



# INWATER RESEARCH GROUP, INC



Annual Report

2011

## Our Mission Statement:

**“Our mission is to provide the scientific community and general public with information to promote conservation of coastal and marine species and their habitats.”**



## Message from the President

Inwater Research Group continued to be in the forefront of issues affecting marine turtles in the southeastern United States in 2011 in research, conservation and education. As in 2010, the year began with a prolonged period of cold weather that triggered a stranding event of cold-stunned sea turtles from the Florida waters, although thankfully not as severe and prolonged as the 2010 cold stunning event. IRG personnel again worked closely with the Florida Fish and Wildlife Conservation Commission and many other groups of volunteers to rescue, stabilize, and transport affected sea turtles.

In 2011, efforts continued to assess the damage from the catastrophic Deepwater Horizon oil spill in the Gulf of Mexico. The true magnitude of the effects of this spill will not be known for years. There is a program underway, known as a Natural Resource Damage Assessment (NRDA), which will attempt to quantify the damage from the spill and identify appropriate mitigation and restoration. IRG was contracted to conduct the offshore sea turtle component of the NRDA damage assessment with funding from the National Oceanic and Atmospheric Administration. Working far offshore from small boats with helicopter and fixed wing aircraft spotting support, IRG staff gathered data which will be used to assess the impact this spill had on the early juvenile stages of four species of sea turtles which use the pelagic zone of the Gulf as a developmental habitat.

In 2011, IRG continued our contract with the Florida Power and Light Company to manage the sea turtle conservation program at the St. Lucie Nuclear Power Plant on Hutchinson Island in St. Lucie County, Florida. This is a hands-on program that safely captures and frees sea turtles from the cooling water system at the power plant. In addition to capturing and releasing turtles from the plant's intake canal, we will also be conducting sea turtle nesting surveys on the northern 19 kilometers of Hutchinson Island. The Florida Power and Light project is extremely valuable conservation work, and generates a vast amount of data used by scientists and regulatory agencies. Analyzing and disseminating data collected from nesting surveys and captures at the intake canal will forward our mission goals and add to our understanding of marine species in coastal ecosystems.

We continued our exciting long term research project in the Key West National Wildlife Refuge in 2011, where we have been working since 2003 to census the sea turtles in the refuge and the habitats they use. This information will allow refuge managers to more effectively conserve both sea turtles and their habitats. Our discovery several years ago of a large assemblage of

adult and subadult green turtles in the western Refuge continues to spark interest and generate research products. In 2010 we had a paper published in the journal *Endangered Species Research* on habitat partitioning and group foraging by green sea turtles within and adjacent to the Marquesas Keys. IRG has deployed satellite tracking tags and collected DNA samples from this unique assemblage of turtles, and we are in the process of analyzing data for dissemination and publication. We have also discovered another area within the Refuge that is home to a surprisingly abundant population of hawksbill sea turtles, and IRG received additional funding through the Florida Sea Turtle License Plate Grant program to continue to study the population structure, growth rates, and genetic origins of this poorly understood species. We are currently looking for funding opportunities to continue the Key West National Wildlife Refuge work in 2012. Public support is always welcome and helps Inwater Research Group reach our research goals.

With the continued assistance of our research collaborators, granting agencies, and donor and sponsor support, Inwater Research Group looks forward to continuing our mission to conduct high quality research and use those research products to further the conservation of marine species and their habitats in 2012 and beyond.

Michael J. Bresette  
President, Inwater Research Group, Inc.



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## **Our Staff**

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## **Part Time Staff**

Cody Mott  
Dawn Witherington  
Tomo Hirama



## 2011 Milestones and Accomplishments

### Research Projects:

Key West National Wildlife Refuge: The results of IRG's work in the western section of the Key West National Wildlife refuge on green turtles in the vicinity of the Marquesas Keys was published in the journal *Endangered Species Research*. The paper, titled "Size-class partitioning and herding in a foraging group of green turtles *Chelonia mydas*" is a result of our discovery that the green turtles in the Marquesas area have partitioned themselves by size into two very distinct assemblages, the smaller size individuals in the shallow seagrass habitats of Mooney Harbor, and the larger sized individuals in the deeper more open-water habitats of the adjacent Eastern Quicksands. Despite the very close proximity of these two areas, there was virtually no overlap in the size classes of green turtles present. The paper also documents the formation of foraging herds by the larger size class of turtles in the Eastern Quicksands. Other work by IRG in this fascinating eastern Quicksands area includes the application of GPS satellite tracking tags to large subadult and adult green turtles. These high-tech tracking devices allow for a very detailed and precise recording of movements and migrations.

Inwater Research Group received additional funding in 2011 through the Florida Sea Turtle License Plate Grant fund to continue our research into the hawksbill sea population in the Key West National Wildlife Refuge. This research will take advantage of our discovery in 2008 of a specific area within the refuge that has a high abundance of hawksbills that showed very strong site fidelity, which facilitates capture and recapture efficiency. Field work continued in 2011 to capture and tag hawksbills and collect morphometric and genetic information. These data will allow IRG to describe the size class structure and sex ratio of the population, calculate growth rates for juvenile and subadult hawksbills in the Refuge, and to determine the genetic origin (the geographic area where the individuals were hatched) through mitochondrial DNA analysis.

All of this work has stemmed from our long-term effort to characterize sea turtle populations in the Key West National Wildlife Refuge. That effort, underway since 2003, has produced extremely valuable results and has provided crucial information to refuge managers about how best to conserve and manage the Refuge. The continuation of this work has been identified by the Board of Directors as the highest priority for the future, and IRG is actively seeking long term funding for this effort.

Lake Worth Lagoon, Palm Beach County: Inwater Research Group has been conducting research to characterize the sea turtle populations of this large and urbanized estuarine system since 2005. This work has been funded by the Palm Beach County Department of Environmental Resource Management, in order to learn about the species of sea turtles that utilize the Lagoon

and the habitats in which they are found. In 2011, under a contract with Palm Beach County, IRG began Phase III of this project. In the summer of 2011, IRG conducted visual transect surveys throughout the 25-mile length of Lake Worth Lagoon, and capture efforts were focused on an area in the northern Lagoon near Little Munyon Island where the transect surveys had identified particularly high abundance. Information from this work is used by the County Environmental Resource Management staff in the planning and execution of their comprehensive restoration program for the Lagoon. Since sea turtles are such a high-profile species, the presence of sea turtles in the Lagoon and their dependence on the Lagoon as a developmental habitat helps raise public awareness about the progress and benefits of the restoration effort.

### **Conservation and Environmental Monitoring Projects:**

Florida Power and Light Company Sea Turtle Conservation Program: In 2009 Inwater Research Group was contracted by Florida Power and Light Company to conduct the sea turtle conservation program at the St. Lucie Nuclear Power Plant on Hutchinson Island. To fulfill this contract, IRG has four biologists on site and on call 365 days a year to monitor the plants cooling water intake system and safely capture and release any sea turtles that become trapped in the canal. Data from these turtles are extremely valuable to the scientific community, and IRG will be collecting and managing this data set, as well as disseminating information collected through the FPL program via publications, data sharing and collaborations with other researchers, and presentations at scientific meetings and symposia. In 2011, IRG staff made presentations of data from the power plant project at the International Sea Turtle Symposium in San Diego.

Indian River County Nearshore Sea Turtle Abundance Surveys: In order to assess the potential effects of beach restoration projects on the adjacent nearshore reef that serves as developmental habitat for juvenile green turtles, IRG was contracted by Coastal Technology Corporation to monitor sea turtle population levels before, during, and after construction of the Indian River County Sector 3 beach restoration project. In 2011, IRG conducted visual surveys along fixed 3-km long transects just offshore of the beach restoration project areas, and in control areas outside the area of influence of the projects. Comparing data from before and after construction with concurrent data collected in the control areas allows for an assessment of project impacts.

Palm Beach County Nearshore Sea Turtle Abundance Surveys: Inwater Research Group is conducting monitoring similar to the Indian River County project for Palm Beach County's beach restoration and shoreline protection projects. IRG is surveying the nearshore reef areas between Jupiter Inlet and Lake Worth Inlet to collect preconstruction baseline data on sea turtle abundance at three sites where future shoreline protection projects are planned, and at a control site at John D. MacArthur Beach State Park. Combined with future post-construction monitoring, these baseline data will allow for an assessment of project construction impacts.

## **Education and Public Outreach:**

A major component of the mission of Inwater Research Group is the dissemination of our research results to the public and the scientific community, public outreach on marine conservation issues, and volunteer service to other marine research teams and the community. 2011 saw a major expansion of our efforts in this important aspect of our mission, including the production and dissemination of educational posters on the ecology and value of the beach wrack community and the pelagic sargassum community to our shoreline and offshore ecosystems.

In 2011, IRG began a program of grants-in-aid to promising graduate students conducting cutting-edge research in sea turtle biology and conservation. Our first grant recipient was Simona Ceriani, a doctoral candidate at the University of Central Florida, who received \$5000 to support her work on the use of stable nitrogen and oxygen isotopes to identify foraging grounds and migrations of sea turtles along the east coast of the United States.

To promote the dissemination of research and to provide opportunities for networking, IRG board members served on the organizing committee and board of directors for the establishment of a major sea turtle research conference, the Southeast Regional Sea Turtle Meeting. The inaugural meeting was held recently at Jekyll Island Georgia, and was attended by over 400 participants, with future meetings planned to be held every other year. In addition to hundreds of hours of donated time, IRG also provided a \$5000 sponsorship for the meeting.

Inwater Research Group has maintained a special relationship with the Environmental Studies Council of Martin County. This group serves over 10,000 K-12 public school students from 27 schools annually, providing environmental education and awareness programs. The Council has permits to maintain captive loggerhead turtles for educational purposes. These turtles serve as the centerpiece for education programs, and must be released when they reach sufficient size. In 2011, IRG provided funding and expertise to equip "Clark", the turtle to be released this year, with a satellite tracking tag so students can follow the progress of "their" turtle after its release. Classes throughout the Martin County system will integrate updates from the satellite tracking into their course materials.

Since Inwater Research Group began the sea turtle conservation program at the St. Lucie Plant, IRG biologists, with the cooperation of FPL personnel, have collected hundreds of fish and other marine specimens for public education programs at the Florida Oceanographic Society and the Environmental Studies Center of Martin County.

Another important aspect of our mission is to provide assistance to other conservation organizations and resource agencies. That assistance may take the form of providing data or reviewing drafts of proposals or policies, or assistance in the execution of field projects or emergency response efforts. In 2011, IRG donated the use of our specially equipped shallow water skiff and an operator to assist the Florida Fish and Wildlife Conservation Commission and the National Marine Fisheries Service research project to apply satellite tracking tags to

reproductively active adult loggerheads in Florida Bay to track their movements between the Florida Bay foraging grounds and the nesting beaches. Our work at the Florida Power and Light St. Lucie Plant in 2011 provided the opportunity for IRG staff to collaborate with several researchers by providing data, specimens and samples to support their research interests. IRG has been providing morphometric data to Dr. Mike Salmon at Florida Atlantic University for his green turtle research, and has been supplying blood and biopsy samples to several students at the University of Central Florida for use in studies of stable isotopes and sex determination.



## Supporters and Volunteers

### Institutional Supporters:

Florida Sea Turtle Grants Program  
U.S. Fish and Wildlife Service  
Florida Fish and Wildlife Conservation Commission  
National Marine Fisheries Service  
Save a Turtle Foundation  
Norcross Foundation  
Disney Wildlife Fund  
Brevard Zoo  
Palm Beach County Environmental Resource Management  
Underwater Engineering Services, Inc.  
Maui Jim Sunglasses

### Individual Supporters:

Charlie Page  
Mary Kaye Maxwell  
Sophia Reid  
Matt and Allison Bresette

### Volunteers:

Karrie Minch, Meghan Koperski  
Dawn Witherington, Wanda Bresette, Laura Herren  
Karen Holloway-Adkins, Mario Mota, Russ Scarpino  
Brenda Bodinger, Stacy Kubis, Sue Schaf



## 2010 Financial Statement

