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Restoring Georgia's Wetland Forests

REPORT

PREPARED BY

Forest Stewards Guild
putting the forest first

FLINT RIVERKEEPER

Acknowledgements

This report was developed by the Forest Stewards Guild and Flint Riverkeeper with input from individuals listed in the Acknowledgements of our Stakeholders, plus individuals who provided valuable information but wish to remain anonymous.

Flint Riverkeeper is a nonprofit headquartered in southwest Georgia that works to restore and protect the flow and quality of the Flint watershed, and via various partnerships the hydrologic health of Georgia as a whole.

The Forest Stewards Guild is a national organization that practices and promotes ecologically, economically, and socially responsible forestry as a means of sustaining the integrity of forest ecosystems and the human communities dependent upon them. They are land stewards working in a variety of forest types throughout the United States and Canada.

Special thanks to Sapelo Foundation for providing financial support and making this endeavor possible. We look forward to utilizing the valuable information to move forward in our efforts to conserve wetlands in Georgia.

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Executive Summary

Framing the Issue

Wetlands in the state of Georgia cover approximately 18.4 percent of the state's landscape (Figure 1). Unfortunately, historical and current wetland losses due to land conversion have negatively impacted these sites. Historic losses prior to the 1980s paired with the more recent losses in wetland diversity (Dahl 2011) has negatively affected the hydrology of downstream communities. This in turn has social and ecological consequences, and the potential to negatively impact widespread Georgian communities. Wetlands protect homes and other infrastructure by dissipating the energy of floods; they stabilize stream flows during dry conditions; they improve the quality of drinking water by filtering out sediment and pollutants; they provide habitat corridors for wildlife; they provide significant social benefits in the form of recreational opportunities; and they reduce the impacts of climate change via carbon storage.

As an alternative to government regulations, voluntary wetland restoration will be critical to the long-term conservation of wetland areas. Current federally funded conservation incentive programs in Georgia are available for landowners that provide economic assistance to help achieve their land stewardship goals. However, these programs may not necessarily be adequate to reach Georgia's wetland conservation goals at the scale desired to sustain essential ecosystem services.

Figure 1. Wetland coverage in the state of Georgia.

This report aims to provide information about how to strategically approach the creation of a viable program to incentivize wetland conservation on private lands in the state of Georgia. To compose these recommendations, report writers first researched and analyzed the need for an incentives-based conservation program in Georgia. Then, a variety of key stakeholders were engaged to understand their needs, priorities, and concerns. Based on research findings and stakeholder input, a basic recommended program outline was identified.

Key Findings

In summary, this program should be targeted towards private forest landowners and aim to restore degraded wetlands to proper hydrological function, create and incentivize appropriate wetland forest management activity parameters, and protect wetland resources through long-term conservation easements.

A successful program will accomplish this through:

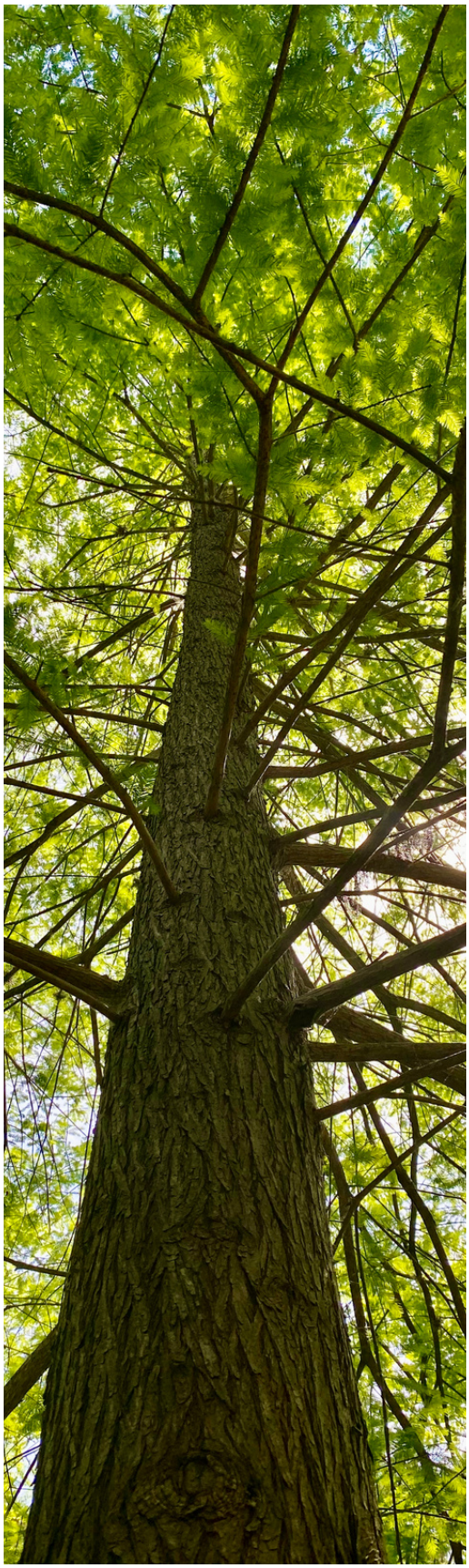
- Carefully crafting a wetland project prioritization process.
- Utilizing tax-based economic incentives.
- Expanding landowner eligibility.
- Defining site limitations and selecting appropriate wetlands based on those parameters.
- Basing payments off of completed program conservation activities.
- Including both restoration activities and protection criteria to ensure longevity of the wetland.
- Encouraging the continued implementation of Best Management Practices in forestry operations.

The next steps identified by this partnership and its stakeholders are: 1) understand why landowners are/are not utilizing current conservation programs, 2) collaborate with universities and other research entities to gather information on priority landscapes for restoration in Georgia and the needs and wants of landowners, 3) build a program that incorporates the suggestions defined in this report as well as additional logistical details, 4) strategize ways to market a program to gain support from a diverse coalition of taxpayers, and 5) implement a successful program. Some of the activities in these steps are linear, though some are not, and certain steps will be intertwined.

Opportunities

To protect and conserve the ecological and social functions of wetlands throughout the state, the need for an incentives-based wetlands conservation program in Georgia is great because most communities in the state of Georgia will benefit from the values provided by wetlands restored via an incentives program, as all wetland types provide ecological and socioeconomic benefits (De Steven and Lowrance 2011, Edwards et al 2013).

Economic incentive programs can often be structured to achieve greater conservation goals than that would result from traditional regulation (National Center for Environmental Economics 2001). This program, whether started from square one or incorporated into an existing program, will build on current regional conservation partnerships to further increase the capacity of wetlands conservation. A program sponsored and managed by the state of Georgia would bolster the valuable and foundational set of structures and services provided by existing federal packages in a highly effective, leveraged fashion. A statewide program would tap the great expertise that resides within Georgia's academic, land management, and advocacy communities to tailor conservation activities to the needs of local Georgians. The continuation of diverse stakeholder involvement will be imperative to share resources and expertise and eventually create a program feasible and attractive to a variety of supporters and participants.



Introduction

Identifying the Problem

Wetland losses are occurring on a national scale and these losses, particularly in freshwater systems, have resulted in negative consequences for hydrologic function and ecosystem connectivity (Dahl 2011). The economic, ecologic, and social values of healthy wetlands are well-recognized, but making alterations to the hydrology and other functions of wetlands are often favored due to short term economic returns. Historical site conversions to softwood production, agriculture, and residential and commercial development have occurred, impacting the quality and quantity of remaining wetlands. Many site conversions ceased several decades ago (e.g. conversions to softwood production) while others continue (e.g. residential and commercial development) (Fretwell 1996, Kramer 2019). The effects of conversion can be seen downstream of converted sites in streams and rivers, and in underground aquifer systems, affecting the overall health of the watershed. These negative effects have led to efforts to restore and conserve wetland ecosystems across the US by private landowners partnering with federal and state agencies, environmental non-profits, and other organizations. These efforts include but are not limited to: the direct implementation of restoration activities, increasing educational opportunities regarding the importance of wetland values and functions, and the creation of incentives programs for landowners to conserve wetland acreage on private properties.

The issue of wetland conservation is a common subject of conversation in the state of Georgia. As wetlands occur on approximately 18.4 percent of the total acreage of the state (US Fish and Wildlife Service 1973-2014), it is important for the state to engage in multiple, and wide-ranging, conservation efforts to ensure the resilience and long-term sustainability of these ecosystems and the services they provide. Wetlands are critically important to biodiversity, flood protection, baseflows of stream systems during drought, carbon storage, recreation, and clean water. Unfortunately, most remaining wetlands and wetland forests are threatened by land conversion, development, and fragmentation. Many of Georgia's watersheds have experienced 25 to 30 percent losses of original wetland acreages (Frayer et al 1983, Dahl 2011, Kramer 2019), and approximately 50 percent of remaining wetlands are characterized as being in only fair to poor condition (EPA 2011), highlighting the importance of protecting what remains as well as taking opportunities to restore what has been lost.

Participants (which included natural resource practitioners and private forest landowners) at the Forest Stewards Guild's 2018 Bottomland Hardwoods Learning Exchange in Brunswick, Georgia identified several limitations or

barriers to wetland restoration and protection. These included: the lack of education, awareness, and guidance for private landowners; lack of wood product markets for many primary wetland tree species; longer harvest rotations for wetland wood products; lack of hunting lease opportunities; lack of low-impact harvesting equipment; and the lack of a more comprehensive suite of conservation incentives aimed at wetland restoration. The participants also expressed that one of the most effective strategies for overcoming these barriers in Georgia is state-level policy change.

Defining Wetland Conservation

Wetlands have been defined using several parameters and by various ecological agencies and organizations. However, there are three common threads found in nearly every definition: 1) the area supports plants that grow in or on water (hydrophytes), 2) the area consists of predominantly hydric soils, and 3) the current or historical hydroperiod allows for periodic inundation of the area.

Within the context of this report, the term wetland will be in reference to an area that shows characteristics of historically or currently supporting hydric vegetation, contains hydric soils, and shows evidence of historic or current periodic inundation. Wetland types include geographically isolated wetlands, pine-flatwood wetlands, riparian or bottomland hardwood forests, and other rare or specialized wetlands that primarily occur in the Piedmont or Appalachian regions of Georgia.

Additionally, wetland conservation means to wisely manage landscapes based upon preserving or improving specific ecological (e.g. hydrological) and socioeconomic characteristics and services of the wetland, thus reasonably achieving proper functioning. When referenced in this report, wetland conservation includes both restoration and protection, depending upon the current state of the wetland.

Hydro-what?

Hydrophyte: plants that grow in or on water

Hydric Soils: formed under conditions of saturation, flooding or ponding long enough during the growing season to develop anaerobic conditions in the upper part (USDA).

Hydroperiod: the amount of time per year that an area of land is wet or the length of time that there is standing water at a location.

The values and functions of wetlands are highly complex. Ecologically, they dissipate the energy of floods, reduce erosion, stabilize streamside environments, filter water by removing sediment and pollutants, maintain healthy baseflows, provide recharge of aquifers, and provide habitat corridors for wildlife. including many rare, threatened, endangered and highly specialized species including both game and non-game animals. Socially and economically wetlands provide unique recreational opportunities, natural beauty for surrounding communities, and produce a unique mix of forest products for markets. These values support the need for conserving Georgia wetlands to sustain the health and vitality of communities dependent upon them.

Vision and Scope of this Report

This report represents a partnership between Flint Riverkeeper and the Forest Stewards Guild whose overarching purpose is to reverse the trend of wetlands loss and increase the acres of wetlands restored and conserved in Georgia forests. We began this project with two primary goals of 1) examining the role of Georgia's forestry best management practices (BMPs) in the context of protecting wetland forest ecosystem function and 2) build the foundation of a policy strategy to create a state-level incentive program for wetland forest conservation. As the work progressed, it became clear that the need and opportunities to restore and protect wetlands are a priority.

With this report we aim to provide information about how to approach creating a viable program to incentivize wetlands conservation in Georgia. Our vision is to use our findings to influence key non-governmental players in Georgia, such as but not limited to the Georgia Forestry Association, the Georgia Water Coalition, the Georgia Wildlife Federation, and Ducks Unlimited to work with elected and appointed policymakers to develop a wetlands conservation incentives program that increases the acreage of functional wetlands in Georgia.

Methods

The methods utilized to produce this report are as follows:

- Step 1: Research and analyze the need for an incentives-based conservation program for wetlands in Georgia.
- Step 2: Engage with a variety of key stakeholders through emails, phone calls, and meetings to further understand the needs, priorities, and concerns of stakeholders in Georgia.
- Step 2.1: Engage policy and law students at the University of Georgia's River Basin Center to independently research and explore ideas to increase wetlands conservation.
- Step 3: Based on research findings and stakeholder input, identify a basic recommended program outline.
- Step 4: Identify clear next steps to continue the creation of an incentives-based conservation program for wetlands in Georgia.

Engaging with Stakeholders

In the fall of 2020, we conducted a virtual workshop and follow-up interviews with key stakeholders in wetlands restoration and protection. Central topics included the boundaries and baseline requirements for what a state-level incentives-based program for wetlands conservation would be. We invited a variety of stakeholders including academicians, industry practitioners, professional advocates employed by environmental nonprofits, high-profile family forest landowners, professional consulting foresters, government-appointed natural-resource managers, and elected officials. The recommendations within this report have been crafted based on stakeholder input solicited from these engagements. They are consensus-derived from the stakeholder group, but also include the professional opinions of the authors of this report.

Understanding the Situation

Current Status of Georgia Wetlands

Georgia's landscape contains five distinct physiographic regions: Ridge and Valley, Blue Ridge, Piedmont, Southeastern Plains, and Southern Coastal Plain (Figure 2) (Griffith et al. 2001). Within these five broad regions are many ecotypes and variations in geology and forest composition. The variety and number of physiographic regions in combination with patterns of high and variable rainfall contribute to an abundance and diversity of wetlands across the state. In fact, nearly 20 percent of Georgia's landscape is covered by wetlands (Darst and Light 1996, US Fish and Wildlife Service 1973-2014) and the majority of Georgia's wetland habitats are concentrated towards the southeastern portion of the state.

Drainage ditch used to convert a wetter site to a pine plantation.

While Georgia and the Southeast as a whole host a diversity of wetland types with many functions, there have been historical wetland losses in the region because of land conversion to agricultural lands, silviculture plantations, and rural and urban development (Dahl 2011, Edwards et al. 2013). Today, wetland loss is most likely the result from urban and suburban development pressure rather than agriculture or silviculture (Fretwell 1996, Kramer 2019).

At the time of European settlement in the early 1600s, there were an estimated 221 million acres of wetlands in the continental United States (Dahl 1996, Kramer 2019). Within the last century, wetland losses and gains have fluctuated based on political and societal attitudes. From the 1950s to the 1970s, it is estimated that an average of 439,000 acres of wetlands were lost per year (Frayer et al 1983) as a result of conversion of wetlands to agriculture or forestry uses (Dahl 2011, Kramer 2019). Federal wetland policies instituted in the 1970s worked hard to combat these losses and between 1970 and 1990 the rate of wetland loss slowed by half (Fretwell et al 1996). In 1986, the Emergency Wetlands Resource Act was passed and instituted the No Net Loss policy. The No Net Loss policy states that the nation should strive for no net losses of wetlands.

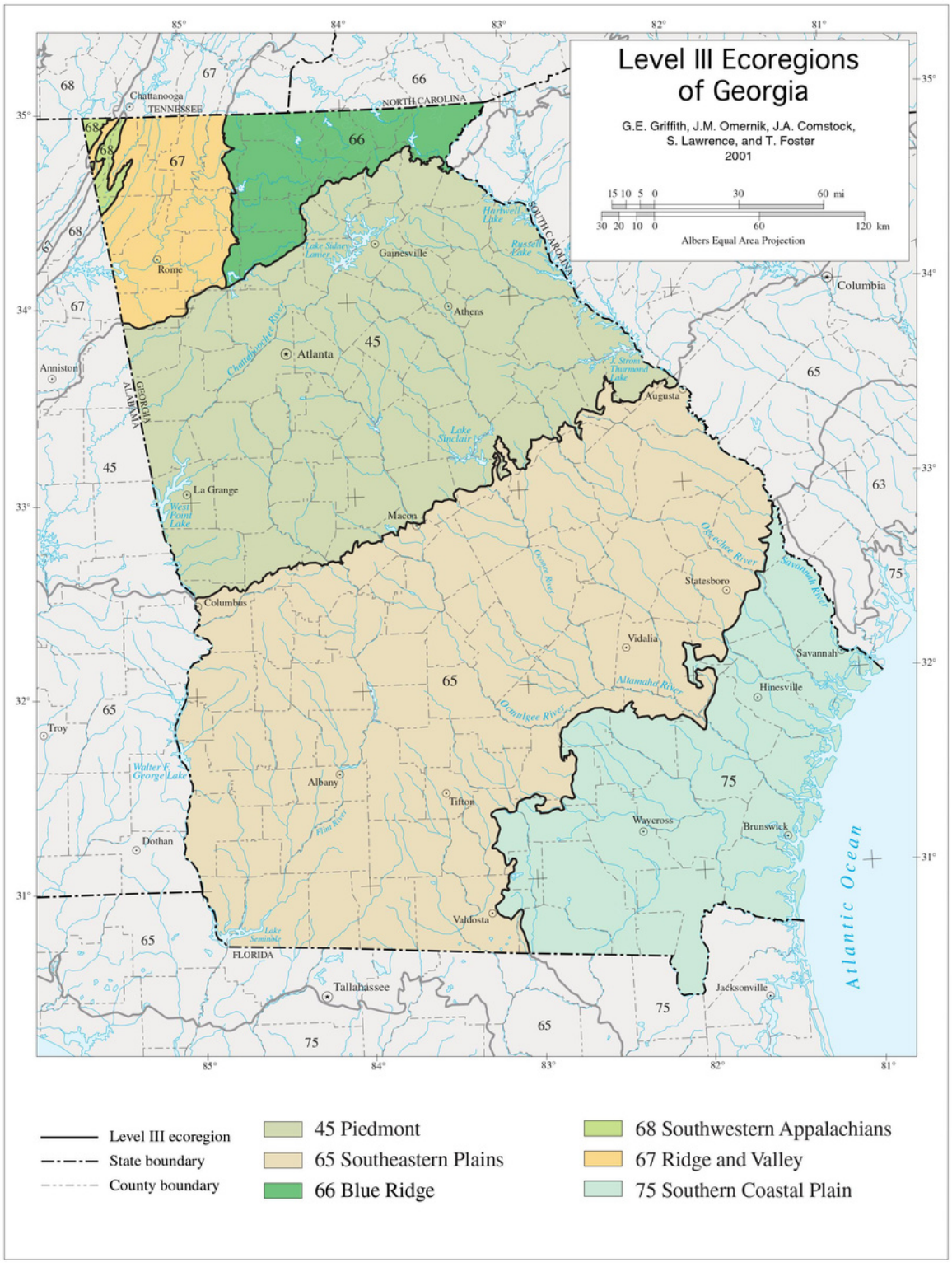


Figure 2. Level 3 Ecoregion of Georgia. Map by Griffith et al 2001.

Between 2004 and 2009 particular regions in the US, including the southern half of Georgia, experienced higher rates of freshwater wetland loss by conversion to upland habitat than the rest of the country (Figure 3) (Dahl 2011).

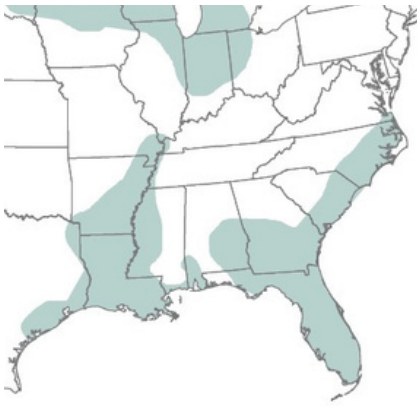


Figure 3. Freshwater wetland loss. Dahl 2011.

Additionally, in 2011 the US Environmental Protection Agency conducted the first National Wetland Condition Assessment. This assessment rated wetlands as either in "Good", "Fair", or "Poor" conditions. In the Southeastern Coastal Plain, which includes the southern half of Georgia, 50 percent of the wetlands were in good condition, 22 percent were in fair condition, and 28 percent were in poor condition (Figure 4) (US Environmental Protection Agency 2016).

To manage such losses and conditions, regulatory and incentive-based legislation exists to aid in the conservation of wetland habitats.

Wetland regulation in Georgia is federally managed (i.e. the Clean Water Act). A permit is required for certain classes of modification or destruction of certain types of wetlands, and only those wetlands that are jurisdictional are afforded protection.

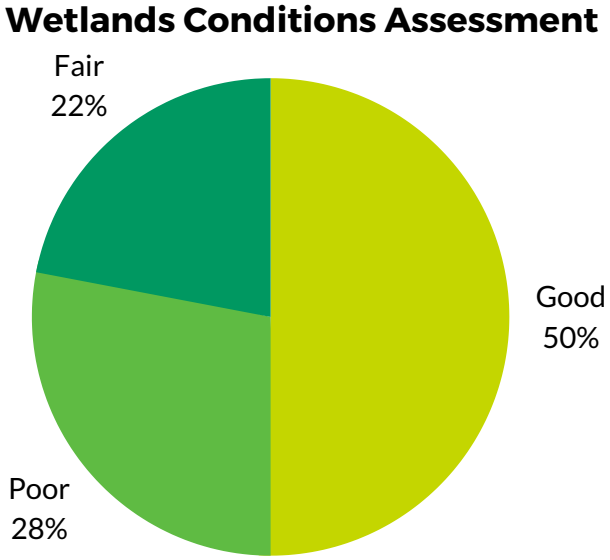


Figure 4. Wetland Conditions Assessment of the Southeastern Coastal Plain. US EPA 2016.

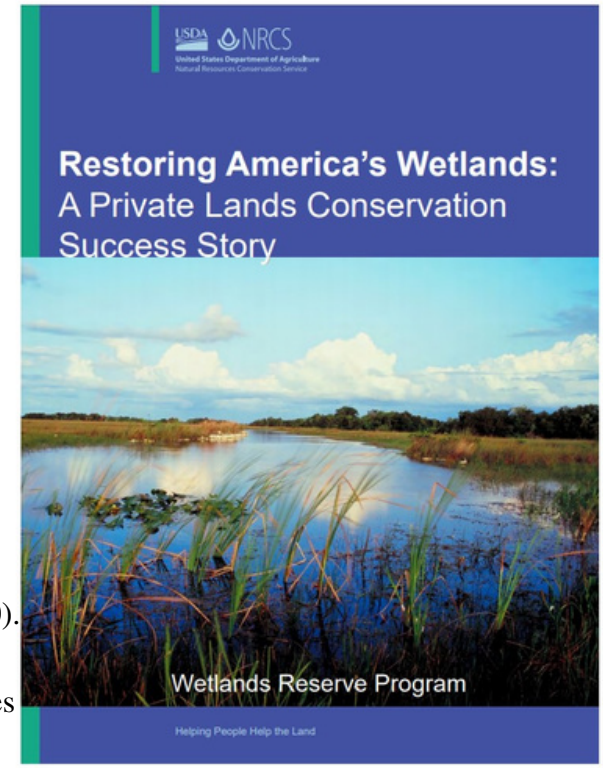
A **jurisdictional wetland** is one that has been delineated by the Army Corps of Engineers and determined as Waters of the United States in accordance with the current Jurisdictional Determinations. It is important to note that a wetland may still be functional and not be determined jurisdictional. For example, sloughs and oxbows in river floodplains are often considered jurisdictional. However, regularly-flooded flats between the jurisdictional features, squarely in the floodplain, are frequently not. Similarly, cypress domes or ponds often found between jurisdictional branches and creeks are not considered jurisdictional although they share similar hydroperiods.

Another protection afforded to wetlands is the implementation of forestry Best Management Practices. Georgia's BMPs for forestry are set to "inform landowners, foresters, timber buyers, loggers, site preparation and reforestation contractors, and others involved with silvicultural operations about common-sense, economical and effective practices to minimize non-point source pollution (soil erosion and stream sedimentation) and thermal pollution," (Georgia Forestry Commission 2019a) and were last updated in 2019. The document provided by the Georgia Forestry Commission (GFC) is comprehensive and includes information specific to wetland management (Georgia Forestry Commission 2019a). These BMPs are quasi-regulatory, science-based measures designed to protect water quality under Section 404 of the Clean Water Act. They provide a minimum standard of operation and while not required by law, violations of BMPs carry weighty consequences. Therefore, the GFC conducts biennial surveys to monitor BMP implementation across the state. In recent years, the state has scored 90 percent or better on BMP implementation (Georgia Forestry Commission 2019b). In Special Management Areas, which includes wetlands and wetland forests, BMP implementation scored 93 percent in 2019 (Georgia Forestry Commission 2019b). The score for Timber Harvesting in the 2019 BMP Survey was 98 percent (Georgia Forestry Commission 2019b). Based on these findings, we believe that BMPs for wetland forests in Georgia are fulfilling their intended purpose. However, there are opportunities to incentivize additional forestry practices not currently included in Georgia BMPs that will be addressed in this report. We are not calling for a stronger regulatory approach.

Limited state oversight is implemented by the Georgia Comprehensive Planning Act, requiring the Georgia Department of Natural Resources (DNR) to develop minimum standards and procedures for the protection of natural resources. This includes wetlands, though the program is non-regulatory in nature. Due to the fact that certain wetlands are not regulated because they are not federally jurisdictional, and that the definition of jurisdictional is subject to change, it is important for the state of Georgia to consider and invest in programs focused on voluntary wetlands conservation in addition to Best Management Practices (Dorney et al. 2012). Such programs should consider both jurisdictional and non-jurisdictional wetlands and be designed to appeal to as broad an array of private owners as possible.

Current Wetlands Conservation Programs

Voluntary wetland restoration activities are not encompassed in current state and/or federal regulations or requirements (Association of State Wetland Managers 2015). While Georgia does not have a current formal wetland restoration plan, the Georgia Environmental Protection Division created a Wetland Program Plan for the years 2011 - 2016 that focuses on monitoring and assessment, regulatory activities, and voluntary restoration and protection. The voluntary restoration and protection efforts outlined in the 2011-2016 Wetlands Protection Program primarily discuss maintaining and developing education and outreach programs focused on engaging community members and K - 12 students (EPA 2010). The state also engages in several restoration activities through programs offered by the Wildlife Resources Division, Georgia Department of Natural Resources, and the Georgia Environmental Protection Division (Association of State Wetland Managers 2015). Further, many of Georgia's regional water management plans contain recommendations concerning wetlands conservation.



There are several existing incentive programs available to private landowners within the state of Georgia that are applicable to wetland restoration and protection. These programs include tax-based incentives usually operationalized as easements on upland and wetland tracts as well as cost-share resources, often offered through the US Department of Agriculture's Natural Resources Conservation Service (NRCS). Each of these voluntary programs offers economic incentives (cash payment or tax credit) for implementing appropriate pre-determined and contractual conservation practices. These practices include activities such as: increasing the width of and permanently protecting riparian buffers, enhancing habitats for endangered species, restoring hydrology and other critical functions in conservation areas, limiting management activities deemed appropriate on the land, committing to short or long-term conservation easement agreements. Further, new opportunities exist to harness existing federal programs, developing carbon markets, and any new state program to achieve blended results serving multiple purposes while using financial resources more efficiently. (For a more thorough breakdown of programs available in Georgia, see Appendix.)

A popular federal wetland restoration program in the US is the Wetlands Reserve Program established in 1995. In the Southeast, wetland restoration is accomplished primarily through this voluntary program (Steven and Gramling 2012, De Steven and Lowrance 2011). The Wetlands Reserve Program provides funds for restoring degraded wetlands with a history of agricultural and/or silvicultural use, and for purchases of conservation easements (temporary and permanent). For example, through this program a landowner could enter their property into a 30-year easement and 50 to 75 percent of the cost of practices such as ditch plugging, dike construction, installing water-control structures, and vegetation planting will be covered by NRCS through a one-time payment. Permanent easements garner a higher per-acre payment. Many areas in Georgia have seen active use of this program, particularly in riparian zones along major river systems. Since 2005, floodplain easements along the Satilla and St. Marys River systems in southeast Georgia have conserved over 160 linear miles of creek and riverbank and over 100,000 acres of floodplain forests (personal communication, Cassidy Glassman and Ashby Worley, The Nature Conservancy, 2021). These functional wetlands include hundreds of miles of oxbows and sloughs embedded in the floodplains.

However, integral to NRCS's Wetlands Reserve Program in Georgia and other similar programs are several limitations and barriers to achieving widespread wetland restoration goals in the state.

Barriers

- **Landowner ineligibility due to AGI requirements**. To apply to cost-share, easement-purchase, and other assistance programs a landowner often must have an adjusted gross income (AGI) level at or below $900,000. This tends to be the greatest barrier to accessing conservation incentive programs for landowners who hold large tracts of wetland acreage. Such landowners typically include closely-held family corporations as well as large publicly-traded timber companies.

- **Complex enrollment processes** that deter private forest landowners from applying and participating. Some programs have enrollment processes that landowners are unwilling to, or do not know how to, complete.

- **Backlogs of application requests and limited program budgets**. While landowners may apply for current conservation programs, their chances of receiving funding are low due to backlogs of application requests and limited program budgets. For example, in 2019 the NRCS Environmental Quality Incentive Program (EQIP) enrolled and funded roughly 28 percent of applicants in Georgia (Hill 2020, NRCS 2020), leaving nearly three-quarters unfunded, ranking in the top three states of unfunded applications in the US that fiscal year. The reasons for this disparity may include factors that are out of the control of the program, such as applicants not qualifying due to incomplete or inaccurate applications.

- **Limited geographic scope or species-specific**. Some programs only offer funding for properties that are located in critical conservation or selected partnership areas. These programs are often national and may not provide many opportunities, if any, for the state of Georgia.

- **Incongruent goals**. Many programs have traditional focuses on the wildlife benefits of wetland restoration. This focus often influences and dictates restoration methods and may not restore hydrologic functions to the extent necessary. For example, hydrologic "enhancement" is only allowed on up to 30 percent of a Wetlands Reserve Program-enrolled tract (Steven and Gramling 2012).

- **Match/landowner funding requirements**. "Match" is the cost share being made by the applicant to the conservation project to match the dollars from a government funding source for that project. This cost share can include dollar amounts, hours of labor, or the use of other services at the cost of the applicant. This could be a barrier to some landowners that do not have the funding availability to contribute towards match.

- **Individual payment limits**. Annual program budgets often have a payment limit per funding cycle. For example, if a landowner's property requires $50,000 of restoration work but the program they are enrolled in has a $30,000 limit, 40 percent of the restoration activities will be incomplete.

Why Develop "Yet Another" Program?

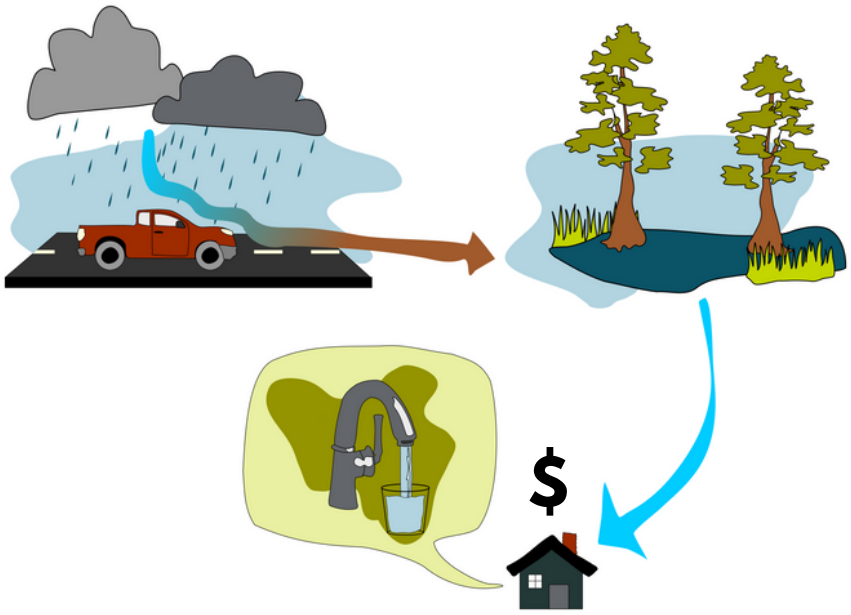
Exploring the need and interest in a state-level, Georgia-wetlands-focused conservation incentives program is important because most communities in the state of Georgia will benefit from the values provided by wetlands restored via an incentives program, as all wetland types provide ecological and socioeconomic benefits (De Steven and Lowrance 2011). Additionally, economic incentive programs can often be structured to achieve greater conservation goals than that would result from traditional regulation (National Center for Environmental Economics 2001). A program sponsored and managed by the state of Georgia would bolster the valuable and foundational set of structures and services provided by existing federal packages in a highly effective, leveraged fashion. A statewide program would tap the great expertise that resides within Georgia's academic, land management, and advocacy communities to tailor conservation activities to the needs of local Georgians.

Services and Values of Wetlands

- Restoring and conserving the functions of a wetland will improve the quality of source water for drinking, reducing treatments costs.
- Restoring and conserving the functions of a wetland will protect homes and other infrastructure from severe flooding and high-water events.
- In addition to filtration and flood attenuation, the baseflow characteristics and baseflow-support characteristics of wetlands provide critical functions during drier periods.
- Restoring and preserving the functions of a wetland will protect viewsheds and increase recreation opportunities, in turn increasing revenue within Georgia.
- Conserving the functions of wetlands will reduce the impacts of climate change and carbon emissions.

Services and Values of Wetlands

Restoring and conserving the functions of a wetland will **improve the quality of source water for drinking** (National Park Service 2016), reducing treatments costs.



Wetlands can regulate the quality of regional surface waters by intercepting and filtering sediments, nutrients, and other pollutants (De Steven and Lowrance 2011) which is critical in ensuring high quality drinking water. This is a well-known fact to water-supply managers in the mountain and Piedmont regions of Georgia, where wetlands acreages are limited and nearly all public drinking water is supplied from surface sources. Wetlands in the Coastal Plain regions of Georgia provide filtration functions important to surface waters but also to underground drinking water systems. There are five water-supply aquifers in the Coastal Plain of Georgia where wetlands provide filtration services, servicing over half of Georgia's counties (Figure 5) (USGS 2016). Waters entering aquifer recharge areas have the potential to be benefitted by wide-spread wetland restoration.

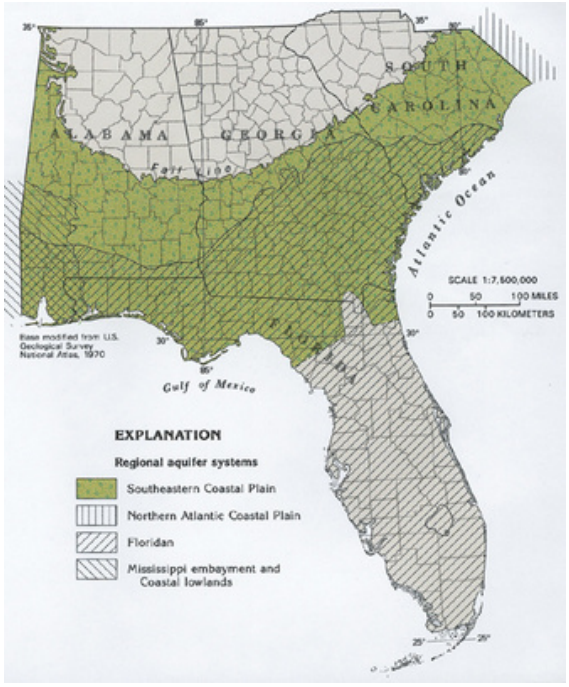
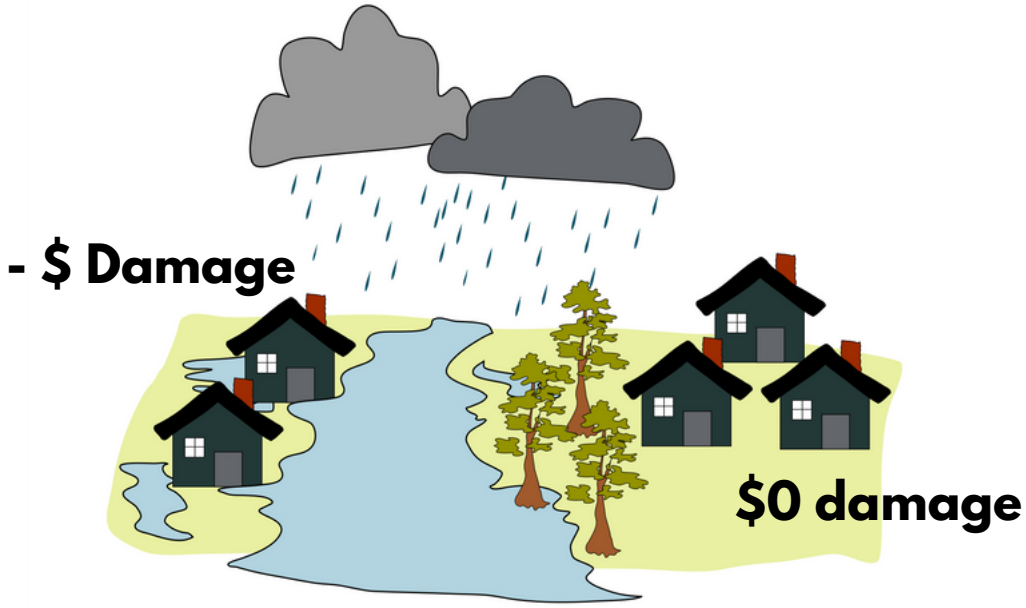


Figure 5. Map of regional aquifer systems from Georgia Water Planning. Georgia.gov.

Services and Values of Wetlands

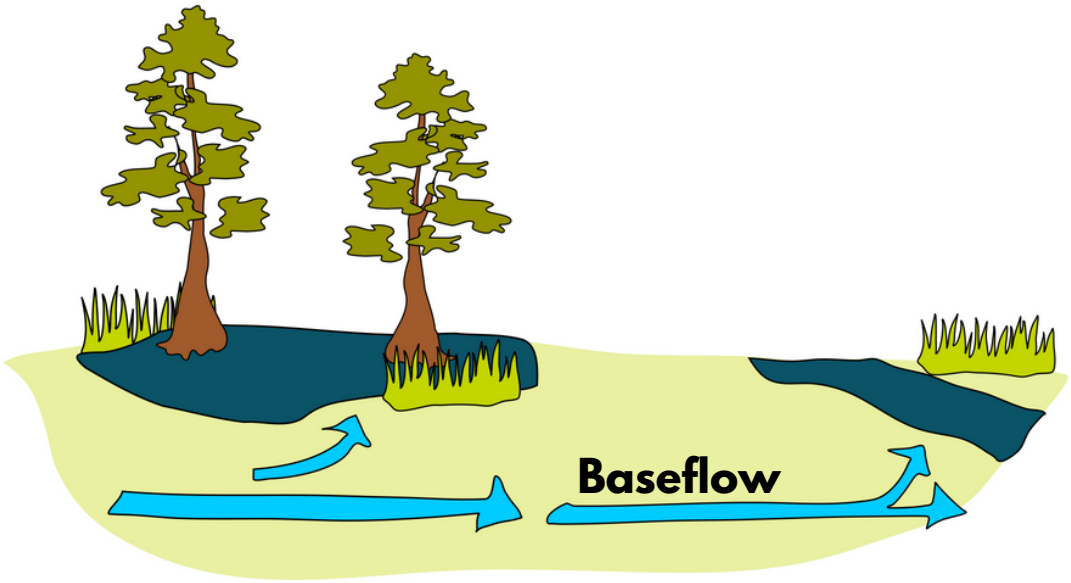
Restoring and conserving the functions of a wetland will **protect homes and other infrastructure from severe flooding** and high-water events.



From 1851 to 2010, 23 hurricanes made direct landfall on the Georgia coast. Three of these were major events (Categories 3 to 5). Two lesser hurricane-force storms hit the zone since then, and many named and unnamed small tropical systems with short-term rainfall accumulations of three or more inches have affected the area over the same periods. While relatively few hurricanes have hit Georgia directly due to its location and shorter coastline compared to other states in the Southeast, many severe weather (e.g. tornadoes) and flooding events have been spurred by hurricane activity in the Atlantic and Gulf Coast, amassing billions of dollars of damage (Blake et al. 2011, National Oceanic and Atmospheric Administration 2020). For example, 1994 Tropical Storm Alberto made landfall in Florida but subsequently stalled over Georgia, dumping monumental accumulations of rain and amassing $750 million in damage. Several cities received over five inches of precipitation, and one city in Georgia amassed over 25 inches of rain. From this deluge, the Flint River experienced a 500-year flood. However, it must be noted that peak flood levels did not reach the predictions made by USGS models. This difference has been attributed by academic and government hydrologists to the massive absorptive functions of the wetlands and aquifer systems present in the lower Flint (personal communication, Elliott Jones, 2020). Investing in the conservation of Georgia's wetland forests could increase the value in protection from extreme weather events by up to $740 million per event (Dogwood Alliance 2017).

Services and Values of Wetlands

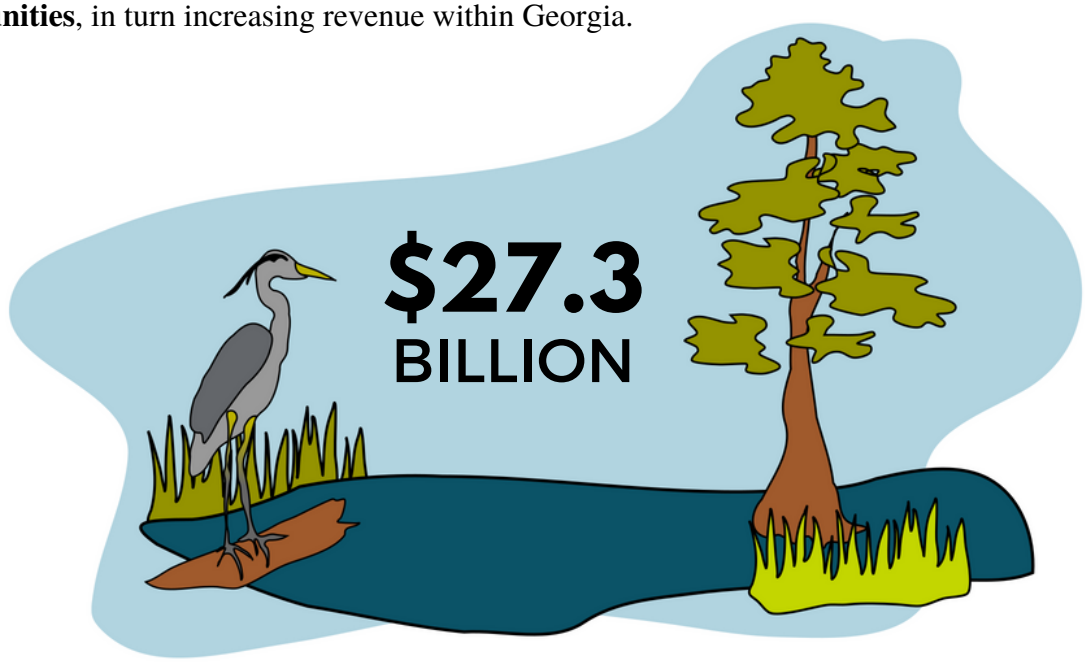
In addition to filtration and flood attenuation, the **baseflow characteristics and baseflow-support characteristics of wetlands provide critical functions during drier periods** (Ameli and Creed 2019; Wisconsin Wetlands Association 2020).



Baseflow is the surface water flowing in a system between precipitation events, after the system has returned to pre-event levels. A complex set of pathways include the flow of water to and from surface waters in wetlands, groundwater, streams and rivers, and other bodies of water such as artificial impoundments and conveyances (e.g. pipes, ditches, detention structures). Forested wetlands play an important role in baseflow mediation as they are central to water-holding in heavily shaded areas during droughts. As an area loses its ability to hold water, downstream problems can arise. Many Georgia streams have seen baseflows degraded between 50 to over 90 percent since 1975 (Emanuel and Rogers 2013). It should not be surprising that the systems that have seen higher floods have also seen lower low flows, the twin fingerprints of a watershed's lessened ability to hold water. While there are many other factors contributing to baseflow issues than wetlands losses and alterations, it should be noted that the actions taken to quickly drain water from a wetland are the very actions that cause increased downstream flooding and decreased downstream baseflow. Wetland restoration is a practical way to mitigate some of this damage.

Services and Values of Wetlands

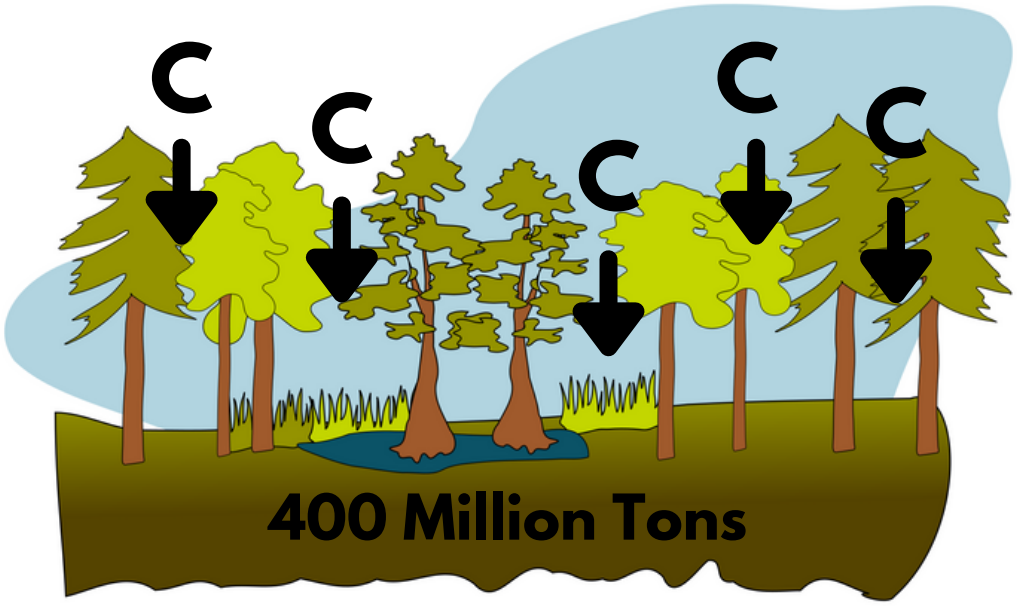
Restoring and preserving the functions of a wetland will **protect viewsheds and increase recreation opportunities**, in turn increasing revenue within Georgia.



In 2017, 58 percent of Georgia's population participated in outdoor recreation and spent $27.3 billion (Outdoor Industry Association 2017). Wetlands either provide direct hydrologic support of waters and lands used for recreation or serve as the actual site of recreational activities such as birding, viewing of other wildlife, hunting, and in some cases paddling and fishing. Not only has interest in outdoor recreation been increasing nationally over the last several years, the Covid-19 pandemic created an even higher demand for outdoor recreation opportunities (Blevins 2020) and highlighted the vast societal benefits of such resources during times both good and bad. Several major wetlands in Georgia are regional destinations for hunting and fishing and are international destinations for tourists. This creates a demand for both recreational and non-recreational jobs in the natural resources industry in the state.

Services and Values of Wetlands

Lastly, conserving the functions of wetlands will **reduce the impacts of climate change and carbon emissions** (De Steven and Lowrance 2011, Kusler 2006, Michigan Technological University 2018).



Wetlands are carbon sinks, meaning they store carbon dioxide from the atmosphere. Freshwater wetlands are especially important in carbon storage as they hold nearly ten times as much carbon than tidal wetlands (Nahlik and Fennessy 2016). Reports show that specifically in Georgia, the forest types commonly associated with wetlands (oak-gum-cypress and elm-ash-cottonwood) sequester over 400 million tons of carbon (Brandeis et al. 2016). Additionally, the known effects of climate change include higher short-term accumulations of rainfall, and longer dry periods between storms, situations that wetlands have been shown to attenuate.

While this list is not comprehensive of the many values that functioning wetlands have to offer, conveying the direct and observable benefits of wetland restoration and protection in straightforward, relatable terms will be critical when creating community buy-in for supporting an incentives program.

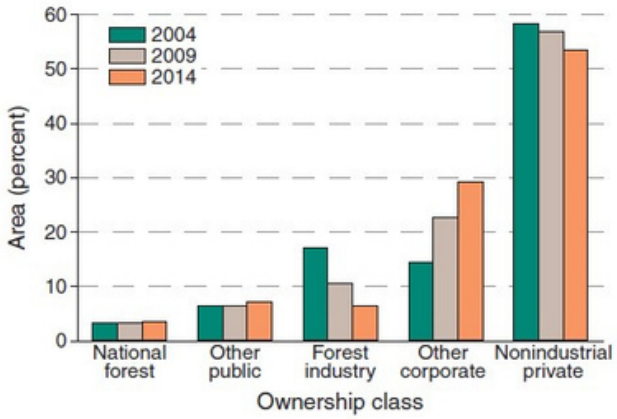
Results

What Was Discovered & Discussed

The following recommendations have been crafted based on stakeholder input solicited from engagements as outlined in the Methods. They are consensus-derived from the stakeholder group, but also include the professional opinions of the authors of this report.

Audience

The intended audience for such a program is Georgia landowners who have one or more acres of wetland on their property in need of restoration and/or protection. Around 85 percent of Georgia forestland is privately owned with nearly 55 percent of that ownership being non-industrial private landowners [Figure 4] (Brandeis et al. 2016), making the potential impact of a successful incentives program quite large.



Percentage of forest land area by inventory year and ownership class. Georgia FIA data 2004-2014.

Objectives of the Program

A successful program will embody the following core objectives:

- Protect wetland resources not covered by the Waters of the United States rules (federal Clean Water Act), as well as jurisdictional wetlands when advantageous.
- Restore degraded wetlands to proper hydrological function.
- Increase total statewide wetland acreage held in long-term conservation agreements.
- Increase landowner knowledge of and accessibility to conservation dollars.
- Prioritize wetland conservation target areas due to anticipated limits on program resources using a watershed-based approach.
- Create and incentivize appropriate wetland forest management activity parameters tailored for maintaining and enhancing wetland and stream function.

Description of the Program

This program should aim to restore degraded wetlands to proper hydrological function, create and incentivize appropriate wetland forest management activity parameters, and protect wetland resources through long-term conservation easements.

A successful program will accomplish this through:

- Carefully crafting a wetland project prioritization process.
- Utilizing tax-based economic incentives.
- Expanding landowner eligibility.
- Defining site limitations and selecting appropriate wetlands based off of those parameters.
- Basing payments off of completed program conservation activities.
- Including both restoration activities and protection criteria to ensure longevity of the wetland.
- Encouraging the continued implementation of Best Management Practices in forestry operations.

Wetland Prioritization

Including a prioritization process for program participants/project selection will be critical in sustaining a successful incentives program long-term. It will additionally be important to develop these priorities further with appropriate stakeholders to help minimize politicization of this approach. Overall, we suggest using a watershed-based approach, which will allow better measurements of program success versus a piecemeal or patchwork approach and will therefore increase the efficacy of adaptive management as lessons are learned. As a part of this, robust ecologic and engineering information will be critical to watershed prioritizations and site selection within watersheds (this will also be important for determining eligibility/feasibility and monitoring).

Several of Georgia's Regional Water Management Plans (e.g. GAEPD 2017) state that wetland restoration and protection should be part of watershed management and based upon analytical reasoning. Additional modeling and analysis will be necessary to insure successful wetland conservation. Something that may be of use is the Wetland Forest Conservation model. With data and input from natural resource practitioners and professionals from throughout the Southeast, the Wetland Forest Initiative created a model to determine conservation priorities of wetland forests in the Southeast. The factors used to calculate prioritization were rates of biodiversity, social concerns, and the potential of succumbing to future stressors. However, there are several ways a wetland area can be prioritized, and we suggest considering the following items.

Firstly, a hydrological analysis of the watershed, and eventually of the parcel in question itself, will be necessary. This will tell us the level of restoration needed to restore the hydrology. It may be beneficial for standard procedures to include reference watersheds (where wetland alterations are minimal) when and where possible.

The location of the wetland will be an important factor when determining priority.

- Proximity to cities and towns (measured in miles)
    - Residential density inside the historical wetland* (measured either in population or number of structures)
    - *Historical Wetland = formerly functional wetland, altered wetland, or historical wetland site, that is currently developed.
- Proximity to major wildlife corridors (miles), recognizing that the restoration of wildlife functions and hydrologic functions frequently are not aligned. For example, restoring a wetland for wildlife habitat may not be feasible in certain locations, yet the filtration and baseflow functions of wetlands could still be restored.
- Proximity to previous or planned projects (miles). This is important because hydrologic and wildlife benefits usually increase as connectivity is increased.
- Location in/along the watershed; 'high' versus 'low' in the overall watershed gradient

Factoring in the wetland type will be important when determining priority.

- Relative rareness of the wetland type itself
- Measure of current biodiversity and species richness
    - And of potential for high biodiversity and richness
- Presence or absence of species of interest
    - And if absent, the potential of their restoration
- Forested versus more open wetlands; hydrologic and other functions vary with type

While the **size** of the wetland (measured in acreage) can be an important factor, it should not function as a cut-off. Even though larger projects generally have higher cost efficiency, smaller projects that are in the right location can have great ecological benefits. Currently, in federal programs, the entry costs (baseline documentation, report preparation, monitoring) are virtually the same for both small and large acreages, frequently becoming an impediment to landowners with smaller sites. Any new, state-level program should be designed such that all applicants are subjected to minimal complications and delays while maintaining the quality of the program. This will help ensure that a wide range of site sizes benefit from the program. Program designers would be wise to look at programs in other jurisdictions that provide time- and cost-efficient services.

The cost of the restoration project should be taken into consideration, and this includes many related factors that can be grouped under this umbrella. The overall cost of the restoration activities should be considered as well as the economic impact to the landowner. This can be measured by looking at current land use (e.g. active agriculture, active silviculture, residential, or abandoned/no use) and calculating how much revenue will be lost to the landowner by putting the wetland into protection. This value can be measured as a function of loss of revenue in the present and future value of timber crops. And, cost/benefit (e.g. the ameliorating effects of the project on downstream flooding or baseflows per unit investment) ratios can be an important tool. Any investment in restoration should take into consideration the likelihood of hydrologic/ecologic success, the sustainability of that success (i.e. risk of failure), and the cost per acre.

An important factor to consider will be to determine how at-risk the wetland is to conversion/further conversion from a use that would be more expensive to recover from. This should include identifying how at-risk the wetland is to the effects of climate change. For example, saltwater inundation and sea level rise might pose a threat to certain freshwater wetlands and it would be inefficient to spend large amounts of money on restoring a wetland that may be under saltwater in 30 to 40 years. Similarly and on the opposite end of the scale, a wetland adjacent to a rapidly-developing suburban area may rise in importance due to imminent risk of permanent conversion.

Finally, other impacts to human communities that can be used in determining restoration prioritization are: measuring stormwater control benefits, measuring the levels of potential wildlife nuisance, and determining the current and potential capabilities of carbon sequestration.

However, it is suggested to not allow prioritization to foreclose opportunities or artificially diminish the importance of areas that are not “first choice.” Sometimes, opportunity in the form of a willing landowner reigns, particularly in the early stages of a program when trends need to be set and early adopters provide a benefit out of scale to the actual project benefits. Additional things to think about will be factoring in the proper funding for implementing this prioritization process as well as continued monitoring of programs, both of which can be seemingly expensive but will prove indispensable as the program is adaptively managed.

Program Incentives and Their Impacts to Public Budgets

Conservation incentive programs often utilize two types of incentives: economic or recognition. Economic incentives provide monetary motivation to implement conservation practices. Recognition incentive programs, or certification programs, reward participants with acknowledgements or certificates of approval for implementing conservation practices. Certification programs are often run by esteemed, reputable organizations, such as the American Tree Farm System.

The incentives deemed most appropriate for this program by the stakeholders assembled are economically based. Reward amounts should be allocated based on the number of restoration activities fulfilled and acreages of wetland permanently protected. In other words, restoration projects and subsequent protection transactions should be calibrated to direct costs and ecological returns as well as appraised values/costs to landowners. The ability to accurately estimate costs and benefits will be key, though it is suggested that the program should avoid placing greater value on protecting high-quality extant wetlands over projects requiring substantial restoration, and vice versa. Prioritization should instead arise from a watershed-based approach as outlined in the previous section.

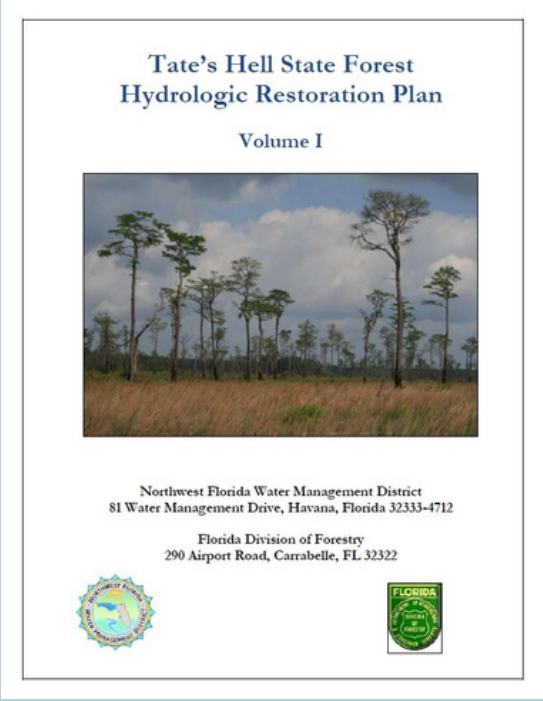
Economic incentive programs are based upon either tax credits or cash in hand. Overwhelmingly, stakeholders recognized that cash payments may be the more attractive option for smaller landowners. Reasons given were that cash transactions tend to be simpler, involve less paperwork and government interaction, and are deemed as “lower-risk”. However, while it was recognized that “cash is king”, it was also noted that it may be easier to implement a tax-based incentives program from a legislative standpoint.

It is important to note that all stakeholders who offered an opinion on the sourcing of tax-based incentives focused on the Georgia income tax structure as the most feasible area for work. The parallel caution given by stakeholders was to not use the ad valorem (i.e. local) property tax structure as an incentives platform. While potentially attractive to landowners to have annual ad valorem taxes abated, such a platform has the potential to be destructive to the budgets of local county governments and school districts. The very basis of public education in Georgia is ad valorem taxation, and timberlands, including wetlands, are at the core of this tax base. Therefore, incentives for restorations and permanent protections should be laid upon the expenditure side of the state budget for cash-in-hand transactions and on the revenue side of the state budget for tax-credit-based transactions.

Fiscal Impact Feasibility

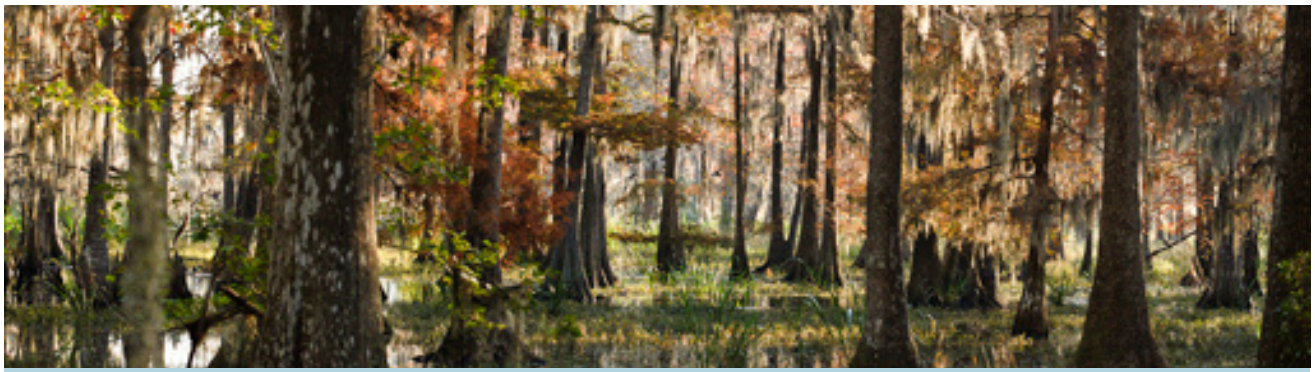
The overall fiscal needs and impacts of creating a new state incentives program is difficult to assess but is tractable in its simplest form. We offer some rudimentary estimates on what the fiscal impact might be and propose a few options of how to make those numbers feasible.

Using the most recent National Wetlands Inventory data, Georgia is approximately **18.4 percent wetlands**. This calculates to about **6.9 million acres** of wetlands. About three-quarters of those wetlands are in southern Georgia, equating to **5.2 million acres**. If those watersheds are in conditions proportional to the 2011 National Wetland Condition Assessment, roughly **50 percent** of those wetlands are in fair or poor conditions and in need of some sort of restoration, or **2.6 million acres**. We can further calculate the potential cost of restoration based on numbers from an example restoration project in the Apalachicola River Basin, Florida, a nearby and similar ecosystem.



In 2011 restoration costs at Tate's Hell State Forest, Florida averaged $26 per acre. Adjusting for inflation as of spring 2021, at **$30 per acre** total statewide restoration costs for **2.6 million** acres would be **$78 million in Georgia** (spring 2021). Distributed over one to two decades, a wetlands conservation program solely based off of the hard costs of restoration activities could cost between **$3.9 and $7.8 million annually**.

Determining the cost of a conservation program that includes incentives for conservation easements that permanently protect restored wetlands will be a more difficult number to estimate. However, factoring in dollars to permanently protect wetlands will be critical to such a program. The Wetlands Reserve Program pays landowners 100 percent of the easement value for permanent easements and up to 75 percent of the easement value for 30-year easements. Wetlands Reserve Program conservation easement values are determined by using an Area Wide Market Analysis (AWMA) and corresponding Geographical Area Rate Caps (GARCs). With the data available from NRCS, it is difficult to estimate the average costs per acre and/or per easement as all financial assistance obligations are grouped into one category and are not easily comparable to the number of enrolled acres per year.



A very approximate amount of costs and range of state budget impact can be estimated from current land values and prices in rural Georgia. A reasonable overall average price per acre in tracts over **100 acres is $2,700** (spring 2021). In order to not underestimate the budget impact, but likely overestimating costs, it is reasonable to assume that **half** of the present value of the land (the wetland) is surrendered in the permanent easement (**$1,350**). Using the 2.6 million-acre figure cited above, that would be a total easement value of **$3.5 billion**. Assuming all such easement values were actually used and spread over at least **three decades**, that averages roughly **$117 million annually** in credits and/or payments. This, added to the upper estimate of the restoration costs calculated above, totals approximately **$125 million annually**. But even at the average annual total of $125 million this constitutes 0.53% of the tax revenues for the most recently completed state fiscal year (2020-2021). A non-trivial number, but reasonable, and with benefits that would be immense for Georgia communities and the economy.

Overall, the initial, one-time costs would be significant, but the long-term returns would be compelling for such conservation work. Once a program such as this is completed, the annual returns would not diminish but continue to be repeated annually and eventually amortize the original investments to near zero.

Determining Eligibility

Landowner Eligibility

For optimal wetland conservation there should be few limits to landowner eligibility. Three parameters to consider are adjusted gross income limits, land ownership, and water rights.

Adjusted gross income. A common barrier for landowners to not receive the benefits from other conservation incentive programs is falling outside of the AGI requirements. For this program, we recommend increasing AGI limits or removing them entirely.

Land ownership. Landowners should have a clear title to their property. However, it is recommended to create an alternative way for heirs' property operators to enroll in the program much like the Farm Service Agency conducts enrollment. The state of Georgia has enacted the Uniform Partition of Heirs Property Act (UPHPA) which allows for alternative documentation to be used as proof of control of the land. This will be crucial for creating an equitable program. Additionally, there should be little to no longevity requirement for ownership of a parcel or group of parcels.

Water rights. In Georgia all landowners have riparian use rights subject to reasonable regulation by the state. There is no titling of the water itself such as in certain western or states. Thus, the adequacy of water flows and accumulation can be based upon scientific investigation and engineering with no legal analysis of such rights. Restored wetlands will most often benefit downgradient property owners in terms of both flood control and baseflow.

Land Eligibility

Lands eligible for this program should be wetlands that have been degraded due to human influence: rangeland, pasture, or forest production lands where the hydrology has been significantly degraded and can be restored; riparian areas which link protected wetlands; and lands adjacent to protected wetlands that contribute significantly to wetland functions and values. Such lands may be federally jurisdictional or not. Non- or minimally degraded wetlands should also be eligible when ecologic data show the value of such transactions.

Acreage limits. There should be no acreage limits, however it may be necessary to prioritize landholdings based on size as previously mentioned in the Wetland Prioritization section.

Dual enrollment. Lands already enrolled in government cost-share programs should be ineligible unless program goals are determined to be different enough with limited to no overlapping activities. However, if it proves advantageous to use state funding for federal match in key programs and landscapes, such dual enrollment should be encouraged.

Existing conservation easements. Lands with existing conservation easements should still be considered eligible for such a program, particularly where an original easement did not restore a wetland that would otherwise be considered eligible. Some conservation easements have clauses that allow for certain management practices where they benefit the ecological functioning of the site.

Awareness of site limitations. When drafting an incentive program, it will be important to define site limitations. It will be important to match compatible restoration practices to appropriate sites and to recognize realistic expectations for hydrologic restoration. From 1998 to 2009, 11 to 15 percent of Wetlands Reserve Program projects in the Southeast were deemed as hydrologically unsuccessful due to incompatibility between landowner goals and site limitations (Steven and Gramling 2012). This same study recommended that future restoration programs consider hydrogeomorphic limitations when defining land eligibility to improve program success. Not defining parameters around site limitations and implementing incompatible restoration activities has the potential to result in poor wetland quality (Euliss et al. 2008; Steven and Gramling 2012) with resultant wastes of taxpayer resources.

Land type. For this program, we recommend considering the legal status of the wetland. While the target of this program is non-jurisdictional wetlands, a jurisdictional wetland may still be a legitimate target for restoration and/or protection. The legal status of the wetland and the property type classification code should be considered.

Program Conservation Activities

Restoration

We recommend including both habitat and hydrologic improvement activities in the wetland conservation program.

Habitat improvement activities include: erosion management via tree planting, native vegetation plantings, non-native invasive species control, prescribed fire implementation, and reestablishing coarse woody debris.

Hydrologic improvement activities include: low water crossings construction, road removal, culvert installation, culvert removal, flashboard riser installation, ditch block construction, box culvert/weir installation and adjustments, bridge building, and surface drain removal. Typical hydrological restoration involves restoring water to a fully or partially drained wetland.

Protection

Once the functions of a wetland have been successfully restored, landowners should have the ability and be incentivized to further conserve the wetland. To achieve this we recommend encouraging longevity of the wetland functions through permanent easements that include non-development clauses, any appropriate habitat management recommendations, and incentives to implement enhanced habitat management practices.

Ensure longevity. Based on stakeholder input and additional research, it was concluded that establishing not only permanent easement agreements, but also establishing a long-term commitment by the State government will be critical to ensure the longevity of conservation work and the protected wetlands. Otherwise, there may be no point in investing in restoration and ecological management if it will be erased by incompatible management once the program is "over." The recommended minimum easement duration is 30 years, but the optimal scenario will be permanent. The most opted for easement option in Wetlands Reserve Program projects in the Southeast is 30-year agreements (Steven and Gramling 2012), but the marginal costs of making such easements permanent is very compatible with longer-term, permanent natural-infrastructure goals. We recommend providing an option for the landowner to renew or make permanent their easement after the first agreement has expired. There should be an additional incentive to renew or keep the easement in perpetuity.

Develop recommended management practices that ensure the viability of wetlands over the long term. Conservation activities that mimic natural disturbance patterns are most likely to be self-sustaining and most successful for the long term (Euliss et al. 2008, Steven and Gramling 2012). Recommended management activities should be based on forest type. Common forest types in Georgia containing non-tidal wetlands are bottomland hardwoods, pine flatwoods, and longleaf pine forests. Included among these are cypress domes/ponds and many other variations of pocosins.

Incentivize the implementation of Best Management Practices (BMPs) and enhanced habitat management practices. This report is not advocating for increased regulations on forestry BMPs. Rather, there may be increased social and ecological benefits that result from inclusion of incentives for enhanced practices for sites associated with streams and wetlands. When implemented properly, BMPs ensure the protection of water quality during forest management activities (National Association of State Foresters 2019). In some site types, water quality practices can reach beyond existing BMPs to have increased benefits. For example, voluntarily increasing streamside management zones around ephemeral wetlands, permanent streams, or jurisdictional wetlands can have a positive impact on these sites. We suggest continuing to use tools based on BMP guidelines as well as rewarding the use of additional habitat enhancement practices. For example, incentivizing a voluntary increase of streamside management zones in 25-foot increments could be folded into easement agreements and could reap large hydrologic and habitat benefits.

Next Steps

How to Take Action

This report is the first step in piloting an economic incentives program for wetland conservation in Georgia. Our findings have set the stage for further research and workshopping. The following next steps have been identified by stakeholders to advance this program. Some of the activities in these steps are linear, though some are not, and certain steps will be intertwined. This document will be given to key trade groups, officials, landowners, and environmental organizations to support their efforts in advocating for improving wetland forest policy in Georgia.

- **Understand** why landowners are/are not utilizing current conservation programs.
- **Collaborate** with universities (e.g. UGA Warnell School of Forestry, Odum School of Ecology, College of Agriculture and Engineering, Albany State) and other research entities (e.g. the Jones Center) to gather information on priority landscapes for restoration in Georgia and the needs and wants of landowners.
- **Build** a program that incorporates the suggestions defined in this report as well as additional logistical details. Changes in both administrative and legislative platforms will need focused advocacy attention from trade and conservation organizations. It may be possible to collaborate with other active incentive programs to achieve multiple conservation goals.
- **Strategize** ways to market a program to gain support from a diverse coalition of taxpayers.
- **Implement** a program that successfully restores and conserves functioning wetlands in the state of Georgia.

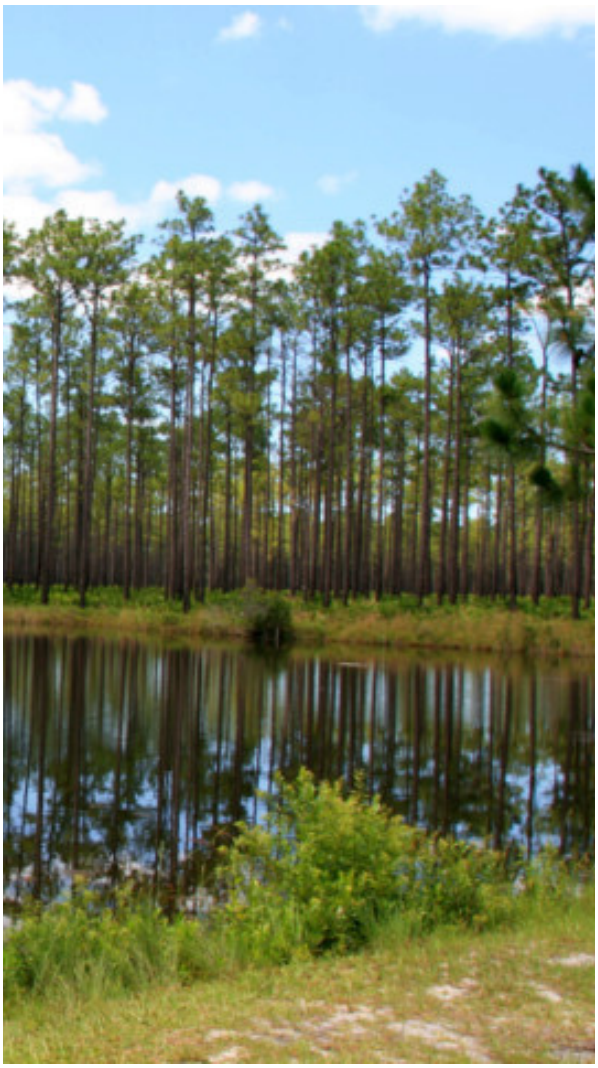
Conclusion

Restoring Wetlands for the Future of Our Communities

Wetlands in the state of Georgia cover approximately 18.4 percent of the state's landscape. Unfortunately, historical and current wetland losses due to land conversion have negatively impacted these sites. Historic losses prior to the 1980s paired with the more recent losses in wetland diversity (Dahl 2011) has negatively affected the hydrology of downstream communities. This in turn has social and ecological consequences, and the potential to negatively impact widespread Georgian communities.

As an alternative to imposing government regulations, voluntary wetland restoration will be critical to the long-term conservation of wetland areas. Current federally funded conservation incentive programs in Georgia are available for landowners that provide economic assistance to help achieve their land stewardship goals. However, these programs may not necessarily be adequate to reach Georgia's wetland conservation goals at the scale desired to sustain essential ecosystem services. A successful wetlands conservation program will be economic incentives based, and pair permanent protection on top of restoration.

Our goal with this project was to provide information about how to approach creating a viable state-level program to incentivize wetlands conservation and protection in Georgia. Our vision is to use these findings to influence key players in Georgia, such as the Georgia Forestry Association and the Georgia Water Coalition, to work with elected and appointed officials to develop a conservation incentives program to boost better wetland conservation and management in the state.



In summary, this program should be targeted towards private forest landowners and aim to restore degraded wetlands to proper hydrological function, create and incentivize appropriate wetland forest management activity parameters, and protect wetland resources through long-term conservation easements.

A successful program will accomplish this through:

- Carefully crafting a wetland project prioritization process.
- Utilizing tax-based economic incentives.
- Expanding landowner eligibility.
- Defining site limitations and selecting appropriate wetlands based on those parameters.
- Basing payments off of completed program conservation activities.
- Including both restoration activities and protection criteria to ensure longevity of the wetland.
- Encouraging the continued implementation of Best Management Practices in forestry operations.

The next steps identified by this partnership and its stakeholders are: 1) understand why landowners are/are not utilizing current conservation programs, 2) collaborate with universities and other research entities to gather information on priority landscapes for restoration in Georgia and the needs and wants of landowners, 3) build a program that incorporates the suggestions defined in this report as well as additional logistical details, 4) strategize ways to market a program to gain support from a diverse coalition of taxpayers, and 5) implement a successful program. Some of the activities in these steps are linear, though some are not, and certain steps will be intertwined.

This program, whether started from square one or incorporated into an existing program, will build on current regional conservation partnerships to further increase the capacity of wetlands conservation. The continuation of diverse stakeholder involvement will be imperative to share resources and expertise and eventually create a program feasible and attractive to a variety of supporters and participants that will increase the amount of and sustain restored wetland forests and other wetland habitats. Managing the program in an adaptive way will lead to high-quality work and efficient use of taxpayer resources.

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Gail Cowie | Albany State University Water Policy Center

Laura Early | Satilla Riverkeeper emeritus

Ben Emmanuel | American Rivers

Robert Farris | Georgia Forestry Association

Forest Stewards Guild staff | Forest Stewards Guild

Laurie Fowler | UGA Georgia River Basin Center, emeritus faculty

Stacy Funderburke | The Conservation Fund

Stephen Golladay | Jones Ecological Research Center

Katie Hill | UGA Carl Vinson Institute of Government

James Klang | TBL Consultants, LLC

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Damon Mullis | Ogeechee Riverkeeper

Jess Riddle | Georgia ForestWatch, emeritus

Dan Roach | Rayonier

Alex Roberston | Georgia - Alabama Land Trust

Gordon Rogers | Flint Riverkeeper

Fletcher Sams | Altamaha Riverkeeper

Dakota Wagner | Forest Stewards Guild

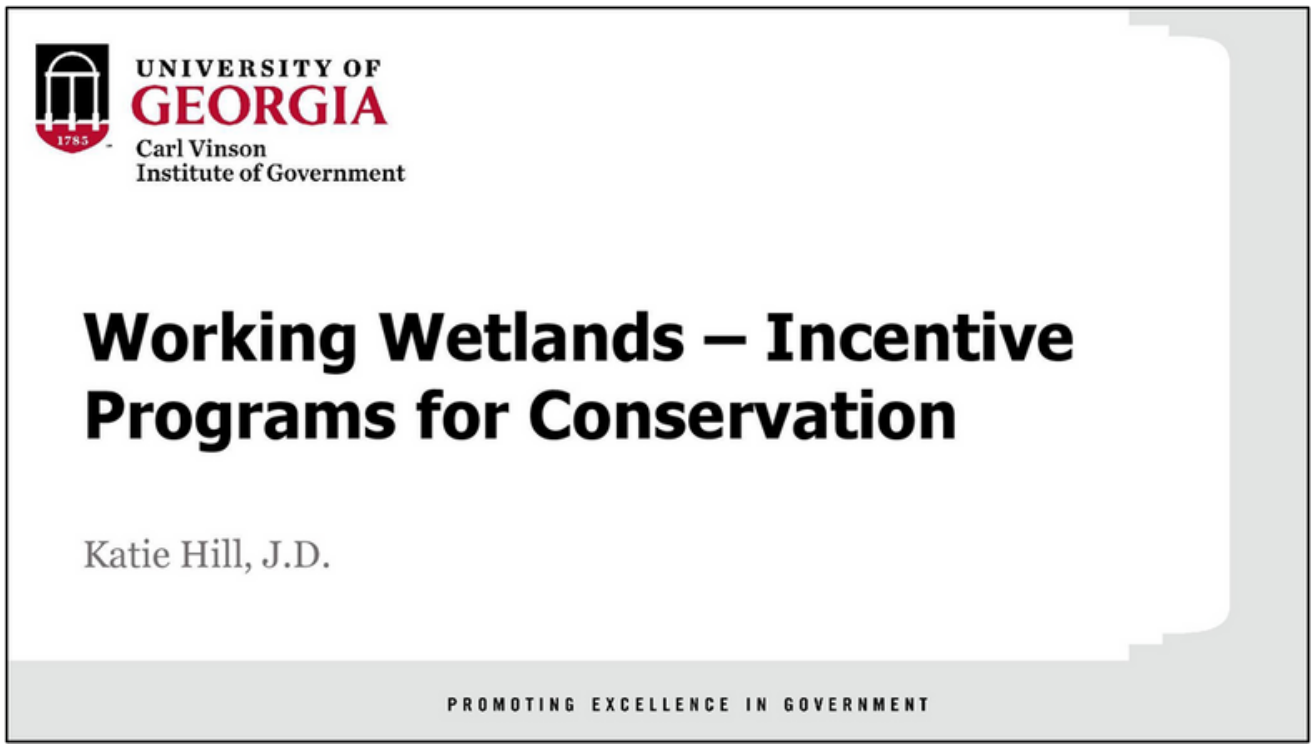
Seth Wenger | UGA Georgia River Basin Center

Mike Worley | Georgia Wildlife Federation

Plus several valued and anonymous participants.

Appendix

September 2020 Workshop Presentation Slides



Which wetlands?






Many definitions

- Hydrology
- Soils
- Plants

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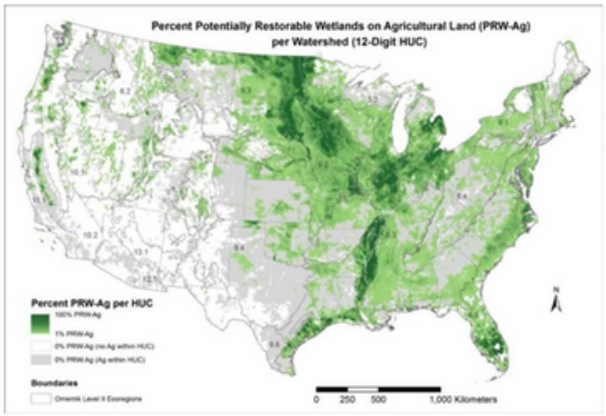

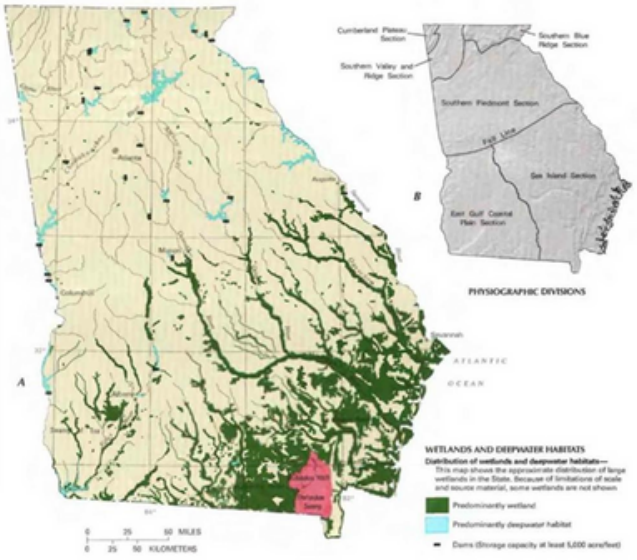

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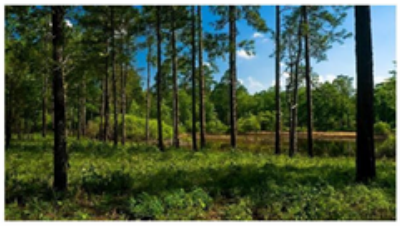

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Existing incentive programs

USDA NRCS

- Wetlands Reserve Program (WRP)
- Environmental Quality Incentives Program (EQIP)
  - EQIP Conservation Innovation Grants (CIG)
- Conservation Stewardship Program (CSP)
- Healthy Forests Reserve Program (HFRP)
- Regional Conservation Partnerships Program (RCPP)
- Resource Conservation and Development grants (RC&D)
- Voluntary Public Access and Habitat Program

Tax incentives

- GA Forest Land Protection Act (FLPA)
- GA Conservation Use Valuation Act (CUVA)
- Conservation easement tax incentives (GA and federal)

Other programs

- GA Forestry BMPs
- USFWS Partners for Fish and Wildlife
- GA Soil and Water Conservation Commission (SWCD) grants
- Certification programs (FSC, SFI)
- Carbon credits

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Program details

Program	Activities	Incentive	Potential Gaps
Wetlands Reserve Program (WRP)	Easements to protect and restore wetlands Wetland Reserve Enhancement Partnerships focus on critical areas; allow leveraging of funds; allow innovative restoration methods	• Permanent easement: 100% easement value, 50-75% restoration cost • 30-year easement: 50-75% easement value, 50-75% restoration cost • Term easement or max under state law: 50-75% easement value, 50-75% restoration cost • NRCS pays all easement recording costs	AGI above $900,000 ineligible (except joint venture or general partnership, which will have benefits reduced commensurate with ownership (to 4th level of ownership)) Backlog of requests (9% applications enrolled 2019)

Environmental Quality Incentive Program (EQIP)	Financial and technical assistance to plan and install structural, vegetative, and land management practices to alleviate natural resource problems	• Payments for conservation practices
		• Georgia examples:
		  • Riparian forest buffer: $185-3,905/ac
		  • Wetland restoration, ditch plug: $11-13/CuYd
		  • Wetland restoration, riverine channel & floodplain: $343-412/ac
			AGI above $900,000 ineligible (except joint venture or general partnership, benefits reduced same as WRP)
			
			$450,000 limit per payment cycle
			
			Backlog of requests (~28% applications funded 2019, GA had third-highest number unfunded applications)

EQIP CIG	Funding for implementation of innovative conservation techniques	• Grant program	Requires 1:1 match
Conservation Stewardship Program (CSP)	Maintain existing conservation systems, adopt additional conservation activities	• Technical assistance • Financial assistance: annual payment for 5 years w/competitive renewal; supplemental payment for conservation plan development	AGI above $900,000 ineligible (except joint venture or general partnership, which will have benefits reduced commensurate with ownership (to 4th level of ownership)) $200,000 limit per payment cycle

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Program details, cont'd.

Program	Activities	Incentive	Potential Gaps
Healthy Forests Reserve Program (HFRP)	Restoration and enhancement of forest ecosystems, primarily to aid recovery of species listed under Endangered Species Act (ESA)	Financial assistance and easements • 10-year restoration agreement • 30-year easement for specific conservation actions • Permanent easement for specific conservation actions May avoid ESA restrictions	Not available in all states Species focus
Regional Conservation Partnership Program (RCPP)	State, multi-state, or watershed-scale projects; half of funding for "critical conservation areas," which includes Longleaf Pine Range	Funding for conservation activities	Must be located in a critical conservation area or selected partnership area. Partners must provide a "significant portion" of the overall cost of project (can be direct or in-kind)
RC&D	Natural resource protection and enhancement	• Technical and financial assistance	Cost-share likely required Small projects
Voluntary Public Access & Habitat	Voluntarily make land accessible to public for wildlife-dependent recreation, including hunting and fishing. States receive funding for programs; no more than $3M per state. Specifically eligible projects include projects on wetland reserve easements	Up to 25% of states' awards may be used to restore, enhance, or create wildlife habitat	Must make land accessible to the public

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Program details, cont'd.

Program	Activities	Incentive	Potential Gaps
FLPA	Property must be devoted to commercial production of trees, timber, or other wood and wood fiber products. May have secondary uses such as wildlife habitat, carbon sequestration, conservation, etc.	Land taxed at 40% of conservation values (based on soil productivity) instead of fair market value Excludes value of any residence on the property	• 200 acre minimum; can be multiple parcels but at least one must be 100 acres • Enrollment period is 10 years • Stiff penalties for breach (pay back twice the amount of savings)
CUVA	Property must be devoted to bona fide conservation use, including timberland	Land taxed at 40% of current use value instead of fair market value	• Maximum 2,000 acres • Enrollment period is 10 years • Stiff penalties (pay back twice the amount of savings)
CE federal tax deduction	Voluntarily donated conservation easement to land trust or government agency that benefits public by permanently protecting important conservation resources	Tax deduction, up to 100% of income for farmers and ranchers (including foresters) for 15 years Other easements, up to 50% of income for 15 years Can help reduce estate taxes Should also reduce property taxes	• For farmers and ranchers must contain restriction that land remain "available for agriculture" • Easement must be permanent

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Program details, cont'd.

Program	Activities	Incentive	Potential Gaps
GA income tax credit	Voluntarily donated conservation easement to land trust or government agency that benefits public by permanently protecting important conservation resources	Credit on state income tax for value of easement – 25% of easement value, maximum of $250,000 for individuals and $500,000 for corporations and partnerships Can carry forward unused tax credit for 10 years Tax credit is transferable Can help reduce estate taxes Should also be property tax benefits	• Must meet two of five conservation purposes • 100-ft vegetated riparian buffers • No new construction within 150-ft of streams • No subdivision of parcels under 500 acres • Only one subdivision for parcels larger than 500 acres • New construction limited to 1% of property
GFC BMPs	Measures to prevent or reduce water pollution during forestry operations (incl. stream management zones and water diversions) Region-specific	Compliance with federal and state law (including wetland impacts) Registered forester accepted standard of practice	

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Program details, cont'd.

Program	Activities	Incentive	Potential Gaps
FWS Partners for Fish and Wildlife	Habitat improvement for migratory birds and endangered, threatened, and at-risk species	Technical and financial assistance Local field biologists help landowners: - Plan, implement, monitor projects - Identify other project partners - Identify funding sources - Provide permitting guidance May include wetland restoration	10-30 year agreement committing landowner to maintain project goals Landowner contributes to cost of project
Certification programs (FSC, SFI)	Management standards to preserve biological diversity, water quality, species habitat	Marketability of products	Cost to certify
Carbon credits	Managing wetlands to sequester carbon	Payments for carbon credits	No viable program in southeast yet

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Potential Gaps

- AGI
- Limited program funding/backlogs
- Payment limits
- Match/landowner funding requirements
- Permanent or long-term restrictions
- Geographic limitations
- Penalties
- Cost
- Lack of a program/market

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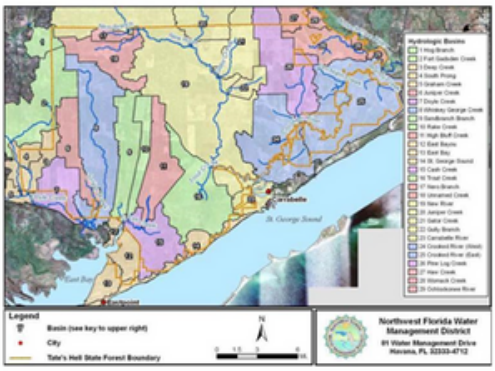
Restoration example: Tate's Hell, FL

Low water crossing

Road removal footprint following one year vegetation regrowth

Earthen ditch block



Surface water basins for restoration plans

Restoration example: Tate's Hell, FL

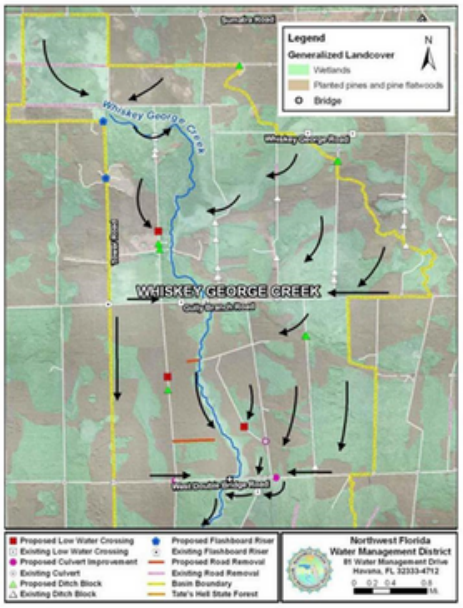
Table 1. Unit costs for hydrologic improvements (2009 dollars)

Hydrologic Improvement	Unit	Unit Cost
Low water crossing	Each	$15,000
Road removal	Per mile	$17,000
Culvert installation	Each	$5,000
Culvert removal	Each	$450
Flashboard riser	Each	$6,000
Ditch block	Each	$2550
Box culvert / weir	Each	$40,000
Bridge	Each	$100,000

$7,615,000 estimated costs for hydrologic improvements

293,650 acres

$26/acre (excludes habitat improvement –prescribed burning, replanting, etc.

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