



INWATER RESEARCH GROUP, INC



Annual Report

2013

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

Through our continued commitment to research, conservation and education, Inwater Research Group continued to be in the forefront of issues affecting marine turtles in the southeastern United States in 2013.

Our efforts continued to assess the damage from the catastrophic Deepwater Horizon oil spill in the Gulf of Mexico. In 2013, IRG researchers provided field assistance to researchers from the National Oceanic and Atmospheric Administration Southeast Fisheries Center in capturing and satellite tagging small pelagic stage juvenile green, loggerhead, and Kemp's ridley sea turtles in the area of the 2010 spill offshore of Venice, Louisiana. This research will help shed some light on the very poorly understood migratory pathways of the age class of turtles perhaps most severely affected by the oil spill. In 2013, IRG also received a second anonymous grant from the Donor Advised Fidelity Trust that will aid in the continuation of our sea turtle work in the Gulf of Mexico in 2014. IRG also received funding in 2013 from the National Fish and Wildlife Federation to embark on a series of vessel based transect surveys of the near shore waters of eastern Louisiana, and area never before systematically surveyed for marine turtles.

In 2013, 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 also conducted 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.

In 2013, we also continued what we hope will be another long-term research project in Florida waters, this one in the "Big Bend" area of the Florida west coast. The shallow marine habitats in this region represent important developmental areas for maturing sea turtles. With funding from the Florida Sea Turtle License Plate Grant Program, we conducted transect surveys and capture efforts in the St. Martins Keys and Big Bend Aquatic Preserves to identify size class distributions, growth rates, genetic origins, and sex ratios of sea turtles found there. A surprising finding from this work was an unexpectedly high prevalence of the tumor disease

fibropapillomatosis in the green turtle population, an ominous indicator that all may not be well in this seemingly pristine environment.

In 2013, IRG was able to add an additional research vessel to our fleet when we commissioned a custom designed and built 27 foot twin engine power catamaran from Americat Boats in Fort Pierce, Florida. With its long range capabilities and full suite of modern electronics, this \$100,000 vessel extends our research reach into areas far offshore. Also in 2013 we were able to modernize our small fleet of vehicles, adding two newer Ford pickup trucks.

With the continued assistance of our research collaborators, granting agencies, 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 2014 and beyond.

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



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Our Staff

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Ryan Walsh
Biologist
St. Lucie Power Plant Project



2013 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. In the works for 2014 is a cutting edge effort to use unmanned aerial vehicles ("drones") to extend our survey coverage and look for additional foraging ground sites in the area.

Inwater Research Group received funding in 2010 and 2011 through the Florida Sea Turtle License Plate Grant fund to conduct research into the hawksbill sea turtle population in the Key West National Wildlife Refuge. This research takes 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 2012 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. Results from the hawksbill are currently being prepared for publication.

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. In 2013, IRG received an anonymous grant from the Donor Advised Fidelity Trust that will aid in the continuation of this project in 2014.

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 2013, under a contract with Palm Beach County, IRG completed field work for Phase IV of this project. 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. Results from this project were presented at the Lake Worth Lagoon Initiative Symposium at Palm Beach Atlantic University in May 2013 and are currently being prepared for publication.

Big Bend Developmental Habitats: In 2012, we began what we hope will be another long-term research project in Florida waters, this one in the “Big Bend” area of the Florida west coast. The shallow marine habitats in this region represent important developmental habitats for maturing sea turtles. With funding from the US Fish and Wildlife Service, we conducted a pilot project study to determine sea turtle distribution and abundance in the St. Martins Keys and Big Bend Aquatic Preserves. Using the vessel based visual transect study method pioneered by IRG, we identified and mapped the occurrence of 150 green, Kemp’s ridley, and loggerhead sea turtles and were able to identify “hotspots” of particularly high sea turtle abundance. In 2013, we returned to the area and initiated capture efforts in the Big Bend study sites to identify size class distributions, growth rates, genetic origins, and sex ratios of Big Bend turtles. A surprising finding from this work was an unexpectedly high prevalence of the tumor disease fibropapillomatosis in the green turtle population, an ominous indicator that all may not be well in this seemingly pristine environment. In 2013, IRG received an anonymous grant from the Donor Advised Fidelity Trust that will aid in the continuation of this project in 2014.

Louisiana and the Gulf of Mexico. Our efforts continued to assess the damage from the catastrophic Deepwater Horizon oil spill in the Gulf of Mexico. In 2013, IRG researchers provided field assistance to researchers from the National Oceanic and Atmospheric Administration Southeast Fisheries Center in capturing and satellite tagging small pelagic stage juvenile green, loggerhead, and Kemp’s ridley sea turtles in the area of the 2010 spill offshore of Venice, Louisiana. This research will help shed some light on the very poorly understood migratory pathways of the age class of turtles perhaps most severely affected by the oil spill. In 2013, IRG also received a second anonymous grant from the Donor Advised Fidelity Trust that received funding in 2013 from the National Fish and Wildlife Federation to embark on a series of vessel based transect surveys of the near shore waters of eastern Louisiana, and area never before systematically surveyed for marine turtles.

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 five 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.

St. Lucie 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 St. Lucie County South Beach and Dune Restoration Project. In 2013, IRG conducted visual surveys along fixed 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.

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. 2013 saw a continued expansion of our efforts in this important aspect of our mission, including the production of two additional educational posters on the ecology of the nearshore reef community and the biology and the conservation of the Atlantic Right Whale, the latter produced in collaboration with the organization Keepers of the Coast. All the posters in IRG's educational poster series are distributed free to educators through our website and to the public at a variety of environmental events that IRG participates in each year.

In 2011 and 2012 IRG initiated 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.

Inwater Research Group also continued its efforts at educational outreach to primary and secondary school students in 2013. IRG staff biologist Cody Mott served on the Board of Directors of the Martin County Environmental Studies Council, where he was instrumental in

securing funding and permitting to apply a satellite tracking tag to the loggerhead sea turtle that was released back into the wild after several years residing at the Martin County School Districts Environmental Learning Center. Mr. Mott also spearheaded a successful fundraising campaign to modernize and improve the facilities for holding sea turtles at the Environmental Learning Center.

Another important aspect of our mission is to provide assistance to other conservation organizations and resource agencies. This 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 2013, 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. In the summer and fall of 2013, IRG researchers provided field assistance to researchers from the National Oceanic and Atmospheric Administration Southeast Fisheries Center in capturing and satellite tagging small pelagic stage juvenile green, loggerhead, and Kemp's ridley sea turtles in the area of the 2010 spill offshore of Venice, Louisiana. This research will help shed some light on the very poorly understood migratory pathways of the age class of turtles perhaps most severely affected by the oil spill. IRG biologists also provided data on shorebird activity and nesting to the Florida Fish and Wildlife Conservation Commission, and assisted FWCC fish biologists in capturing and applying acoustic tracking tags to two goliath groupers captured from the FPL intake canal and released into the ocean.

Our work at the Florida Power and Light St. Lucie Plant in 2013 provided the opportunity for IRG staff to collaborate with several researchers by providing data, specimens and samples to support their research interests. IRG biologists collected blood samples, biopsies, and unhatched eggs from loggerhead turtles to assist with a project conducted by University of Central Florida researchers looking at stable isotope analysis in sub-adult and adult loggerheads. Blood was taken from loggerhead and green turtles captured in the canal to assist in a project conducted by Florida Atlantic University researchers investigating the immune response in marine turtles with fibropapilloma tumors. IRG Biologist collected a suite of detailed front flipper measurements from green turtles captured in the intake canal for a biomechanical study of swimming propulsion dynamics conducted by Embry Riddle University. IRG biologists also supplied data from our nesting beach survey to staff from the US Fish and Wildlife Service for use in an evaluation of coastal development impacts to sea turtle nesting habitat.



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
Florida Power and Light Co.

Individual Supporters:

Anonymous, from the Donor Advised Fidelity Trust
Janet Hochella
Thomas Dickinson
Suzy Murray
Wendy Gierhart
Elizabeth Gunn

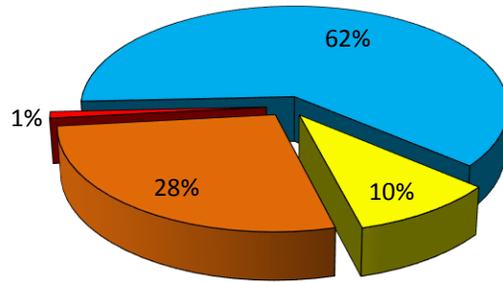
Volunteers:

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



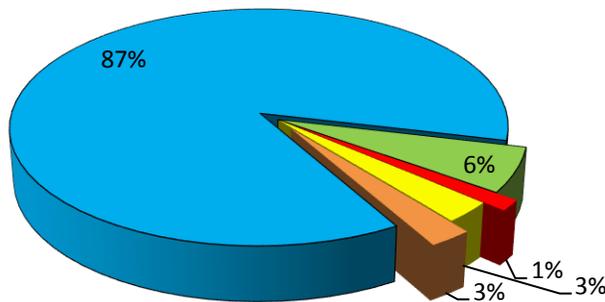
2013 Financial Statement

Revenue 2012, \$621,560



■ Grants ■ Government ■ Donations ■ Mission related contracts

Expenses 2012, \$559,101



■ Programatic ■ Outreach/Education ■ Travel ■ Administrative ■ Employee Benefits