



MONTEREY BAY AQUARIUM®

“The Open Sea” Exhibit Press Kit

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NEWS RELEASE

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For information contact:

Angela Hains: (831) 647-6804; ahains@mbayaq.org

Karen Jeffries: (831) 644-7548; kjeffries@mbayaq.org

**THE VAST AND THE FAST: EXPLORE THE OPEN SEA
AT THE MONTEREY BAY AQUARIUM IN JULY**



Newly transformed galleries offer close encounters with seabirds, sharks, jellies, turtles and more

The Monterey Bay Aquarium is transforming the way people see the oceans with a new perspective on the vast, virtually unexplored waters of the open sea. In July, the aquarium’s acclaimed Outer Bay galleries re-open as The Open Sea —shining light on epic migrations of ocean animals across the Pacific and the constant motion of life in the open ocean.

The dramatically reinvented Open Sea galleries carry visitors beyond our coasts to a vast world of deep, open water. Immense swirls of schooling fishes, pulsing jellies, skilled predators such as sharks and tunas, and seasoned travelers like sea turtles and seabirds share this wild territory. In one instant the water appears empty; in another, it teems with life.

“The open sea is a dynamic place where life is in constant motion,” says Senior Exhibit Developer Jaci Tomulonis. “Complex forces drive currents that, in turn, influence living conditions for ocean animals. The Open Sea galleries bring our visitors into the heart of this extraordinary environment through transformed live exhibits, new multimedia experiences and surprising artistic elements.”

In three different galleries, remarkable new species including tufted puffins, sandbar sharks and deep-sea jellies join aquarium favorites such as tunas, stingrays, sea turtles and the occasional great white shark to introduce visitors to life in this sweeping realm.

The “Out to Sea” gallery carries visitors into the ebb and flow of powerful currents where microscopic plankton and delicate jellies thrive. Get an up-close view of tiny phytoplankton that form the base of a food web on which everything from sharks and whales—and even people—depend.

Drift into the heart of a massive bloom of jellies and investigate how changing ocean conditions, some possibly influenced by human activities, may be causing jelly populations to explode. Currents rule in the open sea and a wide range of invertebrates—from microscopic copepods to black sea nettles with lacy oral arms up to 20 feet in length—flourish in this ever-shifting world.

But it's not just drifters that prosper here; some animals live fast in the open sea. In the million-gallon Open Sea exhibit visitors will meet animals that are built for speed, agility and endurance. Tuna, mackerel, barracuda and sardines flash through the water in streaks of silvery scales. Scalloped hammerhead and sandbar sharks appear to be languid swimmers until they spring into action and turn their supple bodies on a dime. The sandbar sharks, a new species for the aquarium, are easily identified by towering dorsal fins that slice effortlessly through the water.

The aquarium's pioneering white shark research project resumes in 2011, and a young great white shark could again be on exhibit in late summer. The field research team will also tag and track juvenile great white sharks in the wild, gathering information vital to the protection of these top ocean predators as they move through coastal waters in southern California and Mexico.

Joining the frenetic pace of The Open Sea are slow-moving sea turtles, pelagic stingrays and ocean sunfish (*Mola mola*), which have evolved their own methods of survival in this deep blue world.

The "Ocean Travelers" gallery brings some new animals to the aquarium, as it tells the story of marine animals that make long journeys on the ocean's migratory highways. Several exhibits are paired with art installations designed to connect visitors with ocean conservation threats that imperil open sea animals.

Perhaps some of the most accomplished ocean voyagers are sea turtles, many of which swim thousands of miles each year. The Ocean Travelers gallery will be home to juvenile green sea turtles in a new exhibit. Eventually young loggerhead sea turtles will also find a home here.

Tufted puffins, striking seabirds that sport distinctive sweeping yellow plumage on their heads during breeding season, will make their aquarium debut, too. Dubbed "sea parrots" by early sailors for their stout bodies, short wings and orange or red webbed feet, these engaging birds are expert divers and spend most of their lives in the water. Their new exhibit home gives visitors the opportunity to watch them dive, preen and swim.

"The open sea is one of the few truly wild places left on the planet," says Tomulonis. "In addition to introducing visitors to the diverse species that make their homes here, The Open Sea exhibit will offer simple ways to help protect ocean animals so they're around for generations to come."

The aquarium is located on historic Cannery Row in Monterey and is open daily except Christmas Day. Hours of operation vary by season. Daily schedules and aquarium information are available online at www.montereybayaquarium.org or by calling (831) 648-4800.

Advance tickets can be purchased online or toll-free by calling (866) 963-9645. 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.

Editors: Please contact Public Relations for images of animals and exhibits featured in The Open Sea galleries as well as throughout the aquarium.

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The Open Sea

Fact Sheet

- What:** A dramatic transformation of the aquarium's original Outer Bay exhibit galleries, featuring new exhibits and experiences in addition to visitor favorites in The Open Sea galleries.
- Where:** Monterey Bay Aquarium, 886 Cannery Row, Monterey, California.
- When:** Opens July 2, 2011
- The Exhibit:** The Monterey Bay Aquarium first introduced visitors to the mystery and wonder of the open ocean on a grand scale with the debut of the Outer Bay galleries in 1996. Fifteen years later the aquarium promises to awe visitors again with the mystique of the vast blue world that is seemingly the last true wild place on Earth. In July 2011 the aquarium will unveil its newly remodeled galleries, transporting visitors into the fascinating open sea. Signature exhibits include the million-gallon Open Sea exhibit and the mesmerizing jellies. But visitors will also find exciting changes in the 12,643 square-foot galleries, including a re-envisioned Ocean Travelers gallery housing some of the ocean's most impressive long distance swimmers, including young sea turtles and diving seabirds, like ornate tufted puffins. Here, visitors can learn about the threats seabirds, sea turtles, marine mammals and some sharks and fishes face on their long journeys and how we can ensure their safe passage. Highlights include a new interactive multimedia wall devoted to plankton, which form the base of the food web in the oceans, and a large gallery devoted to ocean travelers where innovative environmental art installations and artists' stories are paired alongside live exhibits.
- What's Unique:** The galleries represents the first time the aquarium has displayed both artwork and live species together in a permanent exhibit. The Ocean Travelers gallery features artists passionate about using their art to inspire viewers to care about the threats facing the oceans and marine life. Each installation celebrates not only sea life but the human connection with nature. Live species new to the aquarium include sandbar sharks, deep-sea jellies and tufted puffins.
- Admission:** Included with Aquarium admission: \$29.95 adult; \$27.95 senior (over 65) and student (13–17 or with college ID); \$19.95 child (3–12) and disabled (**2011 rates**). Children under 3 are admitted free. Group rates are available with advance booking for parties of 20 or more.
- Parking/shuttle service:** Parking in Cannery Row parking garage three blocks away. (Passenger drop-off in front of Aquarium.) Free MST trolley service links the Aquarium with downtown Monterey and waterfront destinations daily during peak summer season (Memorial Day to Labor Day).
- Information/Advance tickets** General information is available at www.montereybayaquarium.org or (831) 648-4800. Advance tickets are available online at www.montereybayaquarium.org or by calling (866) 963-9645. There is no service charge to print tickets at home or to pick them up upon arrival. There is a small fee to receive tickets by mail. Local hotels also sell advance tickets to guests.

The Open Sea

Amazing Facts about the Open Ocean

*** Indicates new species at the aquarium**

Pelagic waters – The open ocean, or pelagic waters, circle the globe and hold more than 97% of Earth’s living space, making it the single largest habitat for creatures on our planet. The volume of living space in the oceans accounts for 99 percent of the biosphere – the places where life is found.

Magicians of the open sea – The physical demands of each ocean habitat mold the bodies and lives of the species that live there. Many fishes in the open sea are counter-shaded, their top half dark and lower half light, making them difficult to see when viewed from a predators’ side-view perspective. Tunas, sardines and mackerel are masters of the disappearing trick, as their silver color and tight schooling patterns protect them from potential predators. Other oceanic species (such as mahi mahi) wear shades of silvery blue or green as camouflage.

Marine desert– The open ocean is the sunlit top layer offshore beyond the continental shelves. Scientists refer to it as the oceanic zone, but it’s often called the “marine desert” because nutrients are scarcer here than in shallow waters, and life can be sparse. Pelagic animals have adapted by traveling long distances to find food and moving swiftly through the water to catch prey. Some fishes, such as wahoo and sailfish, can have bursts of speed more than 60 miles per hour. Many pelagic fishes have larger amounts of red muscle compared with white muscle, allowing them to swim continuously over long distances. White muscle is utilized for quick bursts of activity while red muscle is used for continuous activity.

Gypsies of the sea – There are many open ocean species that make transoceanic migrations, including sharks, sea turtles and whales. These animals can be found in all three major oceans and the Mediterranean Sea, and often migrate thousands of miles across ocean basins to mate and raise their young. Marine Protected Areas (MPAs) – think Yosemite of the sea – in coastal habitats like kelp forests, eelgrass beds and mangrove forests can help these animals by protecting spawning grounds and nursery habitats for many of these species. By setting aside areas for protection from human activities such as intensive fishing, pollution and habitat disturbance the oceans and their endangered inhabitants will have time to recover.

ABCs of the oceans – Phytoplankton are the building blocks of all oceanic food webs. These tiny single or multi-celled drifting plants make up the pastures of the sea and use photosynthesis to manufacture sugars. They are grazed upon by zooplankton, fishes and krill; apex predators like sharks and dolphins thrive at the top of this food chain. The aquarium’s new plankton multimedia experience recreates the world of swarming plankton for visitors through tactile, visual and physical experiences.

Massive migration – The greatest mass migration of animals on Earth occurs twice a day in the upper reaches of the deep sea. Throughout the oceans, fishes, krill, copepods and other midwater animals rise to the surface at sunset to feed on abundant food in the upper oceanic layers, then descend at dawn to depths between 650 and 1,300 feet, seeking safety from predators in the darkness below.

Tuna kahunas – Visitors see yellowfin and bluefin tuna in the million-gallon Open Sea exhibit, but few realize that next door to the aquarium is the Tuna Research and Conservation Center (TRCC), one of the world’s leading institutions for the conservation and study of tunas. Founded in 1994 in collaboration with Stanford University, TRCC researchers tag giant bluefin tuna and track the fishes’ transoceanic migrations while electronic tags capture data about body temperature and the water temperatures tunas prefer as they swim and feed. Additionally, researchers are mapping tuna DNA to learn if bluefin in the Atlantic and the Mediterranean Sea share genes or represent genetically

distinct populations. It's all vital information that can help the most important commercial fish in the sea – one that's being rapidly overfished.

* **Sandbar sharks** – Also known as a thickskin or brown shark, the sandbar shark is one of the biggest coastal pelagic sharks in the world – reaching up to eight feet in length. It's notable for its distinctively large dorsal fin. True to its name, this species is often found over muddy or sandy bottoms in shallow, coastal waters though they venture out to the open ocean during seasonal migrations. Sandbar sharks dine on bony fishes, smaller sharks and rays as well as cephalopods, shrimp and snails. As with most shark species, shark finning and overfishing has devastated the sandbar shark population over the last quarter century.

Ocean sunfish – The largest bony fish in the world (weighing more than 4400 pounds and growing over 13 feet long) the ocean sunfish, or *Mola mola*, is often found basking on its side at the surface, which is how it earned its name. While the disc-shaped fish soaks in the sunshine, seagulls take the opportunity to dine on small parasites found on its skin. This relatively slow-moving fish has evolved an immunity to jelly stings, which is helpful since jellies make up the majority of its diet. Relatively little is known about the *Mola mola* and aquarium scientists hope to contribute to the body of scientific knowledge by closely monitoring the caloric intake and growth rate of animals on exhibit.

* **Parrots of the sea** – Puffins have several common names including “parrots of the sea” and “clowns of the ocean,” however “puffin” originally meant “fatling.” The unflattering description was meant to describe chubby shearwater chicks whose nests were on the same islands in Europe as the puffins. Those who've seen a puffin swim underwater claim they are hybrids between fish and birds because of how well they “fly” underwater. A typical dive time lasts 20 – 30 seconds but puffins can stay underwater for up to a full minute. Juveniles are less colorful than adults and even the plumage of mature puffins varies throughout the year. Come early spring, beaks and feet turn a vibrant orange in preparation for breeding season, but in winter they fade to duller shades of their summer color. Unbelievably their beak never stops growing, and the larger the beak, the greater the catch they bring back to the burrow. A puffin's beak is specialized to hold many fish, and their raspy tongue holds fish against spines on the palate, so the hunter is able to open its beak to capture more. An average catch is 10 fish per trip.

Conservation note: Less plastic on land means less plastic in the sea. Today tons of plastic trash swirls on ocean currents and seabirds looking for flashing fishes frequently mistake shiny plastic debris for food. With their stomachs full of plastic instead of fish, many oceanic birds risk starvation.

* **No eyes, no heart, no problem** – Ever since Monterey Bay Aquarium visitors were first introduced to the beauty of jellies on a large scale in “Planet of the Jellies,” a special exhibition that ran from March 1992 to September 1993, they have been one of visitors' favorite animals. Although jellies have no head, heart, brain, bones, cartilage or real eyes they're among the major predators in the oceans. Their tentacles carry stinging cells that are among the most complicated found anywhere in the animal kingdom. Jellies belong to the phylum, or group of animals, known as Cnidaria (ny-daria), which means “stinging thread.” Scientists call the adult form of jellies “medusae” after the mythological Medusa, a dangerous snake-haired woman whose horrifying looks paralyzed humans on sight, turning them into stone. In addition to the popular Pacific sea nettle and moon jellies, visitors will meet some deep-sea species for the first time ever.

Sea Turtles – Sea turtles are the great navigators of the sea; their North Star is always the beaches where they hatched, regardless of the distance. Young loggerheads migrate from nesting beaches off southern Japan to Baja California. Adults make the return trip instinctively. After hatching, green sea turtles scurry into the surf and grow up in offshore waters. Females return to nest on the tropical beaches where they hatched. What remains a great mystery is where sea turtles go to live after hatching and before returning to their nesting beaches.

Conservation note: As temperatures rise globally the beaches where sea turtles nest also are warming. Hotter sand leads to a higher number of female hatchlings. A greatly imbalanced male to female ratio can have dire impacts on the sea turtle population.

Great white majesty – In over 50 years of attempts worldwide, the Monterey Bay Aquarium remains the only institution to keep a great white shark on exhibit for more than 16 days, to get the animals to take food consistently from staff and to document the sharks’ successful return to the ocean. The aquarium will begin a 10th field season of white shark conservation research this summer and will attempt to bring a sixth young great white shark to the Open Sea exhibit. Some 2.5 million visitors have seen at least one of the five white sharks the aquarium had on exhibit between 2004 and 2009, and the aquarium has allocated more than \$1 million toward field studies of adult and juvenile white sharks – research unrelated to the effort to put a white shark on exhibit -- since 2002.

The exhibit of young great white sharks is part of the aquarium’s effort to change public attitudes toward and raise awareness about the threats facing these top ocean predators. In 2004, the first female white shark exhibited in Monterey became “the most powerful emissary for ocean conservation in our history,” according to aquarium Executive Director Julie Packard.

Conservation note: Data from tracking tags placed on adult and juvenile white sharks are providing new insights into their far-ranging travels in the eastern Pacific. Real-time tag data and published research can be found on the Tagging of Pacific Predators (TOPP) website, www.topp.org. The aquarium collaborates with the TOPP team, led by Dr. Barbara Block of Stanford University, and with researchers at the University of Hawaii, Centro de Investigación Científica y de Educación Superior de Ensenada, Mexico (CICESE), California State University, Long Beach, and the Southern California Marine Institute to tag young white sharks in southern California waters, and to collect DNA samples for analysis of the population structure of white sharks in California and Mexico.

Masters of illusion – Tricks of the trade make many aquarium exhibits look like a living slice of the ocean. Throughout The Open Sea galleries, the trick was to create an illusion of the endless blue ocean in a finite space. Special lighting and acrylic panels dyed blue at the factory gives the jellyfish exhibits the appearance of great depth, yet the largest is a little over a foot deep from front to back. In the Out to Sea gallery mackerel appear to swim past the viewing window in an endless school. In fact, they’re swimming in circles – disappearing out of view in one direction like actors heading backstage, then reappearing a few moments later at the far side of the exhibit. The million-gallon Open Sea exhibit appears to go on forever in part because it’s lined uniformly with 192 acrylic panels coated dark blue until they appear seamless and uniform.

We do windows – Big exhibits need big exhibit windows, and the aquarium has one of the largest around. The acrylic window in the million-gallon Open Sea exhibit has a viewing area 54 feet long by 15 feet tall and 13 inches thick. It weighs 78,000 pounds. Fabricated in Japan, it was shipped in five separate panels, assembled on site at the bottom of the unfinished exhibit, and lifted into place with a special crane installed just for that purpose. The other big window in the exhibit is on the ground floor in Vanishing Wildlife. Most of the exhibit windows are made of acrylic, not glass, because acrylic panels can be made larger, lighter and more transparent than glass. To keep the windows from being obscured by algae and animals that settle and grow on its surface, teams of volunteer divers clean the windows in major exhibits regularly.

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