



United States Department of Agriculture
Natural Resources Conservation Service

GULF OF MEXICO

RESTORATION: NRCS STRATEGY FOR SUCCESS





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The Gulf of Mexico Ecosystem Restoration Proposal

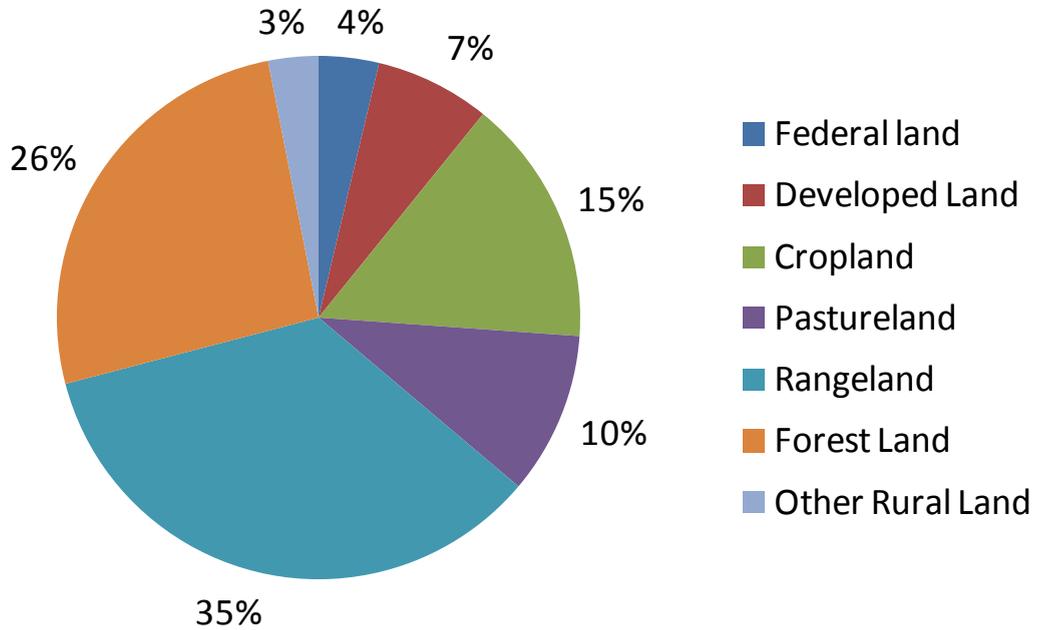
Introduction

The Gulf of Mexico is a national resource treasure. The Gulf of Mexico ecosystem hosts a diverse array of habitats from coral reefs and hyper-saline lagoons to emergent wetlands and vast sea grass meadows. More than 50 percent of the United States' coastal wetlands—approximately 5,000,000 acres—are connected to the Gulf. The Gulf provides 85 percent of all shrimp harvested, 60 percent of all oysters harvested, and more than 50 percent of recreational fishing in the United States. With more than 1.3 billion pounds of annual seafood production, the Gulf produces more finfish, shrimp, and shellfish than the South and mid-Atlantic, Chesapeake Bay, and New England areas combined. The health of this ecosystem is essential to the Gulf states and the nation.

The future health of the region's ecosystem will be decided on private lands. The land area of the five states in the Gulf of Mexico region—Alabama, Florida, Louisiana, Mississippi, and Texas—encompass more than 290 million acres. Private agricultural and forest lands account for 86 percent (see chart next page) of land area in the Gulf states. Consequently, the management of private agricultural lands has a tremendous influence on the health of the region's industries and natural resources, including the quantity and quality of water flowing into the Gulf's estuaries, fisheries and other wildlife. Through an incentive-based, voluntary approach, USDA's Natural Resources Conservation Service (NRCS) partners with farmers, ranchers, and landowners on private lands to sustain and enhance natural resources across the region.

Land Use in the Five Gulf of Mexico States

Source: USDA NRCS National Resources Inventory, 2007 Summary Report



Proposal Summary

A new Gulf-wide restoration strategy has been released. The Gulf Coast Ecosystem Restoration Task Force released in December 2011 a new framework for restoring the Gulf’s overall health; this report, *The Gulf of Mexico Regional Ecosystem Restoration Strategy*, is the first-of-its-kind to collaborate with all five Gulf states, key federal agencies, and the public.

The restoration framework consists of four goals and several actions (see Appendix A) to guide activities at the local, state and federal levels that are necessary to restore the Gulf Coast’s ecosystem and reverse the ongoing decline; they are to:

1. Restore and conserve habitat;
2. Restore water quality;
3. Replenish and protect living coastal and marine resources; and
4. Enhance community resilience.

To implement the strategy, NRCS proposes a comprehensive approach. NRCS proposes a five-pronged approach to enhance water quality and quantity, restore and protect high-priority coastal areas, and enhance wildlife habitat to benefit the ecosystems in the Gulf region. This strategy is measurable in geographic reach and total financial investment and links other federal and state investments, thereby leveraging resources. Most importantly, NRCS is prepared to begin immediate implementation; proposal elements are:

1. Expand NRCS’ Gulf of Mexico Initiative to restore the health of major rivers in all five Gulf states;
2. Increase investments to restore and protect coastal Louisiana;
3. Expand NRCS’ Migratory Bird Habitat Initiative in the Lower Mississippi River Delta and along all five Gulf Coast states;
4. Launch an NRCS “Room for the River” project to restore the Mississippi River’s floodplain; and
5. Expand NRCS’ Mississippi River Basin Initiative in the Lower and Upper Basin states to improve water quality and quantity and address the Gulf of Mexico hypoxic zone.

The table below summarizes funding levels for each element of the approach NRCS estimates can be delivered through existing private lands conservation partnerships.

NRCS Gulf Ecosystem Restoration Proposal Summary

(Dollars in Millions)

Plan Elements	2014	2015	2016	2017	2018	Total	Supports Gulf Coast Task Force Goals
1. Gulf of Mexico Initiative	\$ 30	\$ 30	\$ 30	\$ 30	\$ 30	\$ 150	1, 2, 3
2. Restore and Protect Coastal Louisiana	-	25	25	25	25	100	1, 2, 3, 4
3. Migratory Bird Habitat Initiative	20	20	20	20	20	100	1, 3
4. "Room for the River" Initiative	25	40	40	40	40	185	1, 2
5.1 Lower Mississippi River Basin Initiative	20	20	20	20	20	100	1, 2
5.2 Upper Mississippi River Basin Initiative	70	70	70	70	70	350	1, 2
Total	\$ 165	\$ 205	\$ 205	\$ 205	\$ 205	\$ 985	

[Note: Adjustments to individual project scope or timeline can be made to reflect available funding.]

NRCS believes this comprehensive approach will generate significant benefits to water quality and quantity, wetland protection and restoration, and wildlife habitat and improve the ecological health of the Gulf region.

NRCS will deliver assistance through an extensive network of conservation partners, including state and local agencies and private for- and non-profit organizations. NRCS will deliver the elements of this proposal through its network of public and private partnerships that works collaboratively with farmers, ranchers, and private landowners to plan and install an array of conservation measures to address natural resource concerns on their operations. This network is

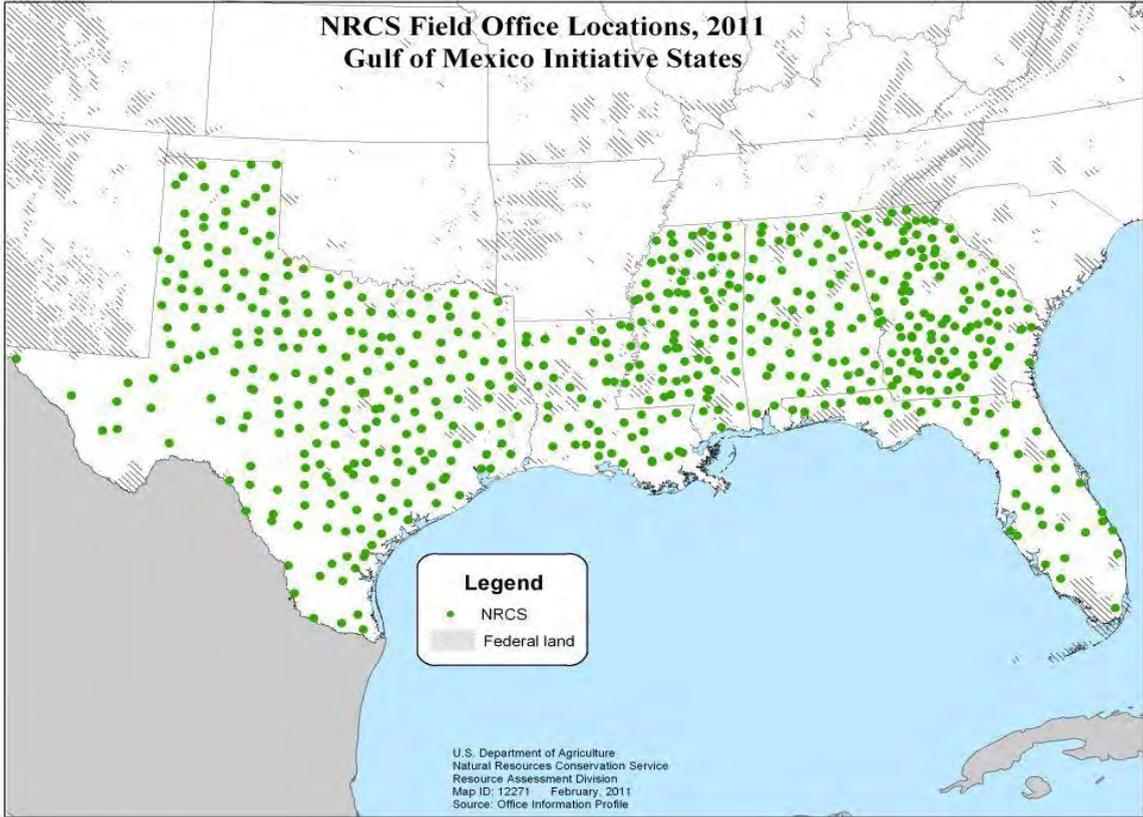
well suited to provide cost-effective and timely assistance to benefit the overall Gulf of Mexico ecosystem restoration effort. NRCS works side-by-side with state soil and water conservation districts and other agencies in all 50 states to leverage each other's technical and financial resources and jointly identify local and regional conservation priorities. NRCS also works closely with state and federal agencies in all states on joint projects through advisory committees (also known as State Technical Committees) and public forums where partners and stakeholders help guide the prioritization and planning of conservation assistance.

Significant conservation delivery infrastructure is already in place. Alongside the conservation partnerships, NRCS has an extensive field-level staff of conservation professionals in place, including soil and range conservationists, biologists, agronomists, and engineers. In just the five Gulf states, NRCS employs over 1,700 staff working out of 428 field offices (see map next page) to work with farmers and ranchers to plan and install conservation on their lands. This local field force is the agency's greatest asset and allows NRCS to act quickly and address natural resource issues of regional or national priority while acknowledging local needs.

NRCS has existing landscape-scale conservation initiatives in place. On-the-ground implementation of conservation assistance in watersheds and habitat areas of greatest ecological benefit could begin almost immediately. NRCS will be able to move swiftly because it builds upon active landscape-scale conservation initiatives. In FY 2010, NRCS launched a series of regional conservation projects addressing regional priorities and uses scientific information to target funding at priority "hot spots" or focal areas. NRCS already has active landscape initiatives that are delivering conservation today and could be easily increased in size and scope to provide more natural resource benefits. Also, NRCS is working with other federal agencies to pilot a multi-tiered water quality monitoring and assessment strategy to measure the results of our work.

The following sections provide additional details for each of the five elements of the overall Gulf restoration proposal. In each section, NRCS has identified the major actions from the *Gulf of Mexico Regional Ecosystem Restoration Strategy* that the particular element would support. Please see Appendix A for a summary description of each action.

In addition, to provide readers with a better sense of the types of conservation projects that NRCS helps to deliver, Appendix B contains "before and after" photographs of examples of a small subset of conservation activities NRCS would implement under this effort.



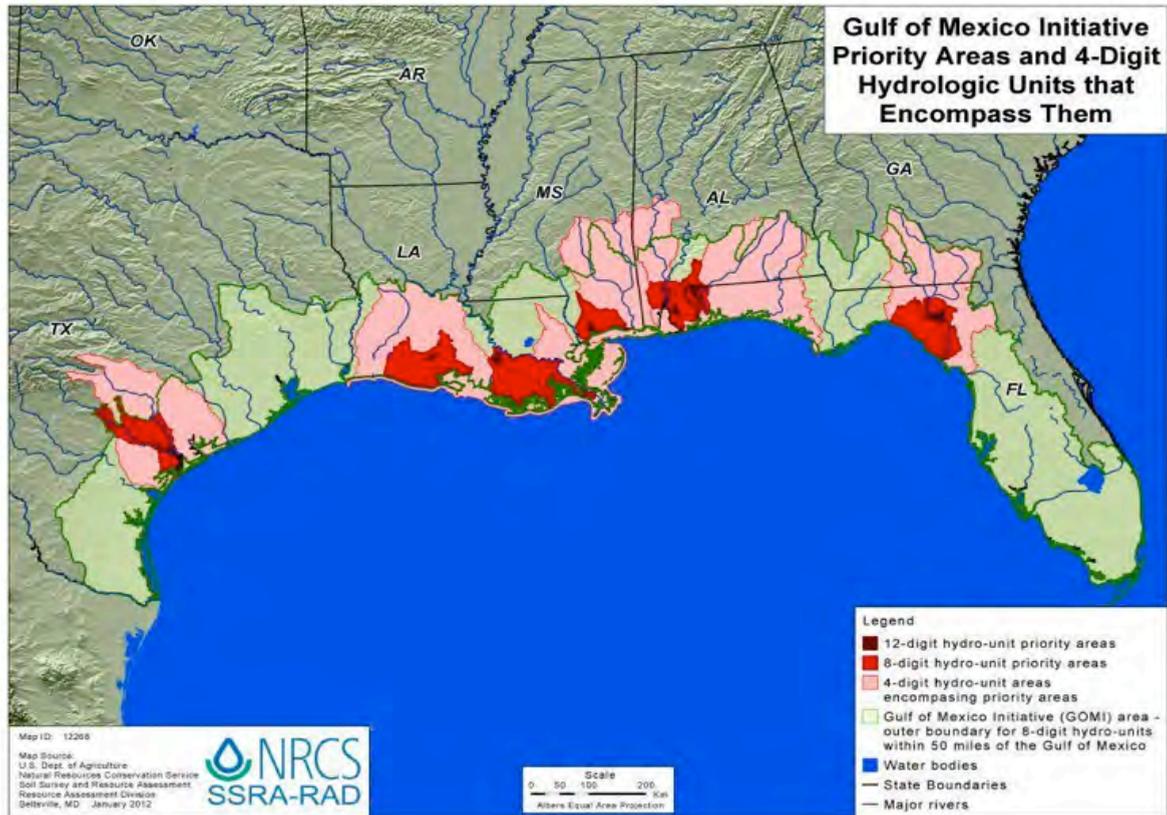
Element 1: Gulf of Mexico Initiative

Plan Elements	2014	2015	2016	2017	2018	Total	Supports Gulf Coast Task Force
							Major Actions
1. Gulf of Mexico Initiative	\$ 30	\$ 30	\$ 30	\$ 30	\$ 30	\$ 150	1.3, 1.4, 1.5; 2.1, 2.2, 2.4, 2.5; 3.1, 3.5

Proposal. Expand the Gulf of Mexico Initiative (GoMI) by treating agricultural lands in greatest need of conservation in seven priority river basins to improve water quality and quantity, as well as restore and protect critical wildlife habitat. Depending on available funding, the number of river basins could also be expanded. This project also presents a significant opportunity to leverage resources with other federal and state partners to benefit priority river basins.

Background. In December 2011, NRCS launched GoMI, an innovative water and wildlife conservation initiative, which will focus up to \$50 million over three years in conservation assistance to farmers and ranchers in priority areas along seven major rivers draining to the Gulf (see map next page). All five states along the Gulf Coast are part of this effort, including Alabama, Florida, Louisiana, Mississippi and Texas. Many communities and cities along these rivers—such as Pensacola, Mobile, Biloxi, and San Antonio—will benefit from the cleaner water, more abundant wildlife, and healthier fisheries produced by this project.

NRCS and its conservation partners developed this initiative in response to the Deepwater Horizon oil spill and President Obama’s call to action to help restore the waters, shores and wildlife populations along the Gulf Coast. USDA is working with a team of local, state, and federal partners to deliver the project, and through this effort, Gulf farmers and ranchers invest in voluntary conservation to provide cleaner water and more abundant wildlife for their neighbors and communities.



Drawing from recent state natural resource assessments, NRCS identified Gulf Coast watersheds where substantial opportunities exist to reduce nutrient and sediment loading through focused technical and financial assistance. Working in conjunction with state and federal agencies, local partners, and producers, NRCS selected seven river basins containing 16 of the watersheds with the greatest opportunity to build upon existing conservation efforts. They include Weeks Bay in Alabama, the Escambia River in Alabama and Florida, the middle Suwannee River area in Florida, the Atchafalaya and Mermentau Basins in Louisiana, the Jourdan River in Mississippi, and the Lower San Antonio River in Texas.

Currently, NRCS has focused GoMI conservation work at relatively small watershed scales (the 8- and 12-digit hydrologic unit code [HUC] scales). This focus allows the agency to target resources where they can be most effective and measurable. NRCS is also working with other federal and state agencies to identify ways to monitor and assess the ability of these conservation treatments on improving water quality.

Performance Information. If GoMI were expanded to include larger river basins (increasing in scale from the current 8- and 12-digit scale to the 4-digit HUC major river basin scale), NRCS would be able to treat additional agricultural lands in the Gulf region that generate significant nonpoint source water loadings. At this scale in the seven river basins, there are about 6.1 million acres of agricultural lands. NRCS estimates that out of this total, about 1.8 million acres (or 30 percent) are in need of a high degree of conservation treatment to address water quality concerns. An additional 2.3 million acres (or 37 percent) are estimated to be in need of a moderate degree of water quality conservation. In total, there are about 4.1 million acres of land that are in need of some form of water conservation treatment.

If NRCS collaboratively worked with producers to install conservation, the agency estimates that such actions would reduce annual edge-of-field losses from these crop fields by:

- Over 7.2 million tons of sediment (or a reduction of 84 percent from current loss levels)
- Over 132 million pounds of nitrogen (or a reduction of 48 percent from current loss levels)
- Over 12.5 million pounds of phosphorous (or a reduction of 62 percent from current loss levels)

NRCS believes these benefits will provide significant water quality benefits to these priority rivers and to the Gulf waters. To better estimate and assess the positive impacts, NRCS wishes to partner with state water quality agencies, EPA, USGS, and NOAA to translate these nonpoint source loading reductions into both in-stream benefits and, ultimately, Gulf of Mexico water quality benefits in estuaries and fisheries.

Element 2: Restore and Protect Coastal Louisiana

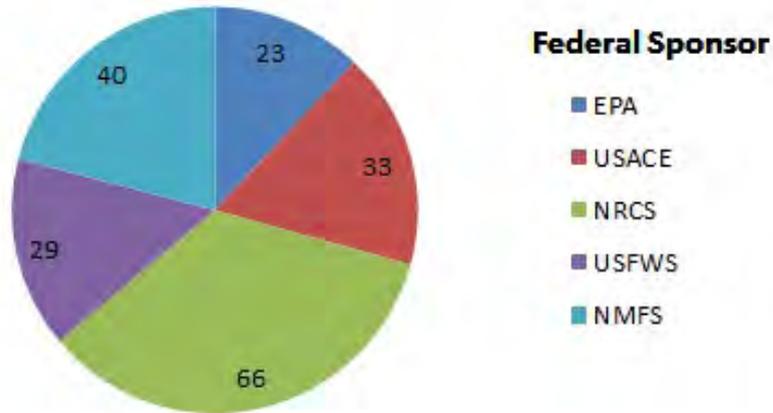
Plan Elements	2014	2015	2016	2017	2018	Total	Supports Gulf Coast Task Force
							Major Actions
2. Restore and Protect Coastal Louisiana	\$ -	\$ 25	\$ 25	\$ 25	\$ 25	\$ 100	1.3, 1.4, 1.5; 2.2, 2.4, 2.5; 3.1, 3.5; 4.1; 4.2

Proposal. Expand and accelerate NRCS support for coastal wetland and barrier island protection and restoration projects along the Louisiana coast.

Background. NRCS and its network of state and local partners in Louisiana are capable of planning and delivering significant restoration projects along the state’s coast. For example, NRCS is a long-standing partner in implementing the 1990 Coastal Wetlands Planning Protection and Restoration Act (CWPPRA), a partnership of five federal agencies and the state of Louisiana working towards the common goal of creating, protecting, and restoring Louisiana’s valuable coastal wetlands. The program is the oldest and largest federally funded restoration program in Louisiana.

Projects such as those that NRCS has implemented under CWPPRA provide an effective near-term solution to address the immediate needs of critically impaired areas of the coast as larger scale projects are planned. Over the past 22 years, CWPPRA has authorized funding for 191 projects, of which 96 have been constructed (see chart next page). Collectively, these projects are benefiting more than one million acres of coastal wetlands.

Authorized CWPPRA Projects



Since inception of the program, NRCS has:

- Been the federal sponsor of 66 of the 191 projects authorized by CWPPRA
- Provided project design and construction contract administration on 12 other federally-sponsored projects

The 57 active NRCS-sponsored projects cover more than 527,000 acres of valuable coastal wetlands at a cost of almost \$607 million. In addition to planning projects, NRCS has completed construction on 39 projects affecting 381,000 acres of coastal wetlands, at a cost of \$232 million.

For example, in partnership with the Louisiana Department of Wildlife and Fisheries, NRCS has helped protect and restore Raccoon Island in the Isles Dernieres Chain. Raccoon Island is experiencing shoreline retreat gulfward and bayward, threatening one of the most productive wading bird nesting areas and shorebird habitats along the Gulf Coast. It is also home to the Louisiana’s largest nesting colony of brown pelicans, the state bird. Through the project, NRCS has helped restore 60 acres of back bay marshes, thus creating valuable avian habitat.

NRCS and its state, local, and private conservation partners can build upon their combined capabilities and continue to collaboratively design and deliver barrier island protection and restoration projects, as well as coastal wetland restoration and freshwater introduction projects.

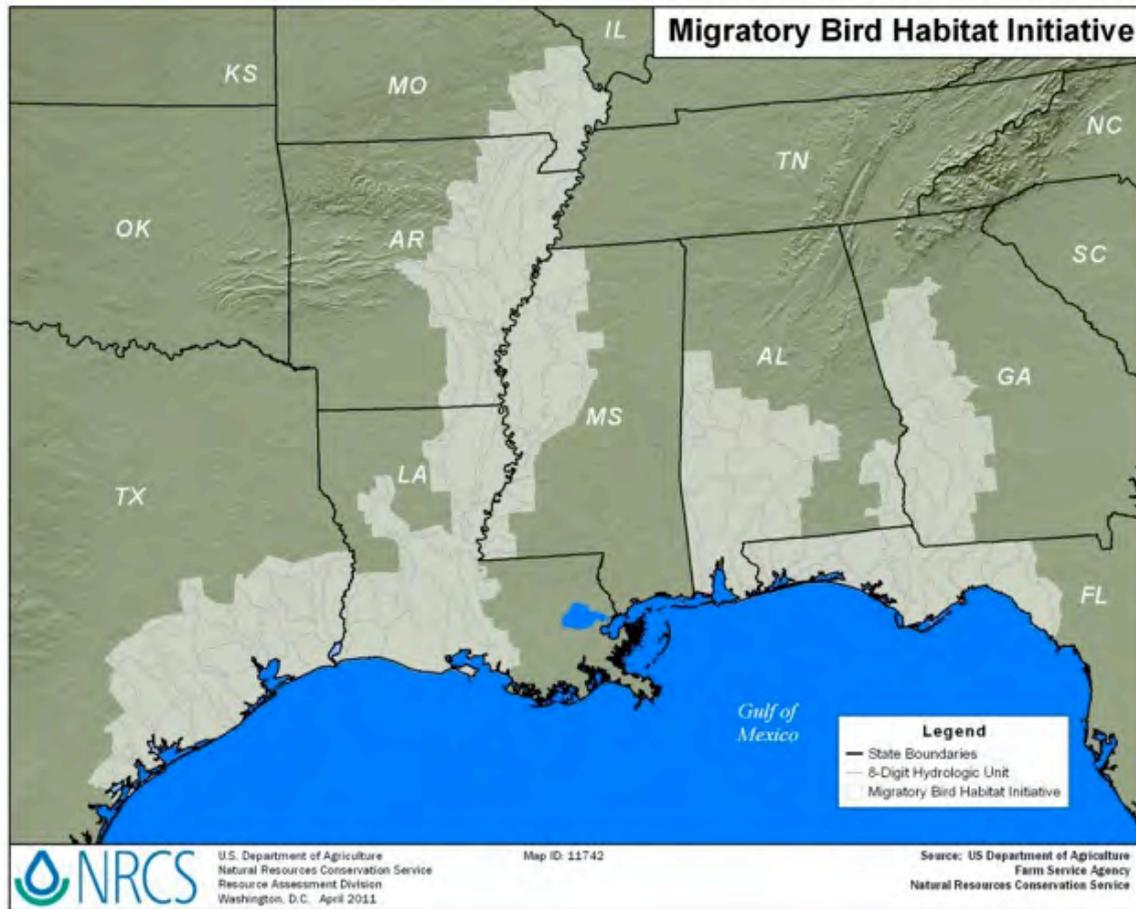
Element 3: Migratory Bird Habitat Initiative

Plan Elements	2014	2015	2016	2017	2018	Total	Supports Gulf
							Coast Task Force Major Actions
3. Migratory Bird Habitat Initiative	\$ 20	\$ 20	\$ 20	\$ 20	\$ 20	\$ 100	1.4, 1.5; 3.1, 3.5

Proposal. Expand the Migratory Bird Habitat Initiative (MBHI) to provide valuable wetlands habitat for migratory birds in the Lower Mississippi River Delta and along the Gulf Coast.

Background. In close cooperation with the U.S. Fish and Wildlife Service and state fish and wildlife agencies, NRCS initiated a coordinated effort with farmers and landowners across eight states to protect and feed birds migrating toward the Gulf of Mexico. Wildlife experts estimated more than 50 million birds migrate through the Mississippi, Central, and Eastern Flyways each fall and spring and feared that significant populations of these birds could be injured by the Deepwater Horizon oil spill, NRCS and its partners launched MBHI in June 2010 when oil was still spilling from the well.

The initiative mobilized private landowners to help create additional, alternative habitats to provide healthy food and resting areas for shorebirds, waterfowl, and other birds headed for the Gulf. The initial goal was to enroll 150,000 acres. After landowners expressed extreme interest in the program, NRCS enrolled more than 470,000 acres, more than triple expectations, across the eight initiative states. NRCS worked closely with its partners to identify the most ecologically valuable areas in the Gulf of Mexico region to target enrollments under this initiative (see MBHI priority enrollment area map below).



The 470,000 acres under contract through MBHI are within the three flyways passing through the Gulf of Mexico. These flyways are important corridors in spring and fall for millions of migratory birds including waterfowl, shorebirds, wading birds and Neotropical migrants, because the Gulf states are the first and last land encountered for trans-Gulf migrants. Also, the Gulf region's southern latitudes provide critical wintering habitat for significant numbers of waterfowl, wading birds, sparrows and other birds considered short-distance migrants who are escaping frozen waters and freezing temperatures farther north.

Under MBHI, farmers and landowners enter into one to three-year contracts to make improvements on their crop and wetland areas to benefit migratory birds. On crop fields, NRCS works with producers to prepare predominantly rice and cotton fields by disking vegetation after crops are harvested in the late summer and early fall. NRCS then helps prepare berms and dikes around fields so they can be flooded to generate instant shallow water wetland areas. Fields flooded with varying water levels provide habitat for a wide range of bird species that might stop to refuel. Where appropriate, NRCS plants appropriate wetland vegetation to provide nesting habitat and food sources. Producers agree to manage the water over the winter months to provide habitat; in the spring after birds migrate north and the habitat is no longer needed, producers drain fields and plant crops.

A continued long-term investment in restored habitat across the Gulf Coast region is needed under this overall restoration effort for two principal reasons. First, bird species directly (through oiling) and indirectly (through impacts to habitat and food sources) suffered injuries from the oil spill; second, the Gulf of Mexico region has lost a significant portion of its coastal wetland through erosion, human disturbance, and land subsidence, as well as inland wetlands through conversion to agricultural and other development uses. The “working wetlands” concept demonstrated on a large scale under MBHI – whereby agricultural lands are temporarily restored to wetland habitats during fallow months to provide habitat for birds and other species – can provide valuable habitat while also keeping lands in active agriculture producing food and fiber.

Performance Information. NRCS has partnered with Mississippi State University to monitor and assess the impacts of MBHI over a three-year period. The university has, in turn, engaged other universities and wildlife organizations to help conduct field surveys and gather remote sensing information to characterize the benefits of this project.

The initial results have been impressive. In Louisiana, for instance, NRCS enrolled a total of 177,000 acres of cropland into the project and restored these acres to temporary wetland habitat during the winter months of late 2010 and early 2011 to provide food and shelter. These restored acres comprised only about two percent of the total wetland habitat in the state of around nine million acres. Because the MBHI acres provided early successional habitat and abundant food sources, the university estimated that MBHI impressively provided about 36 percent of the food calories for migratory birds last winter. These food-abundant acres were heavily used and provided attractive habitat for an array of bird species.

Element 4: “Room for the River” Mississippi River floodplain restoration

Plan Elements	2014	2015	2016	2017	2018	Total	Supports Gulf Coast Task Force Major Actions
4. "Room for the River" Initiative	\$ 25	\$ 40	\$ 40	\$ 40	\$ 40	\$ 185	1.3, 1.4; 2.1, 2.2

Proposal. Purchase up to 160,000 acres of permanent conservation easements on croplands along the Mississippi River floodplain in the Lower Delta to improve water quality and enhance wildlife habitat for aquatic and terrestrial species.

Background. There are over 320,000 acres of cropland in the Mississippi River floodplain between the Army Corps of Engineers levies, from Kentucky and southern Missouri to the mouth of the river in Louisiana into the Gulf of Mexico (see map next page).

By strategically purchasing conservation easements on cropland acres, restoring them to a natural floodplain, reconnecting the land to the river, and planting appropriate vegetation, such as bottomland hardwood trees and wetland vegetation, multiple benefits are created; these benefits include:



Improved water quality in the Mississippi River

Reducing sediment, nutrient, and pesticide loading into the river will benefit riverside communities, but also help to address hypoxia conditions in the Gulf.

Enhanced wildlife habitat

By targeting easement enrollments, we can help establish wildlife habitat corridors for migratory birds, aquatic species, and terrestrial species (such as the Louisiana black bear), between public refuges, forests, and parks, as well as private lands that already have established conservation easements.

Current easement and restoration costs are estimated at about \$3,450 per acre in the region. With a goal of enrolling half of these floodplain cropland acres (or 160,000 acres), NRCS estimates the full multi-year

cost to purchase easements and restore the floodplain to be about \$550 million. NRCS has extensive experience purchasing and restoring conservation easements in the floodplain lands along the Mississippi and other rivers.

Element 5: Mississippi River Basin Initiative

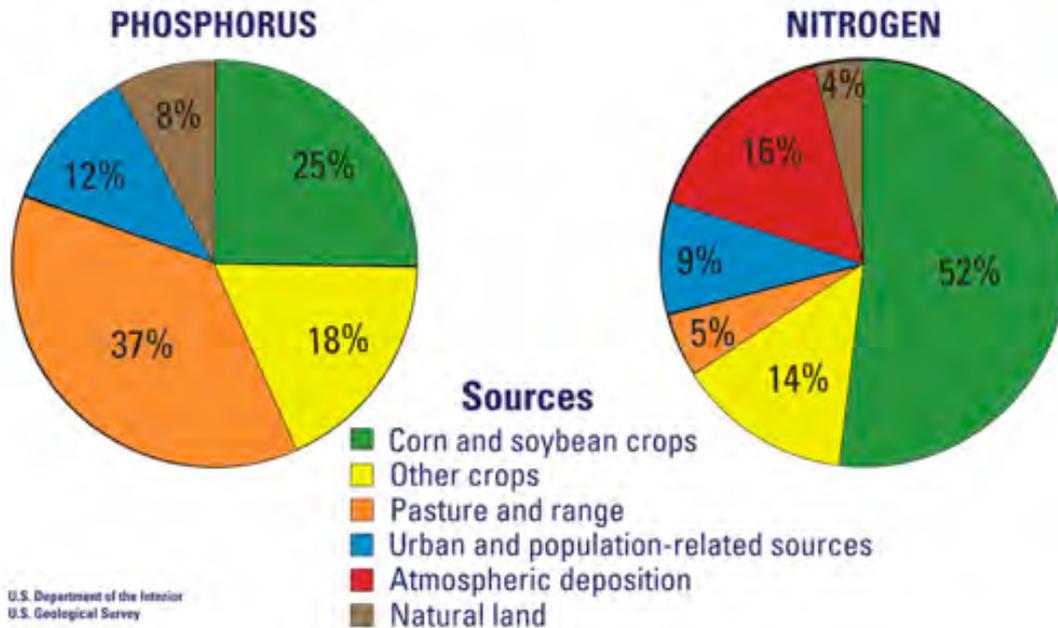
Plan Elements	2014	2015	2016	2017	2018	Total	Supports Gulf Coast Task Force Major Actions
5.1 Lower Mississippi River Basin Initiative	\$ 20	\$ 20	\$ 20	\$ 20	\$ 20	\$ 100	1.3, 1.4; 2.1, 2.2, 2.5
5.2 Upper Mississippi River Basin Initiative	\$ 70	\$ 70	\$ 70	\$ 70	\$ 70	\$ 350	1.3, 1.4; 2.1, 2.2, 2.5
Total	\$ 90	\$ 90	\$ 90	\$ 90	\$ 90	\$ 450	

Proposal. Expand water quality conservation investments in the Lower and Upper Mississippi River Basins through the Mississippi River Basin Healthy Watersheds Initiative (MRBI). Depending on available funding, the number of priority watersheds in the initiative could be expanded to provide additional targeted water quality conservation activities to reduce sediment and nutrient loadings to the river and the Gulf of Mexico.

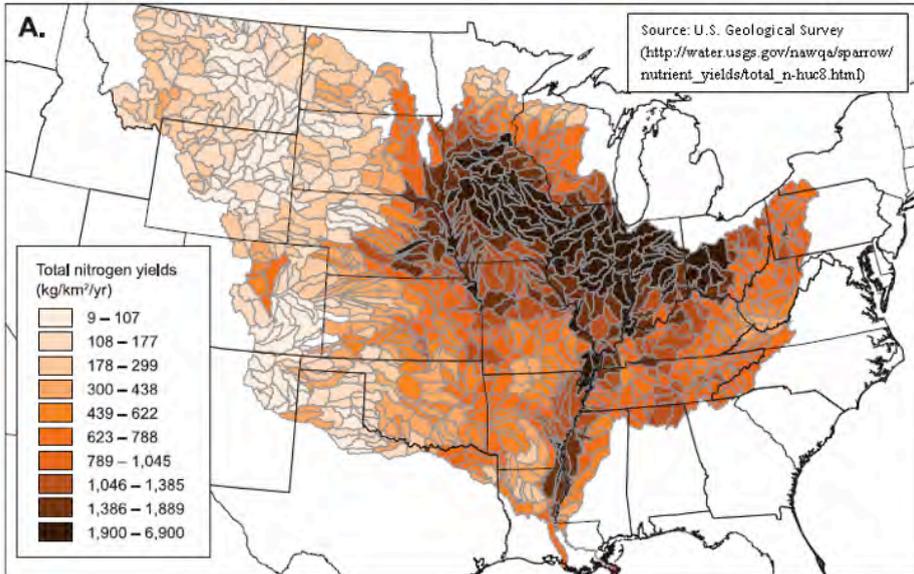
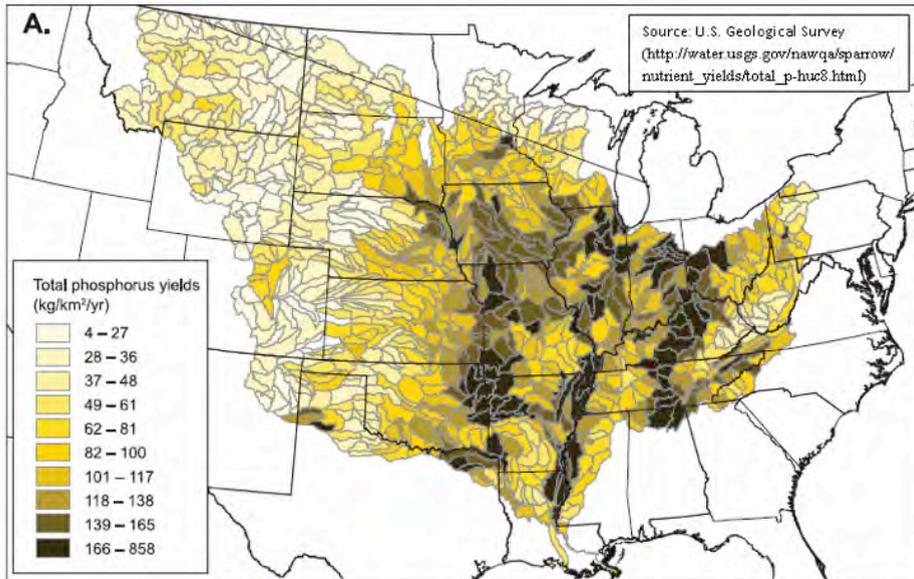
Background. The Mississippi River is the largest river in North America, flowing more than 2,300 miles through the heartland to the Gulf of Mexico, and the centerpiece of the second largest watershed in the world. The watershed not only provides drinking water, food, industry and recreation for millions of people, but it also hosts a globally significant migratory flyway and home for more than 325 bird species alone.

Sediment and nutrient loading from agricultural lands have contributed to water quality problems throughout the river basin and, ultimately, in the Gulf of Mexico. According to the U.S. Geological Survey (USGS), agricultural lands contribute about 80 percent of the phosphorous and 71 percent of the nitrogen that are delivered to the Gulf of Mexico (see chart next page)

Sources of nutrients delivered to the Gulf of Mexico



The large majority of these nutrient loads delivered by the Mississippi River are a result of



agricultural nonpoint sources far removed from the Gulf Coast. According to USGS's SPARROW model—a tool for the regional interpretation of water quality monitoring data—the volume and intensity of the nutrient loadings are from the Corn Belt region of the Midwest that include Illinois, Indiana, Iowa, Minnesota, and Ohio (see the two maps left that depict the total estimated phosphorous and nitrogen yields by 8-digit HUC watershed).



Water quality and hypoxia conditions in the Gulf of Mexico will not be measurably improved until sources of nutrients from these areas far from the Gulf of Mexico, particularly in the Upper Mississippi River Basin, are appropriately addressed. Accordingly, NRCS initiated in FY 2010 the Mississippi River Basin Healthy Watersheds Initiative (MRBI) to work with conservation partners and build on the past efforts of agricultural producers in the 13-state area of the Upper and Lower Mississippi River Basins to address nutrient loading.

NRCS is working with producers using a conservation systems approach to manage and optimize nitrogen and phosphorus within fields to minimize runoff and reduce downstream nutrient loading. NRCS worked with federal, state, and local water

quality agencies and conservation partners to identify high-priority focus areas within each state of the initiative. These are 8-digit HUC watersheds that are estimated to be at greatest risk of delivering nutrient and sediment to the Mississippi River. NRCS is targeting up to \$320 million

in additional conservation funding in these focus watersheds over four years to improve water quality and benefit wildlife habitat with the ultimate goal of improving the ecological health of the river and its tributaries.

In FY 2012, NRCS engaged its federal, state, and private conservation partners to improve MRBI's performance and better leverage each others' technical and financial resources. This initiative has been embraced by federal and state members of the Mississippi River Basin/Gulf of Mexico Hypoxia Task Force as a principle vehicle for assisting states as they develop their State Nutrient Reduction Strategies. This includes collaborative efforts to pilot a watershed-scale, multi-tiered water quality monitoring and assessment effort to report on the effectiveness of voluntary agricultural conservation projects and guide future investments.

Appendix A: Goals and Major Actions for Gulf of Mexico Regional Ecosystem Restoration Strategy

The following table summarizes the overarching goals and recommended major actions included in the final *Gulf of Mexico Regional Ecosystem Restoration Strategy (Gulf Coast Ecosystem Restoration Task Force, December 2011)*.

Overarching Goals	Major Actions
<p>1. Restore and Conserve Habitat</p>	<p>1.1 Prioritize ecosystem restoration in the Gulf of Mexico by ensuring social, environmental and economic outcomes are fully considered in all river management decisions, and by placing it on equal footing with other priorities such as navigation and flood damage risk reduction.</p> <p>1.2 Improve current sediment management practices to maximize to the extent practicable and ecologically acceptable the quantity and effective use of sediments by taking a “strategic use” approach to sediment management.</p> <p>1.3 Restore and preserve more natural river processes of sediment and freshwater distribution.</p> <p>1.4 Expand the network of state, federal and private conservation areas to ensure healthy landscapes that support the environment and culture of the region and the diverse services provided by the Gulf of Mexico ecosystem.</p> <p>1.5 Restore and conserve coastal and near-shore habitats, with a focus on marshes, mangroves, seagrasses, barrier islands, natural beaches and dunes, and coastal forests and prairies.</p>

<p>2. Restore Water Quality</p>	<p>2.1 Decrease and manage excess nutrient levels in the Gulf through the development and implementation of state nutrient reduction frameworks.</p> <p>2.2 Focus restoration actions in priority watersheds to address excess nutrients in coastal waters and reduce hypoxic conditions.</p> <p>2.3 Reduce pollutants and pathogens from stormwater flows and other sources.</p> <p>2.4 Improve the quality quantity of freshwater flow into priority estuaries to protect their health and resiliency.</p> <p>2.5 Coordinate and expand existing water quality monitoring efforts supporting adaptive management of programs and projects designed to improve water quality.</p> <p>2.6 Collaborate with Mexico to assess and reduce emissions from oceangoing vessels in the Gulf that degrade water quality.</p>
<p>3. Replenish and Protect Living Coastal and Marine Resources</p>	<p>3.1 Restore depleted populations of living coastal and marine resources.</p> <p>3.2 Conserve and protect offshore environments.</p> <p>3.3 Restore and protect oyster and coral reefs, and other coastal environments.</p> <p>3.4 Coordinate and expand existing Gulf monitoring efforts to track sentinel species and sites.</p> <p>3.5 Minimize, and eliminate where possible, invasive species that impact the Gulf of Mexico.</p>
<p>4. Enhance Community Resilience</p>	<p>4.1 Develop and implement comprehensive, scientifically based, and stakeholder-informed coastal improvement programs.</p> <p>4.2 Provide analytical support tools to enhance community planning, risk assessment and smart growth implementation.</p> <p>4.3 Enhance environmental education and outreach.</p>

Appendix B: Examples of “Before and After” Conservation Projects

The following pages provide visual examples of water quality and wildlife habitat improvement projects. NRCS and its partners would use these techniques, along with an array of other conservation practices, to protect and enhance natural resources in the Gulf region.



Before Stream Vegetative Buffers



After Stream Vegetative Buffers



Before Stream Vegetative Buffers



After Stream Vegetative Buffers



Preparing Crop Field for Wetland Habitat



Crop Field Restored for Wetland Habitat



Before Upland Water Quality Practices



After Upland Water Quality Practices



Before Revegetation (Perennial Species)



After Revegetation (Perennial Species)



Before Forest Stand Improvement



After Forest Stand Improvement

