FINAL REPORT

South Carolina State Wildlife Grant F22AF03776

South Carolina Department of Natural Resources

Reporting Period: January 1, 2023 – December 31, 2023

Project Title: Pilot project to document presence of sea turtles in South Carolina estuarine waters to reduce impacts of watercraft on endangered and threatened sea turtles

Project Approach and Need:

The South Carolina Department of Natural Resources (SCDNR) Marine Turtle Conservation Program (MTCP) is tasked with management of endangered and threatened sea turtles in South Carolina, to include monitoring the status of populations and determining the cause of mortality. There is a need to expand our knowledge of the presence of sea turtles in interior estuarine areas to enhance our management.

South Carolina is an important foraging ground for juvenile sea turtles including threatened loggerhead and green sea turtles as well as the endangered Kemp's ridley sea turtle. In addition, endangered leatherback sea turtles migrate off South Carolina twice a year and at times are observed within our nearshore and estuarine waters. All 4 turtle species are designated as Highest Priority for conservation action in South Carolina's State Wildlife Action Plan (SWAP 2015). These species are federally listed as either threatened or endangered worldwide and are protected by the IUCN CITES Act, the Endangered Species Act of 1973, and the South Carolina Nongame and Endangered Species Conservation Act of 1975. The Recovery Plans for each of the 4 sea turtles—Loggerhead, Green, Kemp's Ridley and Leatherback—lists Recovery Tasks where the "responsible party" is the South Carolina Department of Natural Resources (NMFS & USFWS 2009, 1991, 2011 and 1992).

No direct, formal estuarine survey exists for determining the full extent of sea turtles inhabiting our waters, but rather opportunistic data collection relies on bycatch from SCDNR fishery-independent monitoring, stranded turtle counts from the South Carolina portion of the federally established Sea Turtle Stranding and Salvage Network (STSSN) managed by the MTCP, and anecdotal observations reported by biologists and the public. Over the past 40 years, looking at both bycatch and stranding datasets, there has been an observed increase in the numbers of juvenile Green and Kemp's Ridley sea turtles present in South Carolina waters.

The MTCP has a need to build and establish partnerships with businesses such as marinas and docks as well as ecotour operators who operate within the inshore estuarine environment. Coastal human populations and watercraft ownership continue to increase across South Carolina. As a result, watercraft interaction continues to be a cause of injuries and mortality for threatened and endangered sea turtles in South Carolina. Therefore, there is a need to reduce the number of interactions between sea turtles and watercraft. It is common for boaters—many of whom are new to boating and coastal waters, especially in estuarine and nearshore areas versus offshore—to be unaware of the marine wildlife inhabiting those areas and the potential negative effects their boating practices might have on these protected species.

Objective: Improve current outreach efforts, including building awareness in South Carolina of sea turtle conservation needs, linking regional and local conservation goals, and providing guidance about sea turtle conservation needs and opportunities.

Accomplishments: Resources provided by the SCDNR Clean Vessel Act (CVA) staff allowed SCDNR MTCP investigators to identify coastal marinas with and without CVA partnerships. Aluminum signage was provided to CVA biologists for their "Clean Marina Workshop" held on August 17th so that marina representatives in attendance would have the opportunity to take signs back with them to post; 6 marinas took advantage of this opportunity. On September 28th, 2023, the CVA Outreach Biologist and MTCP Biologist/Co-investigator, worked in partnership to visit 4 marinas in Horry County and meet with dock masters or managers working at those marinas.

Five formal presentations were made throughout the reporting period. Two presentations were conducted for approximately 40 total students at Coastal Carolina University on February 2nd, one presentation for 30 members of the Sail & Power Squadron of Beaufort on February 14th, one presentation for approximately 20 members of the Charleston Cruising Club on April 5th, and one presentation for approximately 35 members of the Charleston Yacht Club on September 14th. While the length and main topics of these presentations varied, the consistent portion remained to discuss best practices on the water to mitigate fatal watercraft interactions, as well as advertising the existing Survey123 sightings form and website. Laminated signage was provided to these groups at the conclusion of the presentations. In addition, groups such as the Charleston Yacht Club operate out of Charleston City Marina where 3 aluminum sighting signs are posted.

SCDNR MTCP co-investigators attended two tabling events. The first being the multi-day Southeastern Wildlife Exposition (SEWE) between February 17th through 19th. The SCDNR Marine Resources Division (MRD) staffs a table at this event that provides a multitude of outreach material and information. An aluminum sign and laminated signage was available at these tables so that attendees could learn more about the signage. Staff operating the table could explain the importance of the signage and how to utilize the QR code to send the user to the sighting's webpage. This event was estimated to have over 40,000 attendees this year. The second tabling event took place at the SCDNR Marine Resources Division Open House on April 22nd, an event open to the public that hosted an estimated 1,900 people. Each SCDNR group operating out of the Marine Resources Division at Fort Johnson had the opportunity to showcase their program and subsequent research and/or work. This included the SCDNR MTCP that had our own table and had an aluminum sighting sign on display.

Significant deviations: No deviations.

Objective: Analyze spatial and temporal presence of sea turtles in coastal and estuarine waters to determine habitat usage in inshore estuarine environments.

Accomplishments: The SCDNR Marine Turtle Conservation Program worked in conjunction with MRD media staff to improve existing signage (Figure 1) with the goal of raising awareness about the presence of threatened and endangered sea turtle species inhabiting South Carolina's

tidal waters. Signage also provided easy access, in the form of a QR Code, to the updated MTCP sea turtle sightings website through the ArcGIS Survey123 program. Scanning the QR Code with the camera app on any smart phone takes the reader to the webpage where they can submit data pertaining to an observance of healthy, free-swimming sea turtles. Public reporting of sea turtle species in coastal habitats allows SCDNR MTCP staff to better understand spatial presence and habitat utilization of these protected species. Further, bold messaging on the signage indicates wildlife and boaters share the same inshore waters. Signage was distributed among coastal stakeholder groups and via selected placement at high-traffic, popular coastal marinas and boat landings. Optimized signage placement increases understanding, elevates these species in the forefront of public awareness, and potentially alters boater behavior thereby decreasing the chances of a watercraft interaction.

Signage was printed in 3 different formats and sizes: 50 signs were produced at 18 inches by 24 inches on .032 grade aluminum meant to withstand harsh weather conditions and be large enough to be seen by passing watercraft; 100 signs were produced at 9 inches by 12 inches on medium gauge plastic meant to withstand outdoor conditions and be seen by those utilizing piers and/or boat landings; and a minimum of 38 signs were produced at 8 inches by 11 inches on laminated paper to be utilized by businesses in coastal communities and/or clubs with members operating on the water. As of this report, 33 aluminum signs have been distributed to 24 locations throughout the coastal counties of South Carolina to include: 21 marinas and/or docks, 2 piers, and 1 boat landing. Distribution of signage was conducted by SCDNR MTCP Co-Investigators, in partnership with the SCDNR Clean Vessel Act Program (CVA) and the SCDNR Coastal Inventory Distribution System (CIDs).

Aluminum Sign Location and Quantity

County	Location Name, Type	Date of Distribution	Number of Signs
Beaufort	Long Cove Club, Marina	8/17/2023	1
Beaufort	Harbour Town Yacht Basin, Marina	May 2023	2
Beaufort	Wexford Harbor Marina	9/14/2023	1
Beaufort	Shelter Cove Marina	9/14/2023	2
Beaufort	Safe Harbor Port Royal Marina	9/15/2023	1
Beaufort	Dataw Marina	9/15/2023	1
Beaufort	Fripp Island Marina	9/15/2023	1
Beaufort	Safe Harbor Beaufort Marina	9/15/2023	1
Beaufort	Hunting Island State Park Pier	9/15/2023	1
Colleton	The Marina at Edisto Beach	6/11/2023	1
Charleston	Harborage at Ashley Marina	4/12/2023	1
Charleston	Safe Harbor Bristol Marina	3/30/2023	2
Charleston	Safe Harbor Charleston City Marina	3/30/2023	3
Charleston	St. Johns Yacht, Marina	8/17/2023	1
Charleston	Cooper River Marina	8/17/2023	1

Charleston	Ripley Light Marina	8/17/2023	1
Charleston	Dewees Island Dock	July 2023	1
Charleston	Fort Johnson Boat Slip	8/23/2023	2
Charleston	Folly Landing	4/12/2023	1
Georgetown	Heritage Plantation Marina	8/17/2023	1
Horry	Cricket Cove Marina	8/17/2023	1
Horry	Marina at Dock Holliday's	9/28/2023	3
Horry	Barefoot Resort Yacht Club & Marina	9/28/2023	1
Horry	Cherry Grove Marina	9/28/2023	2

Figure 1. SCDNR signage was created to alert watercraft users of sea turtles utilizing waterways.

Laminated signage was provided to 25 coastal businesses throughout the cities of Hilton Head and Beaufort, as well as to three boating clubs in Charleston and Beaufort counties.

Watercraft interaction continues to be the number one cause of mortality for sea turtles in our waterways; however, as we continue to garner reports of these live animals, we can better

understand what habitats they are frequenting and remind those on the water of the best practices they can utilize to mitigate the fatal consequences that boats can have on sea turtles.

Significant deviations: No deviations.

Objective: Assess number, species, and general size class of live healthy sea turtles observed in nearshore coastal and estuarine waters.

Accomplishments:
During 1 January 2023 and 31 December 2023, 48 sighting reports were made through the application. Of the 48, 11 observations were associated with nesting events and not in-water events and therefore were removed from the dataset. The locations of reported sightings are illustrated below (Figure 2) and cover the extent of the coastline. Preliminary analysis shows observations include front beach offshore and inshore habitat usage, from shallow estuarine tidal channels and creeks to shallow water subtidal areas. Future reporting will assist in determining whether these locations remain consistent and indicative of foraging areas. Of the 37 observations, 3 indicated a mating pair (Figure 3). SCDNR staff submitted 8 of the reports with the majority reported by agency boat captains. Sightings received in January and February are not reflective of current outreach efforts described herein as signage was not installed until March of the project year. Size estimation of turtles observed was only reported on 17 (45%) of the sightings across all species, 3 of which were not associated with a species. Size classes for individual species were reflective of what would be expected in South Carolina waters. Further efforts could be made to improve on reporting of estimated size though it needs to be balanced with proper boating best management practices so as not to encourage improper interactions with protected species just to obtain a measurement.

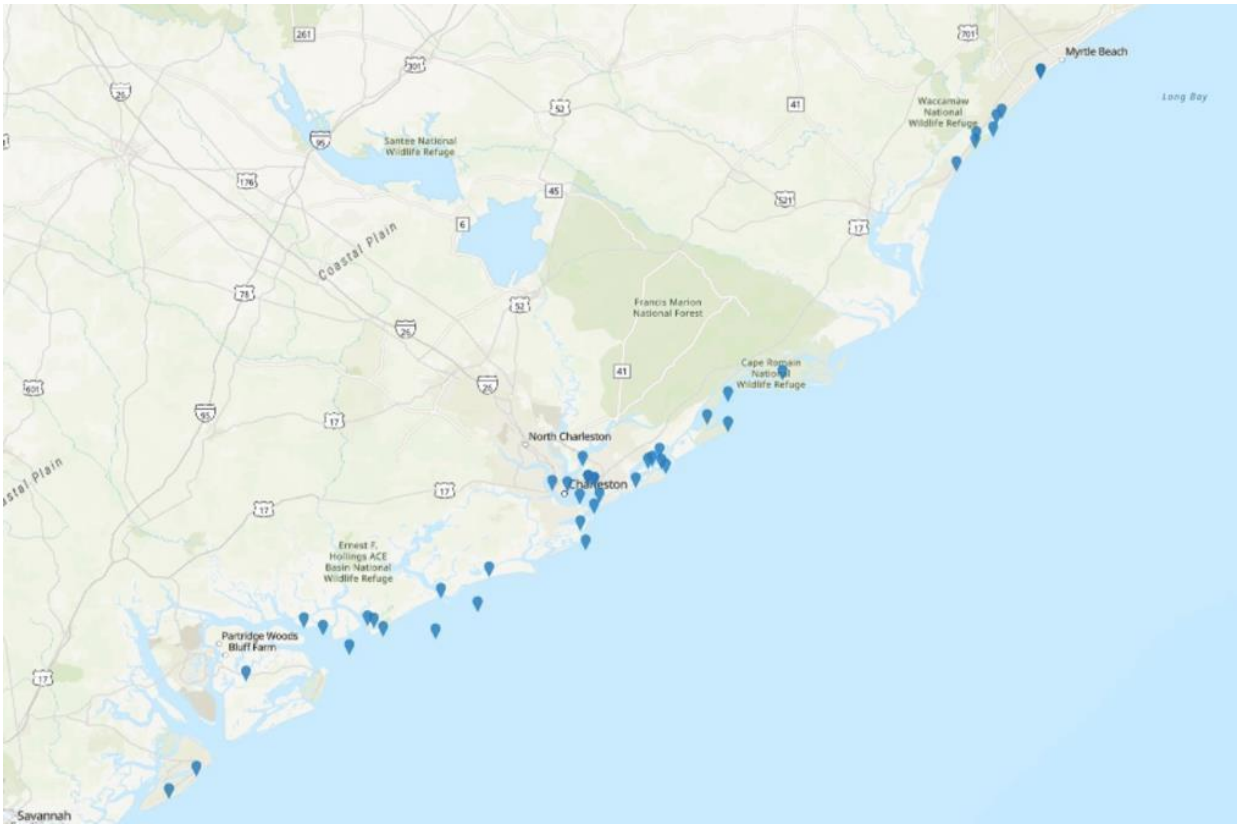

Figure 2. Map of locations where sea turtle sightings occurred in 2023.

For comparison, the number of sightings received in 2022 when no signage was available was 18 with MTCP staff submitting 5 of the reports. Sightings were reported only for April, May and 2 in June. Analysis of the data indicates that the majority of 2023 sightings were made from different observers than those individuals who reported in the previous year and in a far greater portion of the year with 10 out of 12 months with sightings. This would indicate that a broader audience was reached by current expanded efforts.

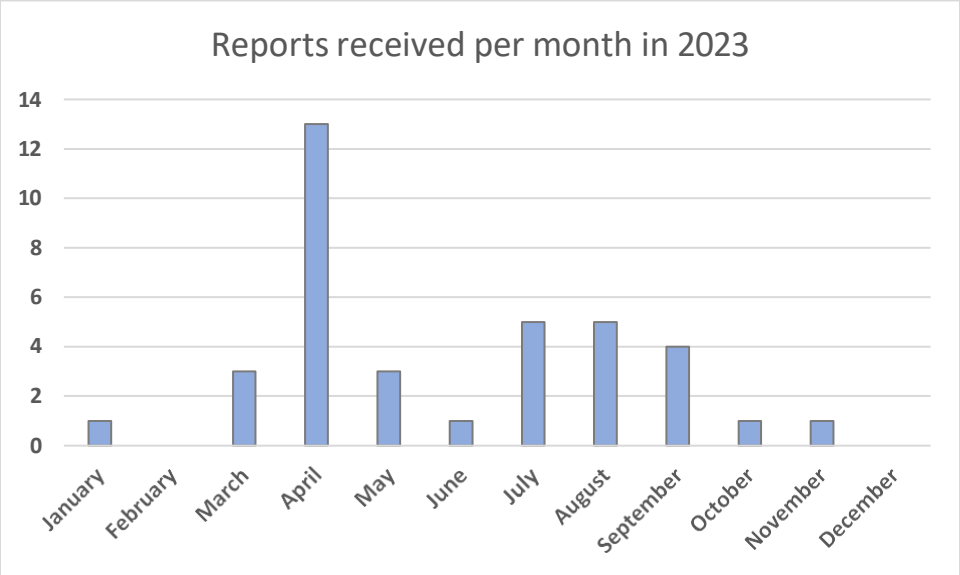

Figure 3. Number of reports received per month for 2023. Eleven of the reports were associated with nesting events (adult female laying eggs or hatchling emerging) and not considered in-water sightings.

The online form includes sample photos for identifying sea turtles observed. Reports based on species identification included 6 Greens, 3 Kemp's Ridleys, 4 Leatherbacks, and 14 Loggerheads. 12 sea turtles of unknown species were reported, although an unknown mating pair is suspected to be Loggerheads (Figure 4).

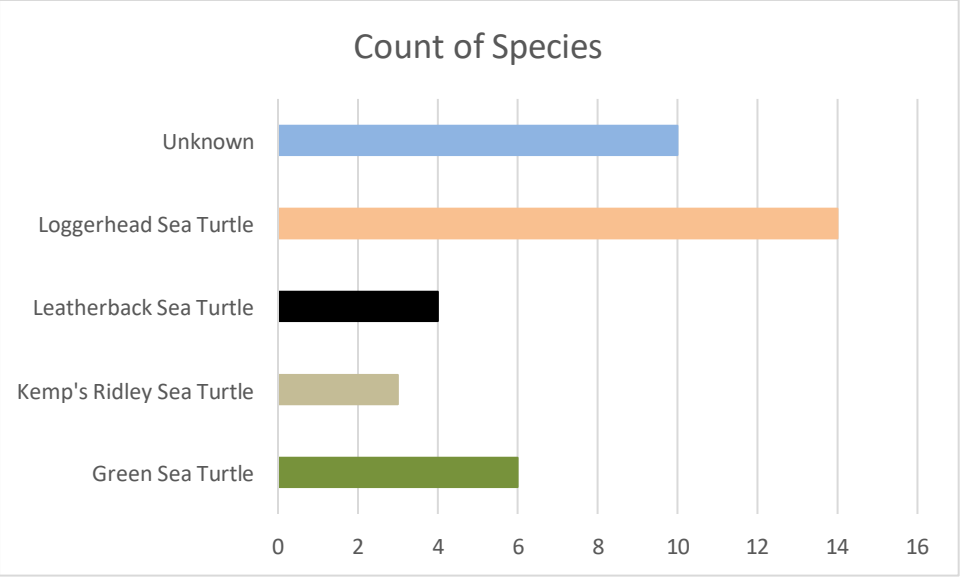

Figure 4. Number of reported individuals (n=37) for each species of sea turtle during the 2023 reporting period.

Significant deviations: No deviations.
Continued advertising of reporting tools available would be conducted to remind employees and the public where to report sightings of sea turtles observed in nearshore and estuarine waters of South Carolina. Since most signage was not installed until later in the year, we expect more observations to be reported for 2024. We will continue to monitor.

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Federal Cost: Funds expended. Financial report under separate cover (425).

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Recommendations: Close the grant.

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