



MYSTIC AQUARIUM

New England's Hands-On Aquarium



Media Guide • 2011

Mystic Aquarium, Institute for Exploration and Immersion Learning are divisions of Sea Research Foundation, Inc., a non-profit 501(c)(3) organization. The mission of Sea Research is to inspire people to care for and protect our ocean planet through education, research and exploration.

OVERVIEW

Mystic Aquarium, Institute for Exploration and Immersion Learning are divisions of Sea Research Foundation, Inc., a non-profit 501(c)(3) organization incorporated in the State of Connecticut. The mission of Sea Research is to inspire people to care for and protect our ocean planet through education, research and exploration.

Mystic Aquarium, one of America's leading aquariums, showcases the living collections, science and conservation work of Sea Research through exhibits, demonstrations and educational programs, emphasizing hands-on, interactive, live animal contact experiences for all ages. Hosting approximately 700,000 visitors annually, the aquarium is open year-round and is Connecticut's largest non-casino attraction. Mystic Aquarium is one of the few in North America housing beluga whales, Steller sea lions and other rare and remarkable marine animals.

The aquarium was founded in 1973 by scientists and researchers, including the inventors of "Instant Ocean," a formulation that enabled aquariums anywhere to provide pure, perfectly balanced sea water for their marine life collections. Since then, the organization has conducted pioneering research on animal disease, animals and ecosystems and other facets of inquiry that have contributed significantly to the knowledge base of aquarists and marine biologists internationally. The aquarium's Seal Rescue Clinic has been a leader in rescuing, rehabilitating and returning stranded marine animals to the wild for more than 30 years, treating more than 375 animals and releasing more than 175 back into the ocean.

The Institute for Exploration (IFE) at Mystic Aquarium was founded by famed oceanographer and National Geographic Society Explorer-in-Residence Dr. Robert Ballard, widely known for his discovery of the *R.M.S. Titanic*, *Bismarck*, *PT-109* and many others. Under Dr. Ballard's leadership, IFE has assembled a team of world-class deep-ocean engineers and oceanographers with renowned archaeologists and geologists to pioneer the emerging fields of deep-sea archaeology and geology. Dr. Ballard's advancements in deep-sea technology have made it possible to uncover secrets of the world's oceans. These discoveries are featured in Dr. Ballard's ever-changing *Challenge of the Deep* exhibition at Mystic Aquarium. National Geographic, an expedition partner, films many of these voyages and builds programs around them for the National Geographic Channel.

With his Inner Space Center at the University of Rhode Island's Narragansett Bay Campus, which opened on June 1, 2009, Dr. Ballard brings information about oceanography, deep-sea archaeology and marine science from ships of exploration to students and researchers in real time via satellite and high-speed networks. Similar to NASA's Kennedy Space Center, the Inner Space Center serves as "mission control" for ships of exploration. Mission control distributes images from Dr. Ballard's new ship of exploration, the *E/V Nautilus*, and the National Oceanic Atmospheric Administration's *Okeanos Explorer* to a network of Exploration Command Centers, including one at the Institute for Exploration and one in the new Nautilus Live Theater at Mystic Aquarium.

Immersion Learning is Sea Research's national education division and was founded by Dr. Robert Ballard and Dr. Stephen Coan in 2002. Through live webcasts from scientific expeditions, curricula that encourage hands-on activities and an engaging website, this non-profit science education organization brings ocean adventures and discoveries from Mystic Aquarium, Institute for Exploration, the University of Rhode Island and the National Oceanic & Atmospheric Administration to more than 50,000 students across North America each year. Students – many of whom are considered at-risk – in grades 4 to 8 experience Immersion in classrooms, after-school settings, such as Boys & Girls Clubs, and other informal learning arenas.

Students are also able to experience deep-sea expeditions virtually through telepresence, a technology that uses satellites and high-speed networks to connect researchers live with audiences. These real-time webcasts form the basis of Immersion's curricula, designed to ignite interest and excitement in science, technology, engineering and math and to build a foundation for future careers in these fields.

Fast Facts

Mystic Aquarium, including the *Challenge of the Deep* exhibition, is a popular attraction, major education facility and cultural resource. It is unique among aquariums for its association with Dr. Robert Ballard and its impressive, growing scientific research base, educational programming and focus in ocean exploration, all of which make it especially broad and deep in its representation and celebration of our ocean planet.

ATTENDANCE

Annual Mystic Aquarium visitation is approximately 700,000 visitors. Research has shown that visitors come from throughout North America, with the majority coming from the Northeastern United States, primarily Connecticut, Rhode Island, New York and Massachusetts.

COLLECTION STATISTICS

Number of Exhibits: 70+
Number of Species: 340+
Number of Specimens: 4,895+

FACILITY

The 19-acre site includes outdoor exhibits, a marine mammal medical care facility, landscaped grounds, on-site parking for 806 vehicles and 137,070 square feet of covered exhibit space, including outdoor displays and an admissions area. The Indoor Exhibit building is 65,000 square feet, and the *Challenge of the Deep* exhibition building is 18,000 square feet.

We welcome people with disabilities or special needs. Those who desire assistance during their visit to Mystic Aquarium should call 860.572.5955 ext. 100, or see guest member services upon arrival.

HOURS

April to October: 9 a.m. to 6 p.m., **March and November:** 9 a.m. to 5 p.m., **December to February:** 10 a.m. to 5 p.m. Last admission entry is one hour prior to closing. Closed on Thanksgiving Day and Christmas Day. Hours are subject to change without notice.

ADMISSION RATES

Adults, \$29; seniors (65+) \$26; children (3-17) \$21; Aquarium members and children age 2 and under are free. Group rates (10 or more paying people) are available with advance reservation. (*Subject to change*)

MEMBERSHIP RATES

Family or grandparent membership \$169; single-parent family or single grandparent membership \$139; couple \$119; individual \$60; member plus \$249 (family membership and two free guests per visit); add-a-guest option \$40.

HISTORY

1973: October 6	The aquarium opened and was first operated by a privately owned, for-profit corporation known as Mystic Aquarium, Inc. The principal shareholder was Ohio industrialist and philanthropist Kelvin Smith. Mr. Smith was a practicing chemist with an interest in marine biology. In the 1950s, Smith (while on the Board of Trustees at the Cleveland Science Museum) began working with fellow chemist and board member William Kelley. Together, Smith and Kelley developed "Instant Ocean," a product that allowed labs and aquariums to create artificial seawater. This product is used at Mystic Aquarium and other institutions worldwide. In the 1970s, Mystic Aquarium, Inc. provided a venue to highlight this product.
1975	Beluga whales first arrived at Mystic Aquarium. The whales were collected in Churchill, Manitoba.
1976	<i>Seal Island</i> , home to Steller and California sea lions and harbor, gray and fur seals, opened.
1977: September	Mr. Smith established the Sea Research Foundation, Inc. as a non-profit organization incorporated in the State of Ohio, dedicated to aquatic education and research. The first assets of Sea Research Foundation, Inc. also included the building and grounds of the Aquarium of Niagara Falls, New York.
1979: April 30	Mystic Aquarium, Inc. was dissolved, and its entire \$2.6 million outstanding debt was assumed by Kelvin Smith, who previously had acquired the equity interests of the then remaining shareholders. The building, grounds and other assets were contributed to the foundation on May 1, 1979.
1989: August 2	The <i>Roger Tory Peterson Penguin Exhibit</i> , which today houses the aquarium's African penguins, opened.
1996	The Seal Rescue Clinic was built. The clinic serves as a temporary home for seals undergoing rehabilitation before release back into the wild.
1997: July 1	Dr. Robert Ballard and the Institute for Exploration joined the Mystic Aquarium. Dr. Ballard brought his desire to share with the world the wonders of the deep ocean and the emerging science of deep-water archaeology. The Mystic Marinelife Aquarium became Mystic Aquarium & Institute for Exploration.
1998: May 1	Sea Research Foundation, Inc., an Ohio non-profit organization, merged into a Connecticut non-stock charitable corporation. The foundation continues to operate as a 501(c)(3) non-profit organization.
1998-1999	A large renovation and expansion included the <i>Ocean Planet Pavilion</i> , main exhibit floor, gift shop, Penguins Café, Aquatic Animal Study Center, <i>Challenge of the Deep</i> and <i>Arctic Coast</i> , one of the largest outdoor beluga exhibits in the nation.
1999: June 28	The aquarium took in two pilot whales stranded at Hardings Beach in Chatham, Mass. After a successful rehabilitation, the whales were released on October 20.
2001	A California sea lion show replaced the dolphin shows in the Marine Theater.
2002	Immersion Learning, Sea Research's national education division, was founded by Dr. Stephen Coan and Dr. Robert Ballard.

2004	The state-of-the-art research laboratory opened, facilitating an integrative research program in aquatic animal health and allowing on-site analysis of biological samples.
2005	In a pioneering research effort in cooperation with SeaWorld, Sea Research Foundation performed the first-ever beluga whale artificial insemination.
2008: June	The aquarium's Penguin Task Force met for the first time to examine all factors possibly affecting the declining African penguin population and develop a plan to assist with education, research and conservation of the species.
2008: September 14	The Gurdon and Kathy Wattles Marine Mammal Observatory opened, allowing guests a look into the two pools of the Aquatic Animal Study Center for the first time. These pools house animals undergoing rehabilitation or in need of temporary housing.
2010: June 23	Sea Research Foundation opens the Nautilus Live Theater in the <i>Challenge of the Deep</i> exhibition and launches NautilusLive.org. Both allow people around the world to virtually join Dr. Robert Ballard and his team aboard his new ship of exploration, the <i>E/V Nautilus</i> , and follow the current expedition in real time.
2010: October 8	Sea Research Foundation assumed management of The JASON Project, an internationally recognized science program for middle-school students and an affiliate of National Geographic Society.
Today	Sea Research is an accredited, active member of the American Zoo and Aquarium Association (AZA) and the Alliance of Marine Mammal Parks and Aquariums (AMMPA). In addition, the aquarium's professional staff is affiliated with several industry organizations.

Dr. Stephen M. Coan Biography



Dr. Stephen M. Coan is president and chief executive officer of Sea Research Foundation, Inc., a 501c3 non-profit organization which operates Mystic Aquarium, Institute for Exploration and Immersion Learning. He is also chief executive officer of The JASON Project, an internationally acclaimed science program for classroom students, also managed by Sea Research Foundation in partnership with the National Geographic Society.

Dr. Coan has been an officer of Sea Research Foundation since 2001. He was appointed chief operating officer in 2004, launching an organizational turnaround. He became president and CEO in 2006 and has since raised more than \$20 million in private and public funds to bring Mystic Aquarium to the forefront of American aquariums. His reorganization, refinancing and rebranding programs under the Sea Research umbrella have enabled the organization to advance its mission nationally and internationally.

Prior to joining Sea Research Foundation, Dr. Coan was the chief education officer of the JASON Foundation for Education, now known as The JASON Project. He has served as executive director of two educational organizations and held faculty appointments at Tufts University, Bentley College and Cambridge College. He is chairman of the Greater Mystic Visitors Bureau, a director of the Chamber of Commerce of Southeastern Connecticut, a trustee of the Pine Point School, police commissioner in the town of Stonington, Conn., a trustee of the Cal Ripken Sr. Foundation in Baltimore, Md., and a founding trustee of the North American Marine Environment Protection Association.

Dr. Coan earned his bachelor's degree from Brandeis University and both a Masters in Management degree and a doctorate in social policy from the Heller Graduate School at Brandeis. He has served as a youth minister and mentor to at-risk youth for many years.

MYSTIC AQUARIUM CAMPUS AT A GLANCE

The ***Ocean Planet Pavilion***, reminiscent of 19th-century garden pavilions, was designed by the world-renowned architect César Pelli.

The ***Arctic Coast*** exhibit features three adult beluga whales. Mystic Aquarium is the only aquarium in New England to house beluga whales.

The **main exhibit floor** holds all of the fish and invertebrate exhibits. The gallery highlights zones of increased productivity throughout the world's oceans. These zones are characterized by the merging of sunlight and nutrients in the marine environment, resulting in a high abundance of biological life. The areas highlighted in the exhibits include *Jellies: The Ocean in Motion*, *Shark Encounters*, *Hidden Amazon*, *Coral Reef*, *Stingray Bay* and *Shark Lagoon*. The main exhibit floor encompasses a 12,500-square-foot area.

The **Marine Theater** is the site of the aquarium's daily shows featuring four California sea lions: Coco, Surfer, Boomerang and Jetty the sea lion pup.

Pribilof Islands exhibit is home to Steller sea lions, the largest of all sea lions, and a harbor seal.

Guests can see more than 25 African penguins at the ***Roger Tory Peterson Penguin*** exhibit.

Challenge of the Deep engages guests in the technology used by deep ocean explorers to find ancient shipwrecks and features photos, video and artifacts from several of Dr. Robert Ballard's expeditions. The exhibit also includes ***Deep Sea 3D***, a thrilling XD theater ride. Search the dark and mysterious ocean depths from a deep sea submersible as you follow a sperm whale 9,000 feet to the ocean floor and encounter the legendary Giant Squid. In the **Immersion Theater**, interact with scientists and researchers during yearly live Immersion Learning webcasts. Join Dr. Ballard and his team aboard the *E/V Nautilus* in the new **Nautilus Live Theater**, where guests can talk with a *Nautilus* team member and watch images from the ocean floor in real time via telepresence.

The ***Ray Touch Pool*** gives guests an opportunity to touch these graceful creatures of the sea.

The ***Gurdon and Kathy Wattles Marine Mammal Observatory*** overlooks the Aquatic Animal Study Center – formerly off-limits to visitors – and provides a clear view of the animals in the center's two large, circular pools. The pools house animals that have been rescued and are undergoing rehabilitation, are new animals under a short quarantine before joining the other aquarium animals, or are from other facilities and need temporary housing.

In ***Birds of the Outback (seasonal)***, get close to hundreds of colorful cockatiels, parakeets and rosellas native to Australia in an aviary setting. With the \$3 exhibit entry fee (plus aquarium admission), guests receive a millet seed stick for feeding the birds right out of their hands.

Our popular **Beluga and Penguin Encounter programs** allow guests to wade in the water with a whale (seasonal), interact with one over a low window (seasonal), participate in a whale training session (seasonal) or visit with a penguin while learning about the animals' physiology and behaviors, as well as conservation of the species. These programs are available by reservation. Additional fees apply.

We welcome people with disabilities or special needs. Those who desire assistance during their visit to Mystic Aquarium should call 860.572.5955 ext. 100, or see a guest member services staff member upon arrival.

Exhibits

Main Exhibit Floor

The main exhibit floor houses all of the Aquarium's fish and invertebrate exhibits and encompasses a 12,500-square-foot area highlighting the many fascinating marine environments throughout the ocean planet.

Jellies: The Ocean in Motion

Immerse yourself in a world of jellies. From the outside, this exhibit resembles a 20-foot-tall jelly floating on water. Under its dome, special lighting showcases the fascinating features of six very different jelly species: moon, purple-striped, spotted, lagoon, comb and upside-down. Trickling water from a two-sided water wall inside the exhibit adds to the experience. The wall, featuring streams of water running over hand-blown glass fish and jellies, was made possible by the creativity of renowned local artist Jeffrey P'an of Prescient Studios in Stonington and Aquarion Water Company.

Shark Encounters

Located at the heart of the main exhibit area, the *Shark Encounters* exhibit houses six white-spotted bamboo sharks. Guests can walk right up and touch the backs of these sharks as they glide by. The shallow, 20-foot-long pool allows for easy reach of these docile, bottom-dwelling sharks, all one to three feet in length.

Coral Reef

The 30,000-gallon *Coral Reef* exhibit allows for above- and below-water viewing. Colorful, tropical fish and Green Moray eels swim against a backdrop of 30 types of manmade coral.

Stingray Bay and Shark Lagoon

These two large habitats house marine animals found further into the ocean's depths. Several species of sharks reaching up to six feet in length swim in *Shark Lagoon*, and Atlantic, Southern and cow-nosed rays, as well as Charlotte the Green sea turtle, reside in *Stingray Bay*.

Charlotte came from the Georgia Sea Turtle Center on Jekyll Island, Ga., in November 2008. She was found stranded on Cumberland Island, Ga., and taken to the center in January 2008. Her shell and hind flippers were covered with barnacles, and she had been struck by a boat's propeller. A CT scan and MRI revealed a fracture or break in her vertebrae and a compressed spinal cord, which partially paralyzed her intestinal tract and hind flippers. The paralysis causes gas to accumulate, which makes it difficult for her to dive. As a result, she floats with her rear end up. Though Charlotte has been deemed non-releasable, there is a chance that, with long-term rehabilitation, she could recover and possibly be released back into the ocean in future years. Until then, she is serving as an ambassador for her species, educating visitors on how they can help protect sea turtles.

Fluorescent Corals

Sliding color filters reveal vibrant, glowing corals. This exhibit shows how fluorescence is produced and its presence in everyday life, the dwindling populations of coral and the amazing ways in which fluorescence is being used in important research projects to find cures and treatments for Alzheimer's and cancer.

Hidden Amazon

From the moment guests walk through the *Hidden Amazon* exhibit's archway, they are transported to this exotic region, where poisonous frogs and schools of piranha create a colorful world.

Moray Eels and Barracuda

Get an up-close look at barracuda and purplemouth and green moray eels.

Mermaid's Purse

Guests can watch shark, skate and ray embryos develop and hatch in this rare, constantly-changing exhibit.

Discovery Lab

Interact with animals from Long Island sound in this 200-gallon touch-and-learn exhibit. Grab a crab, lift a lobster or scoop up a sea star.

Sea Lion Shows

Held in the 1,200-seat Marine Theater, these educational daily shows feature Jetty the sea lion pup, Boomerang, Coco and Surfer engaging in enrichment activities and veterinarian behaviors.

Challenge of the Deep

What vast areas are inaccessible and locked in eternal darkness? The *Challenge of the Deep* exhibition is dedicated to revealing what lies on the ocean floors. Conceived by renowned deep-sea explorer and Institute for Exploration President Dr. Robert Ballard, the exhibit brings visitors on a voyage of discovery through cutting-edge technology. Dr. Ballard's famous expeditions are showcased in this multi-media exhibit, which introduces guests to the emerging science of deep-water archaeology and recent discoveries.

Guests can relive Dr. Ballard's trip to the *R.M.S. Titanic*, which he discovered 1985; discover hydrothermal vents on the sea floor; explore some of America's most protected marine sanctuaries; and see artifacts recovered from Roman trading ships. *Challenge of the Deep* also presents interactive displays, artifacts and findings from IFE's most recent expeditions off the continental shelf of the Eastern United States and in the Mediterranean, Black Sea and beyond.

Nautilus Live Theater

Dr. Ballard's deep-sea exploration comes alive in the Nautilus Live Theater, where guests join him aboard his new ship of exploration, the *E/V Nautilus*, as he explores the last great uncharted territory. A *Nautilus* team member monitoring the expedition's progress from shore hosts daily live shows in this new state-of-the-art theater space, which delivers the expedition in high definition on a big screen.

Guests see footage from Dr. Ballard's previous expeditions, hear about his greatest discoveries and expedition goals during an intimate interview, get the latest news on shipboard activities and recent findings, and see the incredible tools used to explore our oceans in action. They can also talk with a *Nautilus* team member and watch images from the ocean floor in real time via telepresence.

Arctic Coast

Mystic Aquarium is the only aquarium to house beluga whales in New England. This impressive exhibit is more than an acre in size, holding more than 750,000 gallons of water. It is one of the largest outdoor beluga exhibits in the nation. The exhibit is contoured to mimic the belugas' natural habitat in arctic and sub-arctic shallow estuaries, and most of the plantings are representative of species native to the Pacific Northwest.

Current residents:

KELA (KEE-la): Born in 1981. She has never mothered a calf, but underwent the first-ever beluga whale artificial insemination in 2005. Her full name, Kelalukak, means "leader."

***ID TIP:** Kela has dark grey spots along the side of her body and dorsal ridge.

NAKU (na-KOO): Born in 1981. Like Kela, Naku has never mothered a calf. Her full name, Nakungayok, means "cross-eyed" or "bright-eyed."

***ID TIP:** Naku is the dominant female in this exhibit. She is light gray with a white patch on her dorsal ridge and a white crescent moon shape on her head.

JUNO (JOO-no): Born in July 2002. He came to Mystic Aquarium on a breeding loan from SeaWorld Orlando in January 2010.

***ID TIP:** Juno has dark gray coloring around his eyes.

Each whale is 11 feet long and weighs over 1,000 pounds, with weight fluctuating with the season.

Pribilof Islands

The *Pribilof Islands* exhibit is home to a harbor seal and six Steller sea lions, including Astro, the celebrity sea lion featured on the *Today Show* in 2008. The exhibit is designed to recreate the natural setting of the Pribilof Islands and California Coast. The aquarium is one of only four facilities in North America to house Steller sea lions.

Current residents: Harbor Seal

Rocky: Rocky was born in 1980. He is the oldest marine mammal at Mystic Aquarium. In his lifetime, he has fathered two pups.

Current residents: Steller Sea Lions

Kodiak: Kodiak was brought to Mystic Aquarium in 2002 from the Vancouver Aquarium. He is approximately 13 years old.

Astro: Astro was relocated to Mystic Aquarium from California in 2008. He was featured on the *Today Show* in March of 2008 for his role in an elementary school walkathon, in which he did three quarters of a lap around the track. Astro was released three times before being deemed non-releasable after his “walk” with the kids.

Juneau: Juneau was born at Mystic Aquarium in 1984.

L.A.: L.A. (short for Little Angel) was born in 1987 at SeaWorld in Texas.

Eden: Eden is a female who arrived in October 2008 from Vancouver Aquarium. She was born in 2000.

Mara: Mara arrived with Eden. She was born in 2003.

Roger Tory Peterson Penguin Exhibit

Home of more than 25 African penguins, this exhibit allows for above- and below-water viewing of the penguins. The exhibit is a freshwater exhibit. Previously, the penguins were given a salt supplement; however, in 2003, Mystic Aquarium's Dr. Lisa Mazzaro completed a study showing that the salt supplement is not necessary. This information was especially interesting to other facilities that display African penguins and important for the continued health of more than 25 African penguins under human care.

Institute for Exploration

The Institute for Exploration (IFE) is led by Dr. Robert Ballard, its founder and president and the man who discovered the *R.M.S. Titanic* in 1985. This award-winning former Navy officer retired after 30 years as a scientist and director of the Center for Marine Exploration at Woods Hole Oceanographic Institute. He is currently an explorer-in-residence for the National Geographic Society.

Deep-sea archaeology is IFE's specialty, and it has the aim of developing this field with the use of today's ever-growing technology, such as robotics, advanced mapping and imaging systems, and remote-operated vehicles. A pioneer in this undertaking, IFE is at the forefront of undersea exploration and has been involved in a large number of expeditions around the world.

National Geographic, an expedition partner, films these expeditions and produces films and programming for the National Geographic Channel and other channels with the footage. Dr. Ballard and the IFE team's work has been featured on the National Geographic Society's "Wild Chronicles" series on PBS and on National Geographic Society television specials such as "Ghosts of the Black Sea" and "Titanic: The Final Secret."

The Facility

The facility adds approximately 2,400 square feet to the overall footprint of the aquarium and contains operations and development offices, a state-of-the-art conference facility and administrative offices for Dr. Ballard and other members of the IFE team.

A high-tech lab processes the massive amounts of field data coming in from IFE missions and enables team members to view and assess field images such as sonar targets, video and still images from deep-water explorations. The IFE production team uses many of these images and footage to create *Challenge of the Deep* exhibits and educational programming.

University of Rhode Island

The University of Rhode Island's Institute of Archaeological Oceanography (IAO), founded by Dr. Ballard in 2003, is the academic arm of IFE. IAO is a joint masters and doctorate program that provides graduate students the opportunity to participate in IFE expeditions, which supports their Ph.D. program research.

Inner Space Center

Opened on June 1, 2009, on the University of Rhode Island Graduate School of Oceanography campus, the Inner Space Center serves as "mission control" for Dr. Ballard's new ship of exploration, the *E/V Nautilus*, and the National Oceanic Atmospheric Administration's *Okeanos Explorer*, distributing images and information from these ships to a network of Exploration Command Centers across the United States in real time via Internet2 Telepresence, a technology that uses satellites and high-speed networks, connects the ship and its discoveries live with audiences ashore.

The Inner Space Center's other mission is to provide hands-on, real-time educational experiences for students and teachers. The center relays all incoming data and live video to telepresence modules at research institutions throughout the country. It also produces special programs and provides one-on-one live interaction with scientists to the public, school systems and after-school programs, in partnership with Immersion Learning. One of the downlink sites is the Nautilus Live Theater, located in the *Challenge of the Deep* exhibition.

Immersion Learning

Immersion Learning, a division of Sea Research Foundation, Inc., is dedicated to helping students and educators better understand and appreciate the important role that the oceans play in their lives, help them succeed academically and inspire them to pursue careers in science and related fields. Founded by Dr. Robert Ballard and Dr. Stephen Coan in 2002, Immersion Learning brings the exciting world of ocean research and exploration to students in formal, informal and after-school settings.

Immersion Learning takes advantage of cutting-edge technology to join researchers who are exploring one of the world's most important and threatened resources—our oceans. To help kids connect with the researchers and their work, Immersion Learning provides:

- **Fun, engaging, multimedia curricula** based on scientific research and exploration and designed to help kids succeed in mathematics, science and literacy.
- **Opportunities to discover many careers** in science and exploration by allowing kids to learn about and interact with role models who are involved in scientific expeditions.
- **Live webcasts from expedition sites** to give kids a chance to communicate with researchers directly about what they are seeing as they are seeing it and to give the public a better understanding of how scientific research and exploration contribute to the conservation and management of our ocean resources.

Immersion Learning programs are distributed to approximately 50,000 students each year through its network of Immersion sites at aquariums, museums, science centers and educational service centers. Many of these students are at-risk youth served through Boys & Girls Clubs that participate through a U.S. Department of Justice crime prevention program.

Education

Mystic Aquarium's educational philosophy articulates Sea Research Foundation's mission to advance knowledge of the aquatic world for present and future generations. Through inquiry-based teaching and hands-on activities, education programs foster scientific inquiry, promote conservation and encourage people to use and develop observation and analytical skills. The programs incorporate lectures, labs and field trips and use education materials that include live animals and equipment. Mystic Aquarium's education programs include:

Traveling Teachers: Mystic Aquarium's teachers travel to schools within a 75-mile radius to present curriculum materials related to exhibits at the aquarium and local waterways. Snails, lobsters, mussels, sea stars and hermit crabs are available for students to touch and examine, while activities, games, costumes and lab experiments reinforce concepts.

On-Site Classes and Presentations: Mystic Aquarium provides distinct educational opportunities for all ages, from pre-kindergarten through adult. For students, the classes supplement the visit to the aquarium and school science curricula. Teachers benefit from professional development programs. Education programs are both formal and informal, and some offer academic credit through the University of Connecticut. Mystic Aquarium member programs include marine science classes, overnights and conservation programs.

Sea School: Designed for children ages 3-5, Sea School is the country's first and only licensed preschool housed in an aquarium. Sea School sessions offer preschoolers a unique opportunity to experience the exciting marine world. Each class has children using their imagination, interacting with peers and participating in projects designed to develop a variety of skills.

Mommy and Me: Open to infants and children up to age 3, the one-hour program teaches young ones about the ocean and its many inhabitants through interactive activities in a stimulating classroom environment. Sessions include a hands-on activity, story time, music, arts and crafts and a visit from a marine animal.

Curriculum Materials: Resources related to marine science topics, as well as appointments to visit our resource library, are available.

Youth Conservation Corps: This group of high school students serves as ambassadors for the aquarium and its public conservation programs, such as the Amphibian Monitoring Project, a community effort to collect data on local amphibian populations.

Student Exchange Programs: Sea Research Foundation has formed an educational partnership with the American College of Thessaloniki, Greece. In 2008, three Sea Research instructors traveled to Greece to work with teachers and students to provide educational curriculum and materials for use with students of all levels. Students from the college will travel to Mystic this year to participate in a research-based summer program.

Sea Research, the people of Point Lay, Alaska, and the Mashantucket Pequot Tribal Nation have also collaborated on a unique student exchange program, which kicked off in February 2010. Programming focuses on research and conservation efforts around Alaskan marine mammal species, particularly the beluga whale, which Dr. Tracy Romano, senior vice president of research and zoological operations, studies in Alaska each year. The exchange program provides the opportunity to bring together the Inupiat community of Point Lay, aquarium researchers and the Mashantucket Pequot Tribal Nation to learn about each group's cultures and protecting our oceans.

Collaborative Programs: Sea Research partners on educational initiatives with the North American Marine Environment Protection Association (NAMEPA). NAMEPA operates as a voluntary, non-profit and non-governmental organization committed to preserving the marine environment through educating seafarers, port communities and children about the need and strategies for protecting this important global resource.

Internships: Interns come from universities and veterinary schools located around the world, and are assigned a wide range of activities, performed under the auspices of Mystic Aquarium professional staff. Openings for interns are available in almost every department, including education, husbandry, marketing, development, research and information technology.

Conservation Efforts

Every exhibit, program and event at Mystic Aquarium is centered on conservation and supporting Sea Research Foundation's mission to protect our ocean planet. Among the conservation efforts are:

Marine Mammal & Sea Turtle Stranding Program

Mystic Aquarium has been rescuing stranded marine mammals for more than 30 years, and is a founding member of the Northeast Regional Stranding Network. The network consists of independent organizations dedicated to caring for sick and injured animals and learning more about the reasons they come ashore.

The aquarium's rescue efforts are centered on the coasts of Connecticut, Rhode Island and Fishers Island, N.Y., but the Stranding Department has also supported network members from Maine to New Jersey to even Texas when needed.

Stranding department members care for sea turtles and marine mammals. In all, the aquarium has responded to more than 875 stranding calls from the public, treating more than 375 marine mammals and releasing more than 175 back into the oceans.

Aquarium scientists maintain data on marine mammal and turtle stranding and sightings as a means of monitoring the behavior and health of these animals, always vigilant for changes in patterns that might signal an unusual event such as a viral outbreak or a toxic algal bloom. The condition of these animals reveals much about the health of our oceans.

Amphibian Monitoring Project

Launched in 2008 – the year fittingly deemed the “Year of the Frog” by the Association of Zoos and Aquariums – the Amphibian Monitoring Project engages the help of volunteer amphibian enthusiasts in collecting data on local frog, toad and salamander populations throughout the spring and summer seasons. Data is gathered monthly at Bluff Point State Park, Pequot Woods and a conservation site at the aquarium.

The data collected is sent to the Department of Environmental Protection so that populations can be monitored year to year and analyzed to determine how the numbers are indicative of environmental conditions and change.

African Penguin Conservation Efforts

Over the last nine years, the world's African penguin population has decreased by 42 percent. In July 2010, the International Union for Conservation of Nature added the African penguin to the endangered species list. Staff members from the aquarium's animal care, education and research departments have joined forces to examine all factors possibly affecting the penguins and develop a plan to assist with education, research and conservation of these species.

Aquarium staff members regularly travel to South Africa to work with researchers and organizations like the Southern African Foundation for the Conservation of Coastal Birds (SANCCOB) on various conservation initiatives, such as SANCCOB's penguin bolstering project. Researchers are monitoring nests, rehabilitating injured or malnourished chicks and releasing them into new areas in an attempt to create new colonies.

The penguins at Mystic Aquarium contribute to research around the world. Aquarium staff members share information about the colony here to help researchers better understand birds in the wild. The penguins also play an integral role in the African Penguin Species Survival Plan, and are ambassadors for their species, raising awareness of the plight of the African penguin through public events and the Penguin Encounter program.

Animal Research

Research at Sea Research Foundation focuses on the advancement of animal husbandry and aquatic biology. Research takes place both in the field and on-site in a variety of disciplines, including immunology, endocrinology and marine ecology. Findings are shared with other marine facilities through workshops, lectures, seminars and professional conferences, and are published in peer-reviewed scientific journals.

Major Areas of Focus in Research and Veterinary Services

The Research and Veterinary Services (RAVS) Department is currently focusing on four major areas of aquatic animal research that are all interconnected.

Neuroimmunology is the study of the nervous and immune systems, how these two systems communicate with each other and how stress and environmental influences, as perceived by the nervous system, may affect the immune system and overall health. The department's study of neuroimmunology will contribute to an understanding of the marine mammal immune system, such as what factors affect it and how it compares with the immune systems of other species, including humans.

Animal nutrition plays a key role in understanding the health of an individual as well as a population's fitness. Although many nutritional studies originate in response to a medical issue, such as iron storage disease or salt supplementation for aquatic species maintained in freshwater exhibits, there are inherent advantages to a proactive approach.

Veterinary science has seen the achievement of numerous milestones in aquatic medicine, but there still exists a great need for improvement in diagnostic modalities that will enhance diagnosis and preventative medicine.

Knowledge of **infectious diseases** in aquatic animals is growing dramatically. RAVS strives to focus on studies that will improve understanding of the pathogenesis, etiology, prevalence and zoonotic potential of diseases in marine species. These studies are critical for the health and conservation of marine species and will also pose significant implications for human health.

Significant Research Achievements

- Pioneered the development of artificial seawater (Instant Ocean) used by public aquariums, home hobbyists and marine research facilities worldwide.
- Advanced the husbandry of aquarium fish through the development of nutritionally complete gelatin diets and methods for stabilizing water chemistry and reducing parasites.
- Discovered methods for successfully treating and preventing several potentially fatal diseases of marine mammals.
- Successfully established a research and breeding program for the northern fur seal, a depleted species displayed at only four other facilities in North America.
- Established the optimum requirements for vitamin A dietary supplements in Northern fur seals. Vitamin A is crucial to good health, but may cause health problems if over-supplemented.
- Completed the Aquatic Animal Study Center (AASC). This research and animal care facility is essentially a "medical clinic," allowing aquarium veterinarians and staff to effectively provide care for marine animals. The facility is used for the rehabilitation of critically ill, stranded marine mammals including seals, whales and dolphins. The facility also contains a state-of-the-art research laboratory.
- Conducted a study showing that African penguins living in fresh water exhibits don't need salt supplements.
- Contributed to research behind the "Dolphin Safe" label.

Ongoing Research Studies

- The Impact of Marine Origin Brucella on Marine Mammal and Human Health
- Investigation of the Marine Mammal Immune System and Impacts of Stress on Health
- Health and Risk Assessment (HERA) of Bottlenose Dolphin Populations Project
- Monitoring hematology, plasma chemistry, immunology, stress and molt hormones throughout molting periods in penguins
- Effect of Fish Analog Diet on Beluga Whale Health and Body Condition
- Artificial insemination of beluga whales
- The effects of environmental change on the health of belugas in the wild

Annual Events

Earth Day Celebration and Coastal Clean-Up – April

Visitors can learn ways to reduce their imprint on the world through crafts, games and other hands-on conservation-based activities. That same weekend, join aquarium staff for a clean-up at Bluff Point State Park in Groton.

Educators Open House – Fall

Teachers and their families are invited to learn about the many educational opportunities Mystic Aquarium offers throughout the school year, as well as explore the exhibits and classrooms after the crowds have gone home.

Ocean Commotion – September

Ocean Commotion, the aquarium's largest fundraising event, is attended by more than 300 leaders in business, science and cultural and community affairs. Sponsorships are available as well as tickets, which sell out quickly. All donations are acknowledged in the program and are tax-deductible to the extent allowed by law.

National Estuaries Day & Clean-Up – September

This fun-filled day includes educational activities, games, storytelling and live animal presentations. That same weekend, help clean up a local estuary at Bluff Point State Park in Groton, and join millions of others around the world participating in the International Coastal Clean-Up Initiative.

Penguin 5k Run & Walk – October

The annual Run/Walk for the Penguins supports African penguin research and conservation efforts both at the aquarium and in South Africa. Participants get free admission to the aquarium on race day. Prizes, such as Penguin Encounters and original art created by the penguins, are given to the top fundraisers and top finishers in each division.

Fall-o-Ween Fest - October

Mystic Aquarium turns toward the dark side for three days and two nights of Halloween fun. Festivities include haunted storytellers, games, interactive activities, "scary zones," special animal shows, a costume contest and hundreds of jack o' lanterns donated by local Boy and Girl Scout troops.

Family Overnights – Year-Round

Family Fun Overnights include an evening of games, crafts, snacks and the chance to see the aquarium at night. Families sleep on the main exhibit floor, surrounded by fish and invertebrates. A continental breakfast is served the next morning.

For a full list of events, including summer camps, seasonal happenings and school vacation week activities, visit mysticaquarium.org. The site also includes detailed information on our animals, exhibits and programming, as well as Channel Sea video features that bring Sea Research to life.

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