



# Ecological Restoration Brief

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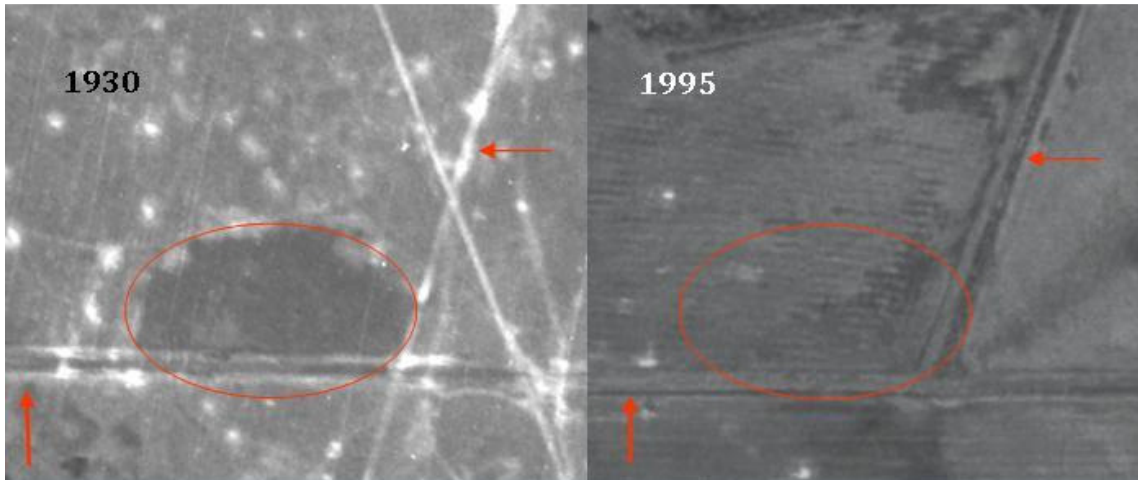
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## **Freshwater Coastal Prairie Wetland Restoration – Case Study: Sheldon Lake State Park**

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Freshwater coastal prairie wetlands once covered large expanses of the Houston-Galveston landscape. A complex wetland matrix of mima mounds and low wetland basins known as prairie potholes provided important ecological services including habitat, flood control, and water cleansing. Many of these areas were leveled for agricultural and development purposes, erasing these features from the coastal landscape.

**New Methodology, Old Material.** The Wetland Restoration Project at Sheldon Lake State Park, initiated in 2003, integrates new planning and development methods with traditional restoration techniques. It shifts the approach from creating new wetland basins within the project site without regard to past wetland locations to an investigation of landscape history. The methodology, conceived by Andrew Sipocz, Texas Parks and Wildlife's Natural Resource Coordinator, utilized a 1920 contour topographic map and 1930 aerial photographs in conjunction with 1994 and 1995 color infrared photographs to identify mima mound signatures, distinguish upland brush from wetland brush, and determine shallow and deep inundation signatures. Historical wetland site locations were verified with soil samples collected during groundtruthing. With verification complete, the precise locations of the basins could be redrawn on georectified maps. The information was then translated into engineering documents that guided the excavation of the pond sites and the subsequent planting of these sites with local, native wetland plants.



Comparative pictures to identify common features (e.g. arrows mark the irrigation canal and the original farm road). The 1995 photo demonstrates the difficulty in finding the original wetland boundaries which are clear in the 1930 photo.

**Our Native Communities.** All of the plant material for this project was collected within a 50-mile radius to maintain the genetic integrity of the plant stock. Plant collection began one year in advance of construction to ensure the selection of species available throughout the year. For example, Southern Blue Flag (*Iris virginica*) is available and actively growing in December and January while Thin-scaled Sedge (*Carex hylinoilepis*) is available in late summer. Plants were also selected for their ability to recover and self-propagate in a short time period and subsequently installed as densely as feasible. The planting phase of the restoration project was completed by the Wetland Restoration Team, a collaborative effort between the Texas Master Naturalists, Texas A&M AgriLife Extension Service, and Texas Sea Grant. Throughout, the team worked with volunteer groups and students to educate them about the function and importance of coastal prairie wetlands.



Wetland Restoration Team working with Eagle Scout Troop 505 to restore coastal prairie wetlands in Phase I, which is completely vegetated after 5 years.

**Six Years Later.** Vegetation monitoring conducted quarterly for six years post-construction shows the most varied succession of species within the shallowest zone. Originally planted with 5 major species, the shallower wetlands now sustain a minimum of 10-15 species seasonally. The deeper zones, which are fully vegetated, provide sustainable waterfowl and water bird habitat as well as a barrier to invasive plant species.



Winter 2010, Phase 2 Pond

The landscape history method of analyzing both early and current photographs followed by re-excavating and restoring buried wetlands has proven a success at Sheldon Lake State Park. Phases 2 and 3 of the restoration effort are currently in progress and planning for phase 4 underway.

**The Texas Society for Ecological Restoration promotes ecological restoration as a means of sustaining the diversity of life on Earth and re-establishing an ecologically healthy relationship between nature and culture.**

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