Case Profile Series on
Land Trusts as Climate Change Solution Providers

The Partnership for Gulf Coast Land Conservation: Catalyzing Natural Climate Solutions for Coastal Resilience in the Gulf Coast

Kavita K. Macleod
Lincoln Institute of Land Policy
Cambridge, Massachusetts, USA

INTERNATIONAL LAND CONSERVATION NETWORK

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Cover photograph of piping plover nesting habitat, courtesy of US Geological Survey, Susan Haig.

For questions regarding or copies of this publication, please contact Robin Austin at raustin@lincolninst.edu.

CASE OVERVIEW FOR EDUCATORS

Topic: Green Infrastructure

Subtopics: Land Restoration, Climate Mitigation, Nature-based solutions, stormwater management, pollution mitigation, disaster response.

Timeframe: 2010-2022

Primary Learning Goals: (1) Better understand how a large landscape organizing group was founded and what role it can play in coordinating conservation organizations in disaster mitigation responses. (2) Move through a case analysis that considers, in sequence, situation, challenge, proposed solutions, implementation, and results.

Secondary Learning Goals: (1) Develop insights into how green infrastructure benefits of land conservation and restoration can be promoted in climate challenged areas. (2) Gain an understanding of the large networks of public, private, and industry partners that are necessary to make such projects successful in multiple dimensions. (3) Explore how disaster mitigation funding can be used by conservation organizations to conserve land as a climate change mitigation strategy.

Primary Audiences: (1) Land Conservation organizations and practitioners, (2) Regional Conservation Networks, (3) Public decision-makers and regulators, (4) community organizations, (5) climate policy analysts and advocates, and (6) interested members of the general public.

Prerequisite Knowledge: General knowledge regarding climate change and the conservation of land.

Summary: This case explores the land conservation sector's response to the Deepwater horizon Oil spill of 2010. It focuses on the establishment of the Partnership for Gulf Coast Conservation, and addresses the utilization of disaster relief funding in land conservation as a green infrastructure solution. With its particular focus on network building and funding acquisition, this case is well suited to land conservation professionals, civic sector disaster management groups, and planners seeking to expand their disaster and conservation visions to a regional view. This project has occurred in the span of time since the Deepwater horizon spill, but is applicable to large landscape conservation and disaster mitigation projects across the world.

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Executive Summary

The Gulf Coast is severely threatened by sea level rise, extreme weather events, and other processes that will worsen with climate change. Coastal areas and communities in the Gulf of Mexico states (Florida, Mississippi, Alabama, Louisiana, and Texas) are highly vulnerable to extreme weather events, storms, and coastal land loss from erosion and rising sea level. The Gulf of Mexico region accounts for 85 percent of coastal wetland loss in the U.S., losing on average a football field-sized area of land every 100 minutes.[1] More than 7,000 square miles across the Gulf states, including large urban centers such as Houston and New Orleans, are less than 5 feet above sea level, putting people and critical infrastructure at risk. The threat that storms and sea level rise pose to the environmental and economic systems in the Gulf has been exacerbated by human infrastructure, such as levees in the region. Natural areas, including salt marshes, oyster reefs, and mangroves—which protect the shoreline and water quality and have fishery and tourism value—are also impacted by sea level rise, storms, and coastal erosion land loss.

Both gray and green infrastructure solutions may help protect environmental processes in the Gulf. Gray infrastructure solutions to sea level rise in low-lying coastal areas have included installing seawalls and breakwaters to protect the coast. However, these solutions are expensive, such as the 1.8 mile-long, $1.3 billion Lake Borgne Storm Surge Barrier that protects New Orleans.[2] Additionally, they are carbon intensive due to the large amount of carbon dioxide released during steel and concrete manufacturing, transportation, and construction. Green infrastructure, on the other hand, is a natural climate solution. In coastal areas, it includes living shorelines and conserved wetlands that can buffer sea level rise and storm surges, thereby reducing flooding and associated impacts. For example, a recent study found that healthy coral reefs can significantly reduce wave energy and buffer the shore from storm surges.[3] Coastal land conservation also precludes development from being sited in disaster-prone areas, reducing the potential impacts of sea level rise and flooding from extreme weather events. Finally, numerous co-benefits accompany green infrastructure, including carbon sequestration, habitat provision, air and water pollution reduction, and recreational and job benefits, to name a few.

The 2010 Deepwater Horizon oil spill disaster catalyzed funding for restoration in the Gulf. In 2010, the Deepwater Horizon oil spill caused extensive damage in the Gulf, underscoring the need for solutions to address and mitigate the underlying environmental challenges of sea level rise, land loss, and pollution in the region. Fortunately, the oil spill's aftermath also brought a number of funding sources to the Gulf that conservation organizations and other groups are using to improve coastal resilience. Funding for Gulf Coast restoration in the wake of the disaster is based on penalties required under federal laws governing natural resources. It is complex and distributed across three primary mechanisms: the Resources and Ecosystems Sustainability, Tourist Opportunities, and Revived Economies of the Gulf Coast States (RESTORE) Act, signed in 2012; funds from a Natural Resource Damage Assessment (NRDA) under the Oil Pollution Act; and funds resulting from the settlement of criminal charges from the oil spill that are disbursed by the National Fish and Wildlife Foundation (NFWF).

The Partnership for Gulf Coast Land Conservation was launched to give land trusts and land conservation proponents a voice in the Deepwater Horizon settlement process, as well as the collective ability to address daunting environmental challenges facing the region. In 2010, the Partnership for Gulf Coast Land Conservation ("the Partnership") was launched by the Land Trust Alliance and partners in the Gulf of Mexico to improve coordination between land conservation organizations in the region. The work of the Partnership in building consensus on land conservation priorities across smaller land trusts in the region has been instrumental in bringing land conservation to the table for inclusion in post-disaster funding. Today, the Partnership is a coalition of 26 state, regional, and national conservation organizations in the Gulf Coast states of Alabama, Florida, Louisiana, Mississippi, and Texas with "...the collective mission…to increase the pace, quality and permanence of voluntary land and water conservation within the Gulf Coast region."[4] These partners have so far protected more than 29,000 acres of coastal habitat and brought more than $52 million in land conservation funding to the Gulf Coast region.

The Partnership facilitates additional land conservation in the region through many capacity building, public policy, and communications activities. Two of the most consequential activities have been: 1) the completion of the Partnership's 2014 report "A Land Conservation Vision for the Gulf of Mexico Region," ("Conservation Vision report"), a consensus document across land trusts in the region that prioritizes areas for land conservation; and 2) the Partnership's Project Assistance Fund (P.A.F.), which provides matching grants of up to $25,000 to assist land trusts in conducting due diligence for land conservation.

This case profile uses two examples to show how the Partnership has advanced the use of natural climate solutions to mitigate climate change-related impacts to coastal areas. The first is the Robinson Preserve Expansion initiative that conserved a 150-acre parcel in Manatee County on the west coast of Florida. The effort involved the Conservation Foundation of the Gulf Coast. The second is the Fleming Plantation Project which, with leadership from the Trust for Public Land (T.P.L.), conserved a 3,000+ acre parcel in coastal Louisiana.

The Partnership for Gulf Coast Land Conservation, serving as a regional coordinating organization, is an example of how partnership models for local land trusts can bring conservation to scale. Large landscape conservation, made possible through collaborations such as the Partnership, is a growing movement that recognizes the ecological benefits of connected landscapes. The Partnership is similar to Regional Conversation Partnerships (R.C.P.s), established to increase the pace and scale of conservation in New England. R.C.P.s engage in spatial prioritization of land conservation goals and can leverage their comparative knowledge and strengths to fundraise for larger projects. The number of R.C.P.s in New England has grown from four in the 1990s to 43 today, and they cover 60 percent of the New England landscape (including New York).[5]

The Partnership continues to develop the Conservation Vision and P.A.F. to meet larger

conservation goals in the Gulf Region. The Partnership is now working on revising the Conservation Vision, such as adding flood mitigation benefits to the criteria for conservation prioritization, to develop a strategic conservation assessment tool for prioritizing projects seeking P.A.F. support. The Partnership is also issuing a second round of P.A.F. grants, funded by the Gulf Coast Ecosystem Restoration Council through the E.P.A. The second round of P.A.F. funding is intended to be more expansive than the first round. It may include projects seeking Deepwater Horizon oil spill related funding or leverage other funding sources. This would allow for strategic conservation projects outside of areas related to the oil spill. In the first round of P.A.F., the primary goal was to help land trust partners prepare their projects to be considered for Deepwater Horizon-related funding sources. P.A.F. grantees also had to focus on the oil spill recovery effort. Land trust partners are enthusiastic about this expansion because it means they can go beyond the priority oil spill areas to upland, adjacent, and inland areas and leverage other complementary funding sources. The types of projects funded through the second round of P.A.F. grantmaking will vary in size as they did in the first round. Some may be as large as Fleming Plantation, and projects are likely to include private conservation easements, urban parks and wetlands, and large public buffers.

Introduction and Context

The Gulf Coast Region

The Gulf Coast is a region of incredible natural beauty and biodiversity, intriguing cultural history, and significant economic activity. Shipping, fishing, oil and gas exploration, and refining, are central economic pillars for the region. The Gulf also provides a plethora of ecosystem services to the people and the wildlife that inhabit its waters and shores.

These natural wonders, environmental services, and economic engines of wealth are all threatened by rapidly degrading natural systems. Nutrient pollution from the Mississippi River Basin has created a growing hypoxia zone in the Gulf of Mexico, suffocating vast populations of marine life. Climate change threatens to inundate coastlines and fresh water supplies. Biodiversity is in rapid retreat. All the while, human populations and the footprint of their settlements continue to expand.

The Deepwater Horizon Oil Spill

In 2010, the Gulf of Mexico and surrounding coastal states faced a significant environmental challenge. The Deepwater Horizon Oil Spill in April 2010 was one of the worst ecological disasters in the United States. Occurring 40 miles off the coast of Louisiana, an explosion at the Deepwater Horizon rig resulted in over 200 million gallons of oil erupting from the ocean floor into the Gulf of Mexico over 87 days. Eleven people died, an estimated 1,300 miles of coastline were affected, and a multitude of oceanic species were killed or suffered health impacts. Fisheries were forced to close, and coastal real estate lost value. A visible, toxic oil slick covered nearly 60,000 square miles of the Gulf of Mexico. Recent research drawing on satellite imagery has suggested that the actual extent of the spill was much larger than initially thought.[6]

The legal consequences of the oil spill, pursuant to U.S. federal law, catalyzed tremendous spending on ecosystem restoration in the afflicted region. This disaster-response funding for Gulf Coast restoration is based on penalties required under federal laws governing natural resources. It is complex and distributed across three primary mechanisms: the Resources and Ecosystems Sustainability, Tourist Opportunities, and Revived Economies of the Gulf Coast States (RESTORE) Act, signed in 2012; funds from a Natural Resource Damage Assessment (NRDA) under the Oil Pollution Act; and funds resulting from the settlement of criminal charges from the oil spill that are disbursed by the National Fish and Wildlife Foundation (NFWF). Appendix I provides a flowchart of spending according to the Clean Water Act penalties after the spill.

Signed into law by President Obama in 2012, the RESTORE Act created the Gulf Coast Restoration Trust Fund within the U.S. Treasury to hold and disburse 80 percent of the administrative and civil penalties resulting from the spill under Section 311 of the Clean Water Act.[7] Regulations and rules around the use of the trust fund were finalized in 2015 and were effective as of February 12, 2016.[8] These regulations describe five components of the Gulf Coast Restoration Trust Fund that receive portions of penalties paid from the spill. These include a direct component administered by the Treasury that funds activities in the affected Gulf States, and the establishment of a federal body, called the Gulf Coast Ecosystem Restoration Council ("the Council"), comprised of members from each of the five Gulf states and six federal agencies that fund activities according to a Comprehensive Plan for the region.[9] The initial plan was approved in 2013; the latest version of the Comprehensive Plan was updated in 2016.[10] The Comprehensive Plan set the following goals for Gulf Restoration:

(1) restore and conserve habitat;

(2) restore water quality;

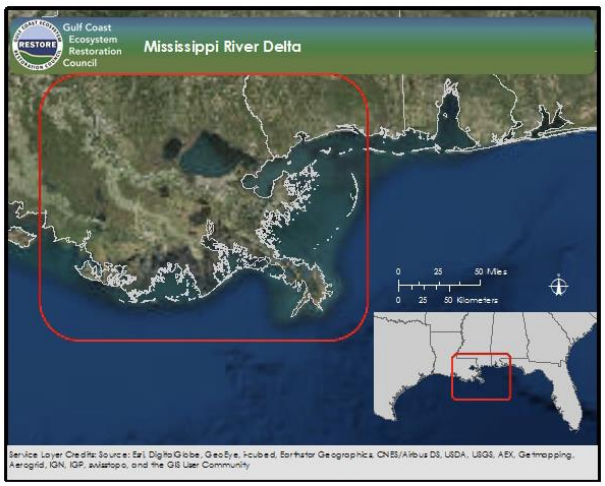
(3) replenish and protect living coastal and marine resources;

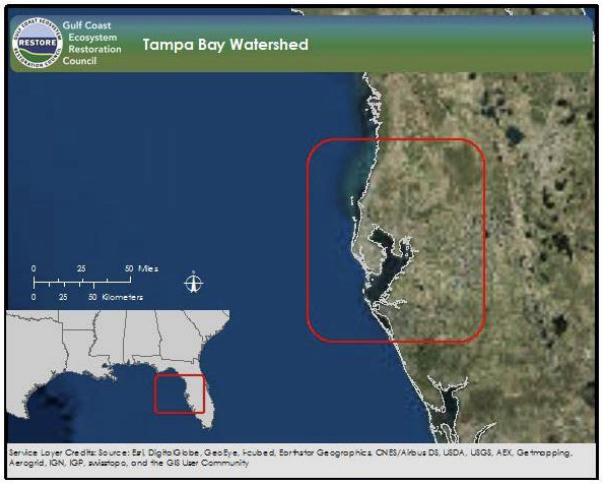
(4) enhance community resilience;

(5) restore and revitalize the Gulf economy.

While the Comprehensive Plan sets the overall goals, objectives, and processes of the Council, specific restoration activities are included in Funded Priorities Lists (F.P.L.s) and State Expenditure Plans (S.E.P.s). The initial F.P.L. was approved on December 15, 2015. Notably, the initial F.P.L. included a goal "…to conserve approximately 18,485 acres of high-value coastal habitat".[11] The initial F.P.L. also points out the significance of the Council's efforts in light of other restoration activity in the Gulf Region, noting that "[t]his F.P.L., if all proposed activities are fully implemented, leverages approximately $1.27 billion in Gulf investments by other entities. This includes co-funding projects with N.G.O.s, such as the Knobloch Foundation, as well as others, and building on Gulf restoration activities from multiple partners and programs, such as NRDA, NFWF, the Coastal Impact Assistance Program (CIAP), and existing capacities of the Member entities and others around the Gulf of Mexico."[12]

The Fleming Plantation and Robinson Preserve projects highlighted in this case profile were both included in the Gulf Coast Ecosystem Restoration Council's initial (2015) F.P.L. Specifically, implementation for backfilling oil and gas canals at Jean Lafitte as well as planning and implementation for restoration of the Robinson Preserve Wetlands. Both projects fall within priority watersheds identified by the Council: Fleming Plantation in the Mississippi River Delta (Figure 1) and Robinson Preserve in the Tampa Bay watershed (Figure 2). Subsequent amendments to the F.P.L. included a 2018 amendment that added approval for roughly $1.8 million to implement coastal habitat restoration on 118 acres of the Robinson Preserve Wetlands.[13]





Figures 1 and 2: Two priority watersheds of the Gulf Coast Ecosystem Restoration Council. Source: Gulf Coast Ecosystem Restoration Council, Resources and Ecosystems Sustainability, Tourist Opportunities, and Revived Economies of the Gulf Coast States Act (RESTORE Act) Initial Funded Priorities List (2015).

The breadth and scale of funding for Gulf Coast restoration through the RESTORE Act is tremendous. However, the Act lacks the ability to coordinate funded activities for optimal impact. It states that "[b]eyond what the Act stipulates, Treasury cannot require the Council, NOAA, states, counties, or parishes to coordinate their selection of projects across components in order to achieve particular economic or environmental goals."[14] Given the complexity of ecological systems in regions such as the Gulf, however, coordination of restoration and other activities to improve environmental goals was, and is, likely to have significant benefits.

The Partnership for Gulf Coast Land Conservation

The Partnership for Gulf Coast Land Conservation ("the Partnership") was founded in late 2010 by the Land Trust Alliance (L.T.A.) and the National Oceanic and Atmospheric Administration (NOAA) to both improve cooperation among land conservation organizations in the Gulf of Mexico region, where state-based coalitions of lands trusts were not organized and to give land trusts and partners an effective voice during the oil spill settlement process.

Until 2016, the Partnership worked under the L.T.A. with fiscal support from the Charles Stuart Mott Foundation, Southern Company, the National Fish and Wildlife Foundation, the United States Forest Service, and the Knobloch Family Foundation. Starting in 2016, the Partnership operated as a separate organization under fiscal sponsorship from the Land Trust for the Mississippi Coastal Plain, and in 2020 the Partnership became an independent 501c3 nonprofit organization. The Partnership defines the coastal zone of the Gulf within which it works following the RESTORE Act. The region is the coastal zones that border the Gulf of Mexico, including any adjacent land, water, and watersheds within 25 miles of the coastal zones and all federal waters in the Gulf of Mexico. In sum, this is an area of over 122 million acres of land.

Today, the Partnership is a coalition of 26 state, regional, and national conservation organizations in the Gulf Coast states of Alabama, Florida, Louisiana, Mississippi, and Texas with "...the collective mission…to increase the pace, quality and permanence of voluntary land and water conservation within the Gulf Coast region."[15] Appendix II provides a list of current members of the Partnership. Nonprofit organizations in the Gulf Region that focus on land conservation are eligible to join the Partnership. The Partnership focuses on increasing voluntary land conservation on private lands given the high degree of private land ownership in the Gulf Coast region. Its partners have so far protected more than 29,000 acres of coastal habitat and brought more than $52 million in land conservation funding to the Gulf Coast region.

The Partnership facilitates additional land conservation in the region through capacity building, public policy, and communications. Capacity-building activities include the Partnership's Project Assistance Fund (P.A.F.), which provides matching grants of up to $25,000 to assist land trusts in conducting due diligence for land conservation. The P.A.F. is described in more detail in a subsequent section. Capacity building also includes the Partnership's training, networking, and other knowledge exchange activities, such as the workshops, webinars, and hosting the annual Gulf Coast Land Conservation Conference. In 2019, the Partnership released a report entitled "Recommended Best Practices in Land Conservation for the Gulf of Mexico Region" that details best practices and lessons learned for landscape-scale conservation in the region.[16] Notably, one of the eight recommendations is providing up-front funding for due diligence.

Public policy activities of the Partnership include engaging and building partnerships with local, state, and federal policymakers around funding and policies that could support land conservation. This includes promoting the benefits of conservation, especially as related to mitigation and restoration after the Deepwater Horizon oil spill. Finally, communications work done by the Partnership consists of a twice-monthly newsletter and a recent film series ("From Land to Water to the Gulf") highlighting the benefits of coastal land conservation and watershed health.[17]

The Partnership's Focus on Strategic Land Conservation

The Gulf Partnership focuses on Strategic Conservation, prioritizing areas along the Gulf Coast for conservation, restoration, and management and directing funding and resources to these areas. The Partnership states that:

> "The Gulf Partnership is committed to Strategic Conservation, the identification of the most important areas in a region for conservation, restoration, and long-term management. This approach is in contrast to a scatter-shot approach – what some have called 'random acts of conservation.' We want every dollar spent on conservation to be used to create the most benefit."[18]

A 2014 report, "A Land Conservation Vision for the Gulf of Mexico Region," written together with The Nature Conservancy and The Conservation Fund, serves as the guiding document for the Partnership's work on Strategic Conservation.[19] The report was developed prior to the oil spill settlement to organize land trusts in the region under a common set of conservation priorities that could advocate for land conservation as part of the eventual oil spill settlement. As a result, this report was the first time that some of the smaller land trusts were able to represent their conservation priorities geospatially. High priority areas for strategic conservation in the Gulf Coast region were identified by layering and assessing the following priorities: (1) focus areas identified by the partners that reflect local community values; (2) wetlands; (3) migratory bird habitat; (4) scenic rivers; and (5) longleaf pine habitat. The final high priority focus areas for strategic conservation action are shown in Figure 3.

Figure 3: High priority focus areas for strategic conservation action by the Partnership
Source: Partnership for Gulf Coast Land Conservation, A Land Conservation Vision for the Gulf of Mexico Region.

The Natural Resources Damage Assessment (NRDA) for the Deepwater Horizon oil spill assessed the "type and amount of restoration needed in order to return the Gulf to the condition it would have been in before the spill and to compensate the public for the natural resource services that were injured or lost."[20] Due in part to the efforts of the Gulf Partnership in developing the Conservation Vision, the large damage assessment priorities included conservation and explained why investing in land conservation should be a part of the ecosystem recovery effort. The Conservation Vision and the work of the Partnership with entities involved in the Deepwater Horizon settlement process informed the NRDA report. Today, the Conservation Vision continues

to provide critical criteria through which the Gulf Partnership prioritizes investments in land conservation in the region through the P.A.F. and its advocacy work.

The Partnership's Project Assistance Funds

Transaction costs associated with due diligence for conservation projects can serve as a barrier to increasing the scale of land conservation, particularly for smaller land trusts. Due diligence activities are necessary to leverage additional funding for land acquisition, management, and other costs associated with the actual conservation of the property. They can be a source of financial risk that some land trusts are not able to assume. According to the Gulf Partnership:

> "Land trusts use public money and charitable donations to protect land forever. Land trusts must have legal and environmental reviews on every land purchase and conservation easement to ensure that the public is getting its money's worth. Due diligence activities may include appraisals, appraisal reviews, surveys and legal descriptions, title review, legal review, baseline documentation reports, recording fees, and environmental assessments."[21]

In 2014, the Partnership set up the Gulf Coast Land Conservation Project Assistance Fund (P.A.F.) using a $500,000 grant from the Knobloch Family Foundation ("Knobloch") to reduce barriers associated with project development-related transaction costs. Knobloch provided the grant to both the Partnership and the Galveston Bay Foundation (which implemented the first round of the P.A.F.) to facilitate increased land conservation along the Gulf Coast after the Deepwater Horizon oil spill. The P.A.F. finances due diligence activities by providing matching grants to land trusts. In the first round of P.A.F. grantmaking, member organizations of the Partnership were eligible to apply for up to $25,000 per project and were required to provide matching funds. The application to the P.A.F. also asks applicants to indicate whether they have adopted the revised Land Trust Alliance Standards & Practices and whether they have conservation defense insurance from TerraFirma, a risk reduction pool founded the Land Trust Alliance in 2011.[22] The Partnership estimates that they have leveraged an additional $50 million in conservation funding to the Gulf Region from the $500,000 original grant.[23]

Problem Statement

Sea level rise and other associated impacts of climate change are a critical challenge to coastal regions, especially in the Gulf Coast area. The potential costs of damage related to sea level rise, extreme weather events, and storm surges are extremely high, but so are the costs of protecting people, property, animals, and ecosystems from these dangers. In a recent article, Yale University asked the question, "…who will pay for the huge costs of holding back rising seas?"[24] and noted that the costs of protecting against sea level rise will be enormous, with the highest costs expected in Florida and Louisiana.[25]

In many cases, gray infrastructure solutions may be necessary to buffer coastal areas from the worst impacts of rising seas and storm surges. Still, natural climate solutions/green infrastructure, such as living coastlines, can both mitigate impacts and reinforce gray infrastructure solutions. Further, natural climate solutions offer multiple co-benefits to the environment and human health that gray infrastructure does not, such as sequestrating carbon rather than generating it through the production of cement seawalls. The costs of natural climate solutions may also be lower than installation and maintenance of seawalls and other large gray infrastructure solutions.

Land conservation is an essential tool for conserving and restoring coastal areas that can preserve important ecological functions that buffer coastal and inland areas from sea level rise and storm surge. Land trusts are uniquely positioned to help conserve coastal land as a natural climate solution, given their deep knowledge of the landscape and continued outreach to private landowners, public agencies, and other stakeholders. However, the costs associated with land conservation can be prohibitively expensive for smaller land trusts. Using a variety of data sources, a recent report by the Partnership estimated that average easement costs in Florida were over $2,000 per acre with an average project size of over 1,600 acres. Per acre costs for fee acquisition were estimated to range from $844 to $102,299 an acre; due diligence costs also varied significantly.[26] Further, the landscape scale of conservation required to achieve desired outcomes in terms of coastal resilience, especially in a region as degraded and damaged as the Gulf, requires coordinated prioritization of areas to direct resources and financing for conservation. Coordination at this scale is also often out of the reach of smaller land trusts.

Strategy and Implementation

The Partnership's approach to land conservation through Strategic Conservation and the use of the P.A.F. is detailed here with the implementation of two completed projects in close collaboration with the Partnership: the Robinson Preserve Expansion in Florida and the Fleming Plantation in Louisiana. While the Robinson Preserve expansion project predated the P.A.F., it was foundational in the Partnership's approach to conservation. It highlights the strategic conservation of a parcel that aligned with multiple stakeholder goals and the overall ecological outcome of increased resilience to climate change and sea level rise. It shows how land trusts can be nimble and creative and can serve as honest brokers of land conservation and bridge gaps between the public and private sectors. The Fleming Plantation project came later and aligned with the Conservation Vision as developed by the Partnership and leveraged the P.A.F. to conserve a large parcel of land critical to the ecological health of the Louisiana coast.

Deep Dive 1: Robinson Preserve Expansion, Florida

Sea level rise threatens low-lying coastal areas worldwide, and Florida's heavily developed and extensive coastline, jutting out into the Gulf of Mexico and the Atlantic Ocean, is no exception. These areas are both the location of high levels of human habitation and significant biodiversity. Around 80 percent of Florida's population lives or works in counties on the coast, where sea level

is projected to rise by roughly one-third of a foot by 2030 and by one foot by 2080. Florida relies heavily on tourists, especially in these coastal areas, where visitors can experience beautiful beaches and coastal recreation.[27]

While sea level rise and extreme storm events have multiple causal factors, climate change is expected to increase both, with potentially devasting economic and ecological damages to the Florida coast. A recent report states that sea level rise "is not so much a completely new coastal hazard as one that exacerbates existing coastal hazards such as flooding from rain or tide, erosion, and storm surge."[28] Manatee County, where Robinson Preserve is located, could lose an estimated $22 million in property tax revenue due to repeated flooding.[29] In a recent chapter on potential climate change impacts to Florida's biodiversity and ecology, a group of scientists concluded that 25 percent of species tracked by the Florida Natural Areas Inventory are "likely to lose half of their current habitat due to sea level rise alone" and that "Florida's species have migrated and adapted to climate change in the past, but that ability is severely compromised now due largely to human modification of the landscape. Up to 76 percent of 236 surveyed species were deemed unlikely to be able to relocate inland in response to rising sea level." [30]

The urgency to address potential impacts of sea level rise and other climate change related processes in Florida is evident in recent state-level actions. Through executive order, Governor DeSantis created the Office of Resilience and Coastal Protection in Florida's Department of Environmental Protection in 2017. Since that time, the Governor also created a Chief Resilience Officer post within state government. More recently, the Governor has proposed a $1 billion fund (Resilient Florida) to assist local governments with climate change impacts in Florida. This seems like a large number until the costs of building seawalls for Sarasota and Manatee counties alone are considered: $3 billion according to one estimate. Costs associated with protecting all of Florida's coastline have been estimated at $76 billion by 2040. This puts Florida in front in terms of funding required to protect the coastline from sea level rise; Louisiana is second but with roughly half of Florida's expected costs.[31]

Currently, the state plans to meet the challenge of sea level rise through $4 billion in investments into raising roads, constructing seawalls, and improving stormwater systems.[32] Natural climate solutions, including the installation and conservation of living coastlines and other forms of green infrastructure, can also make meaningful contributions to coastal resilience. For example, a recent study estimated that mangroves, which have been shown to reduce wave heights associated with storm events in coastal areas, reduced flood damages to properties behind them by 25 percent annually in Collier County, Florida. During Hurricane Irma specifically, this study found that mangroves protected over 600,000 people from flooding across Florida and avoided $1.5 billion in flooding damage to properties from storm surge.[33]

Robinson Preserve

The establishment of Robinson Preserve on the Southern Tampa Bay coastline in Manatee County is an example of leveraging land conservation to meet climate resiliency goals. Restored from a previously degraded state, Robinson Preserve stands today as a 679-acre protected area that is managed for conservation, restoration, and recreation. The preserve sits at the confluence of two estuaries, the Manatee River and Perico Bayou, within a designated Coastal High Hazard Area (see Figures 4 and 5). The coastal grasslands, saltern, marsh, and mangrove habitats within the preserve result from careful design, restoration, and protection to meet multiple goals for habitat conservation and biodiversity preservation; recreation and public access; and climate resiliency against sea level rise and storm surges. Notably, the project protects saltern habitat, globally imperiled sandy salt flats that bring a myriad of bird species to the area each year, some of which are threatened. The over 600-acre parcel of land brings adaptive capacity to the region, protecting critical habitat. Therefore, birds and other species have the opportunity to migrate with the changing climate.

Figure 4: Robinson Preserve

The successful conservation of the land reflects a multi-stakeholder partnership across many local, state, and national entities, including the Florida Communities Trust, the Southwest Florida Water Management District, the U.S. Fish and Wildlife Service, the Sarasota Bay Estuary Program, the Tampa Bay Estuary Program, the Gulf of Mexico Foundation, the Florida Department of Environmental Protection, Florida Fish and Wildlife Conservation Commission, the Conservation Foundation of the

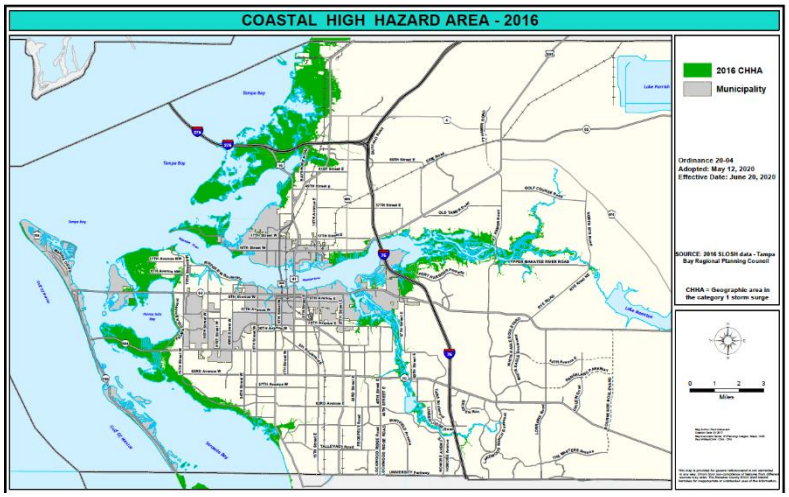


Figure 5: Coastal High Hazard Area in Manatee County, showing Robinson Preserve as part of the CHHA.

Gulf Coast, and the National Fish and Wildlife Foundation. Manatee County states that "[t]hese agencies have contributed financial assistance and consulting services, supporting Manatee County's commitment to preserving and restoring sensitive lands and natural resources."[34]

This section details the Conservation Foundation's role in securing one of the component parcels of the current preserve referred to here as the 150-acre Robinson Preserve "expansion" parcel. The expansion project filled a geographic hole in the existing preserved areas of the Robinson property and prevented residential development that would have occurred absent protection. The expansion also provides upland protection, where conservation and restoration of mangroves and other aspects of a living shoreline can support important bird and aquatic species. Finally, the expansion provided for additional recreational and educational opportunities that facilitate understanding and appreciation of the County's natural resources for both residents and visitors alike.

Multi-Stakeholder Project

The eventual protection of Robinson Preserve involved numerous public and private entities at the local, state, regional, and federal level.

The Conservation Foundation of the Gulf Coast. The Conservation Foundation of the Gulf Coast has catalyzed meaningful land conservation in the Gulf Coast since its founding in 2003. The Conservation Foundation's website notes that the population in the region is projected to grow by over 40 percent in the next 25 years, while 2.7 million acres of native habitat will be lost to the development of roads, shopping malls, and subdivisions that will accompany this growth.[35] In response to growing pressures on the land, the Conservation Foundation has protected over 18,000 acres on 47 properties in the region.[36] The Conservation Foundation's 2020-2023 Strategic Plan, named "The Call to Lead," outlines the direction of its conservation work for the years ahead.[37] The Conservation Foundation served as a conduit to allow Manatee County to acquire the 150-acre Robinson Preserve expansion and steward an easement on the land to protect it in perpetuity from future development. The project allows for passive recreation and other activities on the property conducive to the overall land management goals for conservation, restoration, and recreation.

The Mosaic Company Foundation. Funding necessary to purchase the 150-acre expansion parcel was provided by the foundation arm of a local potash and phosphate fertilizer mining corporation, the Mosaic Company. While the state of Florida requires mitigation and restoration for mining activities, funding for the Robinson Preserve expansion project came from the Mosaic Company Foundation, which conducts community investment activities for food, water, and local health, arts, and education initiatives. The water focus area of the foundation "…supports organizations that work in watershed restoration, habitat conservation, and nutrient stewardship. These programs, respectively, include shoreline restoration and oyster reef installations; improved land management practices and wildlife protection; and 4R nutrient stewardship, which is best management practices for fertilizer application, minimizing nutrient

runoff to improve water quality and optimizing crop yields."[38]

Southwest Florida Water Management District (SFWD). Water is owned by the state in Florida and managed at both the state and regional level. Florida's Department of Environment Protection manages water at the state level and has supervisory authority over the state's five regional water management districts that focus on water supply, water quality, flood protection and floodplain management, and natural systems. The regional water districts can exercise regulatory authority over water under their jurisdiction through measures such as environmental resource permitting. The Robinson Preserve expansion project required permitting from SFWD. SFWD also participated in project funding through leveraging state restoration money.

Gulf Ecosystem Restoration Council. The Robinson Preserve expansion project received funding for restoration work from the Deepwater Horizon oil spill through the Gulf Ecosystem Restoration Council. Implementation of restoration work on the parcel was included in the Council's F.P.L. The F.P.L. underscores federal partnership for the restoration work, and the alignment of this work with broader resilience goals for the Gulf Coast: "The Robinson Preserve Wetlands Restoration project is part of the Connecting Coastal Waters (C.C.W.) initiative NOAA would lead with partners to restore the extent, functionality, and resiliency of Gulf Coast wetlands. NOAA will work with partners to implement this project to restore 118.2 acres of upland and wetland habitat on a fallow parcel recently acquired to expand Robinson Preserve in the Tampa Bay watershed. NOAA will also work with partners to conduct monitoring of restoration outcomes and outreach and educational activities to share restoration practices and engage stakeholders."[39]

Manatee County Parks & Natural Resources (MCPNR) Department. MCPNR is actively involved in land preservation and restoration to address environmental challenges such as sea level rise, and manages conservation and public access on 30,000 acres of publicly conserved land. In 2018, the County joined the Tampa Bay Regional Resiliency Coalition to "…work together to maximize their efforts to mitigate and adapt to the effects of sea-level rise by: identifying vulnerabilities to the effects of climate change in their communities; identifying common vulnerability assessment methodologies; planning for mitigation and adaptation actions that will enhance the resiliency of their communities; learning from each other and their prior efforts and planning documents; leveraging their resources; and pursuing public-private partnerships."[40] Manatee County has also developed a Climate Adaptation Portal that visualizes potential sea level rise impact areas across County lands.[41] The MCPNR was a key project partner and the recipient of the 150-acre parcel, gifted to the County from the Conservation Foundation. The County had purchased an original parcel of 480 acres from the 680-acre parent property, owned by Robinson Farms L.L.C. It sought to extend the property to an additional 200 acres. Ecologically, the County has a goal of creating saltern habitat in this area, which supports edge plants and animals and is an integral part of an ecosystem, though very rare in the Tampa Bay area.

The Process of Preservation and Restoration

The Robinson Preserve acquisition occurred in two phases. The first involved 480 acres from the 680-acre parent property located in Northwest Bradenton, an appealing coastal area ripe for development. When a potential property developer was interested in developing 680 units on the property, the property owners (Robinson Farms L.L.C.) determined that the conditions required to protect area natural resources were prohibitively expensive, and began to consider other options. One such option involved selling the land to Manatee County to develop the property as habitat, which would require significant restoration work given the historic removal of native and upland habitat on the previously farmed areas of the property and the installation of a perimeter dike that had prevented tides and other forces from re-establishing a natural habitat. Ultimately, the County successfully pulled together funding from different sources (state and local) to pay the $11 million acquisition cost for the 480 acres, including from the Florida Communities Trust, which provided a grant of $6 million. However, 200 acres remained on which the County would allow development.

In 2010, Robinson Farms approached the County about purchasing the remaining acres. Earlier plans to establish a golf course on the property had collapsed during the 2008 recession. At the time, the property was covered with dirt due to a planned nursery project that had failed when saltwater intruded into the soil. The property was highly degraded due to anthropogenic disturbance, including the introduction of exotic species. Although the property was not ecologically valuable, the County saw the acquisition as promising given its location within the existing Robinson Preserve area, one of the only intact estuarine habitats at the confluence of two estuaries. Manatee County had also identified the Robinson Preserve expansion for acquisition because sea level rise projections suggested that the original park area would be underwater in 50 to 60 years. The expansion project included 150 acres further inland, on higher ground that could, with restoration, offer increased resiliency of the preserve to sea level rise and storm surges, essentially allowing the preserve to survive. In addition, expanding the preserve into this area would protect it from conversion to high-density housing and chemically-treated lawns that could discharge pollution into the surrounding water bodies.

While the County was considering the value of acquiring the rest of the Robinson property, the Mosaic Company Foundation was looking to make a large impact in the area. Charlie Hunsicker approached the Foundation with the $6 million price tag for the remaining 200 acres at Robinson Preserve and learned that the Foundation had not historically lent more than $1.5 million to anyone. The purchase price was reduced to $3 million through an agreement whereby the landowner would retain the right to develop 50 units on 50 acres of the remaining parcel. Work proceeded with Mosaic over months to determine how to implement the transaction and avoid the appearance of a questionable transaction between the County and the mining company. Finding a suitable nonprofit partner was key, and Charlie thought of the Conservation Foundation, which had been active in Sarasota County but had not worked within Manatee County. This innovative partnership started by chance during a session at a water consortium event in March 2012, at which Christine Johnson, executive director of the Conservation

Foundation, and Charlie Hunsicker, director for parks and natural resources in Manatee County, began discussing Robinson Preserve. According to Johnson, the two missed the subsequent two sessions at the consortium discussing the project. By the end of the day, they had mapped their way forward to this $3 million project. Their conversation took place in March, and the project was completed nine months later, in December 2012.

In the end, the transaction took 15 minutes. The Mosaic Company Foundation provided funding to the Conservation Foundation, which bought the property from Robinson Farms. The Conservation Foundation then donated the land to the County but retained an easement on the land. The easement was innovative because it is unusual for a county government to allow site control to a nonprofit that lacks accountability to taxpayers; however, the County was willing to do that because the Conservation Foundation's goals for conservation, restoration, and management align with those of the County.

The Conservation Foundation summarized the transaction as follows: "[r]ecognizing the popularity of Robinson Preserve and the community demand for more open space, the Conservation Foundation pulled together a creative solution to permanently conserve 150 acres slated for residential development, adding it to Robinson Preserve. With a grant from the Mosaic Company Foundation, Conservation Foundation purchased the land and donated it to Manatee County. Manatee County then strengthened the project in a highly unusual way by donating a perpetual conservation easement back to Conservation Foundation. This conservation easement prevents the possibility of surplussing the property for other purposes and ensures that it will always be a natural area park."[42]

The County was able to leverage the $3 million used to purchase the Robinson Preserve expansion to secure additional funding for restoration work from the SFWD by using it as a match against SFWD tax-based funds in a cooperative funding project. Deepwater Horizon oil spill money was also secured. The Robinson Preserve was one of 25 projects recommended to the Gulf Coast Restoration Council out of a total portfolio of 1,300 potential projects in Florida to receive such funding. The Council selected Robinson Preserve for funding in its first-round out of 550 projects across the five Gulf states due to the strength of existing local matching funding ($5-6 million) and its location in the Gulf at the confluence of two estuaries. Roughly $1.5 million in funding from the Gulf Coast Council was secured through NOAA via NFWF. Funding for restoration was also obtained from E.P.A. through its Tampa Bay program ($271,000 for upland restoration of the site). The F.P.L. project document from the Gulf Coast Restoration Council for the restoration work on Robinson Preserve states that:

> "Restoration activities will be conducted to: 1) create coastal upland, wetland habitats, and tidal creeks designed to incorporate projected near-term sea level rise; 2) create high quality estuarine subtidal habitats; and 3) restore natural hydrology linking the coastal upland, wetland, and estuarine areas. When completed, the project will provide approximately 57.6 acres of coastal upland habitat and 60.6 acres of wetland, open water sub-tidal, and open freshwater habitats, for a total of 118.2 acres of productive habitat

> from fallow land. Remaining portions of the expansion property not identified for restoration are dedicated to an environmental education center and other recreational facilities that would be constructed and managed by Manatee County."[43]

Ecologically, the Robinson Preserve expansion acreage before conservation and restoration was primarily infill dirt hosting exotic species. In developing designs for the restoration work on the expansion site, the County considered the economics of ecosystem services and leveraged sectoral expertise in fisheries, ecology, and other areas. Restoration work included creating wetland habitat designed for juvenile tarpon and snook, an important species to the commercial and recreational fishing in the area; design for sea level rise, including raising the elevation of 40 percent of the property by 15 feet; and design for coastal upland systems such as upland pine habitat. For sea level rise and habitat systems considered jointly, the County worked with surveyors to determine elevation extents of different habitat types to determine where habitat such as upland pine could be developed at the site free from saltwater intrusion threat. Stantec was contracted to implement the restoration work on the property. The company describes its work as a "…plan to restore and create native habitats for tidal estuarine fish and rare coastal upland forests. Restoration efforts improved water quality in the surrounding Manatee River, Perico Bayou, and Palma Sola Bay. The protected native habitats supported nesting for multiple protected bird species and spawning waters for snook and tarpon. On-site improvements designed by our teams include support facilities for an educational center, boardwalks, pedestrian bridges, parking, restrooms, age-specific thematic playgrounds, kayak and paddle trails, kayak storage facilities, and educational signage."[44]

Importantly, the Robinson Preserve expansion project was the first restoration project in which Manatee County explicitly integrated sea level rise into planning and design. Reflecting on the Robinson Preserve Expansion project, Charlie Hunsicker said: "We wanted to build this to be resilient to any level of sea level rise that may be anticipated…we decided to build this up to make a mosaic of habitats that are both resilient to sea level rise, but also where you can plant pine flatwoods ... and in 200 years will still be surviving."[45]

Key Outcomes

Several key outcomes are associated with the successful acquisition and conservation of the Robinson Preserve expansion. Manatee County has since completed work with other land trusts in the Gulf to share knowledge and lessons learned through the Robinson Preserve expansion acquisition. The Robinson Preserve expansion project forged the Conservation Foundation's relationship with the County and led to other subsequent partnerships. This included a partnership with the County, T.P.L. and the Manatee Fish & Game Association that led to the passing of a ballot measure (the Manatee County Bond Referendum) in November 2020 for a Manatee County property tax increase that will generate over $100 million in funding for land conservation, restoration, and management.

The Robinson Preserve and expansion project has also importantly engaged stakeholders and users of the property to understand the environmental issues associated with climate change, sea level rise, storm surge, and the threats posed to both developed coastal areas and natural resources in Bradenton and Manatee County more broadly. The educational aspects of the preserve have allowed the County to reach a broader audience and highlight to residents and visitors alike the importance of coastal habitat resilience.

Deep Dive 2: Fleming Plantation, Louisiana

Coastal Louisiana is a critically important ecological asset to the Gulf region's social, economic and environmental health and to the nation as a whole. New Orleans and the surrounding coastal region of southern Louisiana are home to two million people representing a mix of cultures—Acadian, Caribbean, French—that reflect its dynamic history. The region's music, food, arts, and cultural and historical sites support a vibrant tourism industry, bringing tourists from around the United States and the world to its shores. The coastal region is also an economic engine for commercial and recreational fisheries, shipping, and our energy supply. Louisiana has the most seafood landings in the country after Alaska; in 2019, seafood landings in Louisiana totaled 892 million pounds.[46] The Port of New Orleans supports cargo, rail, industrial real estate, and cruise businesses, bringing in roughly $100 million annually in revenue, and supports one in five jobs in Louisiana.[47] Ecologically, the three million acres of wetlands in the coastal region provide a wide range of ecosystem services, such as habitat that supports a diverse array of flora and fauna, including many species of migratory birds; flood protection; fisheries; and nature-based tourism. A 2010 study estimated that the Mississippi River Delta's natural capital provides at least $12-47 billion in benefits to people each year, with an asset value of $330 billion to $1.3 trillion.[48]

The Louisiana coast is also, however, subject to severe ecological stress that threatens these important social, economic, and environmental services for both humans and wildlife. Coastal Louisiana is losing land at a rapid pace: between 1932 and 2010, the coastal area lost over 1,800 square miles of land.[49] The United States Geological Survey estimates that roughly 75 square kilometers of Louisiana's wetlands are lost annually. While Louisiana accounts for 40 percent of wetlands in the U.S., the state accounts for 80 percent of the total wetland loss. If the current rate of coastal land loss continues, Louisiana's coastal wetlands will be gone in 200 years.[50] Land loss is occurring due to a combination of anthropogenic and natural factors. Throughout history, heavy engineering of the Mississippi River to control its direction and flow removed the primary land-building source—sediment—from the coastal marshes. Dredging wetlands for canals, filling them for agriculture and development, altering natural hydrologic and ecosystem processes, and sea level rise, subsidence, and increasing hurricane activity continue to engulf coastal land. The barrier islands that protect the coastal wetlands are also eroding, leaving the wetlands and coastal areas open to saline intrusion, coastal flooding, and the eroding impacts of both normal wave activity and more extreme storm surges. Over the coming decades, climate change will continue to compound and intensify these ongoing processes.

Many populated places in coastal Louisiana are vulnerable to the consequences of land loss, flooding, and storm surge, especially New Orleans, which sits at the edge of the Barataria Basin amidst the highest rates of land loss in the area. New Orleans was included in a recent study as one of the most highly vulnerable cities worldwide to sea level rise.[51] New Orleans is today protected from flood risk by a range of gray and green infrastructure, including a $14 billion system of levees and floodwalls constructed after Hurricane Katrina in 2005 and completed in 2018. This system, known as the Greater New Orleans Hurricane and Storm Damage Risk Reduction System, is built to protect against a 100-year flood event with a one percent chance of occurring in any given year. However, the Army Corps of Engineers recently indicated that sea level rise and sinking levees from subsidence might render this system inadequate in as little as four years.[52] Relying on this system of gray infrastructure alone may not be enough to protect the City; for this reason, nature-based solutions (green infrastructure) have also been prioritized and implemented in the region to increase the resilience of both the City of New Orleans and the surrounding communities within Louisiana's coastal area. The urgency of these actions is underscored by Louisiana's resettlement of the nation's first "climate refugees" from the barrier island of Isle de Jean Charles, using a $48 million grant from the Department of Housing and Urban Development. It is the first such use of federal tax money for climate change-related resettlement.[53]

Efforts to Stem Land Loss and Associated Environmental Challenges

In response to the continued challenge of land loss along the coast and spurred in part by the massive destruction caused by Hurricane Katrina in 2005, Louisiana's Coastal Protection and Restoration Authority (CPRA) has developed Coastal Master Plans on five-year cycles since 2007 to direct funding to prioritized projects for coastal land loss and disaster risk mitigation. The 2017 Coastal Master Plan "…sets an ambitious path to respond to the loss of our coastal land and the threats from storm surge events. The master plan, in its purest sense, is a list of projects that build or maintain land and reduce risk to our communities. Because the funding for all of those projects is not available now, the master plan identifies a long-term program of construction, operations and maintenance, and adaptive management guided by a robust and continuous planning process to be implemented as funds become available. It operates much like the Federal Highway or the Mississippi River and Tributaries Systems."[54] While CPRA manages the Coastal Master Plan, the plan is a product of a multi-stakeholder process.

Buy-in for the Coastal Master Plan from stakeholders across city, parish, state, and federal agencies, and in the nonprofit and private sectors, ensures that priorities are implemented from high to low priority and complicates any effort to stray from these priorities. Addressing priorities is thus key for any project.

Projects completed or in process along the coast include structural protection projects, such as levee construction, oyster barrier reefs, ridge restoration, shoreline protection, barrier island restoration, marsh creation, vegetative planting and bank stabilization, land conservation, sediment diversion, hydrologic restoration, and other infrastructure construction.[55] Specifically,

the plan incorporates 124 structural and non-structural projects that will maintain over 800 square miles of land. At full implementation, these projects are expected to reduce damages by $150 billion over the next 50 years and represent large-scale engineering to restore the natural hydrological dynamic to the ecosystem. These projects include activities such as marsh creation, which uses sediment dredged from area waterways to create new coastal land areas that also reduce potential future loss of land by protecting existing coastal areas from sea level rise and storm surge. The Barataria Land Bridge is one such project.

Notably, the Coastal Master Plan in Louisiana targets restoration work – work which focuses on rebuilding the marshes and fixing human-caused problems, such as channelizing for oil and gas production, and deforestation. In the absence of land conservation as a priority, land trusts and land protection groups in Louisiana are finding creative ways to work land protection into existing coastal restoration plans in a way that garners buy-in from the public sector. Land trusts have to communicate the relevance of land conservation in the context of the Mississippi River Delta's hydrology and ecology. That is, they must address why land that may be engulfed by the sea in 50 years should be conserved and compare the expected benefits of that conservation with the state's coastal restoration work.

The 2010 Deepwater Horizon oil spill led to significant environmental impacts to Louisiana's salt marshes, wetlands, and wildlife, further compounding existing environmental degradation of the coastal landscape. Restoration priorities identified after the spill have been aligned in part with existing state planning efforts. The Council's initial F.P.L. states that it will work to build upon existing state planning efforts: "…the Council is supporting a number of large-scale planning efforts to lay the foundation for critical projects that address habitat loss in the State of Louisiana and were identified in the State's *Comprehensive Master Plan for a Sustainable Coast*. This is consistent with the RESTORE Act provision for prioritizing projects contained in existing Gulf Coast State comprehensive plans."[56]

Fleming Plantation

The roughly 3,500-acre Fleming Plantation property is located within the National Park Service's 23,000-acre Barataria Preserve, about fifteen miles south of New Orleans. The plantation is a large block of land connected to the coastal marshes in the mid to upper portion of the Barataria Basin. It hosts bottomland hardwood forests, marshes, bayous, a cemetery, historic buildings, and a prehistoric Indian mound.[57] Historically, the plantation has been subject to degradation due to ditching and draining for agriculture.

Figure 6: Fleming Plantation. Source: N.P.S./The Trust for Public Land: https://www.tpl.org/our-work/fleming-plantation-jean-lafitte-national-historical-park

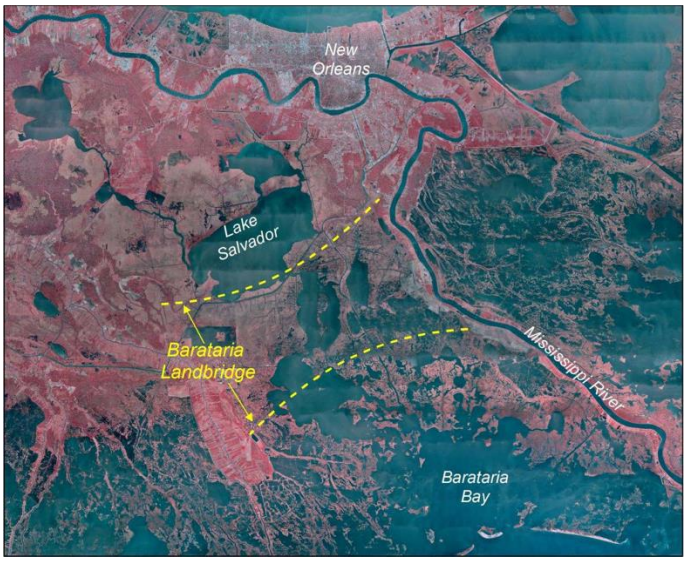


Figure 7: Location of the Barataria Land Bridge. Source: https://www.gulfspillrestoration.noaa.gov/sites/default/files/2020-07%20LA%20Public%20Final%20RP.EA%203.3%20Barataria%20Marsh%20Creation.pdf

The Barataria Preserve itself is a part of the larger Jean Lafitte National Historical Park and Preserve within the Barataria Basin in coastal Louisiana. The Barataria Basin has experienced the second-largest land loss across ten coastal basins in Louisiana, losing almost a third of its land area (~432 square miles) from 1932 to 2016.[58] Land loss in the Barataria Basin results from marsh deterioration from saline intrusion and wind and wave erosion. Historically, the Basin's upper freshwater and lower marine sections had natural hydrologic separation; this separation was removed with the construction of Barataria Bay Waterway and other similar infrastructure, allowing saltwater to intrude into the upper freshwater marshes. In order to reduce saltwater intrusion and land loss, CPRA constructed the Barataria Basin Land Bridge (Figure 7) by moving dredged sediment into the Basin south of Jean Lafitte. Deterioration of the Land Bridge over time is being addressed through multiple restoration projects.[59]

This historical significance of Fleming Plantation can be understood in the context of the culture and history that surround it in the Jean Lafitte National Historical Park and Preserve. Created by Congress in 1978, the park and preserve are spread across six natural, cultural, and historic sites that together tell the story of the complicated and intriguing ecological and social history of southern Louisiana. These six sites include the Barataria Preserve, the French Quarter Visitor Center, the Chalmette Battlefield and Cemetery, the Prairie Acadian Cultural Center, the Acadian Cultural Center, and the Wetland Acadian Cultural Center. The park was initially created with a mission to preserve the natural and cultural resources of Louisiana's Mississippi River Delta region. (Figure 8).[60]

Figure 8: The sites that comprise the Jean Lafitte National Historical Park and Preserve
Source: https://www.nps.gov/jela/planyourvisit/maps.htm

The Jean Lafitte National Historical Park is named after one of the most notorious individuals in the region's history. Jean Lafitte was a known smuggler in the early 19th century when the U.S. government prohibited trade with various countries. Lafitte's crew of workers were called the Baratarians; together, they worked from their headquarters on a barrier island called Grand Terre, and within the marshes of the Barataria Basin, to smuggle and trade goods and enslaved people. Lafitte, however, also helped defend the U.S. during the War of 1812 with England. The end of his life remains a mystery, as historians do not know where he lived after about 1820 or when he died.[61]

The Barataria Preserve provides multiple important social, economic, and environmental services. It is owned and managed by the N.P.S. for conservation and recreation and serves as green infrastructure for storm surge and sea level rise for the surrounding area. The preserve also provides habitat for flora and fauna, including 200 species of birds. However, a large portion of the Barataria Preserve and its environs are threatened by sea level rise and land loss, as shown in Figures 9 and 10. A recent New York Times interactive story about the town of Jean Lafitte within the Barataria Basin starts with a telling statement: "[f]or the community of Jean Lafitte, the question is less whether it will succumb to the sea than when — and how much the public should invest in artificially extending its life."[62]

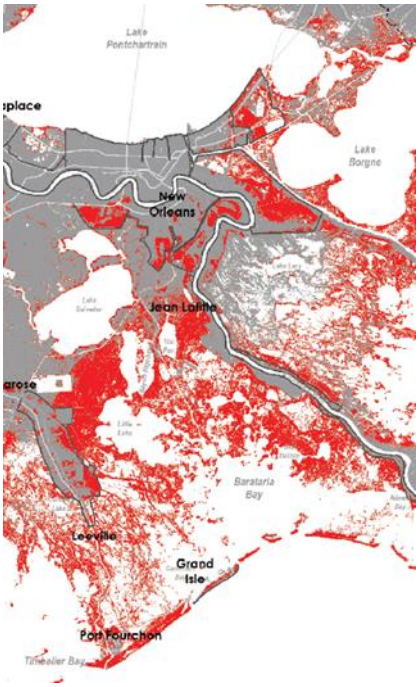


Figure 9: Predicted land loss around Jean Lafitte over the next 50 years. Source: LA 2017 Coastal Master Plan.

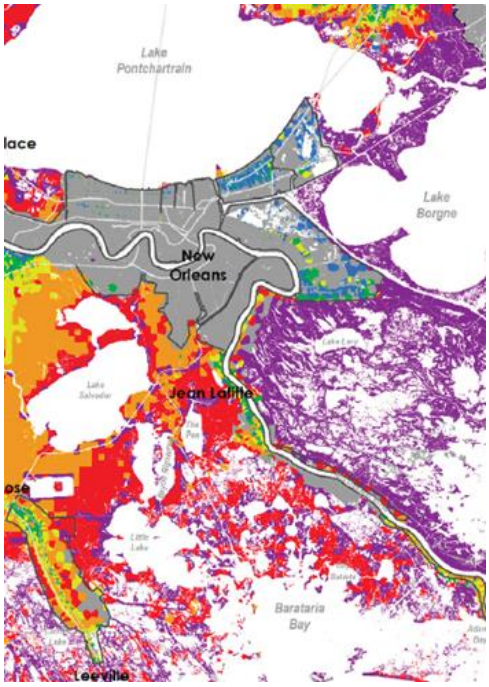


Figure 10: Flood risk around Jean Lafitte over the next 50 years. Source: LA 2017 Coastal Master Plan.

Conserving the Fleming Plantation

The Trust for Public Land (T.P.L.) facilitated the conservation of Fleming Plantation by purchasing the property through a fee simple arrangement and then conveying it to the National Park Service to be added to the Barataria Preserve within the Jean Lafitte National Historical Park and Preserve. The project closed in 2018. Previously, Fleming Plantation had been the largest remaining privately-owned parcel within the Barataria Preserve. The project was funded by two North American Wetland Conservation Act (NAWCA) grants, a grant from the National Fish and Wildlife's Acres for America program, and private donors. The Partnership funded part ($24,000) of the due diligence costs associated with the project.[63] The total cost of placing a conservation easement on the 3,455-acre property was approximately $2.9 million. The Fleming Plantation Acquisition (Figure 11) extended the Barataria Reserve five miles south from the existing boundary, guarding against future subdivision and development in this critically important area for wetland restoration.

Conservation Value of Fleming Plantation

Conserving Fleming Plantation has multiple ecosystem service benefits: habitat connectivity for various species, including important commercial and recreational fish species and migratory birds; recreational opportunities such as hiking, boating, and fishing; and flood control and storm surge protection for the adjacent town of John Lafitte and the greater metro area of New Orleans. In its application for the Partnership's P.A.F., T.P.L. highlights the many benefits to the ecology and environment of the acquisition:

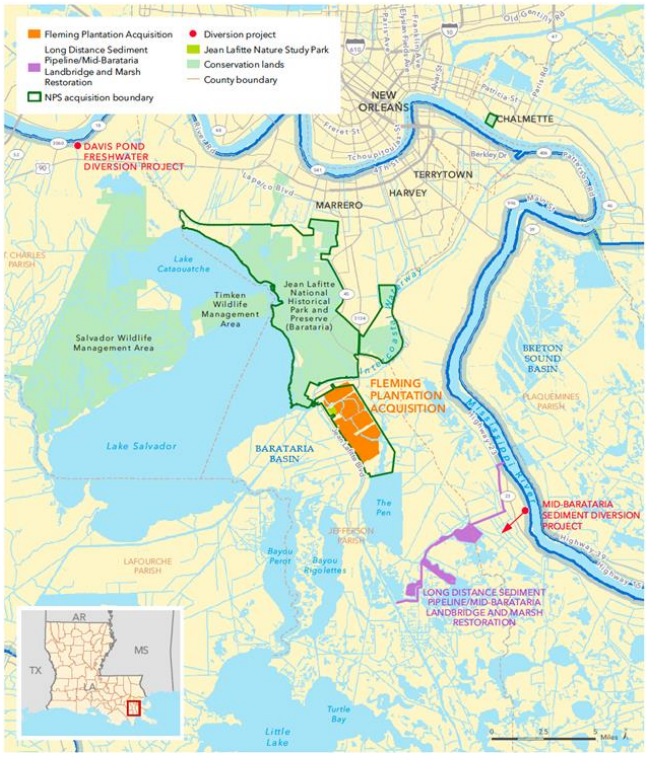


Figure 11: Location of T.P.L.'s Fleming Plantation Acquisition
Source: NPS/TPL

> "Acquisition of the Fleming Plantation tract will extend the 23,000-acre Barataria Preserve approximately five additional miles south into the Barataria-Terrebonne National Estuary, the only estuary recognized in Louisiana as part of the National Estuary Program. The historic Fleming Plantation contains significant natural and cultural resources. The plantation backlands include former agriculture fields (now reverted to forest) worked by slaves until the Civil War and Emancipation and thereafter by sharecroppers; bald cypress swamps home to neotropical migrants; and fresh to intermediate marshes important as nursery areas for estuarine species, including those of commercial importance, and for wintering waterfowl.
>
> In addition to protecting the site's habitat values, the proposed tracts would also directly buffer the levee system protecting the community of Jean Lafitte and help buffer greater New Orleans in extreme storm surge events, critical to public safety and the long-term economic viability of these communities. Additionally, the proximity to New Orleans and the town of Jean Lafitte makes the property ideal for resource-based recreation, fishing, boating, hiking, birding, wildlife photography, etc. The tracts abut the locally managed Lafitte Nature Park with its two miles of boardwalks and the Lafitte back levee provides a ready greenway for potential public access."[64]

The Fleming Plantation land acquisition aligns with and bolsters numerous efforts to stem sea level rise and land loss along the Louisiana Coast, across multiple stakeholders and jurisdictions, through activities such as marsh creation. The Fleming Plantation project is an example of land trust creativity in fitting within the restoration planning framework. In the Council's initial I.P.L. in 2015, the Council states that it "…is funding backfilling 16.5 miles of oil and gas canals to

recreate freshwater wetlands and restore hydrology in Jean Lafitte National Historical Park and Preserve. The Council's efforts build upon investments made by the state in its Comprehensive Master Plan for a Sustainable Coast."[65] A recent project, announced in July 2020 by the CPRA, will build roughly two square miles of marsh below the town of Jean Lafitte. This project aligns with the state's plan to build the Barataria Landbridge south of New Orleans and other inhabited coastal areas. The 2017 Coastal Master Plan incorporates $17 billion of projects for marsh creation.

Conserving Fleming Plantation – Aligning Stakeholder Interests

While T.P.L.'s involvement with the Fleming Plantation project started over a decade ago in 2010, the N.P.S. had identified the property for potential acquisition long before that. The N.P.S. has a list of parcels identified as priorities for acquisition through the Land and Water Conservation Fund (LWCF). The fund was created in the 1960s to invest proceeds from offshore oil and gas leases to protect "our national endowment of lands and waters" through grants to state and local governments and federal allocation of money used to acquire "lands, waters, and interests therein necessary to achieve the natural, cultural, wildlife, and recreation management objectives of federal land management agencies." [66] As of 2014, N.P.S. had a list of over 11,000 parcels prioritized for acquisition, but it did not have funding for them. The total value of these acquisitions was estimated at $2.1 billion.[67] The N.P.S. website detailing the status of the LWCF notes that:

> "In many cases, landowners are anxious and willing to sell their property and they have waited decades for funding to become available. As a result, some landowners end up selling their property to another private party rather than continue to wait. Most property within National Park Service boundaries is highly desirable and appealing to developers and investors. Development threats are common throughout several units in the National Park System and each year the cost of acquisition continues to increase along with property values. Significant resource damage and destruction have occurred due to the inability to acquire property and often the damage to the resource is irreversible."[68]

The National Park Service completed analyses of the Fleming Plantation property and resources and how they might fit into the Jean Lafitte National Historical Park. The Agency needs to evaluate many factors carefully when considering a boundary expansion. N.P.S. concluded that in addition to serving as an important habitat area and providing flood, sea level rise, and storm surge mitigation benefits, Fleming Plantation's agricultural history could bolster the agency's storytelling about the area. N.P.S. also already owned forty acres contiguous with the Fleming Plantation property that houses a visitor experience and boardwalk.

However, it became clear that N.P.S. required a third party, given the federal appropriations work underway to add land to the Barataria Preserve. N.P.S. requires a third party unless Congress has directed the Agency to take on an effort. Stacey Shankle, senior project manager

for Mississippi, Louisiana and Arkansas for T.P.L., had worked with the N.P.S. for a long time, and knew of the agency's goal of expanding the Barataria Preserve, and of the Fleming family's wish to conserve the property. Stacey also had a working relationship with the property's owners. From his vantage point at T.P.L., Stacey knew that the Fleming Plantation property fit into T.P.L.'s land for people mission, and more specifically, into its Gulf Coast Program focused on outdoor recreation. Ecologically, the Fleming Plantation property was also directly protecting the Town of Jean Lafitte, which had been supportive of conserving the property for the protective measures it afforded them as green infrastructure.

The founding legislation that created Jean Lafitte National Historical Park and Preserve left space for future additions to the Park's boundaries. The path to adding Fleming Plantation to the Barataria Preserve had been cleared by Congress in 2009, when Congress approved a boundary expansion for the Barataria Preserve and Fleming Plantation in an amendment to the enabling legislation.[69]

T.P.L., a member of the Partnership for Gulf Coast Land Conservation, applied for funding from the P.A.F. to help cover the costs associated with appraisal, appraisal review, title review, survey and legal work, and environmental assessment for fee acquisition of 3,476 acres for the Fleming Plantation project. T.P.L. funded roughly half of the projected due diligence costs. The remainder of due diligence funding requirements came from T.P.L. investment and other private and foundation gifts. The Partnership's grant enabled T.P.L. to assume risk on the front-end work of the project to establish project readiness and meet Federal requirements.

Stacey Shankle noted that tidal work on big projects in coastal areas is complicated and hard to survey. Still, the ability to say with confidence that a project is ready has a considerable positive impact on securing federal funds. T.P.L. started its own investment into the Fleming Plantation project through matching the P.A.F. funding. Completing the due diligence work enabled T.P.L. to leverage additional and diverse funding (private donations, grants). Within 18 months, the organization had the necessary funds to purchase the project.

T.P.L. played an important role as a conduit of information between N.P.S. and the Fleming family. It also had a deep knowledge of the potential funding landscape. The Fleming Plantation project did not follow the typical NPS LWCF process, and N.P.S. did not contribute any money for the project. Most of the funds for the acquisition came from grants from the North American Wetlands Conservation Act (NAWCA) fund administered by F.W.S. ($2 million) and Acres for America ($610,000). T.P.L. provided the remaining balance ($280,000) from their donor base.

NAWCA Proposal Funding

T.P.L. submitted a proposal called Mid-Barataria Wetlands II for B.P. Gulf Spill funds from the NAWCA to fund the acquisition of Fleming Plantation in February 2016. NAWCA funding was sought due to the critical bird habitat present on the Fleming Plantation property. This proposal was a continuation of the Mid-Barataria Wetlands I project, which T.P.L. had submitted a

proposal for in July 2015. In the Wetlands II proposal, T.P.L. notes that an additional phase of funding would be required to fully acquire Fleming Plantation and to fund wetlands restoration in the project area. Elements in the NAWCA proposal highlight the alignment of ecosystem service benefits from the Fleming Plantation property with multiple ongoing coastal restoration and conservation priorities in the Barataria Basin.

The proposal states that "[t]he addition of Fleming Plantation to the Barataria Preserve Unit of the JLNHPP will extend this 23,000-acre preserve almost five miles further into the Barataria-Terrebonne National Estuary, the only estuary recognized in Louisiana as part of the National Estuary Program. Tract 1 totals 1,270 acres and includes 484 acres of palustrine emergent marsh, 177 acres of palustrine forested wetlands (bald cypress swamp forest and bottomland hardwood), 451 acres of estuarine intertidal vegetated marsh (intermediate and brackish), and 158 acres of open water (bayous, canals, shallow pools, and ponds). Protection and incorporation into the preserve will ensure the diverse habitats within this former sugar cane plantation are protected. Protection and restoration of coastal marsh and forests in the Barataria Basin are recommended in the "Louisiana Wildlife Action Plan (Draft 2015)" as a conservation strategy for shorebird, wading bird and waterfowl, freshwater fish, and crayfish species of concern. Conservation of this inland coastal tract also complements the vision of the 2012 "Louisiana Coastal Master Plan for a Sustainable Coast" (LCMPSC) that aims to re-establish freshwater flows and sediment pathways into the Barataria Basin as part of a long-term coastal wetland restoration effort in strategic areas that have high potential of success."[70]

The proposal also details the alignment of the Fleming Plantation Project with numerous other conservation and restoration activities in the region. The project falls within:

- a high priority area of the North American Waterfowl Management Plan (NAWMP 2012) for waterfowl conservation;

- the U.S. E.P.A.'s Barataria-Terrebonne National Estuary Program (BTNEP) that aims to preserve and restore wetlands and barrier islands;

- the Southeast Louisiana Refuge Complex of the U.S. F.W.S. National Wildlife Refuge System, which contains over 80 species of greatest conservation need identified in the 2015 draft of the Louisiana Wildlife Action Plan; and

- a priority area identified by the Partnership, who donated a match towards the NAWCA proposal for due diligence activities.

Final Protection and Conveyance

T.P.L. conveyed Fleming Plantation into the Jean Lafitte National Historical Park and Preserve in October 2018. The Fleming Plantation project has been the largest in T.P.L.'s coastal program by number of acres. The acquisition has allowed the town of Jean Lafitte to increase its ecotourism, as well as protect itself from sea level rise and storm surge. In addition, public ownership of the

Fleming Plantation by the N.P.S. unlocked funding for restoration associated with oil and gas canals on the property.

Results to Date

The Partnership's efforts to date have immensely benefitted conservation in the Gulf region. The Robinson Preserve and Fleming Plantation examples show how deeply the Partnership's participation in land conservation aligned conservation with broader social, economic, and environmental goals across stakeholder groups and the value of the Partnership's knowledge and financial resources in catalyzing additional funding to bring conservation outcomes to scale. Benefits of the Partnership's work have flowed from many elements of its work, but most notably through the development and release of its Conservation Vision and the P.A.F.

The Partnership successfully coordinated many land trusts in the Gulf region and facilitated consensus around land conservation priorities through the Conservation Vision. Developing this document had important co-benefits that have created enabling conditions for land conservation in the Gulf. For example, through participating in the Conservation Vision, smaller land trusts could leverage funding to spatially catalog land conservation priorities and share knowledge and build consensus around conservation priorities with other land trusts in the region.

The Partnership's Conservation Vision also influenced the oil spill settlement process to include land conservation in restoration activities. That inclusion opened the door for land trusts in the region to leverage restoration funding associated with the Deepwater Horizon oil spill. In other words, the Partnership's ability to participate in regional and national dialogue about restoration and remediation after the oil spill, on behalf of its land trust partners, gave voice to the partners and provided access they otherwise would not have had. This is evident in the Gulf Coast Ecosystem Restoration Council's recent Draft Funded Priorities List (F.P.L.) 3b (November 2020).[71] F.P.L. 3b shows the increase in land conservation as an included category; earlier F.P.L.s did not include as many conservation projects. F.P.L. 3b proposed to approve over $105 million for "…water quality improvement, habitat conservation and restoration, and other ecosystem projects and programs…across the Gulf Coast."[72] Projects proposed for inclusion on F.P.L. 3b include projects for living shorelines and land acquisition for coastal conservation.

T.N.C. leveraged the Conservation Vision in its report entitled, "Protecting Open Space & Ourselves: Reducing Flood Risk in the Gulf of Mexico through Strategic Land Conservation,"[73] The report prioritizes 421 watersheds out of 2,600 in the Gulf of Mexico for land conservation, based on their biodiversity benefits and expected flood risk. The high conservation opportunity watersheds relied on the Conservation Vision footprint and the Protected Areas Database, showing the increasing reach of the Conservation Vision in guiding land conservation in the region.

The Partnership's P.A.F. has been instrumental in catalyzing additional conservation in the region. According to the Partnership's five-year progress report, nearly $400,000 of the original $500,000 fund had been invested, representing 18 closed projects and over 27,000 acres protected. (The remaining $100,000 funding was allocated.) Importantly, these P.A.F. funds allowed land trusts to verify projects through due diligence work that then leveraged over $53 million more in strategic conservation funding for Gulf region projects from the NFWF's Gulf Environmental Benefit Fund, the Deepwater Horizon NRDA, NAWCA, the USDA NRCS; the U.S. F.W.S., the USFS, the Knobloch Family Foundation, and state and local governments.[74]

The Partnership is now working on revising the Conservation Vision to add flood mitigation benefits to the criteria for conservation prioritization and to develop a strategic conservation assessment tool that can run data analytics to support prioritization of the P.A.F. The Robinson Preserve and Fleming Plantation are two examples of strategic conservation for flood mitigation.

The Partnership is also embarking on a second round of P.A.F. grantmaking, funded by the Gulf Coast Ecosystem Restoration Council through E.P.A. The second round of P.A.F. funding is intended to be more expansive than the first round and may include projects seeking Deepwater Horizon oil spill related funding or leverage other funding sources. This would allow for strategic conservation projects outside of areas related to the impacts of the oil spill. In the first round of P.A.F. funding, the primary goal was to help land trust partners ready their projects to be considered for Deepwater Horizon-related funding sources, and PAF-funded projects had to be related to the oil spill recovery effort. Land trust partners are enthusiastic about this expansion. It means they can go beyond the priority areas for the oil spill to upland, adjacent, and inland areas and bring other sources of complementary funding. The types of projects that will be funded through the second round of P.A.F. grantmaking will vary in size as they did in the first round. Some may be as large as Fleming Plantation, and projects are likely to include private conservation easements, urban parks and wetlands, and large public buffers

Lessons Learned

Many lessons have been learned through the Partnership's growth and evolution, both at the macro scale from the Partnership as a convener of land trusts, and at the micro-project scale, where Partnership resources are leveraged to meet the land conservation goals of individual land trusts. Key lessons learned thus far by the growth and evolution of the Partnership and its projects include the following.

Partnership models for land conservation enable landscape-scale solutions to landscape-scale problems. Environmental problems and solutions are rarely limited to a single parcel of land. A recent paper stated that "[c]onservation outcomes are fundamentally tied to processes—such as the movement of water across a watershed or river basin, or the annual migrations of animal species—that occur on a relatively large ecosystem, or landscape, scale. Delivering results on this scale, especially in complex landscapes with diverse government, private, and community actors can only happen through collaboration."[75] Collaborative conservation models are on the rise at

local, regional, and national levels. In the U.S., the Network for Landscape Conservation is dedicated to advancing conservation partnerships across organizations.[76] At the federal level, Congress enacted the Regional Conservation Partnership Program (RCPP) in the 2014 Farm Bill in order to facilitate partnership models of conservation to leverage USDA conservation programs for greater impact. These efforts to broaden conservation partnerships recognize that partnerships bring conservation to scale and can achieve greater impact. Established partnerships work to implement the project at hand and build social capital for future potential work, thereby increasing potential conservation impact over time.

Partnership models for land conservation can elevate local conservation goals to the regional and national stage. Partnership models for land conservation, such as the Partnership for Gulf Coast Land Conservation detailed in this case profile, unlock knowledge and funding for local land trusts. The Partnership for Gulf Coast Land Conservation has been able to clearly articulate local and regional conservation needs to national-level entities in order to leverage funding associated with multiple federal agencies, and of course, from the Deepwater Horizon oil spill settlement.

Clearly articulating the role of land conservation in dynamic ecosystems is critical. The ecosystems in which the Partnership operates are complex and marked by decades and sometimes centuries of human manipulation of the natural environment. Untangling the environmental causes and effects and potential future consequences of multiple land use scenarios is complicated, including the extent to which land conservation can boost ecosystem resilience in comparison to other methods for environmental restoration. Land conservation in this sense is conducted as a natural climate solution, with multiple and myriad benefits beyond those that usually enter people's minds when the word "conservation" is used. As profiled in this case study, land conservation is being implemented to buffer coastal areas from the destructive impacts of sea level rise, storm surge, and flooding, with genuine economic benefits. The land trusts involved in the Robinson Preserve and Fleming Plantation projects, and indeed the Partnership overall, are highly adept at assessing and communicating the benefits of land conservation, not just for habitats and species but also for the people who live and work coastal areas as well.

Partnership models can provide sustainability to land trust members. Land trusts bear an enormous responsibility of protecting the land they conserve in perpetuity. At the same time, many land trusts are small, volunteer-driven organizations with limited resources. Collaborations such as the Partnership provide these land trusts with shared knowledge and access to resources that can help sustain their obligations and reduce the costs of land conservation.

Flexibility in management goals associated with conservation projects can be critical to project success. The projects highlighted in this case profile both resulted in conservation for multiple management goals. The Robinson Preserve project required the County to retain rights to install a passive recreation area on the property, to allow for some construction (e.g., the Mosaic nature center, picnic areas, restrooms), and to restore and maintain the coastal habitat. The Fleming Plantation property was added to a national park to be conserved and managed, not just

as a natural climate solution but also for recreational benefits.

Land trusts can be honest brokers, helping other stakeholders avoid quid pro quo and conflict of interest issues. Land trusts also enforce easements regularly and can exist outside of politics and other nuanced dynamics that can complicate land conservation efforts. A key lesson learned by the Conservation Foundation was how to appropriately receive money from a corporate interest, such as the Mosaic Company, in order to preserve land. Working on the Robinson Preserve expansion project helped the Conservation Foundation to develop guidelines and procedures for selecting potential partners in land conversation. The project also helped the Conservation Foundation to underscore a rule that they do not participate in cause-related marketing.

Policy Recommendations

The partnership model of land conservation has broad applicability to other regions. The partnership model exemplified by the Partnership for Gulf Coast Land Conservation has helped deploy conservation at scale to meet broader environmental and ecological goals. The work of the Partnership could be shared with other regional/watershed priority areas in the U.S. as an example of how to leverage partnerships and collaboration to engage with national dialogues around environmental conservation, restoration, and management. The Partnership's work also provides valuable lessons on including land conservation projects in funding allocated to restoration and management.

More research is needed on the benefits of land conservation for coastal restoration. Coastal restoration calls to mind gray infrastructural solutions such as seawalls and other physical barriers. Additional research into the efficacy and benefits of green infrastructure across different ecosystems and landscapes would help encourage further use of land conservation as a restoration method. Research could importantly point out the multiple co-benefits accompanying land conservation that are not evident with gray solutions. Additional research on the costs associated with land conservation over time as compared to gray infrastructural solutions could also make a case for land conservation as a solution to the coastal challenges of sea level rise, storm surge, and flooding. While restoration and conservation may both be necessary to drive optimal environmental outcomes[77], conservation can be a more cost-effective solution over certain geographies and timescales.

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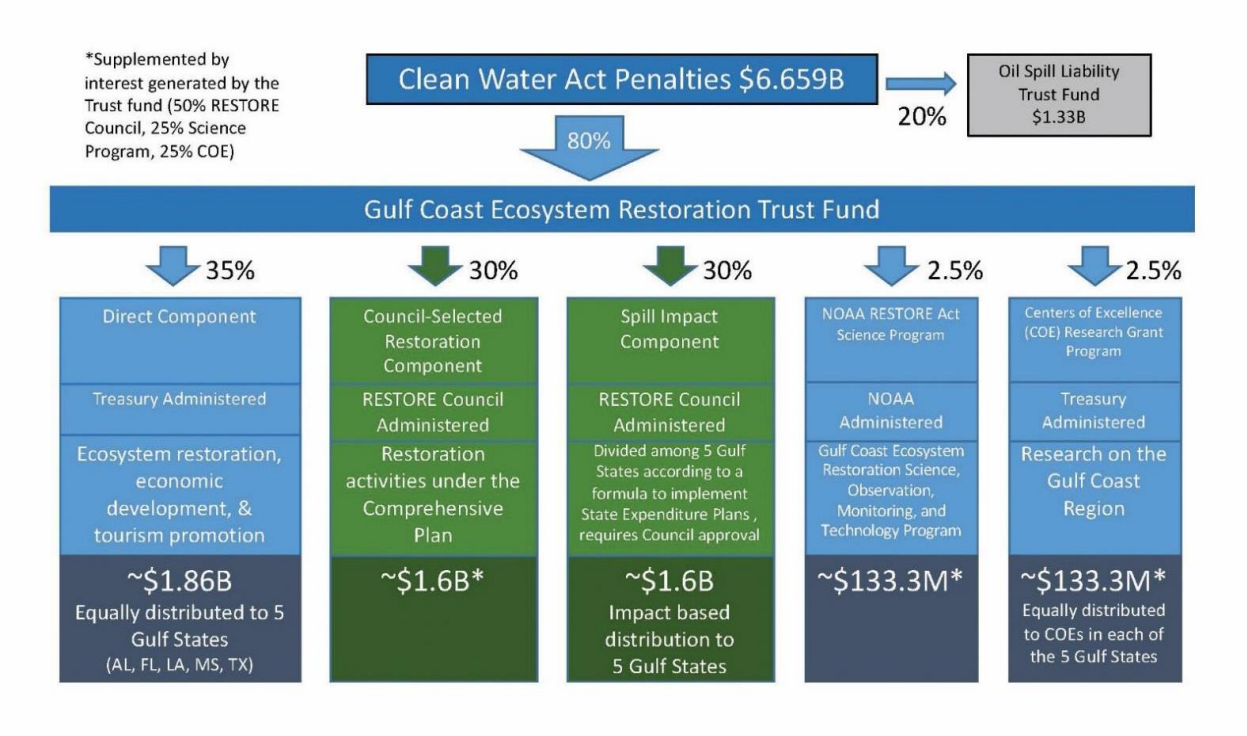
About the Author

Kavita Kapur Macleod has broad expertise and experience conducting analysis of environmental policy issues and integrating economic, scientific, and policy considerations for public, private, and N.G.O. institutions domestically and internationally. Clients have included the World Bank, the Jane Goodall Foundation, the Highstead Foundation, the Environmental Policy Innovation Center, the U.S. E.P.A., U.S. Fish & Wildlife Service, and the U.S. Coast Guard. Kavita's work experience also includes management and financial support for the Massachusetts Executive Office of Environmental Affairs and international program development and implementation at Harvard University. She holds a B.A. in International Relations/Minor in Art History from Tufts University and an M.P.P. from Harvard University, where she focused on environmental science, policy and economics.

Appendix 1: CWA Payments Pursuant to DWH Oil Spill



Source: Gulf Coast Ecosystem Restoration Council, Comprehensive Plan Update 2016

Appendix 2: Partnership for Gulf Coast Land Conservation Partners

ALABAMA

South Alabama Land Trust
Dauphin Island Bird Sanctuary
Coastal Land Trust
Alabama Forest Resources Center
Alabama Coastal Heritage Trust

FLORIDA

Alachua Conservation Trust
Conservation Florida
Conservation Foundation of the Gulf Coast
Florida's Nature Coast Conservancy
North Florida Land Trust
Tampa Bay Conservancy
Tall Timbers Research Station and Land Conservancy

LOUISIANA

Land Trust for Louisiana
Woodlands Conservancy

MISSISSIPPI

Mississippi Land Trust
Land Trust for the Mississippi Coastal Plain

TEXAS

Colorado River Land Trust
Guadalupe-Blanco River Trust
Galveston Bay Foundation
Katy Prairie Conservancy

REGIONAL/NATIONAL

The Trust for Public Land
The Nature Conservancy
The Conservation Fund
National Audubon Society
Land Trust Alliance
American Farmland Trust

Appendix 3: Study Group Questions

One of the several uses of this case profile is in an academic setting. Following are several questions that an instructor can pose to their study group to engage participants in the details of the narrative.

1. Is this a novel initiative? How have the protagonists addressed the climate and industry impacts in the Gulf Coast Region?

2. Is the solution profiled in this case measurably effective and strategically significant for the practice of land and biodiversity conservation and climate change adaptation and mitigation? Why and why not?

3. Is the solution emerging from this case transferable to other jurisdictions and will it endure?

4. Is this a large landscape solution that crosses sectors and political jurisdictions? Who are the key players from various sectors essential to the success of this initiative? What are the key technologies and organizational methodologies?

5. If you were a key participant of the Partnership, what would be your priorities for action in the next year? Over the next ten years?

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