ANNUAL REPORT

2017

Cover Image: (top) Mote Staff Biologist Devin Burris shows a local life guard how to use the smartphone microscope, HABscope; (bottom) a volunteer citizen scientist plants coral fragments that were grown by Mote Marine Laboratory. *Photos by Conor Goulding / Mote Marine Laboratory.*

MOTE'S MISSION

The advancement of marine and environmental sciences through scientific research, education and public outreach, leading to new discoveries, revitalization and sustainability of our oceans and greater public understanding of our marine resources.

PHOTO BY: Conor Goulding / Mote Marine Laboratory

Dear Friends,

What an exciting and positive time to be involved with Mote Marine Laboratory & Aquarium!

Several years ago, Mote recognized that in order to fulfill our mission as a premier, independent marine science research institute, we would need to advance our marine research enterprise by investing in the best and brightest scientists, aquarists and educators and expand our local and global impact.

After launching — and successfully completing — a historic $50 million campaign focused on our research and enterprise, today Mote is well on its way to fulfilling its *2020 Vision and Strategic Plan* with the visionary leadership of our President & CEO, strong support from our Board of Trustees and the generous philanthropic investment from so many of you.

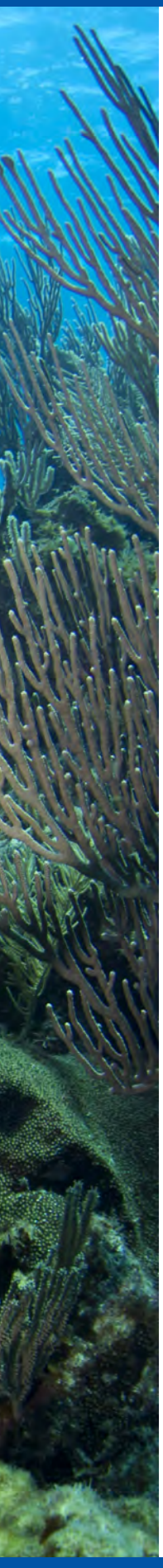
Through this leadership, support and generosity, Mote was able to successfully open its newest facility — an environmentally friendly laboratory at our Summerland Key campus in 2017. This state-of-the-art facility has been named the Elizabeth Moore International Center for Coral Reef Research & Restoration (IC2R3) and houses the Alfred Goldstein Institute for Climate Change Studies. Both were named in honor of major benefactors who realized that we are dependent on our oceans and that Mote's research is leading to better stewardship of our incredible natural resources.

Mote has traveled a long way since the Lab opened in 1955. We continue to work tirelessly to create a better environment for ourselves and our children and we remain deeply committed to the belief that the conservation and sustainable use of our oceans begins with research and education.

On behalf of Mote's Board of Trustees, I'd like to thank you for joining with us in our vision and sharing our investment in the future.

Robert Essner
Chairman
Mote Marine Laboratory Board of Trustees

PHOTO BY: John A. Anderson / Adobe Stock



Dear Friends,

From our origin more than 62 years ago in a one-room facility, Mote Marine Laboratory has grown into a world-renowned research enterprise with five separate campuses that stretch from Sarasota Bay to the Florida Keys and global marine science partnerships that are having amazingly positive impacts for the conservation and sustainable use of our oceans. This *Annual Report* provides a small representation of our notable research innovations, along with educational and outreach accomplishments, made by Mote scientists, aquarists, educators and other staff members.

As a direct result of the enthusiastic engagement of our Board of Trustees, our unbelievably dedicated and brilliant staff, our wonderful volunteers and our incredibly supportive community of donors and partners, we have reached significant milestones for our oceans in 2017. The "Mote momentum" generated by each and every one of you is helping to propel our unique and independent institution into a new era by empowering our freedom to pursue innovative science and enhance the ocean literacy of millions of people around the world.

Mote has always been, first and foremost, a research institution. Innovative science for coral reefs, fisheries, endangered species, significant marine ecosystems and derived products from the sea help us to not only protect and sustainably use our ocean resources wisely, but also improve the quality of human lives locally and in communities worldwide. In addition, we strive to translate and transfer our research through our science education and outreach programs and community partnerships. I am proud that a strategic priority for Mote is to expand the connections of our science to all the diverse communities that we serve in Florida and around the world.

One of our major advances this year was the opening of the new Elizabeth Moore International Center for Coral Reef Research & Restoration (IC2R3) at our Summerland Key campus, which also houses our new Alfred Goldstein Institute for Climate Change Studies. Together, these new research facilities provide the latest tools and technologies to help us continue the innovative research programs that are allowing us to restore reefs in Florida and translate and transfer the methods we've developed so that reefs around the world can likewise be restored.

We are grateful for the generous contributions made by Elizabeth Moore and the Alfred and Ann Goldstein Foundation to help us bring this state-of-the-art facility to fruition. This $7 million facility was also made possible through the philanthropic support of founding donor, the Gardener Foundation, the Rick and Nancy Moskovitz Foundation, the Charles and Margery Barancik Foundation and Jane's Trust Foundation.

Mote's Summerland Key campus has historically hosted and supported the work of more than 150 scientists from 60 institutions around the world per year — including researchers with

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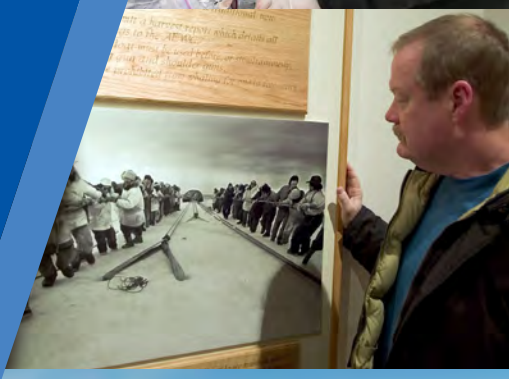
// LETTER FROM THE PRESIDENT CONTINUED...

approximately $63 million in National Science Foundation grants since 2004. Mote's IC2R3 now allows this number of scientists and students, and their vital impact, to grow significantly.

To that end, we have joined with The Nature Conservancy in the Caribbean Coral Restoration Partnership Initiative to synchronize our capabilities of innovative science and community engagement in order to restore more than 1 million corals across the region's reefs and build a network of coral gene banks. This partnership offers international hope for the future of coral reefs and the ecosystems they support. We will engage local island communities, leading scientists and innovative coral restoration practices as we work collaboratively to safeguard these critical ecosystems.

Building on our momentum, we're now working on plans for the rebirth of Mote Aquarium on the mainland and will be making a major announcement in 2018. Not only will this allow us to grow our informal science education and outreach programs and develop a more ocean-literate society, but it will be the catalyst for a new "Silicon Valley" of marine science and technology in Southwest Florida, leading to improved conservation and sustainable use of our oceans.

Everybody — every place in the world — is connected to our oceans. Mote cannot achieve our vision and help the oceans without you. Please continue to be active members of the Mote family, celebrating our positive impacts today and looking toward an even more exciting future!



Dr. Michael P. Crosby
President & CEO

Dr. John Reynolds III

The field of marine mammal science, conservation and education lost one of its finest members in 2017 with the passing of Dr. John Reynolds III in December. Dr. Reynolds was an extraordinary scientist, conservationist and mentor dedicated to manatee conservation not just in Southwest Florida but through his leadership in national and international commissions and coalitions dedicated to sirenians and other marine mammal species.

"John was an inspiring scientist who leaves a lasting legacy for marine conservation on a global scale," said Dr. Michael P. Crosby, President and CEO of Mote. "John's dedication to research and conservation, and his generosity of knowledge and friendship will never be forgotten. He had a passionate belief that a scientist's work is not truly effective unless it can be translated to sound conservation and management strategies, balanced with the needs of local communities. His life of professional focus on science-based solutions for addressing marine conservation challenges at local, regional, national and global scales has produced immense waves of impact within the international scientific community."

From 1980 to 2001, Dr. Reynolds was Professor of Marine Sciences and Biology and Chairman of the Natural Sciences Collegium at Eckerd College, where he was integral in establishing the college's renowned marine science major, helped to facilitate the building of a multi-million dollar marine science center and opened doors for the best and brightest, next-generation scientists. His hundreds of scientific publications and numerous books targeted for a more general audience, helped to inspire and educate millions about the plight of manatees and their unique place in the world. His most recent book, "Florida Manatees: Biology, Behavior, and Conservation," was released in April 2017 and provides an updated look into the lives of these iconic marine mammals and the conservation challenges they face.

Dr. Reynolds served as chairman of the U.S. Marine Mammal Commission, which provides independent, science-based oversight of domestic and international policies and actions of federal agencies addressing human impacts on marine mammals and their ecosystems. Between 1990 and mid-2010, he was reappointed to the commission by four U.S. Presidents — Republican and Democrat. In 2010, the agency's accomplishments were recognized with a distinguished service award from the Society for Conservation Biology. From 2001-2008, he also served as co-Chair of the IUCN Sirenian Specialist Group, and from 2006-2008, as President of the International Society for Marine Mammalogy.

Dr. Reynolds joined Mote part-time in 2000 and as a full-time Senior Scientist in 2001. At Mote, he helped the Lab become a beacon of conservation-focused science, particularly through his leadership of Mote's Manatee Research Program — a cornerstone of the scientific understanding and protection of manatees in Florida and the Caribbean. Today, Mote is one of the three primary organizations maintaining a statewide catalog of Florida manatees — including more than 4,200 fully documented, recognizable animals. He played a crucial role in advising plans for manatees' reintroduction to Guadeloupe and worked closely with Mote's Environmental Laboratory for Forensics scientists on studies of significantly vulnerable species including manatees, dugongs, bowhead and beluga whales, polar bears and sturgeon, often collaborating with and working to benefit subsistence communities that rely upon marine resources. In recognition of his long-term research and conservation efforts with Alaskan marine mammals and environmental issues, he was given an Eskimo name: Emuqtannee (swimming walrus).

In 2013, Dr. Reynolds built and strengthened bridges among scientific and conservation partners around the world with the creation of an International Consortium for Marine Conservation. Recently, he worked with the United Nations Environment Programme to develop and implement a Caribbean-wide Marine Mammal Action Plan.

"There are so many lives that were deeply touched by John in his capacity as a professor, researcher and presidential appointee for leadership in marine mammal conservation," said Dr. Dana Wetzel, Mote Senior Scientist and Dr. Reynolds' longtime research partner and friend. "John was truly dedicated to conservation and the protection of the environment, and his legacy will live on in his comprehensive work and through his mentorship of others. The loss of John will be felt deeply and for a long time, by many across the world."

The Elizabeth Moore International Center for Coral Reef Research & Restoration Opens

Mote opened the new Elizabeth Moore International Center for Coral Reef Research & Restoration (IC2R3) at its Summerland Key campus in May 2017, creating a new base to address the grand challenges facing Earth's underwater rainforests — coral reefs.

The facility is fitted with 30.1 kilowatt solar panels, a rainwater capture system and other eco-friendly features and is designed to advance coral reef research using new seawater systems, raceways and experimental tanks for studying multiple reef species facing climate change impacts such as rising ocean temperatures and ocean acidification. Its eight laboratories also house state-of-the-art advanced technology instrumentation for sophisticated processing and preparing molecular samples for genetic sequencing and genomic analyses, studying life at the microscopic level to see how minute change affects the health of corals, carbonate chemistry for ocean acidification research and many other innovative research efforts.

The facility is named for benefactor Elizabeth Moore, one of the facility's first major donors.

"When I first arrived at Mote in 2010, a vision for new 21st Century research infrastructure on our Summerland Key campus was clear to me: We needed to strategically enhance and expand our capacity to achieve the potential for truly significant impact of our innovative coral reef restoration research here in the Florida Keys and around the world," said Mote President & CEO Dr. Michael P. Crosby. "As we achieve this vision, as an integral part of this community, we are genuinely humbled by the incredible generosity of all those who champion our dream and mission. In particular, we're exceedingly grateful to Elizabeth Moore, who has been inspirational with her support and passion for the marine environment from the beginning."

Moore supported the new facility so that coral reefs would remain a source of wonder, prosperity and thriving biodiversity. "Mote scientists are working to restore reefs, using science-based strategies that take into account global challenges such as climate change, and they are forging international partnerships so their innovations can benefit reefs far and wide. It is an honor to support Mote's work that is creating positive impacts around the world, and I hope others will be motivated to get involved."

The new building also houses the Alfred Goldstein Institute for Climate Change Studies, thanks to a generous donation from the Alfred and Ann Goldstein Foundation,

which supports the building's infrastructure and studies on the impacts of climate change on coral reef ecosystems and restoration.

The IC2R3 is the first U.S. Green Building Council LEED Gold Commercial certified building in Monroe County, honoring its outstanding, eco-friendly design and construction. LEED — Leadership in Energy and Environmental Design — is the world's most widespread rating system for green buildings, according to the U.S. Green Building Council.

Mote researchers, and visiting scientists and students are fully utilizing the facility that includes three wet labs, five dry labs, two indoor classrooms and one outdoor classroom, eight dormitory-style and visiting scientists residential rooms, five offices for Mote staff, and two electric car-charging stations.

In September 2017, the Category 5 hurricane-resistant facility was put to the test by Hurricane Irma. As the Category 4 storm moved directly over IC2R3, the amazing facility stood strong and protected a critical "seed" bank of corals used for reef restoration. Exterior structures on the Summerland Key campus — including coral raceway systems (National Science Foundation-sponsored open air ocean acidification flow-through experimental research units), the specialized seawater tanks, water heat exchange equipment, and electronic instrumentation — received heavy damage.

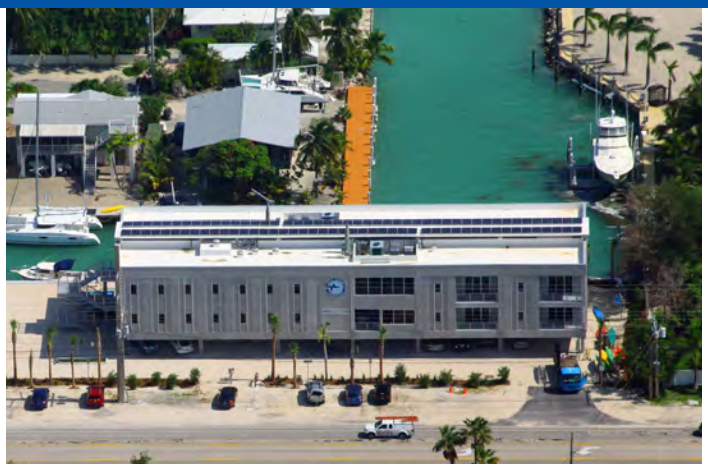


PHOTO BY: FAST Aerial

View from above: An aerial photo of Mote's new laboratory on Summerland Key, Florida.

The building began to reopen just over a week after Irma, many operations resumed gradually over following months. By the year's end, repairs were rapidly progressing, with new exterior coral raceways built, and the rebuild of the open air ocean acidification research system under way. "While Hurricane Irma was a disaster with widespread impact, this challenge provided us with an opportunity to replace, expand and enhance external open air research infrastructure to make the facility even more resilient and useful for the international scientific community," Crosby said. "It also demonstrated the incredible importance of our Category 5-resistant building."

IC2R3 Ribbon-cutting: George Mazzarantani, Director of The Gardener Foundation; Elizabeth Moore, Mote Trustee; Dr. Michael P. Crosby, Mote President & CEO; G. Lowe Morrison, Mote Chairman Emeritus; Peter Rosasco, Mote Keys Advisory Council Chair.

PHOTO BY: Olivia Raney / Mote Marine Laboratory

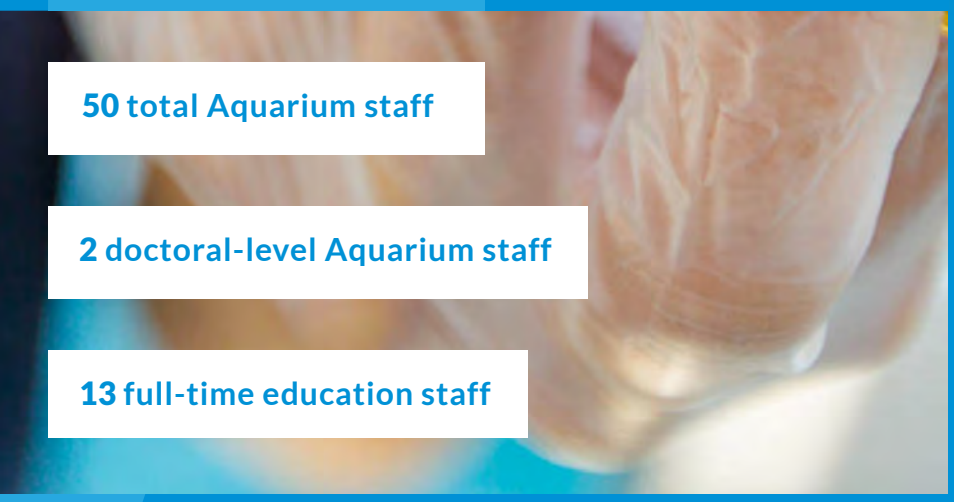
MOTE BY THE NUMBERS

223 total Mote staff

79 total research staff

37 doctoral-level research staff

22 research programs



50 total Aquarium staff

2 doctoral-level Aquarium staff

13 full-time education staff

BENTHIC ECOLOGY

CHEMICAL AND PHYSICAL ECOLOGY

CORAL HEALTH & DISEASE

CORAL REEF ECOLOGY & MICROBIOLOGY

CORAL REEF MONITORING AND ASSESSMENT

CORAL REEF RESTORATION

DOLPHIN RESEARCH

ECOTOXICOLOGY

ENVIRONMENTAL HEALTH

ENVIRONMENTAL LABORATORY FOR FORENSICS

FISHERIES ECOLOGY & ENHANCEMENT

FISHERIES HABITAT ECOLOGY

MANATEE RESEARCH

MARINE & FRESHWATER AQUACULTURE RESEARCH

MARINE BIOMEDICAL RESEARCH

MARINE IMMUNOLOGY

OCEAN ACIDIFICATION

OCEAN TECHNOLOGY

PHYTOPLANKTON ECOLOGY

SEA TURTLE CONSERVATION & RESEARCH

SHARKS & RAYS CONSERVATION RESEARCH

STRANDING INVESTIGATIONS

World Class Research at Mote Marine Laboratory

Understanding Climate Change Impacts

Changes in climate are expected to bring widespread changes to ecosystems and environments worldwide. Those impacts will lead to species-level changes — changes that humans need to understand if we ourselves are to adapt.

CLIMATE AND MARINE ORGANISMS

A grant from the Protect Our Reefs specialty license plate is helping Mote researchers understand the effects of ocean acidification and increasing ocean water temperature conditions on corals using a sea anemone as a model organism.

The project is focused on using a sea anemone, *Aiptasia sp.*, as a model system to better understand what changing temperature and pH conditions can have on corals so scientists can be better equipped to conserve corals and protect them from environmental stressors such as bleaching, climate change and ocean acidification.

Just like corals, *Aiptasia* anemones are host to zooxanthellae, the algae that give corals color and necessary nourishment. In turn, the anemone offers protection and provides nutrients for the algae. Because the same symbiotic relationship is shared between corals and zooxanthellae and *Aiptasia* and zooxanthellae, *Aiptasia* can serve as a model to provide scientists with information of what will happen when corals are introduced to lower pH levels and higher temperatures.

The project has two main objectives:

- Looking at the microscopic life associated with coral reefs, including beneficial bacteria that are part of the corals' immune systems and the microscopic algae that give corals energy and color, and how that is affected by the different water conditions.
- Gaining insight into some of the physiological challenges that corals undergo during periods of elevated temperature and acidification.

COULD MORE ACID IN OCEANS SLOW CORAL DISEASE?

Coral reefs face intensifying struggles as greenhouse gases warm and acidify the ocean, but a Mote study highlighted a potential silver lining: Some coral diseases might also dwindle amid environmental change.

Model Systems: Dr. Emily Hall researches ocean acidification and climate change conditions on corals using a sea anemone as a model organism in Mote's OASys lab.

The study, published in the peer-reviewed journal *PLOS ONE*, revealed that black band disease was less deadly to mountainous star coral (*Orbicella faveolata*) as water acidified, or decreased in pH.

Scientists from Mote and the University of South Carolina, and students from the University of Rhode Island, University of New Hampshire, University of Hawaii and Unity College in Maine conducted the study with funding from the Dart Foundation and the Protect Our Reefs grants program. Student contributions were supported by the National Science Foundation (NSF) Research Experiences for Undergraduates program and Mote College Internship Scholarships.

The new study is the first to examine how low pH water affects black band — a fast-progressing, often deadly, worldwide coral disease affecting at least 42 coral species in the Caribbean alone. Affected species include mountainous star coral, a major contributor to the reef system of the Florida Keys and listed as threatened under the U.S. Endangered Species Act.

CORAL IMMUNITY AND DISEASE SUSCEPTIBILITY

A National Science Foundation (NSF) Early Concept Grant for Exploratory Research (EAGER) award will support Mote research in partnership with investigators from the

Coral Health & Disease: Dr. Erinn Muller is conducting coral resilience research in her lab at Mote.

University of Texas and the University of Virgin Islands to better predict how corals react to disease exposure and how that will influence the coral community of the future.

Researchers will study seven coral species from the Caribbean and look for ways to better understand how diseases affect coral communities and how corals may respond to different climate change scenarios. In July 2017, study partners from the University of Texas and University of the Virgin Islands conducted coral disease transmission experiments on St. Thomas with great success. The data are now being processed to determine key genes that may regulate the immune response within these corals.

SEAGRASSES NOT RECOVERING FOLLOWING RECORD TEMPERATURES

Massive seagrass beds in Western Australia's Shark Bay — a UNESCO World Heritage Site — have not recovered much from the devastating heat wave of 2011, according to a new study demonstrating how certain vital ecosystems may change drastically in a warming climate.

The study was published in *Marine Ecology Progress Series*, and authored by a Mote Postdoctoral Fellow, colleagues from Florida International University, Deakin University in Australia and Nova Southeastern University.

Shark Bay earned its World Heritage status, in part, because of its 1,853 square miles (4,800 square kilometers) of seagrass beds — the richest in the world. This vast, subtropical ecosystem hosts thousands of large sharks, other fish, sea turtles, bottlenose dolphins and a critical population of dugongs, plant-eating mammals related to manatees. Before the heat wave, many sites were dominated by the temperate seagrass known as "wireweed" (*Amphibolis antarctica*), whose dense and tall thickets provide ample food and shelter for numerous species. The heat wave drastically thinned many wireweed beds, and in many places their rhizomes (underground stems) blackened and died, leaving bare sand.

The new study showed that surviving *A. antarctica* beds appeared stable but didn't reclaim much turf. Instead, the tropical seagrass *Halodule uninervis*, a close relative of the shoalgrass native to Florida, began filling the gaps. *H. uninervis* was spotted at 2 percent of sites in 2012, but had expanded to almost 30 percent of them by 2014.

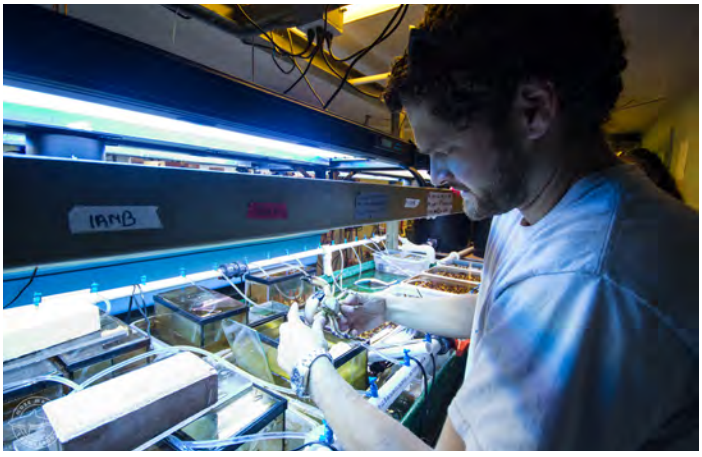
OCEAN ACIDIFICATION AND STONE CRABS

Mote researchers have been studying stone crabs to better understand how one of Florida's important commercial species is being affected by ocean acidification and low-oxygen levels.

Since 2000, the annual commercial stone crab landings have declined on average by 20-25 percent, with the 2013-2014 season recording historic lows. Preliminary numbers for the 2016-17 season show totals of approximately 2.9 million pounds with a value of $30.6 million. The significant decline in annual landings since 2000 is concerning for the fisheries' future sustainability.

Early studies have shown that stone crab embryos may develop more slowly and hatch less successfully amid pH changes predicted for our future oceans.

Stone Crab Research: Mote Postdoctoral Research Fellow Dr. Phil Gravinese inspects egg-bearing stone crabs in his lab at Mote.



Red Tide Studies

Of the thousands of species of algae in fresh and marine waters, most are beneficial — they form the basis of the food web and provide a critical source of oxygen that humans and other living organisms need to breath. But not all are so helpful, and when they occur in large concentrations, they are sometimes collectively termed harmful algal blooms (HABs). The specific HAB organism that causes red tide in Florida, for example, produces neurotoxins that can result in massive fish kills, the deaths of marine mammals, sea turtles, sea birds and — for humans — neurotoxic shellfish poisoning and respiratory impacts.

Mote researchers from a variety of disciplines study that red tide algae, *Karenia brevis*, to better understand how it works and to develop strategies that help mitigate its impacts on humans and wildlife.

DEVELOPING QUICKER DETECTION MECHANISMS

Mote is part of a team with the National Oceanic and Atmospheric Administration and the Gulf of Mexico Coastal Ocean Observing System (GCOOS), along with the Florida Department of Health, that is developing a new smartphone microscope and automated ID system to improve red tide monitoring and detection.

The low-cost microscope — designed to be used in the field — is being paired with a new app being developed by GCOOS that automates ID of the *K. brevis* organism. *K. brevis* has an active involvement in harmful algal blooms (HAB). The idea is that trained beach observers can use the microscopes to collect videos of water samples that are uploaded to a cloud-based server and automatically evaluated for the presence of red tide. The system uses TensorFlow, Google's open-source deep-learning library, to identify the red tide algae cells in water samples and provides a real-time response. It can also provide information on cell counts to help resource managers determine whether they warrant a health concern.

Mote's role is to train volunteers to collect small water samples, place them onto a microscope slide, take videos with a smartphone attached to the microscope, and upload those videos to GCOOS for automatic assessment. These "HABscope" results are being reviewed by Mote scientists and validated by standard cell-counting methods.

HABscope: Mote Staff Scientist Dr. Tracy Fanara and Mote Staff Biologist Devin Burris show a group of local life guards how to use the red tide smartphone microscrope in Sarasota, Florida.

EXPANDING RED TIDE RESEARCH IN BOCA GRANDE

An anonymous donor's generosity is helping to expand Mote's red tide research and outreach efforts on Charlotte Harbor's Boca Grande. The $100,000 philanthropic investment is helping to support:

- Expansion of local community outreach and engagement to benefit those affected by HABs;
- Advanced technology such as citizen science apps for mobile devices and field sensors for HAB forecasting support;
- Improved rapid response strategies for mitigation of HAB impacts on public and ecological health and economics;
- Innovative strategies and technologies for HAB control, including testing whether ozonation might be a viable way to destroy *K. brevis* in limited applications in the field.

In 2018, Mote will begin using aerial drones to test whether they are viable tools for red tide detection.

REDUCING RED TIDE IN CANAL SYSTEMS

Ozone is used in many closed water treatment systems and Mote has already patented an ozonation system that destroys red tide and purifies seawater entering Mote Aquarium. The system bubbles ozone through seawater inside a special container, without releasing this harsh, oxygen-based chemical into the environment.

Now, Mote scientists and engineers are working together to further develop the technology to see whether it's a viable

PHOTO BY: Mote's Manatee Research Program

Red Tide: A harmful algal bloom of *Karenia brevis* in Sarasota, Florida, is visible from the sky.

option for destroying Florida red tide algae and its toxins in localized marine waterways such as shoreline canals.

In December, they tested the "ozonator" in a 25,000-gallon pool at Mote's Sarasota campus, measuring the concentration of ozone in seawater inside the ozonator, and including a device to eliminate ozone degassing to the atmosphere. They found that the ozone concentrations were sufficient to remove red tide algae and toxins while regenerating dissolved oxygen gas to the water. Oxygen gas, very different from harsh ozone, is needed in ocean ecosystems but often depleted during red tide, as marine life killed by red tide is decomposed by bacteria, which consume the oxygen.

In 2018, the researchers will test natural, untreated seawater in the same tank, in preparation for testing with red tide-containing water from New Pass, Sarasota, during the next red tide event. Ultimately, the researchers aim to test the ozonator in appropriate environments, such as canals, during a future bloom of Florida red tide. The goal is to reduce the red tide toxins that kill fish, sea turtles and marine mammals, cause neurotoxic shellfish poisoning in people who eat contaminated shellfish, cause beachgoers to cough and sneeze due to airborne toxins, and ultimately to restore the local environment to natural conditions.

Oil Spill Research Continues

The Deepwater Horizon oil rig exploded in the Gulf of Mexico in 2010 and led to the largest oil spill in U.S. history: 210 million gallons of oil over 87 days.

Since the spill, hundreds of studies have been conducted to better understand the ongoing impacts on the Gulf environment and the plants and animals that call it home.

C-IMAGE CONSORTIUM

The University of South Florida-College of Marine Science and Mote scientists used funding from the Gulf of Mexico Research Initiative (GoMRI) to create C-IMAGE, the Center for the Integrated Modeling and Analysis of Gulf Ecosystems, an international consortium of researchers. C-IMAGE partners are studying the impacts on an ecosystem after an oil spill, revealing the behavior of oil under high pressure, and predicting the health and reproduction of fish after large spills.

During 2017, scientists from Mote's Environmental Laboratory for Forensics and Mote's Marine & Freshwater Aquaculture Research Program collected 1,564 blood and tissue samples from fish exposed to varying concentrations of oil components in ongoing studies at Mote Aquaculture Research Park.

The scientists continued evaluating the health of Gulf of Mexico redfish, flounder and pompano in their multi-year series of studies focusing on how fish are affected by oil compounds in their diet, in sediments and in water. By studying whether exposed fish experience DNA damage, immune function changes or other impacts, the researchers hope to help elucidate how wild fish were affected by Deepwater Horizon and set the stage to better understand future spills.

Preliminary data suggest that oil-exposed fish tend to have suppressed immune system function, whether they encounter oil compounds in their food or water. These and other findings from the lab will help researchers know what impacts to check for in wild fish.

Mote's fish exposure studies will culminate over the next two years, as Mote and other C-IMAGE partners work to synthesize the results of numerous projects and put them into meaningful context for natural resource managers who work to address oil spill impacts.

One Mote study poised to make progress in 2018 investigates whether oil-exposed pompano pass impacts to their young. Pompano at Mote Aquaculture Research Park have been exposed to oil compounds, have spawned and Mote researchers will study their offspring in 2018.

Understanding Marine Mammals

Humans have long been fascinated by marine mammals, and gaining a better understanding of their biology, behavior and habitats has been a key interest to researchers working at Mote for decades. Better understanding these animals supports their conservation and management while also providing information about ecosystems that humans value. As marine mammals are affected by degraded habitats and decreased food sources, humans may also feel impacts.

INVESTIGATING MANATEES' SUPER SENSE OF TOUCH

A new Mote peer-reviewed study published in the *Journal of Comparative Physiology A* shows that special body hairs help manatees sense water movements smaller than the period at the end of this sentence. These hairs likely help them feel their way through a three-dimensional, underwater world where their vision is limited.

The study included authors from Pittsburgh Zoo & PPG Aquarium, New College of Florida, Mote, Loggerhead Instruments and the University of Florida.

The research team also included Mote's resident manatees, Hugh and Buffett. These two highly trained manatees participate in their own care and multiple studies of their senses and physiology.

The manatees' body hairs — called vibrissae — detected water displacement of less than a micron. A human hair is about 100 microns wide. Their facial hairs are about 10 times more sensitive.

Sensitive Manatees: Mote resident manatees Hugh and Buffett helped scientists study how manatees use body hairs to sense their environments.

FEEDING WILD DOLPHINS PUTS THEM AT RISK FOR INJURY

Scientists published a new study revealing that wild dolphins are more likely to be injured if humans feed them — even if the feeding is done unintentionally.

Data collected from 1993-2014 by Mote's Stranding Investigations Program and the Sarasota Dolphin Research Program (SDRP) — a partnership between Mote and Chicago Zoological Society/Brookfield Zoo's that is the world's longest-running study of a wild dolphin population — was analyzed by researchers from Murdoch University in Western Australia and the University of Aberdeen in Scotland, to understand why bottlenose dolphins begin seeking human-provided food and how it affects their risk of injury.

It's the first study that directly links human-related feeding of wild dolphins with increased risks of injury from human interactions such as boat strikes, entanglement in fishing gear or ingestion of hooks and line.

The study analyzed data from 1,142 bottlenose dolphins, including 190 (16.5 percent) described as "conditioned" because they had accepted human handouts, targeted bait, catch or crab pots, or had "patrolled" back and forth within 20 meters of boats, lines or fishing piers. The authors found that 84 (7.5 percent) of the dolphins had human-related injuries by the end of the study period in 2014.

RECORD YEAR FOR DOLPHIN CALVES

SDRP reported a record number of bottlenose dolphin calves were born in Sarasota Bay in 2017, with 21 new calves born to five concurrent generations of long-term resident dolphins in the Bay. As of December 2017, 17 of those calves were known to have survived.

Since it began its monitoring program in 1970, SDRP has documented births by female dolphins ranging in age from 6 to 48 years, including the oldest known bottlenose dolphin, Nicklo, who turned 67 in 2017, and Ginger, a dolphin rehabilitated and released by Mote's Dolphin & Whale Hospital in 2009, who gave birth to her second calf in 2017.

Successful calving years are good news for ecosystem health in Sarasota Bay. For example, 83 percent of dolphin pregnancies identified from ultrasound during health assessments in Sarasota Bay were found to result in calves

PHOTO BY: Sarasota Dolphin Research Program / CZS

Success Story: Sarasota Bay resident bottlenose dolphin Ginger with her second calf. Photo taken under NMFS Scientific Research Permit No. 15543.

swimming alongside their mothers. This stands in sharp contrast to the 20 percent success documented during comparable research in Barataria Bay, Louisiana, which experienced heavy oiling from the Deepwater Horizon spill, and pointed to one of the major impacts of the spill.

Unlocking Sharks' Cryptic Lives

Shark research at Mote started with the Lab's birth in 1955 and is still going strong. Mote is home to the only Center for Shark Research designated by the U.S. Congress and our scientists remain dedicated to studying the biology, ecology and conservation of sharks and their relatives, the skates and rays.

TAGGING GREAT WHITES

Mote scientists in partnership with OCEARCH, a non-profit organization with a global reach for research on great white sharks and other large apex predators, and a team of collaborating scientists tagged two great white sharks and two tiger sharks with satellite transmitters during a three-week expedition that concluded in March off South Carolina and Georgia. Satellite tags track sharks' locations and send data back to scientists when the sharks' dorsal fins break the water's surface.

Tagged white sharks "Hilton" and "Savannah," and tiger sharks "Weimar" and "Beaufort," traveled impressive distances, as shown on the OCEARCH Global Shark Tracker at www.ocearch.org:

- Hilton, tagged near Hilton Head, South Carolina, has traveled a whopping 6,368 miles, south to Florida, north to Nova Scotia, and south to North Carolina, where he last pinged on Dec. 14.
- Savannah, tagged near that Georgia city, has traveled an impressive 3,053 miles north to Nova Scotia and south again, nearing her original tagging site by Dec. 14.
- Weimar traveled 2,033 miles, zig-zagging near his tagging site off Hilton Head, South Carolina, and down near the Florida-Georgia border, then traveling northward near the North Carolina-Virginia border before his tag stopped transmitting in May.
- Beaufort traveled more than 930 miles up and down the Atlantic Coast, from Hilton Head, South Carolina, north past Morehead City, North Carolina, and then back south, passing Hilton Head again before he was last tracked in April.

Mote joined a second OCEARCH expedition near the eastern part of Long Island that resulted in satellite tags on 11 baby great white sharks, and identification and/or satellite tagging of several other species of large, oceanic sharks.

PHOTO BY: Robert Snow / OCEARCH

Tagging Sharks: Dr. Bob Hueter, Mote Senior Scientist & Director of the Center for Shark Research, examines a shark tag with a colleague during an OCEARCH expedition.

SHARKS CLOSER TO HOME

Researchers and students tagged 34 sharks along Florida's Gulf Coast for studies designed to benefit their populations. The research cruise involved five scientists, two graduate and 40 undergraduate students from New College of Florida, Eckerd College, Mote and The Nature Conservancy (TNC).

The team attached identification tags to 21 blacktip sharks, including 10 females revealed by ultraspund to be pregnant; six bull sharks; three blacknose sharks; and four tiger sharks. Of those, one blacktip and five bull sharks received acoustic tags that will ping when the sharks pass underwater receivers in bay passes. One bull shark and one tiger shark were tagged with satellite transmitters to track their migratory movements in the Gulf.

The cruise, conducted on the Florida Institute of Oceanography ship *R/V Bellows*, was designed to enhance knowledge about the shark species using Southwest Florida's coastal habitats. Data from acoustic and satellite tags, and recaptures of conventional (plastic) ID-tagged sharks, are important for understanding shark populations in the Gulf of Mexico overall, and can be compared with past data to investigate possible changes over time. Multiple shark species are valuable to Gulf fisheries and to ecosystems where they serve as top predators in the food web, maintaining a healthy community.

Fisheries and Their Futures

Studying fish habitat use and the impacts of habitat changes on species helps humans gain a better understanding of how populations fluctuate over time. Such fluctuations can mean less food fish or a reduction in commercially or recreationally important fisheries that provide enormous economic benefits to communities. Mote research focuses on a range of fisheries topics, including fish farming.

FARMING NEW SPECIES

Mote scientists have launched a new study on farming almaco jack — a popular sushi species served in some parts of the world, but never before farmed near one of its major habitats, the Gulf of Mexico.

By studying how to spawn and raise Gulf stocks of almaco jack in sustainable, land-based aquaculture systems, Mote scientists will provide essential knowledge to help the aquaculture industry produce healthy, juvenile almaco jack in land-based farms to supply offshore cage farms. This research underscores a new opportunity for Gulf-based aquaculture. In January 2016, the National Oceanic and Atmospheric Administration announced the Fishery Management Plan for Regulating Offshore Marine

Sustainable Fisheries: Mote Senior Biologist Tom Waldrop weighs an almaco jack at Mote Aquaculture Research Park.

Aquaculture in the Gulf of Mexico, which will allow as many as 20 offshore aquaculture operations in Gulf waters to be permitted over 10 years.

Mote's study of almaco jack will last two years and focus on:

- Understanding the reproductive cycle in an aquaculture system;
- Developing methods to improve survival and growth for research- and commercial-scale trials of rearing larvae and fingerlings;
- Examining seafood market opportunities;
- Disseminating results to the scientific community and aquaculture industry.

Ultimately, Mote scientists' research will yield opportunities to develop the world's first domesticated stock of almaco jack — multiple, successive generations bred and raised in sustainable aquaculture systems. Currently, almaco jack aquaculture operations elsewhere collect wild fish to breed for one cycle, rather than a multi-generation breeding and maturation program.

SNOOK HABITAT NEEDS

Mote scientists released approximately 1,399 juvenile snook into Phillippi and North creeks in Sarasota County as part of ongoing studies of habitat-use patterns of these important sport fish. That brings the total number of fish

Tagging Snook: Mote scientists and volunteers check a juvenile snook to make sure its PIT tag is transmitting, before releasing it.

released over the past two years to 5,620, and 61,000 over the last several decades.

In recent years, the fish have been raised at Mote Aquaculture Research Park and fitted with PIT tags (passive integrated transponders) before release. Over time, fine-tuning snook-release strategies has improved the relative survival of stocked snook by nearly 200 percent.

Today, Mote scientists have 12 continuously monitoring, solar-powered antenna systems to detect PIT-tagged fish in the Sarasota estuarine areas. Study results will help improve the survival of aquacultured snook.

STORMWATER SYSTEMS AND SNOOK

Dozens of fish species — including common snook and largemouth bass — use certain parts of the upper Phillippi Creek system, according to the first fish survey of this urbanized network of canals, retention ponds and wetlands in Sarasota.

The survey — led by Mote scientists and funded by Sarasota Bay Estuary Program (SBEP) — found the highest numbers and diversity of fishes around upper creek areas mimicking natural habitat: curving canals or ponds with wetland vegetation and sections of slower-moving water. Less naturalistic canals, with shorelines straightened for optimum drainage, generally hosted fewer fish of fewer species.

Canal System: A Mote study revealed naturalistic canals like this one host higher numbers and diversity of fish species like common snook and largemouth bass.

Urban waterways can lose ecosystem value — for example, the ability to support economically important sport fish — due to pollution, altered water flow and loss of natural habitat. Scientists around the nation are investigating how to help these waterways better serve wildlife, ecosystems and communities. Phillippi Creek drains approximately 60 square miles (145 square kilometers) of Sarasota County land, with downstream waterways richer in natural habitat and upstream waterways bearing a clearer human fingerprint: more straightened, channelized canals, sediment traps and retention ponds.

Since the 1980s, Sarasota County has significantly enhanced its measures to prevent floods and enhance water quality, most commonly using ponds. Ponds help delay the discharge of runoff, capture sediments and protect downstream ecosystems. County officials and Mote scientists each want to know whether further enhancements will help support fisheries.

Ensuring Long-Term Scientific Leadership & Success

When Mote implemented its *2020 Vision & Strategic Plan*, a key priority was the development of staff recruitment and nurturing programs designed to ensure the long-term success of its research enterprise. Today, Mote has developed key programs that allow us to meet our goals of helping early career scientists as they gain their footing in the research community and of providing support for those in later career stages who are making countless contributions to society. These awards are all funded entirely through generous philanthropic support.

Mote Postdoctoral Research Fellowship

A two-year fellowship provides 100-percent salary support, research start-up, supplies, equipment and mentorship to postdoctoral scientists conducting outstanding work early in their careers.

2017 FELLOWS

Dr. Philip Gravinese
Dr. Andrea Tarnecki
Dr. Robert Nowicki
Dr. Ryan Schloesser
Dr. Heather Page

Mote Eminent Scholar Awards

This award provides 50-percent salary support to Mote Senior Scientists who can use the funding to advance a current research initiative or develop a new one that is consistent with Mote's *2020 Vision & Strategic Plan*.

2017 EMINENT SCHOLARS

Dr. Kellie Dixon
Dr. Carl Luer
Dr. Dana Wetzel

Mote Scholarly and Service Activities

A 25-percent salary support award provides funding for scientists to conduct scholarly and service activities that reinvigorate their research and allow them to give back to the community.

2017 SCHOLARS

Dr. Nathan Brennan
Dr. Tracy Fanara
Dr. Emily Hall
Dr. Robert Hueter
Dr. Kevan Main
Dr. Erinn Muller
Dr. James Locascio
Dr. Vince Lovko
Dr. John Reynolds
Dr. David Vaughan

Translating & Transferring Scientific Knowledge to the Public

Conducting scientific research has been only a part of Mote's repertoire since founder Dr. Eugenie Clark gave her first lecture on fish biology to the local community. Today, translating and transferring scientific research to the public is a core part of Mote's mission to create a more ocean-literate society. Education programs for students, marine-focused clubs, life-long learning opportunities for adults, special exhibits and events are all tools that help Mote engage different sectors of the public. Our experts also provide information and testimony about important resource management issues being considered by local, state and federal agencies and lawmakers.

Marine Policy and Sharks

In September, Mote published a new study in the scientific journal *Marine Policy* showing that banning the sale of shark fins in the United States can actually harm ongoing shark conservation efforts.

Study authors Dr. Robert Hueter, Director of Mote's Center for Shark Research, and Dr. David Shiffman of Simon Fraser University's Earth2Ocean research group make an analytical case that the proposed Shark Fin Sales Elimination Act of 2017, a bill in committee in U.S. Congress at press time, is an ineffective approach to protecting sharks. Shiffman and Hueter reviewed scientific and economic data to understand the possible implications of a U.S. ban on fin trade. Key findings include:

Banning the sale of shark fins in the United States would likely not result in a significant direct reduction in global shark mortality, because the United States exports approximately one percent of all the shark fins traded globally, and imports an even smaller percentage of the global fin trade.

- Preventing sale of U.S. caught fins opens more market share for less sustainable fisheries that may practice finning.
- U.S. ban could cause waste without reducing shark mortality.
- The proposed fin ban would therefore eliminate about 23 percent of the ex-vessel value of legally caught sharks, causing economic harm to rule-following fishermen and undermining decades of progress towards sustainable shark fisheries management in the United States.

Hueter and Shiffman suggest that Congress should use the best available science to promote sustainable harvest practices that could also be a model for other nations in the global marketplace.

Tackling Plastics in our Oceans

Mote partnered with the University of Florida Institute of Food and Agricultural Sciences (UF/IFAS) Extension's Florida Microplastic Awareness Project, Sarasota Dolphin Research Program, Sarasota Bay Watch and Palmetto High School to host a TEACHING LAB FOR HIGHSCHOOLERS. During the lab, the students examined fish stomach contents for potential plastic during the study and found local evidence of a worldwide environmental challenge. Plastic and other trash becomes marine debris after falling or washing into the ocean, where it can damage

Microscopic Debris: A student examines a water sample for microplastics under a microscope.

sensitive ecosystems and harm or kill animals that swallow or entangle in it. Derelict fishing gear — such as line, hooks and nets left in the environment — is a growing threat for multiple marine animals around Florida. Meanwhile, consumer plastic products may release or break down into microplastics that sea turtles, birds, fish, shellfish and even corals can mistake for food — potentially with serious health consequences.

Mote Aquarium opened a NEW EXHIBIT, "Sea Debris: Awareness through Art" featuring Greta the great white shark, Natasha the sea turtle, and other amazing sculptures made of marine debris. Each huge, marine-inspired sculpture is made of plastic and other debris gathered from Oregon's coast and transformed into art through the project "Washed Ashore." Sculptures up to 15 feet long and 8 feet high fascinate all those who seek creative solutions to the challenge of marine debris.

Empowering Volunteer Citizen Scientists

One way to increase ocean literacy is to engage everyday citizens in ongoing scientific research programs. One of Mote's largest volunteer citizen scientist engagement efforts involves PLANTING CORALS TO HELP REBUILD REEFS in the Florida Keys.

In June 2017, veterans and students worked with Mote scientists — including President & CEO Dr. Michael P. Crosby, Dr. David Vaughan and Erich Bartels — to plant 500 coral fragments near Looe Key, marking the sixth year of a unique partnership involving science, conservation and restoration.

A New Reef: Retired Sgt. 1st Class, U.S. Army, Billy Costello plants a staghorn coral fragment on Hope Reef in July.

Members of the Combat Wounded Veteran Challenge (CWVC) and SCUBAnauts International joined forces with half-a-dozen Mote scientists for the one-day record-breaking mission on the reef. The number of corals planted marked the most-ever the groups have planted in a single day since they began working together in 2012.

CWVC improves the lives of wounded and injured veterans through rehabilitative, high-adventure and therapeutic outdoor challenges while furthering the physiological, biomedical and pathological sciences associated with their injuries. The veterans who participate in the outdoor challenges have suffered from traumatic brain injuries, PTSD or have lost limbs.

SCUBAnauts International involves teens in the marine sciences with intensive dive and science training. Through its partnerships with universities and research organizations, SCUBAnauts learn to take charge as they work on innovative projects that positively impact our oceans.

Mote's Vaughan is also working with volunteer citizen scientists to restore corals along Fort Zachary Taylor Historic State Park in Key West and surpassed a 12,000-coral milestone in August.

The project, funded by the Monroe County Tourist Development Council, involves planting fragments of five coral species along a publicly accessible snorkel trail during summer 2016 and 2017. Most of the restored corals were rescued by National Oceanic Atmospheric Administration during dredging or other projects, then propagated by Mote scientists and planted in the same general area where they were initially found. The planting area is represented by educational signs on shore and at the Florida Keys National Marine Sanctuary's Eco-Discovery Center in Key West.

Mote is also working to restore coral in the U.S. Virgin Islands (USVI). Mentored by Mote staff scientist Dr. Erinn Muller and staff from The Nature Conservancy (TNC), eight USVI high school students helped to collect healthy elkhorn coral fragments and transport them to a damaged reef section, where TNC staff reattached the corals.

Vital SCIENTIFIC INFORMATION ABOUT WHALE SHARK BEHAVIOR, BIOLOGY AND ECOLOGY WAS RELEASED Nov. 29 in the scientific journal *BioScience*, thanks to a 22-year citizen-science program enabling ecotourists and

others around the world to photograph whale sharks for research, and ultimately, conservation. The project *Wildbook for Whale Sharks* invites the public to submit photos of whale sharks' unique spot patterns to an online database, helping scientists identify individual animals. This effort has helped describe 20 hotspots for whale sharks around the globe and has expanded scientists' understanding of these endangered sharks' mysterious lives. The new *BioScience* paper was authored by scientists from ECOCEAN Inc. Mote Senior Scientist Dr. Robert Hueter was a co-author on the paper, which included institutions in more than a dozen countries.

Public Outreach

Mote launched a new MARINE SCIENCE EDUCATION PODCAST, "Two Sea Fans." During each recorded audio episode, hosts Joe Nickelson and Hayley Rutger, of Mote's Community Relations and Communications department, interview Mote scientists, educators and their partners about ocean topics that matter to them — from rescuing sea turtles to finding probiotics for fish and studying sharks in Cuba and breeding jellyfish. New episodes debut about every two weeks as free downloads through iTunes, or:

- ONLINE AT: mote.org/podcasts

"THE TEETH BENEATH: The Wild World of Gators, Crocs and Caimans" opened at Mote Aquarium, allowing visitors to see American alligators and invasive spectacled caimans found in Florida waters and wetlands and learn how wetland and coastal habitats are vital to native species such as the elusive American crocodile. Gators, crocs and caimans are crocodilians — a group of large, reptilian predators that are sometimes feared or misunderstood but play important roles in their ecosystems, reminiscent of the sharks studied by Mote scientists.

Mote hosted a SCREENING OF THE ACCLAIMED DOCUMENTARY "CHASING CORAL," which drew a standing-room-only crowd to Mote's Elizabeth Moore International Center for Coral Reef Research and Restoration (IC2R3) on Summerland Key, Florida. "Chasing Coral" cast member Zack Rago also joined the staff for a dive in Mote's underwater coral nursery just off of Summerland Key. Mote also hosted a screening at its Sarasota campus for Mote members, which included a panel discussion featuring two Mote scientists and Rago.

Education Programs

Mote's new chapter of SCUBANAUTS INTERNATIONAL is actively hosting meetings on the third Thursday of every month and participating in quarterly regional meetings with all chapters. Like other chapter participants, Sarasota SCUBAnauts have the opportunity to sign up for monthly dives. The club helps guide young men and women, ages 12 through 18, to participate in marine sciences through underwater research and conservation activities that build character, promote active citizenship and develop effective leadership skills.

Learning at Sea: Aboard a ship, during an AMIkids Floating Classroom Program, students learn environmental stewardship, among other topics and skills.

Teamwork, leadership, environmental stewardship and boating safety are just a few of the many concepts AMIKIDS LEARN DURING MONTHLY FLOATING CLASSROOM PROGRAMS led by educators from Mote. AMIkids is a Florida-based non-profit organization dedicated to helping troubled youths develop into responsible and productive citizens. AMIkids typically live in urban or suburban areas and have had little exposure to the marine environment. Before they can attend the Floating Classroom, students must complete a specified curriculum of enhanced learning. Mote's collaboration with AMIkids began in 2015 and the program has a served more than 164 students, including 94 in 2017. The program plans to increase the

number of trips per month and to expand the lesson plans and curriculum to opportunities off the boat in 2018.

Mote expanded its educational offerings in summer 2017 with a series of PROFESSIONAL DEVELOPMENT WORKSHOPS for teachers. These programs are designed to provide locally relevant marine science content enrichment for grades 3 through 12. Topics covered include marine invertebrates, elasmobranchs (sharks, skates and rays), corals and environmental health and monitoring.
Teachers learn model science inquiry methods and technology integration of strategies with current scientific research, links to state education standards and opportunities for interdisciplinary connections.

Teaching Teachers: Mote's Senior Coordinator of Educational Technology Jason Robertshaw presents an example of science and technology curriculum to local teachers.

Florida's Department of Agriculture and Consumer Services recognized the success of Riverview High School's program STARS TO STARFISH, which features eco-friendly aquaculture (fish farming) technology made possible through a multi-year partnership with Mote scientists. Teaching the next generation about aquaculture is critical. The U.S., imports 91 percent of its seafood, leading to a $14 billion trade deficit. At the same time, saltwater fishing in Florida generates an estimated $6.1 billion in revenues annually. Mote Aquaculture Research Park in eastern Sarasota County is addressing new ways to clean and re-use both fresh and salt-water in closed-loop, or recirculating, systems, to grow fish, sea vegetables and plants for wetlands restoration in ways that sustainably utilize natural resources — especially water.

Public Service

In addition to being dedicated to leadership in scientific inquiry, discovery and innovation, Mote is equally dedicated to public service and a desire to work for the good of the communities we serve. From helping to understand why marine animals strand on our beaches and monitoring endangered sea turtles to working with legislative leaders to ensure that they have the most relevant information needed to make important decisions about our marine resources, Mote takes its role as a good citizen seriously.

Briefing Legislators and Government Officials

In 2017, we met with: U.S. Congressman Vern Buchanan (R-Florida); State Senator Greg Steube (R-Sarasota); State Rep. Holly Raschein (R-Key Largo); Wes Brooks, Legislative Aide to U.S. Senator Marco Rubio (R-Florida); Macey Smith, Legislative Aide to Senator Bill Galvano (R-Bradenton); Sean Brady, Legislative Aide to U.S. Congressman Vern Buchanan (R-Florida); Steve Koncar, Legislative Aide to U.S. Rep. Daniel Webster (R-Florida); Susan Neaves, Legislative Aide to State Rep. Alex Miller (R-Sarasota); State Rep. Alex Miller (R-Sarasota); State Rep. Julio Gonzalez (R-South Sarasota County); State Rep. Joe Gruters (R-Sarasota); State Senator Bill Galvano (R-Bradenton); Susie Quinn, Chief of Staff to U.S. Senator Bill Nelson (D-Florida); State Senator Denise Grimsley (R-Lake Placid); State Rep. Michael Grant (R-Port Charlotte); State Rep. Kristin Jacobs (D-Coconut Creek); Ethan Abner, Legislative Aide to U.S. Rep. Tom Rooney (R-Florida); Anne Bell, Legislative Aide to State Senator Denise Grimsley (R-Lake Placid). Also, Nikaolo Pula, Director of Office of Insular Affairs, US Department of Interior and Ambassador Jose Ramon Cabanas, Cuba Embassy.

PUBLIC SERVICE CONTINUES ON NEXT PAGE ▸

Red Tide Reports: Now There's an App for That

Mote scientists have developed a new app that allows smartphone users to help report impacts caused by Florida red tides. The goal is to increase the number of people making reports about possible red-tide effects on beaches, provide greater access to red tide information to beach visitors and to ensure better beach days.

Karenia brevis, the organism that causes red tide, is found naturally in the Gulf of Mexico and is observed throughout the year. But in elevated concentrations, red tides can cause respiratory irritation in humans and kill fish and other marine animals. Many factors, including algae distribution, currents and winds, can determine whether effects are noticeable. When a person leaves an area with a red tide, symptoms usually go away. People with asthma, COPD or other chronic respiratory conditions are cautioned to avoid areas with active red tides.

Blooms of Florida red tide can be very patchy, with background to high concentrations occurring in close proximity to one another. Therefore, effects may be noticeable on one beach but not on a nearby beach.

The free app, Citizen Science Information Collaboration (CSIC), allows users to report when and where they experience respiratory irritation or see discolored water or dead fish — all potential indications of Florida red tide.

The new CSIC app — available for iOS and Android phones — is designed to enhance and complement existing red tide resources for the public, including FWC-FWRI's statewide red tide tools and status updates, the National Oceanic and Atmospheric Administration's respiratory irritation forecasts, Mote's Beach Conditions Reporting System's twice-daily updates at 31 Gulf Coast beaches, and the University of South Florida's three-day forecasts of bloom trajectories and processed chlorophyll imagery (indicating marine algae) with red tide concentrations overlaid.

The app was developed by Dr. Tracy Fanara, manager of Mote's Environmental Health Program, with Dr. Vincent Lovko, manager of Mote's Phytoplankton Ecology Program, and web development contractors at Function on Phones.

Recovery: Mote Stranding Investigations Program staff recover the carcass of a deceased pilot whale and prepare it for necropsy at Mote Marine Laboratory.

Stranding Investigations Program

In 2017, Mote's Stranding Investigations Program — the 24-hour response program for marine mammals and sea turtles in Sarasota and Manatee counties — fielded more than 580 calls from the public about possible sick or injured marine animals. Staff recorded and/or recovered 18 dolphins and whales, 110 sea turtles, some of which were taken to Mote's Sea Turtle Rehabilitation Hospital. Mote responders also assisted FWC colleagues with four manatee rescues and 17 recoveries of deceased manatees.

The Program is also often called upon to help during mass stranding events outside of our local counties. In January, program staff responded to a mass stranding of 95 false killer whales in the Florida Everglades. Mote and other members of the response team — from NOAA Fisheries, the Florida Fish and Wildlife Conservation Commission (FWC), the National Park Service, the Sarasota Dolphin Research Program, Dolphins Plus Oceanside Marine Mammal Responders, Harbor Branch Oceanographic Institute, Marine Animal Rescue Society, Rookery Bay National Estuarine Research Reserve, the University of Florida, the U.S. Coast Guard and the U.S. Geological Survey — tried to herd several animals back into deeper waters but they re-stranded. In the end, 72 whales died, 10 were humanely euthanized and 13 remained unaccounted for. Field necropsies were conducted on eight of the animals to try to determine the cause of the stranding but the results were inconclusive. Some strandings are never fully understood, but each sample collected helps scientists better understand these species' lives and deaths.

Program staff, in partnership with the Sarasota Dolphin Research Program and the Florida Fish and Wildlife Conservation Commission (FWC) also responded to a stranding of about 20 Fraser's dolphins on Siesta Key's Turtle Beach. Ultimately, one large male dolphin was humanely euthanized and the remainder of the dolphins were successfully herded back to sea.

Hospital Care for Endangered and Protected Species

Mote's Sea Turtle Rehabilitation Hospital cared for 41 sea turtle patients in 2017. The hospital provides critical and ongoing care for sick and injured sea turtles until they can be returned to the wild. Patients included a group of cold-stunned Kemp's ridley sea turtles, an endangered species, brought to Mote from Massachusetts.

The hospital also released a rehabilitated, male loggerhead turtle nicknamed "Sea Salt" in February. The turtle had been found floating one mile off Holmes Beach in Manatee County in 2016. Before his release, the turtle was fitted with a satellite tag, that allowed scientists to track his movements in the wild. These tags also help measure the success of the rehabilitation. By late July, he had traveled a meandering path up, down and offshore of the Southwest Florida coast, swimming a total distance of about 1,470 miles (2,366 kilometers) and covering about an 80-mile range north to south along the coast. Sea Salt was the sixth adult male sea turtle tagged by Mote scientists. Males are tagged less often because, unlike females, they don't come ashore to nest and are usually only available to Mote when they are treated and released by the Lab's Sea Turtle Rehabilitation Hospital.

Rehab and Release: Staff from Mote's Sea Turtle Rehabilitation Hospital and Stranding Investigations Program release loggerhead sea turtle "Sea Salt" off Lido Beach in February.

Mote's Dolphin & Whale Hospital also marked another successful rehabilitation when the Sarasota Dolphin Research Program (SDRP) — the world's longest running study of a wild dolphin population — spotted a former patient with a new calf. The dolphin, nicknamed "Ginger" is part of the resident dolphin population in Sarasota Bay regularly monitored and studied by the SDRP. Ginger was rehabilitated by Mote's hospital after stranding on the beach in 2008, when she was 3 years old. Ginger gave birth to her first calf in 2015, but it disappeared within about six months. (Loss of first-born calves is not unusual, in dolphins or many other mammal species.) The new calf was first observed in July and continued to be seen with the baby through the end of the year. Seeing Ginger move from stranded youth to young mother indicates the success and importance of Mote's rehabilitation hospital and its role in supporting new generations of Sarasota dolphins.

Monitoring and Protecting Endangered Sea Turtles

Sea turtles laid a near-record number of nests from Longboat Key through Venice in 2017, according to Mote's Sea Turtle Conservation & Research Program and its Sea Turtle Patrol volunteer team who monitor this 35-mile stretch of beaches each day of nesting season, May 1-Oct. 31. They documented 4,503 nests from all sea turtle species across Mote's patrol area. Of those, 4,424 were laid by threatened loggerhead sea turtles and 79 by threatened green sea turtles. Two nests in the loggerhead group were sampled for genetic testing to determine whether they were hybrids resulting from loggerhead and green turtles mating.

Researchers also documented the risks that beach furniture posed to nesting turtles in 2017 — reporting that at least 104 local sea turtles interacted with beach furniture, sometimes dragging chairs caught on their backs. These events triggered additional Mote efforts to help educate the public on the importance of removing furniture from the beaches at night to protect these threatened and endangered reptiles during their nesting season and to follow other turtle-smart procedures.

Thumbs Up for Turtles: A participant in Mote's 31st Annual Run for the Turtles poses with Mote mascot Shelly the Sea Turtle.

Running for the Turtles

More than 1,000 runners and walkers hit the beach to help endangered and threatened sea turtles during Mote's 31st annual Run for the Turtles in April on Siesta Public Beach.

The Run, a 5K race sanctioned by the Manasota Track Club and a 1-mile fun-run/walk, has provided major support for Mote's Sea Turtle Conservation and Research Program. Over the years, the research program has monitored more than 82,538 turtle activities and protected more than 2 million turtle hatchlings. The Program has also tagged 6,172 turtles for identification and fitted some with satellite transmitters to track the turtles' migrations through the ocean.

To amplify the Run's support for marine science and conservation, Mote joined forces with Positive Tracks, which helps young people get active and give back through the organization's U23 Challenges Program. In 2017, Positive Tracks generously pledged to help youths organize fundraising efforts around the Run and double every dollar raised by Run team members up to $23 and team captains' dollars up to $230.

Removing Invasive Lionfish

Divers removed 1,079 invasive lionfish from the Gulf of Mexico during the fourth annual Sarasota Lionfish Derby in July, saving an estimated total of at least 1.6 million fish from the invasive predators.

The Derby was undertaken through a partnership between Mote and Reef Environmental Education Foundation (REEF), which helps study and address the lionfish invasion and sanctions official lionfish derbies. It drew 14 teams of divers who vied to catch the most lionfish, the largest lionfish and the smallest lionfish in Gulf of Mexico waters ranging from Collier to Escambia County.

More than $3,500 in total cash prizes were awarded to first, second and third place winners in each category during an awards ceremony that filled Mote's WAVE Center to capacity. Leading up to the ceremony, top local chefs from Indigenous Restaurant, Seafood Shack, Beach House, Mattison's Forty-One and Mote's Deep Sea Diner prepared tasty dishes during a lionfish cooking competition. Winners were determined by popular vote. The public also visited educational booths about lionfish, checked out gear designed to capture them and watched lionfish be counted and measured by REEF staff and dissected by Mote scientists.

Angling for Snook Science

More than 40 anglers participated in the 2017 William R. Mote Memorial Snook Shindig, a research-based catch, sample and release tournament in November. This unique tournament involves the public in monitoring for snook raised at Mote and then released as part of fisheries studies.

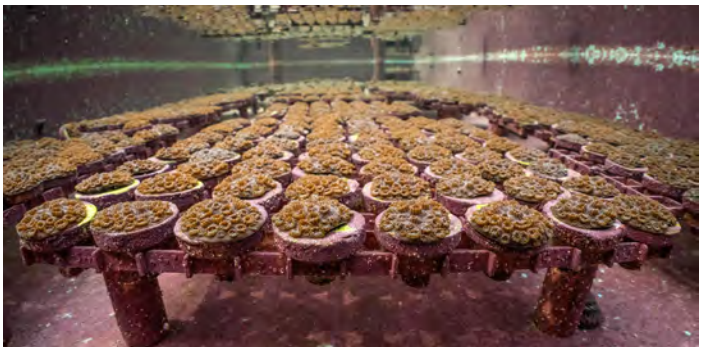
Snook are one of the most sought-after catches in Florida's saltwater recreational fishing industry, which draws more than $7 billion to the economy annually. However, increased fishing pressure, habitat loss and natural challenges such as cold weather and red tides have contributed to declines in snook populations. For more than 30 years, Mote and FWC scientists have partnered in research designed to evaluate whether hatchery-raising and releasing snook into the wild can be an effective fishery management tool. The tournament helps scientists estimate the contribution of previously tagged-and-released snook to the Sarasota Bay snook fishery and glean valuable information about snook growth, survival and migration patterns.

Over decades, Mote scientists have released more than 61,000 snook into Sarasota-area waters. Past Snook Shindig results have revealed that changes in snook-release strategies, based on Mote pilot studies, have improved survival of stocked snook by as much as 200 percent. The tournament's presenting sponsors were Carol and Barney Barnett, who have donated $3 million to help Mote implement its Fisheries Conservation & Enhancement Initiative — a science-based, community-wide, grassroots partnership initiative aimed at fisheries conservation and sustainable use in Sarasota Bay. The Barnetts' leadership gift challenges others to match this critical support toward this important initiative.

Coral Research and Restoration Funding

The state of Florida and a private family foundation both took note of Mote's unique coral reef research and restoration programs in 2017 and provided important financial support that will continue to fund Mote science that is at the vanguard of restoring Florida's coral reefs.

The Charles & Margery Barancik Foundation awarded Mote a $300,000 grant to support Mote's coral restoration effort including coral microfragmenting work in Mote's inland coral nursery. This particular aspect of the restoration process involves Mote scientists growing small pieces of boulder corals at its inland laboratory facilities that are then planted on degraded reefs in the ocean. The funding will help support genetic testing of these coral fragments to ensure that scientists are planting those that will be most resilient to future ocean conditions.



Microfragments: Small fragments of boulder coral are grown on land in Mote's laboratory facilities before being planted in the wild.

The state of Florida is also supporting Mote's coral restoration work conducted in partnership with Florida's Fish and Wildlife Conservation Commission (FWC) and the Department of Environmental Protection (DEP) through a $500,000 appropriation that began in October 2017.

This funding will support Mote planting 25,000 corals within a year. Reefs in the Florida Keys provide a $6-billion annual economic benefit to the state's economy, support 71,000 jobs and provide the first line of defense for coastal resiliency; reef restoration is critical for preserving and nurturing the beauty, biodiversity and economic impact of this natural treasure.

Memorial Fund to Support Mote Biomedical Research

Mote has created a new research fund in memory of long-time volunteer and board member Ronald A. Johnson through the generous support of the Glaze family and their company, Fort Wayne Metals.

Johnson, former mayor of Longboat Key, first became involved in Mote's efforts as a volunteer when he moved to the area in 1996. He served as a Mote Trustee from 2002 to 2013, holding multiple leadership positions and making significant contributions to the organization. He remained an honorary Trustee until his death in 2016.

The Ronald A. Johnson Memorial Fund will support Mote's biomedical research to advance studies of cancer-fighting compounds developed from shark immune cells.

Mote Accolades

Mote Aquarium received several readers' choice awards from area publications in 2017:

- Sarasota Herald-Tribune's Reader's Choice Award for Best Local Children's Attraction;
- Sarasota Herald-Tribune's Reader's Choice Award, runner up, for Best Local Tourist Attraction;
- SRQ Magazine's award for Best Local Children's Attraction
- Best Attraction award from SarasotaOUT.com.

Mote was also named Tampa Bay Business Journal's 2017 Nonprofit of the Year in the Environment and Animals category. The Journal honored 38 finalists across seven categories: Arts, Culture and Humanities; Crisis Resources; Education; Environment and Animals; Family Services; Health and Human Services; and Public and Societal Benefit.

Mote — an independent, nonprofit marine science institution that leads today's research for tomorrow's oceans — won among five finalists in the Environment and Animals category.

Virtual Teaching: Mote Senior Coordinator of Digital Programs Kasey Gaylord-Opalewski teaches a class via videoconferencing.

Digital Learning Program Honors

The International Society for Technology in Education (ISTE) honored Mote's digital learning program, SeaTrek.TV, with the 2017 Interactive Video Conferencing Professional Learning Network Content Provider award for their outstanding contributions to interactive videoconferencing.

SeaTrek.TV brings Mote's research, animals and exhibits to classroom learners using affordable, easy-to-use distance learning technology. These virtual field trips are an exciting way to engage learners with STEM topics such as diving into Mote Aquarium and chatting with a shark specialist or exploring the Florida Keys and making observations like a real coral reef scientist.

Mote-Focused TV Episode Wins EMMY

In 2017, Mote's Sea Turtle Conservation and Research Program was the subject of an episode of WEDU's *Quest*, a monthly series from the Tampa-area PBS affiliate that captures the latest news in science, technology and education.

The episode, called "Sea Turtle Nesting Season," won a Suncoast Regional EMMY® in the Environmental Programs category. It was one of five finalists judged by a panel of veteran television professionals.

Global Shark Research

Dr. Robert Hueter, Director of the Center for Shark Research at Mote Marine Laboratory, is now serving as Chief Science Advisor to OCEARCH.org. OCEARCH is a nonprofit organization dedicated to generating scientific data about great white, tiger and other keystone shark species through the collection of biological samples from captured sharks that are briefly held (15 minutes or less) then tagged and released. The tagged animals are tracked in the wild and scientists are uncovering brand new information on each species they track.

In a collaborative environment established by Founding Chairman and Expedition Leader Chris Fischer, OCEARCH shares real-time data through OCEARCH's Global Shark Tracker, which is also designed to inspire current and future generations of explorers, scientists and ocean stewards. Through April 2017, OCEARCH completed 28 expeditions worldwide.

In 2016, OCEARCH open sourced the data on the Global Shark Tracker to 2.3 million users, achieved an annual global reach of more than 6 billion media impressions, a Facebook reach of 70 million impressions, and a Twitter reach of 134 million impressions.

Mote Scientist Joins Pacific Congress of Marine Science and Technology Board

Dr. Kenneth Leber has been named to the Pacific Congress of Marine Science and Technology (PACON) Board of Directors. PACON is an international organization comprised of marine scientists, engineers, industrialists and policy-makers dedicated to sharing state-of-the-art marine science and technology and the appropriate applications of this technology from countries around the Pacific Rim and beyond. PACON's principle goal is to provide information to all participating nations to promote the environmentally sound utilization of ocean resources and to advance knowledge in the various disciplines. The

organization provides an international forum for nations and islands of the Pacific to exchange information, ideas and technology. Mote President & CEO Dr. Michael P. Crosby, is a Past-Chairman of the PACON Board of Directors and continues to serve on the Board.

Coral Restoration Recognition

Dr. David Vaughan, Executive Director of Mote's research facility in the Florida Keys, received some accolades for his coral research and restoration work in 2017. Vaughan was recognized by the U.S. Coral Reef Task Force and also honored with a prestigious conservation award from The Field Museum in Chicago. In January, he was featured in AARP's #DisruptAging campaign, which focuses on replacing negative and inaccurate stereotypes that exist about aging with a realistic and positive representation of what aging has come to mean.

Coral restoration techniques applied by Vaughan and his colleagues allow for restoring large areas of reef-building corals in just one or two years instead of the hundreds of years that some slow-growing corals might need on their own.

Mote Librarian Elected to Consortium

Mote's science librarian, Kay Garsnett, was elected to the board of a professional library association whose members serve more than a third of Florida's population.

Garsnett is now the Special Libraries representative for the Tampa Bay Library Consortium (TBLC) Board of Directors, for a term spanning January 2018 through January 2021. Members include state colleges, state university system libraries, private academic schools, colleges and universities, public school systems and public and special libraries. Together these libraries serve more than 6.3 million central Floridians in 18 of Florida's 67 counties.

New Protect Our Reefs Marketing Manager

Amy Hernden joined Mote in 2017 as the organization's Protect Our Reefs Marketing Manager. The position raises awareness of Mote's Protect Our Reefs program — funded through sales of the Protect Our Reefs specialty license plate — to help fund coral reef research, restoration, education, conservation and outreach.

Hernden was born and raised in Bradenton before moving to Jacksonville to attend the University of North Florida where she obtained her Bachelor of Science in Communication. Her career includes a diverse background of experience in development, special events, public relations and membership for both nonprofit and private hospitality organizations. Learn how you can support Mote's mission and purchase your own Protect Our Reefs license plate:

- ONLINE AT: motereefplate.com

Inaugural Recipient Awarded Fellowship in Mote Founder's Name

In 2017, Mote Marine Laboratory welcomed its first recipient of the Mote-NCF Eugenie Clark Undergraduate Marine Research Fellowship: Maria Shehata, a student from Egypt pursuing her undergraduate degree at New College of Florida. Maria has been conducting coral genetics research with her Mote mentor, Staff Scientist Dr. Erinn Muller, Manager of Mote's Coral Health & Disease Research Program and Science Director for the Elizabeth Moore International Center for Coral Reef Research & Restoration.

Mote and New College of Florida (NCF) established the Eugenie Clark Undergraduate Marine Research Fellowship in partnership with the Daughters for Life Foundation, an organization that provides scholarships and awards that enable aspiring young women of any Middle Eastern nationality or background to pursue undergraduate studies in Canada, the United States or United Kingdom. Eugenie Clark Undergraduate Marine Research Fellows have the opportunity to conduct hands-on scientific research at Mote. Supporting these young women honors the memory of a pioneering female marine researcher who made several of her exciting discoveries in the Middle East: Mote Founding Director Dr. Eugenie Clark.

The Mote-NCF Eugenie Clark Undergraduate Marine Research Fellowship was made possible with generous support from Mote Trustee Penelope Kingman, with additional internship support for Maria provided by the Community Foundation of Sarasota County.

TEA FOR THE SEA

Tea for the Sea is an annual event that celebrates women's leadership in the fields of science and philanthropy and the convergence of the two. In 2017, about 135 women attended the April 27 event at the Sarasota Yacht Club to hear from key Mote speakers Dr. Erinn Muller and Dr. Kevan Main.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PHOTOS BY: Conor Goulding / Mote Mainre Laboratory

1. Dr. Erinn Muller speaks to the audience about her work with Mote's Coral Health & Disease Program.

2. Mrs. Nathalie Mould and Ms. Katherine Vestal.

3. Mote President & CEO Dr. Michael P. Crosby presents Event Chair Kimberley Carriero with flowers.

4. Mote scientists Dr. Tracy Fanara, Dr. Emily Hall and Dr. Nicole Rhody.

5. Pictured left to right: Carolyn Donnelly, Mary Lou Johnson, Ellen Zimmerman, Joanne Forch, Catherine Kaplinski, Clemmie Cash, Kimberley Carriero, Betsy Winder, Beatrice Uzielli and Lucy Harris.

More than 400 people attended the Havana-themed 2017 Party on the Pass on March 24, in support of Mote's hospitals for sea turtles, dolphins and whales. The evening was full of good food provided by local restaurants, good music and good will. A silent auction was held to raise funds for the animal hospitals.

PHOTOS BY: Conor Goulding / Mote Marine Laboratory


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1. Tim Clarke and Mote Trustee Susan Gilmore-Clarke.
2. Sarasota County Commissioner Mike Moran and his wife Lori.
3. Carol and Mote Trustee Bob Carter.
4. Linda and Keith Monda, Michelle and Keith Senglaub, and Veronica and Jay Brady.

RUN FOR THE TURTLES

More than 1,000 runners and walkers hit the beach to help sea turtles during Mote's 31st Run for the Turtles on April 1, on Siesta Key Public Beach. The Run, a joint effort between Mote, the Manasota Track Club and Sarasota County Parks and Recreation, raises funds to help Mote scientists study and protect sea turtles.

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PHOTOS BY: Conor Goulding / Mote Marine Laboratory

1. Run participants Cooper and Lorienne Nickelson snap a photo before the race.
2. Participants line up to compete in the 1-mile fun run/walk on Siesta Key Public Beach.
3. A runner approaches the finish line of the 5K run on Siesta Key Public Beach.
4. Mote Mascot Shelly the Sea Turtle poses with a group of top placing participants after the 5K run.
5. Mote Education staff taught participants and onlookers about sea turtle research and conservation via Mote Mobile.

OCEANIC EVENING

It takes brains, heart and courage to be good stewards of our oceans and planet. Mote's 2017 Oceanic Evening drew over 400 ocean supporters for an elegant Emerald City themed event that shared the Lab's exciting vision for the future.

PHOTOS BY: Conor Goulding / Mote Marine Laboratory and Chris Fitz-Gibbons


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1. Mote President & CEO Dr. Michael P. Crosby welcomes guests to Mote's 2017 Oceanic Evening.
2. Jane Graham-Hyslop and Mote Trustee Judy Graham.
3. Mote Trustees John Dart and Richard Donegan, with Debbe Dart and the Wicked Witch of the West.
4. Guests dancing to live music at Oceanic Evening.
5. Mike Johnson, General Manager of the Florida National High Adventure Sea Base in the Florida Keys, and Michael Thorton, CEO & President of AMIkids.
6. A guest appearance from the Wizard of Croz.

VOLUNTEERS

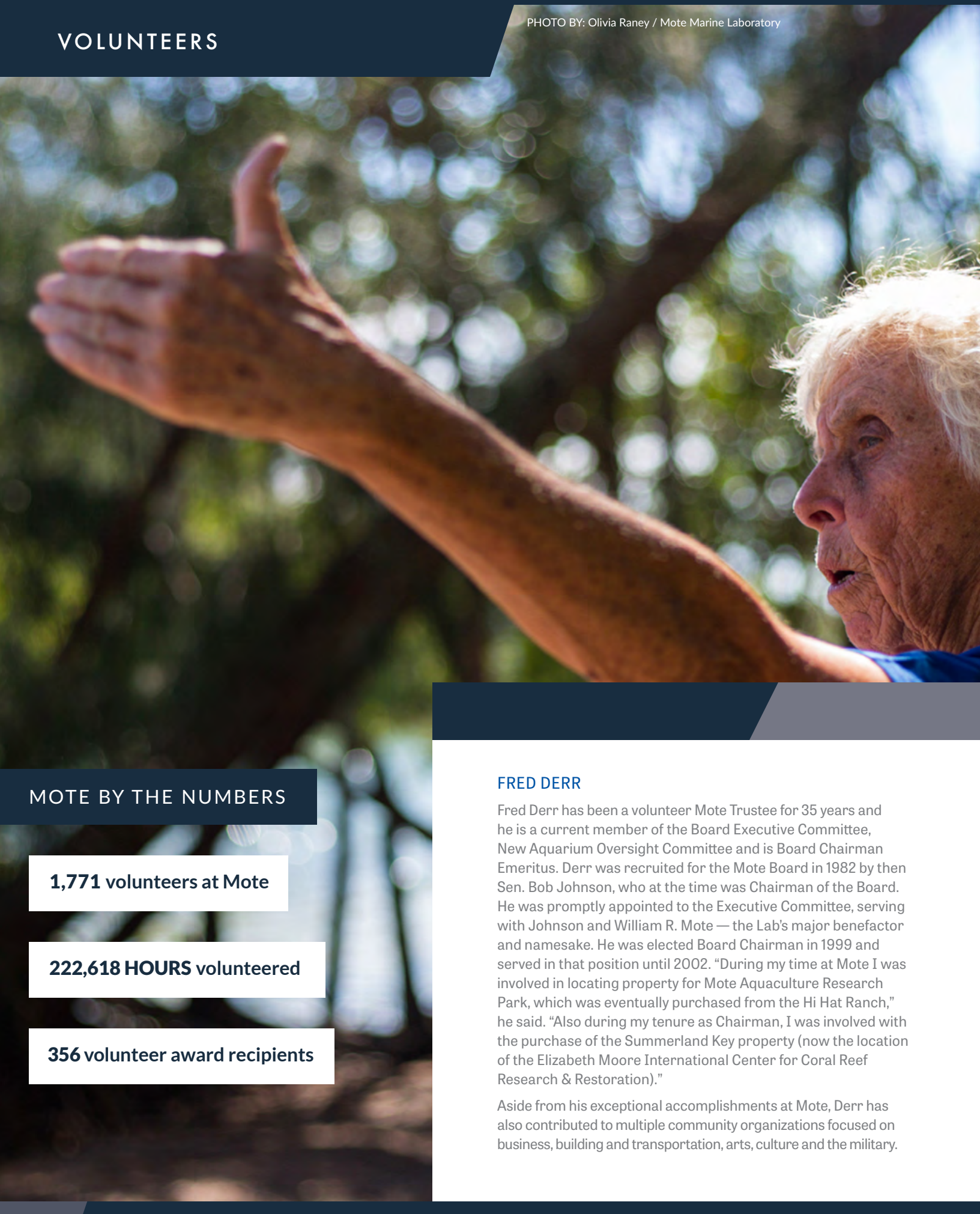

PHOTO BY: Olivia Raney / Mote Marine Laboratory

MOTE BY THE NUMBERS

1,771 volunteers at Mote

222,618 HOURS volunteered

356 volunteer award recipients

FRED DERR

Fred Derr has been a volunteer Mote Trustee for 35 years and he is a current member of the Board Executive Committee, New Aquarium Oversight Committee and is Board Chairman Emeritus. Derr was recruited for the Mote Board in 1982 by then Sen. Bob Johnson, who at the time was Chairman of the Board. He was promptly appointed to the Executive Committee, serving with Johnson and William R. Mote — the Lab's major benefactor and namesake. He was elected Board Chairman in 1999 and served in that position until 2002. "During my time at Mote I was involved in locating property for Mote Aquaculture Research Park, which was eventually purchased from the Hi Hat Ranch," he said. "Also during my tenure as Chairman, I was involved with the purchase of the Summerland Key property (now the location of the Elizabeth Moore International Center for Coral Reef Research & Restoration)."

Aside from his exceptional accomplishments at Mote, Derr has also contributed to multiple community organizations focused on business, building and transportation, arts, culture and the military.

Mote Volunteers Shine

10,000 Hours: Dr. Michael P. Crosby with the Volunteer Emeritus Award recipients, who have volunteered at least 10,000 hours, or 10 years, at Mote.

In 2017, volunteers filled 1,771 positions supporting Mote's Research, Aquarium and Education programs, donating thousands of hours of their time. Among the honorees at Mote's annual Volunteer Awards Ceremony were two members of the Mote Board of Trustees — Judy Graham and Frederick Derr, who have both served for 35 years. Volunteer Roberta Benninghoff was also recognized for 30 years of service.

"People I meet cannot believe we have so many volunteers, so actively engaged in Mote's mission of world class marine research, education and public outreach," said Mote President & CEO, Dr. Michael P. Crosby. "Mote was founded on passion, partnership and philanthropy, and our volunteers embody all three."

Another dozen volunteers were inducted into Mote's Volunteer Emeritus Program, which allows volunteers with a minimum of 10 years or 1,000 hours of service to be nominated by Mote's Volunteer Board and approved by Mote's President & CEO to receive special honors upon their retirement. Emeritus volunteers retain many benefits of their service at Mote — including visiting Mote Aquarium for free and attending certain special events.

Mote also presented awards to volunteers who had served for 25, 20, 15, 10, five, three and one years. Volunteers who had served more than 4,000 hours total during their lives also received the national President's Volunteer Service Award for lifetime achievement.

VOLUNTEER SPOTLIGHT

JUDY GRAHAM

Judy Graham is a volunteer Mote Trustee, leader of the Board's Governance Committee, member of the Executive and New Aquarium Oversight Committees and Board Chairman Emeritus. "I call this place Mote College, because you learn something every time you are here," Graham said. "It is a fabulous institution and I've enjoyed every moment that I have had the honor of spending here."

Graham reflected on her history with Mote: "In the early 80s, my good friend Dan Miller took me on the back-room tour of the Lab, and I was hooked! I was first asked to help out with Mote's early fundraiser, An Evening of Island Elegance, held in the unpaved Mote parking lot under a tent. It was anything but elegant most of the time! Through the years, Mote volunteered me for many things from helping bring the JASON Project to the campus to cleaning bathrooms for various functions. I ended up on the Board of Trustees and worked my way up to Chairman of the Board, but still have the privilege of cleaning a bathroom every so often!"

ROBERTA BENNINGHOFF

Roberta Benninghoff, began volunteering in 1987, about a year after her husband, Carl, started. Today, she is approaching 6,000 hours of volunteer service to Mote. "I met so many really fine people during my tenure, some of whom are among my best friends," Benninghoff said. "Carl and I took great pleasure in bringing our grandchildren to Mote; they thought they needed to visit each time they came to Sarasota."

During the ceremony, Benninghoff was joined by her daughter, who also attended last year's ceremony honoring Carl posthumously for his 30 years of service. "Together, Carl and I have given Mote 60 volunteer years. In this past year of grief since Carl's death, my Mote family has been a great support team for me with their caring kindness," said Benninghoff, who also generously volunteers her time with her church, neurochallenge Parkinson's patients, Key Chorale, La Musica and her homeowners' association board of directors.

SEE THE LIST OF AWARD RECIPIENTS ▸

2017 Volunteer Board

Angela Briguglio	Anna Marie Martin	Bob Whyte	Pam Baker
President	*Vice President*	*Treasurer*	*Secretary*

President's Volunteer Service Award

Connie Beaupre
Don Dietterick
Joanne Dietterick
Suzanne Goodman
Mike Herron
Melvin Kestner
Betty Linke
Jim Linke
Mary Pexa

35-Year Awards

Frederick Derr*
Judy Graham*

30-Year Awards

Roberta Benninghoff

25-Year Awards

Barbara Bock
Patty Sturtevant
Beth Waskom*
Barbara Wear

20-Year Awards

Sherry Emigh
Don Fleming
John Ginaven
The Honorable Andy Ireland*
Gene Stover

15-Year Awards

Judy Allen
Bernita Barker
Diana Britton
Sharon Dickman
Stephen Dickman
Richard Donegan*
Angie Gallicchio
Sal Gallicchio
Christine Garber
Diane Mckissick
Betty Morse
Marvin Morse
Mike Pizzi
Terri Pizzi
Peter Rosasco
Kerri Scolardi
Cyndi Seamon
Maureen Snyder
Sue Stolberg
Tony Tabeek

10-Year Awards

Cindy Barnes
Bette Boysen
Mary Brugger
Bruce Camardo
Paula Clark
Howard Cowan
Kate Cowan
Jim Davies
David Dickson
David Farrish
David Fontaine
Kay Furey
David Gill
Jim Grimes
Phyllis Hamblen
Yvonne Hebda
Kim Heuberger
Jeffrey Hollway
Cathy Horn
Jack Jenney
Carl Jones
Patricia Jones
Carole Kuklewski
Terry Leland
Stan Liner
Dennis Lutsky
Gary Marcus
Neal Marcus
Dick Miller
Dianne Millett
Roger Mitchell
Nigel Mould*
Sean Rea
Ken Rear
Pat Rolf
Ann Walborn

Volunteers Emeritus

Jack Baumring
Dave Bracy
Eileen Cohen
Dee Flanagan
Peggy Gause
Carol Kinder
Bill Lafollette
Mary Lafollette
Tom Maxfield
Norma Jean Mckeever
Evelyn Mitchell
Fran Schlusemann

* Mote Trustee or Honorary Trustee

PHOTO BY: Conor Goulding / Mote Marine Laboratory

MAKING WORLD-CLASS RESEARCH POSSIBLE

Protecting and conserving oceans isn't easy; it takes dedication, creativity, intellectual capacity, stamina and an endless capacity of curiosity and desire for discovery.

But world-class research also depends on the generous philanthropic support of individuals and private foundations who believe in our mission and choose to help Mote reach its goals. In 2017, we received 12,182 gifts from 9,293 donors, including 155 corporate supporters.

We thank this strong community of donors who believe in Mote and show their support through their generous gifts.

MOTE BY THE NUMBERS

12,182 donations

more than **9,500** members

155 corporate members

143 Legacy Society members

$500,000 and over

The Alfred and Ann Goldstein Foundation, Inc.
Ms. Elizabeth Moore
Mr. and Mrs. Hoyt R. Barnett
GiveWell Community Foundation
Gulf Coast Community Foundation

$250,000 - $499,999

Anonymous
Anonymous
Anonymous
Charles and Margery Barancik Foundation
Mr. Frank A. Brunckhorst and Mrs. Jaclyn Kim

$100,000 - $249,999

Anonymous
The Community Foundation of Sarasota County
The Dart Foundation
Mr. and Mrs. Robert A. Essner
Jane's Trust Foundation
Donald Ronald Janusz Estate
Helen Johnson-Leipold and Craig Leipold
Mr. and Mrs. Keith Monda
Rick and Nancy Moskovitz Foundation
Mr. Robert Richey, Sr.
Ms. Peggy J. Sears
The Steinwachs Family Foundation
Mr. and Mrs. James I. Uihlein
Mr. and Mrs. James P. Uihlein

$50,000 - $99,999

The Charles T. Bauer Charitable Foundation
Michael and Marcia Corrigan
Mr. James D. Ericson
Judy Graham
Mr. and Mrs. Andrew Hartman
The Hutson Wiley and Echevarria Foundation, Inc.
McCune Family Foundation
Mr. G. Lowe Morrison
Mote Scientific Foundation
The Lookout Foundation, Inc.

Carol and Barney Barnett with Mote President & CEO Dr. Michael P. Crosby, at a Tampa Lightning game where they were honored.

Mr. and Mrs. Niles Noblitt
Park Foundation, Inc.
Mr. and Mrs. Richard Robb
Vinik Family Foundation
Mr. and Mrs. Robert M. Williams
Wohlers Family Foundation

$25,000 - $49,999

Anonymous
Mr. and Mrs. James A. Armour
Axe Inc Technologies
Gene and Anne Beckstein
Boscia Family Foundation
The Brookby Foundation
The Cabbadetus Foundation
Mr. and Mrs. Philip E. (Mickey) Callanen
Mr. and Mrs. Robert E. Carter
Mr. and Mrs. Ronald D. Ciaravella
Mr. and Mrs. Howard C. Cobin
Dolphin Aviation
Frank E. Duckwall Foundation, Inc.
Genova Products
GFP Properties of Sarasota LLC
Ms. Penelope L. Kingman
The Jerome M. Kobacker Charities Foundation
Estate of Roger O. Kurth
Mr. and Mrs. Trudo Letschert, Sr.
Mr. and Mrs. Kirk F. Malcolm

Manatee Community Foundation
Mr. and Mrs. Thomas E. McInerney
Mercury Marine
The New Amsterdam Charitable Foundation
Sara Roberts Foundation
Schmidt Marine Technology Partners
Mr. William R. Shepard
The Snow Family Foundation

$10,000 - $24,999

Anonymous
Wally Adams Foundation
American Endowment Foundation
Arthur and Catherine Armitage
Mr. and Mrs. James H. Bankard
Benderson Development Company
Bird Key Yacht Club
The Edward E. and Lillian H. Bishop Foundation
Donald C. Brace Foundation
Mr. and Mrs. Fred C. Brumbaugh
Caldwell Trust Company
Carbonari Family Foundation
Estate of Dr. Eugenie Clark
Mr. and Mrs. Scott Collins
Mr. and Mrs. W. Thomas Cook
Mr. and Mrs. Kenneth Cox
Dr. and Mrs. Michael P. Crosby
Crystal Springs Preserve, Inc.
Mr. James K. Culter and Ms. Jan Miller
Mr. and Mrs. Maurice Cunniffe
Mr. and Mrs. John M. Dart
Mr. and Mrs. Frederick M. Derr
Frederick Derr & Company, Inc.
Mr. and Mrs. Richard O. Donegan
Ruth DuPont Lord Charitable Trust
Mr. Dean H. Eisner
Julius Fleischman Foundation
Fort Wayne Metals Research Products Corp.
The Foundation for Jewish Philanthropies
Ralph S. French Charitable Foundation Trust
Mrs. Susan C. Gilmore
Mr. and Mrs. Scott A. Glaze
The Griffin Endowment
Mr. and Mrs. Philip D. Harrison
Hayward Flow Control
Hubbard's Marina
Mark and Carol Hyman Fund
Mr. and Mrs. Michael V. Janes
The Jewish Federation of Sarasota-Manatee
Kates Foundation Inc.
Rita B. Lamere Memorial Foundation
Longboat Key Turtle Watch
Ms. Pauline Lord
Manasota Air Service
McGue Family Charitable Fund
Edwin T. Meredith Foundation
Mr. Nigel P. Mould and Ms. Nathalie Randanne de Vazeille
The Mary E. Parker Foundation
PNC Financial Services Group
Polycom
Ms. Marguerite Potter
Publix Super Markets Charities, Inc.
Mr. and Mrs. Edward M. Reefe
Renaissance Charitable Foundation
The Resort at Longboat Key Club
Mr. Randall Ridenour
Mr. William S. Robertson and Ms. Lynn Welty
Mr. and Mrs. George Rothweiler
Samowitz Foundation
Ms. Karen Scheid
Dr. and Mrs. Howard A. (Sam) Seider, Jr.
Mr. and Mrs. Charles R. Smith

Mote Trustee Scott Collins at Mote's 31st Annual Run for the Turtles.

Willis A. Smith Construction, Inc.
Ms. Elizabeth Steele
Ms. Sandi Stuart and Mr. D. Michael Murray
Mr. and Mrs. Richard S. Talford, Jr.
The Thomas Family
L.V. Thompson Family Foundation
Triad Foundation, Inc.
Mrs. Ann S. Walborn
Mr. and Mrs. Ray Walborn
Mr. and Mrs. Thomas H. Watson
Wells Fargo Foundation
Ms. Barbara L. Whitcraft and Mr. David Heinsler
Misdee Wrigley and James Mather Miller Charitable Foundation

$5,000 - $9,999

Ms. Judy Aleman and Mr. Steve Bloom
Allen & Company
Mr. and Mrs. James T. Bisesi
Boca Grande Womans Club
Branch Banking and Trust (BB&T)
Mr. and Mrs. Travis Brown
The Buchanan Family Foundation
Mr. Kenneth Buchanan
Mr. and Mrs. Jonathan Bull
Mr. and Mrs. Paul Carreiro
Chicago Mercantile Exchange
Combined Federal Campaign
Cowles Charitable Trust
LTG Howard G. Crowell, Jr. USA, Retired, and Mrs. Crowell
Mr. and Ms. David Curry
Death's Door Distillery
Donate Well dba GoodDoneGreat.com
Mr. N. Rogan Donelly
Mr. and Mrs. Richard Engel
Mrs. Shirley E. Fein
Firkins Automotive Group
Helen Forde Gander and Mary A. Baldwin Charitable Trust
GE Foundation Matching Gift Program
The Glick Family Foundation
Golder Family Foundation
Mr. and Mrs. Andrew Hemmert
Hunter Ward Foundation
Mr. Ervin D. Johnson, Jr.
Mr. and Mrs. Larry Kabinoff
Dr. Candace Kendle and Mr. Christopher Bergen
Mr. and Mrs. Melvin M. Kestner
Mr. and Mrs. Gerald A. Kolschowsky
Ms. Lynne Koy
Mr. Neil LaBelle and Ms. Lu Abrams
Dr. and Mrs. David Law
Mr. Brightman Logan & Family
Mr. Robert Lydecker
Macy's
Mrs. Jean M. Martin
Mrs. Jeane S. Martin
Massachusetts Mutual Life Insurance Company
Mr. and Mrs. Stephen McLennan
Mr. and Mrs. Mark Melvin
Mr. and Mrs. Larry A. Merriman
Rebecca and Toma Milbank
Ms. Virginia A. Miller
The Montei Foundation
Mosaic Fertilizer, LLC
The Curtis & Edith Munson Foundation
National Christian Foundation - Wisconsin
Network For Good
The PNC Foundation
Porter Foundation
Mr. Richard S. Prescott
The Pruitt Foundation, Inc.

Jeff Boyd at Mote's Breakfast with the President event.

Andy & Anne Hemmert with Shaikh and Kerry Rasool at Oceanic Evening.

Rays Baseball Foundation
Mr. William C. Saba
Sabal Trust Company
Safari LTD
Mr. and Mrs. Lawrence F. Schmidt, Sr.
S & H, Inc.
The Shannon Foundation
Mr. and Mrs. Thomas C. Sherman
Snyder Family Foundation NFP
Mr. and Mrs. Cyrus W. Spurlino
Stark Community Foundation
SunTrust Foundation
Mr. and Mrs. Hobart K. Swan
The Tarr Charitable Family Foundation
Trinchero Family Estates
Estate of Heidi Turner
Mr. and Mrs. Thomas Tussing
UBS Private Wealth Management
Mr. Bobby Whitley

$1,000 - $4,999

Anonymous
Anonymous
530 Burns Gallery
Dr. Denise D. McHugh and Mr. Douglas M. Adams
AgileThought
Mr. David W. Agostine
Alessi Bakery
Mr. and Mrs. Phil Alessi
Amazon Smile Foundation
Mr. & Mrs. Cass P. Anderson
Mrs. and Mr. Theresa Arnold
Mr. and Mrs. James E. Baker
The Bank of America Charitable Foundation, Inc.
Mr. and Mrs. Charles R. Baumann
BB&T Insurance Services
Beacon Aviation Insurance Services
Mr. and Mrs. Daniel F. Bebak
Mr. and Mrs. Glenn K. Bell
The Benevity Community Impact Fund
Mr. and Mrs. Donald Berk
Mr. and Mrs. Donald H. Bernstein
Ms. Lisabeth Bertsch
Mr. Richard Biddle
Mr. James Blackford
Blackthorn Ventures, Inc. dba Lynches Pub & Grub
Mr. and Mrs. Bob Blalock
Mr. and Mrs. Lawrence Blau
Mr. Stephen W. Boesel
Mr. Robert J. Brodbeck
Buchanan Family Foundation
Buckeye Reef, LLC
Mr. and Mrs. Stephen R. Buckley
Mrs. Judy Cahn
Ms. Cheryl Caldwell
Mr. Robert J. Cameron and Ms. Laura Bryg
Canandaigua National Bank & Trust Co.
Captain Planet Foundation
CapTrust
Mr. and Mrs. Steve Carter
Mr. and Mrs. Phillip D. Charney
Mrs. Carole K. Chrisman
Mr. and Mrs. Edward K. Christian
Ms. Laurel B. Cohen and Mr. Axel Traugott
Cohen-Toon Fund
Columbia Restaurant Group
Community Foundation of Tampa Bay
The Community Foundation of Will County
The Community Foundation Serving Richmond & Central Virginia
Mr. and Mrs. Chandler B. Converse, Jr.
Deborah M. Cooley Charitable Trust

Mote Trustee Judy Graham with Tom & Kathi Sherman at Oceanic Evening.

Mr. Robert E. Copeland and Ms. Marian Holmes
Mr. and Mrs. Jim Cowperthwait
Mrs. Ann Crosby
Mr. and Mrs. Joseph A. Crupi
Ms. Nancy Cunniffe
Mr. and Mrs. Johnnie M. Curls, Jr.
Mr. and Mrs. Alfred D'Alessio
Mr. and Mrs. Gary Davis
Mr. and Mrs. Michael E. Davis
Mr. and Mrs. John P. Deckro
Mr. and Mrs. Neil DeFeo
DEX Imaging, Inc.
Diamond Vault
Mr. and Mrs. David Dickson
Disney Worldwide Services, Inc.
Mr. and Mrs. Robert E. Dods
Ms. Babs Doherty
Drum Circle Distilling LLC
Mr. and Mrs. David Dunlap
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More than 9,500 individuals and families choose to support Mote's mission by participating in Mote's Membership program. This special "club" is for those who know that the dollars we raise through the program help support the daily cost of science, science education and animal keeping: keeping habitats clean and healthy and animals fed, keeping the lights on, water filters working and the research equipment running. In return, Mote Members have ready access to Mote Aquarium and to the interactive programs that make learning about our oceans fun.

We thank all Mote Members for their support and invite you to join or renew your membership today. Go online to mote.org/membership or call (941) 388-4441, ext. 373.

Leaving a Legacy for Future Generations

Every Mote supporter has their own connection to Mote — their own reasons for giving. But members of Mote's Legacy Society all have one thing in common: Their belief in Mote's long-term success, the desire to support its future and the commitment to the health and sustainability of our oceans. By designating Mote as a beneficiary in their estate plans, Legacy Society members are using the power of deferred giving to provide key support that will allow Mote scientists and educators to continue doing what they do best: working for the good of our oceans for generations to come.

LEGACY BRUNCH

Each year, Mote hosts a brunch event for members of its Legacy Society. This year's brunch was held on Feb. 16, in the New Pass Room at Mote Marine Laboratory.

1. Legacy Society members enjoy brunch at Mote Marine Laboratory.

2. Mote President & CEO Dr. Michael P. Crosby welcomes members of Mote's Legacy Society.

3. Guest speaker Dr. Nicole Rhody, Staff Scientist with Mote's Marine & Freshwater Aquaculture Research Program, addresses the attendees.

DEVELOPING YOUR OWN OCEAN LEGACY

Mote's Legacy Society is made up of inspirational supporters that champion Mote's mission and vision for the future through planned giving. To learn more about joining Mote's Legacy Society, please contact our Development Office at (941) 388-4441, ext. 309.

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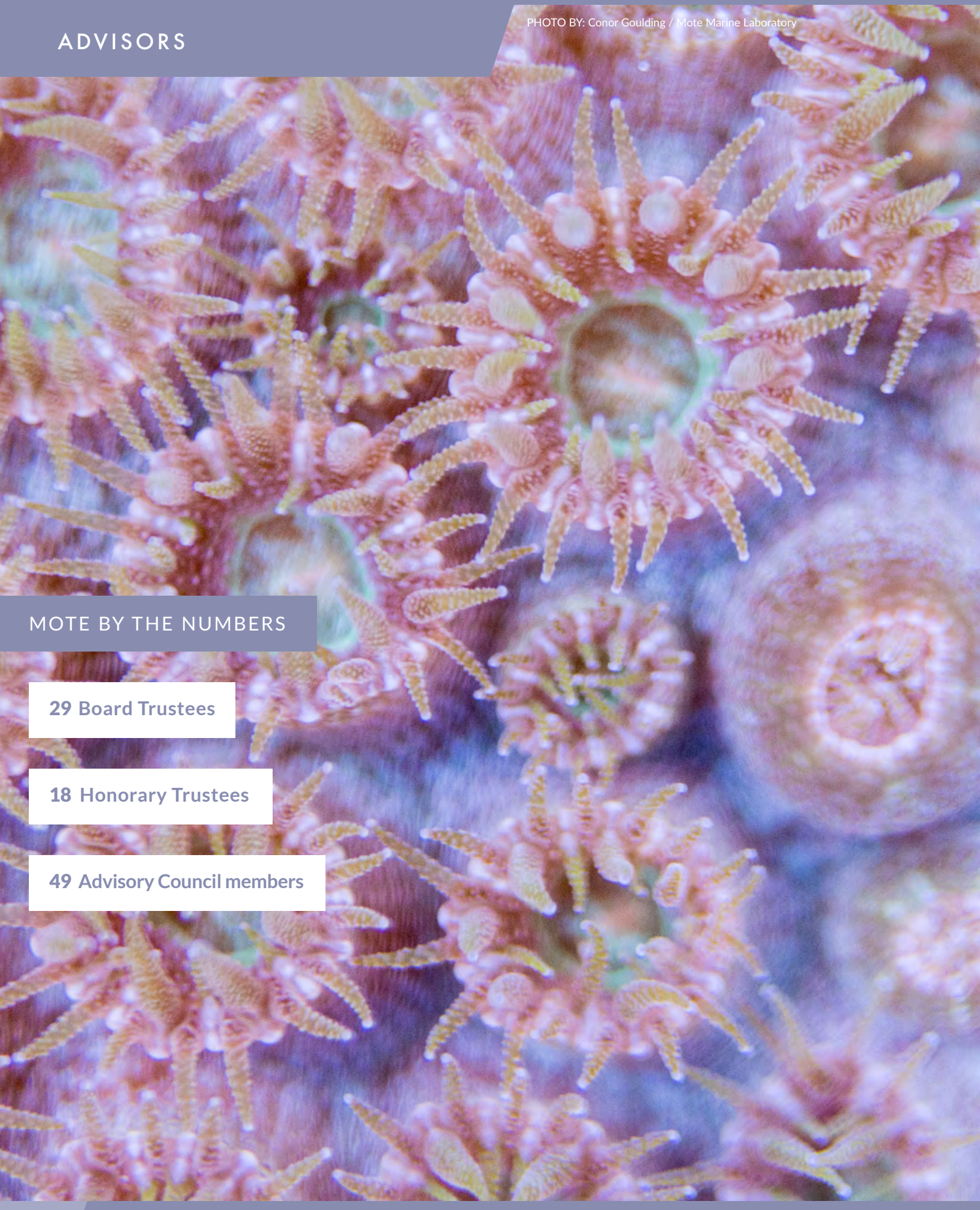

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MOTE BY THE NUMBERS

$19.1 MILLION Laboratory net assets

$16.2 MILLION Foundation net assets (endowment)

$1,023,925 Protect Our Reefs specialty license plate sales

PROTECT OUR REEFS

Established in 2003, the Protect Our Reefs specialty license plate program provides a $25 donation to Mote Marine Laboratory for each plate sold in the state of Florida and helps to fund coral reef research, restoration, education and conservation.

- ONLINE AT: motereefplate.com

Revenues*

$22,902,748

* Does not include beneficial interest in Mote Marine Foundation

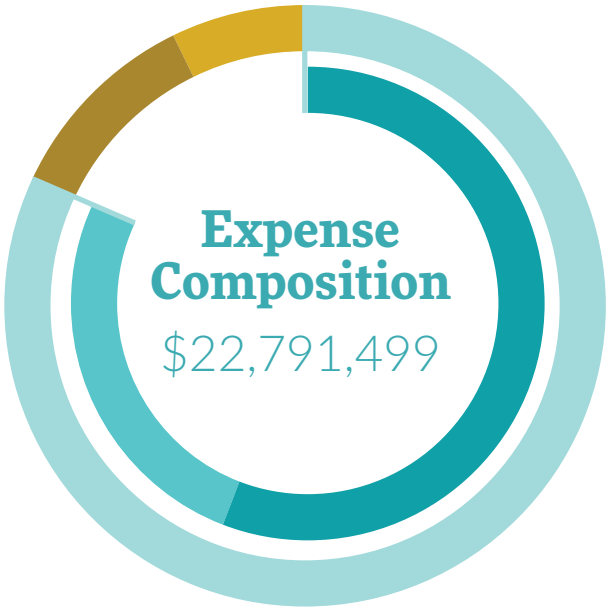
46% Research[1] $10,466,897

32% Education, Membership & Outreach[2] $7,267,958

23% Contributions & Investments $5,167,893

[1] Research includes Protect Our Reefs program and Mote Aquaculture Research Park management

[2] Education and Outreach includes Aquarium and science education programs



Expense Composition

$22,791,499

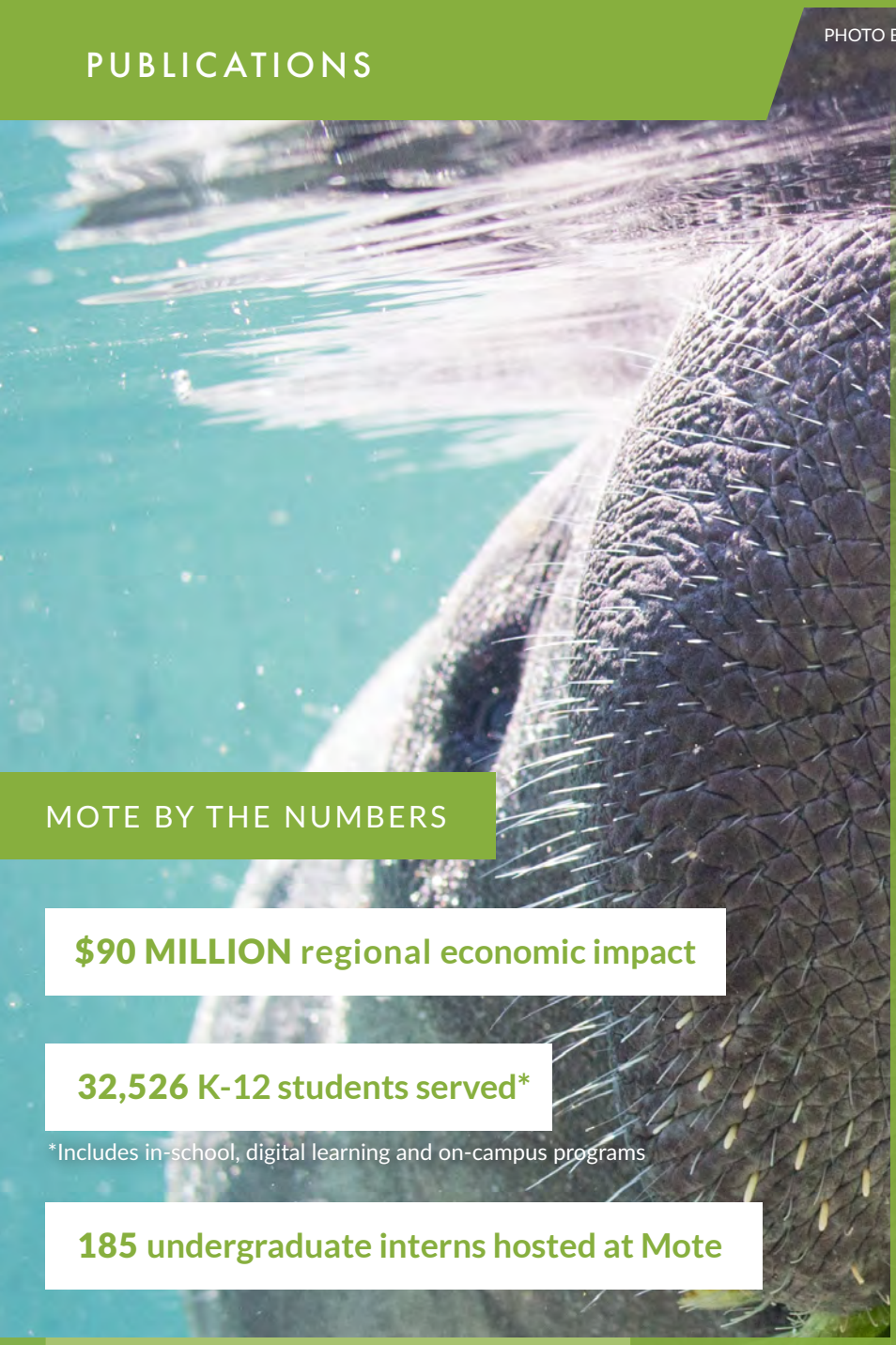
82% Program Services $18,624,417

- 56% Research[1] $12,735,966
- 26% Education & Outreach[2] $5,888,451

11% Administrative & General $2,480,302

7% Fundraising $1,686,780

PUBLICATIONS



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MOTE BY THE NUMBERS

$90 MILLION regional economic impact

32,526 K-12 students served*

*Includes in-school, digital learning and on-campus programs

185 undergraduate interns hosted at Mote

40 education/outreach programs

333,661 visitors to Mote Aquarium

28,770 Mote Mobile Exhibit viewers

41 patients cared for in Mote's animal hospitals

AFTERSCHOOL PROGRAMS
BAY WALKS
BIRTHDAY PARTIES
BREAKFAST WITH THE SHARKS
COLLEGE INTERNSHIPS
COMMUNITY OUTREACH
CUSTOM GROUP PROGRAMS
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ENDLESS OCEANS
FIELD TRIPS
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HIGH SCHOOL VOLUNTEERS
HOMESCHOOL ADVANCE PROGRAM
HOMESCHOOL DAYS
KAYAKING WITH MOTE
MOMMY & ME
MORNING ROUNDS
MOTE MOBILE EXHIBIT
MOTE SCIENCE CAFÉS
OUTREACH PROGRAMS
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RAPS: RESEARCH AFTERSCHOOL PROGRAM (KEYS)
RESEARCH EXPERIENCES FOR UNDERGRADUATES (REU)
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SEAHORSE CONSERVATION LAB TOURS
SEASNOOZE OVERNIGHTS
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SHARK ENCOUNTER
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SUMMER CAMPS
TEACHER WORKSHOPS
TEEN SCIENCE CAFÉS
TRAVELING EXHIBITS
VOLUNTEER OPPORTUNITIES
WINTER BREAK CAMP
YOUTH OCEAN CONSERVATION SUMMIT

Peer-Reviewed Journal Articles

Ardente, A. J., Garrett, T. J., Colee, J., Vagt, B. J., Walsh, M. T., **Wells, R. S.**, ... & Hill, R. C. (2017). Differences in purine metabolite concentrations in the diet of managed and free-ranging common bottlenose dolphins (*Tursiops truncatus*). *Aquatic Mammals*, *43*(6), 618-628. doi: 10.1578/AM.43.6.2017.618

Ardente, A.J., **Wells, R.S.**, Smith, C.R., Walsh, M.T., Jensen E.D., Schmitt, T.L., ... & Hill, R. C. (2017). Dietary cation-anion difference may explain why ammonium urate nephrolithiasis occurs more frequently in common bottlenose dolphins (*Tursiops truncatus*) under human care than in free-ranging common bottlenose dolphins[1]. *Journal of Animal Science, 95*(3), doi:10.2527/jas.2016.1113

Baker, I., O'Brien, J., **McHugh, K.**, & Berrow, S. (2017). An ethogram for bottlenose dolphins (*Tursiops truncatus*) in the Shannon Estuary, Ireland. *Aquatic Mammals*, *43*(6), 594-613, doi: https://doi.org/10.1578/AM.43.6.2017.594

Baker, I., O'Brien, J., **McHugh, K.**, Ingram, S.N., & Berrow, S. (2017). Bottlenose dolphin (*Tursiops truncatus*) social structure in the Shannon Estuary, Ireland, is distinguished by age- and area-related associations. *Marine Mammal Science*. doi: 10.1111/mms.12462

Bejarano, A. C., **Wells, R. S.**, & Costa, D. P. (2017). Development of a bioenergetic model for estimating energy requirements and prey biomass consumption of the bottlenose dolphin *Tursiops truncatus*. *Ecological Modelling*, *356*, 162-172. https://doi.org/10.1016/j.ecolmodel.2017.05.001

Cerutti-Pereyra, F., **Bassos-Hull, K.**, Arvizu-Torres, X., **Wilkinson, K.A.**, García-Carrillo, I., Perez-Jimenez, J.C., & **Hueter, R.E.** (2017). Observations of spotted eagle rays (*Aetobatus narinari*) in the Mexican Caribbean using photo-ID. *Environmental Biology of Fishes*, 1-8. https://doi.org/10.1007/s10641-017-0694-y **OPEN ACCESS**

Cheney, B., **Wells, R.S.**, Barton, T.R., Thompson, P.M. (2017). Laser photogrammetry reveals variation in growth and early survival in free-ranging bottlenose dolphins. *Animal Conservation*. doi:10.1111/acv.12384 **OPEN ACCESS**

Churnside, J. H., Marchbanks, R. D., Lembke, C., & **Beckler, J.** (2017). Optical backscattering measured by airborne lidar and underwater glider. *Remote Sensing*, *9* (4), 379. doi:10.3390/rs9040379 **OPEN ACCESS**

Cremer, M.J., Holz, A.C., Bordino, P., **Wells, R.S.**, & Simões-Lopes, P.C., (2017). Social sounds produced by franciscana dolphins, *Pontoporia blainvillei* (Cetartiodactyla, Pontoporiidae). *Journal of the Acoustical Society of America*, *141*(3), 2047-2054. doi: http://dx.doi.org/10.1121/1.4978437

Davison, A.J., Subramaniam, K., Kerr, K., Jacob, J.M., Landrau-Giovannetti, N., ... **Wells, R.S.**, & Waltzek, T.B., (2017). Genome sequence of a gammaherpesvirus from a common bottlenose dolphin (*Tursiops truncatus*). Genome Announcements, *5*, e00777-17. https://doi .org/10.1128/genomeA.00777-17. **OPEN ACCESS**

Desoubeaux, G., Le-Bert, C., Fravel, V., Clauss, T., Delaune, A. J., ... **Wells, R.**, ... & Cray, C. (2017). Evaluation of a genus-specific ELISA and a commercial Aspergillus Western blot IgG® immunoblot kit for the diagnosis of aspergillosis in common bottlenose dolphins (*Tursiops truncatus*). *Medical Mycology*. https://doi.org/10.1093/mmy/myx114

OPEN ACCESS: Freely available online.

Drury, C., Schopmeyer, S., Goergen, E., **Bartels, E.**, Nedimyer, K., Johnson, M., ... Lirman, D. (2017). Genomic patterns in *Acropora cervicornis* show extensive population structure and variable genetic diversity. *Ecology and Evolution*, 1-13. https://doi.org/10.1002/ece3.3184

El-Habashi, A., Duran, C.M., **Lovko, V.**, Tomlinson, M.C., Stumpf, R.P., & Ahmed, S. (2017). Satellite retrievals of Karenia brevis harmful algal blooms in the West Florida shelf using neural networks and impacts of temporal variabilities. *Journal of Applied Remote Sensing*, *11*(3), 032408. doi: 10.1117/1.JRS.11.032408 **OPEN ACCESS**

Ewing, R. Y., Mase-Guthrie, B., McFee, W., Townsend, F., **Manire, C. A.,** Walsh, M., ... & Schaefer, A. M. (2017). Evaluation of serum for pathophysiological effects of prolonged low salinity water exposure in displaced bottlenose dolphins (*Tursiops truncatus*). *Frontiers in Veterinary Science*, *4*, 80. doi: 10.3389/fvets.2017.00080 **OPEN ACCESS**

Ferreira, L.C., Thums, M. Heithaus, M.R., Barnett, A., Abrantes, K.G., ... **Nowicki, R.**, ... & Meekan, M.G. (2017). The trophic role of a large marine predator, the tiger shark *Galeocerdo cuvier*. *Scientific Reports*, *7*, 7641. doi:10.1038/s41598-017-07751-2 **OPEN ACCESS**

Gardiner, J.M., Atema, J., **Hueter, R.E.**, & Motta, P.J. (2017). Modulation of shark prey capture kinematics in response to sensory deprivation. *Zoology 120*, 42-52.http://dx.doi.org/10.1016/j.zool.2016.08.005

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Grier, H.J., **Neidig, C. L.**, & Quagio-Grassiotto, I. (2017). Development and fate of the postovulatory follicle complex, postovulatory follicle, and observations on folliculogenesis and oocyte atresia in ovulated common snook, *Centropomus undecimalis* (Block, 1792). *Journal of Morphology, 278* (4), 547-562. doi: 10.1002/jmor.20652

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Compiled by Kay L. Garsnett, MLIS, CA
Librarian/Archivist

MAIN CAMPUS
SARASOTA, FL | 10.5 ACRES
(LONG-TERM LEASE, CITY OF SARASOTA)

MOTE AQUACULTURE
RESEARCH PARK
SARASOTA, FL | 200 ACRES

BOCA GRANDE OUTREACH OFFICE
BOCA GRANDE, FL

ELIZABETH MOORE
INTERNATIONAL CENTER FOR
CORAL REEF RESEARCH & RESTORATION
SUMMERLAND KEY, FL | 1 ACRE

LIVING CORAL REEF EXHIBIT
FLORIDA KEYS NATIONAL MARINE
SANCTUARY'S ECO-DISCOVERY CENTER
KEY WEST, FL

MOTE BY THE NUMBERS

26 off-site aquariums

5 campuses in Florida

28 total buildings and structures

331,152 total square feet

Renderings subject to change

Looking Ahead to 2018 and Beyond

In 2018, Mote Marine Laboratory & Aquarium will announce plans for a spectacular new Aquarium on mainland Sarasota County.

The new Mote Science Education Aquarium will be designed and strategically located to serve a much greater number and cross-section of residents and visitors in Florida, and enhance ocean literacy opportunities and impacts for all. Mote leaders have had preliminary discussions with appropriate officials from Sarasota County to understand the potential opportunities for use of approximately 5 to 8 acres of county-owned land within Nathan Benderson Park, a highly accessible location in a hotspot of community growth adjacent to Interstate 75. The interstate's intersection with University Parkway hosts an average 60,000 drivers on both sides daily, allowing an expected average of 43 million drivers to view Mote's new facility each year.

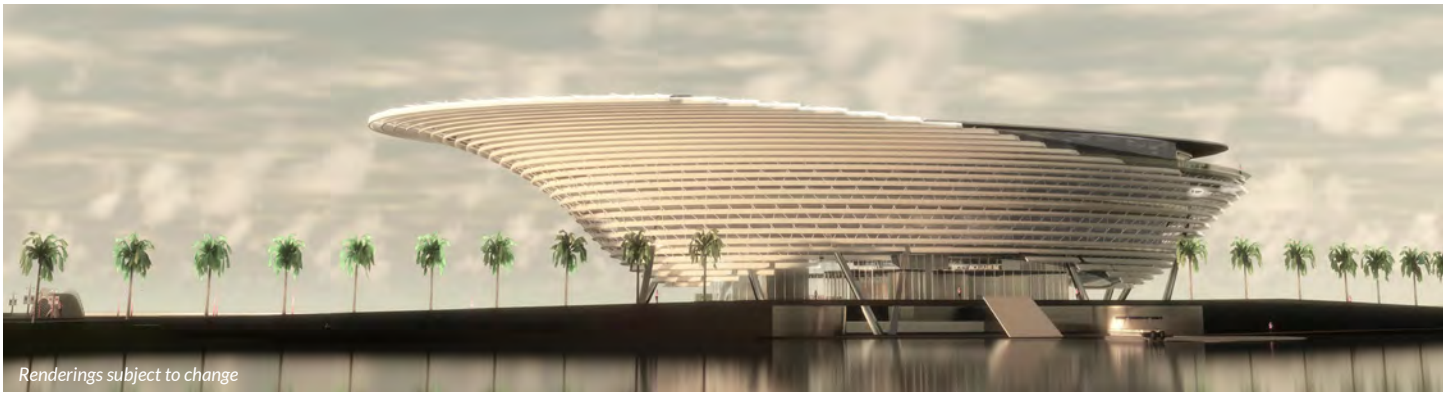
Powering this major advance will be Mote's new, $130-million capital construction fundraising effort, *Oceans for All: Improving Access to Marine Science & Technology*.

"This spectacular new facility and campus will embody our vision of *Oceans for All*, doubling the number of visitors whose lives are enriched by marine science each year, and providing no-cost opportunities for all schools to utilize specialized teaching labs to ensure that every child in our region, from kindergarten to high school, has the opportunity for hands-on marine science and technology research experiences," said Mote President & CEO Dr. Michael P. Crosby. "The oceans are connected to everyone, every place in the world, and our goal is to ignite within each visitor a greater degree of curiosity to learn more about the oceans and their critical value in providing the oxygen we breathe, food, medicine, economic impact and overall quality of our lives."

With 110,000 square feet of space and 1 million gallons of exhibit water, Mote Science Education Aquarium will:

- Be more than double the size of Mote's current Aquarium on City Island;
- Expand the ability to feature marine animals and scientific displays from around the world;
- Deepen visitors' experiences through interactive teaching labs, onsite diving programs, scientific demonstrations and creatively interwoven, interactive technology;
- Provide informal science education to a larger, more diverse audience.

The Aquarium's rebirth on the mainland will also provide critically needed space for significant evolution of Mote's City Island campus into an enhanced International Marine Science, Technology and Innovation Park with much-needed infrastructure and science facilities for expanded intensive research capabilities that will attract scientists from around the world and empower Mote's best and brightest minds to excel in addressing the significant threats facing Earth's oceans.



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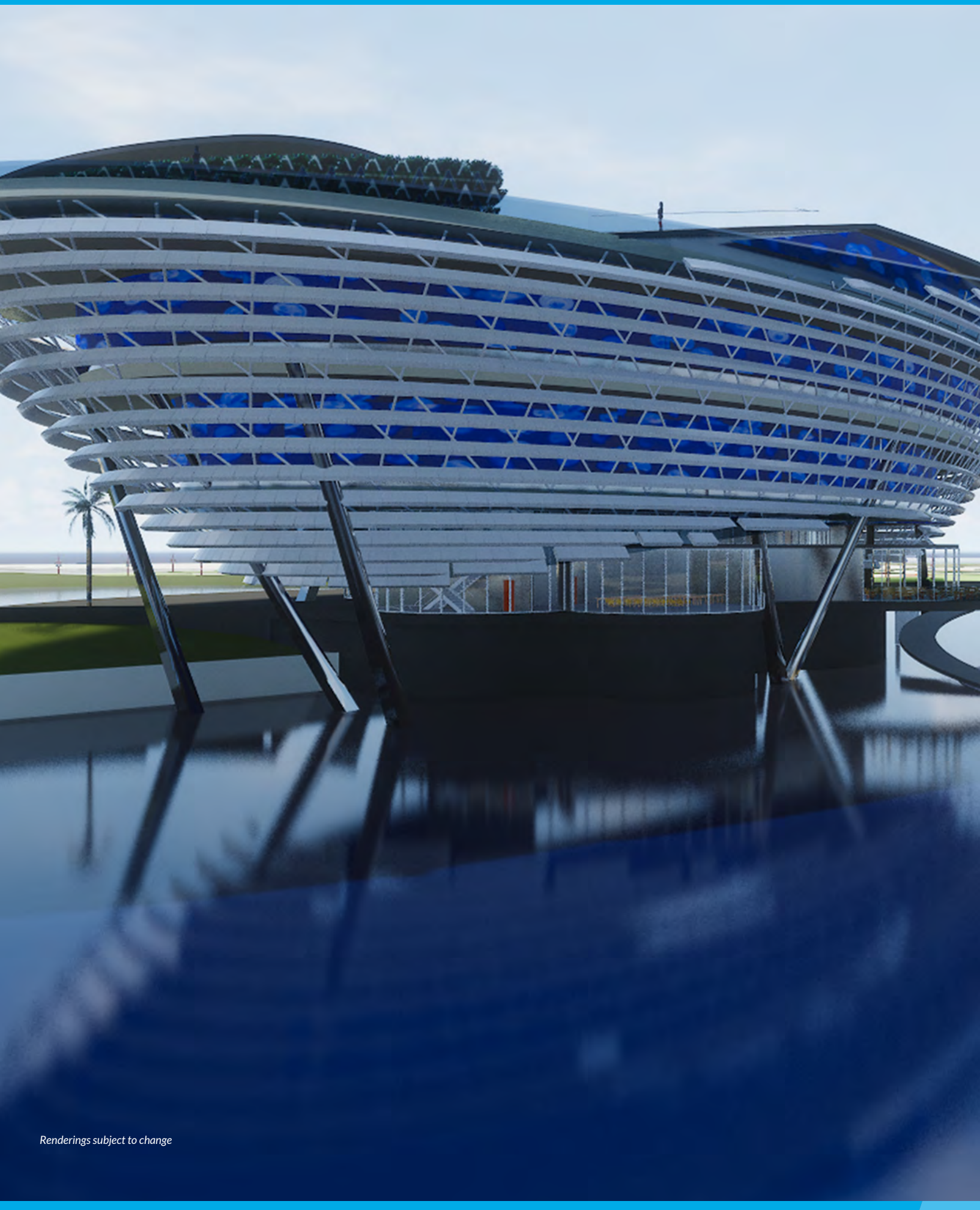

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