National Oceanic and Atmospheric Administration (NOAA).

The Aquarium has organized a citizen science project to monitor a population of green sea turtles living in the San Gabriel River in Long Beach. The Aquarium has partnered with representatives from NOAA Fisheries Service, the Los Cerritos Wetlands Authority, consulting firm Tidal Influence, and California State University, Long Beach for this project. Experts theorize that the turtles inhabit this area because they are attracted to the warm water outfalls near the power plants, but scientists do not yet have firm conclusions to explain their presence. This project will monitor the turtles and gather more information.

More data will allow scientists and wildlife managers to determine how best to protect the turtles. The area of the San Gabriel River where green sea turtles have been spotted is being considered for restoration by the Los Cerritos Wetlands Authority, which will accommodate the needs of the turtles. Volunteers meet monthly to count turtles in thirty-minute sessions at stations along the river. Volunteers must be at least fourteen years old. To learn more about getting involved with the sea turtle monitoring project, send an e-mail to seaturtlemonitoring@gmail.com.

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