



Santee Coastal Reserve

Wetlands Management Review





Acknowledgements

The South Carolina Department of Natural Resources (SCDNR) appreciates the insights, observations and time generously provided by the wetlands review team of Lew Crouch, Todd Merendino and Michael Prevost; three well-respected practitioners with more than 100 collective years of wetlands management experience. Their ability to thoroughly review Santee Coastal Reserve's wetland management program was made possible by the coordinated collection and presentation of data, candid anecdotal observations and field tours offered by Upper Coastal Waterfowl Project staff. All photos are provided courtesy of Joachim Treptow. Thank you for your dedication to capturing and documenting all aspects of habitat management and work on the Upper Coastal Waterfowl Project.

Wetland Review Team



Lew Crouch

Retired, Wildlife Manager
Cheeha-Combahee Plantation

Lew Crouch is the retired manager of Cheeha-Combahee Plantation, a 12,000+ acre sporting property in the ACE Basin, where for 40 years he oversaw the management of upland habitats with an emphasis on bobwhite quail, wild turkey, doves and deer. He was also responsible for the management of 1,400+ acres of managed impoundments for waterfowl and associated species. Lew holds a Bachelor's of Science degree in biology from Boston State College and a Master of Science in wildlife biology from Clemson University. Lew continues to live onsite at Cheeha-Combahee and provides counsel as needed.



Michael Prevost

Wildlife Manager
Rochelle Plantation

Michael Prevost is the general manager of Rochelle Plantation. In addition to planning and overseeing the implementation of habitat management, capital improvements, maintenance and administrative functions, he serves as a landowner representative on multiple regional conservation initiatives. He has 50 collective years of experience in studying and managing South Carolina's coastal ecology with the U.S. Fish and Wildlife Service, S.C. Department of Natural Resources, The Nature Conservancy and a private sector entity. Michael holds a Bachelor's of Science degree in forestry with a concentration in wildlife ecology and Master of Science degree in wildlife ecology from the University of Georgia.



Todd Merendino

Ph.D., Waterfowl Biologist
Ducks Unlimited

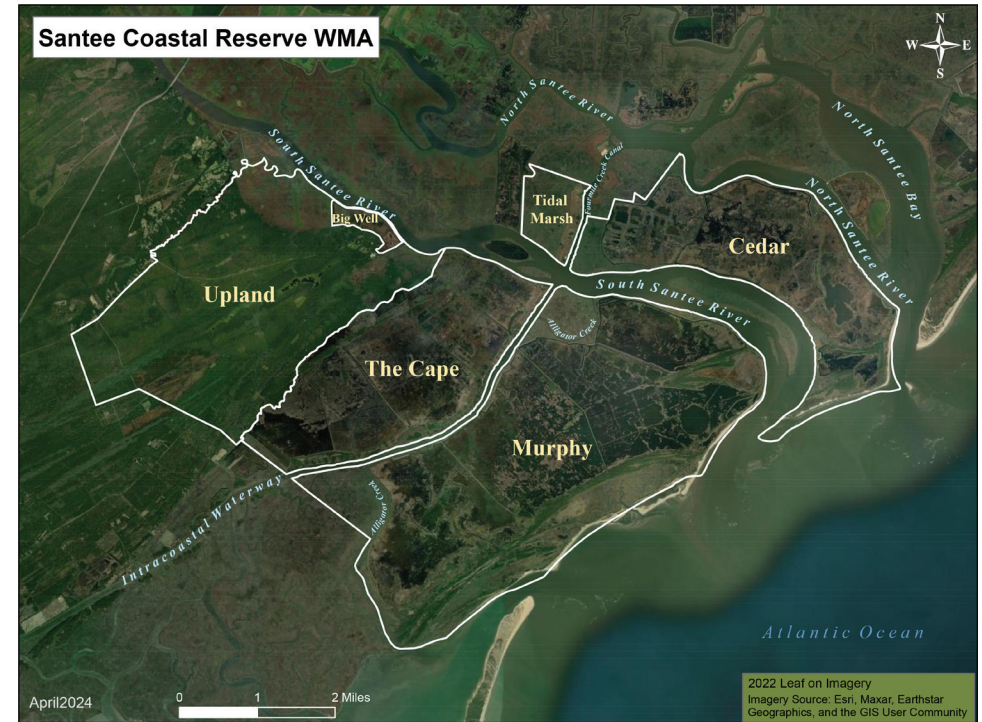
Todd Merendino, Ph.D., is the director of conservation programs for Ducks Unlimited, SW Unit and oversees DU's habitat conservation work in Texas, Oklahoma and New Mexico, with an emphasis on restoration of coastal wetlands and estuarine habitats throughout the Texas Gulf Coast. He works with state, federal, NGO and private landowner partners on a diverse suite of projects ranging

from beneficial use of dredge material, shoreline breakwaters and water-level management projects involving levees and water control structures that are funded with a consortium of federal and state grants, as well as corporate and private partners. Todd holds a Bachelor's of Science degree in wildlife management and a Master of Science degree in wildlife science from Texas Tech University, and a doctorate degree in zoology from the University of Western Ontario.

The management goal for the Santee Coastal Reserve is to maintain and enhance the integrity of the natural resources of the area while optimizing public recreational and educational opportunities.

Property Overview

Santee Coastal Reserve (SCR) is a 24,000-acre wildlife management area, owned by the South Carolina Department of Natural Resources, with unparalleled diversity and natural beauty located at the confluence of the North Santee and South Santee rivers and the Atlantic Ocean. It holds a rich history of active land management and recreational use, including serving as the home of the Santee Gun Club, which owned and managed the property for waterfowl for 74 years before the state of South Carolina acquired the property through The Nature Conservancy in 1974. Santee Coastal Reserve continues to be an incredible gift to the people of South Carolina and an invaluable asset to our state's natural resources.



Upper Coastal Waterfowl staff actively manage more than 5,500 acres of upland habitats, placing a high priority on fire-maintained longleaf stands and the unique species they support. The property's expansive managed wetlands total more than 12,000 acres in three main managed wetland units (Cape 3,665 acres; Cedar Island 3,638 acres; Murphy Island 5,580 acres), each consisting of multiple sub-impoundments. A smaller mainland unit -- Big Well, 115 acres -- is not being hunted due to the small size of the impoundments and proximity to the center of activity on site. Upper Coastal Waterfowl Project staff and equipment are responsible for the maintenance of more than 50 miles of dike and 56 water control structures on SCR while also providing management and maintenance for Santee Delta and Samworth Wildlife Management Areas (WMAs). The expansive size of SCR's impoundments, coupled with the fact that most of the property is only accessible by boat and barge, creates extraordinary management opportunities and challenges. These factors had a direct impact on the feedback for all six areas that the review team evaluated.

SCR is one of the state's most popular Category One Waterfowl Lottery Hunt areas, with a reputation for providing a positive and productive experience. Lottery hunts provide opportunities for an average of 346 duck hunters over the course of 20 to 24 hunts each season, producing an average harvest of 3.98 ducks per gun. Additionally, its location near U.S. Highway 17 between Georgetown and Charleston make it a popular stop for recreational hikers, bird watchers and nature photographers.

BY THE NUMBERS

- 5,526 total acres of upland habitats
- More than 50 miles of dike
- 2 barge slips
- 12,883 acres in three main managed wetland units
- 56 water control structures
- 4 docks



TARGET WATERFOWL PLANT SPECIES



Dwarf Spikerush



Widgeon Grass



Saltmarsh Bullrush

Project Overview

In May 2023, SCDNR engaged a third-party facilitator and a team of three external wetland experts with public and private sector experience to conduct a thorough review of its wetland impoundment management practices. The team was tasked with evaluating the following six areas:

1. Evaluate the **existing management plan** for gaps or misplaced goals.
2. Evaluate **infrastructure** (dikes, water control structures) for unknown needs.
3. Evaluate current **water management and habitat management** regimes.
4. Evaluate efforts to control **invasive and undesirable** plant species.
5. Evaluate **waterfowl disturbance** within the property and in areas immediately adjacent to the property on public waterways.
6. Evaluate **hunt management regimes**.

During two meetings (one web-based teleconference and a two-day onsite classroom session and field tour), the team reviewed and discussed all aspects of Santee Coastal Reserve's wetland management program and documentation including:

- WMA Management Plan
- Maps
- Water management data
- Equipment and staffing
- Budget
- Waterfowl harvest data



Key Takeaways

The wetlands review team was impressed by the diversity, scale and natural beauty of the property, and by the initiative, field expertise and passion exhibited by Upper Coastal Waterfowl staff. Leveraging cloud-based technologies, the SCDNR biologists and field staff access management data in real time, resulting in better informed decisions in the field and ensuring information transfer throughout the team. Given the inability to mow, disc and burn due to site conditions, the staff is commended for their knowledge of the property and maintaining infrastructure in a manner that allows them to successfully leverage water level management as a primary vegetation management tool.

“Wetlands management at Santee Coastal Reserve is a logistical machine. Staff should be proud of the results they’ve achieved by documenting key data and implementing creative approaches in the field.”

– Todd Merendino, Ducks Unlimited



ONE: EXISTING MANAGEMENT PLANS

The current management plan comprised by Upper Coastal Waterfowl staff is comprehensive and flexible, considering annual variations due to budget or weather – both significant short-term weather events (hurricanes, tropical storms) and long-term events such as the impacts of rising sea levels, changes in rainfall patterns, increases in water temperatures, changes in salinities and the intensity/frequency of storms. These weather variations have a direct impact on plant species and infrastructure. Detailed annual planning guides staff and leadership on specific goals within the broader narrative. Regular staff meetings help prioritize immediate needs.



Additionally, the management plan includes a lengthy and detailed narrative about the history and past uses of the property from the early Native American inhabitants through today. The effort to compile and include this information suggests a sensitivity and respect for the property's historical uses that can help guide management decisions today.



TWO: INFRASTRUCTURE

The maintenance of roads, dikes and water control structures is a year-round focus for Upper Coastal Waterfowl staff and complicated by the logistics of barging equipment to two islands. The review team commends staff for the systems and processes they have in place to aggressively tackle the maintenance of their current infrastructure. Each water control structure is labeled and tied to an app, allowing for real-time updates of potential structure failures. Frequently used lumber and hardware are kept onsite, shortening repair time. As water control structures are replaced, staff make design improvements based on the performance of the existing structure.



The review team notes the project leader should objectively prioritize infrastructure maintenance needs among the three WMAs and consider the use of qualified contractors for large scale or complex projects to ensure that maintenance continues uninterrupted when emergencies arise.

The ability to improve infrastructure under a general permit from the Army Corps of Engineers was noted by the review team as a significant positive factor in making repairs in a timely manner. A new boat dock is a significant project that seems to be improving access for maintenance and hunting. While the small Big Well unit is not hunted, its causeway provides the main access to the boat dock for staff, equipment and hunters. Due to its low height and routine flooding, raising the causeway should be a priority.



The review team stressed the need to continue with the aggressive focus on maintenance. The Cape is in the best condition due to extensive work in 2019 made possible by significant grant funding and its ease of access (not an island). Grant funding also helped facilitate improvements on the southern edge of Murphy Island. Cedar Island's condition is dire, with extensive sections of external dike at risk of breaching. Additional water control structures would serve to improve management capabilities and efficiency.

Staff and leadership are encouraged to complete a comprehensive evaluation of Murphy and Cedar Islands and pursue significant funding for infrastructure enhancements, with a focus of urgency placed on Cedar Island. Projects could include deepening interior canals to improve hunt access, adding additional water control structures to improve water management and encourage beneficial plants/discourage invasives, and re-establishing the external dike and berms. Lastly, the team notes that years of re-topping have depleted the material needed to make repairs in the event of an emergency.

“ If you lose your current infrastructure through rising sea levels or major storms, you’ll struggle to replace it. This is a huge investment to protect. ”

– Todd Merendino, Ducks Unlimited



THREE:

WATER MANAGEMENT & HABITAT MANAGEMENT

Managing water levels in wetland impoundments for optimum habitat conditions was described by the review team as “part art, part science.” The raising and drawing down of water at strategic intervals promote the growth of native food plants such as widgeon grass and limits the growth of undesirables such as filamentous algae. The SCR staff collects extensive data, including weekly measurements of salinity, water temperature and water levels at each water control structure and houses the data in an app that can be accessed in the field.



The review team commends staff for this proactive and innovative approach to support their decision-making. The recent work with the Baruch Institute to collect water pH, nutrients and turbidity is a valuable relationship that will yield new insights.

The review team notes that brackish wetland management is a highly specialized type of habitat management. Continued relationships with the private and public sectors are encouraged to enhance existing management practices and develop new techniques, resulting in high quality habitat.

Because of the size of the property and three main units, the review team encourages staff to consider annual, large-scale, aerial vegetation surveys to assess needs and develop responses, monitor habitat trends and gauge response versus investment. Big Well was noted as a unique resource for passive user groups and possible opportunity to secure funding to enhance it for shorebirds.

Overall, the water level and vegetation management are consistent with standard practices. Potential solutions to challenges such as cat clays and turbidity were discussed. Staff is encouraged to try new approaches and allow adequate time to evaluate the effectiveness of the approach.

SCDNR staff report regular visits with other local wetland managers at both SCR and the neighboring properties. These visits often lead to sharing of knowledge, problem solving and small adjustments in management practices. The panel sees an opportunity to continue those visits and discussions as an asset to SCR and SCDNR staff.



FOUR: INVASIVES/UNDESIRABLES

Santee Coastal Reserve, like many neighboring coastal properties, is working aggressively to effectively manage the highly invasive plant, common reed (*Phragmites australis*). This native grass is a member of the reed family that grows quickly into an impenetrable mat, outcompeting other beneficial native food sources and consuming acres of waterfowl habitat in a short period of time. Upper Coastal Waterfowl staff have made significant progress in greatly reducing phragmites using industry-standard methods, including spraying by helicopter, drone and airboat. Additionally, staff acknowledges the challenge of balancing the volume of work between agency resources and external contractors. The review team recommends contractors perform large-scale *Phragmites* treatment on the Cedar and Murphy Island units with staff performing routine smaller-scale treatments.

The review team encourages staff to consider aerial monitoring to supplement their current field monitoring to identify patches of the noxious weed and prioritize treatment before these areas expand to an unmanageable scale. Additionally, staff and leadership are encouraged to partner with other agencies, universities and the private sector for a comprehensive study on managing *Phragmites*.



FIVE: WATERFOWL DISTURBANCE

The scale of Santee Coastal Reserve and the size of impoundments provides significant buffers from publicly accessible properties/waters and affords ample sanctuary areas to waterfowl. Limited disturbance is one of the WMAs most significant assets when considering the quality of hunts. Of note is the value of Big Well to serve the needs/interests of the non-hunting public. Its proximity to the main center of activity provides an opportunity for birdwatching and hiking without disturbing waterfowl and impacting the quality of hunts. Access to the Cape during winter should be limited to managed hunts. Lastly, the visiting team recommends that any discussion to change the hunt regime consider the need for and value of sanctuary areas to limit pressure.



SIX: HUNT MANAGEMENT REGIME



Santee Coastal Reserve is one of the most popular WMAs in the collection of Category One waterfowl areas as demonstrated by the number of lottery applications submitted each year. Staff strives to provide a quality experience while balancing a complex set of logistical challenges that include moving hunters by wagon, three boats captained only by SCDNR staff holding U.S. Coast Guard licensed captain certifications, and small mudboats to place them in areas that were scouted the previous day. In the event of a hunter cancellation, SCDNR's Columbia headquarters works to fill the open space, ensuring that the maximum number of individuals are afforded the opportunity. Joachim Treptow, project leader, shared that the experience is what his team “works all year for” and added that the hunters routinely provide “positive, appreciative” feedback.



The review team noted that despite the wait time to be drawn, the hunter numbers were reasonable based on the accessibility of suitable habitats and the need to minimize disturbance, and noted that the hunts at SCR are a delicate balance between quality and quantity. The team cautioned against increasing hunter numbers without significant changes. Additional areas for hunters could potentially open by cleaning interior ditches to improve accessibility. Cedar Island, particularly Ford and Jordan Marsh sub-units, may support additional hunters, without sacrificing quality experience, after improving the perimeter and cross dikes, installing additional trunks and deep flooding for 1-2 years.

“ Thank you to you and your staff for putting on a wonderful event! Staff were prepared and organized and it showed! Everyone was extremely helpful, courteous, and kind! My son and I had a wonderful experience and he has not stopped talking about how much fun he had! Thanks for all you do to maintain a wonderful venue and retain a professional staff! Again, many thanks for memories for a lifetime! ”

– S. Kelly, Santee Coastal Reserve
Waterfowl Lottery Hunter



Conclusion

Upper Coastal Waterfowl staff provided a comprehensive presentation of the wetlands management program, including illustrations and descriptions on infrastructure and a detailed review of the management strategy for each of the three geographic wetland management units. A thorough field tour further confirmed that SCR is unique among SCDNR Waterfowl Management Areas, offering both exceptional habitat benefits and significant management challenges due to scale and logistical realities.





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