







Broad River Waterfowl Management Area

Wetlands Management Review





Acknowledgements

The South Carolina Department of Natural Resources (SCDNR) is grateful for the candid, professional feedback from three experienced waterfowl practitioners: Frank Nelson, Jonathan Patrick, and Houston Havens, who spent many hours reviewing management plans and conducting onsite reviews with the South Carolina Department of Natural Resources' staff. During their two-day visit, they reviewed not only the Broad River Waterfowl Management Area but also the Clemson and Beaverdam Waterfowl Management Areas. The visiting wetlands review team extends its appreciation to Wildlife Biologist Jake Oates and his team for their thorough and transparent presentation of the property.

Wetlands Management Review Team

Frank Nelson

Frank has worked with the Missouri Department of Conservation for the past twenty-one years. In his current role, he serves as Wetlands Coordinator to support the management of fifteen intensively managed waterfowl areas and specializes in leveraging technology and research to improve habitats.



Jonathan Patrick

Jonathan is the Wildlife Education Center Programs Director for the South Carolina Waterfowl Association. He is responsible for the management of more than eight hundred acres of upland waterfowl impoundments and brings expertise in managing agricultural crops for waterfowl.



Houston Havens

As the Waterfowl Program Coordinator for the Mississippi Department of Wildlife, Fisheries and Parks, Houston works with private landowners and staff to oversee a variety of projects to improve waterfowl habitat, including large-scale impoundment improvements and identifying habitat management deficiencies.





The Broad River Waterfowl Management Area's purpose is to provide high-quality hunting opportunities and habitat for wintering waterfowl.

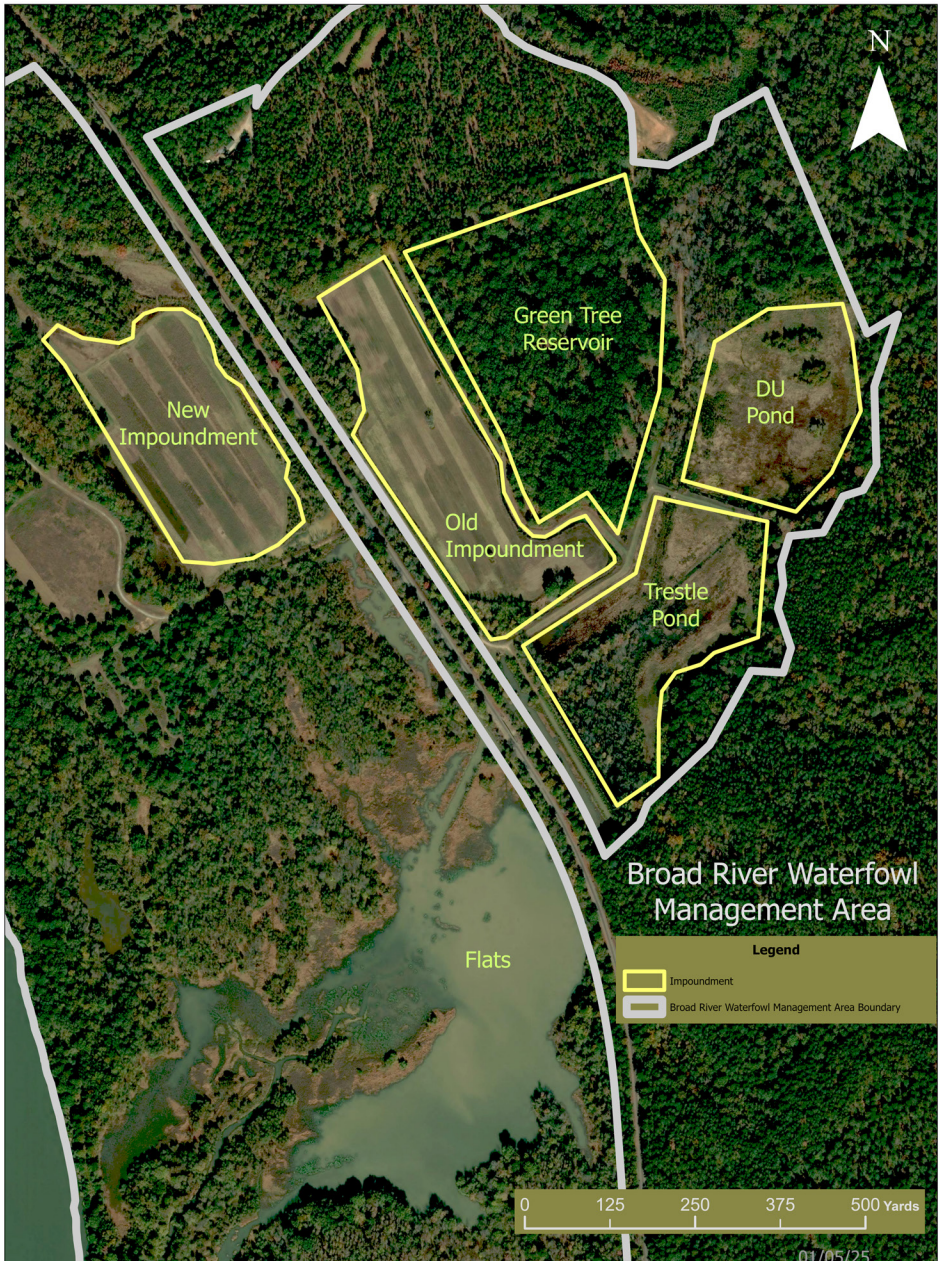
Broad River Waterfowl Management Area is considered an important wintering area for mallards and American black ducks.

Property Overview

The Broad River Waterfowl Management Area is located in Fairfield County along the eastern bank of the Broad River at the mouth of Parr Reservoir, a 4,400-acre reservoir managed by Dominion Energy as a storage reservoir for the V.C. Sumner Nuclear site. Water storage within Parr Reservoir is utilized for power generation and reactor cooling, resulting in daily fluctuations in the reservoir's level. Changes in water level average one to two feet per day, but can be substantially greater. The hydrology and rainfall patterns on this site have changed considerably since it was established in the 1970s. Broad River Waterfowl Management Area is known for its higher-than-average population of mallards, noting that 27 percent of mallards harvested on Category One waterfowl areas in the state are harvested at Broad River Waterfowl Management Area.

The Broad River Waterfowl Management Area consists of the following:

- 126 acres under waterfowl management
- 4 impoundments:
  New Impoundment, Old Impoundment, DU Pond and Trestle Pond
- A 30-acre oak dominant Green Tree Reservoir (GTR) within 72 acres of flooded timber


N
Green Tree
Reservoir
DU
Pond
New
Impoundment
Old
Impoundment
Trestle
Pond
Broad River Waterfowl
Management Area
Legend
Impoundment
Broad River Waterfowl Management Area Boundary
Flats
0
125
250
375
500 Yards
01/05/25

TARGET WATERFOWL PLANT SPECIES



Corn



Smartweed



Chiwapa millet



Rice

Project Overview

In September 2025, the SCDNR engaged a third-party facilitator and a team of three external wetland experts with experience in both the public and private sectors to conduct a thorough review of wetland management practices. The team was tasked with evaluating the following five areas:

1. Evaluate the **existing management plan** for gaps or misplaced goals.
2. Evaluate **infrastructure** (dikes, water control structures) to improve efficiency.
3. Evaluate the selection and success of **planted crops**.
4. Evaluate and make recommendations on **mitigating disturbance.**
5. Evaluate current **water management** regimes and issues.



During two meetings (one web-based teleconference and a classroom session/ field tour), the team reviewed all aspects of the properties' wetland management programs and documentation, including:

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



Key Takeaways

ONE:
EXISTING MANAGEMENT PLANS

The staff and resources dedicated to this site, as well as the staff's willingness to consider all options to improve habitats and strengthen the overall management plan, will ensure ongoing improvement. The management is complicated by waterflow issues that will be addressed later in this report. The review team encourages staff to leverage available technology to collect data and understand patterns that may affect management decisions.

Notably, LiDAR data could be helpful to improve understanding of forest management over time, sedimentation patterns and rates, and water flow. Drones are another tool that could be helpful to treat undesirable species (invasive and woody vegetation), monitor and document storm impacts, and gain a better understanding of why and how waterfowl are using the Flats (a 60-acre area with no water control). The Green Tree Reservoir (GTR) is a unique asset for this area in South Carolina and attracts mallards later in the season, and likely has other unique wetland-dependent flora and fauna. Lastly, the team commends staff for addressing unexpected access issues, resulting in continued use of all portions of the property.



TWO:
INFRASTRUCTURE

The review team praises staff for their attention to detail in ongoing maintenance, as seen in the removal of encroaching debris along the dikes and storm-damaged or downed trees from the GTR.



The work to increase the height of the dike along the GTR has been adequate for water management. Ongoing work in the GTR should include assessing the stand with LiDAR data to determine next steps in forest management, managing undesirable mid-story trees, and implementing periods of no flooding to promote a staged progression of mast-producing trees.

The infrastructure in the New Impoundment is sufficient to support crop cultivation, in times of “normal” rainfall, or to manage moist soil plants.



Moist soil management is one of the most effective and reliable habitat management techniques for wintering waterfowl. Plants such as smartweeds, millets, and sedges produce abundant seeds and wetland conditions support aquatic insects and invertebrates that help meet critical energetic needs of dabbling and diving ducks that winter on the Broad River Waterfowl Management Area.

THREE:
PLANTED CROPS

Soil conditions on Broad River Waterfowl Management Area are highly variable, allowing for both planted crops (in years with favorable precipitation amounts) and moist soil management. In areas suitable for cultivation, the review team recommends interplanting crops in thirds, which could include corn, chufa, and millet, and promoting moist soil management to provide a variety of food sources and cover options within and across years. Because changes in weather patterns may impact crop establishment, the review team recommends maintaining flexibility in the plan and documenting management changes. Managing a portion of each impoundment in natural moist soil vegetation provides flexibility to manipulate small patches to create showy, open water soon after flooding since unharvested, planted crops cannot be manipulated for waterfowl hunting.



The review team also notes the value of crops to provide vertical cover for hunters. Corn works in dryer locations with greater water control, while sorghum sudan can handle wetter conditions.

Sesbania should be monitored and intentionally controlled. Some patches can be beneficial for wind breaks and thermal cover in moist soil areas. When it becomes established, mechanical disturbance (such as mowing and crop planting) and chemical treatments can help keep this aggressive invasive plant in check. Control should be focused on areas and densities of sesbania that negatively impact the desired beneficial plant response, whether in planted crops or high-quality moist soil plants. Like many invasive species, an integrated approach that may include a coordinated set of actions over time is necessary to target key windows when these plants may outcompete native plants.

FOUR:
MITIGATING DISTURBANCE

As a Category One waterfowl area, onsite disturbance is managed through a limited hunt schedule and limited site access throughout the hunting season. Additionally, staff have rerouted an access point to limit onsite disturbance. This was seen as a positive proactive adjustment that should be continued. The Flats are not often hunted due to hunter preferences or inadequate water levels. When not hunted, this area can provide sanctuary.

The property is under considerable pressure from public waterways that are hunted at least six days a week. The review team notes the significant negative impacts that off-site disturbance can have on a relatively small Waterfowl Management Area.



FIVE:
WATER MANAGEMENT

Throughout the Broad River Waterfowl Management Area, the effectiveness of water management is challenged by highly fluctuating water levels (one to two feet per day) in the adjacent reservoir and a lack of independent control of the DU Pond and Trestle Pond. In short, releasing water in one impoundment to benefit one set of objectives leads to additional water in a different impoundment, negatively impacting the ability to manage the second impoundment. Additionally, the interconnectedness of the impoundments results in crop loss in the Old Impoundment when excess water from the GTR flows into the Old Impoundment. To fully manage each impoundment, the water level must be independently controlled. Lastly, flash floods from Terrible Creek cause excessive sediment to be deposited in and along the creek bed, exacerbating a sheet flow of water across adjacent areas. However, in periods of slow, steady precipitation, Terrible Creek can be used as a water source.

To improve water management, a variety of options should be considered, such as removing a cross-dike, installing a new dike parallel to the water flow, increasing capacity, and/or considering the placement of water control structures. The review team documented several specific options for staff to consider.

The review team recommended continuing to monitor red oak regeneration and the health of dominant red oaks in the GTR. While flood-related stress did not seem to be a serious issue for the mature trees in the GTR, there was little to no advanced regeneration of desirable red oaks. This could be a sign of negative impacts from annual flooding. Community composition, stand age, and occurrence of oak regeneration should be periodically monitored in the GTR to ensure forest health, diverse stand structure, and long-term food supply.



Conclusion

To maximize opportunities to manage Broad River Waterfowl Management Area for waterfowl, independent management of each impoundment is imperative. Until these costly investments are considered, the review team encourages staff to remain flexible by responding to current site conditions. Lastly, the addition of new staff brings the opportunity for fresh ideas. The team encourages SCDNR to continue to invest in training to grow the next generation of waterfowl managers.





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