

Protecting Mississippi Wetlands: Vital to communities, economic growth, and nature

AN ANALYSIS OF ECOSYSTEM SERVICE BENEFITS

Summary

Mississippi has 3.8 million wetland acres. Following the 2023 *Sackett v. EPA* Supreme Court decision and subsequent proposed rule changes by the Environmental Protection Agency (EPA) in 2025 and 2026, as many as 3.2 million of these are at-risk due to loss of federal Clean Water Act protections. This could continue the state's historical wetland loss: by the mid-1980s, Mississippi had lost approximately 59 percent of its historical wetlands.

Wetlands provide broad benefits to communities, supporting Mississippi's economy, culture, and wildlife. Wetlands are critical natural infrastructure, helping reduce flood risks and insurance losses. They are vital for clean water and drought mitigation, supporting municipalities, agriculture, and industry throughout the state. Wetlands power key seafood and tourism industries. Mississippi's rich hunting and fishing heritage depends on wetlands that are home to hundreds of species of birds, fish, and other wildlife.

The National Audubon Society and Earth Economics estimated the economic value of multiple benefits that wetlands provide for Mississippians and showed how those benefits are experienced.



Key Findings

- 3.8 million acres of wetlands across Mississippi
- 3.2 million acres of inland wetlands are clearly at-risk

Wetlands provide \$4.3 billion in ecosystem service benefits every year in Mississippi, including:



\$369 MILLION

in riverine flood mitigation benefits



\$872 MILLION

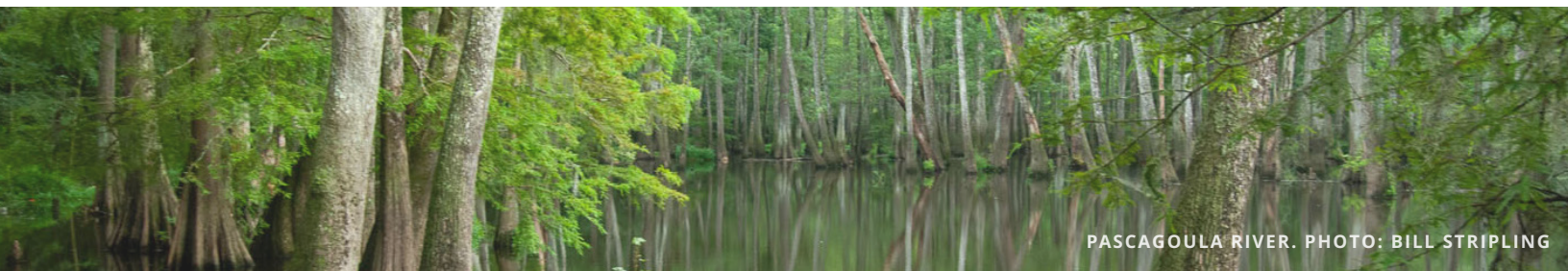
in water quality and water supply benefits



\$3.1 BILLION

in benefits flow from wetlands that are clearly at-risk

All 2.9 million Mississippians benefit directly from ecosystem services provided by wetlands.





LEAST SANDPIPERS. PHOTO: LARRY PACE

Mississippi's Wetlands

Most of Mississippi's wetlands are inland, dominated by trees, shrubs, and other perennial plants. Estuarine and coastal wetlands are quite diverse, from coastal salt marshes to forested cypress-tupelo gum swamps.

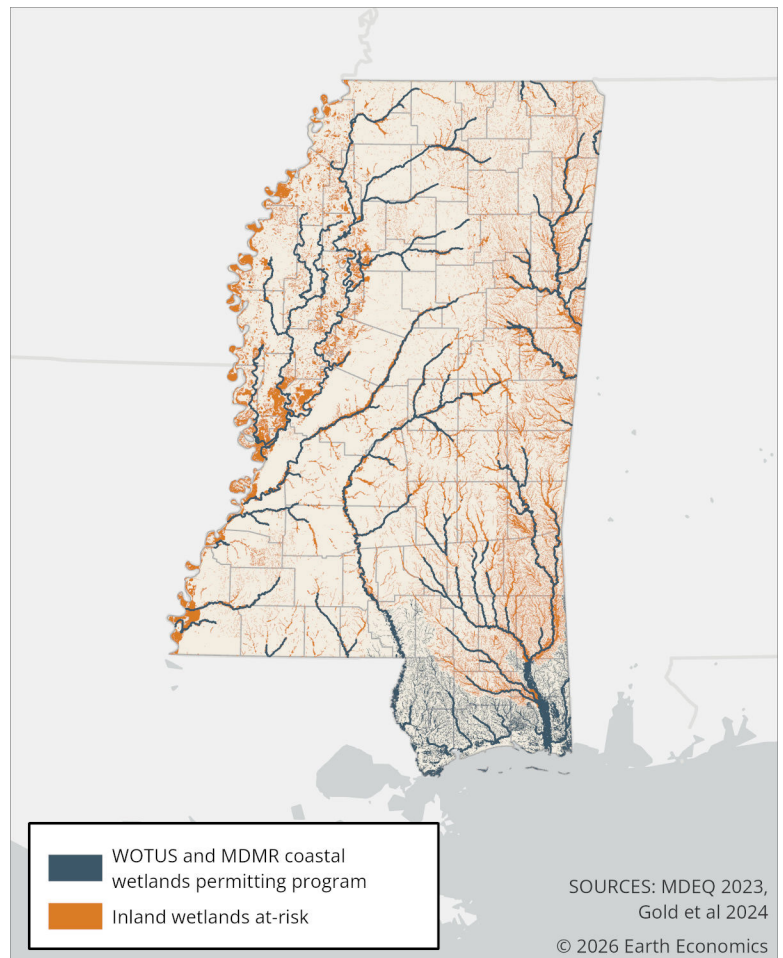
Under state and federal law, the Mississippi Department of Marine Resources (MDMR) implements a permitting program for impacts to wetlands in the Mississippi Coastal Zone, which includes the three coastal counties of Hancock, Harrison, and Jackson. Following *Sackett v. EPA* (2023), these coastal wetlands continue to be permitted through MDMR. Inland wetlands without a continuous surface connection to navigable waters (known as Waters of the United States) are not federally protected and currently have no state protections.

This report uses 2024 wetland maps¹ from the Environmental Defense Fund which exclude wetlands not recognized by the U.S. Army Corps of Engineers, such as non-vegetated land, deep water, or highly impacted by humans. The remainder were categorized by their degree of connectivity to Waters of the United States (WOTUS), as well as whether they were permanently or seasonally flooded.

Proposed changes to federal wetland protections are still in development. Of Mississippi's 3.8 million acres of wetlands, over 564,000 acres are coastal, and permitted by the CPP. About 28 percent of inland wetlands are connected to the WOTUS. Of these, nearly 52,000 acres are flooded most of the year, and just 52 acres are permanently connected to WOTUS. All other inland wetlands—nearly 84 percent of wetlands across the state—may be at-risk.

WETLANDS AT-RISK

- 3.8 million acres of wetlands across Mississippi
- 564,545 acres of coastal wetlands that are regulated by the State (15 percent)
- 52 acres of permanently flooded inland wetlands that are not at-risk of losing federal protections (less than 1 percent)
- 51,866 acres of semi-permanently flooded inland wetlands are potentially at-risk (1 percent)
- 3,188,088 acres of inland wetlands are clearly at-risk (84 percent)



SOURCES: MDEQ 2023,
Gold et al 2024
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Figure 1: Mississippi wetlands and surface waters

Benefits from Wetlands Flow Across the State

Benefits provided by Mississippi's wetlands are experienced throughout the state and beyond, from outdoor recreation to improved water quality, to reduced flood risk, and more.

- All 2.9 million Mississippians and 2.3 million residents of neighboring states benefit from the state's biodiverse wetland habitats, which also support the region's seafood industry.
- 2.5 million residents benefit from higher home values associated with nearby wetlands.
- 1.6 million residents enjoy wildlife watching and other recreational opportunities supported by wetlands.
- 252,000 residents living in floodplains benefit from reduced flood risk provided by wetlands.
- Mississippi wetlands hold an estimated 287 billion gallons of water, equivalent to over two and a half times the annual water use of the state's population and over two-thirds of the annual crop irrigation demand.



Why Wetlands Matter to Mississippi

Intact wetlands can protect communities while supporting economic development. Recognizing the magnitude of such benefits can help Mississippi's decision makers plan for growth without increasing flood risk, degrading water quality, or shifting long-term costs to communities. By protecting these critical resources, Mississippi can safeguard these benefits for this and future generations.



1. Wetlands protect drinking water and lower water treatment costs

Wetlands are essential to clean, abundant water supplies. By intercepting and filtering pollutants and sediments before they reach surface and ground water supplies, they reduce water treatment costs for communities, farmers, and industries.



2. Wetlands reduce flood risk and minimize insurance losses

Wetlands and stream corridors slow and store rains and storm surge, reducing flooding risk for homes and infrastructure, minimizing the need for built flood protection infrastructure that is more costly to maintain, and lowering insurance losses. These are especially important in a state with the eighth most-expensive home insurance in the nation.²



3. Wetlands are critical natural infrastructure for Mississippi

Buildings and infrastructure in floodplains require more frequent repairs, while flooding reduces property values, upends lives and livelihoods, and shrinks tax revenues. Just as discouraging development in floodplains safeguards people and property, rules protecting wetlands can promote public safety and reduce disaster losses.



4. Wetlands support robust outdoor recreation and seafood economies

Wetlands provide important habitat for birds, fish, and other wildlife that support Mississippi's outdoor recreation and seafood industries, as well as its hunting and fishing heritage. Protecting wetlands in the heart of the Mississippi Flyway is more important than ever, considering the region's historic wetland losses.



5. Wetlands can create income for landowners while saving taxpayers money

Voluntary programs to compensate landowners who implement practices benefitting wetlands, wildlife, and working lands are increasingly common. Enrolling Mississippi's marginal croplands in voluntary programs such as the Wetland Reserve Easement (WRE) program has been shown to save taxpayers as much as \$1,420 per acre in avoided costs for crop insurance, commodity programs, and disaster assistance payments,³ while providing habitat for migratory birds and other wildlife—yet another source of income for landowners selling hunting leases.

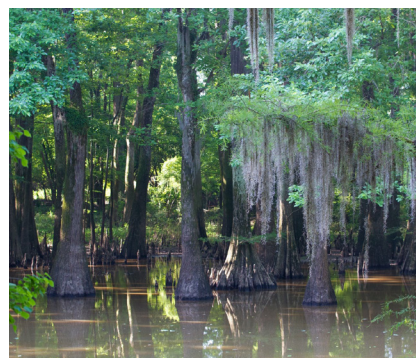
Photo credits, from top:

Farmland in Bolivar County. Photo: Kevin Scarborough/Flickr (CC BY 2.0)

Least Sandpiper. Photo: Larry Pace

Pearl River in Lefleur's Bluff State Park. Photo: Abby Braman

Shrimp boat in Mississippi Sound. Photo: Beverly Darby



Wetlands' Value in Mississippi: Everyone Benefits

Healthy, intact ecosystems—forests, wetlands, rivers, lakes, and grasslands—produce benefits known as ecosystem services. Because most ecosystem services are not traded in markets, their value is often overlooked by decision makers. But in the last several decades, economists have developed ways to estimate the value of non-market benefits, including:

- Avoided costs, such as downstream flooding
- The cost of replacing naturally filtered water
- The value of natural processes (e.g., pollination) to market value (e.g., increased yields)

DEFINITION: ECOSYSTEM SERVICES

Ecosystem services support our lives and well-being. Some benefits are bought and sold in markets, such as food or timber.

Many others—clean air, flood protection, outdoor recreation, the enjoyment of natural places—are non-market benefits, meaning the value they provide is often missing from conventional economic accounts.



Earth Economics used a wetlands-specific model to estimate the value of multiple benefits provided by Mississippi's wetlands.

Key Annual Benefits Supported by Mississippi's Wetlands

- Riverine flood mitigation:** Wetlands act as natural sponges by absorbing rainfall and slowing floodwaters—and help Mississippians and communities along the state's inland waterways to avoid costly flood damages.
- Surface water and groundwater supply:** Waters intercepted by wetlands replenish both surface water and groundwater.
- Water quality improvements:** Wetlands naturally filter water, reducing water treatment costs and providing higher quality recreational opportunities.
- Aesthetic beauty:** Property values tend to be higher near natural ecosystems such as wetlands.
- Habitat and biodiversity:** Wetlands support thriving plant and animal communities. These contribute to economic activity in a myriad of ways, such as supporting the seafood industry, recreational hunting, and wildlife watching.

KEY BENEFIT

Wetlands Are Critical Natural Infrastructure

Wetlands are critical natural infrastructure for Mississippi, reducing flood risk and long-term public costs. **252,000 Mississippians live in floodplains and benefit from wetlands and their ability to reduce flood risk.** Yet with one of the highest poverty rates in the nation, Mississippi communities and residents have fewer resources to respond to or rebuild after natural disasters. The cost of inaction—including a failure to adequately protect wetlands—results in higher insurance premiums for Mississippi families and businesses, larger federal disaster bills, and the frequent need to rebuild. When wetlands are degraded or destroyed, we can expect flooding to increase.

THE NATIONAL FLOOD INSURANCE PROGRAM

Wetlands provide natural protection by storing and slowing floodwaters, reducing flood risk to homes, businesses and communities. When flooding does cause damage, the National Flood Insurance Program (NFIP) provides insurance coverage to help property owners recover. Our analysis of NFIP data since 2021 found \$45 million in flood insurance claims across 65 counties in Mississippi, highlighting the significant cost communities face from flooding.



Figure 2: 100-year floodplains

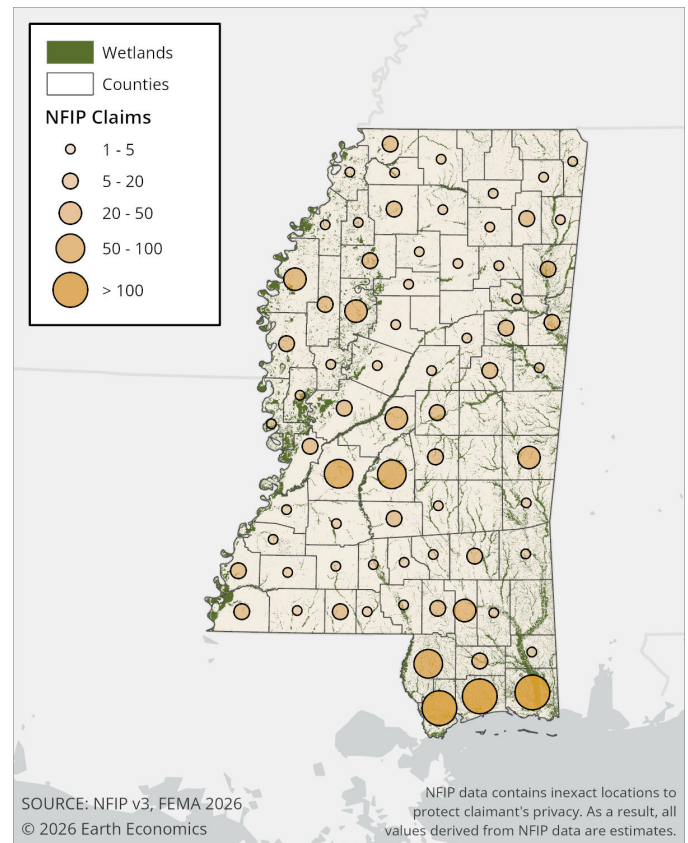


Figure 3: NFIP claims, 2021-2026

KEY BENEFIT

Wetlands protect drinking water, support groundwater recharge, and lower treatment costs

Wetlands are vital to cleaner water and mitigating drought. Urban and agricultural runoff harms human health, the environment, and the economy. The ability of wetlands to filter runoff before it reaches surface waters reduces treatment costs for communities, farmers, and industry. Wetlands also recharge groundwater and the surface waters that agricultural producers rely on, while reducing costs for industries and communities who rely on stable flows to meet their discharge permit limits.

Mississippi wetlands hold an estimated 287 billion gallons of water, enough to meet the annual water needs of 7.9 million people, over two and a half times the state's population. Wetland storage also equals over two-thirds of the water used annually to irrigate crops across the state, supporting farmers and agricultural production during periods of high demand.

Wetlands also overlap Mississippi's public water system service areas, which support over 2 million people. Within these areas, over 925,000 acres of wetlands store an estimated 62.6 billion gallons of water. Although these wetlands are not the sole source of water for those residents, their storage supports the broader water systems on which communities depend. The amount stored is equivalent to the annual water use of over 1.7 million people, or over 58 percent of the total household demand.

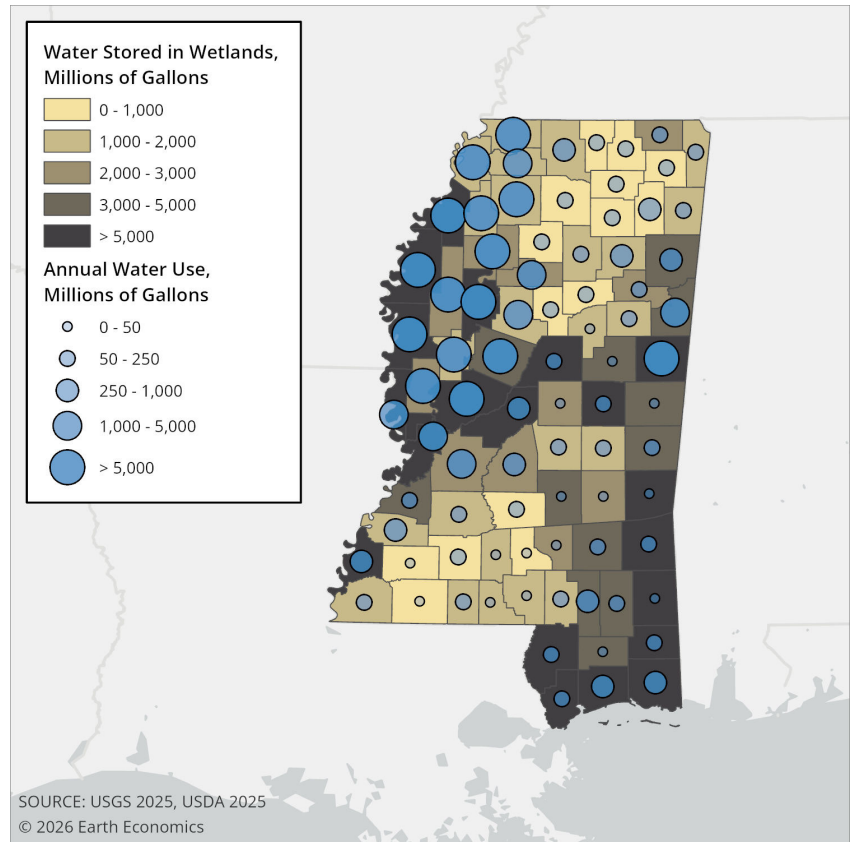


Figure 4: Mississippi wetlands store an estimated 287 billion gallons of water that are critical to supporting the state's annual water use needs



Wetlands Support Farming

Agriculture is Mississippi's largest industry, contributing \$9.5 billion to the state economy and directly and indirectly supporting more than 11 percent of the workforce.⁴ The industry depends on reliable water resources but faces challenges from both drought and flooding. These risks are particularly relevant in northwest Mississippi, where agriculture is widespread but drought risk is among the highest in the state.⁵

Drought can increase flood risk, hardening soils and limiting plant growth, leading to rapid runoff, erosion, and sedimentation during and after rain events.

To assess potential relationships between wetlands and agricultural losses, we evaluated United States Department of Agriculture (USDA) crop indemnity data since 2021 attributed to drought, flooding, or excess rain.⁶ County-level losses were compared with the ratio of wetland acres to farmland.

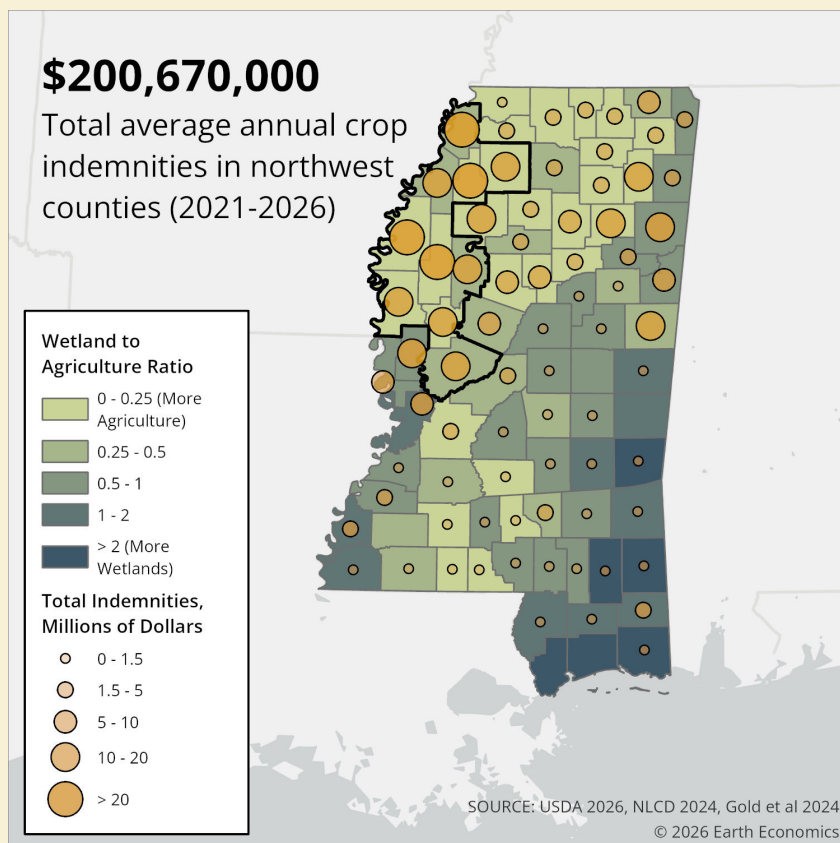


Figure 5: Wetlands and crop indemnity claims

Agricultural losses were highest in counties with relatively fewer wetlands, but these counties are also the major agricultural centers of the state. Counties with less than half as much wetland acreage as farmland acreage experienced higher losses per acre (\$52) than counties with a higher proportion of wetlands (\$33). Ten counties* in the northwest corner of the state accounted for half of all crop insurance payments statewide and showed higher losses per acre (\$73) than elsewhere in the state (\$35). Across these northwest counties, there are approximately 2.8 million acres of farmland, and 575,000 acres of wetlands; this means there is a low ratio of wetlands to farmland, specifically less than 50 percent throughout.

* Bolivar, Coahoma, Humphreys, Leflore, Panola, Quitman, Sunflower, Tunica, Washington, and Yazoo Counties

USDA's Agricultural Conservation Easement Program offers Wetland Reserve Easements (WREs) to support landowners who retire flood-prone farmlands and restore them back to wetlands. Mississippi properties enrolled in WREs have saved taxpayers \$1,420 per acre through reduced crop insurance, commodity programs, and disaster assistance payments (Blackwoods Group LLC, 2023).⁷

While these patterns are not proof that fewer wetlands lead to greater crop losses, they highlight an important relationship between lower relative wetland coverage and areas experiencing substantial agricultural losses from drought, flooding, and excess rain.



LEFLEUR'S BLUFF STATE PARK.
PHOTO: ABBY BRAMAN

A Critical Future for Mississippi's Wetlands

Mississippi's 3.8 million acres of wetlands are the foundation of Mississippi's way of life and economy. Hunting, fishing, and outdoors culture have deep roots, fueling the state's \$4.2 billion annual outdoor recreation economy.⁸ Wetlands are also critical to support the state's agricultural and seafood industries,⁹ supply an abundance of clean water, reduce flood risk, provide higher property values, and so much more.

As Mississippians decide where and how to protect wetlands, the many values wetlands provide need to be given full consideration. Wetlands offer cost-effective solutions for strengthening economic and environmental resilience. To protect wetlands is to invest in public safety and community prosperity, a common sense and fiscally conservative solution to reduce costs, while providing a broad range of benefits in perpetuity.

The cost of inaction—or not adequately protecting wetlands—will lead to higher insurance premiums for Mississippi families and businesses, larger federal disaster bills, and more frequent rebuilding efforts. Investing in wetlands is prevention, and is always less costly than disaster recovery.

Photos courtesy of the National Audubon Society.



Earth Economics is a non-partisan non-profit specializing in applied ecological economics. We translate nature's value into economic language to help leaders make smarter investments for people and planet. Our mission is to quantify and value the benefits nature provides to people, communities, and organizations, fostering effective decisions that prioritize the wellbeing of people and nature.



Audubon protects birds and the places they need, today and tomorrow.

For 120 years and counting, the National Audubon Society has preserved bird habitats, conducted scientific research, influenced policymakers to enact commonsense conservation laws, and engaged communities across the hemisphere to protect the natural resources upon which birds – and we – depend. By “bending the bird curve,” we are working to halt, and ultimately reverse, the decline of birds across the Americas.



GREAT EGRET.
PHOTO: BILL STRIPLING

Estimating the Value of Ecosystem Services

METHODOLOGY

Mapping

This analysis mapped Mississippi wetlands to identify their potential status in the wake of the 2023 *Sackett v. EPA* decision, based on methods developed by the Environmental Defense Fund,¹ which estimated Clean Water Act protections based on wetland characteristics and connectivity to streams, rivers, and other waters. Protection scenarios reflect EPA's Supplemental Notice of Proposed Rulemaking to the Updated Definition of "Waters of the United States" (September, 2026).

Valuation

Earth Economics estimated the economic value provided by Mississippi wetlands by applying a global study of 170 wetlands,¹⁰ which adjusts the value of wetland benefits based on four factors that vary by location: wetland size, total wetlands within 50 kilometers (km) (approximately 31 miles), human population within 50 km, and human influence (e.g., urban or rural, protected status). This spatially explicit model enabled Earth Economics to calculate unique unit values for each wetland across the state. In addition, the team filled model gaps with recent valuation studies transferable to Mississippi wetlands.

Beneficiary mapping

Earth Economics combined service-specific spatial boundaries with data on population and water use to identify beneficiaries and illustrate the scale of each benefit across Mississippi. Contact Earth Economics for more details on the technical approach.

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Suggested Citation:

Delaney, G., Needell, A., Fletcher, A. (2026). *Protecting Mississippi Wetlands: Vital to communities, economic growth, and nature: An analysis of ecosystem service benefits* [Factsheet]. Earth Economics