Restoring Coastal Louisiana

A Resource for the Nation

WATER MARKS

Winter 2000 Special Issue

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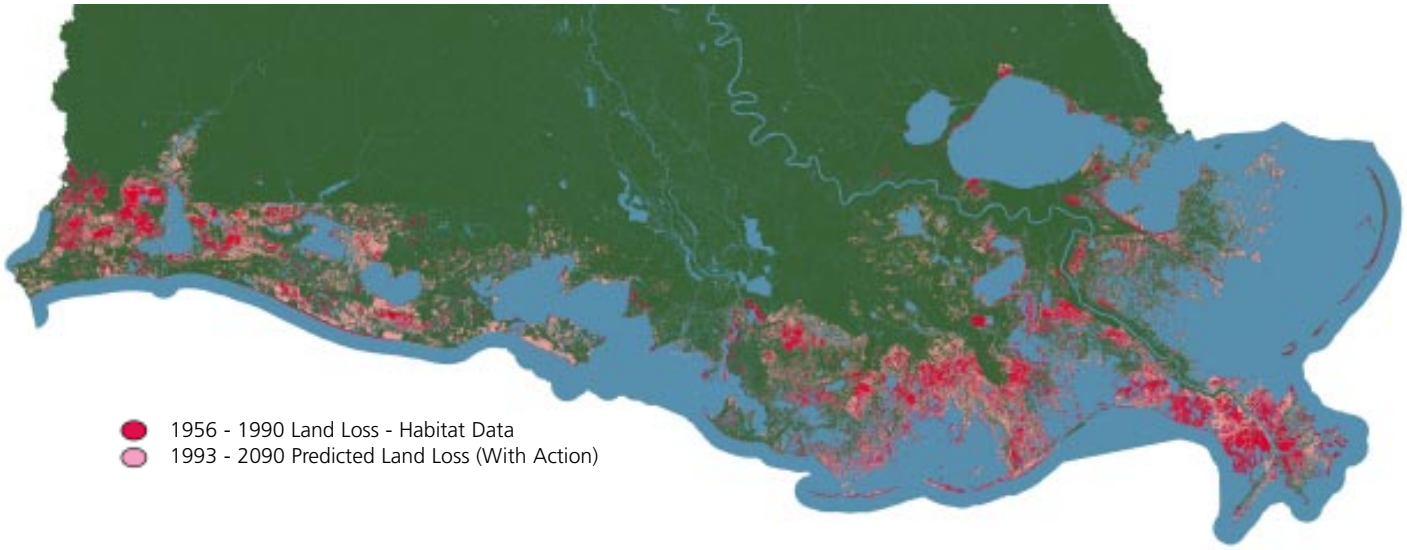
Coastal Louisiana's Future Jeopardized by Continued Land Loss

Louisiana Land Loss Area 1956 - 2090 **(USGS/DNR/USACE)**



Location of Landloss Area in Louisiana

Winter 2000 Special Issue
WaterMarks

WaterMarks is published quarterly to communicate news and issues of interest related to the Coastal Wetlands Planning, Protection and Restoration Act of 1990. This legislation funds wetlands enhancement projects nationwide, designating approximately $35 million annually for work in Louisiana. The state contributes 15 percent of the cost of project construction.

Acknowledgements
This special issue of *WaterMarks* is a revised reprint of *Caring for Coastal Wetlands*. Beth Vairin, U.S. Geological Survey, National Wetlands Research Center in Lafayette, LA, was the primary author and editor for the booklet.

Caring For Coastal Wetlands

BTNEP

The value of seafood species that depend on wetlands is $1 billion per year in Louisiana alone.

About half of the U.S. population lives along the country's coast, and coastal residents know more than ever before about the processes shaping their neighboring coastal wetlands. With that knowledge has come a sense of responsibility for caring and protecting the fragile coastal systems on which the country depends for fish and shellfish production, natural protection against storms, recreation, and many other values. To date, the Coastal Wetlands Planning, Protection and Restoration Act of 1990 and the Coast 2050 Plan are the most significant acknowledgments that public awareness of these vital areas and concern for their future have grown.

Though wetland loss occurs across the country, Louisiana accounts for over 80 percent of total coastal wetlands lost in the lower 48 states, at a rate of 25-35 square miles per year.

Wetland Values. . . Wetland Loss

Public awareness about the importance of coastal wetlands has marked the latter part of the 20th century. As a result, we will enter the 21st century with a deep appreciation for the way these areas function and the important values they provide.

Once endangered, brown pelicans such as this one have made an outstanding comeback in Louisiana's wetlands.

Economic:
Freshwater and saltwater marshes provide habitat for many species that we use for economic and recreational purposes. Waterfowl, wading birds, alligators, and furbearers all need wetlands for

some or all of their lives. Shellfish such as shrimp and crabs and many fish species use coastal wetlands for nursery habitat, spawning and feeding grounds.

- **Habitat:**
  Coastal habitats like swamps and barrier islands also support numerous threatened and endangered species, including the bald eagle, brown pelican, and piping plover.

Glenn Guntenspergen, U.S. Geological Survey

Hurricane winds can fold coastal marshes like an accordion, but these marshes and other coastal wetlands help reduce the threat of storm surges from hurricanes.

- **Storm Protection:**
  Barrier islands, coastal marshes, and other wetlands protect our cities and other inland habitats from the flood threat posed by storms and hurricanes.

- **Recreation:**
  Coastal wetlands provide unique opportunities for professional and amateur photographers, hunters, fishers, birdwatchers and boaters.

With an appreciation of the importance of coastal wetlands has come the realization that these habitats are fragile and that coastal wetland loss in the 20th century has been high. Even though wetland loss occurs across the country, loss figures in Louisiana account for over 80 percent of total vegetated wetlands lost in the lower 48 states — a rate of 25 to 35 square miles each year. Furthermore, Louisiana's coastal wetlands provide wintering habitat for 20 percent of the nation's waterfowl and supports the largest fishery in the lower 48 states.

The reasons for the losses vary. Storm damage, sea-level rise, subsidence, and floods, combined with human alterations such as oil and gas exploration, navigation canals, flood control levees, and urban and agricultural expansion, constantly challenge the survival of coastal wetlands. Moreover, the individual response of each wetland area to these events varies greatly, depending on location and the timing of such events. This makes understanding wetland systems even more difficult.

Meeting the Challenge

Recognizing the importance of coastal habitats and their vulnerability, legislators and voters began to call for wetland protection in the 1970's with the passage of laws like the Estuary Protection Act in 1970 and the Coastal Zone Management Act in 1972.

In addition, federal and state agencies began projects that led the way to current programs for wetlands restoration, especially in Louisiana. For instance, the U.S. Army Corps of Engineers began to use dredged material to rebuild marshes, and the state of Louisiana and the Natural Resources Conservation Service began sponsoring planting projects to reduce erosion in local areas. Prior to this, the U.S. Fish and Wildlife Service had acquired wetlands to protect natural resources and routinely managed them to help ensure longevity of the coastal habitat.

The Breaux Act

The Coastal Wetlands Planning, Protection and Restoration Act of 1990 has been a powerful statement about national concern for conserving and restoring coastal wetlands. The act is commonly known as the "Breaux Act," for its major author, Senator John Breaux of Louisiana. Because Louisiana faces the most alarming coastal wetland loss rates, the act's primary focus is on restoration and protection of those wetlands.

Cooperative Care of Wetlands

The act is specific and succinct. Over its ten-year lifespan it gives careful guidance for restoring Louisiana's vital coastal wetlands. It also establishes the Coastal Wetlands Conservation Grant Program to help preserve and restore other coastal wetlands in the United States. Under this program, any coastal state other than Louisiana that "submits a proposal substantial in character and design to carry out a coastal wetlands conservation project" is eligible to receive a matching grant for that project. In addition, it provides funds to further assist states and other wetland conservation programs under the North American Wetlands Conservation Act, passed in 1989.

The Breaux Act designates 70 percent of its authorized funds to Louisiana restoration projects, 15 percent to the Coastal Wetlands Conservation Grant Program, and 15 percent to North American Wetlands Conservation Act projects. All projects that protect and restore wetlands with Breaux Act funding, however, require non-federal matching contributions, which come from states and private sources, either as cash or in-kind services. By its very nature, the act encourages partnerships in reducing wetland loss.

The Cost

Where is the money coming from? Taxes on fishing equipment, import duties, and small engine and motorboat fuels are put into various accounts maintained by the U.S. Treasury Department. About 18 percent of the tax revenues are set aside to fund Breaux Act activities, with no more than $70 million designated each year for those activities. Although this amount of money sounds substantial, one large-scale restoration project alone can cost more than $200 million.

Since 1991, the Breaux Act has provided $33 to 53 million per year in federal funding for Louisiana restoration projects. For nationwide projects, the Coastal Wetlands Conservation Grant Program and North American Wetlands Conservation Act each receive about $7 to 11 million per year in federal funds from the Breaux Act. However, in addition to this critically important funding source, more resources are needed if restoration efforts are to match the scale of coastal wetland loss.

Art Belala, U.S. Army Corps of Engineers, New Orleans District

Senator John Breaux of Louisiana was the major author of the Coastal Wetlands Planning, Protection and Restoration Act of 1990. Here he speaks at a project dedication.

The Act in Louisiana

Reducing the severe loss of coastal wetlands in Louisiana is the primary goal of the Breaux Act, both in funding and in careful instruction on how that funding will be used. Those funds marked for Louisiana enable a comprehensive approach to wetland restoration: they fund the actual wetland restoration projects, but just as significantly, they fund the coordinated planning of those efforts as well as monitoring of the projects to measure their effectiveness.

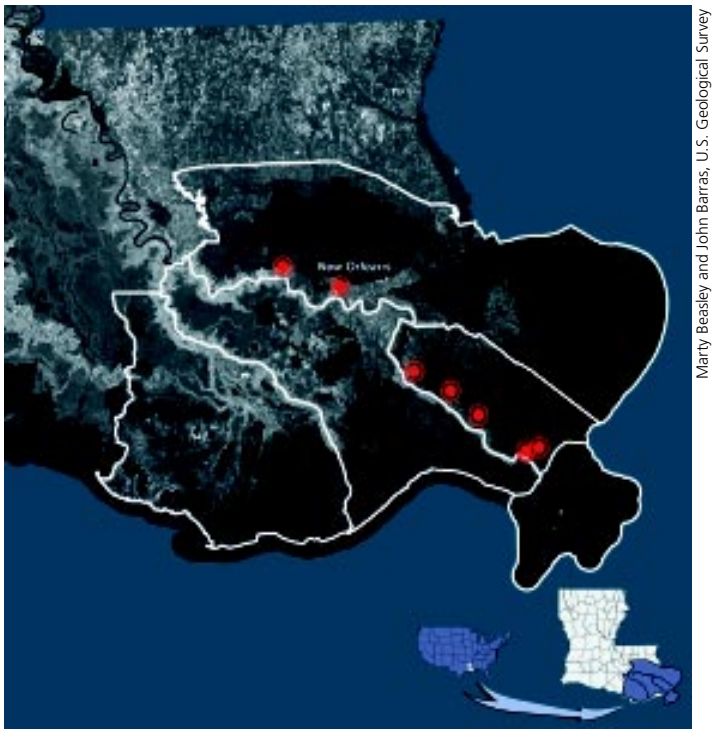
The Louisiana Coastal Wetlands Conservation and Restoration Task Force — made up of representatives from five federal agencies and the Governor of Louisiana — has a comprehensive restoration plan for addressing coastal Louisiana's severe wetland loss problem. Every year, this task force approves and reports to Congress priority lists of projects; every three years, it reports to Congress on the effectiveness of projects.

Planning

The act calls upon the federal and state governments to pull together into an unprecedented task force to ensure that a breadth of wetland issues are addressed. The act mandates that representatives from the U.S. Departments of the Army, Interior, Commerce, Agriculture, and the Environmental Protection Agency, along with the governor of Louisiana, work together as partners.

In 1993, the task force prepared the Louisiana Coastal Wetlands Restoration Plan to assist in identifying and selecting the highest priority restoration projects. Through public hearings, briefings, and interactive local meetings, the partners made extensive efforts to foster the involvement of university scientists, landowners, local governments, the general public, and a wide variety of other interests.

The plan outlines objectives for Breaux Act projects, identifies basin-level restoration strategies and specifies projects needed to implement those strategies. Drawing largely from potential projects identified in that plan, the task force, with the help of its technical



Marty Beasley and John Barras, U.S. Geological Survey

The tremendous problem of large-scale wetland loss in Louisiana has to be met with large-scale efforts, which are costly. Feasibility studies — such as the Mississippi River Sediment Nutrient, and Freshwater Redistribution Study (MRSNFR shown above) and the Louisiana Barrier Shoreline Feasibility Study — give the task force information to weigh long-term projects against proposed benefits. Outlines are boundaries of hydrologic basins within the MRSNFR study area; red dots represent potential diversion sites.

personnel, annually evaluates a list of candidate projects.

As of January 2000, the task force had approved nine annual priority lists, resulting in selection of 99 active projects to address wetland loss in nine hydrologic basins along Louisiana's coast. These projects are anticipated to create, restore, and protect about 75,000 acres of wetlands over the next 20 years.

Coast 2050

In 1998, coastal restoration efforts in Louisiana took a bold step forward with the creation of Coast 2050. A strategic plan for the survival of Louisiana's coast, Coast 2050 was prepared at the urging of citizens from across Louisiana and the nation. Its creation involved federal, state and local entities; landowners; environmentalists; wetland scientists and others. The planning process was carefully crafted to maximize common ground, ultimately leading to the strategy's endorsement by all 20 of Louisiana's coastal parishes.

The ecosystem strategies recommended by Coast 2050 promote restoration and protection on a coast-wide basis and involve the natural forces that created the Louisiana coast — the Mississippi River, the climate, and the rise and fall of the Gulf of Mexico. Strategies that use these forces, however, are not without cost. The total cost estimated by Coast 2050 is in excess of $14 billion — a tenfold increase in the current investment made by the Breaux Act. The cost of doing nothing, however, is considerably higher — if left unchecked, future land loss could risk over $100 billion in infrastructure and resources over the next 50 years. And these damages do not adequately reflect the true impact to our country if this national treasure is lost.

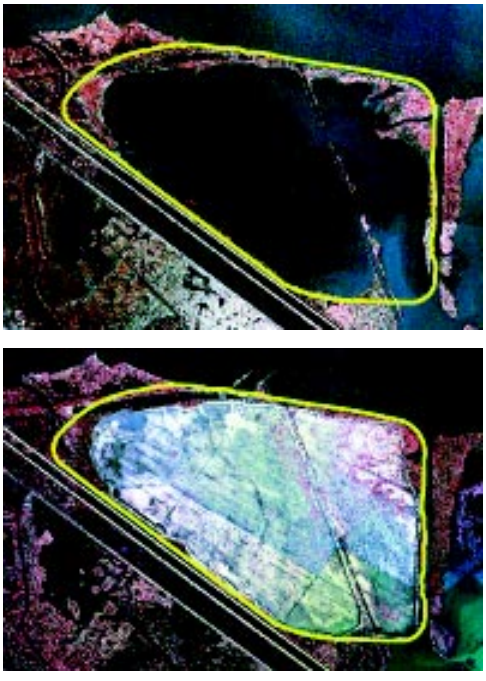
Natural Resources Conservation Service

This constructed rock bulkhead, located where Boston Canal meets Vermilion Bay in south Louisiana, is one feature of a project now protecting over 400 acres of marsh along the northern edge of the bay. Plantings of smooth cordgrass along the shoreline are further protecting the coastal wetlands from physical erosion. Six months after the project began, monitoring showed that about 5 feet of sediment were deposited landward of the bulkhead and almost 90 percent of the cordgrass had survived.

Projects: How, Why, Where

Breaux Act priority projects, which play a pivotal role in Coast 2050's restoration strategies, are carried out by the federal agencies represented on the task force, in close cooperation with the state. A 20-year monitoring period is established to determine a project's effectiveness in protecting, creating, or restoring wetlands. Funds for this monitoring effort are set aside throughout a project's duration.

If a project is officially deauthorized, funds slated for that project can be redirected to other efforts. This flexibility



Bill Jones and Steve Hartley, U.S. Geological Survey

By using dredged sediment, nearly 350 acres of new vegetated wetlands now exist in Bayou LaBranche; the lighter areas show the wetland gain. As expected, initial plantings of millet (an annual plant) have been replaced by naturally occurring species.

is a key feature that recognizes the dynamics of wetlands over time and the need for their long-term care.

Breaux Act projects in Louisiana have focused on both creating and restoring coastal wetlands already lost and on reducing future wetland losses associated with natural processes and human activities. Restoration projects are generally grouped as

- **vegetative** — planting appropriate kinds of plants (such as salt-tolerant ones) in vulnerable areas to help prevent erosion and trap sediment;
- **sedimentary/ freshwater** — creating or nourishing wetlands by using diverted or dredged sediments or freshwater with its associated nutrients;
- **structural** — using materials such as rock breakwaters to protect existing wetlands that are threatened by erosion;
- **hydrologic** — restoring more natural flow and salinity patterns.

The Breaux Act projects are anticipated to create, restore, or protect over 75,000 acres of coastal wetlands in Louisiana.

Natural Resources Conservation Service

Demonstration projects are small scale and are used to showcase restoration methods. In the photos above and at left, wave-dampening devices protect shorelines and nearby marshes from erosion.

A major accomplishment of the Breaux Act restoration planning process was delineating the unique landscape features and key processes affecting wetlands in each of Louisiana's nine hydrologic basins. The various causes of wetland loss, and the specific solutions for offsetting those losses, vary from basin to basin. Some specific problems and how they are being addressed through Breaux Act projects follow.

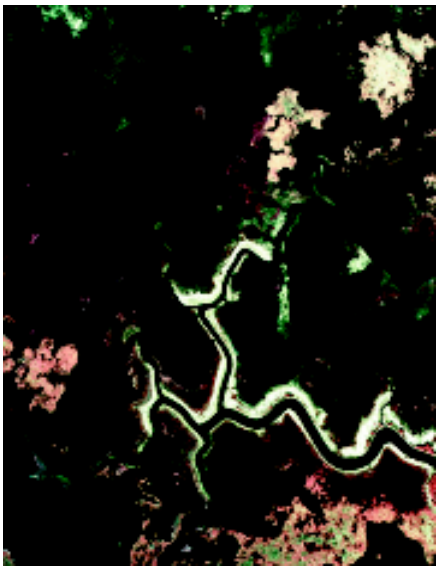
- The basins with active deltas, like the Mississippi and Atchafalaya rivers, have been affected by maintenance of large navigation channels through the deltas. Restoration efforts focus on improved management of sediment carried by those rivers, to facilitate accretion of new

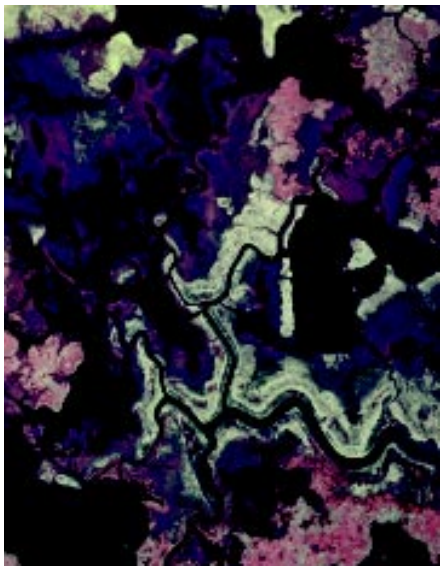
Natural Resources Conservation Service

To date, 99 projects, such as plantings to help prevent erosion, have been approved to reduce wetland loss in Louisiana.

deltaic marsh. Small-scale sediment diversions (artificial crevasses) created in the Mississippi Delta provide clear evidence that large-scale delta-management projects could be successful as well.

- The Pontchartrain, Breton Sound, Barataria, and Terrebonne basins are inactive delta regions where the Mississippi River once provided abundant sediment. (The highest marsh loss rates in the state are in the Barataria and Terrebonne basins.) Causes of coastal wetland loss in all of these regions include subsidence, sea-level rise, erosion, excessive ponding, and saltwater intrusion due to canals and channels. Projects in these basins reintroduce river water, sediments, and nutrients by a variety of means, such as siphons and freshwater and sediment diversions; use dredged material to restore wetlands and barrier islands; reduce erosion by wetland plantings; and restore natural hydrology to reduce excessive ponding in marshes and swamps and prevent salt water from moving into previously fresh areas.





Robert Greco and Eric Seeger, U.S. Geological Survey

- In the Chenier Plain of southwestern Louisiana — the Teche/Vermilion, Mermentau, and Calcasieu/Sabine basins — the greatest threats to wetlands are shoreline erosion, saltwater intrusion, and excessive ponding. The loss of the shoreline causes breakup of interior wetlands by allowing salt water to penetrate further into fresh marsh areas. Once plants die, fragile organic marsh soils can be easily eroded. Stabilization projects such as marsh plantings and breakwaters protect banks from further erosion, and water control structures moderate salinities and water levels. Dredged material helps replenish what has been lost by creating new marsh.

	Acres	
	1993	1996
Water	241	117
Emergent marsh	52	118
Transitional wetland	40	98
Net increase of marsh habitat	124	

These images (1993, left; 1996, right) and data show results from a Breaux Act project in Bayou Sauvage National Wildlife Refuge, Orleans Parish, LA, where water levels were drawn down to expose mudflats and allow plants to grow (lighter areas on 1996 image).

Monitoring data collected from Breaux Act projects can be far reaching in usefulness. Data can be reviewed and used world wide for similar restoration efforts.

Natural Resources Conservation Service

An unexpected benefit of a Breaux Act project. Pelicans are using the project site at Raccoon Island for roosting.

Monitoring Efforts

Before project design is even completed, a plan for systematic evaluation of the results is developed. The monitoring plan for a project defines protocols for collecting data and information used to scientifically evaluate the effectiveness of the restoration project. Standardizing the collection of this information is vitally important so that everyone involved

can get an overall picture of how well a project is working. Researchers from Louisiana's universities help plan monitoring efforts as well as review results, thus broadening the base of technical expertise involved with restoration.

Cooperative efforts among the federal and state agencies continue well after a project is completed as participants collect data from the field, aerial photographs, and satellite images and then provide their findings to the task force in a series of regular reports. That information can be used to develop modifications in the operation of projects or to point out design changes in future projects to better achieve wetland goals. In extreme cases, a project might be deauthorized if it is not achieving its goals.

Louisiana Department of Natural Resources

When 75 percent of a restoration project has been designed, plans begin for monitoring the effectiveness of that project. In the photo above, a monitoring technician services a continuous recorder placed in thin-mat, floating marsh.

Education

The future survival of coastal wetlands and the need to maintain and restore them hinges on public awareness. One of the earliest achievements in the Breaux Act process was the understanding that the public had to be involved in the identification and prioritization of projects. Public meetings occur throughout coastal Louisiana to assist in identifying wetland restoration issues. The task force carefully considered input from previous public meetings during their development of Louisiana's Coastal Wetlands Restoration Plan and during the selection of priority list projects.

The Breaux Act in Other States

Although Louisiana's unique wetlands are specifically provided for in the Breaux Act, the act also recognizes and addresses wetland loss nationwide. The National Coastal Wetlands Conservation Grant Program and the North American Wetlands Conservation Act both receive funds authorized under the Breaux Act. The Coastal Wetlands Conservation Grant Program makes 15 percent of the funds from the Breaux Act available to coastal states and territories for wetland conservation. Since the act's inception, it has assisted more than 75 projects in U.S. states and territories.

The North American Wetlands Conservation Act was passed in 1989 to promote governmental and private partnerships to conserve wetlands, specifically in their support of migratory waterfowl and other fish and wildlife. As of mid 1997, about $40 million in grants have been directed to the conservation of 130,000 acres of coastal wetlands in the United States.

21st Century Challenges

Project results are starting to show that the Breaux Act has been an innovative catalyst for coastal restoration nationwide. The National Coastal Wetlands Grant Program and the component of the North American Wetlands Conservation Act funded by the Breaux Act ensure a strong foundation for continued wetland conservation and the benefits wetlands provide to fish, wildlife, and the American people. • The Breaux Act in Louisiana has been extremely successful in leading many federal, state, and private efforts to develop an integrated, comprehensive, system-wide approach to wetland restoration. Large-scale feasibility studies will be paramount in setting the future course of major restoration projects.

The unprecedented monitoring program will provide an invaluable record of program effectiveness as well as the feedback needed to fine-tune restoration efforts.

Although projects approved under the nine priority lists will be designed, constructed, and monitored over the next 20 years, authorization of the Breaux Act itself will end September 30, 2000 unless reauthorized by Congress. The anticipated benefits of almost 75,000 wetland acres created, protected, or restored over 20 years in Louisiana exceed those of similar efforts in other coastal areas of the nation, and additional restoration will be achieved with projects authorized via the 10th priority list. But if the rate of 25-35 square miles of Louisiana's coastal wetlands lost each year continues, hundreds of thousands of acres could be lost during that same time. Loss of that magnitude indicates that a larger-scale restoration effort is clearly needed to sustain the ecologic and economic productivity of the nation's largest coastal wetland complex.

Making that effort is the challenge facing us as we greet the 21st century.

Even though nearly 75,000 acres of Louisiana's coastal wetlands are expected to be created, protected, or restored over 20 years because of current Breaux Act projects, these projects are only a first step in balancing the anticipated loss of hundreds of thousands of acres in that same time.

Louisiana Coastal Wetlands Conservation And Restoration Task Force

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