



ANNUAL REPORT

2021



Mote's 2021 Annual Report presents accomplishments and finances
for the 2021 fiscal year, from Oct. 1, 2020 – Sept. 30, 2021.

To read the expanded version of this report,
scan this QR code or visit mote.org/2021AR





“FOR GENERATIONS, WE HAVE BEEN TAKING FROM THE SEA.

NOW, IT’S TIME TO START GIVING BACK.”

— WILLIAM R. MOTE, MOTE BENEFACTOR AND NAMESAKE

FROM THE CHAIRMAN



Mote Marine Laboratory cares deeply for the world's oceans. We provide innovative research and science to impact the health, sustainability, and revitalization of all oceans. Caring for the oceans is a tall order and our job is to deliver the science.

Mote has over 40 Ph.D.-level scientists on staff. We conduct studies around the world specializing in the 150-mile-wide continental shelf waters in Florida's coastal regions including estuaries where most of the action takes place that directly affects the quality of our lives. The wonderful fish we eat, the famous beaches with clean water and healthy animals, recreational fishing and fishing industries, a booming tourism industry—all benefit by Mote science. Think red tide mitigation, and coral reef restoration, and fish stock enhancement, environmentally friendly aquaculture, and sea turtle rehabilitation to name a few projects. There is also our biomedical research that is leading to cancer fighting treatments made from protein complexes isolated from sharks.

We are the largest independent nonprofit marine research laboratory focused on understanding the Gulf and Florida's coasts. We are not tethered to the bureaucracy of government or academia.

This independence gives us agility and quick response time, and is the appeal to scientists who choose to work on projects they care about most. Mote's research budget has grown 50% in the last three years. This is outstanding performance in a time of consistently diminishing availability of funding. Our scientists have the scientific clout to compete for and bring in over half of Mote's research funds. There are no contracts, no tenure, just independence and long hours... and this includes their leader, Dr. Michael Crosby. God bless them all.

Mote began with a single research program in a one-room laboratory with one scientist. Today marine science research at Mote is world-renowned and our scientific papers are heavily cited. We now have 67 years of accessible publications and data on file. Most importantly, Mote freely shares discoveries and findings with governments and scientists around the world. To share our science with everyone else, we have generated science and technology education programs for all people groups, including those with less access to opportunity, and we operate public outreach venues, including Mote Aquarium, one of the most popular aquariums in the US.



In the near future, our trustees, staff and volunteers look forward to the opening of a new, 110,000-square-foot, state-of-the-art facility—Mote Science Education Aquarium (Mote SEA). You must visit when it opens in 2024. Your continued support is vital to making it a reality and it will be a “WOW” that will make you proud.

Celebration plans are in place this year (2022) to commemorate what would have been the 100th birthday of our founding Director, Dr. Eugenie Clark. Dr. Clark gave Mote direction and inspiration, and Mote continues to follow her example. We care deeply for our oceans, develop science that has impact, and we share our results.

We invite you to join us in our mission. Thank you.



Maurice Cunniffe
Chairman, Mote Marine Laboratory
Board of Trustees

FROM THE PRESIDENT & CEO



Many will remember 2021 as a year when the world regained momentum following the onset of an unprecedented global pandemic. At Mote Marine Laboratory & Aquarium, our momentum never stopped—and in many ways, we surpassed our past impacts this year.

Our accomplishments would be exceptional by any standard outside of our own. For the Mote family, they're exactly what we've come to expect—unmatched innovation in marine research, science education and public outreach.

Thanks to our incredible Mote family, 2021 was a year of firsts and celebrations:

In our ongoing efforts to expand coral restoration throughout the Florida Keys, we introduced the initial coral fragments to Mote's newest facility—the **first and only** coral restoration nursery in Islamorada.

We restored more than 32,000 corals this year to Florida's Coral Reef, **the highest annual total** in Mote's 13 years of science-based restoration. That brings our cumulative total to more than 140,000 corals restored with science since 2008.

We assembled a team to conduct **the first airborne drone surveys to monitor for critically ill manatees in the Indian River Lagoon**, where manatees are facing a catastrophic loss of the seagrasses they eat.

Alongside the Governor and leaders of the Florida Legislature, **we cut the ribbon** on the new Florida Red Tide Mitigation & Technology Development Testing Facility at Mote Aquaculture Research Park. The best and best and brightest scientific and engineering minds from around the world are now utilizing 29,000 square feet of new research facilities to safely test the most promising red tide mitigation tools and technologies in large experimental systems that help us predict environmental effects.

Mote scientists developed **the first protocol for measuring growth rates of live coral microfragments** using structured-light 3D scanning—one of many innovations we published in over 90 peer-reviewed journals and publications this year.

Members of our research team also co-authored **the first multi-year, peer-reviewed research paper** on the large-scale movements of whitespotted eagle rays in U.S. waters.

Along with the International Union for Conservation of Nature's (IUCN's) World Commission on Protected Areas, Marine Connectivity Working Group (MCWG), Mote's Marine Policy Institute co-authored the new Marine Connectivity Conservation "Rules of Thumb" for MPA and MPA Network Design—the **first guidance** from the MCWG for advancing connectivity conservation practices in marine environments.



Our Beach Conditions Reporting System (BCRS, visitbeaches.org) added 17 new shoreline monitoring sites this year for a total of 48, including its **first two sites outside of Florida**.

Mote welcomed its **first batch** of baby elkhorn corals from parent corals grown in our underwater breeding nursery established in 2020.

Mote's International Coral Gene Bank, **opened its doors** and received its first living corals, bolstering Mote's collection of approximately 2,000 genotypes, and representing the single largest collection of coral genetic diversity outside of Mother Nature herself.

Mote's Sea Turtle Conservation & Research Program **celebrated its 40th year of monitoring and field research**, during which we documented our fourth highest number of local sea turtle nests. As of this year, Mote's team has documented 133,954 sea turtle crawls on southwest Florida's vital nesting beaches.

In some ways, our 66th year was no different from our first—when Dr. Eugenie (“Genie”) Clark opened Mote's doors for the first time and began making discoveries that would change our understanding of ocean species. As we enter 2022—the 100th year of Genie's story—we're already nearing our next set of firsts and records.

This year we will see Mote's new Science Education Aquarium (SEA) begin rising from the ground and taking shape. In 2022 we will enter our 30th year of operations in the Florida Keys and will celebrate with an expansion into the Upper Keys that will formally extend Mote's science-based coral reef restoration efforts throughout the entirety of Monroe County—from Key Largo to Key West. In addition, we will cut the ribbon on a brand new informal marine science education and outreach center on the world-famous Anna Maria City Pier.

The best way for Mote to outpace the growing challenges facing our oceans is to continually outpace ourselves. In that effort, we remain fueled by the same passion, partnerships and philanthropic investment that have powered our decades of paradigm-shifting marine science and have become the hallmark of our leadership worldwide. To that end, it is by your purposeful support and engagement that we continue to chart the course toward *Oceans for All*.



Dr. Michael P. Crosby,
President & CEO



HELPING CORALS SURVIVE IN A BRAVE NEW WORLD

From 2009–2018, the world’s coral reefs lost 14% of their coral—a blow to ocean ecosystems and economies that depend on them. These losses add up to more coral than you can find on Australia’s reefs today.

Fortunately, Mote Marine Laboratory’s response with coral research and restoration are adding up too.

Mote scientists restored more than 32,000 corals this year to Florida’s Coral Reef, the highest annual total in Mote’s 13 years of science-based restoration, with primary operations at our Elizabeth Moore International Center for Coral Reef Research & Restoration (IC2R3) on Summerland Key, Florida. Just as exciting: Mote scientists sampled 229 staghorn corals at three of our restoration sites and found that nearly 90% were sexually mature. That means they’re capable of spawning, initiating sexual reproduction to produce coral babies with fresh genetics to help revive imperiled populations.

Of course, this is no time to break out the champagne. The threats of increasing ocean temperatures, ocean acidification, coral disease, pollution and more continue to devastate many coral populations so severely that scientists are scrambling to collect and preserve samples of precious, native genetic varieties that could otherwise be lost forever. To that end, Mote’s new International Coral Gene Bank accepted its first corals this year—providing a secure, inland, “Noah’s Ark” for 1,650 corals of 14 species. Mote currently has nearly 2,000 genotypes of corals, the largest collection outside of Mother Nature herself.

Achievements like these are only possible because of Mote’s groundbreaking science. A sample of our results:

- Some corals are genetically hardwired to tolerate climate change impacts (increased temperature and ocean acidification) better than others, and they can likely pass this advantage to their babies.



Above: Corals in Mote's International Coral Gene Bank.

These climate-resilient, native coral genotypes (genetic varieties) are being grown in Mote's coral nurseries and are valuable for restoration.

- The deadly stony coral tissue loss disease (SCTLD) is worse in areas with higher coral species diversity, more coral cover, and greater numbers of certain coral species (boulder brain corals, mountainous star corals and great star corals). However, fewer cases of the disease were documented when the environment had been hotter for longer.

This year, IC2R3 was also abuzz with new and ongoing studies:

- Mote scientists completed 20 unique staghorn coral breeding events this summer in our land-based system. As part of those efforts, we successfully bred staghorn coral genotypes that can resist the devastating white-band disease, to investigate whether these coral parents can pass disease resistance to their babies.



Above: Staghorn coral thrives after being planted on Florida's Coral Reef by Mote scientists.

- In collaboration with the U.S. National Park Service, Mote scientists tested 13 treatments for a deadly, global coral disease called black band disease (BBD), finding highly promising results from one treatment—a natural, topical, antimicrobial and antiviral substance from the company Ocean Alchemists LLC. Now, Mote and Ocean Alchemists are testing new potential treatments for the devastating stony coral tissue loss disease (SCTLD).
- The first corals were planted this year by Mote and partners for *Mission: Iconic Reefs (M:IR)*, an unprecedented, collaborative restoration effort led by the National Oceanic and Atmospheric Administration (NOAA) and focused on seven key reefs within the Florida Keys National Marine Sanctuary.
- This year, the first and only coral restoration nursery in Islamorada was brought to life by Mote through a partnership with the famed Bud N' Mary's Marina.



MAKING THE BEST OF A BAD RED TIDE YEAR

A bloom of Florida red tide algae (*Karenia brevis*) formed in December 2020 and continued along parts of the Gulf of Mexico Coast beyond the end of this fiscal year, causing heartbreaking fish kills and other marine animal mortalities.

The bloom overlapped with unusual and complex environmental events whose potential influences can be untangled only by science—rain and runoff from Hurricane Elsa, unusual wind patterns that kept red tide algae near shore, drought-related increases in salinity that helped move the bloom further into Tampa Bay than normal, nutrients released from dead fish, and the 215 million gallons of nutrient-polluted wastewater released into Tampa Bay from the former phosphate processing facility at Piney Point.

Mote Marine Laboratory’s red tide researchers helped the public separate fact from fiction this year: These events didn’t start the bloom of native *K. brevis* algae, but some likely exacerbated both the intensity and duration of its impacts on coastal communities—fish kills and respiratory irritation in people who inhaled red tide toxins (brevetoxins).

Such impacts can be fought directly—a vision fortified with hard evidence this year by the Florida Red Tide Mitigation & Technology Development Initiative led by Mote in partnership with the Florida Fish and Wildlife Conservation Commission (FWC). This summer, Florida Governor Ron DeSantis cut the ribbon for Mote’s new, 29,000-square-foot Florida Red Tide Mitigation & Technology Development Facility, where



Above: Mote's Dr. Vince Lovko conducts one of the Red Tide Initiative's earliest pilot-scale tests of a mitigation compound, kaolinite clay, in a small area of the marine environment.

Mote and partners from across the country conducted six experiments advancing promising mitigation technologies through the second tier of a three-tiered testing process. All together, this year the Initiative supported more than 25 research projects to find and test the best mitigation compounds and technologies.

At the new facility, Initiative scientists advanced four mitigation technologies from tier 1 (small scale lab tests) to tier 2 (larger-scale tests in mesocosm systems that help mimic real-world conditions). Those projects are: patented OZONIX® water purification technology; a robot called EVIE designed to find and harvest red tide algae to produce biofuels; a type of ultraviolet light (UVC) that is widely used to kill other microscopic organisms; and kaolinite clay intended to “grab,” sink and remove red tide cells and toxins from the water. The clay and OZONIX® technologies have even begun to move to tier 3, pilot tests in the environment.

Through tier-1 lab experiments, Initiative scientists also discovered that at least six other types of mitigation compounds have great potential to reduce *K. brevis* cells, toxins or both.

Mote scientists also improved red tide detection technology:

- Mote scientists have identified 12 synthetic antibodies that are potential key components



Above: Staff from Mote and Prescott Clean Water Technologies test how well the OZONIX® system can mitigate red tide.

needed to make a handheld red tide toxin sensor for shellfish tissue and water—a much-needed tool for shellfish farmers and natural resource managers.

- Mote's Beach Conditions Reporting System (BCRS, visitbeaches.org) expanded and upgraded its public website and app this year, including adding 17 new shoreline monitoring sites. Two new sites are in Alabama—the first BCRS sites outside Florida.

In response to the Piney Point wastewater spill, Mote and University of Maryland scientists conducted lab experiments comparing and combining water samples from the spill area with samples of the concurrent red tide bloom. Their findings will add to an ongoing, Mote-led study supported by NOAA's ECOHAB program, examining how *K. brevis* blooms change over time, respond to extreme environmental events, and ultimately terminate.

To monitor the bloom and inform the public, the longstanding Mote-FWC Cooperative Red Tide Program analyzed 2,552 samples for Florida red tide algae.

This is the only group regularly gathering data on *K. brevis* and carbonate chemistry together in the natural environment on Florida's west coast. Carbonate chemistry is important for studying climate change impacts on harmful algae.

INNOVATIVE RESEARCH

MOTE IS...

MAKING THE BEST OF A BAD RED TIDE YEAR

SCAN FOR FULL STORY



29,000 SQUARE FEET

SIZE OF THE RED TIDE RESEARCH FACILITY opened this year thanks to the Florida Red Tide Mitigation & Technology Development Initiative. The facility has 160,000 gallons of treated, recirculated seawater storage.

+25 RED TIDE STUDIES

TO DEVELOP MITIGATION TOOLS AND TECHNOLOGIES supported by the Initiative this year.

4 RED TIDE MITIGATION TOOLS

ADVANCE TO LARGE-SCALE, "MESOCOSM" TESTS in Mote's new Florida Red Tide Mitigation & Technology Development Facility. OF THESE, TWO HAVE BEGUN PILOT TESTS IN THE ENVIRONMENT.



+1,200 SHELLFISH

used in Mote studies investigating how to help farmed shellfish clear red tide toxins faster.

+125 POSSIBLE MITIGATION COMPOUNDS AND TECHNOLOGIES

examined by the Initiative as of late 2021.



4 MAJOR PATTERNS OF RED TIDE BLOOM

TERMINATION IDENTIFIED through a Mote-led study funded by the National Oceanic and Atmospheric Administration.

PARTNERS INCLUDED: BIGELOW LABORATORY FOR OCEAN SCIENCES, FLORIDA FISH & WILDLIFE CONSERVATION COMMISSION, NEW YORK UNIVERSITY - ABU DAHBI, UNIVERSITY OF MARYLAND, UNIVERSITY OF SOUTH FLORIDA



98 DAYS OF ROBOTIC GLIDER SURVEYS

conducted this year to monitor ocean conditions relevant to red tide research.



500 POUNDS OF DEAD FISH FROM RED TIDE AREAS

PUT TO GOOD USE in a study by Florida Gulf Coast University and Mote. The study examined potential benefits of removing fish killed by red tide and recycling them for fertilizer.



2,552 WATER SAMPLES

analyzed for Florida red tide algae by the Mote-FWC Cooperative Red Tide Research Program in 2021.



NO ONE ELSE

EXCEPT THE MOTE-FWC COOPERATIVE PROGRAM

is regularly gathering data on Florida red tide algae and carbonate chemistry—needed for climate change studies—together in natural environments on Florida's west coast.

MOTE IS...

KEEPING PACE WITH CLIMATE CHANGE

SCAN FOR FULL STORY



CLIMATE-CHANGE RESISTANCE

APPEARS TO BE GENETICALLY HARDWIRED IN SOME CORAL GENOTYPES (GENETIC VARIETIES), according to a Mote-led, peer-reviewed study. These climate-resistant, native genotypes are grown by Mote and are valuable for restoration.

34°C (93.2°F)

WATER TEMPERATURE

TOLERATED BY RECENT RED TIDE BLOOMS

Based on this finding, scientists in a Mote-led study note that *Karenia brevis* (Florida red tide algae) may tolerate higher temperatures than those previously reported: 20-28°C optimal range and 30°C that appeared to stress the algae in a lab.

1 BIG DATA GAP FILLED WITH MOTE'S NEW, CONTINUOUS PH MONITORING STATION



that will help us understand ocean acidification—a component of climate change—in the Florida Keys.

SUPPORTED WITH A COMPETITIVE GRANT FROM: INTEGRATED OCEAN OBSERVING SYSTEM, SOUTHEAST COASTAL OCEAN OBSERVING REGIONAL ASSOCIATION

20 SCIENTIFIC TEAMS

from around the world did Research In MOTE'S CLIMATE AND ACIDIFICATION OCEAN SIMULATOR (CAOS) SYSTEM this year.



2 NEW REPORTS

ON HARMFUL ALGAE AND CLIMATE CHANGE released this year with Mote authorship or participation.



MICROBES NEW TO SCIENCE

CAN BE FOUND IN "BLUE HOLES" EXPLORED BY MOTE

in the Gulf of Mexico, reports a peer-reviewed paper by University of Miami, Mote and other partners from the latest expeditions that sampled blue hole bacteria, archaea and more.



MOTE IS... ADVANCING SCIENTIFIC FRONTIERS

MOTE IS...

TAKING THE PULSE OF OUR MARINE ENVIRONMENT



3 ANTIBODIES

MIGHT HELP US PURIFY CANCER-FIGHTING COMPOUNDS FROM SHARKS, Mote scientists discovered this year.

PARTNER: GREEN MOUNTAIN ANTIBODIES



+1 YEAR *theBay*

OF DATA ON THE BAY PARK COLLECTED by Mote scientists to monitor for benefits of environmental improvements.



13% DECLINE IN SEAGRASS



from 2018 to 2020 in Sarasota County, reported this year, highlighted needs for enhancing water quality and addressing algal blooms.

MOTE'S WATER QUALITY AND RED TIDE MONITORING HELP DETECT CHALLENGES AND INFORM GOVERNMENT-LED IMPROVEMENT EFFORTS.

LIVING SEAWALL

HELPS ATTRACT OYSTERS, FISH AND MORE, report Mote scientists who monitored the City of Sarasota's living seawall at Bayfront Park.

ONE NEW SOURCE



OF RAW MATERIAL FOR CELL-CULTURED SEAFOOD — Pacific white shrimp cells — cultivated by Mote for the cutting-edge sustainable seafood industry.



MOTE IS... BRINGING SUSTAINABLE SEAFOOD TO THE TABLE

8,216 SQUARE FEET

SIZE OF THE AQUAPONICS FARM LAUNCHED BY MOTE this year to demonstrate this sustainable food technology at commercial scale.

MOTE'S NEW RON AND MARLA WOLF AQUAPONICS CENTER WAS MADE POSSIBLE BY THE SUPPORT OF THE BERNARD AND NORTON WOLF FAMILY FOUNDATION



PIONEERING SUSTAINABLE LAND-BASED SYSTEMS FOR NATIVE ALMACO JACK, a candidate for sustainable offshore aquaculture.



8 INDUSTRY PARTNERSHIPS

connecting Mote's sustainable aquaculture science with potential commercial applications.



2 PRIVATE COMPANIES

have tapped MOTE SCIENTISTS TO DEVELOP SUSTAINABLE AQUACULTURE TECHNOLOGY for Florida stone crabs and Atlantic tripletail.

+\$750,000

IN COMPETITIVE GRANTS

secured by Mote scientists to MAXIMIZE THE VALUE OF FISHERIES ELECTRONIC MONITORING (EM) to fill data gaps for sustainable fisheries management.

MOTE IS...

ENABLING SMART FISHERIES MANAGEMENT



+10,000 TAGGED SNOOK RELEASED

into tidal creek systems of Sarasota and Charlotte counties for Mote's fisheries enhancement research. ALL THESE FISH CAME FROM A SINGLE, SUCCESSFUL SPAWNING EVENT AT MOTE AQUACULTURE RESEARCH PARK — showing how effectively we can produce sportfish to help wild populations rebound from environmental challenges.



ONE-STOP SHOP

FOR FISHERIES EM DATA IN THE GULF OF MEXICO created by Mote this year:

SUPPORTED BY: NET GAINS ALLIANCE, NOAA FISHERIES

CFEMM Home Port website
MOTE.ORG/CFEMMHOMEPOR

15,591 FISH SOUND RECORDINGS

added to Mote's library that will help machine learning systems extract data valuable for science and fisheries management.

PROJECT PARTNER: AXIOM DATA SCIENCE

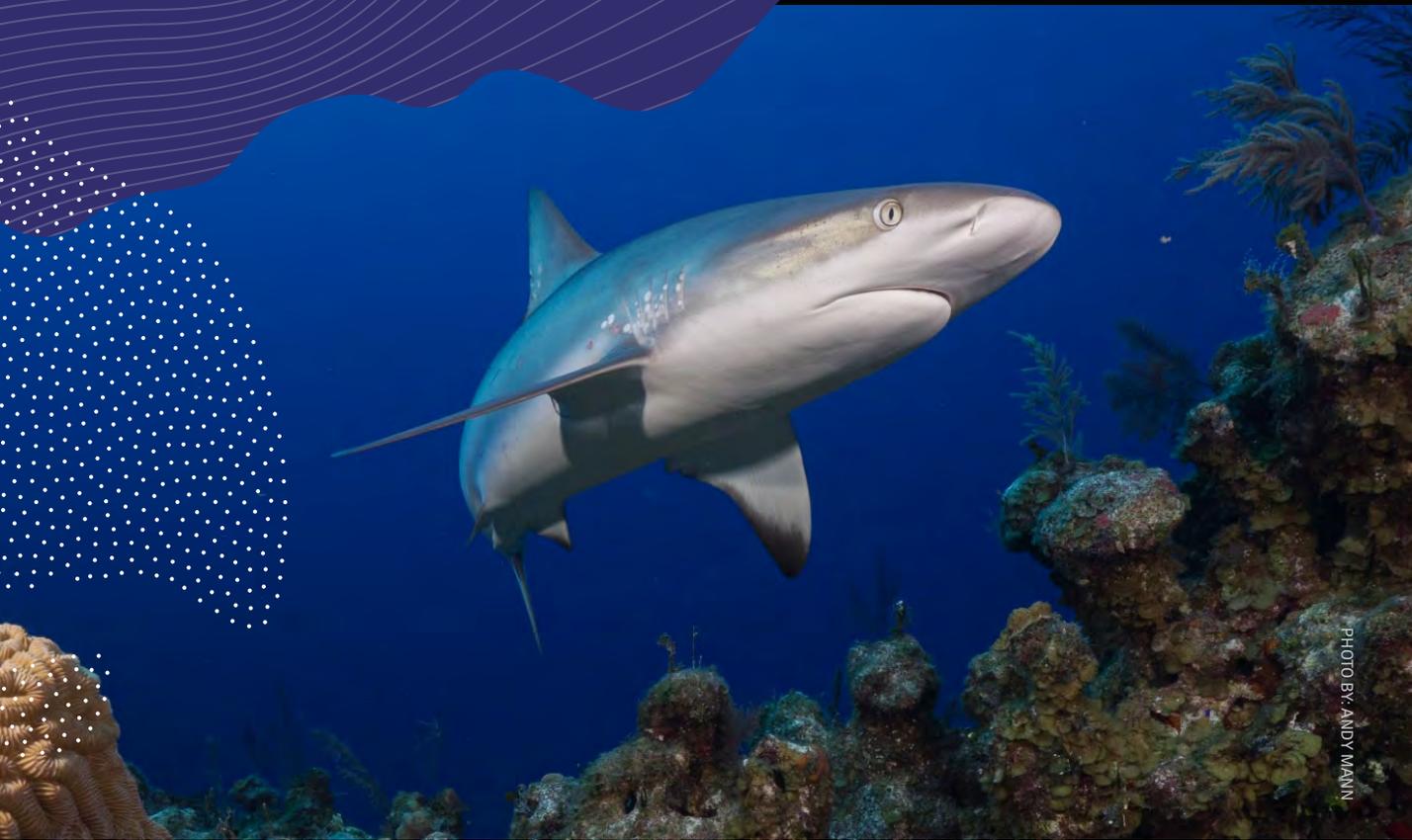


PHOTO BY: ANDY MANN

A WIN FOR FINS

In 2020, the world's largest reef shark survey revealed that these ecologically important animals are depleted in many places around the globe. This year, Mote Marine Laboratory scientists launched a new, international effort to do something about it.

Dr. Demian Chapman took on the leadership of Mote's Center for Shark Research this year after leading the world's largest reef shark survey, Global FinPrint, at Florida International University. Global FinPrint revealed that sharks were functionally extinct in many survey locations and NO sharks were seen in 20% of survey sites. Its results set the stage for a new, high-impact initiative at Mote, expanding upon our 66 years of renowned shark research that began with Mote's founding "Shark Lady," Dr. Eugenie Clark.

This year, Mote launched the exciting new project Expanding the Global FinPrint, to turn the lessons of FinPrint into conservation successes for sharks and their cousins, rays. Specifically, Mote is partnering with local grassroots organizations, governments and fisherfolk for research and conservation in countries with high conservation potential for reef sharks and rays. Funding and scientific support are being directed to these local groups so they can implement management approaches that are likely to work both for the animals and people.

One success is already unfolding. This year, the Government of Belize announced new regulations prohibiting shark fishing within about 1,500 square miles of critical shark habitat around Lighthouse Reef, Glover's Reef and Turneffe Atoll. These measures



Above: Dr. Demian Chapman launched the new initiative Expanding the Global FinPrint at Mote this year.

stem from recommendations of Belize’s National Shark Working Group composed of government, shark fisherfolk, non-government organizations and researchers, including Chapman at Mote.

Now in Belize, a new initiative of its National Shark Working Group is combining fishers’ knowledge of how and where to catch sharks with Mote’s experience tracking sharks’ movement with electronic tags. Results will inform management decisions by Belize’s Fisheries Department. Generous support for this program comes from Mote philanthropist Greg Manocherian, along with The Ellen Fund—Ellen DeGeneres’ conservation foundation as part of their new Endangered Campaign. Additional funding comes from the Mays Family Foundation, Earthwatch International and Betsy and Peter Snow, with the Georgia Aquarium supplying tags.

This year, Mote scientists co-authored the first multiyear, peer-reviewed research paper on the large-scale movements of whitespotted eagle rays in U.S. waters. Whitespotted eagle rays are protected in multiple U.S. states but fished in some countries such as Cuba and Mexico. It is important to understand their movements to confirm where they spend their time and what risks they face. The new study, “Variable migration patterns of whitespotted eagle rays *Aetobatus narinari* along Florida’s coastlines,” published in *Marine Biology*, provides critical



PHOTO BY: GLOBAL FINPRINT / FLORIDA INTERNATIONAL UNIVERSITY

Above: A shark is captured on camera by the world’s largest reef-shark survey, Global FinPrint, which Chapman led at Florida International University and will build upon through Expanding the Global FinPrint at Mote.

information for management and conservation. Over three years, project partners tagged 52 whitespotted eagle rays in Florida waters. Our results strengthened evidence that whitespotted eagle rays migrate along Florida’s Gulf Coast, seemingly moving south when northern habitats cool, while south Florida’s Atlantic Coast appears to host resident rays year ‘round—and coastal habitats such as the Indian River Lagoon (IRL) are likely crucial for sustaining local populations.

A Mote scientist involved in that study also co-authored an assessment report this year designating whitespotted eagle rays as “endangered” on the IUCN Red List because they are fished, caught unintentionally as bycatch, and their range has contracted.

SCIENCE TO POWER CONSERVATION &

TO READ THE STORIES BEHIND THESE STATS, SCAN THE QR CODES OR GO ONLINE TO: [MOTE.ORG/2021AR](https://mote.org/2021AR)

MOTE IS...

ACHIEVING A WIN FOR FINS

SCAN FOR FULL STORY



"ENDANGERED"

NEW LISTING OF WHITESPOTTED EAGLE RAYS in the IUCN Red List, upgraded from "Vulnerable" after an amended assessment co-authored by a Mote scientist.

FIRST

PEER-REVIEWED RESEARCH PAPER on the large-scale, multi-year movements of whitespotted eagle rays in U.S. waters co-authored by Mote scientists.

1,500 SQUARE MILES

OF NEW SHARK PROTECTIONS (FISHING BANS) established by Belize government, based on recommendations from working group including a Mote scientist.



NEW GLOBAL INITIATIVE, EXPANDING THE GLOBAL FINPRINT, launched by Mote to empower shark and ray conservation based on results of the world's largest reef shark survey.



~1,100 FLORIDA MANATEES PERISHED

in 2021 amid multiple stressors, including loss of seagrass (their food) in the Indian River Lagoon. There, **MOTE HAS JOINED THE FLORIDA FISH AND WILDLIFE CONSERVATION COMMISSION (FWC) FOR A NEW SERIES OF MANATEE SURVEYS TO INFORM CONSERVATION AND MANAGEMENT.**

MOTE IS...

ON A MISSION TO HELP MARINE MAMMALS

SCAN FOR FULL STORY



FIRST DRONE SURVEYS

TO MONITOR FOR CRITICALLY ILL MANATEES IN THE INDIAN RIVER LAGOON made possible by a team assembled by Mote this year.

400 INDIVIDUAL MANATEES

PHOTO-IDENTIFIED BY MOTE IN WINTER 2020-2021 surveys in Broward County, including animals that appeared malnourished—suggesting they had come from areas affected by seagrass die offs.



FIRST RECORD

OF MANATEE TRAVELING FROM FLORIDA TO THE MEXICAN CARIBBEAN co-authored by Mote scientist this year.

80 POLAR BEARS SAMPLED

TO INVESTIGATE THE ENVIRONMENTAL CONTAMINANTS IN THEIR BODIES, through a partnership of Alaska's North Slope Borough, Mote and the U.S. Geological Survey.



FIRST PEER-REVIEWED PAPER

DESCRIBING AFRICAN MANATEE VOCALIZATIONS co-authored by Mote scientist this year.

+15 CORAL STUDIES

PUBLISHED IN PEER-REVIEWED SCIENTIFIC JOURNALS by Mote authors or co-authors this year.



SCAN FOR FULL STORY



MOTE IS...

HELPING CORALS SURVIVE IN A BRAVE NEW WORLD

FIRST

protocol for measuring **GROWTH RATES OF LIVE CORAL MICROFRAGMENTS** using structured-light 3D scanning developed by Mote.



20 STAGHORN CORAL BREEDING EVENTS conducted by Mote in summer 2021, including breeding disease-resistant coral genotypes together.

MANATEE PHOTO BY: DAVID SCHRICHTE

SUSTAINABLE USE

 **40-YEAR MILESTONE**
FOR MOTE'S SEA TURTLE CONSERVATION AND RESEARCH on Longboat Key through Venice, Florida, celebrated this year.

 **133,954 SEA TURTLE CRAWLS**
DOCUMENTED BY MOTE on 35 miles of southwest Florida beaches in the past four decades. Of those, **49% (65,321)** RESULTED IN A NEST (sea turtle digging a special chamber in the sand and depositing her eggs).

377 TURTLES TAGGED
for identification and **10 TAGGED WITH SATELLITE-LINKED TRANSMITTERS TO MONITOR THEIR MIGRATIONS** during Mote research this year. 

5 BEACH NOURISHMENT PROJECTS required **ENDANGERED SPECIES MONITORING BY MOTE** this year.

#1 CAUSE OF DEATH 
FOR SARASOTA BAY DOLPHINS WAS **FISHING GEAR**—according to analyses by Mote and the National Oceanic and Atmospheric Administration (NOAA) using stranding response data from 1985–2020.



49 TURTLES RELEASED
after recovering in Mote's Sea Turtle Rehabilitation Hospital. This included seven loggerheads, 21 greens and 21 Kemp's ridleys.

1,650 CORALS OF 14 SPECIES
ARRIVED AT MOTE'S NEW, INTERNATIONAL CORAL GENE BANK, which is designed to preserve coral species and genetic diversity for future research, propagation and restoration.

NEARLY 2,000 GENOTYPES
OF CORAL AT MOTE—the largest collection outside Mother Nature.

FIRST & ONLY

CORAL RESTORATION NURSERY IN ISLAMORADA brought to life this year by Mote in partnership with Bud N' Mary's Marina.

+32,000 CORALS RESTORED
to Florida's Coral Reef by Mote in 2021—**OUR BEST YEAR EVER!** Since 2008, we've restored more than 140,000.



MOTE IS...
SHELL-EBRATING SEA TURTLE MILESTONES

 **6,500 SEA TURTLE HATCHLINGS**
were collected and released, with biological samples collected from nearly 2,000, by Mote scientists for conservation-focused research this year.

15 TEMPERATURE DATA LOGGERS 
deployed at sea turtle nests by Mote scientists studying **HOW CLIMATE CHANGE MIGHT AFFECT SEA TURTLE SEX RATIOS.** Nests produce more females during warmer periods and more males in cooler ones. 

285 SEA TURTLES
RESCUED OR RECOVERED BY MOTE—180 of which took place in just three months. Starting in July 2021, the ongoing Florida red tide demanded herculean efforts from Mote's dedicated team. 



MOTE IS...
DEMONSTRATING THAT EACH RESCUED ANIMAL MATTERS

45 MANATEE RESCUES OR RECOVERIES
aided and **11 STRANDED DOLPHIN RESPONSES** conducted by Mote staff this year. 

 **90%**
OF MOTE-RESTORED STAGHORN CORALS WERE MATURE ENOUGH TO **SPAWN** out of 229 corals surveyed at three sites. Spawning is a key step in sexual reproduction.

13 CORAL DISEASE TREATMENTS TESTED
by Mote and partners for black band disease. **ONE TREATMENT FOUND TO BE HIGHLY PROMISING.**



PHOTO BY: EAD72 / ADOBE STOCK



FIRST ‘RULES OF THUMB’ FOR CONSERVING AN OCEAN IN MOTION

As ocean habitats around the world face climate change, overfishing, pollution, and other challenges, marine protected areas (MPAs) can provide sanctuary to threatened populations and vital ecosystem services. However, MPAs have given too little consideration to the fact that marine wildlife and resources move around, creating “ecological connectivity” among different populations, communities and ecosystems—and often crossing MPA boundaries.

This year, Mote Marine Laboratory & Aquarium worked to translate and transfer the best available science to help societal leaders conserve ocean connectivity, which is vital for many species’ survival. Mote and the International Union for Conservation of Nature’s (IUCN’s) World Commission on Protected Areas, Marine Connectivity Working Group (MCWG)* published the new Marine Connectivity Conservation ‘Rules of

Thumb’ for MPA and MPA Network Design—the first guidance from the MCWG for advancing connectivity conservation practices in marine environments.

“This publication is the result of collaboration among experts around the world and provides guidance for integrating connectivity into the planning and management of MPAs,” said Barbara Lausche, Director of Mote’s Marine Policy Institute and one of the authors on the publication. “These 13 ‘Rules of Thumb’ are intended to support more consistent efforts by MPA managers and marine conservation professionals to implement connectivity conservation and measure progress towards global conservation targets.”

Ecological connectivity is defined as the movement of populations, individuals, genes, gametes (eggs and sperm) and propagules between populations,



Above: Marine species like sharks can migrate, providing one source of ecological connectivity between populations, communities and ecosystems.

communities and ecosystems, as well as the structural connection of non-living material from one location to another. “In the ocean, species frequently cross national and international borders and the boundaries of MPAs as they travel for food, access to mates, refugia and more,” said Aaron Laur, publication author and Center for Large Landscape Conservation International Connectivity Program Manager. “These ‘Rules of Thumb’ advance marine connectivity as an essential component of national, transboundary, and global marine policies and complementary management approaches across marine jurisdictions, in order to ensure greater success in marine conservation efforts.”

Preserving connectivity can also reinforce natural resilience to climate change and sustain marine-dependent livelihoods.

“This publication may be one of the most concisely impactful that I have reviewed in my over 30 years of working with Marine and Coastal Protected Areas, in terms of furthering strategic national and international connectivity efforts for the long-term conservation and sustainable use of our ocean biome,” said Mote’s President & CEO, Dr. Michael P. Crosby. “In a broader sense, this also underscores that rather than being barriers that separate us, oceans are bridges that can bring us together.”

Some of the ‘Rules of Thumb’ in the publication include:

- Identifying the role of marine connectivity in the face of climate change, and identifying climate change resilience as an objective in the management of MPAs.
- Including multiple types of ecosystems and habitats in MPAs to account for various levels of ecological connectivity. For example, an MPA could include coastal nurseries and offshore adult habitats for species such as sharks.
- Recognizing the relationship between MPAs and areas that may be used for commercial fishing, offshore mining/drilling, or other activities as species move between these areas.



[READ ALL 13 “RULES OF THUMB” HERE](#)

The MCWG is part of the Connectivity Conservation Specialist Group, which was designated in 2016 under the International Union for Conservation of Nature’s World Commission on Protected Areas.

TRANSLATE & TRANSFER

TO READ THE STORIES BEHIND THESE STATS, SCAN THE QR CODES OR GO ONLINE TO: [MOTE.ORG/2021AR](https://mote.org/2021AR)

MOTE IS...

HIGHLIGHTING OUR CONNECTED OCEANS



FIRST MARINE CONNECTIVITY CONSERVATION 'RULES OF THUMB'

from the IUCN Marine Conservation Working Group authored this year through Mote's partnership with the Working Group. The goal: Help marine protected areas safeguard ocean species or environmental components that travel or otherwise connect different populations, communities and ecosystems.

MOTE IS...

PROVIDING CUTTING EDGE-UCATION



FIRST KIDS' EDUCATION PROGRAM FOCUSED ON THE BAY PARK

launched by Mote this year. The park is currently being developed to improve public access and ecological health along 53 acres of Sarasota Bayfront land.

32,317 PEOPLE



EDUCATED BY MOTE during our informal science education programs this year—including 30 IN-PERSON AND 21 VIRTUAL PROGRAMS.

200 UNDERGRADUATE INTERNS

got valuable hands-on experience in marine science with Mote mentors this year.



6 NEW FLORIDA KEYS PROGRAMS

launched this year for on-site, residential learning. Mote's Keys team also launched four new teacher resource kits, a daytime summer camp program and an expansion of Mote's Monroe County School District outreach program.



22 RESEARCH INTERNSHIPS

FILLED BY UNDERREPRESENTED MINORITY STUDENTS in year 2 of the Marine Science Laboratory Alliance Center of Excellence (MARSCI-LACE).

OF THOSE, 17 WERE SUPPORTED THROUGH NATIONAL SCIENCE FOUNDATION (NSF) FUNDING TO MARSCI-LACE AND FIVE BY PHILANTHROPIC FUNDS FOR MOTE'S LOCAL RESEARCH EXPERIENCES FOR UNDERGRADUATES INTERNSHIPS.



YOUTH OCEAN CONSERVATION SUMMIT

40 STATES, 20 COUNTRIES

Locations of this year's participants in MOTE'S VIRTUAL YOUTH OCEAN CONSERVATION SUMMIT.



2 AWARDS—Facilitator's Choice and Presenters' Choice—EARNED BY MOTE'S MARSCI-LACE OUTREACH VIDEO IN THE "STEM FOR ALL" VIDEO SHOWCASE organized by the NSF-funded nonprofit TERC.



2 MORE INSTITUTIONS

PARTNERED WITH MOTE FOR MARSCI-LACE INTERNSHIPS THIS YEAR: Perry Institute for Marine Science and Smithsonian Marine Science Station.

SCIENCE FOR PUBLIC SERVICE



MOTE IS...

INVIGORATING OUR AQUARIUM AND OUR COMMUNITY

+\$90 MILLION

COMMITTED FOR MOTE SEA as of October 2021, a big step toward the \$130-million goal of our campaign to create this exciting new facility and realizing its educational, economic and cultural benefits for southwest Florida.

FIRST LOOK

—VIDEO “TOUR” OF NEW AQUARIUM shows what it will be like to visit the iconic new Mote Science Education Aquarium (Mote SEA), the upcoming rebirth of Mote Aquarium at Nathan Benderson Park dedicated to the vision of *Oceans for All*.



MANATEE MAKEOVER

With support from Manatee County, Mote Aquarium unveiled its redesigned Manatee County Manatee Habitat!



306,650 VISITORS

LEARNED ABOUT THE SEA AT MOTE AQUARIUM, and many were wowed by our limited-time exhibit “WILD KRATTS®: OCEAN ADVENTURE!”



EXHIBIT SPONSORED LOCALLY IN PART BY SARASOTA COUNTY TOURIST DEVELOPMENT TAX REVENUES

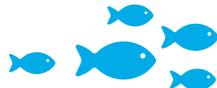
TOP 10%

ON TripAdvisor

MOTE AQUARIUM'S RANKING in the top 10% of attractions earned us TripAdvisor's Traveler's Choice award in 2021!



TO VIEW THE VIDEO, SCAN THE QR CODE OR GO ONLINE TO: [MOTE.ORG/2021AR](https://mote.org/2021AR)



421 MARINE ANIMAL SPECIES

called Mote Aquarium home this year—21 more than in 2020.

9 OFF-SITE AQUARIUMS

maintained by Mote.

+6,000 MEDIA PIECES

SHARED MOTE'S MISSION WITH THE WORLD THIS YEAR, including stories from National Geographic, National Public Radio, ABC's Good Morning America and other international to local news outlets.



MOTE IS...

SPEAKING UP THE FOR THE SEA



AUTISM FRIENDLY BUSINESS

Mote earned this designation from the Center for Autism and Related Disorders at University of South Florida because key members of our team participated in training to provide those with autism a welcoming environment.



+30 BRIEFINGS

FOR LOCAL TO NATIONAL GOVERNMENT LEADERS were provided this year by Mote President & CEO Dr. Michael P. Crosby and fellow Mote scientists, a key way that we translate and transfer our knowledge to inform societal decisions vital to the ocean's future.

12,878,566

Mote's total reach on Facebook this year. Facebook users engaged with Mote's marine science, education and outreach content 562,385 times. On Twitter, Mote's engagement was 21,180 and total reach was 789,230. On Instagram, Mote's total reach was 306,550.

SUPPORTING OUR BEST AND BRIGHTEST

Mote is dedicated to nurturing the best and the brightest minds in marine science and technology fields—a key priority in our *Beyond 2020 Vision and Strategic Plan*. Mote offers the following awards and fellowships—made possible by philanthropic support—to deserving members of its research staff. Below each award is a list of this year’s recipients.

MOTE POSTDOCTORAL RESEARCH FELLOWSHIPS

These three-year fellowships provide 100% salary support, research start-up, supplies, equipment and mentorship to postdoctoral scientists conducting outstanding work early in their careers.

NEW IN 2021:



DR. BETH BRADY has studied manatees for more than 13 years, focusing on their acoustic communication. Her interests include vocal anatomy, recognition of other manatees, behavior, human influences on communication, and more. This year, she co-authored the first peer-reviewed research paper on African manatee vocalizations and launched new manatee research at Mote. Previously at Florida Atlantic University, she led one of the largest-ever studies describing Florida manatees’ vocal repertoire.

FELLOWSHIP RECIPIENTS WHO CONTINUED FOR ALL OR PART OF 2021:



DR. HANNA KOCH
Coral Reef Restoration



DR. JAKE LASALA
Sea Turtle Conservation & Research Program



DR. AILEEN MALDONADO
Ecotoxicology Program

MOTE SCHOLARLY AND SERVICE AWARDS

These two-year awards provide 25% salary support for scholarly and service activities that further Mote’s mission, consistent with Mote’s *Beyond 2020 Vision*.

NEW AWARDEES IN 2021:



DR. NATE BRENNAN Staff Scientist in the Fisheries Ecology & Enhancement Program



DR. EMILY HALL Manager of the Ocean Acidification Research Program and the Chemical & Physical Ecology Program



DR. CATHY WALSH Manager of the the Marine Immunology Program

AWARDEES WHO CONTINUED FOR ALL OR PART OF 2021:



DR. JIM LOCASCIO Manager of the Fisheries Habitat Ecology & Acoustics Program



DR. VINCE LOVKO Manager of the Phytoplankton Ecology Program



DR. KEVAN MAIN Manager of the Marine & Freshwater Aquaculture Research Program and Associate Vice President for Research in the Directorate of Fisheries & Aquaculture



DR. NICOLE RHODY Staff Scientist in the Marine & Freshwater Aquaculture Research Program



DR. TRACY SHERWOOD Staff Scientist in the Environmental Laboratory for Forensics



DR. ANDREA TARNECKI Staff Scientist in the Marine Immunology Program



DR. DANA WETZEL Manager of the Environmental Laboratory for Forensics

MOTE EMINENT SCHOLAR AWARDS

These three-year awards provide 50% salary coverage to Mote senior scientists with great potential to significantly advance or develop a research initiative consistent with Mote’s *Beyond 2020 Vision*, and which will help ensure the long-term prosperity of Mote’s research enterprise.

AWARDEES CONTINUING IN 2021:



DR. ERINN MULLER, Manager of the Coral Health & Disease Research Program and the Coral Reef Restoration Program



DR. CYNTHIA HEIL, Director of the Red Tide Institute at Mote Marine Laboratory



EXPANDING THE SHARK LADY'S LEGACY

On May 4, 2022, many around the world will be thinking of one trailblazing scientist, teacher and friend—Dr. Eugenie Clark, whose 100th birthday is a day to reflect, and most of all, to look toward new horizons.

Clark, who passed away in 2015 after a lifetime of studying sharks and other fishes, is remembered not just as Mote Marine Laboratory's founding "Shark Lady," but as a scientist ahead of her time. Back in the 1950s, she'd already caught on that sharks are complex and fascinating rather than mindless and frightening, and that women belong in marine science fields once dominated by men. Her trailblazing mindset has led to many of Mote's greatest impacts today and inspires our progress toward an even brighter tomorrow.

In 2022, the U.S. Postal Service is honoring Clark with a new Forever Stamp—a mini piece of art as vibrant as she was. The stamp, designed and created by Amanda

Phingbodhipakkiya, was featured in a November 2021 announcement from USPS that stated: "Affectionately known as the 'Shark Lady,' pioneering marine biologist Eugenie Clark (1922–2015) spent her career working tirelessly to change public perception about sharks as well as to preserve marine environments around the world."

In 2022 and beyond, Mote is honoring our beloved "Genie" Clark by ensuring the great lessons she taught us continue to guide our progress:

DIVERSIFY SCIENCE

Clark traveled a truly uncommon path, as a Japanese-American woman excelling in the male-dominated field of marine science after World War II. Today, many of the highest-impact research efforts at Mote are led by women, and one of our top priorities is to continue and expand Mote's efforts to open doors for minority



Above: MarSci-LACE student Xavier Houston (top) and MarSci-LACE alum and Mote staff member Giandria Green (bottom) conduct research in the lab.

populations that are still underrepresented in marine science: African Americans, Hispanic Americans, American Indians, Alaska Natives, Native Hawaiians, and Native Pacific Islanders.

That’s the mission of our ongoing, successful, Louis Stokes Alliance for Minority Participation (LSAMP): Marine Science Laboratory Alliance Center of Excellence (MarSci-LACE). Like Clark in her early years, underrepresented minority students often face societal obstacles that their peers may not encounter—for example, the subtle or overt message that they don’t belong in science due to a relative lack of minority role models in marine science. By mentoring and learning from the underrepresented-minority interns in MarSci-LACE, with support from the National Science Foundation, Mote and its partners emphasize that these students not only belong in science—they are essential to it.



Above: Dr. Eugenie Clark’s pioneering research with sharks helped reshape the public image of these important species.

CHANGE MINDS FOR THE GOOD OF CONSERVATION

Clark founded Mote in 1955 with her fisherman assistant, Beryl Chadwick, and sought to learn even more about fishes—especially sharks, a group of predatory animals feared by many. Over time, discoveries by Clark, the Mote scientists who succeeded her, and the global shark research community have revealed that sharks aren’t the mindless monsters that many imagined.

Dr. Demian Chapman, Director of Mote’s Center for Shark Research, said of Clark: “She did some amazing work on sharks, including one of the most famous experiments where she actually taught lemon sharks how to ring bells for a food reward, and that demonstrated that these animals were not just primitive, dumb brutes—they were actually quite intelligent. That really spun the narrative in this country and around the world about sharks.” Her love of sharks also helped people around the world to embrace what ongoing science revealed: Sharks play valuable roles in regulating ocean ecosystems that support us all.

Chapman is the latest Mote scientist uncovering the truth about sharks and their cousins, rays. In his prior role at Florida International University, Chapman and partners completed the world's largest reef shark survey, Global FinPrint, revealing that these important animals were functionally extinct at many surveyed sites. Now he's leading Mote's new initiative, Expanding the Global FinPrint, to turn science into conservation successes for struggling populations of reef sharks around the world. Read more on page 12–13.

RECOGNIZE THAT AN AQUARIUM VISIT CAN CHANGE A LIFE

As a child, Genie Clark loved visiting the New York Aquarium at Battery Park—one of the earliest ocean encounters that inspired her brilliant career.

Her story has inspired decades of Mote Marine Laboratory's public education—centered since 1980 at Mote Aquarium on City Island, Sarasota, Florida. This fiscal year, Mote broke ground for our Aquarium's rebirth—as Mote Science Education Aquarium (Mote SEA) at Nathan Benderson Park. At this nexus site for Sarasota and Manatee counties and southwest Florida overall, visitors will discover more than 1 million gallons of exhibits with marine life and scientific displays from around the world. Mote SEA will have interactive state-of-the-art STEM (science, technology, engineering and math) teaching labs and ensure that annual, educational programming is available to approximately 70,000 students from Sarasota and Manatee county schools free of charge.

Most important, Mote SEA will be dedicated to *Oceans for All: Improving Access to Marine Science & Technology*—a key concept in Mote's mission that has become the name of our fundraising campaign to create this iconic facility. As this fiscal year drew to a close, Mote supporters had committed \$90 million toward the \$130-million campaign goal, the grounds were being prepared at



Above: A little girl explores the marine world at Mote Aquarium.

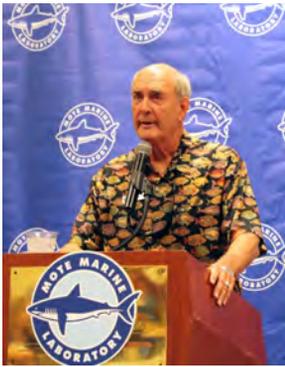
Nathan Benderson Park, and our completed blueprints were under review with Sarasota County—all of which is expected to enable vertical construction to begin in late 2022. As we eagerly await our Aquarium's rebirth, the most exciting question on our minds is: If Genie's childhood aquarium inspired her to achieve so much, what wonders will Mote SEA inspire in the next generation of scientists?

“THERE WILL NEVER BE ANOTHER GENIE CLARK, BUT HER LEGACY IS ALIVE THROUGHOUT MOTE—IN MORE THAN 20 DIVERSE RESEARCH PROGRAMS WE LEAD, IN THE INCLUSIVE AND WELCOMING MINDSET OF OCEANS FOR ALL, AND IN EVERY YOUNG MIND THAT HAS DISCOVERED MARINE SCIENCE AT MOTE AQUARIUM AND WILL DIVE EVEN DEEPER AT MOTE SEA.”

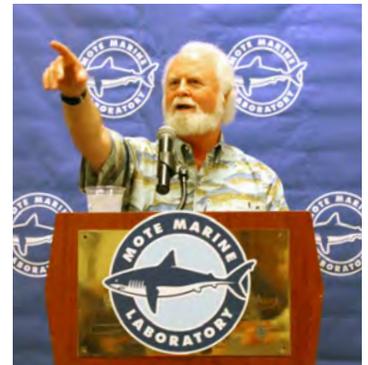
— MOTE PRESIDENT & CEO DR. MICHAEL P. CROSBY

ISLAMORADA MEETS MOTE SCIENCE

In May, Mote Marine Laboratory scientists shared their research through a poster session at the Cheeca Lodge in Islamorada, allowing community leaders, members of the state government and the public to dive deeper into Mote's mission. There, Islamorada City leaders read aloud their official proclamation that May 14 is Mote Marine Laboratory Coral Reef Restoration Day. Mote Trustees joined this exciting event and toured Mote's Keys facilities to sharpen their skills as Mote ambassadors. That included a visit Mote's newest land based coral nursery at Bud N' Mary's Marina in Islamorada.



PHOTOS BY: KEYS WEEKLY



Top row from left: Mote Marine Laboratory's Board Chairman Dr. Sam Seider addresses the crowd; Mote scientists present research posters to event attendees, including Frank Derfler, Florida Keys History & Discovery Center Board of Directors.

Bottom row from left: Mote President & CEO Dr. Michael P. Crosby (center) with members of Mote's Florida Keys Advisory Council (from left: Margie Smith, Chair Pete Rosasco, George Garrett and Mike Puto); Crosby lays out his vision for the future of Mote coral research in Islamorada.

CELEBRATING THE MAGIC OF MOTE

For more than 65 years, Mote science has been unlocking the mysteries of the seas. This year’s Oceanic Evening brought our greatest supporters, scientists—and sorcerers—back together to celebrate the “Magic of Mote.”



PHOTOS BY: CLIFF ROLES

From top left: Chairman Maurice and Carolyn Cunniffe; Nickolas and Jourdan Reinhart; Pat Donegan and Nolia Stephan; Chairman Maurice Cunniffe speaking at the event; Event Chair and Mote Chairman Emeritus Judy Graham with Mote President & CEO Dr. Michael P. Crosby and Sharon Crosby; Anne Essner with Chairman Emeritus Arthur and Catherine Armitage; John Harper and Courtney Peffley, Lindsay and Kai Braun; Mike Murray and Vice Chairman Sandi Stuart; Ted and Susan Sherman; Melissa and Kelly Caldwell; Jim and Christina Price, Rey and Genie Pascual, Jody Mayo and Steve Lansing; Susan and Don Featherman.

WE ARE MOTE

264 MOTE STAFF
INCLUDING:

41 DOCTORAL-LEVEL STAFF
115 RESEARCH STAFF



62 AQUARIUM STAFF
20 EDUCATION STAFF

24 RESEARCH PROGRAMS

- Benthic Ecology
- Chemical & Physical Ecology
- Coral Health & Disease Research
- Coral Reef Monitoring and Assessment
- Coral Reef Restoration
- Dolphin Research
- Ecotoxicology
- Environmental Health Research
- Environmental Laboratory for Forensics
- Fisheries Ecology & Enhancement
- Fisheries Habitat Ecology & Acoustics
- Harmful Algal Bloom Mitigation & Ecology
- Manatee Research
- Marine & Freshwater Aquaculture Research
- Marine Biogeochemistry
- Marine Biomedical Research
- Marine Immunology
- Ocean Acidification Research
- Ocean Technology
- Phytoplankton Ecology
- Sea Turtle Conservation & Research
- Sea Turtle Rehabilitation Hospital
- Sharks & Rays Conservation Research
- Stranding Investigations

+\$14,918,026 DONATED TO MOTE
VIA **4,689 DONATIONS** FROM **3,278 GENEROUS DONORS**

8,442
MOTE MEMBERS
SUPPORTING MOTE'S MISSION

168
CORPORATE DONORS
SUPPORTING MOTE'S MISSION

51 EDUCATION PROGRAMS INCLUDING

Adult learning programs • Behind-the-scenes Aquarium experiences • College internships • Fishing clinics • Florida Keys programs • Florida Master Naturalist Program • High school internships & volunteer programs • Homeschool programs • Kayaking programs • Onsite and virtual programs and events for families • Public outreach • Preschool programs • Research Experiences for Undergraduates • School field trips, outreaches, and classroom kits • School partnerships • Science Cafés • Scout programs • SEA Trek Virtual Learning programs • Special Lecture Series • Special needs programs • Spring Break, Summer Break and Winter Break camps • Professional Development • Travel programs • Volunteer opportunities • Youth Ocean Conservation Summit • Youth clubs & programs

8 CENTERS OF EXCELLENCE

Alfred Goldstein Institute for Climate Change Studies • Center for Fisheries Electronic Monitoring at Mote • Center for Shark Research • Florida Red Tide Mitigation & Technology Development Initiative • Mote Marine Laboratory's International Coral Gene Bank • Louis Stokes Alliance for Minority Participation: Marine Science Laboratory Alliance Center of Excellence • Marine Policy Institute • Red Tide Institute

340,182 SQUARE FEET
TOTAL BUILDINGS AND STRUCTURES

17 PATENTS
HELD BY MOTE AS OF YEAR
END, with two new patent
applications filed this year.

5 ANNUAL GOALS MET OR SURPASSED

BEYOND 2020 VISION & STRATEGIC PLAN

Mote's *Beyond 2020 Vision & Strategic Plan*, endorsed by our Board of Trustees, charts a course for the success of Mote's mission. Below are the annual strategic goals met or exceeded by our hardworking Mote family this year.

INCREASE THE LEVEL OF FUNDING FROM ALL SOURCES FOR ANNUAL RESEARCH OPERATIONS TO APPROXIMATELY \$27 MILLION IN 2030.



RECRUIT AND ANNUALLY MAINTAIN FOUR CONTINUOUSLY ROTATING THREE-YEAR POSTDOCTORAL RESEARCH FELLOWSHIP POSITIONS WITH FULL SALARYFRINGE/ START-UP COSTS BY 2025.



EXPAND THE TOTAL NUMBER OF MOTE PH.D.-LEVEL RESEARCHERS TO 45 IN 2030.



RECRUIT AT LEAST TWO NEW FULL TIME, SENIOR LEVEL RESEARCH STAFF BY 2030.



INCREASE THE AVERAGE NUMBER OF PUBLICATIONS (PEER-REVIEWED JOURNALS & BOOKS) PER MOTE PH.D. TO THREE ANNUALLY BY 2030.



TO DOWNLOAD MOTE'S FULL STRATEGIC PLAN, SCAN THIS QR CODE OR GO ONLINE TO: [MOTE.ORG/BEYOND2020](https://mote.org/beyond2020)

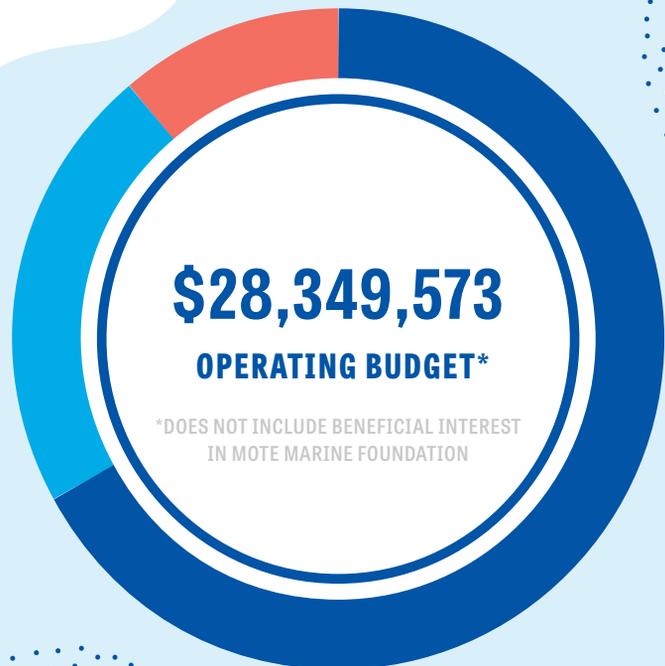


90 PEER-REVIEWED PUBLICATIONS, BOOKS AND CHAPTERS

RESEARCH 67%
\$18,986,780

EDUCATION & AQUARIUM 22%
\$6,255,206

FACILITIES & ADMINISTRATION 11%
\$3,107,587





MOTE SUPPORTERS: YOU FLOAT OUR BOAT

At Mote Marine Laboratory & Aquarium, we're incredibly thankful for you—our volunteers who donate time and talent, our Trustees who donate leadership and insight, and our donors and members who give us both essential funding and the spark that strengthens our passion for healthy oceans.

Mote has forged ahead safely during the global pandemic because of you. We're celebrating research milestones—40 years of sea turtle science and conservation, our best coral restoration year ever, a new worldwide effort to help sharks and rays, and more—because of you. And we're preparing the grounds for Mote Science Education Aquarium (Mote SEA) as we speak—because of you.

This year:

- 1,302 Mote volunteers, including our dedicated Trustees, gave us 160,208 hours of vital service across every facet of our mission—and some of these

amazing people celebrated their 20th or even 30th year with Mote. See the full list on the next page.

- 3,278 generous donors made 4,689 gifts totaling nearly \$15 million, helping Mote's mission excel across the board and allowing us to reach the milestone of \$90 million committed in our ongoing *Oceans for All* campaign to create Mote SEA. Notably, Mote's Legacy Society ended the year with 132 members—philanthropic leaders who choose to support Mote in their will or estate plan.
- 186 corporate supporters made it their business to support the sea.
- 8,442 members supported Mote's mission, and many visited Mote Aquarium, joined our education programs, and in the process, amplified and reflected our enthusiasm and passion for the oceans.

Every day, we embrace Mote's mission with grateful and buoyant spirits—knowing that the Mote family is thousands strong.

2021 VOLUNTEER AWARD RECIPIENTS

30 YEARS

Nancy Adams
Tommy Vaughan-Birch

20 YEARS

Brenda Bolay
Don Castracani
Betty Dimmick
Carol Fischbein
Henry Luciano
Wes Meltzer
Carol Miller
Mary Jo Perkins
Brenda Reddy
Roberta Steiner
Amy Trytek
Cathy Wiggins

15 YEARS

Evan Barniskis
Jim Davies
Sondra Fox
Sue Gutek
David Harralson
Angie Holmstrom
Kathryn Hynds
Lynda Isler
Brian Kelly Barbara Kemp
Diane Kestner
Melvin Kestner
Barbara Levine
David Levine
Dennis Lutsky

Cathy Marine Barbara
McIntyre

Jeanne Panka
Mary Richardson
Andy Rosebrock
Kim Rosebrock
Carol Scarbrough
Lei Ann Slack
Jill Ungar

10 YEARS

Debbie Klinger
Margot Kolodziej
Thomas Kolodziej
Beth Laubisch
David Laubisch
Stephen London
Anna Marie Martin
Jean Martin
Caryl Mason-Carr
Sara Myers
Tom Norton
Jon Prettyman
Eileen Raffaelli
Bert Rappole
Ken Schneier
Maureen Shuman
Steve Stockdale
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Gil Weiner
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Tony Ridley
Joan Smith

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30 YEARS

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25 YEARS

Ronald D. Ciaravella (*dec.*)

20 YEARS

G. Lowe Morrison

15 YEARS

Penelope Kingman

10 YEARS

Robert Essner

5 YEARS

N. Rogan Donnelly
Elizabeth Moore

1 YEAR

Barbara Brizdle

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Supporters of the *Oceans for All* campaign to create Mote's Science Education Aquarium (Mote SEA).

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\$1,000,000+

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Benderson Family
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Judith Economos
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Anonymous
Manatee County
Ryan and Maureen Martin
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Sarasota County
State of Florida
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\$500,000 TO \$999,999

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**MOTE'S CORAL RESEARCH EXHIBIT
AT THE FLORIDA KEYS NATIONAL MARINE SANCTUARY'S
ECO-DISCOVERY CENTER**

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