

Caretta's Corner

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Winter/Spring 2017

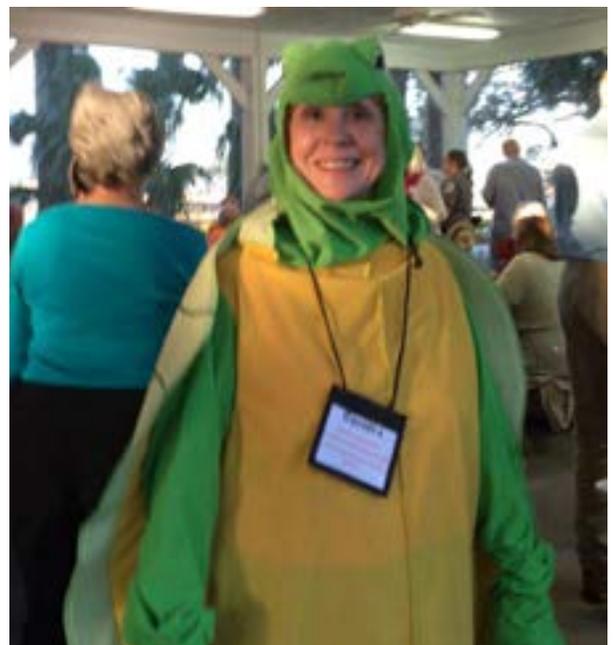


Turtle Talk and Tapas Too

By Carol Corbin, Communication Director, Friends of Hunting Island, Photos by Joan Orvis

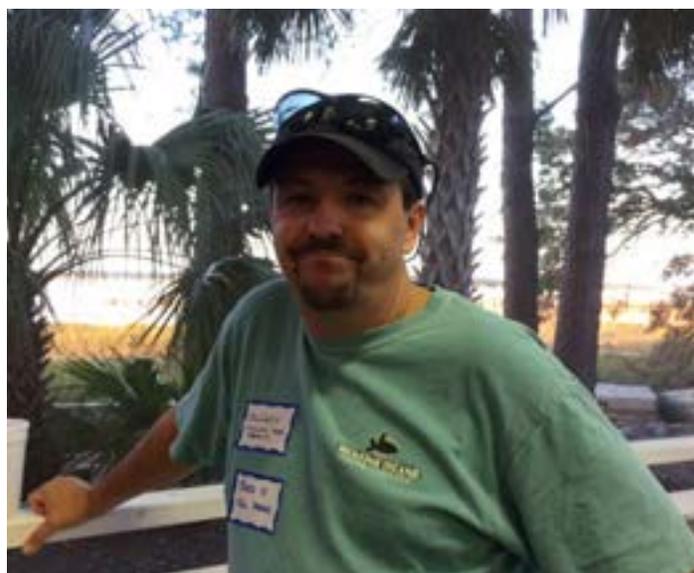
OVER ONE-HUNDRED TURTLE ENTHUSIASTS gathered at the Dataw Island gazebo on the evening of October 27, 2016, for a pot-luck tapas and dessert evening just a few weeks after Hurricane Matthew destroyed the Dataw marina.

After an hour of socializing, the guest speaker, Brian Shamblin from the University of Georgia, spoke about Genetic Assignments of Loggerhead Turtles. His DNA work is summarized by Keith Aspray in his article in this issue of Caretta's Corner.



Peggy Willenberg, FOHI social media co-chair is our favorite turtle, "Caretta."

Turtle Talk and Tapas Too cont.



DNA and Hunting Island's Sea Turtles

By Keith Aspray

AS THE TURTLE PROGRAM volunteers on Hunting Island know, samples of DNA are being obtained from each sea turtle nest, loggerhead specifically, being laid on Hunting Island's beaches. This has been an on-going activity since 2009 and involves the collection of one egg shell from each nest. The shell, which contains only the mother turtle's DNA, is emptied, preserved and sent off for analysis.

The Georgia and South Carolina Department of Natural Resources and the North Carolina Wildlife Resources Commission Sea Turtle Programs are participating in a multi-state genetics research project along with the University of Georgia to answer several basic loggerhead sea turtle nesting questions. The answers to these questions will help biologists better understand how the loggerhead population is doing. Currently, the actual number of loggerhead sea turtles that nest in these three states is not known. Loggerheads nesting in these three states make up the Northern Recovery Unit which is genetically distinct from loggerheads nesting in Florida and other parts of the world. By collecting an egg from every single nest, the scientists will use DNA genetic fingerprinting (CSI for sea turtles) to identify individual loggerhead nesting females. This information will provide a census of the actual nesting population. In addition to estimating how many females are nesting in Georgia, North and South Carolina each year, the scientists also have the potential to answer the following questions:

- How many clutches of eggs does each nesting female lay in a year?
- Is the female nesting on more than one beach?
- How far apart are her nests?
- How many turtles are nesting in more than one state?
- Most individual females do not nest every year. How often does each turtle nest: every two years, three years, four or more years?
- How precisely does a daughter return to her hatching site to lay her eggs?

The scientists performing all of this CSI type of work are Dr. Campbell Nairn and Dr. Brian M. Shamblin and his team

at the University of Georgia's Warnell School of Forestry and Natural Resources. Our thanks to them for allowing us to look at the data and share some results with you.

During the 2016 nesting season, there were 141 loggerhead (*Caretta caretta* specie) nests located on Hunting Island beaches. Of these 141 nests, DNA results for 139 of these nests have been finalized by the end of March 2017. That is about 99% of the nests found on the island.

We know so far that:

- 1 turtle visited Hunting Island 6 times during nesting season (that is about 4% of all the nests identified by DNA)
- 4 turtles visited 5 times each (14%)
- 11 turtles visited 4 times each (32% or 44 nests out of the 139)
- 5 turtles visited 3 times each (11%)
- 5 turtles visited 2 times each (7%)
- 44 turtles visited Hunting Island only once (32%)

That is 70 loggerheads producing 139 nests on the island. Of these 70 loggerheads, 34 of them were identified by DNA for the first time in 2016!!!! Those 34 newly identified loggerheads were responsible for 49 of the 139 identified nests on Hunting Island, or about 35%. No wonder Hunting Island experienced a banner year in nesting loggerheads. If these mother sea turtles were never produced and protected 20-30 years ago, we might have been down around 90 nests in total in 2016.

There was one loggerhead who nested in 2016 on Hunting Island who was first identified by DNA in 2009 on Cumberland Island. All turtles identified by their specific DNA are assigned an ID. In this case, the loggerhead was assigned "CC00023". The "CC" stands for *Caretta caretta* and "23" means she was the 23rd turtle identified by this program. To put that in perspective, the DNA ID numbers are over 9900!

CC00023 is known to have first visited Hunting Island to lay a nest in 2012. She is the one and only loggerhead that made 6 nesting visits to Hunting Island in 2016. While she

DNA cont.

may have visited Hunting Island earlier than 2012, we will never know if and when because we didn't perform DNA analysis before the 2009 nesting season on Hunting Island.

A question we asked ourselves - "Do the turtles go back to the same section of beach every time they visit Hunting Island to lay a nest?" No!!!! Most of the loggerheads that visit Hunting Island, except for about 5 of them at the most in 2016, visited multiple zones. As our volunteers know, our beach is laid out in zones numbered 1 to 6, going from north to south. Zone 6 is down by Nature Center, while Zone 1 is north of the campground.

For example, our mother loggerhead above (CC000023) visited Zones 2, 3, 4, 2, 3 and 3, in that order, to lay nests. Mother CC006106 laid nests in Zones 4, 5, 3, 4 and 4, while Mother CC006119 nested in Zones 2, 4, 3, 4 and 3. So in general, when loggerheads come back to their "favorite" beach to lay nests, they come to the same GENERAL beach area relative to each other, but not to a SPECIFIC section of that beach.

Another interesting mother turtle was CC001385 who laid a nest (#3) on May 16, 2016 in Zone 6 with 115 eggs. When that nest was inventoried at 75 days, as no hatchlings were observed exiting the nest (as mandated by the SC DNR), all the eggs were found unhatched. In fact, they were white, full and soft – unfertilized perhaps. Is this an ongoing issue with Mother CC001385? No. She went on to lay 3 more nests on Hunting Island in 2016 and she is one of the few loggerheads that stayed in one zone to lay her nests – all in Zone 6. Her other 3 nests produced a range of results. The last nest she laid had a 0% hatch success rate (the percentage of eggs in the nest that hatch), however

this nest did have some wash overs (the nest got wet which is not good). However, her 2nd and 3rd nests had hatch success rates of 94% and 46%. Maybe she just forgot a crucial step before laying the first nest.

Finally, look at Mother CC008507. She was first identified by DNA in 2016 and laid nests on Hunting Island 4 times this year. A new mother, but perhaps not a mature one yet. She may need help or have a medical issue. All of her 4 nests had hatch success rates below 5%. In fact, 3 of the 4 nests she laid had 0% hatch success rates. She laid nests in Zones 3, 5, 6 and 6. Maybe she will figure it out in later years, or perhaps she is still a bit young, or perhaps there is a flaw in her makeup. Let's hope we see her again in 2 to 3 years and her hatch success rates are above average for loggerheads on our beach.

Thanks to Your Efforts!!

By a vote of 50-49, the bill that would disallow communities from banning plastic bags failed in the SC House, and debate is ended for this year.

All your phone calls paid off. Thank You!



McNair Center for Sea Turtle Research and Conservation

By Samantha Mills, Major Gifts Office, South Carolina Aquarium

THE MARINE ECOSYSTEMS THAT sea turtles call home are becoming more and more dangerous. The increase in plastic pollution, the impacts of climate change, the loss of habitat, the effects of dredging and the acidification of the ocean all cast into sharp relief the need for this program. We must translate the Sea Turtle Care Center™ into an exploratory effort to assess changes and impacts to our oceans.

The opening of Zucker Family Sea Turtle Recovery™ will present our Aquarium research team with a fresh and fertile research landscape. Thanks to a very generous gift from the Robert and Janice McNair Foundation, the Aquarium has launched the McNair Center for Sea Turtle Conservation and Research. Within the McNair Center (for short), the Aquarium will develop a series of research programs designed to elevate the visibility and scientific voice of our Sea Turtle Care Center™ and to advance critical studies related to other species in which the Aquarium has historically invested.

Led by our most tenured expert, Dr. Shane Boylan, the Aquarium will form an in-house research center, which will forge partnerships with a diverse array of academic, animal care and private and public research agencies.

We will engage with the global dialogue on sea turtle care, and use our existing data to explore new pathways related to healing techniques, as well as sea turtle behavioral patterns that will inform how best to preserve these animals in the long term. These research efforts will include:

- Analyzing the data we've collected over the past 16 years for application to collaborative papers, produced in partnership with select international institutions
- Conducting physiology research using our exercise pool to assess improvements in the health of patients in advanced stages of rehabilitation
- Using the unprecedented technologies in Zucker Family Sea Turtle Recovery™, including our unique exercise pool and our on-site CT scanner, to identify and analyze injury and illness trends and to guide experimental veterinary techniques
- Linking our sea turtle impaction data to the effects of plastic pollution, yielding professional papers that will drive awareness of the role of microplastics in the health of animals, humans and the environment



Friends of Hunting Island Sea Turtle Conservation Project Year End Report 2016

By Dory Ingram, FOHI Sea Turtle Conservation Project Coordinator

IN MAY 2016, THE FOHI Sea Turtle Conservation Project trained and certified 174 volunteers, of whom 65 were new. This was the first year that the Project required all volunteer registration to be online, and the registration process was dramatically improved by this innovation. Several enhancements to our registration system will be added in 2017. Registration will begin this year on January 1 and continue through March 31.

An important initiative began on July 10, when a meeting was held for all volunteers who wished to be involved in nest inventories. At that meeting, it was announced that Valerie Solze had accepted the new position of Inventory Coordinator for the sea turtle project. Working with sign-up sheets completed by the volunteers, Valerie designed and implemented a system that ensured that new inventory volunteers received hands-on training by observing experienced volunteers, and at the same time volunteer tasks were assigned in such a manner that all volunteers had an equal opportunity to participate. In addition, new safeguards for crowd management were put in place to protect live hatchlings released at inventory from accidental injury by spectators. The improvements in the manner in which public inventories are conducted have been a great success, and Valerie is to be congratulated for her dedication.

We conducted 27 public evening sea turtle nest inventories in 2016. The number of guests on morning patrols and/or public inventories in 2016 was 1608, a new record for our project.

The sea turtle season on Hunting Island came to a sudden end with the arrival of Hurricane Matthew on October 8. With Hurricane Andrew and Tropical Storm Julia, four nests were lost. On the morning before the hurricane, volunteers removed the last of the wire cages from the beach and secured them in storage. Beth and Jeremy Glass assisted “Boss on the Beach” Buddy Lawrence in completing this task hours before reporting to their regular jobs, which involved evacuating others to places of safety. Beth and Jeremy deserve our gratitude for their dedication.

At their August 9th meeting, the FOHI Board approved a proposal that was several years in the making to establish the position of FOHI Sea Turtle Patrol Specialist, to ensure continuity within the project and to ensure that an experienced

individual is on the beach with the volunteers at 6 am every morning from May through October. This position is currently held by Buddy Lawrence, who has performed this service as a dedicated volunteer for the past 17 years. With the new position comes a stipend which will be funded exclusively by voluntary donations made by the volunteers in the FOHI Sea Turtle Conservation Project.

On October 27, the FOHI Sea Turtle Conservation Project hosted “Turtle Talk and Tapas Too.” Visitors included sea turtle conservation volunteers and project personnel from Fripp, Harbor, Pritchard’s, and Hilton Head Island, Coffin Point, and Land’s End. The speaker was Dr. Brian Shamblin, Assistant Research Scientist from the Warnell School of Forestry at the University of Georgia.

On October 29, the FOHI Sea Turtle Conservation Project sent volunteers Valerie Solze, Beth Glass, and Jeremy Glass to represent us at the annual Department of Natural Resources end of season gathering in Charleston.

The following figures may be found on seaturtle.org and reflect the results of the sea turtle nesting season on Hunting Island:

Unique Females: 57 (DNA analysis is incomplete as of this report, so the figure may be higher)

Nests: 141

In Situ: 95

Relocated: 46 (32.6%)

Inventoried: 137 (97.1%)

Lost: 4 (2.8%)

False Crawls: 203

Estimated Eggs to Date: 15,073

Eggs Lost: 1218 (8%)

Hatched Eggs: 7959

Emerged Hatchlings: 7225

Mean Incubation Duration (all): 52.2 days

Mean Clutch Count: 110.9 eggs (Relocated Only)

Mean Hatch Success: 52.1%

Mean Emergence Success: 47.9%

Nest Success: 76.6%

Beach Success: 40.9%

Caring for Sea Turtles and Ourselves: Kelly Thorvalson Brings Exciting News From The SC Aquarium To Beaufort County

By Dory Ingram, Coordinator, FOHI Sea Turtle Conservation Project

SPEAKING TO STANDING ROOM only crowds at the Port Royal Sound Foundation Maritime Center and at Green Drinks Beaufort on February 20 and 21, Kelly Thorvalson of the South Carolina Aquarium gave her Beaufort County audiences exactly what they came for: an exciting first-hand preview of the long anticipated Zucker Family Sea Turtle Recovery, the sea turtle hospital expansion opening in Charleston to the public on May 27. Made possible by a \$2.5 million donation from the Jonathan Zucker family as well as other generous donors across the country, the new exhibit will engage aquarium visitors with the sounds and sights of all aspects of sea turtle rescue, rehabilitation, and release. A state-of-the-art augmented reality triage exhibit will allow sea turtle lovers of all ages to bring model Kemp's ridley, green, and loggerhead sea turtles seemingly to "life" in order to diagnose ailments and prescribe treatments for the injured creatures. "Take action" kiosks and a donation station will invite visitors to participate actively and immediately in the conservation of endangered and threatened sea turtles. And best of all, the general public will be able to watch for the first time while aquarium veterinarians and staff provide life-saving care and medical treatment to sick and injured sea turtles from our coastline and from as far away as New England.

As the new Conservation Programs Manager of the South Carolina Aquarium, Kelly also introduced her audiences to three environmental initiatives that they are spearheading under the leadership of Conservation Director, Albert George. These programs include the "Good Catch", a sustainable seafood initiative encouraging customers to "ask before you order" to find out about the origin of seafood on restaurant



Kelly Thorvalson, South Carolina Aquarium at Green Drinks

menus; the "Resilience Initiative for Coastal Education" (RICE) which is bringing communities into conversations about sea level rise through community engagement programs; and "Breaking Down Plastic," a solutions based plastic pollution summit to



be held March 30 at the Charleston Gaillard Center in an effort to reduce the amount of harmful plastics entering waterways.

Friends of Hunting Island was proud to be instrumental in hosting

Kelly during her two day visit. We eagerly await the opening of the new hospital expansion, and we applaud the exciting new programs being developed by the South Carolina Aquarium.

For more information on sea turtle rescue and recovery and to learn how YOU can be involved in the programs and initiatives of YOUR South Carolina Aquarium, please visit scaquarium.org/conservation.

"Caring for sea turtles is ultimately caring for ourselves."

**– Kevin Mills, CEO,
South Carolina Aquarium**