



WETLAND RESTORATION MANGROVE AIR SEEDING

Restoration of the Mississippi River Delta is of national significance. The economic health of much of the United States depends on sustaining the navigation, flood control, energy production, and seafood production functions of the Mississippi Delta and river system. Each of those functions is currently at severe risk due to a coastal wetland loss rate of approximately one football field an hour. Louisiana has more than 4 million acres of coastal wetlands, representing 40% of the country's total. However, Louisiana currently accounts for 90% of coastal wetland loss in the United States.

Mangroves have naturally expanded into the coastal salt marshes of Louisiana over the past few decades due to warming temperatures, and show potential to reduce wetland loss and increase the resiliency of the region to hurricanes.

PROJECT DETAILS

ConocoPhillips and Tierra Resources partnered to implement a pilot project focused on planting mangroves to prevent wetland loss. ConocoPhillips owns approximately 636,000 acres of wetlands in the coastal zone of southeast Louisiana. This three-year pilot project had three main goals: to study the viability of planting mangroves for restoration purposes, to apply the best practices of the certified wetland methodology to quantify carbon sequestration, and to research the carbon impacts of prevented wetland loss. The pilot project was implemented in a salt marsh environment where various mangrove planting techniques were tested.

Air seeding by crop duster airplane was determined to be the most viable planting technique. This technique is much less labor intensive than hand planting mangroves, requires no major construction, and therefore is much more cost-efficient.

continued

"We have proven that mangrove air seeding can be cost-efficient and scalable."

- Dr. Sarah Mack

ABOUT THE PARTNERS



ConocoPhillips | At ConocoPhillips, responsibly delivering energy to the world is just the beginning. As an international exploration & production company, ConocoPhillips is committed to protecting the environment that we share. We set high environmental standards to ensure that our actions today will provide the energy needed to drive economic growth and social well-being, while also securing a stable and healthy environment for tomorrow.

Tierra Resources | Based in New Orleans, La, Tierra was founded in 2007 with a mission to conserve, protect, and restore coastal wetland ecosystems by creating innovative solutions that support investment into wetland restoration activities. Tierra Resources' services enable landowners, corporations, nonprofits, and government clients to understand the regulatory, financial, and scientific landscape to preserve and restore wetlands and monetize wetland offsets.

Other Partners | Based out of Zachary, La, *Comite Resources* has been subcontracted to provide long-term monitoring services for the initiative. Based in Portland, OR, *The Climate Trust*, is a nonprofit organization providing advisory services on environmental markets. *Lewis Environmental Services, Inc.* is a private ecological consulting firm based out of Venice, FL, who provides insight into mangrove restoration.



For more information please contact:
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“The future of this region and its ability to protect itself and the national economy will require new public-private paradigms and a national commitment to environmental stewardship.” – Dr. Sarah Mack

WETLAND RESTORATION

Air seeding can be achieved at approximately 3% the cost of conventional mangrove restoration. A crop duster airplane is a scalable restoration technique that can seed much larger areas in a much shorter time than hand planting mangrove seedlings. Up to 40,000 acres in Terrebonne and Lafourche parishes were determined to have ideal conditions for mangrove establishment. This restoration technique shows potential to be expanded to other areas of Louisiana and the world.

SEQUESTERING CARBON

Wetlands sequester, or store, carbon through photosynthesis as they grow. However, as wetlands convert to open water, the previously stored carbon contained in the soil can be released to the atmosphere. The pilot project research was able to prove that greenhouse gas emissions can be avoided by preventing wetland loss. The results of this research contribute to the collective understanding of wetland and carbon science, providing more value to restoring our precious wetlands.

WHY MANGROVES?

Mangroves and tidal salt marshes are among the most endangered marine wetland habitats in the world. Mangroves are native to Louisiana, thrive in saline environments, and sequester relatively high amounts of carbon. Mangroves are becoming more prevalent in Louisiana since there has not been a hard freeze to kill mangroves since 1989. Mangroves also provide a wealth of benefits ranging from fish habitat and supporting commercial and recreational fisheries, to filtering coastal waters. The elaborate root systems of mangroves show potential to reduce erosion, as well as increase a wetland’s ability to reduce storm surge and hurricane-related flooding.

WHAT IS AT RISK?

An analysis using peer-reviewed literature and accretion (vertical growth) measurements taken through the pilot project, indicate that the salt marshes that protect the Port Fourchon region are disappearing faster than other areas, due to increased rates of regional sinking combined with

sea level rise. The analysis results suggest that much of the salt marshes that protect this area will be gone in 14-21 years. However, it could occur sooner, because erosion—one of the leading causes of wetland loss in the area—was not able to be incorporated into our calculations.

According to the Greater Lafourche Port Commission, a three week closure of Port Fourchon from a hurricane would result in national losses of \$11.2 billion in sales, \$3.1 billion in household earnings and negatively impact nearly 65,000 jobs. Oil pipelines at risk in the surrounding wetlands provide a critical connection to the nation’s refineries.



MEASURING SUCCESS

Wetland restoration in the Mississippi River Delta has broad impacts on the entire U.S. economy. These wetlands and waterways contribute tens of billions of dollars to the national economy every year and support millions of jobs. ConocoPhillips intends to remain a good environmental steward of its property and to help protect the region’s important assets, such as the fifth largest port in the nation, at-risk communities, critical oil and gas infrastructure, and a culture that is dependent upon healthy wetlands.

As the largest wetland landowner in Louisiana, ConocoPhillips supports greater conservation of wetlands in the Gulf Coast and around the world. Piloting this groundbreaking mangrove project broadens options for the development of restoration projects by landowners in this region.

Southern Louisiana has some of the fastest rates of wetland loss in the world. Mangroves naturally decrease wetland erosion, and now mangrove air seeding is available as a new restoration technique that can quickly and cost-effectively establish large areas of mangroves; stabilizing wetlands and reducing storm surge and greenhouse gas emissions.

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