



MOTE MARINE LABORATORY | 2010 ANNUAL REPORT

MILESTONES

Dear Friends,

2010 was a notable year for Mote Marine Laboratory and Aquarium.

We marked a major milestone, celebrating the Lab's 55th anniversary through a variety of special events dedicated to commemorating our many decades of research, outreach and conservation in Southwest Florida and beyond. These celebrations began with the state Legislature and many local governments in our region issuing proclamations marking the importance of the Lab's work and its dedication to our oceans. The celebrations culminated in one of our most elegant black-tie events ever with Oceanic Evening hosting a full orchestra at Michael's on East.

Dr. Eugenie Clark, the Lab's founding director, was inducted into the Florida Women's Hall of Fame. This Hall of Fame, established by the Florida Legislature in 1992, includes women who have made significant contributions to the improvement of life for all citizens of Florida. We certainly think Genie fits that bill!

Unfortunately, 2010 also marked a darker event as we watched millions of gallons of oil spew into the Gulf of Mexico following the explosion of the Deepwater Horizon oil rig. The explosion, which included the loss of 11 lives, led to what has been called the worst man-made disaster in U.S. history.

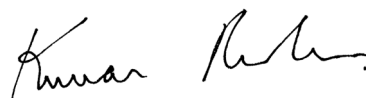
In one respect, the disaster brought out the best in our staff: Scientists in each research center quickly came together to formulate an oil spill response plan of research and monitoring programs and our support divisions began incorporating the disaster into fundraising and outreach efforts designed to support these scientific endeavors. These efforts showcased Mote's nimbleness in reacting to current environmental needs. And the community support these efforts received truly was a testament to the importance of our planet's oceans to our members, regional residents and others nationwide.

But with the disaster occurring during a time of continued economic uncertainty nationwide and negatively affecting tourism statewide – including visitorship to Mote Aquarium – responding to the Deepwater Horizon also impacted our bottom line. The issue became yet another catalyst for us to spend 2010 evaluating our current Strategic Plan and putting together a new one that will take us through 2020.

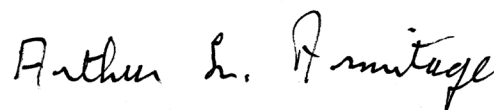
With the new Strategic Plan – to be completed in early 2011 – we will build on the 55 years of experience behind us, so that we look forward to an even brighter future.

Thank you for your tremendous support during these trying times.

Sincerely,



Dr. Kumar Mahadevan, Ph.D.,
President & CEO



Arthur Armitage
Chairman of the Board of Trustees

NOTABLE EVENTS IN 2010



FEBRUARY

Dr. Ernest D. Estevez was chosen to assume the lead editor role for the production of the Florida Oceans and Coastal Council's 2010 report on the effects of climate change on Florida's ocean and coastal resources. The report was published as "Climate Change and Sea-Level Rise in Florida: An Update on the Effects of Climate Change on Florida's Ocean & Coastal Resources, 2010."

MARCH

Dr. Michael Crosby accepted the position as Senior Vice President for Research at Mote Marine Laboratory, joining the staff to oversee the Lab's research enterprise and increase the organization's ability to conduct world-class research. Through his impressive credentials, Dr. Crosby will help guide the Lab through the development of strategic priorities, goals and enabling strategies.

The Florida House and Senate recognized Mote Marine Laboratory's 55th anniversary year through special resolutions unanimously approved in each house. The resolutions recognized Mote as a "powerhouse of near-shore marine research" and commended its "tireless pursuit of answers to some of the ocean's most pressing questions" and its efforts to share "its knowledge with the world."

The House resolution, introduced by Rep. Keith Fitzgerald, D-Sarasota, was co-sponsored by 111 representatives during Oceans Day in Tallahassee. Florida Sen. Mike Bennett, R-Bradenton, introduced the Senate version of the resolution. (House resolution: www.mote.org/hr9013; Senate resolution: www.mote.org/sr2298)

Mote was created in 1955 by Dr. Eugenie Clark. From its beginnings as a small, one-room, one-woman operation focused on sharks, the Lab has grown into one of Florida's leading marine research and outreach organizations with a main campus in Sarasota and field stations in eastern Sarasota County, Charlotte Harbor and the Florida Keys. Mote has nearly 200 staff members conduct-

NOTABLE EVENTS IN 2010 (continued)

ing research on sharks, red tide, marine mammals, sea turtles, coral reefs, fisheries, coastal ecology and aquaculture. Mote's 1,300 volunteers contribute more than 200,000 volunteer hours to the organization.

Each year, 350,000 visitors are drawn to Mote Aquarium, one of the largest attractions in Southwest Florida, and another 28,000 students are educated through Mote programs on campus and even off campus through SeaTrek, Mote's premiere Distance Learning program.

The resolutions also noted Mote's numerous academic affiliations with Florida universities, including its "landmark affiliation agreement with the University of South Florida that allows two of the state's leading research institutions to join forces in new science ventures, provide expanded learning programs, and create economic development opportunities for the region."

Mote Founding Director Dr. Eugenie Clark was inducted to the Florida Women's Hall of Fame during a ceremony on March 23 in Tallahassee. Governor Charlie Crist selected Clark, popularly known as "The Shark Lady," and two other women from a list of 10 finalists presented to him by the Florida Commission on the Status of Women.

Clark, who still serves as a member of Mote's Board of Trustees, is a world-renowned marine biologist and teacher who founded Mote Marine Laboratory as the one-room Cape Haze Marine Laboratory in 1955 and earned her nickname through her lifelong love of shark research and conservation.

The Florida Women's Hall of Fame was established by the Florida Legislature in 1992. The names of inductees are permanently displayed on the Plaza Level of the Capitol.

APRIL

With great sadness, Mote noted the passing of Michael Martin, Chairman Emeritus of the Board of Trustees, and a long-standing supporter of the organization. Mr. Martin was a generous and giving person who made a substantial difference in the Laboratory's growth, serving as Chairman of the Board from 1993 to 1996. During that period, the Laboratory invested heavily in education and research efforts through the construction of the Martin Selby Conference Center and the subsequent development of our education programs through the Jean and Michael Martin Marine Education Resource Center. He first joined the Board in 1989 and remained a strong advocate, friend and supporter of the Mote family.

The U.S. Marine Mammal Commission, chaired for 20 years by Dr. John Reynolds, III, Director of Mote's Center for Marine Mammal and Sea Turtle Research, received a Distinguished Service Award from the International Society for Conservation Biology. The Society is an international professional organization dedicated to promoting the scientific study of the phenomena that affect the maintenance, loss and restoration of biological diversity. The Society's 10,000-plus membership worldwide comprises a wide range of people interested in the conservation and study of biological diversity including resource managers, educators, government and private conservation workers and students. This award recognizes distinguished service in the field of conservation biology.

Mote's 24th annual Run for the Turtles registered a record 1,085 participants who helped raise more

NOTABLE EVENTS IN 2010 (continued)

than \$25,000 for sea turtle research and conservation programs.

MAY

Many Florida communities celebrated “Mote Marine Laboratory Week” in honor of the organization’s founding during June 13-19, 2010. The celebrations recognized Mote’s contributions to marine research, education and community service along Florida’s Gulf Coast as well as its efforts throughout the state, nation and world.

The proclamations recognized Mote as “one of the few remaining independent marine research centers conducting marine research and education projects locally, in Florida and throughout the world” and offered “sincere congratulations on 55 years of advancing the science of the sea through research, education and community service.”

The communities celebrating Mote Week were: The cities of Anna Maria, Bradenton, Bradenton Beach, Holmes Beach, Key West, Longboat Key (Town of), Naples, North Port, Palmetto, Sarasota, Venice and the counties of Charlotte, Collier, Lee, Manatee, Monroe, Pasco, Pinellas, Sarasota.

Nick Whitney, a post-doctoral scientist in Mote Marine Laboratory’s Center for Shark Research, was recognized by Albion College as one of its inaugural “Top 10 in 10” Young Alumni Award winners at an April ceremony in Albion, Michigan.

A specialist in shark behavioral ecology, Whitney’s current research uses accelerometers (the same technology used in iPods and the Nintendo Wii) to study fine-scale behaviors in sharks, sea turtles and Burmese pythons. A 2000 graduate of Albion College, Whitney received master’s and Ph.D. degrees from the University of Hawaii at

Manoa.

Albion’s Young Alumni Awards, established as part of the College’s 175th anniversary celebration this year, recognize noteworthy and distinctive achievements made by alumni who have graduated within the past 10 years.

AUGUST

Mote was once again saddened by the loss of a Mote Trustee. Maj. Gen. Raymond E. Mason Jr. was a decorated World War II veteran known to many as “The General,” who joined Mote’s Board of Trustees in 1997, serving with a focus on education, finances and investments. He gave nearly \$1 million to various Mote programs and donated many priceless hours of support.

His generosity helped many students get their feet wet in marine science and he was an ardent supporter of Mote’s college intern scholarships, education programs, the Center for Distance Learning and the “Major General Raymond E. Mason, Jr. and Margaret E. Mason Technology Resource Hub” in Mote’s Arthur Vining Davis Library, which has provided marine science resources, reference and research materials to scientists worldwide and the general public for more than 30 years.

Maj. Gen. Mason also supported Mote’s aquaculture research efforts with crucial funding for reconstruction after a 2006 fire caused great damage at Mote Aquaculture Park

Mote’s marine science educators received the 2009-2010 Pinnacle Award from the Center for Interactive Learning and Collaboration for the outstanding videoconference programs for K-12 students. The award goes to organizations that provide content through the Center’s website and

NOTABLE EVENTS IN 2010 (continued)

whose programs earn high marks from teachers on that organizations evaluations.

Mote's Center for Distance Learning has delivered state-of-the-art videoconferencing to students since 1996. Known today as SeaTrek, the programming allows Mote educators to share marine science knowledge and chat live with students in 30 U.S. states, Canada, the United Kingdom and the Dominican Republic.

The Center for Interactive Learning and Collaboration is a non-profit organization providing services to help develop, support and evaluate video distance learning programs and community projects to maximize learning.

Kate Nierenberg, a senior biologist at Mote Marine Laboratory, was honored for writing the year's most outstanding scientific paper published by the Florida Environmental Health Association.

Nierenberg was lead author of the paper "Beaches and HABs: Successful Expansion of the Florida Red Tide Reporting System for Protection of Public Health through Community Education and Outreach," which appeared in the Summer 2009 issue of the *Florida Journal of Environmental Health*.

Nierenberg and her co-authors reported on the growth of Mote's Beach Conditions Report™, which provides information about red tide, rip currents, fish kills and other conditions that can affect beachgoers' health, including oil spill impacts. The Report™ covers 33 Gulf Coast beaches from the Florida Panhandle to Collier County. Nierenberg accepted the organization's Golden Pen award, an annual honor given since 1980 to the Journal's most outstanding, well-written and interesting article.

SEPTEMBER

Dr. Kim Ritchie was been appointed to the Editorial Board for the International Society for Reef Studies journal, *Coral Reefs*. The International Society for Reef Studies was founded in 1980 to promote the production and dissemination of scientific knowledge and understanding of coral reefs, both living and fossil.

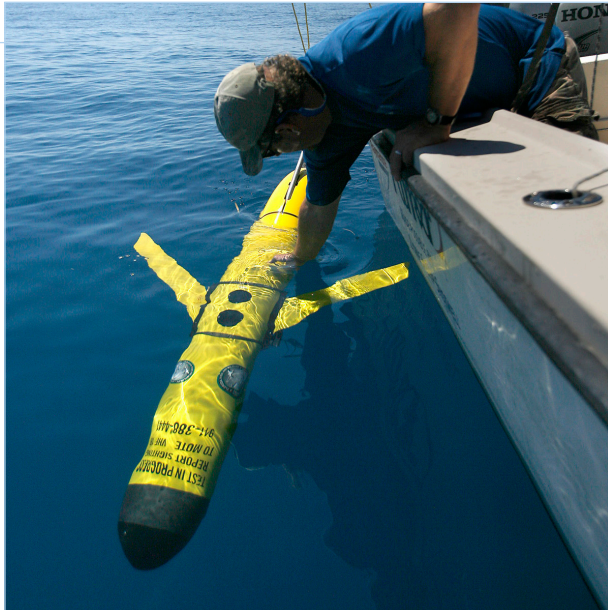
Dr. Randy Wells was elected President of the Society for Marine Mammalogy. Founded in 1981, the non-profit organization evaluates and promotes the educational, scientific and managerial advancement of marine mammal science; gathers and disseminates scientific, technical and management information and provides scientific information on matters related to the conservation and management of marine mammal resources.

Mote's Center for Aquaculture Research and Development donated 3,767 pounds of redfish to the Sarasota Salvation Army Food Bank.

NOVEMBER

The inaugural Siesta Key Crystal Classic Master Sand Sculpting Competition, which benefited Mote, drew 60,000 visitors whose attendance helped raise important financial support for sea turtle conservation and research programs.

THE DEEPWATER HORIZON OIL DISASTER



Responding to the potential for great harm to local marine resources, Mote President and CEO, Dr. Kumar Mahadevan, mobilized the research staff to develop and implement a tactical response and research plan following the Deepwater Horizon Oil Disaster. Dr. Richard Pierce, director of Mote's Center for Ecotoxicology, was appointed to coordinate Mote's oil spill response.

Dr. Pierce developed a three-phase response plan to document pre- and post-oil conditions as well as long-term impacts:

- Pre-oil impact: Sample collection and archiving for baseline data; continuous monitoring along Florida's Gulf coast using autonomous underwater vehicles (AUVs) and expanded Beach Conditions Reports.
- Post-oil impact: Re-visit previous sample sites and analyze all samples; continue AUV and Beach Conditions monitoring; initiate biomarker analyses to assess exposure impacts.
- Long-term impacts: Initiate toxicity studies on at-risk organisms; continue biomarker analyses to assess long-term impacts; continue monitoring for oil and dispersants.

SHARKS, TUNAS & BILLFISHES

Scientists in Mote's Center for Shark Research are gathering samples from large sharks and other large migratory fishes in oil-impacted parts of the Gulf to see whether traces of the oil are present in the animals' blood, muscle or organs and whether the oil has affected their immune systems, fertility or DNA. In this ongoing study, researchers will compare the samples taken from oiled areas to those taken from animals in non-oiled areas to look for oil-related effects on the long-term health and future generations of sharks in the Gulf.

UNDERWATER ROBOTS

Mote deployed four autonomous underwater vehicles, or AUVs, on multiple missions to patrol for signs of oil and dispersants from May through October 2010 in waters from Southwest Florida to the Florida Keys. These robots detected no signs of oil or dispersant. However, they gathered new and critical information about ocean currents that is helping to refine future models that would be used to determine movements of pollutants like oil.

BEACHES

As questions arose about the impact of the spill along beaches, Mote expanded its Beach Conditions Report™ to include oil spill impacts on 33 beaches on Florida's west coast. As it has during the Florida red tides that led to its creation, this system continues to prove itself as an important source of credible, real-time information for the public. Today, the Report includes photos of the beaches as well. www.mote.org/beaches

THE DEEPWATER HORIZON OIL DISASTER (continued)



ENVIRONMENTAL MONITORING & ASSESSMENT

Mote responded immediately to the spill by monitoring for oil and studying the condition of Florida's marine and coastal ecosystems in a joint effort with Sarasota County, the Sarasota Bay Estuary Program and Florida's Department of Environmental Protection. Mote scientists gathered baseline samples of water, sediment, total organic carbon and bottom-dwelling organisms like oysters, clams and seagrasses from sites in Sarasota Bay, barrier island beaches and Charlotte Harbor, Fla. These baselines from oil-free areas can be compared with oiled areas or be used to study the before-and-after if any other environmental problems occur in these areas. In addition, scientists in Mote's Center for Coastal Ecology assisted the National Oceanic and Atmospheric Administration's Mussel Watch program in collecting oyster samples from Apalachee Bay, Fla., to the Florida Keys.

Mote also surveyed the abundance and distribution of mole crabs, ghost crabs and coquinas in the surf zone on Lido Key so that a baseline existed for those animal communities. The project was the first in-depth scientific survey of these species in Sarasota County.

In an ongoing project, Mote, The National Aquarium and Johns Hopkins University are using semi-permeable membrane devices (SPMDs) to test for the presence of oil contaminants in the Gulf. These membranes filter water and collect the organic contaminants it contains. The devices can then be brought back to the lab and studied to determine whether chemicals indicating oil contamination are present.

The researchers deployed SPMDs during summer 2010 in Southwest Florida's Sarasota Bay to get baseline samples of the environment in advance of any possible oil impacts. When no oil arrived, the team shifted their efforts to the northern Gulf of Mexico, including waters off Mississippi, Alabama and Louisiana. In those areas, Mote scientists are also collecting oyster, sediment and other environmental samples for a thorough picture of oil effects on northern Gulf ecosystems. The researchers plan to deploy more SPMDs in the northern Gulf in May 2011.

CORAL

Mote scientists have been studying the potential effects of oil and dispersants on coral larvae at Mote's Tropical Research Laboratory on Summerland Key. This project was designed to reveal whether oil, dispersants or the two combined will affect the survival of the larvae or make it harder for them to settle and grow into adult corals.

Results indicated that dispersants and dispersants plus oil are fatal to the swimming coral larvae for more than 72 hours after mixing, contrary to the claims that dispersants have a very short toxic life. These results demonstrate potential for significant negative impacts on coral larvae should dispersant/oil mixtures ever reach

THE DEEPWATER HORIZON OIL DISASTER (continued)



the Florida Keys. Two species of coral in Florida – elkhorn and staghorn – are listed as threatened under federal law.

DOLPHINS

Scientists in the Sarasota Dolphin Research Program, a partnership between Mote Marine Laboratory and the Chicago Zoological Society, have been studying bottlenose dolphins in Gulf Coast waters off Sarasota, Fla., and the Florida Panhandle in coordination with NOAA to monitor for possible oil effects. They have been studying the distribution and abundance of dolphins by taking photos of their dorsal fins, which have unique patterns of nicks and notches that allow scientists to recognize specific dolphins.

They have also taken small samples of the dolphins' skin and blubber, which will be analyzed for environmental contaminants, genetics and indications of their diets.

Program scientists plan to participate in a health assessment of bottlenose dolphins in the northern Gulf during summer 2011 and will expand their studies of dolphins that range over the Gulf's continental shelf.

SEA TURTLES

Mote scientists are working within a Gulf-wide Natural Resource Damage Assessment to study the possible effects of oil on loggerhead sea turtles, a threatened species. Project scientists are looking for oil impacts to female loggerheads, their young and their nesting beaches by taking samples of blood, skin, eggs, beach sand and more. The researchers will also track turtles with satellite tags to better understand their lives at sea.

This project includes partners from Mote, the U.S. Geological Survey and the University of Florida and focuses on beaches of Florida's Panhandle, Southwest Florida and the Keys. The project is funded by the U.S. Fish and Wildlife Service.

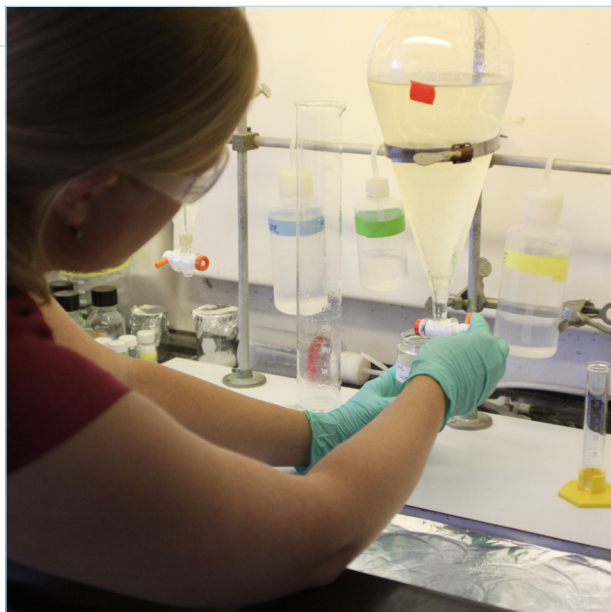
ANIMAL REHABILITATION

Mote's Sea Turtle Rehabilitation Hospital provided the last step in the recovery and release of 18 sea turtles rescued from oiled waters of the northern Gulf. The turtles, which were cleaned of oil before arriving at Mote, included Kemp's ridley and green sea turtles – both endangered species. Mote staff worked closely with state and federal wildlife officials to release the turtles in oil-free waters off of Florida's Gulf coast.

ECOSYSTEM MONITORING IN THE FLORIDA KEYS

Mote's ecosystem monitoring system in the Florida Keys, which was in place before the spill, helped to reveal that no oil reached the Keys. This system, called the Marine Ecosystem Event Response and Assessment Project, or MEERA, continues to provide early detection and assessment of biological events occurring in the Keys – which are

THE DEEPWATER HORIZON OIL DISASTER (continued)



home to the continental United States' only barrier reef – and surrounding waters.

OUTREACH

Mote's outreach related to the spill included providing current information about the human health and the environmental damage and assessment to the general public through www.mote.org and the media, hosting a public forum for the community and hosting and participating in scientific forums and symposia relate to the spill. Working with the National Wildlife Federation and the University of South Florida, Mote hosted a national symposium to craft recommendations for long-term responses to the spill. The major recommendation was for a unified research and monitoring effort to quickly detect the spill's effects as they arise and give management agencies the information they need to implement changes to deal with effects as soon as they are detected.

The rapid response by Mote Marine Laboratory to the Deepwater Horizon Oil disaster was made possible thanks to the generous support of the community.

A lead grant from the Gulf Coast Community Foundation of Venice provided us with the initial ability to respond; additional donations and grants – including those that are funding ongoing research – also played a key role in Mote's ability to respond.

We would like to thank the many individuals that donated to our response efforts as well as the organizations that supported this response:

- Appleby Foundation
- Back Alley Gifts
- Gerald A. & Karen A. Kolschowsky Foundation
- Guy Harvey Ocean Foundation
- Harold M. & Adeline S. Morrison Family Foundation
- Henry & Marilyn Taub Foundation
- Huisiking Foundation
- Integracllick, LLC
- Jelks Family Foundation
- Knox Family Foundation
- Mote Scientific Foundation
- National Geographic
- Natural Resources Defense Council
- New Amsterdam Charitable Foundation
- Oceana
- Polo Grill & Bar
- Sarasota Roller Girls
- Sarasota Slam Fishing Tournament
- Sarasota Yacht Club
- Shamrock Irish Pub
- Shannon Foundation
- Trico Foundation
- United Natural Foods
- Verizon Foundation
- William G. & Marie Selby Foundation

SCIENCE CENTERS AND RESEARCH HIGHLIGHTS



AQUACULTURE RESEARCH AND DEVELOPMENT

Director: Kevan L. Main, Ph.D.

MISSION: Dedicated to finding innovative and cost-effective methods to produce aquatic species for food and for fisheries and habitat restoration.

Aquaculture research with marine species – particularly snook and pompano – continued to evaluate the effect of sex ratio, hormonal cues and nutrition on egg production and quality. Using state-of-the-art recirculating technology developed at Mote Aquaculture Park to mature and spawn fish, we produced more than 8,000 fingerling pompano used for hatchery trials in Texas and Florida and studied the effect of nutrition on egg production and quality.

Snook spawning research focused on the effect of sex ratio, hormonal cues, and nutrition on egg production and quality. We worked with our collaborators to develop a photographic staging system to determine maturation state of snook eggs and analyzed endocrine profiles for snook broodstock. Results were used to identify new directions in maturation and spawning research for 2011. Egg quality studies revealed that fatty acid concentrations differed from what is seen in

wild spawned fish. This work was used to modify broodstock diets and improve egg quality in captive spawned snook.

After spawning snook, we developed and tested a newly designed hatching system that provided better water quality for larvae and improved early larval-rearing success. We also used the zero-discharge fingerling system to determine growth, survival rates and filtration system efficiency during redfish trials that resulted in the harvest of 3,767 pounds of redfish donated to the Sarasota Salvation Army Food Bank.

In an effort to increase our sustainability, Mote began a large-scale project to use solid fish waste to grow saltwater plants for restoration projects. The project is designed to be a model of how saltwater fish farms can cost-effectively recycle all of their waste – a goal commercial-scale aquaculture has yet to achieve. The project builds on Mote’s marine aquaculture research which raises saltwater fish more than 17 miles inland using 100-percent recirculated water. This process releases no waste into the oceans, but until now has produced some dry solid waste that had to be disposed of on land. By using this waste to feed saltwater plants – and doing it on a large enough scale to translate to commercial operations – this innovative system could serve as a model for sustainable marine aquaculture efforts across the nation and beyond.

In 2010, we partnered with Addictive Fishing Television and McCabe Productions, Inc. in the Project Snook initiative. Addictive Fishing Television, with host Blair Wiggins and produced by McCabe Productions, Inc., is working to tell the stories of snook science to help make anglers aware of the efforts taking place to support this important fish population in Florida – and to give anglers the opportunity to make donations

SCIENCE CENTERS AND RESEARCH HIGHLIGHTS (continued)

to help support the science. We also developed new collaborations with the University of South Florida College of Marine Sciences and College of Engineering faculty in marine aquaculture, sustainable recirculating technologies, biofuels generation and aquaculture education.

The Sturgeon Program expanded production and had more than 170 metric tons of fish swimming in its tanks by the end of 2010. Additional purge tanks were brought on line to handle expanded 2010 caviar production – we produced 950 kilos of caviar in 2010, which more than doubled the 2009 caviar production. Mote caviar is now being sold by 12 caviar houses in the U.S. Caviar revenues lagged behind expectations due to the economy, but increased 226 percent over fiscal year 2009 revenues. Sturgeon meat revenues increased 203 percent.

Sturgeon meat continues to be marketed throughout Florida and to select markets in the mid-Atlantic states, New York and Chicago. Progress on determining the sex and level of gonadal maturation using ultrasound continued as did collaborations with USF on the development of inventory management software, marketing management and techniques to improve production system water chemistry. We also continued to work on purge system improvements and nutrient balances as well as with air pattern cooling optimization.

CORAL AQUACULTURE:

Gretchen Goodbody-Gringley, Ph.D., joined the Center for Aquaculture Research and Development and Center for Coral Reef Research staff as a postdoctoral scientist in 2010.

We completed experiments to evaluate the effect of food sources and light on the growth of three coral species and the effect of herbivorous snails on the settlement of coral larvae.

We continued to maintain broodstock corals and coral fragments in the indoor and outdoor culture systems and we obtained permits for restoration outplanting trials for the corals held in aquaculture. We carried out the first transplant trials, releasing four species at a nearshore and an offshore site in the Florida Keys. Growth and survival will be monitored quarterly to determine the feasibility of releasing cultured corals.

MARINE AQUACULTURE RESEARCH:

Kevan L. Main, Ph.D. Developing the technology and husbandry techniques to farm high-value marine species to restore declining recreational fisheries and to advance Florida's food fish aquaculture industry. Research is focused on culture methods and sustainable marine recirculating aquaculture systems to produce snook, redfish, long-spined sea urchins and coral for stock enhancement and pompano for food.

STURGEON COMMERCIAL DEMONSTRATION:

James T. Michaels, MS. Developing and demonstrating sustainable freshwater recirculating aquaculture systems and techniques to produce caviar and sturgeon for high-value food markets and to promote a new aquaculture industry in Florida. In so doing, the program and its technology will help relieve pressure on wild sturgeon stocks and fill the current gap of supply vs. demand for food fish.

ADDITIONAL STAFF: Brian Babbitt • Constance Beaulaton, BS • Stephen Corbett • Terri Deppe, BA • Curtis Gionet • Gretchen Goodbody-Gringley, Ph.D. • John Holly • Michael Nystrom, MS • Matthew Resley, MS • Brian Richard • Nicole Rhody, MSc • Randy Shine • Wade Tappan.

SCIENCE CENTERS AND RESEARCH HIGHLIGHTS (continued)



COASTAL ECOLOGY

Director: Ernest D. Estevez, Ph.D.

MISSION: Studies the effects of human uses of water on coastal resources, especially rivers, bays and estuaries, and develops and applies multi-disciplinary research tools to understand the effects of river flow regulation, industrial and municipal discharges and storm water runoff on coastal ecosystems.

In 2010, the Center's research tour ranged in natural scale from photons to Planet Earth, with local stops at molecules (nutrients), populations (red tide, barnacles, scallops), unstudied communities (tidal creeks and rivers, patch reefs) and unexplored environments (blue holes).

When ultraviolet sunlight hits the dye left in your clothes from washing, the dyes absorb the light but give off even more in a process called fluorescence. These dyes end up in estuaries, a sure marker that human wastewaters are there. We developed an instrument that measures dyes in fresh or salt waters, a challenge because of naturally present confounding factors. We have applied for a patent and are working with

manufacturers to bring it to market. This device proves human wastes are present, better than any known method and it can also be adapted to detect oil and dispersants in seawater.

In related work, we also developed new mathematical models to account for the amount and spectral quality (colors) of underwater light in estuaries. These models are in great demand by bay managers seeking to understand how best to restore seagrasses. The group also made two important discoveries: First, red tide loves urea. This is critical because new fertilizers are adding urea to make them more potent, but red tide is quite content to use all the urea it can find. The group also found that nutrients in sediment at the bottom of estuaries or the Gulf release enough nutrients to meet 100 percent of red tide's initial requirements – a very important finding in the world of harmful algal blooms.

Red tide inspired more than science in 2010. Working with Ringling College, we also developed an interdisciplinary project focusing on red tide, combining the talents of artists at Ringling and scientists at Mote. A hugely successful avant-garde exhibit was showcased at Mote using visual artworks – from posters and videos to T-shirts and toys – to reveal how Florida red tide works and what scientists are learning about it.

Our center's zoologists spent 2010 on equally challenging problems such as the sudden invasion of Crystal, Homosassa, Chassahowitzka and Weeki Wachee rivers (whose flows are gin-clear spring waters), by marine barnacles. Extensive field sampling led our main zoologist to conclude that the invasion was caused by a combination of factors including reduced spring discharges, sea-level rise, boats carrying larvae into rivers and the increased amount of suitable barnacle habitat like seawalls.

SCIENCE CENTERS AND RESEARCH HIGHLIGHTS (continued)

Center scientists continued to analyze data and alligators from the Myakka River, in order to recommend ecological safeguards for water and watershed changes envisioned by local and state governments. We identified a critical zone of the river where shoreline plants, especially marshes, are extremely sensitive to salinity changes. The effects of proposed watershed regulations are being evaluated with the critical zone serving as the standard for ecological protection. In related work, we continued research in tidal creeks, hoping to solve some very basic ecological and management problems.

The center's director also took a leading role serving as principal architect and editor of a new state report on the effects of sea-level rise on Florida's ocean resources through his membership of the Florida Oceans and Coastal Council. (The report can be viewed at <http://www.floridaoceanscouncil.org/reports/>.) A fact-finding trip to Jamaica to explore new collaborations led to a new agreement between Mote and the University of the West Indies.

BENTHIC ECOLOGY:

James Culter. Explores life in and on the bottoms of Florida's rivers, estuaries, and oceans and conducts nationally significant studies at electric power stations. The program also discovers and explores submerged sinkholes and caverns on the west Florida shelf.

CHEMICAL ECOLOGY:

L. Kellie Dixon, Ph.D. Monitors coastal water quality in Southwest Florida, develops new methods for real-time detection of human wastes in rivers and estuaries, determines seagrass light requirements, and conducts meta-analyses of very large data sets relating red tide and water quality.

COASTAL RESOURCES:

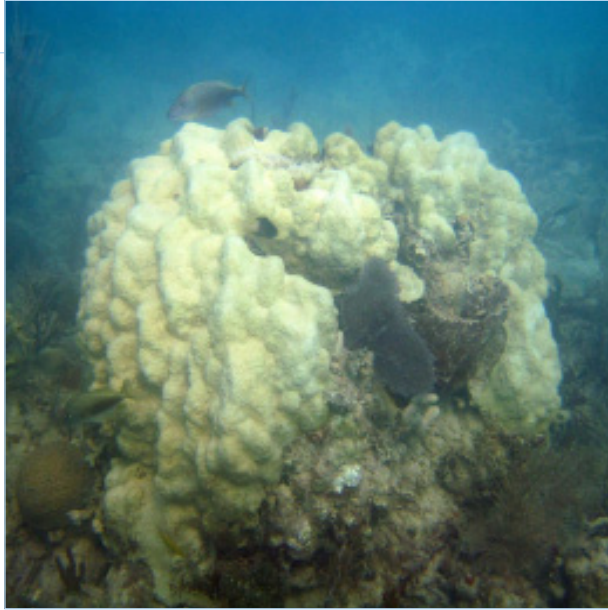
Ernest D. Estevez, Ph.D. Develops methods and applications to use mollusks and other invertebrates as markers to portray ecological conditions and guide management in tidal rivers, and creates ecological condition indices to improve resource management.

ADDITIONAL STAFF: Nichole M. Becker, BS • Camia M. Buehler, BS • Maya J. Dobrzeniecka, BS • Emily R. Hall, Ph.D. • Susan R. Hemme, MS • Patricia J. Minotti, BA • Ari Nissanka, D.Sc. • Lori J. Zaworski, BS

ADJUNCT AND VOLUNTEER SCIENTISTS:

Andre Clewell, Ph.D. • James Fountaine, Ph.D. • Tom Fraser, Ph.D. • John Morrill, Ph.D. • David Shafer, Ph.D. • Jennifer Shafer, Ph.D.

SCIENCE CENTERS AND RESEARCH HIGHLIGHTS (continued)



CORAL REEF RESEARCH

Director: David Vaughan, Ph.D.

MISSION: Dedicated to monitoring, understanding and restoring coral reefs in collaboration with the Florida Keys National Marine Sanctuary and other research organizations in Florida Keys.

The Coral Reef Science and Monitoring Program staff worked extensively on the Lower Keys Offshore Coral Nursery Project. This project has produced more than 2,000 fragments of the threatened Staghorn coral (*Acropora cervicornis*) and is being maintained at the nursery funded by the National Oceanic and Atmospheric Administration-American Recovery and Reinvestment Act.

In addition, we are also maintaining nearly 300 fragments of “rescued” corals – those fragments that were removed for construction projects or damaged in boat groundings – for the Florida Keys National Marine Sanctuary and will be made available to researchers and aquariums for study and public education. We also worked with the Center for Aquaculture Research and Development to outplant coral fragments grown in aquaria. The release, permitted by Sanctuary

officials and Florida Fish and Wildlife Conservation Commission, is designed to test the feasibility of using corals grown in land-based raceways and recirculating tank systems to restock damaged or depleted reef sites. In all, 138 coral fragments were released. Species were *Montastrea cavernosa* (great star coral), *Montastrea annularis* (boulder star coral), *Stephanocoenia intersepta* (blushing star coral) and *Siderastrea siderea* (massive starlet coral).

Through the Florida Keys Red Tide Monitoring Program, we made monthly trips along the Gulf side of the Lower Keys and coordinated opportunistic volunteer samples to support Mote’s red tide research programs.

The Marine Ecosystem Event Response and Assessment expanded cooperative efforts to develop protocols for reporting and capturing lionfish and other invasive species in the Florida Keys and we continued BleachWatch, which trains volunteers to help detect coral bleaching so that an early warning can be sounded and management can take action.

Record cold water temperatures in January had a detrimental affect on corals in the Keys, causing a rare cold-water bleaching event that led to coral deaths in many areas of the Florida Keys National Marine Sanctuary. Inshore reefs showed greater impacts than offshore reefs. MEERA (Marine Ecosystem Event Response and Assessment Program) and BleachWatch played key roles in identifying the bleaching event early and alerting the Florida Reef Resilience team, a multi-organization effort that includes Mote scientists. The team, led by The Nature Conservancy, is normally mobilized for surveys following warm-water bleaching events. Thirty-one scientists representing 13 organizations surveyed 78 sites throughout the Florida reef tract from Martin

SCIENCE CENTERS AND RESEARCH HIGHLIGHTS (continued)

County south through the lower Florida Keys, assessing coral health in the wake of the record low temperatures. Surveys conducted Jan. 25-Feb. 12, showed that the inshore and mid-channel reefs from Biscayne Bay to Summerland Key were the hardest hit.

Studies also showed that one flash of hot summer weather may leave corals ailing for months, according to a new mathematical model based on Mote studies of bacteria living on corals. This model, developed through a collaboration between Mote and Cornell University, is the first to use math to describe how the protective bacteria on elkhorn corals suddenly gives way to disease-causing bacteria when corals are stressed. Elkhorn coral, (*Acropora palmata*), is listed as a threatened species under the Endangered Species Act. The new model may help marine resource managers contend with current declines in corals worldwide. The model could even help scientists predict how climate change and other factors might tip the delicate balance between coral health and disease.

Mote researchers also shed new light on how marine bacteria manage to adapt so rapidly. As reported in *Science*, the study showed widespread, horizontal gene transfers allow the organisms to be resilient in the face of environmental change. The finding is especially significant in efforts to understand how communities of organisms, such as coral reefs, adapt to challenges in the environment. Gene Transfer Agents (GTAs), viral-like particles produced by Proteobacteria, demonstrated activity in the natural environment that had not been previously documented, suggesting that this is a mechanism by which marine bacteria acquire some traits in a matter of minutes rather than through thousands of years of evolution. Scientists have long known higher organisms transfer DNA through reproduction, but until now have had limited understanding of how the most basic organisms – microbes – accomplished the same

feat. The study shows a higher level of gene transfer in the reef environment, a finding that potentially could help scientists know whether beneficial genes are being transferred to create healthier coral reefs.

We also continued research with *Diadema*, the long-spined sea urchin and the first large-scale larval productions at the Tropical Research Lab. This is the first time large volumes of larvae were tested in 1,500-liter tanks. This transition from small aquarium size tanks will now all take place in the Mote lab in the lower keys.

CORAL REEF SCIENCE AND MONITORING:

Erich Bartels. Evaluates the biology and health of coral reef ecosystems through projects such as BleachWatch, Reef Resilience Monitoring, Marine Ecosystem Event Response and Assessment (MEERA) Project and The Staghorn Nursery Project.

CORAL REEF RESTORATION:

David Vaughan, Ph.D. Seeks to develop systems and techniques to grow coral and other species, such as sea urchins, for replanting in depleted reef systems, and for scientific study.

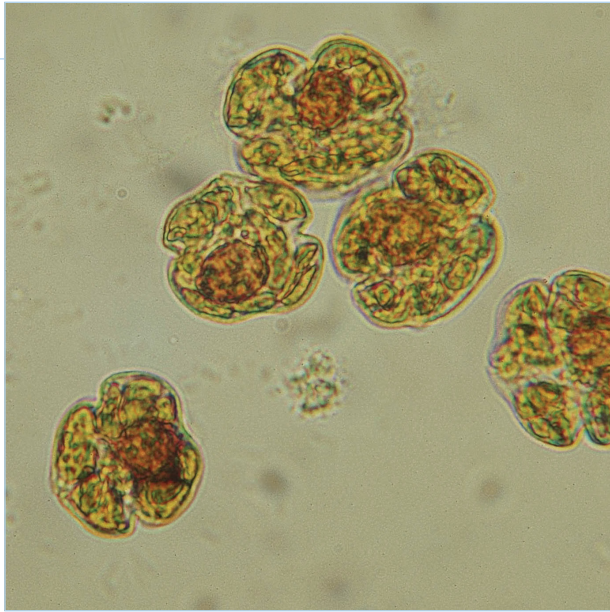
MARINE MICROBIOLOGY:

Kimberly Ritchie, Ph.D. Seeks to establish health assessments for Florida coral reefs, establish microbial baselines of coral communities and studies the application of beneficial bacterial interactions to corals and their symbionts.

ADDITIONAL STAFF: Cory Walter, MS • Dave Wilson, BS

ADJUNCT STAFF: Dr. Rutiger Bieler, Chicago Field Museum

SCIENCE CENTERS AND RESEARCH HIGHLIGHTS (continued)



ECOTOXICOLOGY

Director: Richard H. Pierce, Ph.D.

MISSION: Investigates the source, fate and effects of natural biotoxins (red tide toxins) and chemical pollutants (pesticides, petroleum, industrial contaminants, pharmaceuticals) in the marine environment, including the ecology of harmful marine algae that produce biotoxins. Develops and implements new technologies to identify and monitor toxic substances, the organisms that produce them and the resulting effects. A major focus is assessing impacts from exposure and discovering ways to reduce public health and natural resource exposure and risk.

In 2010, we took a leadership role following the explosion on the Deepwater Horizon oil rig. The center's director coordinated Mote's oil spill response, which included meeting and coordinating with Mote scientists, federal, state and local agencies and other research institutions, to establish a coordinated and compatible response plan and to prioritize monitoring and research activities as funds were made available. We also worked with Mote administration, development and communications to solicit funds and disseminate

information to the many concerned members of the public. Initial, pre-oil impact response included collection of environmental samples along Sarasota coastal areas to establish baseline conditions. Mote's autonomous underwater vehicles (robots) were deployed off our coastal waters and in the Florida Keys looking for the earliest signs of oil. Additional, on-going studies, were initiated to investigate the toxicity of oil and dispersants on marine life.

Investigating Florida's red tide continued to be a key focus for us in 2010. Florida's red tide can sicken people and kill wildlife, but research is revealing possible ways to control or lessen its effects. Mote, in collaboration with the Florida Fish and Wildlife Research Institute, hosted a free public forum on the "Florida Red Tide Control and Mitigation Program," a competitive grants program sponsored by the Florida Wildlife Conservation Commission that provided funds to groups exploring strategies to lessen red tide's effects on the public or control its spread. The forum revealed findings from this program, which disbursed more than \$1.5 million between 2007 and 2009.

Florida's red tide blooms can have a huge impact on communities, causing concerns about everything from a bloom's impact on a local economy to how it affects marine animals like manatees and sea turtles. Blooms are caused by a complicated recipe of biology, chemistry and ocean physics – complicated enough that helping the public understand what's happening can be difficult.

To help communicate red tide research to the general public, scientists at Mote teamed up in a unique partnership with students at the Ringling College of Art and Design. The idea was to turn visual arts students loose on red tide to see what kinds of unique approaches to outreach they would

SCIENCE CENTERS AND RESEARCH HIGHLIGHTS (continued)

come up with. The students created 15 art projects that included everything from a new cell phone app and a red tide comic book to movies, blogs and sculptures. The project included expert judges and members of the public voting for the best project. The winning entry was a comic book titled “The Mote Mariner VS the Red Tide.”

Scientists also continued their research to evaluate chemical contaminants and their effects on marine organisms in the arctic and in tropical environments providing a global perspective of the contaminants that put marine life at risk.

In collaboration with Beckman-Coulter Inc. (a health industry corporation) and the University of South Florida, we worked to establish a marine protected species biomarker laboratory to look at the consequences of climate change and contaminant exposure on sub-cellular processes. In addition to assessing DNA damage in a variety of animals, we also successfully demonstrated the application of human reproductive biomarker technology for marine research, applying these techniques to assess the impact of toxins on the reproductive fitness of marine species including mammals, fishes and sharks.

Progress has been made in evaluating the effects of environmental stress on the immune system. We also continued research to investigate the impact of mosquito-control pesticides on non-target organisms in the Florida Keys. This research is conducted in cooperation with the U.S. Fish and Wildlife Service and Florida International University and provides critical information that helps the Fish and Wildlife Service establish protocols for mosquito control applications in national wildlife refuges.

AQUATIC TOXICOLOGY:

Dana Wetzel, Ph.D. Investigates chemical contaminants concerning impacts on marine

mammals and other marine organisms, advancing diagnostic technology through a biomarker laboratory to evaluate adverse effects at the molecular level. This approach has been implemented in the arctic, sub-tropical and tropical environments providing a global perspective of the contaminants that put marine mammals at risk. A special application assesses consequences of exposure on fertility and reproductive fitness.

CHEMICAL FATE AND EFFECTS:

Michael Henry, BS. Investigates natural biotoxins and chemical pollutants in the marine environment, including sources, routes of exposure, bioaccumulation and persistence in affected organisms, as well as trophic transfer through the food web. A major focus is to provide cause-and-effect relationships between exposure and adverse impacts in order to reduce the risk to natural resources and public health.

ENVIRONMENTAL HEALTH:

Barbara Kirkpatrick, Ed.D. Investigates how airborne biotoxins impact public health, accomplished through field exposure studies. Their mission is to identify problems and to develop creative ways to disseminate information to educate resource managers, public health officials and the public about dangers and how to mitigate adverse impacts. A major focus is innovative technology (the Beach Conditions Reporting System) to accomplish the information and education outreach goals.

PHYTOPLANKTON ECOLOGY:

Gary Kirkpatrick, Ph.D. Investigates phytoplankton behavior, photophysiology and bloom dynamics of Florida's red tide to understand how harmful

SCIENCE CENTERS AND RESEARCH HIGHLIGHTS (continued)

algae function at cellular, community and ecosystem levels. To accomplish this, the Sarasota Operations of the Coastal Ocean Observation Laboratories (SO COOL) was expanded to apply state-of-the-art sensor, satellite and world-wide web technology to coastal ocean issues focusing on red tide and marine algal communities.

ADDITIONAL STAFF: Patricia Blum, AA • Anamari Boyes, BS • Cory Boyes, AA • Robert Currier, AAS • Alan Hails, BS, PE • Rebecca Medvecky, BS • Katherine Nierenberg, MS • Valeriy Palubok, MS • Erin Pulster, MS., • Vince Lovco, Ph.D.

ADJUNCT SCIENTISTS: Terence Evens, Ph.D. • Gary Fahnenstiel, Ph.D. • Scott Glenn, Ph.D. • David Millie, Ph.D. • Gary Rand, Ph.D. • Edward VanVleet, Ph.D. • Steven LeGore, Ph.D. • Oscar Schofield, Ph.D. • Aswani K. Volety, Ph.D.

PROFESSIONAL VOLUNTEER: Karl Henderson, Ph.D, PE

SCIENCE CENTERS AND RESEARCH HIGHLIGHTS (continued)



FISHERIES ENHANCEMENT

Director: Kenneth M. Leber, Ph.D.

MISSION: Strives to substantially increase the knowledge of how to preserve and responsibly enhance economically and ecologically important coastal fish and invertebrate populations.

Snook Research: Studies of the movement patterns of snook along beaches in Charlotte Harbor during spawning season showed that mature snook had very high site fidelity at their spawning sites. Tagging and analysis of recapture data showed that females either remained at spawning locations throughout the year or left for a season or two and then returned. Ongoing studies of juvenile snook in mangrove creeks is helping to better understand which creeks contribute to which spawning sites. This work has been part of a Master's project by Andrew Barbour at University of Florida. Recapture rate is over 70 percent, a very high recovery, which shows that snook have little inclination to migrate out of the habitats they grow up in, until they leave to spawn. Two manuscripts were prepared on this work. One manuscript has already been printed in a journal.

The 2010 "Snook Shindig Hook Kids on Fishing" clinic based at the snook demonstration lake at MAP was a big success. This event is usually coupled with the Annual Snook Shindig Research Tournament and both events are widely popular and engage Mote scientists with the public. However, in 2010, Shindig tournament was cancelled to show solidarity with FWC's decision not to open snook season until the following year (owing to cold winter snook kills in 2010). But the Kid's fishing Clinic portion of the Snook Shindig was held as usual. In November, the Snook Stock Enhancement Program partnered with the Mote's Education Division and the Center for Aquaculture Research and Development, to host a kids fishing clinic at the Aquaculture Park 100 title one 5th graders from Alta Vista Elementary School. The clinic was funded by the Fish Florida Foundation and in-kind support provided by numerous local and national businesses and angler groups.

Bonefish and Tarpon Research: Bonefish research by Aaron Adams continued at Grand Bahama Island, Abaco, Bahamas and Cienaga de Zapata National Park in Cuba. Tagging and fin clipping research on bonefish and collecting specimens for age-growth estimates is revealing growth and habitat utilization patterns needed to better understand their life cycle. Dr. Adams also assisted FWC staff in improving regulations for bonefish and permit. Dr. Adams continues to collaborate with Dr. Jerry Ault (University of Miami) on tarpon satellite tagging. Dr. Adams has satellite tagged tarpon in Southwest Florida and Belize. He is frequently consulted by government agencies and NGOs regarding fisheries conservation and management of these and other species.

SCIENCE CENTERS AND RESEARCH HIGHLIGHTS (continued)

Tarpon Genetic Tracking: Mote scientists Carole Neidig and Tom King are working in partnership with FWC's research institute to collect tarpon genetic samples to evaluate movement patterns of this important sport fish. Of the total of 2,251 fin clips analyzed, 36 were recaptures, which provide movement data. Six fish were recaptured 300 days or more after they were first captured. Farthest movement was 88 miles. At least 300 anglers and 180 shops around the state participate in these studies. We also partner with numerous fishing tournaments and brought on Sea Grant (state-wide), Everglades National Park and the South Carolina Coastal Conservation Association as partners.

Bonefish & Tarpon Outreach: Dr. Adams gave a presentation on bonefish research at an international conference in Cienaga de Zapata, Cuba. Dr. Adams has also appeared in the ESPN2 TV series *Pirates of the Flats*, which weaves together bonefish conservation, research and fishing.

Red Drum Research: Samples collected by biologists and anglers were used to determine optimal size at release for red drum in Tampa Bay. Genetic fingerprinting showed that very small (1 inch) juveniles provided the same bang-for-the-buck, in terms of contributing fish to the fishery, when released in Alafia River nursery habitats. But small juveniles stocked in companion studies in the Little Manatee River provided no contribution to the fishery from those habitats, where much larger fingerlings are clearly the appropriate size for stocking to be effective there.

Stocking Catadromous Marine Fishes in Inland Ponds and Lakes: After pilot studies at a three-acre freshwater snook lake developed at Mote Aquaculture Park (MAP) showed that stocking

young common snook could create additional fishing opportunities for anglers, the results are being put into practice in Costa Rica. Mote's stock enhancement scientists, led by Dr. Ken Leber, used the knowledge gained in the pilot studies at MAP to help design and stock a new 50-acre fishing lake on private land in Costa Rica with black snook and white snook, Pacific cousins to Florida's common snook. Dr. Leber and his team are also discovering information on life-history and ecological requirements of these highly prized fish in their natural habitats on the Pacific coast of Costa Rica, as well as documenting the survival and growth potential of the fish stocked into the lake. Some snappers, corvina (cousin to spotted seatrout), tarpon and tripletail are also being stocked into the 50-acre lake to evaluate the potential to supplement the snook lake fishery, created in 2010, with these species as well.

FISHERIES HABITAT ECOLOGY:

Aaron A. Adams, Ph.D. Advances knowledge about fish habitat use, habitat connectivity throughout the life cycle, essential fish-habitat requirements and the relative contributions of different fish habitats to fish population size. These studies provide better understanding of which species benefit most from conserving, restoring or adding habitats. Dr. Adams is also Executive Director of Bonefish and Tarpon Trust, a non-profit organization in South Florida dedicated to preservation of bonefish, tarpon and permit for the future.

MARINE STOCK ENHANCEMENT:

Kenneth M. Leber, Ph.D. Studies focused on developing and testing responsible marine stock enhancement technology and protocols to help restore depleted populations, augment fishery

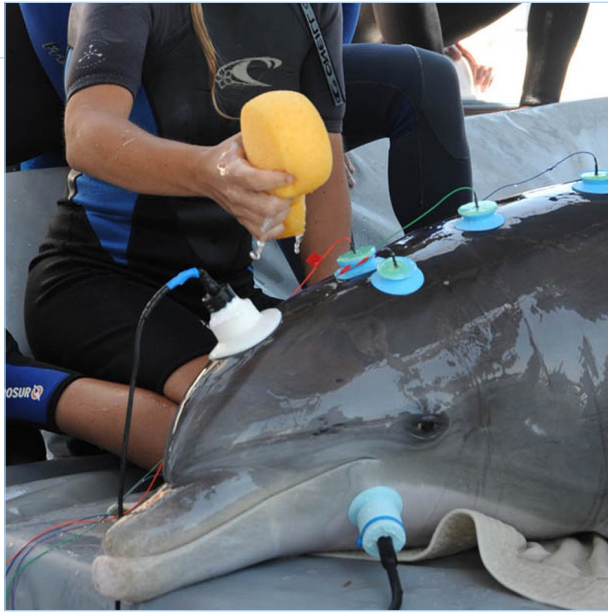
SCIENCE CENTERS AND RESEARCH HIGHLIGHTS (continued)

yields and advance basic knowledge about wild stocks. Develops optimal stocking strategies (fish size, release habitat, timing of releases, magnitude of releases, acclimation measures, etc.) and strategies for using conservation hatcheries to help with conservation and restoration of endangered species, such as those found in coral reef communities.

ADDITIONAL STAFF: Andrew Barbour, MS student
• Ross Boucek, BS • Nathan Brennan, Ph.D. • Terri Deppe, BA • Rachael Sommer, BS • Tom King, Ph.D. • Carole Neidig, MS

ADJUNCT SCIENTISTS: H. Lee Blankenship, MS
• Sasha Koulish, Ph.D. • Kai Lorenzen, Ph.D. • Martin Moe, MS • Ken Nedimyer • Bill Pine, Ph.D.
• Juliane Struve, Ph.D. • Carl Walters, Ph.D.

SCIENCE CENTERS AND RESEARCH HIGHLIGHTS (continued)



MARINE MAMMAL AND SEA TURTLE RESEARCH

Director: John E. Reynolds, III, Ph.D.

MISSION: Provides information to enhance the understanding of the biology and habitat requirements for marine mammals and sea turtles to help inform management decisions, promote effective conservation; and provides professional leadership support for students and programs worldwide.

The Manatee Research Program had had several areas of focus including:

- Intensive field efforts associated with assessing manatee distribution, abundance, genetics and behavioral ecology;
- Participating in and providing leadership for programs for manatee and other marine mammal research and conservation in several Caribbean countries and elsewhere in the world (e.g., China, and southeast Asia);
- Developing new, collaborative, conservation programs with a number of partners;
- Completing two new books.

The Sea Turtle Conservation and Research Program completed its 29th year of monitoring in Sarasota County beaches for nesting and hatching sea turtles. Sarasota County had a recovery year for loggerhead nesting, with 2,512 loggerhead nests and a new county record of 38 green sea turtles nests. The program also documented two rare Kemp's ridley nests.

Highlights of our ongoing efforts to use satellite transmitters to track loggerhead turtles (23 animals tagged) at sea showed animals traveling to the Caribbean for the first time and a long-term recapture of a female first tagged by Mote 22 seasons ago. In-water research in Charlotte Harbor continued with the first satellite tracking of a Kemp's ridley. Stable isotope studies continued for both loggerhead and ridley sea turtles with assistance from the Sea Turtle Grants Program.

The Sensory Biology and Behavior Program continues to train marine mammals and sea turtles in ways that provide important insights into sensory biology and communication. This team effort involves Mote Aquarium Animal Care staff, Center scientists and adjunct researchers.

Highlights include:

- A new \$450,000 grant to study the function and neurophysiology of manatee vibrissae in a collaborative project with New College of Florida, the University of South Florida and University of Florida.
- Hosting a conference on the effects of man-made noise on marine fish and turtles. This was the final conference of a series that took place twice per year supported by Office of Naval Research, the National Science Foundation and the National Marine Fisheries Service. The goal was to provide a set of standards and criteria to avoid or mitigate the harmful effects of man-made sound in the sea.

SCIENCE CENTERS AND RESEARCH HIGHLIGHTS (continued)

A study by a team of scientists led by the University of South Florida and Mote Marine Laboratory showed that hearing loss may play a role in some of the animals' distress.

In the study, published in the journal *PLoS One*, researchers found severe to profound hearing loss in 57 percent of the bottlenose dolphins and 36 percent of the rough-toothed dolphins studied after the animals stranded. More than half of the dolphins tested during the study had been brought to Mote's Dolphin and Whale Hospital for treatment.

Given that these species rely on echolocation for orientation and feeding, the researchers believe that hearing loss could play a significant role in some strandings. The finding might also provide good cause for veterinary experts, scientists and resource managers to rethink the rehabilitation and release of dolphins given the role hearing loss might play in their trauma.

The world's longest-running study of wild dolphins, which is based at Mote's Sarasota campus, celebrated its 40th anniversary in 2010. The Sarasota Dolphin Research Program, a joint program by Chicago Zoological Society and Mote, also received a national conservation award for its efforts.

Through the Sarasota Dolphin Research Program, scientists have studied the 160 bottlenose dolphins that live year-round in the "natural laboratory" setting of Sarasota Bay. These animals have been studied for more than five generations, allowing researchers to gather unparalleled data to inform marine mammal management and conservation.

The Program also earned the top honor in the 2010 North American Conservation Award from the Association of Zoos and Aquariums. The annual award recognizes exceptional efforts to preserve regional habitat, restore species and support biodiversity in the wild.

In 2010, the Program continued to produce scientific information, provide guidance and training to developing programs, scientists, and students globally, and involve numerous collaborators in dolphin research in Sarasota Bay and elsewhere.

The program successfully rescued an entangled 10-month-old dolphin calf (nicknamed "Nellie" in honor of former Mote colleague Dr. Nélio Barros who passed away in 2010) and monitored it and "Ginger," a dolphin that was rehabilitated and released in 2009. The Program also continued ongoing, long-term fish surveys in Sarasota Bay that quantitatively documented fish kills from a severe cold event and continued to monitor recovery of the bay following the large-scale red tide that affected the bay during 2005-2006.

Research integrating findings from monthly dolphin population surveys, annual dolphin health assessments and seasonal fish abundance surveys indicate that Sarasota Bay dolphins may not have fully recovered from the red tides. Numbers of dolphins in the bay remain low and body condition for some classes has not returned to pre-red-tide levels. In spite of fish abundance returning to levels approaching pre-red tide, average prey fish sizes for some key species remain significantly smaller, suggesting they may not be sufficient to meet dolphin energetic demands.

We continued satellite-linked tracking of Franciscana dolphins in Argentina that defined the degree to which these dolphins are at risk from entanglement in gillnets.

And in 2010, we documented the long-term resident dolphin community of Sarasota Bay that spans five generations, showing they had a successful year with high productivity (16 calves) and low mortality.

The Stranding Investigations Program received 513 calls regarding stranded marine animals in 2010; 212 concerned manatees, 189 concerned

SCIENCE CENTERS AND RESEARCH HIGHLIGHTS (continued)

turtles, 42 were for cetaceans and the remaining 70 were other species. This winter was one of the coldest on record, impacting large numbers of sea turtles and manatees. The Program helped to rescue three manatee calves and assisted in 79 sea turtle responses. Staff was recognized for their contribution during this crisis by Florida's Fish and Wildlife Conservation Commission. The program also assisted in the capture and disentanglement of a resident Sarasota Bay dolphin calf.

Finally, the Ruth Delynn Cetacean Osteological Collection was reviewed by the Systematic Collection Committee of the American Society of Mammalogists for accreditation, receiving extremely favorable reviews that will likely lead to full accreditation in 2011.

The Dolphin and Whale Hospital and Sea Turtle Rehabilitation Hospital provide optimal care of live-stranded animals, while also collecting data on biology, physiology and medicine. They also serve as a regional resource and interacts closely with Mote's Sea Turtle Conservation and Research Program and Sarasota Dolphin Research Program.

The Dolphin and Whale Hospital received no live strandings during 2010.

During the first quarter of 2010, Mote treated more sea turtles than we usually treat in multiple years. In January alone, we treated a leatherback and 46 cold-stunned turtles. Throughout the entire year, we treated 118 sea turtle patients, of which 59 were fibropapilloma turtles.

Mote was selected as a primary treatment facility for sea turtles needing care as a result of the Deepwater Horizon oil spill in the Gulf of Mexico. We were not required to treat any sea turtles for oil, so we were designated a secondary treatment facility, and we held and treated 18 sea turtles from the oil spill region.

We successfully released 63 sea turtles during the year: One leatherback, three loggerheads,

39 greens and 20 Kemp's ridleys. Sixteen of the Kemp's and two of the greens were oil spill turtles.

MANATEE RESEARCH:

John Reynolds III, Ph.D. Partners with other organizations to answer questions about manatee biology, health and behavior to understand the species, inform management decisions and educate the public. Works in conjunction with Mote's Aquatic Toxicology Program to conduct research on contaminants, biomarkers and other aspects of marine mammal biology in marine mammals in Alaska and internationally. Has helped develop Caribbean-wide action plans for manatees and other marine mammals.

SARASOTA DOLPHIN RESEARCH:

Randall S. Wells, Ph.D. Studies coastal and offshore dolphins in the southeast U.S., Argentina and elsewhere to understand their biology, health, behavior and ecology and the human factors – including environmental contaminants – that impact them. Responsible for follow-up monitoring of rehabilitated dolphins for Mote and other institutions. The program is a partnership with the Chicago Zoological Society and done in conjunction with colleagues worldwide.

SEA TURTLE CONSERVATION AND RESEARCH:

Tony Tucker, Ph.D. Coordinates turtle monitoring activities in Sarasota County to aid assessment of beach nourishment projects. Satellite tags on nesting females are tracking the migratory paths and inter-nesting habitat use for the largest loggerhead turtle rookery in the Gulf of Mexico.

SCIENCE CENTERS AND RESEARCH HIGHLIGHTS (continued)



SENSORY BIOLOGY AND BEHAVIOR:

William Tavolga, Ph.D. Researches sensory and cognitive processes in a variety of marine mammals and fishes. Projects range from ultrasound reception in certain fishes to touch and hearing sensitivity in manatees. Leading participation in a series of NOAA-sponsored conferences on the effects of man-made noise in the ocean on marine life.

STRANDING INVESTIGATIONS:

Gretchen Lovewell, BS. Provides 24-hour response to marine mammal and sea turtle strandings in coastal Southwest Florida and offers logistical stranding support to state manatee biologists. Studies seek to understand the natural history of cetaceans and sea turtles and evaluate long-term mortality trends.

DOLPHIN AND WHALE HOSPITAL SEA TURTLE REHABILITATION HOSPITAL:

Lynne A. Byrd, BA, Certified Board Veterinary Technician. Provides around-the-clock medical care for dolphins, whales and sea turtles suffering

from disease or trauma. Mote's hospitals have a remarkable record for assisting the rehabilitation and recovery of debilitated animals and returning them to the wild.

ADDITIONAL STAFF: (1) Andrew Stamper, DVM (consulting veterinarian) • Charles Froonjian • Kathy Klingelberger, MS • Mary Mankze, BA • Christine Skey, BA • Patrick Walsh • (2) Sheri L. Barton, MS • Carolyn Cush, BS • Jennifer Helseth, BS • Kerri Scolardi, MS • Deirdre Semeyn, BS • Jay M. Sprinkel, BA • (3) Jason Allen, BS • Brian Balmer, MS • Aaron Barleycorn, BS • Kim Bassos-Hull, MS • Elizabeth Berens-McCabe, MS • Deb Fauquier, DVM • Jennifer Hebert, MS • Katie McHugh, Ph.D. • Gene Stover • (4) Emily Argo, BS • Kristen Mazzearella, MS • Kendra Garrett, MS • Sunnie Hart, BS • Ryan Welsh, BS • Sarah Hirsch, BS • Emma Jugovich BS

ADJUNCT SCIENTISTS: Nelió B. Barros, Ph.D. • Gordon B. Bauer, Ph.D. • Heidi E. Harley, Ph.D. • Leszek Karczmarski, Ph.D. • David A. Mann, Ph.D. • William McLellan • Anne B. Meylan, Ph.D. • D. Ann Pabst, Ph.D. • Arthur N. Popper, Ph.D. • James A. "Buddy" Powell, Ph.D. • Stephanie Presti Lantry, Ph.D. • Butch Rommel Ph. D • Michael Salmon, Ph.D. • Laela S. Sayigh, Ph.D. • Lori Schwacke, Ph.D. • Peter L. Tyack, Ph.D. • Graham A.J. Worthy Ph.D. • Jeanette Wyneken, Ph.D.

- (1) Animal Hospitals
- (2) Manatee Research
- (3) Sarasota Dolphin Research
- (4) Sea Turtle Conservation and Research
- (5) Stranding Investigations

SCIENCE CENTERS AND RESEARCH HIGHLIGHTS (continued)



SHARK RESEARCH

Director: Robert E. Hueter, Ph.D.

MISSION: Dedicated to the scientific study of sharks, skates and rays; research ranges from molecular biology and biomedical studies of sharks in the laboratory to ecological, fisheries and conservation studies of shark populations in the sea.

Designated by the U.S. Congress as a national center for shark research in 1991.

Biomedical research in our center continued to collect data on tumor growth inhibitory activity of elasmobranch epigonal organ conditioned medium proteins, with related studies by collaborators at Clemson University focusing on reducing these proteins to active peptides. A major laboratory instrument, purchased with a grant from the Doherty Foundation and matching funds from an anonymous foundation, contributed to the advanced analysis of electrophoretic gels and antibody blots.

Laboratory experiments continued to characterize molecular pathways involved in programmed cell

death (apoptosis) of human tumor cells exposed to shark immune cell-derived compounds. These studies provided evidence that shark immune cell-derived compounds induce the conversion of key apoptotic pathway enzymes from their precursor forms to their active forms in T-cell leukemia target cells and these conversions correspond to significant increases in activity of these enzymes in treated tumor cells.

In addition, preliminary studies to characterize the composition of stingray mucus secretions were initiated, with the goal of identifying novel antimicrobial compounds that could be applied to wound-healing in humans, including military applications.

With the Deepwater Horizon oil blowout that occurred from April to July, much of the focus of the Center's Shark Biology Program was redirected to assessing the impacts on sharks, rays and other large epipelagic fishes of the Gulf of Mexico. This work began with an offshore research cruise to the northeastern Gulf in November to sample blood and tissues from sharks, tunas, billfishes and other oceanic species possibly affected by the spill.

The Center's work in Cuba made major advances in 2010. We hosted a workshop on shark fisheries of the Gulf, following the Trilateral Initiative for Marine Science and Conservation of the Gulf of Mexico & Western Caribbean conference held at Mote in September. These efforts resulted in the design of a new fisheries landings program to document the impacts of Cuban, Mexican and U.S. fisheries on shark populations of the Gulf of Mexico. Together with our collaborators, we conducted a shark fisheries workshop in Havana and then initiated the new fisheries monitoring

SCIENCE CENTERS AND RESEARCH HIGHLIGHTS (continued)

program at three ports on Cuba’s northwest coast and conducted a field course in shark identification and anatomy.

We also took on a leadership role in a major public outreach and research effort called the “Guy Harvey Ultimate Shark Challenge,” an all catch-and-release shark fishing tournament held along the southwest Florida coast. This tournament was conducted in conjunction with local shark fishing enthusiasts, the Guy Harvey Ocean Foundation and the Shark-Free Marinas Initiative and was the first fishing tournament ever to be endorsed by the Humane Society of the United States. The tournament involved conventional and satellite tagging of caught-and-released sharks and live video streaming of the process back to Mote’s Immersion Cinema. A publicly accessible website tracked the movements of the sharks after release. The Guy Harvey Ocean Foundation funded the Mote CSR research activities in the tournament.

Research results in 2010 also provided new insights into how sharks track and capture their prey. Sharks sniff out prey by sensing small differences in the time it takes an odor to reach each nostril, and use that difference to tell where the odor is coming from. This is a novel discovery about sharks, which could improve the design of underwater robots designed to locate oil and other ocean pollutants. The study is part of a larger National Science Foundation-funded project based at Mote that investigates how sharks feed and combine all their senses to interact with their environment. Sharks use multiple senses, including smell, hearing, vision, lateral line and electroreception, to track down their prey.

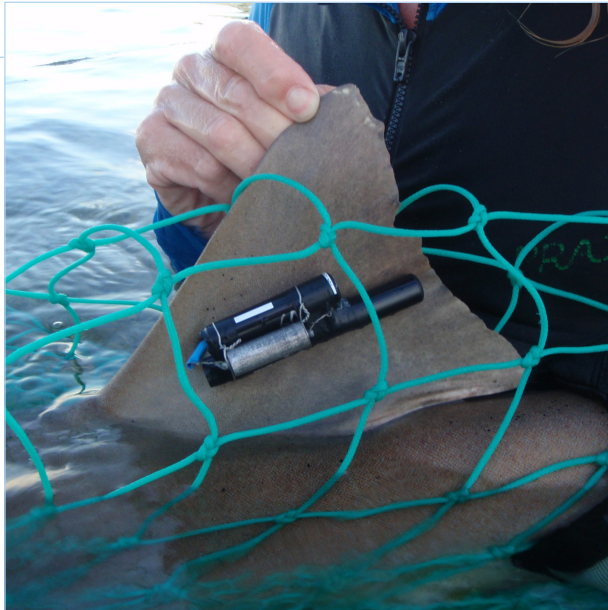
Research with spotted eagle rays expanded in 2010 with work conducted in association with Mote’s Marine Operations Division and Center for Marine

Mammal and Sea Turtle Research. Funding from the Georgia Aquarium supported the deployment of four satellite tags on eagle rays off Sarasota. We also conducted monthly aerial surveys along the southwest Florida coast to observe and count large sharks and rays, with flight services donated by the LightHawk organization, a nonprofit partner in this research.

We continued studies of the fine-scale behaviors of sharks, rays and other species using accelerometers – motion-sensitive computer chips used in smart phones and video games. The accelerometers can detect each flick of a shark’s tail or tilt of its body and give scientists insight into exactly what the animals are doing and when. These tags show when swimming, resting, mating, and other behaviors occur, and can also be used to measure how much energy the animals are expending. The expertise of CSR scientists in this field has led them to expand their application of these tags to two species of sea turtles as well as invasive Burmese pythons in the Everglades.

A Mote study published in 2010 also provided groundbreaking insights into the feeding mechanisms of whale shark. The study was the most comprehensive to date on the unique system that sets the filter-feeding whale shark apart from most other shark species. Working with our Mexican colleagues and University of South Florida scientists and students, Mote CSR researchers found that, for most of the day, whale sharks swim at or near the surface, angled upward about 13 degrees with their open mouths submerged or peeking just above the water’s surface. Whale sharks seek plankton patches dominated by tiny crustaceans called sergestid shrimp and calanoid copepods, along with predatory worms called chaetognaths, but also seek out the eggs spawned by fishes such as the little tunny. The sharks swim to “ram” water

SCIENCE CENTERS AND RESEARCH HIGHLIGHTS (continued)



and food through filtering pads covering the gills inside the throat – a process called ram feeding. Water passes through while large enough food particles are caught and carried to the opening of the esophagus in a unique process engineers call “cross-flow filtration.” Until now, the most detailed study of whale sharks’ filter feeding anatomy was a paper in 1941. The current study adds much greater detail – including measurements of the tiny pores in the filter pads.

MARINE BIOMEDICAL RESEARCH:

Carl Luer, Ph.D. Studies disease resistance, biochemistry, reproduction and embryonic development of sharks, skates and rays.

MARINE IMMUNOLOGY:

Cathy Walsh, Ph.D. Characterizes cellular immune function in elasmobranchs, identifies immune regulatory factors and characterizes environmental stressors in marine vertebrate health.

SHARK BIOLOGY:

Robert E. Hueter, Ph.D. Studies shark abundance, behavioral ecology, feeding mechanisms, sensory systems, fisheries and conservation of sharks.

ADDITIONAL STAFF: Jamie Brennan, BS • Stephanie Leggett, BA • John Morris, BS • Mercedes Smith, BS • John Tyminski, MS (affiliate researcher) • Nicholas Whitney, Ph.D.

SCIENTISTS-IN-RESIDENCE: Eugenie Clark, Ph.D. (Mote Founder and Trustee) • José Castro, Ph.D. (NOAA) • H. Wes Pratt, BS (NOAA, retired).

ADJUNCT SCIENTISTS: George Benz, Ph.D. • A.B. Bodine, Ph.D. • Jeffrey Carrier, Ph.D. • Charles Colle, Ph.D. • Leo Demski, Ph.D. • Michelle Heupel, Ph.D. • Gary Litman, Ph.D. • Philip Motta, Ph.D. • R. Glenn Northcutt, Ph.D. • Colin Simpfendorfer, Ph.D. • Gregory Skomal, Ph.D. • Clayton Smith, Ph.D. • Robert Thommes, Ph.D.

EDUCATION HIGHLIGHTS



Jim Wharton, Vice President

Mote Marine Laboratory's Education Division provides opportunities for life-long learning and presents on-site experiences for students through school and public programs, summer camps and special adult-oriented lectures through the Centers for School and Public Programs, Volunteer and Intern Resources and Distance Learning. During 2010:

- 13,000 adults and children – a 30 percent increase over 2009 and a new record – participated in our on-site school and public programs.
- 7,200 participated in distance learning programming.
- 1,323 volunteers donated 197,273 hours in service of Mote.
- 267 volunteers donated 1,400 hours during the inaugural Siesta Key Crystal Classic, a master sand sculpting event on Siesta Key. Mote is a key event organizer and recipient of the funds raised through this event.
- 140 college students participated in our marine science internship program, coming from throughout the United States and beyond, including Australia, Brazil, Canada,

Columbia, Germany, Italy, Singapore and the UK.

- \$20,000 in scholarship monies helped to support interns who demonstrated financial need.
- 49 high school students participated in the new summer high school volunteer program and provided valuable assistance in many areas.
- 30 high school students participated in new Job Shadow program, allowing them the opportunity to learn more about careers in marine science.
- 50 summer camp scholarships were provided through the Kingman Scholarship Program and other local donor organizations.

This year, the Education Division also redefined our goals and developed a new mission statement that more closely aligns our educational programs with the scientific research performed by Mote. Our mission is "...to use the methods and findings of Mote's world-class, cutting-edge research programs to increase science and ocean literacy in our audiences and to inspire global marine and environmental stewardship through informed personal choices."

Members of our division also played key roles in evaluating proposed national science education standards by representing Mote in the National Marine Educators Association and other organizations.

We also worked to engage the public in marine science in new ways, including the introduction of Science Cafés to the community. Mote Science Cafés are informal community outreach events modeled after the salons of the 1920s that explore the topics of the day and give everyone a chance to participate in the discussion.

EDUCATION HIGHLIGHTS (continued)

Other key highlights for the year included:

- Receiving a 2009-2010 Pinnacle Award given by the Center for Interactive Learning and Collaboration (CILC). The Award, given to SeaTrek Distance Learning, recognized our outstanding distance learning programs for K-12 students. The award goes to organizations that provide content through the CILC website and whose programs earn high marks from teachers on CILC evaluations. Mote's Center for Distance Learning has delivered state-of-the-art videoconferencing to students since 1996. Known today as SeaTrek, our programming allows Mote educators to share marine science knowledge and chat live with students in 30 U.S. states, Canada, the United Kingdom and the Dominican Republic. The programs bring the ocean world to students through interactive science education programs and foster understanding of marine life and an appreciation for conserving the marine environment.

We also showcased Florida's coral reef through a new traveling exhibit called "Sanctuary Reef." This exhibit, which resembles a coral reef cove inside the hull of an overturned ship, features models of corals, colorful fish, eels and other reef fauna, while the exhibit's exterior provides reef-related information. "Sanctuary Reef" was designed by Mote educators to travel nationwide and educate students about corals, reef ecosystems, scientific research and marine sanctuaries. During visits to schools, the exhibit features live videoconference programs where students can interact with Mote educators via a TV screen.

"Sanctuary Reef," which was funded through a grant from the Department of Education, traveled to several locations in Florida.

Closer to home, Mote dedicated its newly renovated classroom in our Marine Education Resource Center to long-time education volunteer Dr. Wayne Hootman. The classroom and building renovations were funded through a grant from the Duckwall Foundation and turned an aging, tired space in to a healthy, attractive and highly practical learning environment.

For the first time ever, Mote Education offered online registration for several of its programs, including summer camps and the Special Lecture Series. The new system dramatically advances our ability to serve, track and communicate with our audiences.

And finally, but importantly, at our annual Volunteer Awards Ceremony, we had the pleasure of recognizing 293 outstanding volunteers, including those who have served for one year, three years, five years, 10 years, 15 years, 20 years, and 25 years. Another 16 outstanding Mote volunteers received the President's Call to Service Award, which recognizes 4,000 or more life-time volunteer. This award is the nation's highest volunteer award.

STAFF: Melissa Alsobrooks, BA • Dan Gallagher, Ph.D. • Kasey Gaylord-Opalewski, MS • Krystle Harvey, BS • Elizabeth Fine, ME • Amy Fleischer, MA • Julie Jaquette, ME • Lisa Kinsella, BA • Elizabeth Metz Kirk, MA • Kat Nicholaisen, BS • Timothy Oldread, MBA • Jason Robertshaw, AS • Gina Santioanni, BA • Beverly Stancel, BA • Bradley Tanner, BA • Debra Tidwell, AS • Rebecca Walsh, BS • Miranda Wrobel, BA.

AQUARIUM HIGHLIGHTS



Dan Bebak, Vice President

This year marked the Lab's 55th anniversary and several events were planned in the Aquarium to highlight this important milestone and give area residents and tourists new attractions to see.

One major event hosted by the Aquarium was a special 55th Anniversary Celebration Juried Art Exhibition & Silent Auction. Pieces were selected by jurors Jack Dowd, a nationally recognized contemporary social realist artist, and Lourdes and Robert Ziegenfuss, art collectors and gallery curators. The show was available for visitors during operating hours.

In a special moment of whimsy, we also hosted Sarasota Mayor Richard Clapp, who braved the sharks to show community support for the region to become a test market site for Google fiber, the company's ultra high-speed Internet service. The honorable mayor donned a wetsuit and swam with our bonnethead sharks. While Sarasota was not ultimately chosen as a test site, the event drew national attention to Mote Aquarium.

Mote Aquarium's mascot, Gilly the Shark, enjoyed a makeover in 2010, getting an updated look that was featured in a short film produced by

the Communications Division. The film featured Gilly going in for "surgery" and coming out with a new look. The short feature and Gilly's new look have been well received.

Another makeover involved the highly visible 6,000 gallon aquarium in the main terminal of the Sarasota Bradenton Airport, which underwent a complete renovation. New filtration systems, new internal coral decorations and a new enclosure were installed and finished. New graphics and LCD monitors were also installed and now offer us a chance to update promotions based on new things happening at Mote Aquarium.

Another addition in 2010 was a new life-size and accurate model of a Megalodon jaw near fossil creek. This addition to our shark-focused zone offers visitors a fun picture-taking experience and is a new revenue generation tool made possible thanks to a generous contribution from the Mote Scientific Foundation.

Since 2008, Mote Aquarium staff have been discussing the feasibility of hosting temporary exhibits that would offer our visitors – especially our local residents – new reasons to return for a visit. This year, we began discussions in earnest about hosting a temporary penguin exhibit. The New Amsterdam Charitable Foundation generously provided the initial funds to help us secure the exhibit, which is now planned for a November 2011 opening.

This year, however, we did experience a downturn in attendance attributed to the explosion of the Deepwater Horizon oil rig in the Gulf of Mexico. At the beginning of 2010, Mote Aquarium was enjoying better-than expected attendance and increased revenues in the gift shop, Deep Sea Diner and Sarasota Bay Explorer. That good news didn't last, however, following the explosion. The Aquarium, like many tourist-

AQUARIUM HIGHLIGHTS (continued)

based sites in Florida suffered from the public misperception that oil was affecting our area and tourism numbers reflected a decline. (We did receive a partial payment to offset losses.)

MOTE AQUARIUM STAFF: Amanda Amole, AA
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ADJUNCT PROGRAMS



PROTECT OUR REEFS PROGRAM

Since 2003, Mote has administered the funds generated through sales of the Protect Our Reefs specialty license plate to Florida drivers. In addition to providing an extremely important source of financial support for the Center for Coral Reef Research, funds generated through plate sales also support a grants program.

In 2010, coral reef researchers and conservationists at Mote and other organizations received \$341,568 in grants to study, protect and educate the public about Florida's coral reefs. These grants are designed in-part to provide initial funding for new research investigations with the idea that the projects will eventually lead to larger and more critical investigations.

The grants fueled 13 new and ongoing projects, including cutting-edge research on coral health and the microscopic organisms that affect it, methods to restore corals in depleted areas, environmental monitoring programs and more. The grants program is funded through sales of Florida's Protect Our Reefs license plate, administered by Mote Marine Laboratory. Reports are available at <https://dspace.mote.org/dspace/handle/2075/114>

THE MARINE POLICY INSTITUTE

Director, Frank Alcock, Ph.D.
Deputy Director, Barbara Lausche, JD

Created in 2006, the Marine Policy Institute continued to pursue its core mission to strengthen the scientific basis of public policy – especially related to economic development and ocean sustainability and coastal ecosystems. MPI delivered a full program with ongoing support from the Gulf Coast Community Foundation of Venice.

During 2010, MPI was especially active in two policy areas:

- Local policy tools for sea level rise adaptation, including community outreach and planning as follow-up to its 2009 sea level rise policy assessment.
- Initiating new policy work on offshore oil drilling in response to Florida legislative interest and the Deepwater Horizon oil spill.

MPI's sea-level rise activities included participation in the Gulf of Mexico Alliance related to community resilience tools, presenting at the International Conference on Sea Level Rise in the Gulf hosted by the Harte Research Institute and at a climate change workshop of the Annual Conference of the Florida Chapter of the American Planners Association.

At the regional level, the MPI built on its initial sea-level rise assessment work through a new project with the Sarasota Bay Estuary Program funded by an EPA Climate Ready Estuary grant. Through the grant, we produced a sea level rise web viewer for the region (Manatee and Sarasota Counties) using the latest digitized elevation data to show scenarios of a 1, 3, and 6 foot rise in sea level in the region. MPI created a project team of GIS

ADJUNCT PROGRAMS (continued)

and scientific experts to provide the data and advise the contractors on development of the site. MPI will use the viewer as an outreach and communications tool to stimulate discussion and encourage local sea level rise adaptation actions through focus groups, sessions with local government staff and community workshops.

The issue of offshore oil drilling and gulf oil spills was a major new policy area for MPI during 2010. The MPI served as advisor to the Collins Center for Public Policy, and the director co-authored a report to the Century Commission for a Sustainable Florida and State Legislature on “Potential Impacts of oil and Gas explorations in the Gulf.” The publication, available on Mote’s and other websites, was released just before the explosion of the Deepwater Horizon oil rig and was especially pertinent to the legislature and the public during the numerous discussions that followed.

Other 2010 initiatives included partnering with the Mote Shark Research Center and Environmental Defense Fund on a Gulf-wide shark fisheries management project to analyze catch share controls, collaborating on a fisheries policy workshop with Mote scientists and USF Sarasota/Manatee, partnering with New College to develop a survey, and analyze data collected on public awareness about the impacts from red tide events, and co-hosting a workshop on Florida Red Tide Control and Mitigation.

On the international front, the MPI participated in the 10th Conference of Parties to the Convention on Biological Diversity in Japan with support from IUCN (International Union for Conservation of Nature) and presented guidelines on marine and coastal protected areas law as a principal author.

Marine Policy Institute Advisory Committee:

- Michael Orbach, Marine Policy Institute Chairman, Nicholas School, Duke University
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- James Wilson, School of Marine Sciences University of Maine

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FINANCIAL REPORT

MOTE MARINE LABORATORY, INC. AND SUBSIDIARIES
 CONSOLIDATING STATEMENT OF FINANCIAL POSITION
 DECEMBER 31, 2010 AND 2009
 (SUMMARIZED COMPARATIVE TOTALS ONLY)

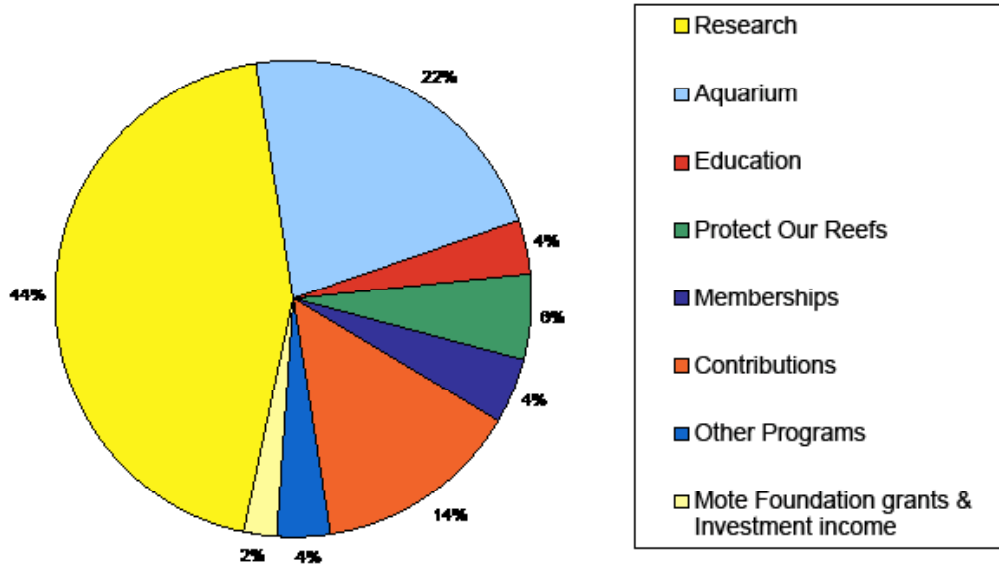
	2010 Consolidated Total	2009 Consolidated Total
<u>Assets</u>		
Cash and cash equivalents	\$ 2,216,029	\$ 2,377,325
Accounts receivable	125,687	179,753
Accounts receivable-related party	-	599,998
Due from MESI	-	-
Due from Mote Marine Foundation, Inc.	1,242	14,797
Research grants receivable	1,361,345	1,211,615
Bequest receivable	185,000	25,000
Pledges receivable	32,942	55,441
Inventory	3,672,176	3,528,728
Prepaid expenses and other assets	88,321	89,869
Donated assets held for sale	41,805	21,000
Patents, net	14,806	-
Investment in MESI	-	-
Land	7,498,190	7,498,190
Software in progress	37,925	-
Property and equipment, net	21,078,082	22,992,977
Beneficial interest in the net assets of Mote Marine Foundation, Inc.	<u>10,178,400</u>	<u>9,630,083</u>
Total Assets	<u>\$ 46,531,950</u>	<u>\$ 48,224,776</u>
<u>Liabilities, Net Assets and Stockholders' Equity</u>		
<u>Liabilities</u>		
Accounts payable	\$ 520,675	\$ 617,102
Accrued payroll	724,842	625,827
Due to Mote Marine Laboratory, Inc	-	-
Memberships relating to future periods	557,908	531,269
Funds advanced on research programs	2,248,252	2,382,041
Line of credit	3,748,406	4,057,871
Notes payable	<u>5,640,063</u>	<u>5,707,403</u>
Total liabilities	<u>13,440,146</u>	<u>13,921,513</u>
Minority Interest	<u>1,652,599</u>	<u>1,875,241</u>
<u>Net Assets and Stockholders' Equity</u>		
Unrestricted	20,055,963	21,798,762
Temporarily restricted	2,683,740	1,914,850
Permanently restricted	<u>8,699,502</u>	<u>8,714,410</u>
Total Net Assets	<u>31,439,205</u>	<u>32,428,022</u>
Total Liabilities, Net Assets and Stockholders' Equity	<u>\$ 46,531,950</u>	<u>\$ 48,224,776</u>

MOTE MARINE LABORATORY, INC. AND SUBSIDIARIES
CONSOLIDATING STATEMENT OF ACTIVITIES
YEAR ENDED DECEMBER 31, 2010 AND 2009
(SUMMARIZED COMPARITIVE TOTALS ONLY)

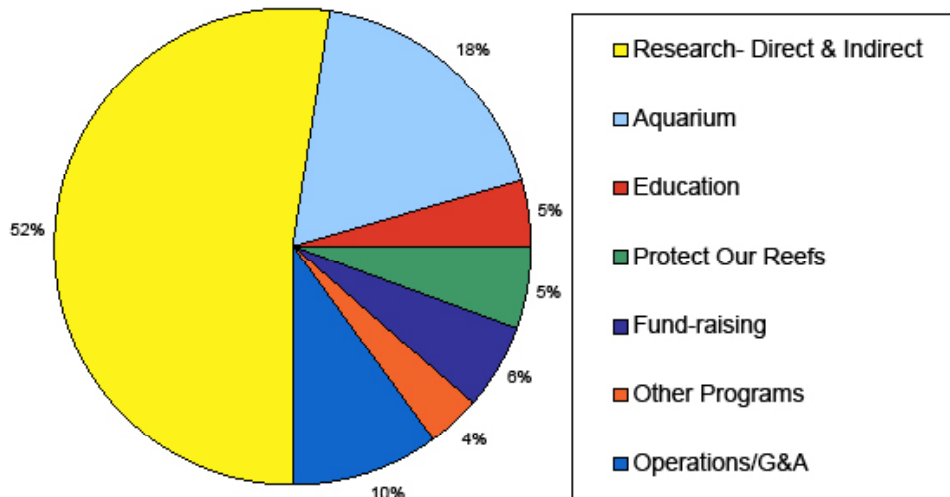
	2010 Consolidated Total	2009 Consolidated Total
Support, Revenue and Reclassifications		
Program revenue		
Research revenue		
Federal	\$ 2,593,056	\$ 3,138,455
State	1,738,987	2,925,309
Other	2,988,104	1,917,109
Aquarium		
Admission fees	2,530,306	2,514,197
Gift shop	1,038,395	994,687
Other	358,598	256,369
Fish and caviar sales	592,968	265,866
Memberships	767,357	750,805
Education	685,696	764,177
Protect Our Reefs-License Plate	1,033,218	1,053,905
Other programs	627,073	407,053
Contributions		
Construction	53,603	56,800
Aquarium	91,032	295,772
Other programs	2,048,370	1,386,873
Non-cash contributions	303,125	404,053
Grants from Mote Marine Foundation, Inc.	377,031	316,801
Investment income	19,889	29,476
Unrealized (loss) gain on investments, net	1,386	2,512
Realized loss on investments, net	(1,248)	(358)
Realized gain on disposal of assets	16,570	5,500
Change in net assts of Mote Marine Foundation, Inc.	548,317	825,018
Total support, revenue and reclassifications	18,411,833	18,310,379
Expenses		
Cost and expenses		
Cost of products sold	263,022	162,120
Processing and packing	84,118	25,371
Selling, general and administrative	14,698	30,362
Abnormal losses	114,616	-
Interest	-	994
Other	242,682	50,543
Program services		
Research	8,543,100	8,993,888
Education	897,881	859,249
Aquarium	3,504,904	3,321,924
Protect Our Reefs-License Plate	1,036,126	1,058,400
MAP facility operations	1,131,067	909,380
Other	733,356	549,298
Supporting services		
Administrative and general	1,916,173	2,032,310
Fund raising	1,141,549	1,007,880
Total expenses	19,623,292	19,001,719
Increase (decrease) in net assets/net income (loss) before forgiveness of debt, equity earnings in subsidiary income and minority interest	(1,211,459)	(691,340)
Minority interest in MESI	222,642	124,757
Increase (decrease) in net assets/net income (loss)	(988,817)	(566,583)
Net assets/retained earnings at beginning of year, as originally stated	32,428,022	30,366,435
Prior-period adjustment	-	2,628,170
Net assets/retained earnings at beginning of year	32,428,022	32,994,605
Net assets/retained earnings at end of year	\$ 31,439,205	\$ 32,428,022

FINANCIAL REPORT (continued)

**Mote Marine Laboratory
and Subsidiaries
Revenue 2010***

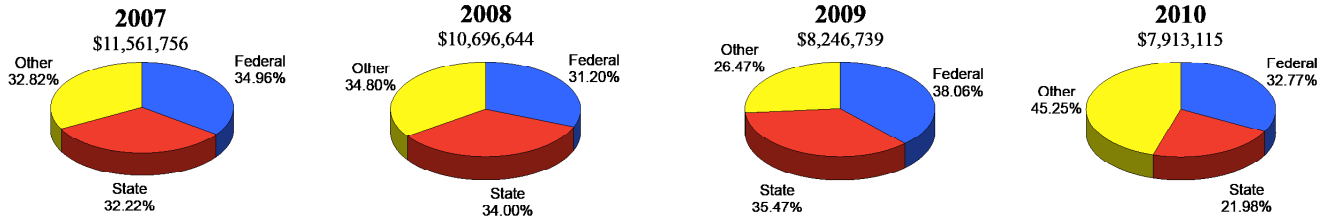


**Mote Marine Laboratory
and Subsidiaries
Expenses 2010**



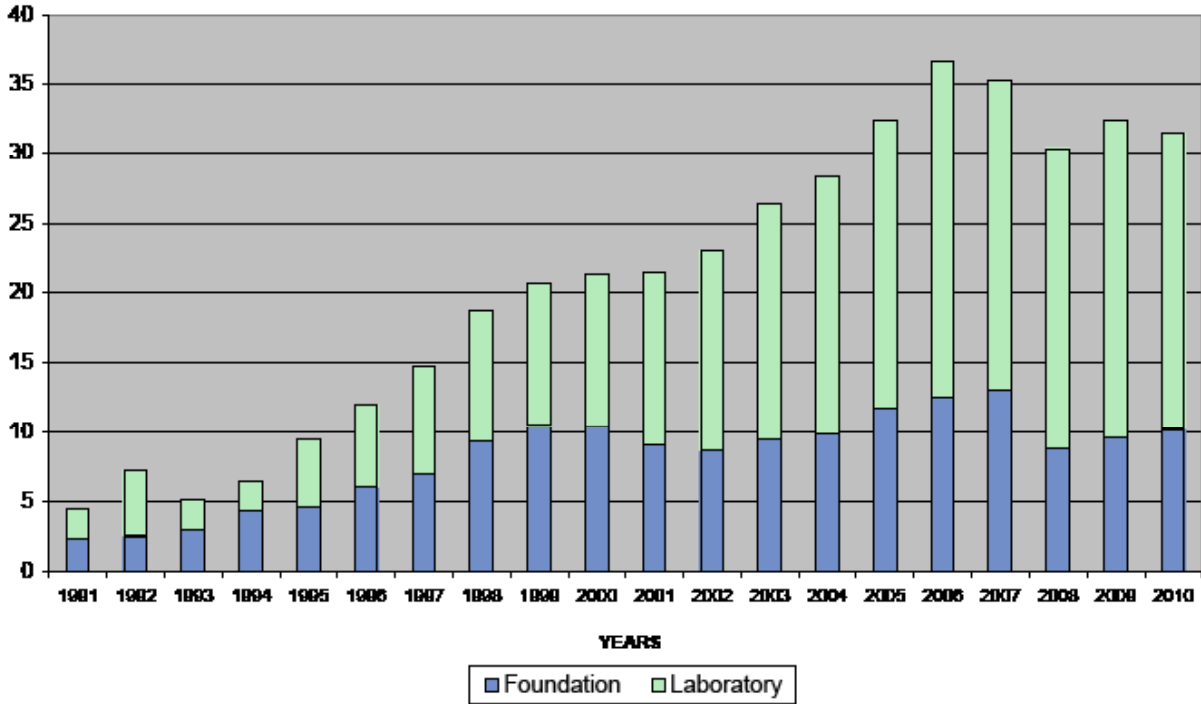
FINANCIAL REPORT (continued)

RESEARCH REVENUES



Millions

TOTAL NET ASSET GROWTH 20 YEARS 1991-2010



The Statement of Financial Position and the Statement of Activities included are excerpts from our complete set of financial statements audited by Kerkering, Berberio & Co., P.A., for the years ended Dec. 31, 2010 and 2009. The complete set of audited financial statements can be obtained from Dena Smith, Chief Financial Officer or downloaded from www.mote.org/2008audit.

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MOTE LIBRARY AND 2010 PUBLICATIONS

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Mote's research library archives and makes available to the public print copies of publications produced by Mote's research staff. It also maintains a repository of digital collections that are accessible through the Library webpage.

These electronic collections contain materials relating to Mote's history and research, and primary source photographs, documents and reports covering environmental and historical issues in Southwest Florida and beyond from the 1920s to the present.

Contemporary materials in the repository include Mote Technical Reports that reflect the research performed at Mote; Coral Reef reports written by Mote's "Protect Our Reefs" license plate grant program recipients and Center for Shark Research resources including reports from the Sawfish Research Project and Whale Shark investigations.

Archival collections include a selection of field journals from the 1920s-1940s of noted ichthyologist, Charles M. Breder, Jr. and papers from the Bass Biological Laboratory from the 1930s-1940s. The Bass Lab was the first co-educational research field station in Florida and the first year-round collecting station in Southwest Florida.

Documents, photographs and other materials are continually added to the repository. View collections online at www.mote.org/dspace.

BOOKS: AUTHORED OR EDITED

Castro, J.I. *The Sharks of North America*. New York: Oxford University Press. xiii 613 p. In press.

Fleischer, A. and B. Tanner. 2010. *Marine Science Laboratory Manual*. 127 p. To accompany: Castro, P. and M. E. Huber. *Marine Biology*, 8th ed. New York: McGraw Hill. 128 p.

Hines, E., J.E. Reynolds III, A.A. Mignucci-Giannoni, L.V. Aragones, and M. Marmontel (eds.). *International Strategies for Manatee and Dugong Conservation*. Gainesville: University Press of Florida. In press.

Marsh, H., T.J. O'Shea, and J.E. Reynolds III (eds.). *Ecology and Conservation of Sirenia: Dugongs and Manatees*. New York: Cambridge University Press. In press.

Quintana-Rizzo, E. and J.E. Reynolds III (compilers). 2010. *UNEP: Regional Management Plan for the West Indian Manatee (*Trichechus manatus*)*. CEP Technical Report No. 48. Kingston, Jamaica: UNEP Caribbean Environment Programme. xvi, 168 p.

Quintana-Rizzo, E. and J.E. Reynolds III (compilers). *UNEP: Plan de Manejo Regional del Manatí de las Indias Occidentales (*Trichechus manatus*)*. [In Spanish.] CEP Technical Report No. 48. Kingston, Jamaica: UNEP Caribbean Environment Programme. In press.

Spotte, S. 2010. *The Smoking Horse: A Memoir in Pieces*. New York: SUNY Press. 195 p.

Spotte, S. *Brother's Ghost: A Novella*. Evanston, IL: Northwestern University Press. In press.

Spotte, S. *Societies of Wolves and Free-ranging Dogs*. New York: Cambridge University Press. In press.

DISSERTATIONS AND THESES

Lener, C. 2010. *Using Epibionts to Predict Loggerhead Sea Turtle (*Caretta caretta*) Foraging Grounds*. M.A. thesis. West Connecticut State University.

McHugh, K. 2010. *Behavioral Development of Free-ranging Juvenile Bottlenose Dolphins (*Tursiops truncatus*) in Sarasota Bay, Florida*. Ph.D. dissertation. Animal Behavior Group, University of California, Davis. 169 p.

2010 PUBLICATIONS (continued)

Mendez, M. 2010. *Environmental Factors to Population Structure in Mobile Marine Organisms: A Combined Genetic-oceanographic Approach in Coastal Cetaceans*. Ph.D. dissertation. Columbia University, New York. 140 p.

Merrill, M. 2010. *Magnetic Orientation of Loggerhead Sea Turtle Hatchlings: Migratory Strategies in the Gulf of Mexico*. M.S. thesis. Florida Atlantic University, Boca Raton, FL. 50 p.

ARTICLES, CHAPTERS AND BOOK REVIEWS (PEER-REVIEWED AND POPULAR)

Adams, A.J., J.E. Hill, and C. Samoray. Characteristics of spawning ground fidelity by a diadromous fish: a multi-year perspective. *Environmental Biology of Fishes*. In review.

Alagely, A., C.J. Krediet, K.B. Ritchie, and M. Teplitski. Signaling-mediated cross-talk modulates swarming and biofilm formation in a coral pathogen *Serratia marcescens*. *The ISME Journal*. In press.

Backer, L.C., S.V. McNeel, T. Barber, B.A. Kirkpatrick, C. Williams, M. Irvin, Y. Zhou, T.B. Johnson, K. Nierenberg, M. Aubel, R. LePrell, A. Chapman, A. Foss, S. Corum, V.R. Hill, S.M. Kieszak, and Y.S. Cheng. 2010. Recreational exposure to microcystins during algal blooms in two California lakes. *Toxicon* 55(5):909-921.

Balmer, B.C., L.H. Schwacke, and R.S. Wells. 2010. Linking dive behavior to satellite-linked tag condition for a bottlenose dolphin (*Tursiops truncatus*) along Florida's northern Gulf of Mexico coast. *Aquatic Mammals* 36(1):1-8.

Balmer, B.C., L.H. Schwacke, R.S. Wells, R.C. George, J. Hoguet, J.R. Kucklick, S.M. Lane, A. Martinez, W.A. McLellan, P.E. Rosel, T.K. Rowles, K. Sparks, T. Speakman, E.S. Zolman, and D.A. Pabst. Relationship between persistent organic pollutants (POPs) and ranging patterns

in common bottlenose dolphins (*Tursiops truncatus*) from coastal Georgia, USA. *Science of the Total Environment*. In press.

Balmer, B.C., R.S. Wells, L.H. Schwacke, T.K. Rowles, C. Hunter, E.S. Zolman, F.I. Townsend, B. Danielson, A.J. Westgate, W.A. McLellan, and D.A. Pabst. Evaluation of a single-pin, satellite-linked transmitter deployed on bottlenose dolphins (*Tursiops truncatus*) along the coast of Georgia, USA. *Aquatic Mammals*. In press.

Barbieri, M.M., W.A. McLellan, R.S. Wells, J.E. Blum, S. Hofmann, J. Gannon, and D.A. Pabst. 2010. Using infrared thermography to assess seasonal trends in dorsal fin surface temperatures of free-swimming bottlenose dolphins (*Tursiops truncatus*) in Sarasota Bay, Florida. *Marine Mammal Science* 26(1):53-66. (This student paper was the winner of the F.G. Wood Award from SMM.)

Barbour A.B., M.S. Allen, T.K. Frazer, and K.D. Sherman. Evaluating the potential efficacy of invasive lionfish (*Pterois volitans*) removals. *PLoS ONE*. In press.

Barros, N.B., P.H. Ostrom, C.A. Stricker, and R.S. Wells. 2010. Stable isotopes differentiate bottlenose dolphins off west-central Florida. *Marine Mammal Science* 26(2):324-336.

Bauer, G.B., D.E. Colbert, and J.C. Gaspard III. 2010. Learning about manatees: a collaborative program between New College of Florida and Mote Marine Laboratory to conduct laboratory research for manatee conservation. *International Journal of Comparative Psychology* 23:811-825.

Berens McCabe, E.J., D.P. Gannon, N.B. Barros, and R.S. Wells. 2010. Prey selection by resident common bottlenose dolphins (*Tursiops truncatus*) in Sarasota Bay, Florida. *Marine Biology* 157(5):931-942.

2010 PUBLICATIONS (continued)

- Berens McCabe, E.J., D.P. Gannon, N.B. Barros, and R.S. Wells. 2010. Erratum to: Prey selection by resident common bottlenose dolphins (*Tursiops truncatus*) in Sarasota Bay, Florida. *Marine Biology* 157(5):943.
- Bordwardt C. and A.D. Tucker. Florida's sea turtles and light. In: Posch, T. (ed.). *The Dark Side of Light*. John Wiley & Sons, Inc. In press.
- Boucek, R.E. and A.J. Adams. Comparison of retention rates for three tag types in common snook, *Centropomus undecimalis*. *North American Journal of Fisheries Management*. In press.
- Bowen, W.D., J.D. Baker, D. Siniff, I.L. Boyd, R.S. Wells, J.K.B. Ford, S.D. Kraus, J.A. Estes, and U. Stirling. 2010. Long-term studies. Chpt. 13, Pp. 283-305. In: Boyd, I., D. Bowen, and S. Iverson (eds.). *Marine Mammal Ecology and Conservation: A Handbook of Techniques*. New York: Oxford University Press. 448 p.
- Burdett Hart, L., R.S. Wells, J.D. Adams, D.S. Rotstein, and L.H. Schwacke. 2010. Modeling lacaziosis lesion progression in common bottlenose dolphins *Tursiops truncatus* using long term photographic records. *Diseases of Aquatic Organisms* 90(2):105-112.
- Burdett Hart L., D.S. Rotstein, R.S. Wells, K. Bassos-Hull, and L.H. Schwacke. Lacaziosis and lacaziosis-like prevalence among wild common bottlenose dolphins (*Tursiops truncatus*) from the west coast of Florida, USA. *Diseases of Aquatic Organisms*. In press.
- Bryan, C.E., S.J. Christopher, W.A. McLellan, W.E. McFee, L.H. Schwacke, and R.S. Wells. 2010. Application of ICP-MS to examining the utility of skin as a monitoring tissue for trace elements in bottlenose dolphin, *Tursiops truncatus*. *The Open Chemical and Biomedical Methods Journal* 3:169-178.
- Castro, J.I. 2010. [Book Review]. McCandless, C.T., N.E. Kohler, and H.L. Pratt Jr. (eds.) 2007. *Shark Nursery Grounds of the Gulf of Mexico and the East Coast Waters of the United States*. *Transactions of the American Fisheries Society* 139:635-636.
- Castro, J.I. Resurrection of the name *Carcharhinus cerdale*, a species different from *Carcharhinus porosus*. *aqua, International Journal of Ichthyology*. In press.
- Cheng, Y.S., Y.Zhou, C. M. Irvin, R.H. Pierce, M.S. Henry, and D.G. Baden. 2010. Characterization of Florida red tide aerosol and the temporary profile of aerosol concentration. *Toxicon* 55(5):922-929.
- Cheng, Y.S., Y. Zhou, J. Naar, C.M. Irvin, W.C. Su, L.E. Fleming, B.A. Kirkpatrick, R.H. Pierce, L.C. Backer, and D.G. Baden. 2010. Personal exposure to aerosolized red tide toxins (brevetoxins). *Journal of Occupational and Environmental Hygiene* 7(6):326-331.
- Clark, E. and J.E. Randall. *Cephaloscyllium stevensi*: a new species of swellshark (Carcharhiniformes: Scyliorhinidae) from Papua New Guinea. *aqua, International Journal of Ichthyology*. In press.
- Cooper, S.T., H. Greening, E.D. Estevez, E. Peebles, and G. Henderson. 2010. Synthesis and next steps towards maintaining progress. Pp. 519-526. In: Cooper, S. (ed.). *Proceedings, Tampa Bay Area Scientific Information Symposium, BASIS 5, 20-23 October 2009, St. Petersburg, FL*. St. Petersburg, FL: Tampa Bay Estuary Program. 538 p.
- D'Amelio, S., S. Cavallero, N.O. Dronen N.B. Barros, and L. Paggi. Two new species of *Contracecum* Railliet & Henry (Nematoda: Anisakidae), *Contracecum fagerholmi* n. sp. and *Contracecum rudolphii* from the brown pelican, *Pelecanus occidentalis*, from the northern Gulf of Mexico. *Systematic Parasitology*. In press.

2010 PUBLICATIONS (continued)

- Daniels, C.A., A. Zeifman, K. Heym, K.B. Ritchie, C.A. Watson, I. Berzins, and M. Breitbart. Spatial heterogeneity of bacterial communities in the mucus of *Montastraea annularis*. *Marine Ecology Progress Series*. In press.
- DeLynn, R.E., G. Lovewell, R.S. Wells, and G. Early. Congenital scoliosis of a bottlenose dolphin. *Journal of Wildlife Diseases*. In review.
- Deutsch, C.J. and J.E. Reynolds III. Florida manatee status and conservation issues. In: Hines, E., J.E. Reynolds III, A.A. Mignucci-Giannoni, L.V. Aragones, and M. Marmontel (eds.). *International Strategies for Manatee and Dugong Conservation*. Gainesville: University Press of Florida. In press.
- Dixon, L. Kellie. 2010. Salinity. Pp. 4.21-4.56. In: Flannery, M.S. et al. *Determination of Minimum Flows for the Lower Myakka River – Peer-Review Draft*. Brooksville, FL: Southwest Florida Water Management District. 431 p.
- Downes, J.A., M.W. Horner, and A.D. Tucker. Time-geographic density estimation for home range analysis. *Basic and Applied Ecology*. Submitted.
- Dunsha, G., D. Duffield, N. Gales, M. Hindell, R.S. Wells, and S.N. Jarman. Telomeres as age markers in animal molecular ecology. *Molecular Ecology Resources*. In press.
- Eakin, C.M, E. Bartels, K.B. Ritchie, C. Walter (et al.). 2010. Caribbean corals in crisis: record thermal stress, bleaching, and mortality in 2005. *PLoS ONE* 5(11):e13969, 9 p.
- Estevez, E.D. 2010. Scaling the effects of climate change on Florida's ocean and coastal resources to the Tampa Bay estuarine ecosystem. Pp. 457-462. In: Cooper, S. (ed.). *Proceedings, Tampa Bay Area Scientific Information Symposium, BASIS 5, 20-23 October 2009, St. Petersburg, FL*. St. Petersburg, FL: Tampa Bay Estuary Program. 538 p.
- Estevez, E.D. 2010. Shorelines and wetlands. P. 3.3. In: Flannery, M.S. et al. *Determination of Minimum Flows for the Lower Myakka River – Peer-Review Draft*. Brooksville, FL: Southwest Florida Water Management District. 431 p.
- Estevez, E.D. 2010. Tidal wetlands. Pp. 6.1-6.26. In: Flannery, M.S. et al. *Determination of Minimum Flows for the Lower Myakka River – Peer-Review Draft*. Brooksville, FL: Southwest Florida Water Management District. 431 p.
- Estevez, E.D. and H. Greening. 2010. Estuaries, tidal rivers, and coastal forests. Pp. 8-10. In: Florida Oceans and Coastal Council. *Climate Change and Sea-Level Rise in Florida. An Update to the Effects of Climate Change on Florida's Ocean and Coastal Resources [2009]*. Tallahassee: Florida Department of Environmental Regulation. vi, 26 p. www.dep.state.fl.us/oceanscouncil.
- Estevez, E.D., K.L. Meaux, J.K. Culter, J. Sprinkel, and R. Janneman. 2010. A method for assessing tidal creek status and trends in southwest Florida using a condition index based on ecological variables and rapid-survey methods. Pp. 301-317. In: Cooper, S. (ed.). *Proceedings, Tampa Bay Area Scientific Information Symposium, BASIS 5, 20-23 October 2009, St. Petersburg, FL*. St. Petersburg, FL: Tampa Bay Estuary Program. 538 p.
- Fair, P.A., J. Adams, G. Mitchum, T.C. Hulsey, J.S. Reif, M. Houde, D. Muir, E. Wirth, D. Wetzel, E. Zolman, W. McFee, and G.D. Bossart. 2010. Contaminant blubber burdens in Atlantic bottlenose dolphins (*Tursiops truncatus*) from two southeastern US estuarine areas: concentrations and patterns of PCBs, pesticides, PBDEs, PFCs, and PAHs. *Science of the Total Environment* 408(7):1577-1597.

2010 PUBLICATIONS (continued)

- Fleming, L.E., B.A. Kirkpatrick, L.C. Backer, C.J. Walsh, K. Nierenberg, J. Clark, A. Reich, J. Hollenbeck, J. Benson, Y.S. Cheng, J. Naar, R.H. Pierce, A.J. Bourdelais, W.M. Abraham, G.J. Kirkpatrick, J. Zaias, A. Wanner, E. Mendes, S. Shalat, P. Hoagland, W. Stephan, J. Bean, S. Watkins, T. Clarke, M. Byrne, and D.G. Baden. Review of Florida red tide and human health effects. *Harmful Algae*. In press.
- Fossette, S., A.C. Gleiss, A.E. Myers, S. Garner, N. Liebsch, N.M. Whitney, G.C. Hays, R.P. Wilson, and M.E. Lutcavage. 2010. Behavior and buoyancy regulation in the deepest-diving reptile: the leatherback turtle. *The Journal of Experimental Biology* 213:4074-4083.
- Fraser, T.H. 2010. A new deepwater species of the genus *Apogonichthyoides* (Apogonidae) from the Timor Sea, north-western Australia. *aqua, International Journal of Ichthyology* 16(3):93-100.
- Gardiner, J.M. and J. Atema. 2010. The function of bilateral odor arrival time differences in olfactory orientation of sharks. *Current Biology* 20:1187-1191.
- Gardiner, J.M., R.E. Hueter, K.P. Maruska, J.A. Sisneros, B.M. Casper, D.A. Mann, and L.S. Demski. Sensory physiology and behavior of elasmobranchs. In: Carrier, J.C., J.A. Musick, and M.R. Heithaus (eds.). *Biology of Sharks and Their Relatives*. 2nd ed. Boca Raton, FL: CRC Press. In press.
- Garrett, K., B.P. Wallace, J. Garner, and F.V. Paladino. 2010. Variations in leatherback turtle nest environments: consequences for hatching success. *Endangered Species Research* 11:147-155.
- Goodbody-Gringley, G. 2010. Diel planulation by the brooding coral *Favia fragum* (Esper, 1797). *Journal of Experimental Marine Biology and Ecology* 389:70-74.
- Goodbody-Gringley, G., S.V. Vollmer, R.M. Woollacott, and G. Giribet. 2010. Limited gene flow in the brooding coral *Favia fragum* (Esper, 1797). *Marine Biology* 157(12):2591-2602.
- Goodbody-Gringley, G. Induction of *Porites astreoides* larval settlement by *Astraea sp.* Herbivorous snails. *Coral Reefs*. In review.
- Goodbody-Gringley, G. R.M. Woollacott, and G. Giribet. Population structure and connectivity in the Atlantic scleractinian coral *Montastraea cavernosa* (Linnaeus, 1767). *Marine Ecology*. In press.
- Grant, R.J., K.L. Kelley, J.E. Maruniak, A. Garcia-Maruniak, T. Barrett, C.A. Manire, and C.H. Romero. 2010. Expression from baculovirus and serological reactivity of the nucleocapsid protein of dolphin morbillivirus. *Veterinary Microbiology* 143(2-4):384-388.
- Heupel, M.R., B.G. Yeiser, A.B. Collins, L. Ortega, and C.A. Simpfendorfer. 2010. Long-term presence and movement patterns of juvenile bull sharks, *Carcharhinus leucas*, in an estuarine river system. *Marine and Freshwater Research* 61(1):1-10.
- Hines, E., J.E. Reynolds III, L. Aragones, M. Marmontel, A. Mignucci-Gionnoni, and D. Domning. The role of science in sirenian conservation in developing countries. In: Hines, E., J.E. Reynolds III, A.A. Mignucci-Gionnoni, L.V. Aragones, and M. Marmontel (eds.). *International Strategies for Manatee and Dugong Conservation*. Gainesville: University Press of Florida. In press.
- Janik, V.M., S. King, L. Sayigh, and R.S. Wells. Identifying signature whistles from recordings of groups of unrestrained bottlenose dolphins (*Tursiops truncatus*). *Marine Mammal Science*. In review.

2010 PUBLICATIONS (continued)

- Joy, J. E., E. John, and S. Spotte. Effect of abiotic factors on nine species of mosquito larvae (Diptera: Culicidae) naturally colonizing small containers in southwestern West Virginia. *Journal of Vector Ecology*. In press.
- Julian, P. and E.D. Estevez. 2010. Historical bathymetric analysis of Tampa Bay. Pp. 27-33. In: Cooper, S. (ed.). *Proceedings, Tampa Bay Area Scientific Information Symposium, BASIS 5, 20-23 October 2009, St. Petersburg, FL*. St. Petersburg, FL: Tampa Bay Estuary Program. 538 p.
- Kirkpatrick, B.A., J.A. Bean, L.E. Fleming, G.J. Kirkpatrick, L. Grief, L., K. Nierenberg, A. Reich, S. Watkins, and J. Naar. 2010. Gastrointestinal emergency room admissions and Florida red tide blooms. *Harmful Algae* 9(1):82-86.
- Kirkpatrick, B.A., R.H. Pierce, Y.S. Cheng, M.S. Henry, P.C. Blum, S. Osborn, K. Nierenberg, B.A. Pedersen, L.E. Fleming, A. Reich, J. Naar, G.J. Kirkpatrick, L.C. Backer, and D.G. Baden. 2010. Inland transport of aerosolized Florida red tide toxins. *Harmful Algae* 9(2):186-189.
- Kirkpatrick B.A., L.E. Fleming, J.A. Bean, K. Nierenberg, L.C. Backer, Y.S. Cheng, R.H. Pierce, A. Reich, J. Naar, A. Wanner, W.M. Abraham, Y. Zhou, J. Hollenbeck, and D.G. Baden. Aerosolized red tide toxins (brevetoxins) and asthma: continued health effects after 1 h beach exposure. *Harmful Algae*. In press.
- Kucklick, J., R. Pugh, P. Becker, J. Keller, R. Day, J. Yordy, A. Moors, S. Christopher, C. Bryan, L. Schwache, C. Goetz, R.S. Wells, B.C. Balmer, A. Hohn, and T. Rowles. 2010. Specimen banking for marine animal health assessment. Pp.15-23. In: Isobe, T., K. Nomiya, A. Subramanian, and S. Tanabe (eds.). *Interdisciplinary Studies on Environmental Chemistry- Environmental Specimen Bank: Exploring Possibility of Setting-up ESBs in Developing Countries*. Tokyo : TERRAPUB.
- Kucklick, J., L. Schwache, R.S. Wells, A. Hohn, A. Guichard, J. Yordy, L. Hansen, E. Zolman, R. Wilson, J. Litz, D. Nowacek, T. Rowles, R. Pugh, B.C. Balmer, C. Sinclair, and P. Rosel. Bottlenose dolphins as indicators of persistent organic pollutants in the western North Atlantic and northern Gulf of Mexico coasts. *Environmental Science and Technology*. In review.
- Leber, K.M. and H.L. Blankenship. How advances in tagging technology improved progress in a new science: marine stock enhancement. Introductory chapter. In: *Advances in Fish Marking and Tagging Technology*. *American Fisheries Society Symposium* 76. In press.
- Leverone, J. 2010. Benthic macroinvertebrates. Pp. 6.28-6.50 In: Flannery, M.S. et al. *Determination of Minimum Flows for the Lower Myakka River - Peer-Review Draft*. Brooksville, FL: Southwest Florida Water Management District. 431 p.
- Lorenzen, K., K.M. Leber, and H.L. Blankenship. 2010. Responsible approach to marine stock enhancement: an update. *Reviews in Fisheries Science* 18(2):189-210.
- Lorenzen, K., R.S. Steneck, R.R. Warner, A.M. Parma, F.C. Coleman, and K.M. Leber. 2010. The spatial dimensions of fisheries: putting it all in place. *Bulletin of Marine Science* 86(2):169-178.
- Loughlin, T., L. Cunningham, N. Gales, R.S. Wells, and I. Boyd. 2010. Marking and capturing. Chpt. 2, Pp. 16-41. In: Boyd, I. D. Bowen, and S. Iverson (eds.). *Marine Mammal Ecology and Conservation: A Handbook of Techniques*. New York: Oxford University Press, Inc. 448 p.

2010 PUBLICATIONS (continued)

- Lirman, D., S. Schopmeyer, D. Manzello, L.J. Gramer, W.F. Precht, F. Muller-Karger, K. Banks, B. Barnes, E. Bartels, A. Bourque, J. Byrne, S. Donahue, J. Duquesnel, L. Fisher, D. Gilliam, J. Hendee, M. Johnson, K. Maxwell, E. McDevitt, J. Monty, D. Rueda, R. Ruzicka, and S. Thanner. Severe 2010 cold-water event caused unprecedented mortality to corals of the Florida Reef Tract and reversed previous survivorship patterns. *PLoS ONE*. In press.
- Luer, C.A., C.J. Walsh, and A.B. Bodine. Recent advances in elasmobranch immunology. In: Carrier J.C., J.A. Musick, and M.R. Heithaus (eds.). *Biology of Sharks and Their Relatives*. 2nd ed. Boca Raton, FL: CRC Press. In press.
- Mahaney, E. 2010. Two environmentally-centered collections available online. *Florida Archivist* 26(1):8.
- Mancia, A., G.W. Warr, J.S. Almieda, A. Vekoso, R.S. Wells, and R.W. Chapman. 2010. Transcriptome profiles: diagnostic signature of dolphin plantations. *Estuaries and Coasts* 33:919-929.
- Mann, D.A., M. Hill-Cook, C.A. Manire, D. Greenhow, E. Montie, J. Powell, R.S. Wells, G.B. Bauer, P. Cunningham-Smith, R. Lingenfelter, R. DiGiovanni Jr., A. Stone, M. Brodsky, R. Stevens, G. Kieffer, and P. Hoetjes. 2010. Hearing loss in stranded odontocete dolphins and whales. *PLoS ONE*: 5(11):e13824, 5 p.
- Mao-Jones J, K.B. Ritchie, L.E. Jones, and S.P. Ellner. 2010. How microbial community composition regulates coral disease development. *PLoS Biology* 8(3): e1000345, 16 p.
- Mateo, I., E.G. Durbin, R.S. Appeldoorn, A.J. Adams, F. Juanes, R. Kingsley, P. Swart, and D. Durant. 2010. Roles of mangroves as nurseries for French grunt *Haemulon flavolineatum* and schoolmaster *Lutjanus apodus* assessed by otolith elemental fingerprints. *Marine Ecology Progress Series* 402:197-212.
- Mateo, I., E.G. Durbin, R.S. Appeldoorn, A.J. Adams, F. Juanes, and D. Durant. Inferred growth of juvenile French grunts, *Haemulon flavolineatum*, and schoolmaster, *Lutjanus apodus*, in mangrove and seagrass habitats. *Bulletin of Marine Science*. In press.
- McComb, D.M., T.M. Frank, R.E. Hueter, and S.M. Kajiura. 2010. Temporal resolution and spectral sensitivity of the visual system of three coastal shark species from different light environments. *Physiological and Biochemical Zoology* 83(2):299-307.
- McDaniel, L.D., E. Young, J. Delaney, F. Ruhnau, K.B. Ritchie, and J.H. Paul. 2010. High frequency of horizontal gene transfer in the oceans. *Science* 330:50 [plus 12 pp. supplemental material].
- McHugh, K.A., J.B. Allen, A.A. Barleycorn, and R.S. Wells. Severe *Karenia brevis* red tides influence juvenile bottlenose dolphin (*Tursiops truncatus*) behavior in Sarasota Bay, Florida. *Marine Mammal Science*. In press.
- Meegan, J, C. Field, I.Sidor, T. Romano, S. Casinghino, C.R. Smith, L. Kashinsky, P.A. Fair, G. Bossart, R.S. Wells, and J. Lawrence Dunn. 2010. Development, validation, and utilization of a competitive enzyme-linked immunosorbent assay for the detection of antibodies against *Brucella* species in marine mammals. *Journal of Veterinary Diagnostic Investigation* 22(6):856-862.
- Mendez, M., H.C. Rosenbaum, R.S. Wells, A. Stamper, and P. Bordino. 2010. Genetic evidence highlights potential impacts of by-catch to cetaceans. *PLoS ONE* 5(12):e15550, 7p.

2010 PUBLICATIONS (continued)

- Merrill, M.W. and M. Salmon. 2011. Magnetic orientation by hatchling loggerhead sea turtles (*Caretta caretta*) from the Gulf of Mexico. *Marine Biology*. In press.
- Miller, D.L., V. Woshner, E.L. Styer, S. Ferguson, K.K. Knott, M.J. Gray, R.S. Wells, and T.M. O'Hara. Histological findings in free-ranging Sarasota Bay bottlenose dolphin (*Tursiops truncatus*) skin: mercury, selenium and seasonal factors. *EcoHealth*. In review.
- Montie, E.W., C.A. Manire, and D.A. Mann. How pygmy killer whales hear. *Inside JEB*. In press.
- Montie, E.W., C.A. Manire, and D.A. Mann. Live CT imaging of sound reception anatomy and hearing measurements in the pygmy killer whale, *Feresa attenuate*. *Journal of Experimental Biology*. In press.
- Motta, P.J., M. Maslanka, R.E. Hueter, R.L. Davis, R. de la Parra, S.L. Mulvany, M.L. Habegger, J.A. Strother, K.R. Mara, J.M. Gardiner, J.P. Tyminski, and L.D. Zeigler. 2010. Feeding anatomy, filter-feeding rate, and diet of whale sharks (*Rhincodon typus*) during surface ram filter feeding off the Yucatan Peninsula, Mexico. *Zoology* 113(4):199-212.
- Nelson, M.D., C.C. Koenig, F.C. Coleman, and D.A. Mann. Sound production of red grouper *Epinephelus morio* on the West Florida Shelf. *Aquatic Biology*. In press.
- Nierenberg, K., M.M. Byrne, L.E. Fleming, W. Stephan, A. Reich, L.C. Backer, E. Tanga, D.R. Dalpra, and B.A. Kirkpatrick. 2010. Florida red tide perception: residents versus tourists. *Harmful Algae* 9(6):600-606.
- Nierenberg, K., K. Kirner, P. Hoagland, S. Ullman, W.G. LeBlanc, G.J. Kirkpatrick, L.E. Fleming, and B.A. Kirkpatrick. 2010. Changes in work habits of lifeguards in relation to Florida red tide. *Harmful Algae* 9(4):419-425.
- Nierenberg, K., J. Hollenbeck, L.E. Fleming, W. Stephan, A. Reich, L.C. Backer, R. Currier, and B.A. Kirkpatrick. Frontiers in outreach and education: the Florida red tide experience. *Harmful Algae*. In press.
- Nollens, H.H., R. Rivera, G. Palacios, J.F.X. Wellehan, J.T. Saliki, S.L. Caseltine, C.R. Smith, E.D. Jensen, J. Hui, W.I. Lipkin, P.K. Yochem, R.S. Wells, J. St. Leger, and S. Venn-Watson. New recognition of enterovirus infections in bottlenose dolphins (*Tursiops truncatus*). *Veterinary Microbiology*. In press.
- Olsen, J., J. Downs, A.D. Tucker, and S. Trost. Home range size and territorial calling of southern boobook owls *Ninox novaeseelandiae* in adjacent territories. *Journal of Raptor Research*. In press.
- de la Parra Venegas, R., R.E. Hueter, J. González Cano, J.P. Tyminski, J. Gregorio Remolina, M. Maslanka, A. Ormos, L. Weight, B. Carlson, and A. Dove. An unprecedented aggregation of whale sharks, *Rhincodon typus*, in Mexican coastal waters of the Caribbean Sea. *PLoS ONE*. In press.
- Pierce, R.H. Integrated mosquito management strategies are required to control mosquito populations in the Florida Keys. In: Kruczynski, W. and P. Gletcher (eds.). *Tropical Treasures: South Florida Marine Habitats*. U.S. EPA Water Quality Program, Special Publication. In press.
- Pierce, R.H., M.S. Henry, P.C. Blum, S.E. Osborn, Y.S. Cheng, Y. Zhou, C.M. Irvin, A.J. Bourdelais, J. Naar, and D.G. Baden. Compositional changes in neurotoxins and their oxidative derivatives from the dinoflagellate *Karenia brevis* in seawater and marine aerosol. *Journal of Plankton Research*. In press.

2010 PUBLICATIONS (continued)

- Pine, W.E., N.P. Brennan, K.M. Leber, M.C. Darcy, and K.M. Malik. Density mediated survival and movement patterns in an estuarine dependent juvenile fish. *Estuaries and Coasts*. In review.
- Powell, J.R. and R.S. Wells. Recreational fishing depredation and associated behaviors involving common bottlenose dolphins (*Tursiops truncatus*) in Sarasota Bay, Florida. *Marine Mammal Science*. In press.
- Quintana-Rizzo, E. and R.S. Wells. Unusual behavior of an adult female bottlenose dolphin (*Tursiops truncatus*) toward a non-related dead neonate. *Aquatic Mammals*. In press.
- Reed, R.N. and A.D. Tucker. Determination of age, sex, and reproductive condition in reptiles. In: Foster, M. (ed.). *Reptile Biodiversity Methods*. University of California Press. In press.
- Reep, R.L., J.C. Gaspard III, D. Sarko, F.L. Rice, D.A. Mann, and G.B. Bauer. Manatee vibrissae: evidence for a "lateral line" function. *Annals of the New York Academy of Sciences*. In press.
- Reynolds, J.E. III. Family Dugongidae. In: Kingdon, J. (ed.). *Mammals of Africa*. Elsevier Science Publishers. In press.
- Reynolds, J.E. III. Family Trichechidae. In: Kingdon, J. (ed.). *Mammals of Africa*. Elsevier Science Publishers. In press.
- Reynolds, J.E. III and C.D. Marshall. Vulnerability of sirenians. In: Hines, E., J.E. Reynolds III, A.A. Mignucci-Giannoni, L.V. Aragones, and M. Marmontel (eds.). *International Strategies for Manatee and Dugong Conservation*. Gainesville: University Press of Florida. In press.
- Reynolds, J.E. III, G. Morales-Vela, I. Lawler, and H. Edwards. Utility and design of aerial surveys for sirenians. In: Hines, E., J.E. Reynolds III, A.A. Mignucci-Giannoni, L.V. Aragones, and M. Marmontel (eds.). *International Strategies for Manatee and Dugong Conservation*. Gainesville: University Press of Florida. In press.
- Reynolds, J.E. III and D.L. Wetzel. The use of fatty acid signature analysis to assess foraging in elphinids and as a forensic tool in marine mammals. Proceedings of a Workshop on Research and Conservation of the genus *Sotalia*. *Latin American Journal of Aquatic Mammals* (Special issue). In review.
- Rhody, N.R., N.A. Nassif, and K.L. Main. 2010. Effects of salinity on growth and survival of common snook *Centropomus undecimalis* (Bloch, 1792) larvae. *Aquaculture Research* 41(9):e357-360.
- Roelke, D.L. and R.H. Pierce. Effects of inflow on harmful algal blooms: some considerations. *Journal of Plankton Research*. In press.
- Ross, M.S., E.L. Pulster, M.B. Ejsmont, E.A. Chow, C.M. Hessel, K.A. Maruya, and C.S. Wong. Enantioselectivity of polychlorinated biphenyl atropisomers in sediment and biota from the Turtle/Brunswick River estuary, Georgia, USA. *Marine Pollution Bulletin*. In press.
- Ross, C., R. Ritson-Williams, R.H. Pierce, J.B. Bullington, M.S. Henry, and V.J. Paul. 2010. Effects of the Florida red tide dinoflagellate, *Karenia brevis*, on oxidative stress and metamorphosis of larvae of the coral *Porites astreoides*. *Harmful Algae* 9(2):173-179.
- Rowles, T.K., L.S. Schwacke, R.S. Wells, J.T. Saliki, L. Hansen, A. Hohn, F. Townsend, and R.A. Syre. Evidence of susceptibility to morbillivirus infection in cetaceans from the United States. *Marine Mammal Science*. In press.

2010 PUBLICATIONS (continued)

- Russell, B.C., T.H. Fraser, and H.K. Larson. 2010. Castelnau's collection of Singapore fishes described by Pieter Bleeker. *The Raffles Bulletin of Zoology* 58(1):93-102.
- Schwacke, L.H., M.J. Twiner, S. de Guise., B.C. Balmer, R.S. Wells, F.I. Townsend, D.C. Rotstein, R.A. Varela, L.J. Hansen, E.S. Zolman, T.R. Spradlin, M. Levin, H. Leibrecht, Z. Wang, and T.K. Rowles. 2010. Eosinophilia and biotoxin exposure in bottlenose dolphins (*Tursiops truncatus*) from a coastal area impacted by repeated mortality events. *Environmental Research* 110:548-555.
- Schwacke, L.H., A.J. Hall, F.I. Townsend, R.S. Wells, L.J. Hansen, A.A. Hohn, G.D. Bossart, P.A. Fair, and T.K. Rowles. Hematology and clinical blood chemistry reference intervals for free-ranging common bottlenose dolphins (*Tursiops truncatus*) and variation related to geographic sampling site. *American Journal of Veterinary Research*. In press.
- Schwacke, L.H., E.S. Zolman, B.C. Balmer, S. de Guise, R.C. George, J. Hoguet, A.A. Hohn, J.R. Kucklick, S. Lamb, M. Levin, J.A. Litz, W.E. McFee, N.J. Place, F.I. Townsend, R.S. Wells, and T.K. Rowles. Anaemia, hypothyroidism and immune suppression associated with polychlorinated biphenyl exposure in bottlenose dolphins (*Tursiops truncatus*). *Proceedings of the Royal Society B*. In press.
- Sellas A.B., K. Bassos-Hull, R.E. Hueter, K.A. Feldheim. Isolation and characterization of polymorphic microsatellite markers from the spotted eagle ray (*Aetobatus narinari*). *Conservation Genetics Resources*. In press.
- Semeyn, D.J., C.C. Cush, K.M. Scolardi, J. Hebert, J.D. McBride, D. Grealish, and J.E. Reynolds III. Aerial surveys of manatees (*Trichechus manatus*) in Lee County, Florida provide insights regarding manatee abundance and realtime information for managers and enforcement officers. *Journal of Coastal Conservation*. In Press.
- Shamblin, B.M., M.G. Dodd, K.L. Williams, M.G. Frick, R. Bell, and C.J. Nairn. Loggerhead turtle eggshells as a source maternal nuclear genomic DNA for population genetic studies. *Molecular Ecology Resources*. In press.
- Shamblin, B.M., M.G. Dodd, D.A. Bagley, L.M. Ehrhart, A.D. Tucker, C. Johnson, R.R. Carthy, R.A. Scarpino, E. McMichael, D. S. Addison, K.L. Williams, M.G. Frick, S. Ouellette, A.B. Meylan, M.H. Godfrey, S.R. Murphy, and C.J. Nairn. Genetic structure of the southeastern United States loggerhead turtle nesting aggregation: evidence of additional structure within the peninsular Florida recovery unit. *Marine Biology*. In press.
- Shank, G.C., R. Lee, A. Vahatalo, R.G. Zepp, and E. Bartels. 2010. Production of chromophoric dissolved organic matter from mangrove leaf litter and floating *Sargassum* colonies. *Marine Chemistry* 119:172-181.
- Shank, G.C., R.G. Zepp, A. Vahatalo, R. Lee, and E. Bartels. 2010. Photobleaching kinetics of chromophoric dissolved organic matter derived from mangrove leaf litter and floating *Sargassum* colonies. *Marine Chemistry* 119:162-171.
- Sharp, K.H., K.B. Ritchie, P.J. Schupp, R. Ritson-Williams, and V.J. Paul. 2010. Bacterial acquisition in juveniles of several broadcast spawning coral species. *PLoS ONE* 5(5):e10898, 6 p.

2010 PUBLICATIONS (continued)

- Simpfendorfer, C.A., B.G. Yeiser, T.R. Wiley, G.R. Poulakis, P.W. Stevens, and M.R. Heupel. Environmental influences on the spatial ecology of juvenile smalltooth sawfish (*Pristis pectinata*): results from acoustic monitoring. *PLoS ONE*. In press.
- St. Aubin, D.J., K.A. Forney, S.J. Chivers, M.D. Scott, K. Danil, T. Romano, R.S. Wells, and F.M.D. Gulland. Hematological serum and plasma chemical constituents in pantropical spotted dolphins (*Stenella attenuata*) following chase, encirclement and tagging. *Marine Mammal Science*. In review.
- Stacey, B.A., A.M. Foley, E. Greiner, L.H. Herbst, A. Bolten, P. Klein, C.A. Manire, and E.R. Jacobson. 2010. Spirorchidiasis in stranded loggerhead *Caretta caretta* and green turtles *Chelonia mydas* in Florida (USA): host pathology and significance. *Diseases of Aquatic Organisms* 89:237-259.
- Stover, S.M. 2010. [Book Review]. D'Antonio, P. 2010. *American Nursing: A History of Knowledge, Authority, and the Meaning of Work*. *Doody's Review Service*. November. <http://www.doody.com/drs/>
- Thomson, S., R. Kennett, A.D. Tucker, N.N. Fitzsimmons, P. Featherston, E.A. Alacs, and A. Georges. *Chelodina burrungandjii Thomson, Kennett and Georges 2000 – Sandstone Snake-necked Turtle*. *Chelonian Conservation Monographs* 5. In press.
- Tornero, V.K., K. Taranjit, R.S. Wells, and J. Singh. Eco-toxicants: a growing global threat. In: Yamagiwa, J. and L. Karczmarski (eds.). *Field Studies of Primates and Cetaceans: Understanding and Conserving Complex Mammalian Species*. Springer. In review.
- Tripp, K.M., J.P. Verstegen, C.J. Deutsche, R.K. Bonde, M. de Wit, C.A. Manire, J. Gaspard III, and K.E. Harr. 2010. Evaluation of adrenocortical function in Florida manatees (*Trichechus manatus latirostris*). *Zoo Biology* 29:1-15.
- Tucker, A.D. 2010. The correct name to be applied to the Australian freshwater crocodile, *Crocodylus johnstoni* [Krefft 1873]. *Australian Zoologist* 35(2):432-434.
- Tucker, A.D. 2010. Nest site fidelity and clutch frequency of loggerhead turtles are better elucidated by satellite telemetry than by nocturnal tagging efforts: implications for stock estimation. *Journal of Experimental Marine Biology and Ecology* 383:48-55.
- Tucker, A.D., F. Guarino, and T.E. Priest. Where lakes were once rivers: hydrologically altered habitats shift diets of trophic generalist and specialist turtles of southeast Queensland. *Chelonian Conservation and Biology*. In review.
- Tucker, A.D., T. Wibbels, and J.E. Layton. Radar golf balls as a recovery aid for field studies. *Marine Turtle Newsletter*. In review.
- Twiner, M.J., S. Fire, L. Schwache, L. Davidson, Z. Wang, S. Morton, S. Roth, B.C. Balmer, T.K. Rowles, and R.S. Wells. Concurrent exposure of bottlenose dolphins (*Tursiops truncatus*) to multiple algal toxins in Sarasota Bay, Florida, USA. *PLoS ONE*. In press.
- Venn-Watson, S., F.I. Townsend, R. Daniels, J. Sweeney, J. McBain, L. Klatsky, C. Hicks, L. Schwache, R.S. Wells, and C.R. Smith. Hypocitraturia in Atlantic bottlenose dolphins (*Tursiops truncatus*): assessing a potential risk factor for urate nephrolithiasis. *Comparative Medicine*. In press.

2010 PUBLICATIONS (continued)

- Wall, C.C., B.T. Donahue, D.F. Naar, and D.A. Mann. 2011. Spatial and temporal variability of red grouper holes within Steamboat Lumps Marine Reserve, Gulf of Mexico. *Marine Ecology Progress Series*. In press.
- Walsh, C.J., S.R. Leggett, B.J. Carter, and C. Colle. 2010. Effects of brevetoxin exposure on the immune system of loggerhead sea turtles. *Aquatic Toxicology* 97:293-303.
- Wells, R.S. 2010. Feeling the heat: potential climate change impacts on bottlenose dolphins. *Whalewatcher* 39(2):12-17.
- Wells, R.S. Social structure and life history of common bottlenose dolphins near Sarasota Bay, Florida: insights from four decades and five generations. In: Yamagiwa, J. and L. Karczmarski (eds.). *Field Studies of Primates and Cetaceans: Understanding and Conserving Complex Mammalian Societies*. Springer. In review.
- Wetzel, D.L., E. Pulster, and J.E. Reynolds III. Organic contaminants and sirenians. In: Hines, E., J.E. Reynolds III, A.A. Mignucci-Giannoni, L.V. Aragones, and M. Marmontel (eds.). *International Strategies for Manatee and Dugong Conservation*. Gainesville: University Press of Florida. In press.
- Wetzel, D.L., J.E. Reynolds III, J.M. Sprinkel, L. Schwacke, P. Mercurio, and S.A. Rommel. 2010. Fatty acid profiles as a potential lipidomic biomarker of exposure to brevetoxin for endangered Florida manatees (*Trichechus manatus latirostris*). *Science of the Total Environment* 408(24):6124-6134.
- Whitney, N.M., H.L. Pratt Jr., T.C. Pratt, and J.C. Carrier. 2010. Identifying shark mating behaviour using three-dimensional acceleration loggers. *Endangered Species Research* 10:71-82.
- Whitney N.M., Y.P. Papastamatiou, and A.C. Gleiss. Integrative multi-sensor tagging of elasmobranchs: emerging techniques to quantify behavior, physiology, and ecology. In: Carrier J.C., J.A. Musick, and M.R. Heithaus (eds.). *Biology of Sharks and Their Relatives*, 2nd ed. Boca Raton, FL: CRC Press. In press.
- Whitney N.M., R.L. Pyle, K.N. Holland, and J.T. Barcz. Movements, philopatry, and reproductive seasonality in the whitetip reef shark (*Triaenodon obesus*) from community-based photo-identification. *Environmental Biology of Fishes*. In press.
- Whitney N.M., W.D. Robbins, J.K. Schultz, B.W. Bowen, and K.N. Holland. Phylogeography of the whitetip reef shark (*Triaenodon obesus*): oceanic dispersal in a sedentary reef predator. *Journal of Biogeography*. In press.
- Wilson, R.C., J.E. Reynolds III, D.L. Wetzel, L. Schwierzke-Wade, R.K. Bonde, K.F. Breuel, and W.E. Roudebush. Secretion of anti-Müllerian hormone in the Florida manatee *Trichechus manatus latirostris*, with implications for assessing conservation status. *Endangered Species Research*. In press.
- Wintle, N.J.P., D.A. Duffield, N.B. Barros, R.D. Jones, and J.M. Rice. Total mercury in stranded marine mammals from the Oregon and southern Washington coasts. *Marine Mammal Science*. In press.
- Yorby, J.E., M.A.M. Mollenhauer, R.W. Wilson, R.S. Wells, A. Hohn, J. Sweeney, L.H. Schwacke, T.K. Rowles, J.R. Kucklick, and M.M. Peden-Adams. 2010. Complex contaminant exposure in cetaceans: a comparative E-Screen analysis of bottlenose dolphin blubber and mixtures of four persistent organic pollutants. *Environmental Toxicology and Chemistry* 29(10):2143-2153.

2010 PUBLICATIONS (continued)

- Yordy, J.E., D.A. Pabst., W.A. McLellan, R.S. Wells, T.K. Rowles, and J.R. Kucklick. 2010. Tissue-specific distribution and whole-body burden estimates of persistent organic pollutants in the bottlenose dolphin (*Tursiops truncatus*). *Environmental Toxicology and Chemistry* 29(6):1263-1273.
- Yordy, J.E., R.S. Wells, B.C. Balmer, L.H. Schwacke, T.K. Rowles, and J.R. Kucklick. 2010. Life history as a source of variation for persistent organic pollutant (POP) patterns in a community of common bottlenose dolphins (*Tursiops truncatus*) resident to Sarasota Bay, FL. *Science of the Total Environment* 408(9):2163-2172.
- Yordy, J.E., R.S. Wells, B.C. Balmer, L.H. Schwacke, R.K. Rowles, and J.R. Kucklick. 2010. Partitioning of persistent organic pollutants between blubber and blood of wild bottlenose dolphins: implications for biomonitoring and health. 2010. *Environmental Science and Technology* 44(12):4789-4795.

COLLABORATIONS & PARTNERSHIPS

Alaska Nanuq Commission (Nome, AK)
American University (Washington, D.C.)
AquaMarina (Buenos Aires, Argentina)
Auburn University (Auburn, AL)
Benaroya Research Institute at Virginia Mason (Seattle, WA)
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Florida Department of Environmental Protection (Tallahassee, FL)
Florida Department of Health (Tallahassee, FL)
Florida Fish and Wildlife Conservation Commission, Imperiled Species Management (Tallahassee, FL)
Florida Fish and Wildlife Conservation Commission, Stock Enhancement Research Facility (Port Manatee, FL)
Florida Fish and Wildlife Research Institute (Charlotte Harbor, Florida Keys, St. Petersburg, FL)
Florida Fish and Wildlife Research Institute Pathobiology Lab (St. Petersburg, FL)
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New Gate School (Sarasota, FL)
North Carolina State University (Raleigh, NC)

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Ocean Conservancy (St. Petersburg, FL)
Oceanic Institute (Waimanalo, HI)
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Tampa Bay Watch (St. Petersburg, FL)
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Texas Parks and Wildlife Department (Austin, TX)
Texas Veterinary Medical Diagnostic Laboratory (Amarillo, TX)
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Turneffe Atoll Conservation Foundation (Belize)
Turtle Hospital (Marathon Key, FL)
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U.S. Department of Agriculture, Agricultural Research Station (Fort Pierce, FL)
U.S. Environmental Protection Agency (Washington, DC)
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University of Texas, Department of Chemistry and Biochemistry (Austin, TX)
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Virginia Institute of Marine Science (Gloucester Point, VA)
WGCU (Fort Myers, FL)

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Washington State University (Pullman, WA)
Webb Research Corporation (Falmouth, MA)
Weber State University (Ogden, UT)
Western Connecticut State University, Dept. of Biological and
Environmental Sciences (Danbury, CT)
Whalenet/ Wheelock College (Boston, MA)
Wildlife Trust (Palisades, NY; Prospect Park, PA; Sarasota, FL)
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Florida Ocean Alliance
Florida Sea Grant
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National Association of Marine Laboratories
The Ocean Project
The Oceanography Society
Science and Environment Council of Sarasota County
Southern Association of Marine Laboratories

FIN

Main Campus and Public Aquarium

MOTE MARINE LABORATORY AND MOTE AQUARIUM

1600 Ken Thompson Parkway

Sarasota, FL 34236

Phone: 941.388.4441

Fax: 941.388.4312

Internet: www.mote.org

e-mail: info@mote.org

Field Stations

MOTE AQUACULTURE PARK

12300 Fruitville Road

Sarasota, FL 34240

Phone: 941.388.4541

Fax: 941.377.2905

CHARLOTTE HARBOR

P.O. Box 2197

Pineland, FL 33945

Phone: 239.283.1622

Fax: 239.283.2466

TROPICAL RESEARCH LABORATORY

24244 Overseas Highway

Summerland Key, FL 33042

Phone: 305.745.2729

Fax: 305.745.2730

Public Outreach Facilities

MOTE'S LIVING REEF EXHIBIT

Florida Keys Eco-Discovery Center

Dr. Nancy Foster Florida Keys Environmental Complex

33 East Quay Road

Key West, FL 33040

Phone: 305.296.3551

Fax: 305.296.2325