

VELADOR

Science-Based Sea Turtle Conservation Since 1959

Issue 3, 2021



Bermuda Turtles Impacted by Collapse of Seagrass Habitat

STC biologists Rick Herren (left) and Dr. Dan Evans are shown retrieving a juvenile green turtle from Bermuda waters as part of an ongoing study looking at the health of the population.

This summer, STC staff biologists Dr. Dan Evans and Rick Herren joined our long-term partners in Bermuda to successfully carry out critical field research as part of the Bermuda Turtle Project (BTP). Studying sea turtles in their marine environment is vital to finding out how well they are doing at various life stages. Over the last five

decades, the BTP has developed into a multi-faceted study of sea turtles in their developmental habitat – a place where young sea turtles from around the Atlantic and Caribbean come to grow up. While we had to postpone our Bermuda field research in 2020 due to the pandemic, the project

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Inside: Coastal Lighting Ordinance Update



STC Satellite Tags Potential Hawksbill/Loggerhead Hybrid



Dr. Dan Evans and Rick Herren discuss sea turtle biology and conservation with course participants and field assistants prior to beginning the day's work.

... from cover

forged ahead in 2021 under the scientific leadership of STC's staff.

As part of the Bermuda Turtle Project, STC and our partners conduct a simultaneous in-water sea turtle biology course for aspiring biologists and resource managers from other countries. This year's participants and field assistants were comprised almost entirely of young Bermudians, since international travel to the island is still challenging.

The entire team worked very well together, STC and Bermuda researchers added a few new methodologies, and we verified some important and unsettling trends.

The most notable takeaway from this year's research in Bermuda is that major ecological changes underway on the island have resulted in a massive die-off of seagrasses—the main food source for juvenile green turtles. More research is needed to fully understand the complicated factors at work, but it almost certainly involves water quality degradation associated with excess nutrient and pollutant runoff from the island, combined with disturbance by human activities. Some people in Bermuda have been quick to suggest overgrazing by sea turtles as the cause, but it



Dr. Gaëlle Roth, veterinarian and project co-director, pulls in the tangle net which is used to safely catch juvenile sea turtles in Bermuda.

VELADOR {bel.a.dor}

In Caribbean cultures, *Velador* translates as "one who stands vigil" —referring to turtle hunters who waited at night for turtles to come ashore. STC claims this title for its newsletter, and around the world STC's researchers and volunteers are replacing poachers as the new veladors. The *Velador* is published for Members and supporters of the nonprofit **Sea Turtle Conservancy**. STC is dedicated to the conservation of sea turtles through research, advocacy, education and protection of the habitats upon which they depend.

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This photo shows one of STC's long-term study sites in Bermuda where healthy seagrass has largely disappeared.

seems unlikely an animal that has thrived around Bermuda for thousands, or possibly millions, of years—in greater numbers than seen today—would be the cause of this collapse.

To better understand the changes underway in Bermuda, the BTP was expanded this summer to include vessel-based transect surveys to estimate the current size of the green turtle population. We also initiated a new sea turtle health assessment that involved analyzing blood samples from captured animals to compare with healthy populations in Florida. During transect surveys, the team sighted 58 green turtles over five days. During the catch and release portion of the project, in which nets are set to catch and study turtles, the project captured 75 green turtles over 13 days.

While this may sound like a lot of turtles, it is far below what has been captured at these sites in recent years. It is now clear that there are significantly fewer green turtles in Bermuda



The Bermuda Turtle Project research vessel, RV Endurance, which is owned and operated by the Bermuda Aquarium.

waters; they are generally smaller in size; and many of them appear underweight and even emaciated. All these results are signs of a population responding to the near complete loss of its major food source.

STC and its partners (the Bermuda Zoological Society and the Bermuda Aquarium Museum and Zoo) are implementing the best new methods to study this situation in order to develop sound conservation strategies. At the same time, we are continuing long-term sampling in areas that were historically green turtle hotspots and identifying new hot-spots where turtles may be taking up residency in search of viable seagrass communities. In addition, STC is redoubling its efforts to raise awareness about how human activities—even in a place as remote and seemingly pristine as Bermuda—can threaten sea turtles and the entire marine ecosystem.

The calamity unfolding in Bermuda has STC's full attention, and we are sounding the alarm to other scientists and conservationists that the health and size of the green turtle aggregation in Bermuda has deteriorated significantly—and this undoubtedly will have ramifications for sea turtle populations throughout the Atlantic and Caribbean. 🌊

All photos provided by the Bermuda Turtle Project.



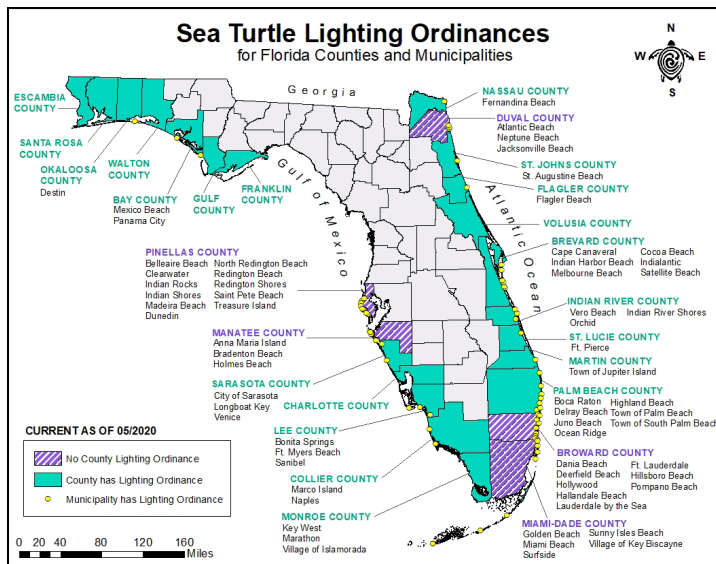
To learn more about the Bermuda Turtle Project, visit
conserveturtles.org/bermudaturtleproject

Lighting Program Update

STC to collaborate with National Wildlife Federation to improve coastal lighting ordinances

To further reduce the threat of artificial lighting on sea turtle nesting beaches in Florida, Sea Turtle Conservancy (STC) will focus on improving local sea turtle lighting ordinances in the next year.

In partnership with the National Wildlife Federation (NWF), STC will conduct outreach and encourage coastal governments to adopt the new language from the Model Lighting Ordinance for Sea Turtle Protection. These guidelines were updated by the Florida Department of Environmental Protection (FDEP) in December 2020 and account for advances in sea turtle research and lighting technology.



This map notes the 86 local governments in Florida which have existing lighting ordinances based off of the 1993 Model Lighting Ordinance. Counties and municipalities administer and enforce both new and existing development. The teal indicates a county that has a lighting ordinance and the purple stripes indicate a county without an ordinance.

Since the early 1990s, more than 90 counties and municipalities in Florida have enacted their own sea turtle lighting ordinances. However, the majority of these ordinances have not been revisited or updated in decades. While the adoption of the updated Model Lighting Ordinance is an important marker for addressing the rampant issues caused

by light pollution along Florida's coasts, local government decision makers must be informed and motivated to use the new Model as a guide and initiate the process of updating their local statutes and enforcement tactics. It takes a combination of political will and local stakeholder support, patience, knowledge about sea turtle friendly lighting, and an understanding of the Model Lighting Ordinance to successfully adopt new ordinance language.

This process often takes several months and involves public meetings, the creation of a task force, sub-meetings of that task force to revise each line of the ordinance and discuss its applicability, and public advocacy to inspire the governing body to adopt the new language. STC and NWF plan to share resources and tackle this large-scale effort together.

In addition to working with coastal governments to update their ordinances, STC and NWF will also collaborate with the Florida Fish and Wildlife Conservation Commission (FWC) to revisit an ordinance ranking system that was published in 2013 by the Levin College of Law at the University of Florida. The original study focused on the strength of local lighting ordinance language throughout Florida and ranked each ordinance as "very weak," "weak," "moderate" or "strong." The exercise revealed that the strength of Florida's local lighting ordinances varied greatly, with the majority of the ordinances coded as "weak."

In the past eight years since the study has been published, many local communities have updated their lighting ordinances. FWC, NWF and STC will evaluate and update the ranking system with more relevant criteria, such as the enforcement capability of each community, and determine the status of local lighting ordinances in 2021.

The final product will be accessible to scientists, decision makers and the public, allowing for diverse stakeholders to know where their community stands in protecting sea turtles from artificial lighting.

By Stacey Gallagher
Lighting Specialist & Development Coordinator

Tour de Turtles Update

STC satellite tags potential hawksbill/loggerhead hybrid in the Archie Carr National Wildlife Refuge!

While searching the Archie Carr National Wildlife Refuge (ACNWR) for nesting loggerhead turtles to satellite tag as part of STC's Tour de Turtles migration marathon education program, STC staff came upon a very unusual sight... a sea turtle that shared characteristics of both a loggerhead and a critically endangered hawksbill turtle! Not only was the turtle nesting very high up in the vegetation, a behavior typical of hawksbill turtles, it also had a narrow head and shell patterns similar to a hawksbill.



Photos by Celeste McWilliams. No artificial light was used in the above photo. All activity permitted under MTP-21-133.

This potential hybrid sighting was extremely rare as hawksbills don't typically nest in the state of Florida. According to the Florida Fish and Wildlife Conservation Commission (FWC), there is only sporadic hawksbill nesting in Florida (between 1 and 4 nests/year, every few years). Most of the nesting is concentrated in Bahia Honda State Park in the Florida Keys and occasionally Palm Beach County. There has not been a documented hawksbill nest

in the ACNWR, but there have been two documented hawksbill/loggerhead hybrid nests on South Brevard Beaches in 2016. FWC has also documented a few hawksbill/loggerhead hybrids in Monroe and Palm Beach counties and have several samples pending analysis from the last couple of years.



The turtle was named "Coral" by her sponsors at tarte cosmetics. To determine if "Coral" is indeed a hybrid turtle, STC biologists took a tissue sample which will be analyzed soon. This is the first time a hybrid hawksbill/loggerhead turtle has been

tagged with a satellite transmitter in the ACNWR. In attendance for her special release were the students participating in our Sea Turtle TECH STEM Mentor Program offered through the Barrier Island Center. To track Coral online visit www.tourdeturtles.org



Conservation Career Training Internship at the Barrier Island Center

The Sea Turtle Conservancy (STC), in partnership with the Brevard County Environmentally Endangered Lands Program, kicked-off the Conservation Career Training Internship program this summer at the Barrier Island Center (BIC) in the Archie Carr National Wildlife Refuge. The purpose of the internship program was to train high school and college students in the skills needed to steward natural resources and succeed in 21st century conservation careers. STC welcomed two college students and two high school students living in Brevard and Indian River Counties, the two counties in which the Carr Refuge is located, to mentor youth in the Sea Turtle TECH (Technology Education Challenges Horizons) STEM (Science, Technology, Engineering and Math) Mentorship program and assist with all manner of operations at the BIC.



Intern Jenna Coven facilitated youth connections with sea turtles by showing a loggerhead hatchling after a nest excavation.

Through hands-on, real world conservation experiences, the interns improved their knowledge of sea turtles, local ecosystems, ecological field techniques and environmental education teaching techniques. Interns built interpersonal skills in leadership, communication and teamwork by leading small group discussions during the STEM workshops and designing and delivering interpretive programs. The interns gained guest services and non-profit administrative

experience, serving as greeters, docents and gift shop attendants at the BIC. Interns also worked alongside conservation professionals from the Archie Carr Working Group, a collaborative network of fifteen organizations working together to conserve the Carr Refuge, which allowed the interns to grow confidence in their ability to achieve a career in conservation.



From left to right, Jenna Coven, Adam Steinfeld, Faith Lugo and Ann Pagillo.

College interns Jenna Coven and Adam Steinfeld are majoring in conservation fields. Adam Steinfeld is a senior at the University of Central Florida majoring in biology and psychology. When asked how his internship has affected his career goals and ambitions, he said, “It’s given me confidence in my goals and interests. Letting me meet people in this field and see how much they enjoy it has confirmed my ambitions and goals. I also want to work with wildlife more.”

Adam also said, “being able to help with turtle walks, going out in the field with professionals, establishing great relationships over the course of this internship with my superiors and understanding how a non-profit works” were some of the most useful experiences to his future career. Adam commented on his perspective of mentoring the next generation, “I connected with the kids really well,” he said. “Many of the kids listed me as their favorite mentor and I didn’t expect that.” When asked to describe his overall experience, he shared, “Eye-opening, involved, helpful, inspiring, and the best job I ever had. Working with scientists, kids, and nature directly, I’ve been able to build confidence, skills and relationships that I will use in my future career.”

Jenna Coven is a junior at Florida State University, majoring in Environmental Science and Policy. Jenna’s feelings about nature strengthened this summer while “seeing many different habitats and observing how everything is interconnected.” Jenna’s connection with sea turtles deepened as well. She shared, “I love sea turtles. I’ve always loved sea turtles. I grew up in Florida. I’ve seen sea turtles but being close to them and working alongside researchers and giving the presentations on sea turtles has made me appreciate them more.” Jenna also narrowed her career interest during the internship and appreciated the resources and mentorship provided by the BIC staff and local conservation professionals. “Before the internship, I just knew that I wanted to preserve and conserve the environment. Meeting the professionals and seeing how I can do that has strengthened my desire to preserve and conserve the environment. This has been the most amazing experience and has also geared me toward what I want to do. I didn’t know how much I liked environmental education and now I think I am going to go into environmental education professionally.”



Interns Ann, Faith, Adam and Jenna participate in a Sea Turtle TECH STEM Mentorship Program snorkel workshop in Sebastian Inlet State Park. It was the first snorkeling experience for 3 of the 4!

The two high school interns, Faith Lugo and Ann Pagillo, were planning on majoring in STEM fields prior to the internship but neither had considered conservation careers. Faith’s internship helped her realize how much she enjoys working with sea turtles. During the internship, she considered changing her career path to veterinary science to take care of injured sea turtles. Faith entered a nursing program in fall 2021; however, veterinary science is her second career choice. As a result of her internship, she plans to make many pro-conservation behavior changes. Faith plans to continue volunteering in the summers at the BIC to help with turtle walks. She will also pick up trash, use less plastic bottles and recycle. She described her overall experience

as, “I learned new things about wildlife, especially sea turtles and I worked with different personalities and customers.” Some of the most useful skills she built during the internship to her future career were “working in a group and dealing with different personalities.”

Ann Pagillo is an 11th grader at Eau Gallie High School, who plans to pursue aerospace engineering. During her internship, the most useful skills she built that will help her in her future career were communication and teamwork skills. Ann enjoyed assisting with the technology and engineering focused STEM workshops, specifically mentoring the students as they designed and built remote operated vehicles and used the imaging goggles with the drones. Her attitude toward sea turtles also changed she said, “I care more about sea turtles

and I want to do more to help them.” After her internship, Ann also plans to incorporate pro-conservation behaviors into her life by “using less plastic waste due to it not being biodegradable, and reduce, reuse and recycle.”

The summer interns gained many marketable job skills. Their hands-on conservation experiences shifted their attitudes towards caring more about sea turtles and their habitats and honed their

conservation ethic. The

inspirational hands-on experiences with wildlife, professional mentors and BIC visitors confirmed conservation career and STEM paths and trained the next generation of stewards of the Carr Refuge and our local natural resources.


Sponsorship for the paid internships was provided by the Sea Turtle Grants Program funded by the Florida Sea Turtle License plate and Quail Valley Charities. The STEM program was sponsored by the Sea Turtle Grants Program, Community Foundation for Brevard and Quail Valley Charities.

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2nd Annual 5K/10K Virtual Race

Join our sea turtles at the Tour de Turtles finish line by participating in Sea Turtle Conservancy's 2nd Annual 5K/10K Virtual Run! That's right, you can join us virtually! Participate in our virtual 5K/10K by running or walking any time from October 29 – November 1, from wherever you are! Basic registration is \$35 per person and includes a special edition turtle medal, with the option to add on a t-shirt for an additional \$15. All funds raised will be used to support our ongoing sea turtle conservation and research programs!



Register online until October 23 or until registration is full by visiting our website at www.conserveturtles.org/tour-de-turtles-virtual-run