

# PACIFIC CURRENTS

MEMBER MAGAZINE OF THE AQUARIUM OF THE PACIFIC

## The Wide World of Marine Invertebrates





CLAIRE ATKINSON

# AQUARIUM FORUM ADDRESSES COAST AND OCEAN USE PLANNING

Coastal and marine spatial planning (CMSP) is designed to allocate legitimate activities and projects to appropriate coastal and ocean areas in an effort to benefit both environmental health and economic prosperity.

**I** **N JULY 2011** the Aquarium of the Pacific's Marine Conservation Research Institute, together with the University of Southern California's Wrigley Institute and Sea Grant program, hosted a forum to discuss coastal and marine spatial planning (CMSP).

Representatives from colleges and universities, state and federal government agencies, various ocean and renewable energy industries, conservationists, and other stakeholder groups gathered to explore the concept of CMSP. In particular, they discussed how it might be applied to the Southern California Bight, which extends from Point Conception in Santa Barbara south to our border with Mexico.

CMSP was one of the recommendations that came out of President Obama's 2010 executive order for the establishment of the nation's first national ocean policy. It's a process that's designed to allocate legitimate and important uses to appropriate coastal and ocean areas in an effort to benefit both environmental health and economic prosperity. It would build upon California's efforts to protect biologically sensitive areas designated through the Marine Life Protection Act. Important human uses might include offshore wind farms, aquaculture, and other sustainable projects that could contribute to Southern California's energy and food system resources and the regional economy.

The Aquarium recently released an initial report summarizing the discussion that took place during the forum, identifying the qualities desired for the region in the future and detailing what fundamental questions should be addressed in a CMSP strategy going forward.

The report detailed the many current uses of coastal and marine spaces in the Southern California Bight. People use the ocean for recreation, including fishing, boating, and tourism; commerce, including commercial fishing, shipping, and offshore oil drilling; and infrastructure, including wastewater outlets and cooling water for coastal power plants. The military also makes use of the coast and ocean in this region, as do indigenous peoples. The Southern California Bight boasts distinctive natural places, including kelp forests, coastal marshes and estuaries, and other areas of biological

significance. The coast and ocean are also culturally significant in Southern California—many residents live in this area because of the relationship with the ocean and coastal lifestyle.

In planning for the future and implementing CMSP in this region, forum participants pointed to several desired end goals. Among those are healthy ecosystems, clean beaches, public health and safety, a working waterfront that attracts tourism, a powerful sense of place, healthy seafood, renewable energy, thriving indigenous maritime culture, technical innovation, an improved regulatory process, and an engaged, informed public.

The participating experts concluded that the public education and outreach program that accompanies a CMSP process in this region must involve a large number of people and a representative cross-section of Southern California's populace. Pilot projects, such as aquaculture, algae for biofuel production, and offshore renewable energy, should be carried out in the context of a CMSP process and regulatory procedures should be improved. Participants suggested California could become a model for solving pressing population growth, sustainable resources, and economic and jobs issues through CMSP. The process could also help in monitoring the cumulative impacts of human uses of the ocean to avoid adverse impacts on ecosystems.

The forum report lays out recommendations, which include convening public meetings, surveying user groups and commercial sectors, developing stories that communicate plausible futures for the region, and cultivating a group of champions for the CMSP process. "The challenge is not to avoid biases, but to balance them...The CMSP process and the dynamic allocation plan must be robust enough to survive transitions of administrations and changes in legislative leadership," according to the report.



Coastal & Marine Spatial Planning in the Southern California Bight

This QR code links to the full report and list of forum participants. You can download a free QR reader app for your smartphone from the iTunes App Store or Android Market.



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

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**Cover photograph** | The carnation coral is a soft, non-photosynthetic coral found in the red sea in Jordan. These corals are also kept in the coral exhibits at the aquarium of the Pacific.

ANDREW REITSMA



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.



Aquarium Founding Sponsor

## LETTER FROM THE CEO

DEAR MEMBERS,

**A** **AN EDUCATIONAL INSTITUTION, the Aquarium of the Pacific has a responsibility to identify the best ways to communicate information so that visitors can understand scientific concepts and feel eager to learn.**



We've developed many types of exhibits to teach visitors about the Pacific Ocean and its inhabitants, but teaching goes beyond that. We approach this mission holistically, using a wide variety of opportunities for guests to engage in learning.

Through years of surveys, we've learned that visitors rank entertainment value as highly as education when they give reasons for coming to the Aquarium. It's no surprise that when people are entertained and having fun, learning new concepts comes easier. For many reasons, science can be difficult to absorb, or it's simply not initially seen as fun and exciting. Bringing arts and science together can help make both subjects more accessible and enhance our understanding of new topics.

This was especially clear during a joint lecture given at the Aquarium last October by photographer Daniel Beltrá and Larry McKinney, executive director of the Harte Research Institute for Gulf of Mexico Studies at Texas A&M University. Both spoke about the aftermath of the 2010 oil spill in the Gulf of Mexico—Beltrá giving an artist's perspective and McKinney, that of a scientist. After the lecture attendees were invited to view Beltrá's aerial photos of the spill. "Scientists have trouble communicating, but artists can really help with that," McKinney told the *Gazette Newspapers*. "You may forget what I said tonight, but you won't forget what you see."

While we feel our exhibits and shows do a great job of entertaining our guests on a daily basis, we also host cultural festivals throughout the year, bringing the arts into the Aquarium and celebrating the connection different cultural communities have with the ocean. Singers, dancers, storytellers, and artisans are able to share their skills with guests, making an Aquarium visit extra special. Coming up this winter are the Festival of Human Abilities, held on January 28 and 29, and the African-American Festival on February 25 and 26.

We've partnered with local arts organizations to bring even more innovative programming to the Aquarium. On June 7 the Long Beach Symphony Orchestra will host a concert at the Aquarium as part of its Sounds and Spaces series. In September the Long Beach Opera will debut composer Gavin Bryar's opera *Paper Nautilus* in the Aquarium's Great Hall. In October the Long Beach Ballet will perform here. I hope you'll join us and witness art and science in combination before your very eyes.

Thank you for your ongoing support.

Sincerely,

Jerry R. Schubel



**T**HE AQUARIUM of the Pacific houses a wide variety of invertebrate animals—those without a backbone. Red and white abalone are cultivated in a specially constructed propagation system, new sea jellies have been added to the Tropical Gallery, and the California spiny lobsters completed their annual molting in the fall.

# MARINE INVERTEBRATES

## California Spiny Lobsters

**AT THE AQUARIUM, California spiny lobsters are on exhibit in the Southern California/Baja Gallery, where aquarists tag and closely monitor them for behaviors associated with molting.** Look for the colored identification tags on the lobsters' antennae. Crustaceans must molt their exoskeletons in order to grow. Once the old shell has been shed, it takes a few days for the newer one to completely harden. Adult lobsters molt once a year, usually in the fall months. This year the Aquarium's lobsters began exhibiting signs of molting in late September and had completed the process by mid-November. Newly molted lobsters are vulnerable to attack from other lobsters. When the Aquarium's lobsters are about to molt, signified by changes in feeding patterns, they are removed from the lobster exhibit.

California spiny lobsters are found in the waters off the California coast from Point Conception in Santa Barbara to Baja California, Mexico. They are one of the largest of the more than forty lobster species in the world, reaching up to three feet in length and weighing up to twenty-six pounds. It is estimated that these lobsters have a lifespan of twenty-five to fifty years.

Unlike many other lobster species, California spiny lobsters lack large front claws and instead rely on sharp spines on their bodies for defense. They can also rapidly swim away from predators using their powerful tails. Their predators include giant sea bass, California sheephead, sharks, octopuses, sea otters, and humans. California spiny lobsters are a popular target for West Coast fishermen.

California spiny lobsters tend to live in rocky reefs or around jetties and rock seawalls where they can find small caves and crevices to hide in during the day. They are nocturnal scavengers, feeding on fishes, sea urchins, clams, mussels, snails, algae, and even other lobsters.



## Upside-Down Jellies

**UPSIDE-DOWN SEA JELLIES are now on display in the Jewels of the Pacific exhibit in the Aquarium's Tropical Gallery.** These unusual sea jellies spend most of their lives attached to the sea floor with their tentacles pointed up toward the ocean's surface. Symbiotic algae live in the tentacles. Because the jellies' tentacles are aimed at the sun, the algae are able to photosynthesize and produce food for the jelly. Upside-down jellies also capture microscopic animals for food using stinging cells released from their tentacles.

These jellies live in mangrove forests and shallow tropical lagoons in the Indo-Pacific Ocean, the Caribbean, Southern Florida, and Hawaii. They can reach up to a foot in diameter. Many animals prey on upside-down jellies, including ocean sunfish and leatherback sea turtles. The stinging cells the jellies use to capture prey can also be used to ward off predators.

*There is a great diversity of invertebrate animals that live in the ocean. You can read more about marine invertebrates in this issue's feature article starting on page 6.*

# Abalone

**THERE ARE SEVEN SPECIES OF ABALONE native to California. Two of those species, white abalone and black abalone, are listed as endangered and three others, including the green abalone, are designated as species of concern under the Endangered Species Act.** Because they are considered a delicacy, abalone have suffered from overfishing and frequently do not live in high enough density to successfully reproduce.

These marine mollusks are known for their shells, which are oval shaped and have a metallic, pearlescent sheen on the inside. Abalone feed on kelp and algae and make their homes in rocky tidal areas. They reproduce through spawning, primarily in the summer months.

To aid in the conservation efforts for these animals in Southern California, the Aquarium of the Pacific is conducting an abalone captive rearing and education project. It is funded by the National Oceanic and Atmospheric Administration's National Marine Fisheries Service (NMFS) Southwest Regional Office and conducted in conjunction with the California Department of Fish and Game. With the support of these two agencies, the Aquarium constructed a first-of-its-kind abalone propagation system.

The Aquarium's abalone program began in 2008 and is now in its second phase. In the first phase, Aquarium staff completed the propagation system and developed educational materials. Goals for the second phase include successful cultivation of red and white abalone, expanded educational programming, and targeted programming for students in grades nine through twelve. With funds from NMFS, touch exhibits in the Aquarium's classrooms have been retrofitted to accommodate red abalone.

# AMERICAN KESTREL

**THE AQUARIUM OF THE PACIFIC is home to a small group of raptors, or birds of prey, including the American Kestrel. These birds are housed behind the scenes at the Aquarium.** The American Kestrel is the smallest, most common, and most colorful of the North American falcons. They feed on small rodents, helping to curb populations of so-called nuisance species like mice. American Kestrels are the only North American falcon that regularly hunts by kiting, or sailing on the wind. They are found throughout the Americas, from south of the Arctic tree line to regions of South America. They prefer to hunt in open fields, marshlands, deserts, and suburban areas with high perches like telephone wires.

American Kestrels eat a wide variety of small prey, including insects, rodents, small birds, reptiles, and amphibians. They fly with rapid wing beats and then hover using the kiting behavior when they spot potential prey. They will then fold in their wings and swoop to the ground to grab their prey with their sharp talons. These raptors are territorial and solitary, except during breeding and migrating seasons. They can tolerate high temperatures in the desert and do not require a source of drinking water, instead getting moisture from their food.

The Aquarium's American Kestrel, Orion, regularly makes appearances on the glove of a trainer, allowing guests to get an up-close look. Husbandry staff are also working with Orion to train him to perform free-flight demonstrations.



CALIFORNIA SEA HARE  
*Aplysia californica*



SAND DOLLAR  
*Dendraster excentricus*



BLUE SPINY LOBSTER  
*Panulirus versicolor*



# Crustacea

MANTIS SHRIMP  
*Hemisquilla ensigera californiensis*

# The Wide World of Marine Invertebrates

Some can shoot a jet of ink. Some can sting. Some have no brains or hearts. Some can regenerate lost limbs. Some are soft and slimy, while others are hard and spiky. Welcome to the incredibly diverse world of marine invertebrate animals.



BAT STAR  
*Asterina miniata*

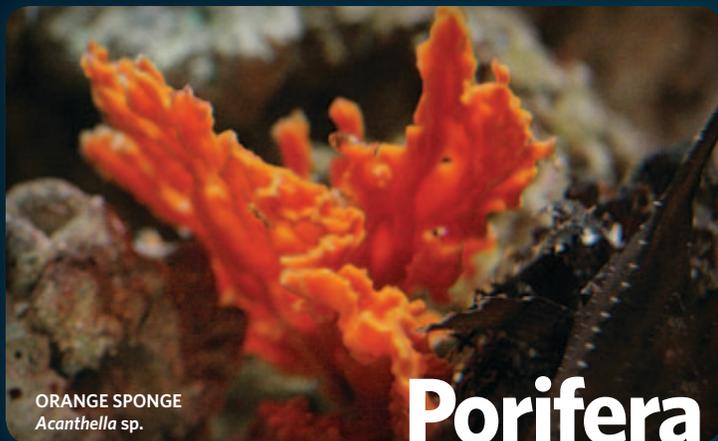


HOODED NUDIBRANCH  
*Melibe leonina*

# Echinodermata

# Invertebrates are those animals that lack vertebrae, meaning they do not have a backbone.

Scientists estimate that more than 95 percent of the world's animals are invertebrates. These animals are classified into different phyla. Five of these phyla are represented among the animals at the Aquarium of the Pacific, listed here in order of complexity: *Porifera*, *Cnidaria*, *Mollusca*, *Crustacea* (a subphylum of *Arthropoda*), and *Echinodermata*.



## Porifera

**THE PHYLUM PORIFERA**, meaning pore-bearing, comprises the simplest of all multicellular animals on Earth—the sponges. More than 9,000 species of sponges have been described by scientists, and most live in the ocean. They can be found all over the world, from the polar regions to the tropics. Sponges are living animals, yet they have no organs, limbs, mouths, or heads, and they do not move or have a definitive shape.

Sponges were the first large, multicellular animals to evolve on Earth, and the first to sexually reproduce. They are seen in the fossil record dating back 550 million years.

Sponges are suspension feeding animals, or essentially living pumps and filters. They pump hundreds of gallons of water a day, filtering out all kinds of small particles for food, including plankton and bacteria. Specialized cells create a current through the sponge. They use flagella to pull water in through their pores, through chambers where nutrients are consumed, then out through a larger hole.

Sponges lack true tissues. Spongin, a matrix of collagen protein fibers, forms a supportive sponge skeleton, while spicules, bits of silicon or calcium, lend further support. Sponge cells are totipotent, meaning that they are capable of changing form and function. While they are not highly organized, sponge cells can communicate and even recognize one another. If you press a sponge through a fine cloth, the cells will immediately begin to reorganize. Within two to three weeks, a functional sponge will have formed, and the cells return to their original function.

On your next visit to the Aquarium of the Pacific, look for sponges in the *Arctic & Antarctic: Our Polar Regions in Peril* exhibit and in the Deep Reef exhibit in the Tropical Pacific Gallery. In the Deep Reef exhibit, look for our brilliantly colored blue sponges, native to the waters off Indonesia.

## Cnidarians

**THE PHYLUM CNIDARIA** (pronounced nigh-DARE-ee-uh) comprises animals like jellies, corals, and anemones that possess stinging cells called nematocysts, or *cnidae*. This word comes from the Greek word *cnidos*, meaning stinging nettle. Cnidarians exhibit two body forms: the polyp, which stays attached to the ocean floor, and the free-floating medusa. In addition to nematocysts, Cnidarians have several other characteristics in common, including radial symmetry, a similar method of capturing food, and a complex life cycle.

Animals that have bodies with radial symmetry resemble a pie, where each "slice" is relatively identical. Thus, Cnidarians don't have a right or left side, but they do have a top and bottom. While they lack organs, Cnidarians have a gastrovascular cavity, where digestion takes place, as well as a net of sensory nerve cells, and tentacles.

Cnidarians use their stinging cells to capture food, which mostly consists of microscopic zooplankton. These stinging cells are usually located along feeding tentacles. Cnidarians feed passively, meaning that their food must float or swim into them. If the food gets stung by the nematocysts, those cells will hold on to and incapacitate the prey. The tentacles then pull the food into the gastrovascular cavity where it is digested.

The Cnidarian life cycle is complex. Some, like anemones and corals, reproduce sexually, releasing sperm and eggs into the water. Jellies have one of the most interesting life cycles among Cnidarians. Adult jellies release sperm and eggs. Fertilized eggs develop into a planula, a flattened, free-swimming, larval-stage organism. The planula settles on a suitable surface, such as a rock, shell, or piece of driftwood, and then develops into the polyp stage. A jelly in its polyp stage looks just like a tiny sea anemone and feeds in the same way. With adequate food and space to develop, the polyp will divide asexually forming a stack. Suitable water conditions cause the polyps

NORTH PACIFIC SEA NETTLE  
*Chrysaora melanaster*



to pulsate and bud off the stacks. They become free-swimming ephyra, the juvenile version of sea jellies. The ephyra drift and eat, eventually metamorphosing into the sexually mature medusa.

Many visitors to the Aquarium spend a few minutes viewing the mesmerizing sea jellies in the Northern Pacific Gallery. The West Coast sea nettles, commonly found off the coasts of California and Oregon, are especially popular for visiting photographers because of the jellies' striking orange coloration and delicate tentacles. The Aquarium's aquarists have successfully cultured West Coast sea nettles for many years, allowing them to share specimens with other institutions. It takes about three months to rear the jellies from polyps to ephyrae. They live about six months to one year in the wild. In protected environments such as aquariums they can live for up to eighteen months due to the absence of predators and availability of an adequate food supply.

To see more Cnidarians at the Aquarium, look for anemones, which can be found in several exhibits and are also present in the Northern Pacific touch lab. Corals are on view in the Tropical Pacific Gallery in the Live Coral Exhibit and the Soft Coral Tunnel.

## Mollusca

**MOLLUSCA IS THE LATIN WORD for soft. It's an appropriate name for mollusks, as they have soft bodies that are sometimes housed in a calcium carbonate shell.**

The Aquarium is home to animals from three of the eight classes of mollusks: gastropods (translated from the Greek for "stomach-foot"), bivalves (those mollusks with two shells), and cephalopods ("head-foot").

Abalone, limpets, snails, and nudibranchs (snails without shells) are all gastropods. The largest group of mollusks, gastropods have a foot that they use for mobility, as well as eyes, antennae, and gills. Most have a radula, or rasping tongue, used to scrape food from a hard surface or drill through shells of other animals for food. When you spot a seashell at the beach with a perfectly round hole in it, that is often evidence that a hungry gastropod was there feeding.

Many of us are familiar with bivalves as some of the most sought-after seafood, including oysters, mussels, clams, and scallops. Bivalves have a foot, which is enclosed in their shells and used to burrow into sand. They use a siphon to draw water in when they are buried and a second siphon to push water out. Food and oxygen are filtered through gills. Some bivalves, like scallops, use short bursts of jet-propelled water to move around the ocean floor. Others stay in one place. Mussels attach to rocks using vacuum suction and strong protein-covered threads that are not soluble in water.

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*When they change color, cephalopods have a remarkable ability to blend in with their surroundings.*

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Octopuses, squid, cuttlefish, and chambered nautilus are all cephalopods, which use their arms for locomotion and capturing prey. These animals have beaks that are used in killing and eating prey. Squid are the fastest aquatic invertebrates when it comes to locomotion. They can move both forward and backward and have the ability to steer.

Among these animals' most distinguishing behaviors are active predation, expelling ink, and changing color. While scientists don't know for sure why cephalopods change color, possible reasons include communication with other animals, attracting a mate, and camouflage. When they change color, cephalopods have a remarkable ability to blend in with their surroundings.

Mollusks are also important to humans for scientific research. California brown sea hares, which are gastropods, have a role as laboratory animals valuable in neurobiology. Sea hares possess the largest neurons in the animal kingdom, making it possible to identify individual nerve cells that are responsible for specific behaviors. Cephalopods like octopuses and cuttlefish are known for their intelligence, particularly in studies that test their problem-solving and memory skills.

To see mollusks at the Aquarium, visit our giant Pacific octopus in the Northern Pacific Gallery. The aquarists that care for the octopus take special care to provide the animal with stimulating toys and puzzles. California brown sea hares are currently on view in the kelp camouflage exhibit in the Southern California/Baja Gallery. And you can read more about the Aquarium's abalone projects on page 5.

## Crustacea

**CRUSTACEA IS A SUBPHYLUM of Arthropoda, the most diverse group of animals on Earth.**

At least half of the 1.4 million species of animals on the planet identified by scientists are arthropods, mostly insects. They are represented in the fossil record up to 530 million years ago. Crabs, lobsters, shrimp, and barnacles are crustaceans.

Crustaceans range in size from the Japanese spider crab with a twelve-foot leg span to tiny crustaceans that are 100 micrometers long. Crustaceans are characterized by a segmented body, featuring a head, thorax, and abdomen. Each body segment has a pair of jointed appendages, and each appendage pair is slightly different because they are specialized to perform certain functions. Their hard shells, or exoskeletons, are made of chitin, a tough but flexible polymer. The exoskeleton limits growth, meaning that crustaceans must molt and shed their shells to grow. Some crustaceans molt as frequently as annually or every other year.

Many crustaceans have evolved elaborate courtship behaviors. The male fiddler crab, for example, waves its claws and taps them on the ground to attract females. During the mating season, males and females find each other by sensing chemicals the animals release or through migrations synchronized to lunar periods, tidal movements, or another environmental cue.

At the Aquarium, you can find crustaceans in the Northern Pacific Gallery, including Japanese spider crabs and shrimp at the touchlab. California spiny lobsters are on display in the Southern California/Baja Gallery, and Alaskan king crabs can be found in the *Arctic & Antarctic: Our Polar Regions in Peril* exhibit.

# Echinodermata

**LIKE CNIDARIANS, most echinoderms (ee-KINE-oh-derms) exhibit radial symmetry and lack heads, but they tend to have an oral side where the mouth is located and an aboral or textured and bumpy surface on the opposite side.** The name of this phylum, *Echinodermata*, means spiny-skinned in Latin. The exception to this body type is the sea cucumber, which is bilaterally symmetrical—it has a similarly shaped right and left side. Sea stars, sea urchins, brittle stars, and sand dollars are all echinoderms. Echinoderms have an endoskeleton, an internal supporting structure.

Echinoderms have a water vascular system, a characteristic unique to their phylum. This system is used for attachment and slow-moving locomotion. Canals with muscular extensions called tube feet extend when filled with water. The tube feet press against an object and release water, creating suction. As water fills the tube feet, suction is released. These tube feet also allow for the disposal of waste and intake of oxygen—essentially, sea stars breathe through their feet. Many sea star species also have a unique method of feeding. They extrude their stomachs outside their bodies and release digestive juices, liquefying their prey. The food mass and stomach are then sucked back in.

Sea stars and sea urchins both have the ability to regenerate body parts. Sea stars can grow new arms if they are removed and sea urchins regenerate their spines, which are sensitive to touch and light. Southern California red sea urchins boast a long lifespan, reaching up to 100 years old in some regions of the ocean. Sea urchins feed on kelp and have played a role in the loss of kelp forests along the Pacific coast of North America. Because they prey on urchins, sea otters help keep urchin populations in check and thus protect kelp forest density. When sea otter populations are threatened, urchins can devastate kelp forests.



BLUE TUXEDO URCHIN  
*Mespilia globulus*

*Echinoderms have a water vascular system, a characteristic unique to their phylum. This system is used for attachment and locomotion.*

Sea cucumbers have some particularly interesting defense mechanisms for evading predators. Some species secrete toxins, and some discharge sticky filaments to discourage potential predators. Perhaps the most unusual behavior is evisceration, in which a sea cucumber will expel the gut and other internal organs through the mouth or anus to distract a predator. The sea cucumber will eventually grow back the lost organs.

Echinoderms can be found on display in many places in the Aquarium. Visitors can also touch echinoderms, including sea stars and sea cucumbers, at the Aquarium's Northern touch lab. One of the most interesting echinoderm exhibits is the sand dollar habitat, which gives visitors a rare view of live sand dollars. This exhibit, called Redondo Canyon, is located in the Southern California/Baja Gallery.

# Conservation

Invertebrate animals face several threats in the wild. Ocean acidification, a result of excess carbon entering the ocean, is anticipated to inhibit crustaceans' and mollusks' ability to grow their calcium carbonate shells. Warming of ocean waters brought about by climate change would compound losses among reef-building corals, leading to coral bleaching and potentially coral reef extinction. These and other threats, including pollution of ocean waters, are a result of human activity. Therefore, we have an opportunity to reverse these trends and help protect the delicate balance that allows animals to thrive in the ocean.

# Visit Our Invertebrate Collection

Perhaps when planning your visit to the Aquarium of the Pacific, you most look forward to seeing some of our more charismatic animals, like the sea otters, sharks, or seals and sea lions. But once you begin strolling through the galleries, you may find yourself lingering at the exhibits containing the luminous, floating sea jellies or the massive Japanese spider crabs. Many of the most fascinating and unusual creatures at the Aquarium are invertebrates, representing an incredible range of shapes and sizes, habitats, and behaviors. Be sure to look for them on your next visit.



CRIMSON ANEMONE  
*Cribrinopsis fernaldi*

LEMON PEEL NUDIBRANCH  
*Peltodoris nobilis*

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!



## MEMBER EVENTS

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

### **M SENIOR MEMBER AFTERNOON**

**WEDNESDAY, JANUARY 25 | 2:00 p.m.-3:00 p.m. & 3:30 p.m.-4:30 p.m.**

Senior members are invited to an afternoon in the Aquarium's Ocean Science Center for a special opportunity to view the Science on a Sphere® global display like never before. An Aquarium educator will hold you captivated with shows on sea level rise and ports. Attendees will be among the few to witness the many other features of the Science on a Sphere®. View current data sets on hurricanes, tsunamis, and even whale migration patterns. Light snacks of cheese and crackers will be available during this exclusive senior member event not shown to the general public.

**COST** | Free for members.

**RSVP** | (562) 437-FISH (3474); required by January 22. Reservations are taken on a first-come, first-serve basis and are required as space is limited.

## MEMBER EVENTS



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### **M SPIDER-MAN KIDS ACTIVITY NIGHT**

**FRIDAY, FEBRUARY 24  
6:30 P.M.-9:30 P.M.**

Member kids are in for a Marvel-ous night because superhero Spider-Man will be swinging into the Aquarium for an action-packed night of fun. This event will be webbed full of activities for member kids, including face painting, crafts to take home, an education program to learn how you can be an ocean super hero, and of course the chance to see Spider-Man at the Aquarium. Dinner will be available for purchase in Café Scuba. Visit the Aquarium website for more information.

**COST** | Free for members. Members may bring guests with their 20% discount off general admission.

**RSVP** | (562) 437-FISH (3474); required by February 21. Reservations are required as space is limited. This event is likely to sell out.

## MEMBER EVENTS

### **M MEMBER EARLY MORNING**

**SATURDAY, MARCH 17 | 8:00 a.m.-9:00 a.m.**

Your luck will begin early this St. Patrick's Day with a special opportunity to enjoy the peace and serenity of the Aquarium one hour prior to the public opening. Experience the playfulness of the sea lions, the calm waters of Shark Lagoon, and the morning chirps of the Lorikeet Forest residents. The Coffee Cart will have coffee, hot chocolate, and pastries available for purchase. Pacific Collections gift store will open and regularly scheduled shows will begin at 9:00 a.m.

**COST** | Free for members. Members may bring guests with their 20% discount off general admission.

**RSVP** | (562) 437-FISH (3474); required by March 14.

### **M ADULT MEMBER WILD WEST PARTY**

**THURSDAY, MARCH 29, 2012 | 7:00 p.m.-10:00 p.m.**

Dust off your boots and mark your calendars for the Adult Member Wild West Party featuring live music, entertainment, line dancing, games, a hickory BBQ, and more. Visit the Aquarium website for more information.

**INFO** | [www.aquariumofpacific.org](http://www.aquariumofpacific.org)

**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.

**SE SHARK LAGOON NIGHTS**  
FRIDAYS, JANUARY 20 THROUGH APRIL 27, EXCEPT  
FEBRUARY 10 & 24 AND APRIL 13 & 20

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

**COST** | Free for everyone.  
**INFO** | (562) 590-3100, ext. 0

**SE NIGHT DIVE**  
FRIDAY, FEBRUARY 10 | 7:00 p.m.-11:00 p.m.

Take in the Aquarium at night, when the lights go down and the bubble curtain goes up in Blue Cavern. In the usual Night Dive tradition, enjoy bands, groove to some DJs, and be moved by works of art.

**COST** | \$14.95; free for members.  
**INFO** | (562) 590-3100, ext. 0

**SE VALENTINE'S DAY DINNER & LATE NIGHT**  
TUESDAY, FEBRUARY 14 | 6:30 p.m.-9:00 p.m.

Fall in love with the sea as you experience the wonder of the Aquarium at night! Enjoy our finest selection of culinary delights for dinner and wander the exhibits and galleries, which will be open until 9:00 p.m. Please note that the Valentine's Day Dinner sold out last year, so make your reservations early.

**COST** | Valentine's Day Dinner: \$62 per adult, \$52 per child, \$52 per member adult, \$42 per member child. Includes Aquarium admission. Late Night: \$14.95 for adults and \$13.95 for children after 5:00 p.m.  
**INFO** | (562) 590-3100, ext. 0

**SE NEIGHBORHOOD STREET CLEAN-UP**  
SATURDAY, MARCH 10 | 10:00 a.m.-12:00 noon

Join us at our tenth annual Neighborhood Street Cleanup at Cesar Chavez Park in Long Beach. Pitch in by picking up trash and helping to prevent pollution from entering the ocean and affecting marine life and our beaches. Each participant will receive a free Aquarium ticket. Be sure to bring a water bottle.

**LOCATION** | Cesar Chavez Park, 401 Golden Ave., Long Beach

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

**SPECIAL EVENTS**

**SE AUTISM FAMILIES NIGHT**  
SUNDAY, MARCH 25 | 5:00 p.m.-9:00 p.m.

Join us for a special evening at the Aquarium for families with adults or children with autism. The entire Aquarium, except Lorikeet Forest, will be open until 9:00 p.m. This will be a peaceful evening when guests can enjoy the tranquility of our exhibits and meet 11,000 animals from the world's largest ocean.

**COST** | \$5; free for members.  
**INFO** | (562) 590-3100, ext. 0

**SE AQUARIUM CLOSED**  
FRIDAY THROUGH SUNDAY, APRIL 13-15

Please note that the Aquarium will be closed due to the Grand Prix of Long Beach street closures.

**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.

**SE UNDERWATER PARKS DAY**  
SATURDAY, JANUARY 21 | 9:00 a.m.-5:00 p.m.

Learn more about Southern California's network of Marine Protected Areas (MPAs) that went into effect January 1, 2012. Guests will be able to learn about the commercial and recreational activities permitted. MPA stories will be told using film, lectures, and interactive exhibits.

**COST** | Free for members; members' guests receive 20% off regular admission  
**INFO** | (562) 437-FISH (3474)

**SE FESTIVAL OF HUMAN ABILITIES**  
SAT. & SUN., JANUARY 28-29 | 9:00 a.m.-5:00 p.m.

Celebrate the creative talents and abilities of people with disabilities. Free interactive classes for people of all ages and abilities will be offered.

**COST** | Free for members; members' guests receive 20% off regular admission  
**INFO** | (562) 437-FISH (3474)

**SE AFRICAN AMERICAN FESTIVAL**  
SAT. & SUN., FEBRUARY 25-26 | 9:00 a.m.-5:00 p.m.

Celebrate Black History Month with jazz music, Mardi Gras dancers, interactive drum circles, art, children's crafts, storytelling, and dance performances from hip hop to West African during this annual festival.

**COST** | Free for members; members' guests receive 20% off regular admission  
**INFO** | (562) 437-FISH (3474)



**DIVERS DAY**

**FESTIVALS**

**SE DIVERS DAY**  
SATURDAY, MARCH 24 | 9:00 a.m.-5:00 p.m.

Learn about the history and recent advancements in diving during the Aquarium's annual Divers Day. Check out educational presentations and dive demonstrations in exhibits. The diving community is invited to learn more about volunteer diving and other opportunities for involvement with dive-related organizations in Southern California. Divers who present valid proof of certification with their photo I.D. will receive free admission.

**COST** | Free for members. Members' guests receive 20% off admission.  
**INFO** | (562) 437-FISH (3474)

**SE EARTH DAY FESTIVAL**  
SAT. & SUN., APRIL 21-22 | 9:00 a.m.-5:00 p.m.

Learn what you can do to help our ocean planet at the Aquarium's eleventh annual Earth Day festival. Join us for a weekend of family fun celebrating the Earth while learning easy, everyday tips to protect the environment. Visit booths from various Earth-friendly organizations and participate in hands-on learning demonstrations for people of all ages.

**COST** | Free for members. Members' guests receive 20% off admission.  
**INFO** | (562) 437-FISH (3474)

**SE INTERNATIONAL CHILDREN'S DAY FESTIVAL**  
SAT. & SUN., APRIL 28-29 | 9:00 a.m.-5:00 p.m.

In celebration of International Children's Day, the Aquarium of the Pacific will showcase the talents of children of many cultures. This colorful international festival will feature music and dance performed by children representing Hispanic, Asian, African American, Pacific Islander, Native American, and other cultures. The Aquarium will also present its Young Hero Award in recognition of one young person's efforts to make this planet a better place.

**COST** | Free for members. Members' guests receive 20% off admission.  
**INFO** | (562) 437-FISH (3474)



## FEBRUARY 7: SOUTHERN CALIFORNIA'S BIGHT AND BORDERLAND

### GUEST SPEAKERS

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

**GS JEANINE JONES & MARK JACKSON | *Atmospheric Rivers, Floods, and Climate Change***

WEDNESDAY, JANUARY 25 | 7:00 p.m.

Recent scientific discoveries are revealing new information about atmospheric rivers—the concentrated streams of moisture that originate over the Pacific Ocean and cause major winter floods in California. In this lecture, Jeanine Jones and Mark Jackson will describe just how extreme these precipitation and flooding events can be, put them in the context of California's historical flooding, and discuss what is known about the effects of climate change on these events. The presenters will also discuss ARkStorm, the simulated flooding event used to gauge California's emergency preparedness for a flood of epic proportions. Jones is the interstate resources manager for the California Department of Water Management. Jackson is the meteorologist in charge for the National Weather Service serving Los Angeles, Ventura, Santa Barbara, and San Luis Obispo Counties.

**GS BRUCE PERRY | *Southern California's Bight and Borderland: Where the Dynamic Ocean Meets Plate Tectonics***

TUESDAY, FEBRUARY 7 | 7:00 p.m.

Movement along the San Andreas Fault in Southern California has shifted large blocks of Earth's crust horizontally and vertically, forming a series of mountains and valleys on land and islands and basins off shore. The complex ocean floor off the Southern California coast, called the Continental Borderland, is unique to our planet, and an area of great interest to geologists. In his lecture, Bruce Perry will cover the evolution of the Continental Borderland

### GUEST SPEAKERS

and its effects on the current circulation, wave action, and biology of the Southern California Bight (the Southern California coast running from Point Conception in Santa Barbara to Mexico). Perry holds a BS and MS in geology and teaches oceanography and geology at local community colleges and universities.

**GS DR. MICHAEL MANN | *The Hockey Stick and the Climate Wars: Dispatches from the Front Lines***

WEDNESDAY, FEBRUARY 15 | 7:00 p.m.

In his lecture, Dr. Michael Mann will discuss the "Hockey Stick," a graph he created with his colleagues to depict changes in Earth's temperature dating back to 1000 A.D. The graph became an icon in the debate over human-caused climate change. He will explore the role of skepticism in science and the relationship between science and politics. Dr. Mann is a member of the Penn State University faculty in the departments of meteorology and geosciences and the Earth and Environmental Systems Institute. He is also director of the Penn State Earth System Science Center. Dr. Mann was a lead author on the Observed Climate Variability and Change chapter of the Intergovernmental Panel on Climate Change Third Scientific Assessment Report in 2001. He shared the Nobel Peace Prize with other IPCC authors in 2007. Mann's book, *The Hockey Stick and the Climate Wars: Dispatches from the Front Lines*, will be available for sale, and he will be signing copies after the lecture.

**GS JOHN SEAGER | *Soaring Past 7 Billion: Population Challenges for a Crowded World***

TUESDAY, FEBRUARY 21 | 7:00 p.m.

With the Earth's population growing by one billion people every dozen years, there is

### GUEST SPEAKERS

a connection between human population growth and several global challenges. These range from poverty to climate change and from species extinction to the political instability of failed nation-states. Solutions to global population stabilization include access to affordable voluntary family planning together with the full empowerment of women, says John Seager, president and CEO of Population Connection. In his presentation, Seager will give a brief overview of the causes of rapid population growth, its impacts, and how to meet this challenge through voluntary approaches. Population Connection educates young people and advocates progressive action to stabilize world population at a level that can be sustained by Earth's resources.

**GS JEANINE JONES & DAN CAYAN | *Climate Change and Coastal Inundation***  
WEDNESDAY, FEBRUARY 29 | 7:00 p.m.

By 2100 increases in global sea level will result in long-term inundation of low-lying coastal areas throughout California. Within the next few decades, coastal flood damages will be driven by event-based inundation from storm surges, inland river flooding, and shallow flooding from high tides combined with storm conditions. Natural variability and human-caused change influence complex interactions like wind patterns and wave climates that contribute to coastal erosion and inundation. In this lecture, Jeanine Jones and Dan Cayan will discuss climate's influence on flooding mechanisms, expected impacts, and vulnerability of infrastructure such as stormwater systems. Jones is the interstate resources manager for the California Department of Water Management. Cayan is a researcher with the Scripps Institution of Oceanography and U.S. Geological Survey.

**GS CHARLES MOORE | *Plastic Ocean: How Bad Is It?***

TUESDAY, MARCH 6 | 7:00 p.m.

In 1997 Captain Charles Moore discovered plastic in the ocean in the North Pacific Subtropical Gyre. Dubbed the Great North Pacific Garbage Patch, this estimated three million tons of plastic debris is still growing in the Northeast Pacific between Hawaii and the West Coast. In his lecture, Moore will discuss his research of plastic's invasion of the marine food web and its creation of artificial habitats, as well as local resource production and recovery as important parts of the solution. His book, *PLASTIC OCEAN: How a Sea Captain's Chance*





# MARCH 20: PHOTOS AND STORIES OF ANTARCTIC ADVENTURES



## GUEST SPEAKERS

*Discovery Launched a Determined Quest to Save the Oceans*, was co-written with Cassandra Phillips. Moore founded Algalita Marine Research Foundation in 1994.

**65 DR. HEIDI CULLEN | *Seeing Climate, Seeing Change***

TUESDAY, MARCH 13 | 7:00 p.m.

If seeing is believing, then how do you show people the phenomenon of climate change? And how do you prove that recent extreme events may be partially a result of global warming? In her lecture, Dr. Heidi Cullen will explore the difficulties of communicating the science of climate change and look at the current state of public perception. She will reflect on the need to improve our ability to visualize climate change as well as provide examples of the energy infrastructure changes we need to solve the problem of global warming. Copies of Dr. Cullen's book, *The Weather of the Future*, will be available for sale, and there will be a book signing after the lecture. Dr. Cullen is vice president for external communications for Climate Central. She also serves as a research scientist for the organization and reports as a correspondent for several national television programs.

**65 J.J. L'HEUREUX | *Penguins: A Photographic Expedition to Antarctica***

TUESDAY, MARCH 20 | 7:00 p.m.

Painter, photographer, and naturalist J.J. L'Heureux made her first trip to Antarctica in 2000 to collect images of ice and snow for a series of white-on-white landscape paintings. During this expedition she became fascinated by the wildlife and environment of the region. Since that initial trip L'Heureux has returned to Antarctica every season for eleven years. Her book *Faces from the Southern Ocean* includes close-up images of the animals that

## GUEST SPEAKERS

inhabit the Antarctic continent, including the Wandering Albatross, elephant seal, and Emperor and Royal Penguins. In her lecture L'Heureux will share her photographs and stories of her Antarctic adventures. Her book will be available for sale, and L'Heureux will be signing copies after the lecture.

**65 CHRIS PLANTE | *The Aquarium's Abalone Cultivation Program***

TUESDAY, APRIL 3 | 7:00 p.m.

Several organizations in California are working to propagate white abalone and introducing them to the wild to help rebuild populations along the California coast. In his lecture, Aquarium of the Pacific Assistant Curator Chris Plante will describe the Aquarium's involvement in this project, the history of the abalone fishery in California, and population loss of local abalone species, especially white abalone. He will also discuss the spawning and larval rearing methods that the Aquarium of the Pacific is using to produce and raise abalone. Plante is the assistant curator of the Southern California/ Baja Gallery at the Aquarium of the Pacific. He has eighteen years of experience in the public aquarium industry.

**65 JEFF HYLAND | *Project: Southern Tier, An Environmental Bicycle Documentary Series***

TUESDAY, MAY 8 | 7:00 p.m.

Film producer Jeff Hyland will screen his film *Project: Southern Tier*, which documents a cross-country bicycle ride through the southern tier of the United States. The film addresses important topics related to the environment, such as clean water, food safety, and air pollution, and how those issues impact human health. There will be a

## GUEST SPEAKERS

question-and-answer session with Hyland after the film. Hyland earned a degree in cinema and technical theatre at San Francisco State University and spent a year in Central and South America, where he developed his passion for environmental change.

**65 WAYNE TRIVELPIECE | *Penguins as Sentinels for Climate Change***

WEDNESDAY, MAY 9 | 7:00 p.m.

Winter temperatures in the Antarctic Peninsula region have increased over the last fifty years, affecting sea ice cover in the region. This climatic change has profoundly impacted the Antarctic krill-based food web. In his lecture, Wayne Trivelpiece will link increasing temperatures and decreasing sea ice cover in the Antarctic Peninsula region to declines in krill and Adelie and Chinstrap Penguin populations. He will also discuss his findings suggesting that predator populations, already at risk from climate-driven changes in the food web, are under increasing pressure from recovering whale and seal populations and outdated fisheries quotas. Trivelpiece is a wildlife biologist with the Antarctic Ecosystem Research Division of the National Oceanic and Atmospheric Administration's Southwest Fisheries Science Center.

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

**INFO** | (562) 437-FISH (3474)

GUEST speaker sponsor:





# HARBOR TOUR

## AQUARIUM TOURS

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

### AT BEHIND-THE-SCENES TOURS

DAILY | times vary

Guests will go above our largest exhibit to feed the fishes, get a glimpse of areas behind Shark Lagoon, and see our Molina Animal Care Center.

**COST** | \$14.50/member | \$18/non-member  
does not include Aquarium admission

**AGES** | 7+ years

**LENGTH** | one hour

**GROUP SIZE** | maximum 10 participants

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

### AT DIVE IMMERSION

BASED ON AVAILABILITY | 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, 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.

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

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

**RSVP** | (562) 590-3100

## AQUARIUM TOURS

### AT ANIMAL ENCOUNTERS

SATURDAYS & 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, or even a shark. There are lots of surprises along the way, so be prepared to get your hands wet!

**THEMES** | *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** | \$80/member | \$90/non-member  
includes Aquarium admission

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

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

**RSVP** | (562) 951-1630

## 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.

### SL 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** | \$60/member | \$70/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

### SL 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** | \$60/member | \$70/non-member

**AGES** | 18+ years

**GROUP SIZE** | 20-60 participants

**RSVP** | (562) 951-1630

### SL YOUTH GROUP SLEEPOVERS

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** | \$50/member | \$60/non-member

**AGES** | 5+ years, plus adult chaperone

**GROUP SIZE** | 20-60 participants

**RSVP** | (562) 951-1630

### SL FAMILY SLEEPOVER

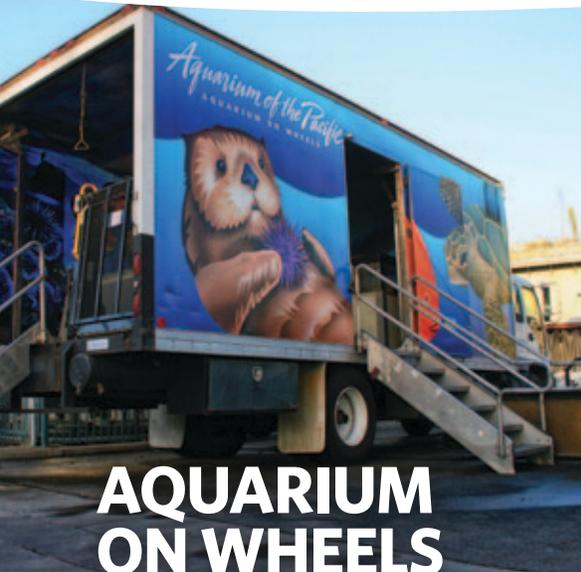
BASED ON AVAILABILITY | 5:00 p.m.-7:00 a.m.

Bring your whole family and spend an evening exploring the Aquarium after dark. Discover the unique relationships and habitats of our ocean critters through hands-on activities and gallery observations.

**COST** | \$50/member | \$60/non-member

**AGES** | 5+ years, plus adult chaperone

**RSVP** | (562) 951-1630



## AQUARIUM ON WHEELS

### SPECIAL PROGRAMS

#### SP 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

#### SP 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



# GRAY WHALE WATCHING

KERIA WATKINS

### OUTDOOR ADVENTURES

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

#### OA 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: \$35.95/adult, \$30.95/senior, \$18.95/child includes Aquarium admission

**RSVP** | (562) 951-1630

### OUTDOOR ADVENTURES

#### OA 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 marine birds 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 (62+), \$15/child (3-11) | Non-members (includes Aquarium admission): \$44.95/adult, \$40.95/senior, \$29.95/child

**LENGTH** | 2-2.5 hours

**AGES** | Children under 16 must be accompanied by an adult.

**RSVP** | (562) 951-1630

#### OA GRAY WHALE WATCHING TRIPS

SEASONAL

Take a voyage with Harbor Breeze Cruises in search of gray whales as they migrate along our coastline. Learn about these gentle giants from an Aquarium onboard educator.

**COST** | Members: \$25/adult, \$20/senior, \$15/child Non-members (includes Aquarium admission): \$44.95/adult, \$40.95/senior (ages 62+), \$29.95/child (ages 3-11)

**LENGTH** | 2-2.5 hours

**AGES** | Children under 16 must be accompanied by an adult.

**RSVP** | (562) 951-1630



# COLORS OF THE OCEAN

## YOUTH PROGRAMS

### VP 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** | Southern California/Baja.....February 11  
Northern Pacific.....March 10  
Tropical Pacific.....April 21  
Sharks.....May 12

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

**AGES** | 7-12

**RSVP** | (562) 951-1630

### VP JOB SHADOW

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.

**TOPIC** | Veterinarian ..... February 4  
Aquarist ..... March 3  
Mammalogist..... April 7  
Aviculturist..... May 5

**COST** | \$24/member | \$29/non-member,  
does not include Aquarium admission.

**AGES** | Grades 7-12

**RSVP** | (562) 951-1630

## 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 in relationships.

### FP TOTALLY TURTLES

SATURDAY, FEBRUARY 25 | 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.

### FP SHARK SLEUTHS

SATURDAY, MARCH 24 | 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!

### FP MAGNIFICENT MARINE MAMMALS

SATURDAY, APRIL 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.

**COST** | ADULT-CHILD PAIR: \$24/member  
\$36/non-member  
EXTRA PERSON: \$10/person  
(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.

### AQ SUPER SENSES OF THE SEA

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

Smell the salty air and feel the cool breeze as we use our senses to explore how ocean animals use their sight, taste, touch, and hearing in their watery home. Immerse yourself in the wonder and discovery of this interactive program.

### AQ COLORS OF THE OCEAN

SATURDAY, MARCH 17 | 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.

### AQ MOVIN' & GROOVIN' BENEATH THE SEA

SATURDAY, APRIL 21 | 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!

**COST** | ADULT-CHILD PAIR: \$24/member  
\$30/non-member | EXTRA PERSON: \$10/  
person (includes Aquarium admission).

**AGES** | 2-3 years, plus adult chaperone

**RSVP** | (562) 951-1630

## OTHER CLASSES

### OC UNDER THE SEA SHAPES

AVAILABLE BY RESERVATION ONLY

The ocean is full of incredible animals and vibrant colors. In this interactive educator- and video-led program, children will match ocean animals, such as sharks and sea anemones, to their shapes. This exciting program is designed especially for preschool and daycare groups.

**COST** | \$9/member or non-member (March-June)  
\$7.50/member or non-member (July-  
February)

**AGES** | 4-5 years, plus one free adult chaperone per  
10 children.

**LENGTH** | 45 minutes

**GROUP SIZE** | 20-student minimum

**RSVP** | (562) 951-1630



## SCHOLARSHIP PROGRAM HELPS BRING STUDENTS TO THE AQUARIUM



The hands-on educational programs at the Aquarium help supplement science curriculum for local schools and boost ocean and environmental literacy for students from preschool through high school.

**A** S AN EDUCATIONAL INSTITUTION, the Aquarium of the Pacific plays an important role in providing hands-on science learning opportunities for students across Southern California.

Offering programs for students of all grade levels from preschool through high school, the Aquarium teaches science to hundreds of visiting students on a daily basis. On peak days during the school year the Aquarium hosts between 1,000 and 2,000 students.

Education scholarships are distributed to schools classified as Title I, based on socioeconomic factors. In the Long Beach Unified School District, about two-thirds of schools qualify. Teachers from Title I schools say their classes would not be able to make the visit to the Aquarium without scholarship funds.

A scholarship visit to the Aquarium includes transportation, time to see the Aquarium's exhibits, and a program in the Honda Theater or SAVOR... Watershed, Tidal, or Splash Zone Classrooms. The Ocean Science Center and new Roddenberry Foundation Education Videoconferencing Studio are newly added education program venues this year. Classroom sessions are generally high-energy, participatory events, with the instructor incorporating hands-on activities, audio visual components, and opportunities for students to ask questions.

The Aquarium's education programs are designed to teach ocean science in a way that's developmentally appropriate for the age group. While preschool and elementary students learn introductory information about animals and their basic characteristics and habitats, high school students can participate in animal dissections and lab sessions for Advanced Placement science classes.

Classroom time for science, particularly at the elementary

level, can be very limited. Teachers view the Aquarium field trip as an opportunity to supplement the lessons they teach in the classroom. Aquarium educators follow the school science curriculum and use ocean examples to teach concepts the students are studying in school. Many teachers have students write about the field trip and what they learned afterward in a language arts assignment.

Teachers and students who visit the Aquarium in the scholarship program are surveyed immediately after their visit and again six weeks later. The survey determines the impact of the visit by asking teachers to assess students' interest in the ocean, science, and animals. In surveys collected in 2010, teachers reported students showing increased interest and enthusiasm for science and related subjects in the classroom. Students reported that because of their visit, they care more about the ocean and the creatures that live there, and they want to know more about how to take care of the Earth and how to protect animals.

Teachers who would like to plan a field trip can visit [www.aquariumofpacific.org/education](http://www.aquariumofpacific.org/education) for teacher resources and field trip orientation materials. To help support the Aquarium's education efforts, individuals can contribute to the Ocean Science Education Fund. This program supports science and conservation education programs for more than 200,000 students, teachers, and community members each year. These activities include science standards-based classroom programs, professional development for teachers, Aquarium on Wheels visits, online resources, and much more. To learn more, visit [www.aquariumofpacific.org/give](http://www.aquariumofpacific.org/give).

# TAKING ON SUSTAINABILITY AS AN INSTITUTION

The Aquarium of the Pacific continually pursues opportunities to reduce its carbon footprint, reduce waste, and protect the environment.

**E**NVIRONMENTAL SUSTAINABILITY EFFORTS at the Aquarium of the Pacific include annually registering the institution's greenhouse gas emissions with the California Climate Action Registry, supplementing energy systems with solar panels, maintaining drought-resistant landscaping, renewing memberships electronically to save paper, teaching the public about sustainability, and much more. In recognition of these practices, the City of Long Beach recently awarded the Aquarium in its Green Business Recognition Program. Now, the Aquarium is participating in several large-scale programs with a focus on sustainability.

Last fall the Aquarium was one of seven institutions in California participating in an ongoing statewide campaign spearheaded by the California Association of Museum's Green Museums Initiative called *Ignite! Museums as Catalysts for Sustainability*. The goal of this initiative is to inspire museums in California to develop green business practices, eco-friendly facility management, and sustainable programming. In this new campaign, museum

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*"The key to changing perspectives on ocean conservation is waking people up to the issues," Jennifer Hagle says.*

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leaders, scientists, environmentalists, community stakeholders, and artists convened to discuss how to preserve ecosystems and promote healthy communities in their region. In roundtable discussions, participants addressed top environmental challenges for their region, identified who is working to address these challenges, and discussed how to involve museums.

In addition, the Aquarium is the first non-profit organization to join the Los Angeles Regional Collaborative for Climate Action and Sustainability and will attend its annual conference. These and other sustainability efforts have motivated Aquarium staff and supporters to do their part.

"The Aquarium has definitely irreversibly impacted my own professional and personal decisions related to sustainable products and practices. The key to changing perspectives on ocean conservation is waking people up to the issues and then educating them on how they can meaningfully change the way they live their lives. I am just one example of the reach that the Aquarium has had and how, in turn, that reach has extended to my family, which will extend to theirs and so on," says Jennifer Hagle, Aquarium of the Pacific Board director.



**A**QUARIUM EDUCATORS RECENTLY LAUNCHED a new program for high school students that uses the Ocean Science Center and the National Oceanic and Atmospheric Administration's (NOAA) Science on a Sphere® (SOS). The program features a film called *Frozen* that was created for the sphere by NASA. Aquarium educators use segments of the film, along with additional materials, to teach students about climate change, the polar regions and the role they play in regulating the Earth's climate, and how instruments orbiting the Earth on satellites collect data to help scientists monitor climate phenomena.

With data fed to NOAA and other agencies via satellite, weather and other phenomena can be tracked closely on a daily basis. Students in the *Frozen* class are able to view both historical and current data sets, make observations, and ask questions, which the educator leading the session uses to direct the lesson. The Aquarium is one of the first institutions to capitalize on these capabilities of SOS and use it as a teaching tool to communicate significant ocean issues to the public.



From left, Heather and Paul Haaga, Corinne Heyning, and her children Nico and Marlene Heyning attended the blue whale replica dedication ceremony this fall.



## GREAT HALL BLUE WHALE DEDICATED IN MARINE BIOLOGIST'S MEMORY

**T**HE AQUARIUM WAS PROUD to formally dedicate the life-sized blue whale model showcased in the Great Hall of the Pacific to the scientific legacy of Dr. John E. Heyning. The blue whale model has inspired guests since the Aquarium's founding in 1998 as an iconic symbol of the majesty of whales. This model was originally made possible through a grant from Edison International. The late Dr. Heyning was an instrumental contributor to the life-like design of this replica, making it the first model in the world to accurately depict the enormous

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*The late Dr. John Heyning was an instrumental contributor to the life-like design of the blue whale replica in the Aquarium's Great Hall.*

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blue whale. This fall Aquarium supporters Paul and Heather Haaga contributed \$100,000 to honor their friend Dr. Heyning, who had dedicated his life to the study of cetaceans as a marine biologist and curator of marine mammals at the Natural History Museum of Los Angeles County. Their gift will fund Aquarium initiatives, such as the nationally recognized guest speaker series and a new partnership with Cascadia Research Collective to identify, monitor, and study the behaviors of blue whales in their natural habitat. The dedication ceremony, held on November 21, 2011, included remarks by Paul Haaga, Aquarium President and CEO Jerry Schubel, scientist Dr. Jay Barlow, Aquarium Board Director Russell Hill, Dr. Heyning's wife Corinne Heyning, who also serves as co-chair of the Aquarium's Trustees of the Pacific, and their children Nico and Marlene Heyning.



Jacob Bingemann (right) feeds Odin the sea otter with Senior Mammalogist Debbie Vereen during a visit to the Aquarium by trustees from the Windsong Trust.

## WINDSONG TRUST SUPPORTS UNDERSERVED STUDENTS

**T**HROUGH A GRANT TO THE AQUARIUM SCHOLARSHIP FUND, the Windsong Trust will help bring science and environmental education to life for disadvantaged youth. The \$100,000 grant will allow more than 4,000 Title I students from throughout the Los Angeles region to visit the Aquarium this school year. Students will learn about marine science and the environment through hands-on activities and interactive classroom or theater programs, as well as by exploring the Aquarium's many animal exhibits. The Windsong Trust supports numerous education initiatives throughout the region and the world, and the Aquarium is proud to have them as a new partner in this vital endeavor.

# Craft: Sea Jelly in a Bottle

Demonstrate how alike sea jellies and trash may appear to ocean animals!

**S**EA JELLIES ARE INCREDIBLE INVERTEBRATE ANIMALS. They lack a brain, heart, and bones and consist mostly of water. Jellies spend most of their lives drifting with ocean currents. Much like sea jellies, trash that ends up in the ocean will also drift with the current. Predators, like sea turtles and sunfish, frequently mistake plastic bags for sea jellies. If these animals eat the plastic bags they find in the ocean, it can be extremely harmful to them and even deadly. This craft will help demonstrate just how alike sea jellies and trash may appear to ocean animals.

## MATERIALS:

- clear plastic or glass bottle or jar, at least 15 ounces
- clear plastic bag (The bags you use in the produce section in the grocery store work well for this craft.)
- thread
- scissors
- food coloring (optional)

## STEPS

1. Cut a five-inch square from the plastic bag. Cut quarter-inch-wide strips about an inch-and-a-half long all around the edges to make fringes on all sides (these will be your sea jelly's tentacles). Be sure not to cut all the way to the center.
2. Gather your plastic bag piece by the middle with the tentacles hanging down. Tie a piece of thread loosely around the jelly above the tentacles and trap a small pocket of air in the "bell" of your sea jelly.



## STEPS (CONTINUED)

3. Fill your bottle with water, add a small drop of food coloring, and shake. Blue food coloring will look most like the ocean.
4. Hold your jelly tentacle-side-up and fill the air pocket with water. Pull the thread tight and tie a knot.
5. Put your sea jelly into the bottle and close the lid tightly.
6. Watch your sea jelly drift as you turn the bottle.

## Kids QR

LEARN HOW WE  
GROW SEA JELLIES  
AT THE AQUARIUM



SEA JELLY VIDEO  
[youtu.be/xgZlbePiDrg](https://youtu.be/xgZlbePiDrg)

Meet Amy Adams,  
our sea jelly expert.

## Fishing for KNOWLEDGE!



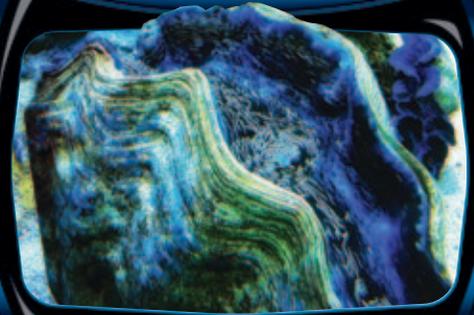
1. If you press a \_\_\_\_\_ through a fine cloth, it will reorganize its cells and return to its original function in a new form.
2. Cnidarians, like sea anemones and sea jellies, have \_\_\_\_\_ cells that they use to capture food.
3. Sea stars and sea urchins can \_\_\_\_\_ body parts, meaning they can grow new ones if they are removed.

Last Issue's Questions and Answers:

1. **Magellanic** Penguins are typically found near the southern tip of South America.
2. The pH scale measures how acidic or **basic** something is.
3. The ocean absorbs **carbon dioxide** and too much of it could make it hard for shellfish, like oysters and shrimp, to build their shells.

### GIANT CLAM

*Tridacna sp.*



TROPICAL PACIFIC GALLERY

### UPSIDE-DOWN SEA JELLIES

*Cassiopea sp.*



TROPICAL PACIFIC GALLERY

### GRACEFUL DECORATOR CRAB

*Oregonia gracilis*



ARCTIC & ANTARCTIC: OUR POLAR  
REGIONS IN PERIL

## GIANT CLAM

*Tridacna sp.*



### PHYSICAL CHARACTERISTICS

The giant clam can grow up to four feet wide, weigh up to 570 pounds, and live for more than 100 years.

### DIET

Giant clams are filter feeders, catching microscopic plants and animals as water passes over their gills. A special type of microscopic plant, which makes its food from the sun, lives within the clam's tissues. Here, it helps to make the majority of the clam's food.

### HABITAT

These clams make their homes in warm, shallow waters on coral reefs.

### FUN FACT

No two giant clams share the exact same coloration.

## UPSIDE-DOWN SEA JELLIES

*Cassiopea sp.*



### PHYSICAL CHARACTERISTICS

These sea jellies spend most of their adult lives upside-down. Using their bells like suction cups, they settle at the sea floor with their tentacles facing the surface.

### DIET

Preying on brine shrimp and other types of microscopic animals, these sea jellies do not have one central mouth. Instead they use branching arms that have hundreds of tiny mouth openings.

### HABITAT

These sea jellies are commonly found living in shallow coastal areas of the mangrove forest and lagoons.

### FUN FACT

Upside-down sea jellies can live in areas where oxygen is low, because they can use the oxygen made by algae that live on them.

## GRACEFUL DECORATOR CRAB

*Oregonia gracilis*



### PHYSICAL CHARACTERISTICS

This small crab can be up to one-and-a-half inches wide and has long slender legs. They are found in a variety of different colors. It has modified hair-like structures that allow it to hook onto different marine organisms for camouflage.

### DIET

The decorator crab will consume sponges, algae, and other smaller crustaceans.

### HABITAT

This species can be found in lower intertidal zones and at depths of more than 1,000 feet.

### FUN FACT

The decorator crab is unable to match its surroundings on its own, so it will collect pieces of its habitat to blend in.

# Dive in!

Let the Aquarium of the Pacific turn your next special event into a night to remember. Available for unique evening events, ranging from a casual reception to a formal sit-down dinner. Shark Lagoon and Cafe Scuba are also available for early evening events. For more information call (562) 951-1663 or visit [yourevent.aquariumofpacific.org](http://yourevent.aquariumofpacific.org).

SAVOR...  
Long Beach

*Aquarium of the Pacific*

100 AQUARIUM WAY LONG BEACH, CA 90802



# Have you considered an upgrade?

Upgrade your membership today, and you will have access to increased member benefits, such as:

- ✦ Transferable membership card (Family Plus membership level and above)
- ✦ VIP events
- ✦ Exclusive opportunities
- ✦ Our more than 11,000 animal residents will appreciate your added support!



FOR MORE INFORMATION, visit [www.aquariumofpacific.org/membership](http://www.aquariumofpacific.org/membership) or call the member support center at 562-437-FISH (3474).

AQUARIUM OF THE PACIFIC

## SAVE 20% this winter 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 Pacific Collections and the Shark Shack.

MEMBERS-ONLY SPECIAL



# AQUARIUM EXPANDS REACH WITH VIDEOCONFERENCING TECHNOLOGY

Using videoconferencing, Aquarium educators can interact with groups of students all over the world, providing ocean science programming to those who are unable to visit the Aquarium.

**W**HILE MANY STUDENTS have the opportunity to take part in educational programming at the Aquarium of the Pacific throughout the school year, Aquarium educators have taken steps to provide access to the Aquarium's programs and animals for students across the country and around the planet. Now, through innovative use of technology, the Aquarium can send its programming and a virtual educator into classrooms around the world. With the newly launched Roddenberry Foundation Education Videoconferencing Studio, the Aquarium has joined a network of content providers that includes museums, zoos, and other cultural institutions. Through this network, teachers and other program planners can request one of seven different video conference programs with an Aquarium educator.

Once a session is scheduled, the Aquarium educator is able to teach and interact with groups of people in a screen-to-screen format similar to online video chat. Many school districts and counties now have videoconferencing equipment available for

teachers. "Videoconferencing is quickly becoming an invaluable tool that teachers are using to get their students outside of the classroom walls without ever leaving the classroom," says Sarah Swain, the Aquarium's education technology and media coordinator. Videoconferencing allows educators to get students involved during the session and allows students to ask questions and learn interactively. Aquarium educators are even able to lead animal dissections in videoconferencing sessions.

This technology has expanded the Aquarium's reach across the country and even internationally. Schools in Canada and Mexico have already expressed interest in the Aquarium's videoconference offerings, Swain says. While students in kindergarten through twelfth grade will be the largest audience for this program, other public groups can also take part. Senior centers, after-school programs, and public libraries are among the groups that have access to videoconferencing technology. If you know of a group interested in setting up a video conference class, call (562) 951-1630.




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*Schools and other institutions across the country and around the world will have access to the Aquarium's educational programming through videoconferencing.*

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# FUNDRAISING HIGHLIGHTS

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

■ **Rose Hills Foundation Funds Core Education Program**

A \$50,000 grant was awarded by the Rose Hills Foundation in September 2011 in support of the Ocean Science Education Program. Through this program, the Aquarium hosts an average of five school groups every day and offers more than 100 education classes. As state budget cuts have hampered the public school system's ability to deliver effective science education, the Rose Hills Foundation's partnership allows the Aquarium to meet this need and provide high-quality science programs to thousands of students.

■ **Aquarium Receives Crystal Vision Award for Whale Research**

On December 1, 2011 the Aquarium was presented with the 22nd Annual Crystal Vision Award from the Employees Community Fund of Boeing California, granting \$50,000 for the Aquarium's Southern California Whale Research Project. The goals of the research project are to collect identification and location information about blue whales and other commonly sighted whales throughout the region. In doing so, the Aquarium will raise awareness about these local species amongst our visitors and the public.

■ **The Boeing Company Sponsors Teacher Training**

The Boeing Company provided a \$35,000 grant to the Aquarium's revitalized 2012 Boeing Teacher Institute (BTI). The goal of this year's BTI is to provide thirty-five teachers with marine biology education, nature experiences, and access to current scientific research, which will then increase the quality and quantity of resources they can draw from and bring back to their students. Opportunities for continued involvement and idea sharing throughout the year will include a science lecture series and an online community specifically for BTI participants.

■ **NOAA Renews Abalone Support**

The National Oceanic and Atmospheric Administration (NOAA) National Marine Fisheries Service, Southwest Regional Office renewed its support of the Aquarium's abalone cultivation and education efforts by awarding a second year of funds under the current contract. Husbandry staff members are refining captive abalone rearing and cultivation techniques for red abalone (*Haliotis rufescens*) and preparing for propagation of the endangered white abalone (*Haliotis sorenseni*). In addition, education staff will continue taking the *Fishing for Change* program—centered on abalone conservation and fisheries management—to area Title I high schools.

■ **John W. Carson Foundation, Inc. Contributes to Interactive Educational Programming**

The John W. Carson Foundation, Inc. granted \$30,000 toward the Aquarium's science and environmental education programs. It earmarked \$5,000 specifically to support technology and media tools that will complement the Science on a Sphere® programming. People are increasingly using technology to gather and exchange information. Therefore, this funding will help pique students' interest in science and inspire them to continue to learn more about the ocean.

■ **Kenneth T. and Eileen L. Norris Foundation Supports Science Education**

Charter partners of the Aquarium of the Pacific, the Norris Foundation recently contributed \$30,000 toward the Ocean Science Education Program. With this support, the Aquarium's education department will be able to connect our school, educator, and general visitor audiences to current and ongoing scientific research and discoveries. This will be accomplished through enhanced teacher professional development opportunities, revitalized classroom and auditorium school programs, and interactive videoconferencing.

■ **Oxy Long Beach, Inc. Supports Long Beach Students and Families**

With a \$25,000 grant from Oxy Long Beach, Inc., the Aquarium's education department will offer out-of-school science learning opportunities to the parents and students of underserved schools in Long Beach, California. Family field trips, science classes for parents and students, and access to the Aquarium will encourage students to become more engaged in science, while providing parents with tools to encourage their children to question, wonder, experiment, and otherwise actively engage as a scientist.

■ **Water Replenishment District of Southern California Funds Watershed Education**

A supporter of the Aquarium's watershed educational programming since 2005, the Water Replenishment District of Southern California continued their support this year with a \$50,000 grant. These funds support the *It All Flows to Me* education program for onsite field trips as well as Aquarium on Wheels visits to schools and community events throughout the Los Angeles area.

# AQUARIUM ACCOLADES

## HERITAGE AWARDS



### Marcus Lopez | Moompetam

Co-chair of the Barbareño Chumash Council of Santa Barbara and a Chumash cultural practitioner, Marcus Lopez works

to preserve his community's relationship to the local coast. His cultural maritime involvement spans more than eighteen years. It includes planning and organizing voyages to the Channel Islands from the mainland, as well as construction and maintenance of traditional maritime vessels of the Chumash and Tongva peoples. Lopez played a key role in the development of Moompetam at the Aquarium and also founded the Indigenous Media Institute. He has been a community organizer for forty-two years on topics relating to sovereignty and social justice for many Native American and other communities.

Pictured: Marcus Lopez, 2011 Moompetam Heritage Award honoree, and Jerry Schubel, president and CEO, Aquarium of the Pacific.



### World Wildlife Fund | Baja Splash

In Mexico's Gulf of California, World Wildlife Fund (WWF) is working to create a network of marine protected areas and to

promote sustainable fisheries, sustainable coastal development, and tourism. WWF México worked with the Aquarium to create a bilingual Gulf of California exhibit, which debuted in 2008. This permanent exhibit helps Aquarium visitors learn about this diverse habitat, the animals and people who depend on it, the threats the Gulf faces, and the role WWF and the Aquarium play in protecting the Gulf. The two organizations also created a film, *A Sea on the Edge*, which explores solutions to threats to the Gulf and is played daily in the Aquarium's Honda Theater.

Pictured: Perry Hampton, vice president of husbandry, Aquarium of the Pacific; and Georgina Saad and Dení Ramírez Macías, 2011 Baja Splash Heritage Award honorees.



### Consulate General of the Republic of Indonesia, Los Angeles | Southeast Asia Day

Established in 1978 the Consulate General of the Republic of

Indonesia, Los Angeles provides service to enhance the bilateral relationship between Indonesia and the United States. The consulate serves the Indonesian communities within eight accreditation states in the United States: Arizona, California, Colorado, Hawaii, Montana, Nevada, Utah, and Wyoming, as well as several islands in the Pacific, such as Guam and American Samoa. The consulate was elected to perform a ceremonial blessing at the Aquarium's opening on June 20, 1998 and has since presented Indonesian dance performances and cultural exhibits each year at the Aquarium's International Children's Day Festival and Southeast Asia Day.

Pictured: Mrs. and Consul General Hadi Martono, 2011 Southeast Asia Day Heritage Award honoree, and Jerry Schubel, president and CEO, Aquarium of the Pacific.



### U.S.-Japan Council | Autumn Festival

In the wake of the devastating earthquake and tsunami that hit Japan in March 2011, the U.S.-Japan Council hosted a series of

fundraisers that raised more than \$2.6 million for its Earthquake Relief Fund. The goal was to provide immediate relief and support the long-term rebuilding of the Tohoku region of Japan. The organization also created an online resource, the U.S.-Japan Relief Network, providing information about fundraising initiatives and events across the country. Also, U.S.-Japan Council staff, members, and board members traveled to Sendai to assist in relief efforts and learn about next steps to recovery.

Pictured: U.S.-Japan Council West Coast Program Director Bryan Takeda, 2011 Autumn Festival Heritage Award honoree.

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*PRESIDENT AND CEO*
- MR. ANTHONY T. BROWN, MBA**  
*VP OF FINANCE/CFO*
- MS. BARBARA LONG**  
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## SEAFOOD FOR THE FUTURE ADDS NEW PROGRAMS AND PARTNERS

Sustainable seafood gets a boost from new programs that help both commercial fishermen and consumers make better choices.

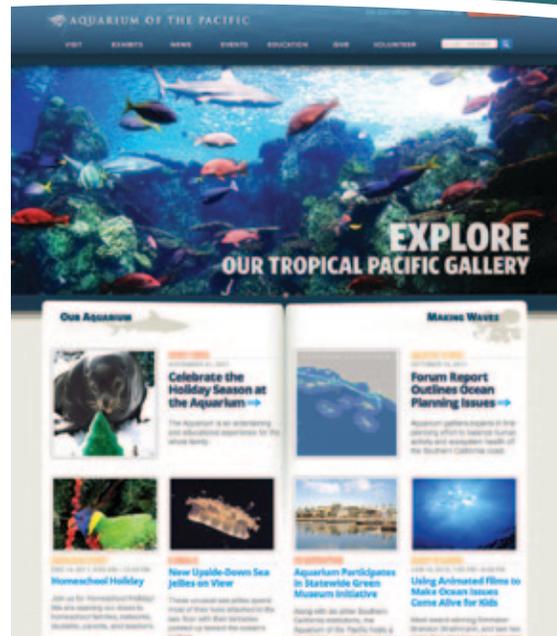
**S**EAFOOD FOR THE FUTURE (SFF)—the Aquarium of the Pacific's program to promote sustainable seafood—has continued to evolve, adding more partners and programs to its roster. The most recent of these is Trace and Trust™ Southern California, which was debuted at the Aquarium's eighth annual Sea Fare fundraising event in October 2011.

Trace and Trust is a network of fishermen, distributors, processors, and restaurants committed to providing full seafood supply transparency by telling consumers exactly who caught their seafood, as well as when, where, and how it was caught. The concept was first tested in Rhode Island, where local fishermen and chefs regularly use Trace and Trust. SFF learned about the program and wanted to bring it to Southern California, with the aim of rewarding fishermen with a higher price return; chefs with a fresh, higher-quality product; and the consumer for choosing local, sustainable seafood. Through Trace and Trust, consumers connect with the men and women their choice is directly supporting.

More seafood choices have been added to the SFF website (<http://seafoodforthefuture.org>), as well as recipes for enjoying these new selections. In light of recent data, fisheries like the Pacific common thresher shark have rebounded in terms of their biomass (the amount of fish in the fishery) and are now being harvested at sustainable levels. Management details have been added to each of the recommendations, where relevant, to highlight SFF's partnership with FishWatch. This also illustrates how effective fishery management can help in rebounding fisheries and keeping them sustainable.

More than twenty new partners have been added to the Seafood for the Future program, including new restaurants like Royal Hawaiian, Scott's Restaurant, and K'ya Bistro; partner distributors like Santa Monica Seafood; and brand partners like PureFish. The most recently added SFF partner distributor, Anderson Seafoods, will work with SFF to find suppliers who share a philosophy of sustainability and provide scientific support and educational materials to assist the company in its efforts. The Aquarium's team will provide Anderson Seafoods with scientific information and educational materials to help the company increase its purchases of sustainably wild-caught and farmed seafood.

SFF has also brought more visitors to the Aquarium. In the month of July 2011 alone, over 3,400 guests experienced the Aquarium of the Pacific after visiting one of SFF's partner restaurants and ordering a sustainable seafood dish.



## VISIT OUR NEWLY REDESIGNED WEBSITE

**T**HE AQUARIUM OF THE PACIFIC recently unveiled its newly redesigned website, which features a new look, easier access to Aquarium news and events, and a deeper look at the Aquarium's work in the worlds of science and conservation.

In redesigning the website, designers focused on engaging visuals that highlight the natural beauty of the animals and habitats featured in the Aquarium's exhibits. On the homepage, visitors will notice content divided into two sections. On the left under "Our Aquarium," stories about animals, upcoming events, and other Aquarium happenings are highlighted. On the right under "Making Waves," stories about staff efforts and involvements that go beyond the walls of the Aquarium are featured. When Aquarium staff participate in an important study or organize a conference, or when the Aquarium releases a statement on current science, you can read about it here. You can also learn about the Marine Conservation Research Institute and its activities, the Aquatic Forum and Aquatic Academy courses, and some of the experts who work with the Aquarium or come here to share their knowledge in forums and lectures.

The website's new format makes it easier for visitors to access content, including full-length lecture videos and the Aquacasts, the Online Learning Center, blogs, and much more. Be sure to check out all the new site has to offer.



# NEW LEGISLATION PROTECTS MARINE LIFE

California's new Shark Protection Act was signed into law this past fall. Also, in Long Beach and other cities, plastic bags have been banned, reducing the amount of plastic that ends up in the ocean.

**T**HE SHARK PROTECTION ACT, authored by Assemblymember Paul Fong, was passed in California this past fall. It is expected to have a significant impact on sharks, potentially saving thousands of them from the destructive practice of shark finning.

Shark fins are highly sought after for shark fin soup. The dish is so popular in some countries that shark fins can sell for up to \$600 a pound, while shark meat is much less valuable. In some regions of the world where there is poor regulation, sharks are hunted for their fins.

Once the fins are removed from the shark, it is often thrown overboard to die. As many as 73 million sharks are killed each year, the majority for their fins, according to Assemblymember Fong's office. While shark finning is banned in the United States, trade in shark fins is not. However, with this new law the possession and sale of shark fins is banned in the state of California. The state joins Hawaii, Washington, Oregon, Guam, and the Commonwealth of the Northern Mariana Islands, all of which have similar laws on the books.

In 2009 the International Union for Conservation of Nature (IUCN) reported that about one-third of open ocean shark species—including hammerhead, great white, and oceanic whitetip sharks—were threatened with extinction. IUCN also reported that shark finning is one of the major threats to these animals in the wild. As top predators, sharks are particularly important for maintaining the balance of life in the ocean.

Another law benefiting marine life has recently taken effect in the City of Long Beach. Plastic bags have been banned in most grocery stores, pharmacies, convenience stores, supermarkets, farmers markets, and other retail outlets that sell food. And grocers must charge 10 cents for every paper bag customers use. Shoppers are being urged to bring in their own reusable bags to avoid the surcharge.

This has become a growing trend in several parts of the state. Cities like San Francisco, Malibu, and Santa Monica have adopted similar bans, and the Los Angeles County Board of Supervisors voted in November 2010 to ban plastic grocery bags in unincorporated areas of the county.

"Long Beach is ground zero for plastic bag pollution in Southern California. What starts out as litter on the street forty miles away from Long Beach becomes marine debris half buried on our beaches or floating in a few feet of water off our shores," Vice Mayor Suja Lowenthal said in a statement introducing the ordinance in November 2010.

Plastic bags are among the top items of trash that end up in the ocean. Because they are lightweight and are easily picked up in the wind, they can be carried into waterways that travel to the ocean. According to ocean advocates, several thousand animals die each year because of plastic litter of all kinds in the ocean.

To learn more about the California Shark Protection Act, visit <http://asmdc.org/members/a22/news-room/press-releases/item/3106-governor-signs-fongs-historic-california-shark-protection-act>.

To learn more about the plastic bag ban in Long Beach, visit <http://www.longbeach.gov/news/displaynews.asp?NewsID=4997&TargetID=55>.



California Shark Protection Act



Long Beach Plastic Bag Ban

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