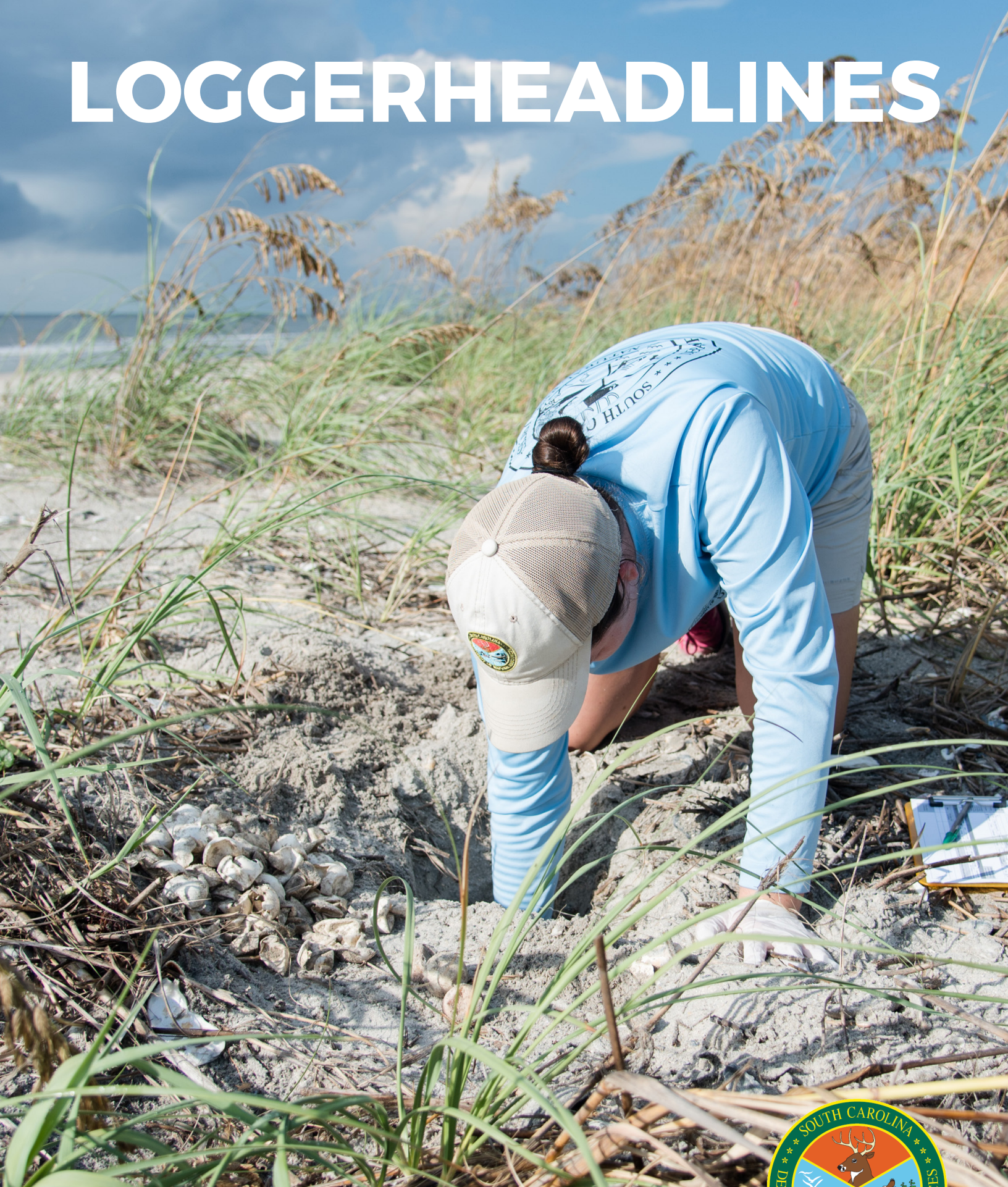


LOGGERHEADLINES



A publication of the SCDNR Marine Turtle Conservation Program



2019 in Review

**Over 1,800
volunteers**

**45,928
hours**

**182,569
miles**

**2,604
relocated
nests**

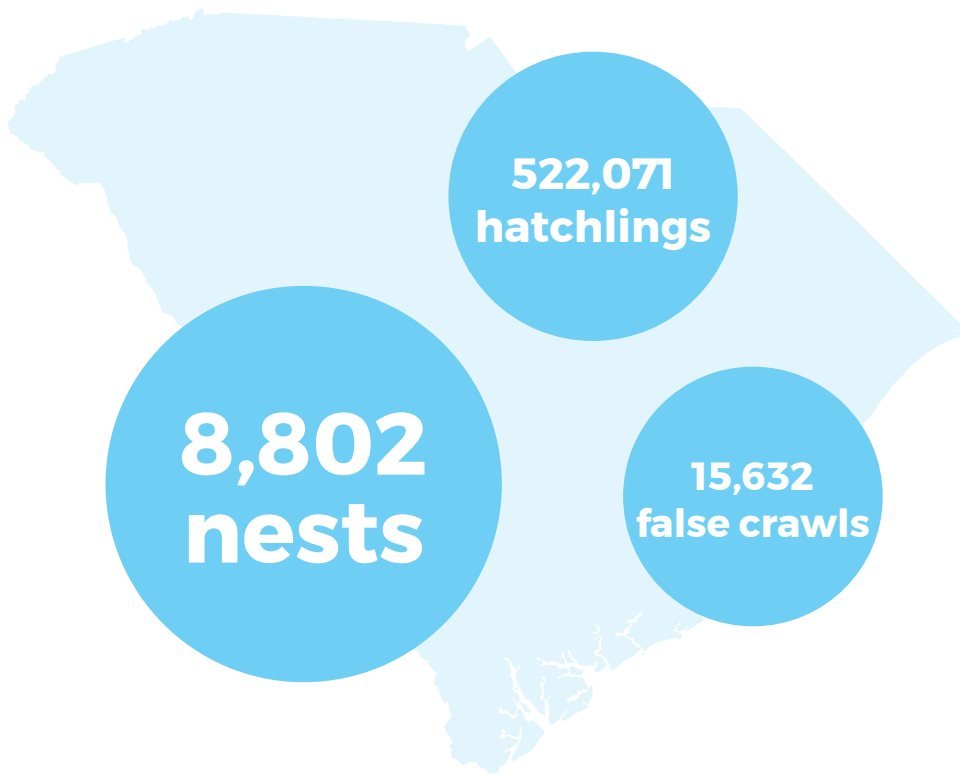
**8,127
DNA
samples**

WOW - the word that comes to mind when I reflect on the 2019 season. We had a record number of loggerhead nests reported, the earliest loggerhead nest in over 40 years of our program, our fourth documented Kemp's ridley nest, our highest number of green nests and more female turtles uncharacteristically nesting during the day. Thankfully, we experienced a low number of stranded turtles despite another hurricane, increased coastal development and artificial lighting on our beach fronts, more boats on the water and more erosion of our barrier islands and nesting habitat.

We survived through both the good and the challenging times for our most successful year to date thanks to our partners, nest protection volunteers and stranding response volunteers. Sea turtle conservation does not happen overnight but requires hard work, commitment to a long-term goal and a strong ethic to preserve our natural resources. We are humbled and grateful to each of you that dedicate your time and energy in service to sea turtle stewardship and the mission of our agency.



— Michelle Pate
*Marine Turtle Conservation
Program Coordinator, SCDNR*



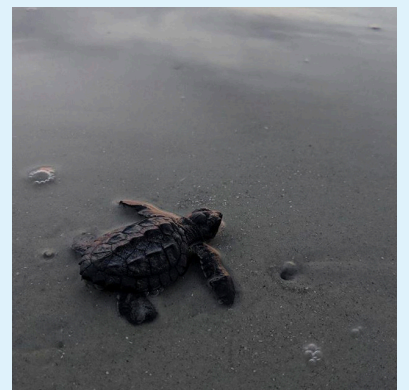
First nest
Apr. 26, 2019, HHI
Kemp's ridley

This turtle was only the fourth Kemp's ridley ever recorded nesting in South Carolina.

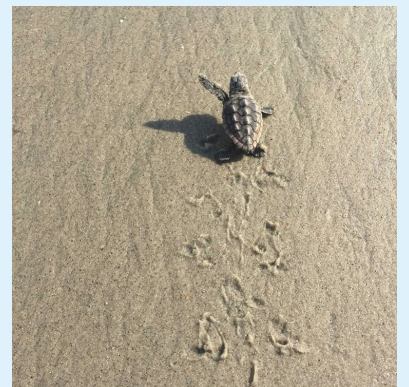
Statewide Nest Count by Beach

Waties Island	27	Folly Beach	145
North Myrtle Beach	34	Kiawah Island	574
Myrtle Beach	31*	Sandy Point - Kiawah	37*
Myrtle Beach State Park	2	Seabrook Island	90
Long Bay Estates	1	Deveaux Bank	3*
Surfside Beach	5	Botany Bay Island	278
Garden City	35	Botany Bay Plantation	327
Hungtington Beach S.P	42	Interlude	23
Litchfield Beaches	40	Edingsville Beach	45
Pawleys Island	39	Edisto Beach S.P	351
Debordieu/Hobcaw	131	Edisto Beach	244
North Island	286*	Otter Island	134*
Sand Island	129	Pine Island	25*
South Island	604	Coffin Point	26
Cedar Island	68*	Lands End	4*
Murphy Island	24*	Harbor Island	96
Cape Island	2,044	Hunting Island	153
Lighthouse Island	1,338	Fripp Island	165
Racoon Key	49*	Pritchards Island	110*
Bull Island	164	Little Capers Island	51*
Capers Island	24*	St. Phillips Island	21*
Dewees Island	28	Bay Point Island	107*
Isle of Palms	57	Hilton Head Island	463
Sullivans Island	15	Daufuskie Island	108
Morris Island	5*	Total	8,802

*Number represents a minimum nest count because these beaches are not surveyed every day.



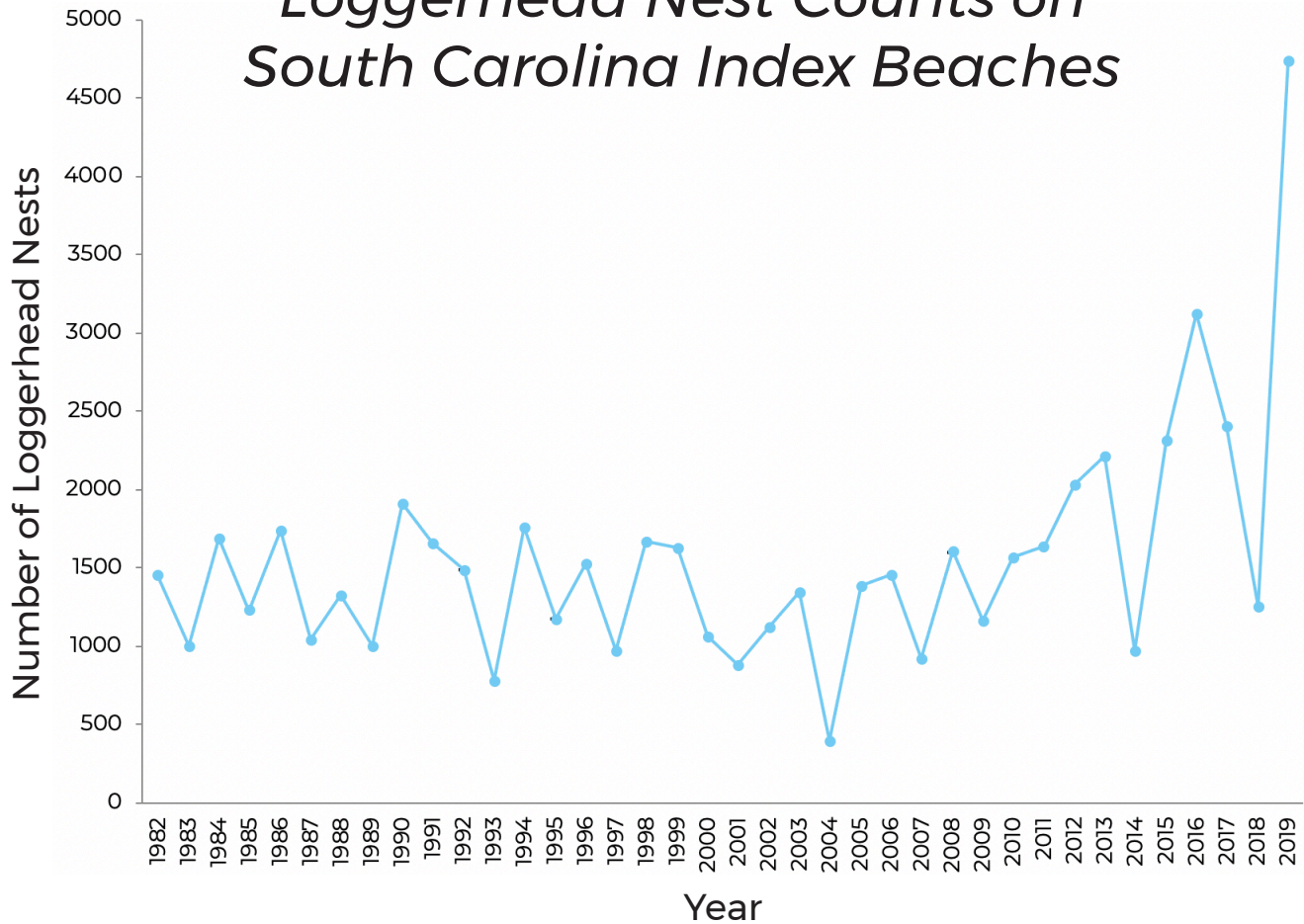
First emergence
Jun. 27, 2019, HHI
Kemp's ridley



Last emergence
Oct. 7, 2019, HHI
Loggerhead



Loggerhead Nest Counts on South Carolina Index Beaches



South Carolina's index beach survey is a subset of our total statewide nest survey (representing roughly 46% of nesting). This survey consists of projects that have conducted standardized data collection of loggerhead nests using ground surveys since 1982 and is used to examine nesting trends over time. Loggerhead nest counts from these six beach projects (South Island, Cape Island, Lighthouse Island, Edisto Beach State Park, Edisto Beach, and Fripp Island) totaled 4,746 for the 2019 season. This graph illustrates the cyclical reproductive pattern of sea turtle nesting and we are seeing the reversal of the long-term declining trend.



DNA Revelations

8,127
DNA samples
in 2019



The SCDNR Marine Turtle Conservation Program continued its participation in the collaborative multi-state research project with the Georgia Department of Natural Resources, North Carolina Wildlife Resources Commission and researchers at the University of Georgia. This year, the large-scale mark-recapture project also included project beaches in northern Florida to look at the maternal DNA from loggerhead sea turtle eggs collected in the area. This genetic fingerprinting provides a different way to identify and track nesting females from the traditional flipper tagging studies conducted on nesting beaches. Read more about the project at: bit.ly/seaturtleDNA



What we've learned:

1 We're finding more big maternal families (cases of mothers and multiple nesting daughters) in South Carolina than expected based on nest count distributions. Of about 6,000 females identified in the early years of the genetics project, we classified 893 as potentially belonging to a mother-daughter pair. Of these 893 turtles, 136 had three or more assigned daughters. Of these 136 mothers, 93 nested in South Carolina, and 57 of those nested at Cape Romain.

2 Large nesting dispersals may be a common occurrence. In 2019, we detected a few females that have been absent from Georgia, South Carolina, and North Carolina but have been nesting in Florida. This may help explain some of the gaps in nesting histories as well as the "one-time" nesters in our records. In 2019, one female who laid a single clutch in South Carolina (Hilton Head Island) laid three more nests in NE Florida. In our full genetic history of this female, we can see her nesting has ranged from Kiawah Island, SC, to St. Augustine, FL.



(Fire)fighting for Turtles

Midway Fire Rescue recently added a new 137-ft ladder rescue truck to its fleet, the tallest of its kind in South Carolina. It is dedicated to Battalion Chief Josh Carney, who passed away in 2018. Assistant Chief Jim Crawford decided to include a sea turtle mural on the truck to additionally celebrate 30 years of SCUTE (South Carolina United Turtle Enthusiasts) service. Designed by local illustrator Paul Combs, the mural depicts a sea turtle holding a rescue tool with 'SCUTE' on his arm, honoring both the life of Carney and the community's countless volunteer hours in the service of sea turtle conservation.

Shedding Light on Turtle Threats

During the summer of 2017, Terri Dahlem of Kiawah Island Turtle Patrol discovered a toy being sold at a local Harris Teeter that posed a threat to nesting sea turtles. The toy consisted of a net with an attached flashlight for nighttime ghost crab hunting on the beach. Dahlem rallied fellow volunteers and worked with the store staff to buy out the entire stock of toys. Volunteers donated the nets to a camp for disadvantaged kids in New York City, and the store pledged to halt new orders of the toy.

After successfully protecting turtles on Kiawah, Dahlem decided to go further. She reached out to the toy company, Illuminet, who agreed to add educational information about sea turtle nesting season to their packaging and to create a red-light version of the product that is safe to use on nesting beaches. They now only sell this version of the toy in coastal stores from Virginia to Florida – another win for lights out! Well done, Kiawah Island Turtle Patrol!

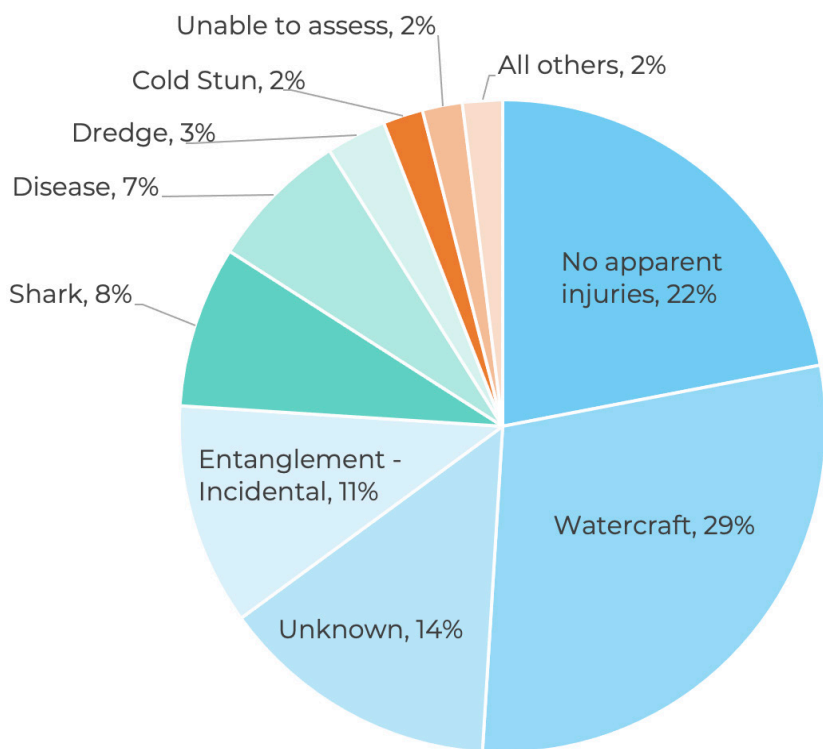


Stranding & Rehabilitation



One hundred thirty-four sick, injured, or dead sea turtles washed ashore in South Carolina during 2019. This represents a decline of approximately 36% compared with stranding events reported during 2016-2018 (which ranged from 205-214 stranded turtles yearly). The stranded turtles included 63 loggerheads, 38 greens, 30 Kemp's ridleys, 1 leatherback, and two turtles of unidentified species. Twenty-nine of the 134 sea turtles stranded alive (21.6%; 14 greens, 8 Kemp's ridley, 7 loggerheads). Twenty-five turtles were admitted to the South Carolina Aquarium Sea Turtle Care Center. Twelve of these were successfully released following rehabilitation, while nine remain under rehabilitation, and four turtles died. Three additional live-stranded turtles were released on-site after stranding, while one turtle died during transport.

Probable cause of stranding for 134 sea turtles in 2019



Tracking Turtles



Flipper & PIT tags

SCDNR's Marine Turtle Conservation Program tagged 22 turtles in 2019. Additionally, five cold-stunned turtles that stranded in Massachusetts and were rehabilitated at the South Carolina Aquarium were also tagged prior to release. Finally, a two-year-old juvenile green turtle used as an educational ambassador at Riverbanks Zoo in Columbia, SC was tagged and released. Tagging these turtles will allow biologists to track their progress should they be encountered again. The status of previously tagged turtles who were encountered either through nesting programs or stranding response during 2019 are listed below:

Tagged Turtles	Original Tag Location	Recapture Info	Time and Distance from Original Nesting Location
Loggerhead - Nesting	Wassaw Island, GA on 5/30/2011	Alive on 6/1/2019 nesting on Kiawah Island, SC	8 years & ≈70 miles
Loggerhead - Nesting	Wassaw Island, GA on 6/23/2013	Alive on 7/21/19 false crawl at Hunting Island State Park, SC	6 years, 1 month & ≈45 miles
Loggerhead - Nesting	Wassaw Island, GA on 5/27/2014	Alive on 5/31/2019 nesting on Hilton Head Island, SC	5 years & ≈25 miles
Loggerhead - Nesting	Wassaw Island, GA on 6/2/2019	Alive on 6/17/2019 nesting on Coffin Point, St. Helena Island, SC	15 days & ≈50 miles
Loggerhead - Nesting	Wassaw Island, GA on 6/7/2019	Alive on 7/4/2019 nesting on Edisto Town Beach, SC	27 days & ≈60 miles
Loggerhead - Stranding	Jekyll Island, GA on 5/23/2017	Dead on 9/26/2019 on Sullivan's Island, SC	2 years & ≈145 miles
Loggerhead - Stranding	St. Lucie Power Plant, Jensen Beach, FL on 7/24/2017	Dead on 6/13/2019 on Morris Island, Charleston Harbor, SC	1 year, 10 months & ≈390 miles





Satellite tags



Picture authorized by NMFS
Section 10(A)(1)(a) permit 19621

The **SCDNR In-Water Sea Turtle Research Program** continued its full regional survey (Winyah Bay, SC to St. Augustine, FL) in 2019 under the leadership of Mike Arendt. The team completed 244 trawling events between May 28 and July 25, capturing one adult female green, 62 loggerhead, and 13 Kemp's ridley sea turtles. Only two sea turtles captured in 2019 were previously tagged by our survey, both of which were recaptured in close proximity (off Brunswick, GA)

to where they were originally tagged three to seven years prior. In 2019, one loggerhead sea turtle was captured and identified as a turtle previously tagged by the SCDNR SEAMAP program.

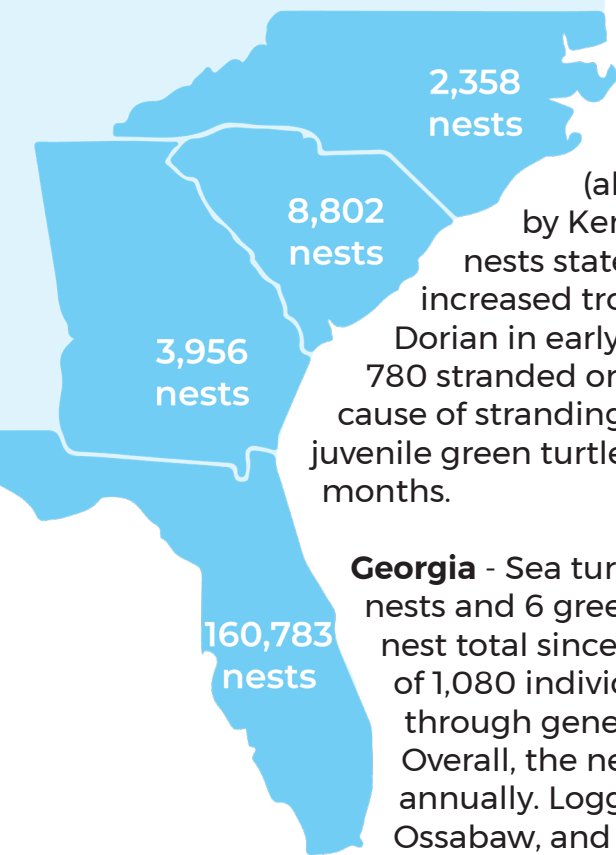
Despite a relatively low capture rate for sea turtles in 2019, most turtles appeared healthy and only one, a Kemp's ridley, was sent to shore for rehabilitation (at the Georgia Sea Turtle Center) for a severely cracked plastron. Fortunately, that injury healed quickly and the sea turtle was released 72 days later.

In 2019, SCDNR biologists attached satellite transmitters to four Kemp's ridley sea turtles, but unfortunately, tracks were short (27 to 51 days). They obtained their first-ever green sea turtle satellite telemetry track in 2019; this animal stayed within the range of the trawl survey for the first 24 days, was lost from tracking for a week, and then re-appeared off central Florida, where it remained for the next 37 days. On August 26, this animal took a steady southerly track and traveled from 28.5°N to 25.8°N during the next five days, after which the track was unfortunately lost, coincident with Hurricane Dorian. A satellite transmitter placed on a juvenile loggerhead sea turtle on June 3, 2019 continues to transmit erratically as of January 21, 2020; this sea turtle remained near Calibogue Sound, SC for most of the tracking period and appears to be spending the first part of winter off northern Florida.

What we've learned:

- 1** Although latitudinal seasonal migrations do occur, longitudinal seasonal movements are more common for loggerhead sea turtles found on the inner shelf during summer.
- 2** Loggerhead sea turtles tend to remain local with a diverse diet, while Kemp's ridleys wander between foraging areas where they reside and appear to pursue specific prey.
- 3** Limited data have been collected for green sea turtles in our coastal trawl survey, and a companion estuarine study could help to better understand the coastal movements of this species.

Neighboring States



North Carolina - During 2019, there were 2,293 loggerhead turtle nests recorded in NC, the highest annual number on record since statewide surveys began in the mid 1990s. There were also 63 green turtle nests (also the highest annual total on record) and two nests laid by Kemp's ridley turtles. Overall hatching success of sea turtle nests statewide was 62.1%, with a seasonal decline associated with increased tropical storm activity in late summer, including Hurricane Dorian in early September. The NC Sea Turtle Project also documented 780 stranded or incidentally captured turtles in NC waters. The biggest cause of stranding was cold stunning, which frequently affects smaller juvenile green turtles that remain in NC estuarine waters well into winter months.

Georgia - Sea turtle cooperators located a total of 3,950 loggerhead turtle nests and 6 green nests on Georgia beaches this year, which is the highest nest total since comprehensive surveys were established in 1989. A total of 1,080 individual females were identified nesting on Georgia beaches through genetic analysis of egg samples collected by cooperators. Overall, the nesting data shows a significant increasing trend of 3.8% annually. Loggerhead nesting totals were highest on Cumberland, Ossabaw, and Blackbeard Islands in 2019.

Florida - The Florida Statewide Nesting Beach Survey program documents nearly all sea turtle nesting in Florida on 800 miles of coastline. Finalized nest counts for the SNBS program for 2019 are as follow: 106,652 loggerhead nests, 53,015 green turtle nests, 1105 leatherback nests and 11 Kemp's ridley nests. Green turtle nest counts have increased eightyfold since counts began in 1989 - a trend that differs dramatically from that of the loggerheads that nest on the same beaches. Leatherback nest counts increased exponentially from 1989 until 2014 but numbers have been declining since 2014.

Find out more about these programs:



bit.ly/ncturtles



bit.ly/gaturtles



bit.ly/flturtles

Citizen Science



**Survey123
for ArcGIS**

ESRI

OPEN

We are excited to announce the release of our new smartphone application for reporting sightings of healthy sea turtles in South Carolina

waters. Information collected by everyday “citizen scientists” using the app will complement our nesting and in-water marine turtle projects and provide valuable information regarding the abundance, locations, and life histories of sea turtles. This information may help improve management and decision-making in lesser-studied estuarine and coastal marine waters of South Carolina.

Through the application, users can share the location and photos of the sighting along with additional information about the animal, such as size, species, and observed behavior. The application also features an educational component, providing users with background information about our program and a “field guide” to assist with the identification of sea turtle species. We want to give a special thanks to Joe Lemeris and Evan Cook at SCDNR for assisting with the development of the application.

Start Using the App on Your Smartphone:

1. Download the “Survey123 for ArcGIS” App on your phone.
2. Use the camera on your phone to scan the QR code or open this link in your web browser: arcg.is/1mKHb00
3. Now the sea turtle reporting form will be ready to use anytime, even in areas with no cell reception!



Beyond Turtles

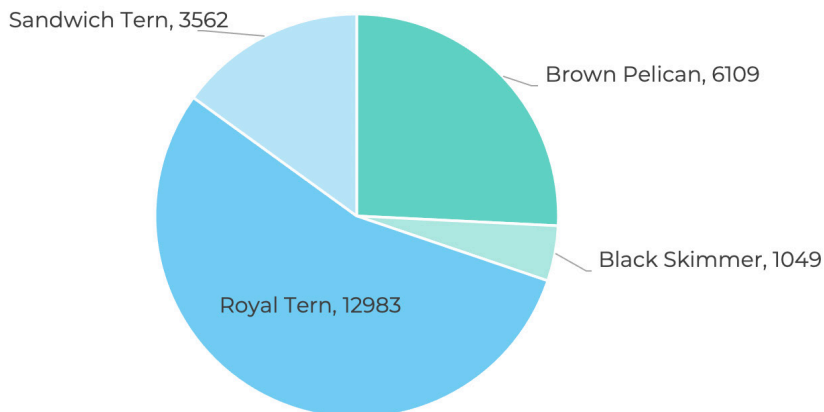
Seabirds

All nine species of seabird that regularly nest in South Carolina are listed as Highest Priority Conservation Status.

“Although numbers were up slightly this year, predation, overwash, and disturbance affected productivity of several species,” said SCDNR Biologist Janet Thibault.

Nine species of seabirds regularly nest in South Carolina in large colonies of hundreds to thousands of pairs. Each spring and summer, staff biologists survey islands to determine the number of nesting birds of each species. Biologists fly over SCDNR Seabird Sanctuaries to photograph nesting areas and count seabird nests from compiled photos. This season, biologists also obtained aerial images by drone at several properties.

Seabird Nest Count in 2019



Bird Key Stono Seabird Sanctuary had the most pelican nests again this year, with 2,270 nests, followed by Deveaux Bank, with 1,701 nests. For the past several years, Crab Bank Seabird Sanctuary in Charleston Harbor has had no birds nesting on it due to erosion. Efforts are underway to renourish the island with material from the harbor channel deepening. Information about the project can be found at: www.sccoastalbirds.org



Marine Mammals

South Carolina continued to experience an above-average number of strandings in 2019, with 66 animals being reported. NOAA and the SC Marine Mammal Stranding Network work to understand the cause of death of stranded mammals so that they can take informed actions to protect marine mammals.

A mass stranding of pilot whales on Edisto that caught the attention of locals in September proved to be a group of animals that had stranded in Georgia earlier in the week. The number of dolphins found entangled in crab pot buoy lines went down this year to 3 from a record high of 8 in 2018. However, this number is still above average and, in response, two information and fact-finding exercises were held with fishermen and state and federal agencies to try to determine the source of the problem and a course of action. One dolphin was found mutilated on Cape Island and another observed with past rope wounds. Three of the dead dolphins were well-known residents of the Charleston estuary that had been sighted since the mid-1990s. Two young dolphin that died were offspring of well-known females in the area.

NOAA in Charleston would like to thank the sea turtle volunteers who assisted during 2019 and welcomes any members who would like to become volunteers for the SC Marine Mammal Stranding Network, particularly in Charleston County, to contact Michelle Pate, Wayne McFee (wayne.mcfree@noaa.gov), or Rob Young (ryoung@coastal.edu). We would also like to welcome Brooke Brown who has joined Lauren Rust with the Lowcountry Marine Mammal Network, which is poised to take on more responsibility within the stranding network.



Strandings in 2019

- 54 Bottlenose dolphin
- 3 Pygmy sperm whale
- 1 Dwarf sperm whale
- 1 Kogia spp.
- 5 Short-fin pilot whale
- 1 Blainville's beaked whale
- 1 Atlantic spotted dolphin



Our Team



Michelle Pate
Coordinator



Charlotte Hope
Wildlife Biologist



Jeff Schwenter
Wildlife Biologist

2019 Seasonal Staff



Abbie King and Michelle Sparks on Botany Bay Plantation WMA
Brendon Viquez, Courtney Miller, and Perry Fennell in Charleston
Madelyn Gilroy and Mary Ware at the Tom Yawkey Wildlife Center

In Memorium



Betty McMahon
Kiawah Island Turtle Patrol
1948-2020



Robert (Bob) Frantom
Waits Island Turtle Team
1937-2019



Holley Miles
Daufuskie Island Turtle Team
1955-2018



Nancy Houser
Isle of Palms Turtle Team
1937-2019



Nancy Mercurio
Waits Island Turtle Team
1936-2019



Kathey O'Connor
Isle of Palms Turtle Team
1940-2018

Gayle Woodward
Isle of Palms Turtle Team
1962-2019

The SCDNR Marine Turtle Conservation Program



Support Our Mission

By purchasing our specialty license plate, you can help continue sea turtle conservation in South Carolina. Get your Endangered Species license plate from the SCDMV in person or online today: bit.ly/endangeredspeciesplate

The South Carolina Department of Natural Resources prohibits discrimination on the basis of race, color, gender, national origin, disability, religion, or age. Direct all inquiries to the Office of Human Resources, Post Office Box 167, Columbia, SC 29202.

This program is funded in part with grants from NOAA Fisheries and the US Fish and Wildlife Service under Section 6 of the Endangered Species Act. Data presented in Loggerheadlines are not to be used in any publication, product, or commercial application without prior written consent of the data owner.

