

**Project Title:** Develop Cost-Effective Methods for Re-establishing Native Gulf Cordgrass in Degraded Wet Prairies at Palo Alto Battlefield National Historical Park

**Discipline:** Natural  
**Type of Project:** Technical Assistance  
**Funding Agency:** National Park Service  
**Other Partners/Cooperators:** Colorado State University  
**Student Participation:** Yes  
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**Investigators and Agency Representative:**

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**Project Abstract:**

Palo Alto Battlefield National Historical Park (PAAL) preserves and interprets the site of the first battle of the U.S. - Mexico War, which occurred on May 8, 1846. The conflict between the two nations was over disputed territory north of the Rio Grande in what today is Texas. The Mexican Army chose this strategic location just north of modern Brownsville to intercept U.S. forces moving to aid the besieged Fort Brown near the mouth of the Rio Grande.

Historically the Rio Grande flooded the battlefield area regularly, producing a wide region of distributary channels and coastal plain that supported marsh and wet prairie ecosystems. Remnant undisturbed wet prairies at PAAL are dominated by gulf cordgrass (*Spartina spartinae*), but most of the core battlefield area no longer supports this historically significant species. A land cover classification map based on historic aerial photography (Ramsay et al. 2004) showed that gulf cordgrass was the dominant cover for most of the battlefield in 1934.

Agriculture, ranching and drainage projects over the last century have significantly altered the local topography, soil, vegetation, and hydrology. Much of the coastal prairie at PAAL was plowed and planted in row crops, such as cotton. Gulf cordgrass has not re-colonized these areas, even decades after agriculture was abandoned in the 1960s. The setting no longer represents the historic battlefield landscape, nor does it function ecologically as it did at the time of the battle (Figures 1 and 2 in Attachment B).

A major goal for PAAL is to reduce the effects of human disturbances on the landscape and restore the historic setting and vegetation so that visitors can learn about and experience the conditions that shaped the battle. Cordgrass restoration has been one of the most pursued natural resource stewardship activities at PAAL since its boundaries were established in 1992. Restoration of this landscape also meets the NPS goal to preserve the valuable natural resource functions that the marshes and wet prairies once provided.

Several key studies have been completed or are ongoing to understand how to restore this historically important native plant cover in PAAL's wet prairies. These include an analysis of the hydrology that supports the marsh and wet prairie communities (Cooper and Wagner 2013), efforts to plant cordgrass cuttings or "splits" by hand in formerly plowed sites (Margo 2006) and a current project with cooperators from the NRCS Plant Materials Center in Kingsville, TX and CSU to grow plants from seed and hand-install them in the core battlefield area (Figure 2 in Attachment B). These procedures have been employed three times over the last four years. However, the project is only planting 30 acres of the core battlefield, leaving hundreds of acres of degraded prairie still devoid of native cordgrass. Planting an additional 400 acres at the park using these methods would cost 2.5 - 3 million dollars. The goal of this project is to develop a long-term, larger-scale restoration approach, and it hinges on developing methods to more efficiently and cost-effectively establish gulf cordgrass on remaining disturbed wet prairies at PAAL.