



MONTEREY BAY AQUARIUM

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MONTEREY BAY AQUARIUM

NEWS RELEASE

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DIVE INTO THE EXPANDED HABITATS OF ‘SPLASH ZONE: OCEAN HOMES’ IN 2008

The best family exhibits at the nation’s No. 1 family aquarium are getting bigger and better than ever with the opening of the revamped and expanded “Splash Zone: Ocean Homes” galleries at the Monterey Bay Aquarium.

Starting March 17, 2008 visitors can journey through an enchanting underwater forest, stroll beneath a sunlit kelp canopy, delight in the wonders of pot-bellied seahorses and pharaoh cuttlefish, pop up next to penguins and much more.

“Splash Zone: Ocean Homes” is a dramatic transformation of the award-winning family exhibit, which opened in April 2000 and has been drawing praise ever since for its engaging and playful atmosphere.

The expanded “Splash Zone” doubles the space where families with children can play and learn together about the ocean. The renovated galleries explore three ocean habitats – the Enchanted Kelp Forest, Coral Reef Kingdom and Rugged Rocky Shore – and combine new interactive experiences, games and live animals with visitor favorites from the original galleries.

“Splash Zone: Ocean Homes” features over 45 new and improved bilingual interactive exhibits, and many new animals, including leafy and weedy sea dragons, two relatives of seahorses and masters of camouflage; pot-bellied seahorses, one of the largest and most spectacular species of seahorses; and both splendid and spotted garden eels, whose bodies sway in the current like sea grass until the eels are frightened and retreat back into slime-lined burrows.

Children can crawl through a coral reef cave, make waves along the rocky shore and investigate creatures that live in a kelp holdfast. It’s all designed for family fun, and to build magical and lasting connections with the ocean for children of all ages.

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“We wanted to create a place where families can actively explore the ocean together, race to find hidden kelp forest animals and cuddle up in a giant clam,” said Exhibit Developer Jenny Sayre Ramberg. “We hope that fun encounters with ocean life will create lasting memories and an abiding love of the ocean.”

The expanded “Splash Zone” remains home to visitor favorites like the colony of blackfooted penguins, the den of moray eels and water play areas for kids and families. But visitors will find significant changes, including new animals on exhibit, a larger and more immersive touch pool area, a crawl-through kelp holdfast and walk-through kelp forest, plus 15 new interactive exhibits where children can discover how animals eat, hide and survive in the ocean.

These are the kinds of exhibits that earned the Monterey Bay Aquarium the No. 1 ranking from *Parents* magazine as the best aquarium for families in the nation; and similar honors in the Zagat Survey U.S. Family Travel Guide.

“We want families to have fun exploring ocean life together,” said Ramberg. “Children who bond with the natural world at an early age learn to love it, and will be more inclined as adults to protect it.”

The second floor of the aquarium’s signature three-story living Kelp Forest exhibit is the gateway into the new “Splash Zone: Ocean Homes” galleries. Visitors entering the Enchanted Kelp Forest gallery first encounter an impressive 40-foot-long touch pool where they can encounter the many plants and animals that live in the multi-layered and sheltered kelp forest habitat, including sea stars, abalones, sea urchins, kelp crabs, snails, sponges and sea cucumbers.

Interactive experiences and exhibits teach visitors about the lives of the animals that live in this rich habitat, from the top of the sheltering kelp canopy down to the haven of the holdfast – the root-like mass that anchors giant kelp to the seafloor.

A giant kelp holdfast sculpture invites visitors to explore a 10 times life-size kelp holdfast and discover animals that call this intricate structure home. Inside, explorers can touch the colorful ridges of oversized sea bugs, see the hairy arms of brittle stars, find a stash of hidden fish egg models and discover a living exhibit that’s home to a red octopus.

Dappled sunlight illuminates golden giant kelp blades streaming overhead where a canopy of kelp arches over visitors in a kelp tunnel exhibit – encouraging visitors to imagine themselves diving in a kelp forest. Another new live exhibit lets visitors view a kelp canopy from above and below the waters’ surface, where kelp fronds crawl with life and provide shelter to jeweled top snails, kelp crabs and well-camouflaged fishes.

The “Kelp Dive” invites families to dive into an “I Spy” game about how animals hide and survive in kelp forest habitats. Players will search a touch-sensitive mural of a richly populated kelp forest for six animals found on their “dive card.” They’ll be rewarded with a fun video clip after they find all six animals.

Interactive exhibits and experiences are integral to “Splash Zone: Ocean Homes” and can be found throughout the expanded galleries. At one new exhibit, children can race each other to grow a giant kelp plant by supplying the three essential things kelp needs to survive: sunlight, nutrients and moving water. In “Kelp Forest Mysteries” they can also use scientific tools to collect clues and uncover why a kelp forest isn’t thriving. And, in all three galleries children can stamp bookmarks to take home as souvenirs – each with a conservation message that connects their actions to the health of the ocean.

Coral encrusted walls welcome visitors into the colorful world of tropical reefs and the Coral Reef Kingdom gallery. Here, pharaoh cuttlefish and garden eels make their debut, joining such family favorites as moray eels and sea horses. Visitors will learn that the ghostly cuttlefish is not a fish at all; it’s a relative of the octopus. A realistic, life-size touch model of this highly intelligent animal demonstrates its unique way of catching food. Kids (and adults) can see and be seen as they make their way through a Coral Cave tunnel, where they’ll encounter tropical sea horses.

The popular Coral Reef Play and Coral Babies areas encourage imaginative and interactive play for younger children, including infants and toddlers. Costumes, ride-on sea creatures, and a giant clam chair invite children to imagine themselves at home in a coral reef.

The third habitat in “Splash Zone: Ocean Homes” is the rough and tumble environment of the Rugged Rocky Shore. Crashing waves and granite rocks are the backdrop for a splashingly fun waterplay exhibit. Children can learn how different boats maneuver through waves and how some rocky shore animals hang on to rocks while others ride the waves and “go with the flow.” A cylindrical display features clingfish and sea stars that can stick to rocks when the tide goes out.

The popular blackfooted penguin colony returns to a new and larger exhibit, complete with large flat screen video monitors to improve viewing during twice-daily feeding shows. A new penguin trivia game at the exhibit will answer frequently asked questions about these beguiling birds. (Or are they mammals? Hint: They have wings and beaks.)

But penguins aren’t the only birds that call the Rugged Rocky Shore home. Common murrelets are native to California’s Central Coast, nesting along rocky coastal cliffs. Their new location across from the penguins give visitors an up-close and personal look at these sleek, black and white diving birds that

are often confused with penguins. An interactive exhibit invites visitors to compare murre and chicken eggs to see which species is better equipped to nest on steep narrow cliffs. Video and audio bring visitors the sights and sounds of a raucous nesting colony of hundreds of birds.

The original “Splash Zone” was designed for families with children from infancy up to age 9. The expanded galleries include new experiences for families with children up to 12 years old. One of the more advanced interactive exhibits, “Gulp, Hunt, Filter, Slurp,” challenges children to match sea otters, barnacles and fish with their hunting method and food items. Once all three items are correctly aligned, players are rewarded with a high-definition video clip of the animal eating.

All of the changes to the renovated galleries reflect years of careful study about how children and families learn while they’re at the aquarium, and draw on learning principles established by children’s museums, early childhood education experts and informal education specialists.

Spanish-speaking visitors can find bilingual signage throughout “Splash Zone: Ocean Homes.” High-definition video displays feature bilingual captions, and interactive exhibits include bilingual instructions. Exhibit modifications also include better access for visitors with disabilities.

“Splash Zone: Ocean Homes” is included with regular aquarium admission of \$24.95 adult; \$22.95 senior (65+) and student (full-time college, with I.D.); and \$15.95 children 3-12 and the disabled. **(2008 rates)** Children under 3 are admitted free of charge. Discounted tickets for members of the military and their families can be purchased in advance at many California and Nevada installations.

The aquarium is located on historic Cannery Row in Monterey. It is open daily from 10 a.m. to 6 p.m. and in summer and major holiday periods from 9:30 a.m. to 6 p.m. (closed Christmas Day). Summer hours include extended weekend hours, from 9:30 a.m. to 8 p.m. on Saturdays and Sundays, between July 5 and August 31, 2008.

More information about “Splash Zone: Ocean Homes” and the aquarium in general is available online at www.montereybayaquarium.org; or by calling (831) 648-4888. Advance tickets can be purchased online or by phone from the aquarium at 1-800-756-3737. Seasonal specials, details about special events and programs, family activities and live web cams can all be found online at www.montereybayaquarium.org.

The mission of the Monterey Bay Aquarium is to inspire conservation of the oceans.

Splash Zone: Exhibit Facts

- What:** A dramatic transformation of the award-winning “Splash Zone” family exhibit. The renovated galleries encourage families to explore kelp forest, coral reef and rocky shore habitats; exhibits feature live animals and interactive learning experiences that appeal to children of all ages.
- Where:** Monterey Bay Aquarium, 886 Cannery Row, Monterey, California
- The exhibit:** A \$4 million, 14,000-square-foot family gallery. Takes visitors on an interactive tour through three ocean habitats – the Enchanted Kelp Forest, the Coral Reef Kingdom and the Rugged Rocky Shore. Features more than 45 new and improved interactive bilingual exhibits and several new and engaging live species, including: leafy and weedy sea dragons, splendid and spotted garden eels, potbelly seahorses and pharaoh cuttlefish. African blackfooted penguins return to a larger home with new flat-screen video monitors for easier viewing access during feeding shows. Exhibit highlights include a 42-foot-long touch pool teeming with sea life, an 8-foot-long kelp canopy tunnel where dappled sunlight illuminates live giant kelp blades streaming overhead; a 25-foot-long crawl-through model of a kelp holdfast that’s 10 times life-size and contains several hidden models of sea life and a living red octopus exhibit.
- What's unique:** The newly renovated galleries double the space where families can play and learn together about the ocean. “Splash Zone” was the aquarium’s first special exhibition created especially for families with young children, from infants to age 9. The new exhibit incorporates interactive experiences that appeal to children up to age 12. It’s based on years of study about how children and families learn while at the aquarium, and builds on learning principles established by children’s museums, early childhood education experts and informal education specialists. Interactive exhibits and experiences are integrated throughout each gallery. Visitors can identify and read about animals found in the Kelp Forest exhibit through touch screen monitors; children can race each other to “grow” giant kelp in one exhibit and uncover clues to discover why a kelp forest isn’t thriving in another; at the “Kelp Dive,” families can use a touch-sensitive mural and a “dive card” as part of an “I Spy” game to learn how animals hide and survive in the kelp forest. Special play areas for infants and toddlers facilitate learning through play.
- Admission:** Included with aquarium admission (**2008 rates**): \$24.95 adult; \$22.95 senior (over 65) and student (13-17 or college ID); \$15.95 child (3-12) and disabled. Children under 3 admitted free. Group rates available with advance booking for parties of 20 or more.
- Parking/shuttle service:** Parking in Cannery Row parking garage three blocks away. The WAVE visitor shuttle links the aquarium with downtown Monterey and waterfront destinations from 9 a.m. to 6:30 p.m. daily during peak summer season (Memorial Day to Labor Day).
- Information/advance tickets:** General information, (831) 648-4888, or online at www.montereybayaquarium.org. For advance tickets call (800) 756-3737, or order online at www.montereybayaquarium.org; Local hotels also sell advance tickets to their guests.

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“SPLASH ZONE: OCEAN HOMES” Gallery Tour

“Splash Zone: Ocean Homes” is a dramatic transformation of the aquarium’s original family exhibition that reintroduces visitors to three ocean habitats: the Enchanted Kelp Forest, Coral Reef Kingdom and Rugged Rocky Shore. Favorite animals and exhibits remain the centerpiece of the expanded galleries, which also includes more hands-on experiences, intriguing animals and double the area where families can actively learn together about the ocean. There are more than 45 interactive exhibits as well as colorful live displays featuring nearly 60 different species. Here’s a quick tour of the three galleries highlighting the new additions.

Enchanted Kelp Forest

Visitors begin their “Splash Zone: Ocean Homes” journey with the most dramatically transformed gallery within the expanded exhibit, the Enchanted Kelp Forest. Over a dozen new interactive exhibits and games, touchable models of marine life, a larger and more dynamic touch pool and a live, walk-through kelp canopy tunnel further immerse visitors in the kelp forest environment. Families will learn about the animals that live in this rich habitat, from the top of the sheltering kelp canopy down to the haven of the holdfast.

Visitors first encounter a live exhibit that displays kelp from a birds-eye-view, where they can explore the anatomy of giant kelp up close and learn about the animals that live in the kelp fronds that lie on the surface of the ocean. Nearby, a 42-foot-long touch pool allows families to gather together for intimate encounters with sea creatures and plants. The display is set at two different heights for easier access by children and the disabled, and an underwater camera offers closer views on a monitor overhead.

Visitors will find large exhibits along the adjacent wall highlighting inhabitants of varying kelp canopy zones. Coming full circle, the final live display visitors encounter before reaching the three-story Kelp Forest exhibit is the holdfast community. The root-like mass that anchors giant kelp to the seafloor is another neighborhood found at the base of these sea plants. Baby octopus, eels, crabs, sea stars, urchins and several fish species find safety within this tangled root environment.

Hands-on experiences and exhibits complement live exhibits, and engage visitors to dive deeper into the Enchanted Kelp Forest. At interactive exhibits across from the touch pool, children can race each other to “grow” giant kelp by adding the nutrients and waves that kelp needs to grow. Four multimedia stations invite visitors to solve a mystery about why kelp isn’t thriving. At a station nearby, children can stamp bookmarks to take home as souvenirs. An interactive mural and “dive card” demonstrate how well animals camouflage themselves in the multi-layered underwater forest, and a live, walk-through kelp forest tunnel gives visitors the perspective of diving beneath the dense kelp canopy. A 25-foot-long crawl-through model of a kelp holdfast engages visitors’ senses, allowing them to explore this underwater shelter without getting wet.

Coral Reef Kingdom

This colorful, interactive exhibit gallery introduces visitors to plants and animals found in the crowded coral reef habits, from comical-looking jawfish and fang-toothed moray eels to a wide variety of brightly colored tropical fishes, clams and the newest animals that call the Coral Reef Kingdom home – the splendid and spotted garden eels, Pharoah cuttlefish and a new species of tropical seahorse.

Coral-colored walls and touchable models further immerse visitors into this habitat, while hands-on activities that children can touch, crawl through, climb on and sit in teach them about coral reef animals. One new interactive exhibit lets kids touch a life-size replica of a cuttlefish and slide a knob to discover how this ornate animal catches prey; tentacles, the same length as the cuttlefish body (two feet) shoot out and grab a crab model, then retract. After children crawl into a giant clam for a photo opportunity, they can make their way through a coral reef tunnel filled with exhibits of seahorses, tropical fishes and moray eels, and then make a bookmark to take home as a souvenir. Each bookmark offers a conservation message that connects their actions to the health of the ocean.

Puppets and costumes await visitors in the Coral Reef Play area. Here, a climb-up, slide-down stage, along with colorful ride-on sea creatures, invite kids to play. Aquarium staff will be on hand to encourage families' and children's explorations. Across the way is Coral Cove, a place for babies and toddlers to play. Designed specifically for families with children ages three and under, the exhibit includes an infant crawl area, a waterbed play area, and games and toys to introduce even the youngest visitors to the ocean.

Rugged Rocky Shore

Leaving the crowded coral reefs behind, families enter the final habitat of the renovated "Splash Zone" – the Rugged Rocky Shore. Rock walls and a long wave crash exhibit with sea stars and anemones serve as the backdrop for a large, dynamic waterplay exhibit. Activities here invite families to discover how humans interact with the rocky shore. Kids learn how different boats maneuver through the water and create their own waves and water currents. (Waterproof aprons are provided.)

Nearby live exhibits let families experience how some ocean animals hold onto the rocks while others ride the waves. At one interactive exhibit, visitors can briefly drop the water level in a clear cylinder to see how northern clingfish and giant spined sea stars survive when the tide goes out.

Blackfooted penguins return to a larger exhibit equipped with new flat-screen video monitors for easier viewing access during popular feeding shows. A new penguin trivia game teaches players more about these beguiling birds. Across the way visitors learn more about another bird that is often mistaken as a penguin. The common murre is native to California's Central Coast, where it nests along rocky coastal cliffs. The murre's new location gives visitors an up-close and personal look at these sleek, black and white diving birds. Another new interactive exhibit invites visitors to compare murre and chicken eggs to see which species is better equipped to survive in nests on steep narrow cliffs. Through video and audio clips, visitors can experience the sights and sounds of a raucous nesting colony of hundreds of birds.

Around the corner, leafy and weedy sea dragons make their debut. Children can discover how the flamboyant appendages of leafy sea dragons help them camouflage themselves and survive in the wild at a new interactive exhibit.

“Splash Zone: Ocean Homes” Species Highlights



= new species for these galleries

Coral Reef Kingdom

Coral Reef Community

Various tropical fishes

It's hard to take your eyes off tropical fishes. They come in a rainbow of colors, interesting shapes and sizes and are usually very active, darting about here and there exploring, seeking food or protecting their territory. Several species in this bustling community exhibit may be familiar to home aquarium hobbyists, such as the longfin bannerfish, lawnmower blenny, squarespot anthias and marine betta. Kids will find a few of their favorite characters from “Finding Nemo,” including Bubbles, a yellow tang (*Zebrasoma flavescens*), and relatives of damsels Deb and Flo, in this exhibit. Head into the Coral Crawl tunnel to visit clownfish (*Amphiprion ocellaris*) Nemo and Marlin. You'll find Jacques, a cleaner shrimp (*Lysmata amboinensis*), in the moray eel exhibit, and Sheldon is, of course, in the seahorse exhibit.

Tropical fishes around the world are under threat by habitat destruction, pollution, global climate change and especially illegal collecting practices. Many pet stores sell fishes, corals, anemones and other creatures taken from depleted coral reefs, often after having been stunned by a squirt of cyanide. A good fish store should always be able to tell you which species are captive bred and which are collected, and whether or not by humane methods. All tropical fishes in the aquarium's collection are either captive bred, transferred from another aquarium or collected from the wild by reputable suppliers.

Various tropical corals

Corals consist of a colony of tiny anemone-like polyps, and are usually found in warm waters at a depth of less than 150 feet. Hard coral polyps secrete and deposit a solid skeleton of calcium carbonate. The colonies they form can be several feet wide, and a coral reef may be miles long. Soft corals don't form skeletons, and usually live among the hard corals on a reef.

Coral reefs are among the most imperiled ecosystems on Earth; many around the world have been damaged or destroyed by human activities. Threats to coral reefs include bleaching (from an increase in water temperature), algal blooms from a nutrient influx (from runoff containing fertilizers), and siltation from erosion caused by logging and damage by people, boats and commercial fishing gear.

Another big threat is illegal collecting. The Monterey Bay Aquarium works with state and federal officials who investigate coral smugglers by taking care of confiscated live specimens for possible use as evidence. Aquarium staff also cultures corals on-site, sending them to other zoos and aquariums to reduce collection of this precious resource from the wild.

Corals species in this exhibit include staghorn (*Acropora* sp.), brain (*Lobophyllia* sp.), velvet finger (*Montipora digitata*.), hammer (*Euphyllia* spp.) and yellow scroll (*Turbinaria reniformis*) hard corals, and finger leather (*Sinularia* sp.) and toadstool leather (*Sacrophyton* sp.).

Jawfish/Garden Eel Exhibit

Spotted garden eel



Heteroconger hassi

These elusive eels are usually found in colonies numbering in the hundreds. At first glance they can resemble swaying fields of sea grass. Get closer, however, and these slender eels disappear into their self-constructed burrows until the coast is clear. They are bright white and freckled with three large and hundreds of small black spots; they're also distinguishable by bright yellow eyes. They can grow up to 16 inches long, although you'll probably never see their full length – once they build their burrows they seldom leave. They feed on zooplankton, eggs and other edibles that drift past. Potential mates stretch over from nearby burrows to entwine bodies and spawn.

Spotted garden eels live in beds of seagrass or on sandy seafloors near coral reefs at depths between about 20 and 150 feet. Their region encompasses tropical marine waters of the Indo-Pacific region, from East Africa, north to Japan, south to New Caledonia and east to the Pitcairn Islands. Though not listed as endangered, their coral reef habitats are under immense pressure to survive the impacts of human activities and pollution.

Splendid garden eel



Gorgasia perclara

This species shares similar Indo-Pacific tropical habitat with spotted garden eels, as well as food preferences. These eels also tend to be found in large groups on sandy seafloors, and spend most of their time peeking out from self-made burrows. Their coloring differs dramatically from spotted garden eels, however. The splendid garden eel sports bright yellow/orange and white bands on its slender body.

Pharoah Cuttlefish Exhibit

Pharoah cuttlefish



Sepia pharaonis

One of the larger cuttlefish species, pharaoh cuttlefish can grow to two feet in length and weigh over two pounds. This species sports stunning iridescent blue bands and bright coloration, which is often described as flamboyant and ornate. As with other cuttlefish, it can rapidly change color as camouflage or to reflect its mood. The nervous system controls this transformation from one color to another, which can take less than a second – and in just a few seconds, it can flash a rainbow of colors. Pharaoh cuttlefish prefer warmer waters, and are native to the Indo-Pacific region from the Red Sea to Japan and Australia. When not hunting or swimming, they are often found buried in sand or gravel, or hiding under overhangs or in grottos where the light is low.

Cuttlefish have a complex propulsion and buoyancy system. Like a submarine, the cuttlefish fills tiny compartments in its cuttlebone with gas to help maintain neutral buoyancy. This helps it hover above the ocean floor, as its large cuttlebone prevents it from being very active or quick. Cuttlefish also have a sharp beak that can cut open flesh like a pair of scissors so it can use its tentacles to tear out the meat. Their blood looks blue-green because it uses the pigment hemocyanin to carry oxygen; our blood uses the red pigment hemoglobin. They also have three hearts – one for each set of gills and one for the rest of the body.

Flying Gurnard

Dactyloptena orientalis

This species might sound like a trapeze act, but it doesn't actually fly. Rather, flying gurnards use their exceptionally large pectoral fins to help them "walk" across the seafloor, looking for crustaceans and other invertebrates to eat. They also use their wing-like fins defensively, spreading them to scare away predators. While a gurnard's body is usually a dull grayish brown, the large fins are rimmed in bright blue, covered with dark spots and wavy lines and have feeler-like extensions on each fin ray. The *orientalis* species, which can grow to about 16 inches in length, is native to the Indo-Pacific down to depths of about 300 feet. These fish also grunt; "gurnard" is a derivative of a French term describing that sound. The gurnard's coral reef habitats are under extreme pressure from overfishing, pollution and global climate change.

Seahorse Exhibit

Various tropical seahorses

Hippocampus sp.

It's easy to see why seahorses fascinate people. With a head like a horse, a snout like an armadillo, a belly pouch like a kangaroo, a prehensile tail like a monkey and the ability to change colors like a chameleon, seahorses are not your average fishes. They can be brightly colored, and move slowly but gracefully, even using dance-like movements during elaborate courtship rituals. Another reason why seahorses intrigue us is because the males become pregnant. During mating, seahorse pairs join together, rising vertically in the water column, and the female deposits eggs into the male's brood pouch where they are fertilized. Pregnancy lasts anywhere from 10 days to six weeks; males then go into labor and bear live young.

The seahorses' unique biology and attractiveness to humans put them at risk. Worldwide, it appears that all 32 known species are in a state of decline. Research is under way to determine exactly why, but the apparent causes are collection for traditional medicine (which accounts for nearly 95 percent of the seahorse market), collection as souvenirs, collection for home aquariums and habitat destruction – they live in coral reefs, sea grass beds, estuaries and mangrove forests, four of the most important – and imperiled – coastal habitats around the world.

Rugged Rocky Shore

Leaping Blenny Exhibit

Leaping blenny

Alticus saliens

Combine an eel with a sucker fish and throw in a little superhero spunk and you've got a leaping blenny. These small (maximum four inches long), blue-grey fishes navigate the rocky intertidal zones of their Indo-Pacific habitats in two ways – swimming in the water and leaping between rocks. They can even breathe air when out of water. This ability to maneuver both above and below the water's surface might improve the leaping blenny's chances of finding food, and gives them other ways to escape predators. Despite their small size, they can leap several times their body length – sometimes onto or near other rocks covered in blennies; perhaps jostling for territory.

It's rare to see these fishes on exhibit in the Western World. The Monterey Bay Aquarium received its first batch of leaping blennies in 2003, as a thank-you gift from Tokyo Sea Life Park, its sister aquarium in Japan.

Nudibranch Exhibit

Various nudibranchs



Nudibranchs are truly among the jewels of the sea. Usually small and delicate, these sea slugs are best known for their beautiful colors, intricate patterns and striking forms; even their eggs are laid in lacy, spiral patterns. Their brilliant colors might serve to warn off predators. Nudibranchs are usually toxic, although they don't produce their own toxins. Rather, they recycle those from their prey – such as anemones – which they then secrete through the finger-like cerata on their backs.

Nudibranchs also have antennae-like appendages on their heads that biologists believe are sensory organs used to find food and a mate. They are hermaphroditic and can produce both sperm and eggs, but can rarely fertilize the eggs themselves. The suborder, Nudibranchia, is the largest suborder of heterobranchs (sea snails and marine gastropods), with more than 3,000 described species. These benthic, or bottom-dwelling, animals are found in oceans all over the world. Little is known about their conservation status in the wild.

Here are highlights of a few nudibranchs that are on exhibit in the expanded “Splash Zone”:

Hopkins rose

Hopkinsia rosacea is one of California's stunning nudibranchs. The specific name "rosacea" relates to its brilliant rose color, which it obtains after feeding on the pinky-red bryozoan, *Eurystomella*. It ranges from Coos Bay, Oregon to Isla San Martin, Baja California. It is common in waters from the intertidal to moderate depths.

White dendronotid

Dendronotus albus and other members of its genus are rather rare, but have been seen in abundance in recent years off California's Channel Islands. The scientific name "albus" comes from its white body color, which is uniform except the yellow-orange tips on its cerata. This species is found from the Kenai Peninsula in Alaska to the Los Coronados Islands off the northern end of Baja California.

Spanish shawl

Flabellina iodinea is one of the most visually stunning and common nudibranchs. The purple pigment in its body, the orange color in its cerata and the scarlet red in its rhinophores (antennae-like organs on their heads) are all derived from a single carotenoid pigment, astaxanthin, which is obtained from its hydroid prey. This pigment occurs in three slightly different states in the Spanish shawl, resulting in the three distinctive colors. This species, found mostly between Baja California and San Francisco, lays bright, pinkish-orange colored egg ribbons, usually on the stalks of its hydroid prey. When disturbed, *Flabellina iodinea* can swim away by flexing its body strongly and gracefully from side to side.

Sea lemon

Peltodoris nobilis are found between Alaska and Baja California. Sea lemons are deep yellow to burnt orange in color, and spotted with black. Fleshy rhinophores (sensory organs) and a rosette of gills protrude from the back of its slim, flat body. Sea lemons breathe through those gills; nudibranchs with these types of gills are in a family called dorids. Predators scorn sea lemons' fruity, penetrating odor and acidic taste. Because the neurons of sea lemons are larger and easier to access than human neurons, researchers find them useful to study nerve cells. In addition, the abundance of sea lemons makes their collection for research feasible and so far, sustainable.

Hermisenda

Hermisenda crassicornis

This stunning species is found along the west coast between Alaska and Baja California, as well as around Japan and South Korea. Its body is translucent with a very characteristic pattern of white or bluish-white lines, yellow-orange patches and bluish white dusting. The cerata are usually a shade of brown tipped with white and sometimes orange, each of which might also contain lines of a darker color. Hermisenda can be trained to navigate mazes using the chemical "smell" of their favorite foods.

Leafy Sea Dragon Exhibit

Leafy sea dragon

Phycodurus eques

This rare, beautiful member of the sea horse family is a "Splash Zone" visitor favorite. Its yellow-green, leaf-like fins and appendages give it an ethereal look, but also provide perfect camouflage amid the seaweeds and seagrasses of its native southern and western Australian habitat. Like the sea horse, the male sea dragon carries fertilized eggs until they hatch, but on a patch on his tail, not in a pouch on his abdomen. Leafy sea dragons can reach up to 16 inches in length.

Weedy Sea dragon



Phyllopteryx taeniolatus

Weedy sea dragons reach the same approximate size as, share the same habitat with and resemble their leafy sea dragon cousins, but have smaller and fewer leaf-like appendages. They also tend to be darker in color, but are nonetheless as fascinating. Like their leafy and seahorse cousins, weedy feed on brine shrimp, sea lice and other small crustaceans. Both types of sea dragons are threatened by habitat destruction, and potentially by the aquarium trade. Currently, sea dragons are protected under Australian fisheries legislation, and it is illegal to take or export them without a permit.

Potbelly seahorse

Hippocampus abdominalis



Potbelly seahorses get their name from their distinctive abdomens; mature males extend their already-prominent pouches to attract females. A large species, potbellies can grow to 12.5 inches long. They come in mottled colors ranging from white to deep browns, yellows and olive greens; males usually have striped tails. This species is found off New Zealand, Australia and Tasmania in seagrass beds and rocky reefs; some even curl up in hollows on the sandy seafloor.

White's seahorse

Hippocampus whitei



This seahorse is endemic to Australian waters and is common in Sydney Harbor; it's also known as the Sydney seahorse. This species can grow to about eight inches long, and has a distinctive feature on top of its head that resembles a crown. While they usually come in shades of brown, gray and black, they turn brighter shades of yellow and cream during their greeting ritual. Seahorses face many threats to their survival, including pollution and collection as souvenirs and for the Asian medicine markets. As of 2004, it is illegal in Australia to collect or harvest any seahorse, sea dragon or other syngnathiform species without a permit. Heavy penalties await lawbreakers – for corporations, fines can run up to \$55,000 and time in prison.

Penguin Exhibit

African blackfooted penguin

Spheniscus demersus

This species of penguin lives on the temperate shores of South Africa. An agile swimmer, it chases down its prey underwater, catching small fish and squid and swallowing them whole. Despite its short, stocky legs, these birds are quite nimble on land whether walking or climbing. This medium-sized penguin can grow to about 28 inches tall and weigh around eight-and-a-half pounds. Our colony consists of 17 birds, 6 females and 11 males – each with names representing places in South Africa. Most were captive born in or near 2000 at the Audubon Aquarium of the Americas in New Orleans. You can watch our colony live on our Penguin Cam at http://montereybayaquarium.org/efc/efc_splash/splash_cam.asp. Penguins as a species are declining in the wild, facing threats from habitat destruction, pollution, global climate change and a declining food supply due to the same factors.

Enchanted Kelp Forest

Melibe Exhibit

Lion's mane nudibranch

Melibe leonine

Although a nudibranch, the melibe is like no other sea slug. Instead of a rasping tongue, it sports a unique oral hood that captures small planktonic animals. To feed, a melibe firmly attaches itself to a kelp blade and then sweeps its raised hood downward or to the side. When food lands on the hood, the melibe sweeps together the two sides and its fringing tentacles lock in the prey. The hood contracts to force the captured food into the melibe's mouth. Like other nudibranchs, melibes are hermaphrodites (they have both male and female sexual organs), and fertilization is internal. Melibes can lay as many as 30,000 eggs, which are enclosed in a long, gelatinous ribbon. Melibes are found in kelp forests between Alaska and Baja California. This unique and amazing animal is neither collected nor hunted, but its existence depends on healthy kelp forests and other seaweed beds.

Holdfast Exhibit

California spiny lobster



Panularis interruptus

This shy, nocturnal crustacean leaves its cave or crevice shelter to feed on sea urchins, small clams, mussels and worms. Although it lacks the large claws of the Atlantic lobster, the California spiny lobster more than makes up for that shortcoming by having a hard shell, or exoskeleton, covered with sharp spines. It must molt, or shed, its exoskeleton to grow, which juveniles do a few times a year and adults once. Spiny lobsters may live to be about 25 to 50 years old and can grow to more than two feet long. They typically are found in rocky shore habitats from Pt. Conception south to Baja California. The California Coastal Divers organization holds the California spiny lobster in high regard as a delicacy. They encourage lobster hunters to take only what they can eat, and catch and release females to protect the diminishing population.

California moray eel



Gymnothorax mordax

This species is the only moray found north of Baja California, and the only eel in California without pectoral fins. It is commonly found in kelp forest habitats to about 120 feet deep, particularly among rocks and in crevices, usually with only its head protruding. A nocturnal and aggressive predator on small reef fishes, octopuses, shrimps and crabs, morays have a well developed sense of smell they use to hunt for prey. Adults can grow to five feet in length, and can live up to 30 years. Females deposit eggs that develop into leptocephalus – the flat and transparent larva of the eel. The transparency is due in part to its surprising lack of red blood cells.

With a large mouth full of razor-sharp teeth, morays may look menacing but are usually shy; they keep their mouth open to breathe. But if provoked, they will fight back and have been known to bite divers when startled or harassed. Morays exhibit the classic symbiotic relationship called mutualism. The moray's den is often lined with red rock shrimp, which eliminate bits of dead skin and parasites from the eel. The shrimp get to eat, and in turn are protected from predators. The moray will not eat the shrimp, even while they clean bits of food from all the way inside the moray's mouth, like living dental floss.

Red Octopus Exhibit

Red octopus

Octopus rubescens

The red octopus's normal color is red or reddish brown, but like other octopuses it can change quickly – in a fraction of a second – to yellow, brown, white, red or a variety of mottled colors. To defend themselves or for social signaling (such as for courting), octopuses change to color patterns that contrast with their surroundings. To camouflage themselves, octopuses change to color patterns that blend with their surroundings. They can also alter their skin texture to match sand or the surface of smooth or rough rocks. An octopus usually forages for invertebrates (crabs are a favorite food) at night, collecting several prey items before retreating to its den to eat at leisure. It kills its prey with venom secreted from its salivary glands, and cracks shells with its sharp beak. An octopus deposits empty shells in a pile outside its den, which is also known as an “octopus's garden.”

The red octopus appears abundant in intertidal waters between Alaska and Baja California. While tidepooling you might see a red octopus, but it's best not to touch it. Red octopuses have sharp beaks and are inclined to bite and then spit venom on the wound. Healing from an octopus bite could take weeks.

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MONTEREY BAY AQUARIUM

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FOR IMMEDIATE RELEASE

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FAMILIES GET A LARGER PLACE TO LEARN TOGETHER IN RENOVATED “SPLASH ZONE”

When the Monterey Bay Aquarium was named the nation’s most family-friendly aquarium by *Parents Magazine*, the editors cited the many interactive exhibits and “touchable, kid-friendly features” as a prime reason for the top ranking.

With the March 17 opening of its expanded and renovated “Splash Zone: Ocean Homes” galleries, the aquarium has created new and better interactive exhibits designed to promote family learning. These new exhibits will help kids engage with compelling ocean creatures and habitats, develop a connection to nature, and plant the seeds for environmental stewardship in the future.

The original Splash Zone galleries were designed specifically to encourage families to learn about the ocean together, drawing in part on a comprehensive study on family learning in science museums and other informal learning centers.

The study by the Philadelphia-Camden Informal Science Education Collaborative (PISEC) concluded that seven characteristics of exhibits encourage families to learn together, including exhibits that several people can look at or touch at the same time; that are comfortable for adults and children; are challenging enough to prompt group discussion; and that appeal to different learning styles. Using this study, aquarium developers created interactive and living exhibits that families could gather around, open-ended activities like waterplay and touch pools, and many other engaging exhibits for children from infancy to age 12. In addition, staff were trained to work with families and deliver engaging programs for families.

Once the original Splash Zone opened in 2000, the aquarium evaluated how visitors actually used and interacted at the exhibits. The results were very positive.

“Visitors liked it, and we liked it,” said Jenny Sayre Ramberg, senior exhibit developer for Splash Zone. “We feel it gave the opportunity for families to have a really fun engaging time together while they were exploring the world of the ocean.”

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As the exhibit creators had hoped, family learning was occurring at exhibits as adults and children shared experiences, showed things to each other, talked and played together.

In interviews conducted by the researchers, adults and children agreed that Splash Zone exhibits taught kids to care about nature. When asked how, the most common responses were that they provided opportunities to touch and feel animals, educated kids, and showed children that animals are alive, fragile, and need protection.

One young visitor to the coral reef area said that the “pretty fishes made you want to save it.”

The Monterey Bay Aquarium was one of the early adopters of the PISEC study’s results, and one of the first institutions to create an exhibit specifically to promote family learning using the findings.

Based on the success of the original Splash Zone, more museums have begun to adopt similar practices and create exhibits where children and parents can learn together. Minda Borun, the principal investigator for the PISEC study, has worked with a number of these institutions.

“Museums like the Bay Area Discovery Museum, the *USS Constitution* Museum and the Denver Museum of Nature and Science have applied the PISEC study’s findings to their exhibits and found that they can increase their appeal to a family audience and increase visitor involvement,” she said.

With the Splash Zone expansion, the aquarium has taken the successful concepts further and created even more interactive exhibits, with even more opportunities for adults and children to explore ocean homes. The biggest change from the original Splash Zone is “bringing the philosophy of family learning into the kelp forest habitat” Ramberg said.

As in the Coral Reef Kingdom and Rugged Rocky Shore galleries, the Enchanted Kelp Forest will “bring you closer and deeper inside the habitat, breaking down traditional exhibit barriers,” she said. The kelp forest interactive exhibits will also engage slightly older children (ages 8-12) by offering more challenging experiences.

In addition to welcoming regular aquarium visitors, since 2002 the Splash Zone exhibit has played host to a special group of families. The aquarium’s education staff has developed a close relationship with Head Start preschool centers in Monterey and Santa Cruz counties. Head Start is a national program that provides preschool services to low-income families. Through class visits to Splash Zone on weekday mornings before the aquarium opens, and through professional development for teachers, the aquarium currently reaches approximately 1,600 children ages 3-5 years old, their parents and 150 Head Start staff.

Many of the Head Start families are Spanish speakers, and the programs are conducted bilingually in Spanish and English. Addressing the needs of these visitors was another goal of the Splash Zone remodel. The new galleries have more bilingual signage, which will help aquarium education staff connect these local families to ocean animals, and steps they can take to protect them.

Aquarium educators say this is a critical issue at a time when many studies are documenting how children are becoming increasingly disconnected from nature. The *San Francisco Chronicle* reported on a recent survey of 333 California parents with teenagers that found “30 percent of teenagers did not participate in any outdoor activity at all” during the summer of 2007. From more time spent indoors in front of televisions and computers, to loss of open space due to urban development, and fear of injury and lawsuits, many of the causes and effects of this “nature-deficit disorder” are chronicled in Richard Louv’s 2006 book *Last Child in the Woods*. San Diego author Louv describes the many social, physical and psychological benefits nature can provide—benefits that today’s children are often not receiving.

In addition to the potential health risks from lack of exercise and outdoor experiences, studies indicate that children who don’t connect with nature as young people will be less likely to protect the natural world when they’re older.

Some researchers counsel that children must first learn to love nature before being taught about the threats facing the environment. David Sobel says focusing too much on the bad news can generate “ecophobia.” He cautions against bombarding children with “examples of environmental abuse,” fearing that “in our zest for making them aware of and responsible for the world’s problems, we cut our children off from the roots.”

In *Last Child in the Woods*, Louv cites the work of Louise Chawla, an environmental psychology professor from Kentucky State University, who interviewed leading environmentalists about which childhood experiences influenced their career choices. They generally cited time spent “outdoors in a keenly remembered wild or semi-wild place...and an adult who taught respect for nature” as keys to their growing sense of environmental stewardship.

Exhibit developer Ramberg says that Chawla’s work is directly applied in Splash Zone exhibits and programs. Staff and volunteers engage children and families with their passion for ocean and nature. Parents are encouraged to continue making connections with nature outside the aquarium, to spend time in nature with their children, and to show children that they care about nature by getting involved in conservation activities.

Through hands-on experiences, interactive and bilingual exhibits, and close encounters with animals, “Splash Zone” will continue to introduce families to the ocean environment. Its underlying vision is that by learning together, they’ll develop a new appreciation for ocean life, and a desire to protect the species they encounter.

“I hope that after they visit, children will feel like the ocean is a place they know,” Ramberg said. “It’s not like the moon; it’s not a scary foreign place. It’s a familiar place, it’s their place.”