Brazilian Peppertree Treatment and Control on Galveston Island

TCEQ Contract No. 582-7-77831

PGA 13

FINAL REPORT
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A PROGRAM OF THE TCEQ

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Executive Summary

Brazilian peppertree (*Schinus terebinthifolius*) is a non-native, invasive plant species that constitutes a considerable threat to barrier islands and other coastal habitats along the Texas Gulf Coast. It is considered by many experts to be among the world's worst invasive species because of the threat it presents to native biodiversity. Brazilian peppertrees form dense thickets that shade out native plants. They quickly outcompete native vegetation in wetlands and coastal areas (much like Chinese tallow has done), displacing diverse natural areas and creating a monoculture of this noxious plant. Furthermore, Brazilian peppertrees are of little value to local wildlife, and contact with this plant can cause contact dermatitis and respiratory irritation in some people. The species has caused immense ecological damage to temperate and subtropical South Florida, which is currently waging a war to control the nuisance. Large infestations have also been identified along the mid and lower Texas coast, and it has the potential to have similar impacts along the upper Texas coast. In 2005, the State of Texas enacted the Noxious Plants List, 4 TAC §19.300, which lists Brazilian peppertree as one of 29 plant species considered to have "serious potential to cause economic or ecological harm to the state." As of January 6, 2005, it became unlawful to sell, distribute, or import any live form of Brazilian peppertree in the State of Texas.

Introduction

The Galveston Bay area has a unique opportunity as it relates to Brazilian peppertree invasion. As the plant is predominantly contained to Galveston Island at the present time, this project represents an opportunity to implement a control program with the potential to head off a much larger problem. In 2005, Brazilian peppertrees from all known locations of infestation at the Sweetwater Nature Preserve, Galveston Island Municipal Golf Course, Scholes Airport, and 17 private residential properties, were treated with a basal herbicide application.

In 2008, GBF sought funding through the Galveston Bay Estuary Program to help fund the first large-scale treatment effort on Galveston Island. In March 2009, the Estuary Program awarded $50,000 to GBF for this purpose. In June, 2010 the contract was modified to extend the contract and increase funding levels to $90,000. GBF raised additional funds in the amount of $45,000 from USFWS and $67,500 from GLO to leverage funds within this contract.

This phase of the project focused on never before treated Brazilian peppertree infestations located along the I-45 corridor on Galveston Island, Pelican Island, and Corps Woods. The infestation existed on public right of ways, railroad properties, conservation properties, and private residential and commercial lots. Coordination with local agencies, private individuals, and corporations prolonged the planning phase of the project as authorizations to access infestations were obtained. The initial control efforts in this phase of the project began in August 2010 and carried in to September 2010. Follow up efforts began in March 2011 to re-treat the infestations targeted during this project.

Map:

Figure 1: Project site map

This map depicts the areas targeted with funding from this grant and the overall scope of the project treatment area.

Project Methodology

Brazilian peppertree can be treated with several different types of chemical applications, each with varying levels of success depending on the site conditions. Given the wide range of conditions found within the project area, the selected contractors coordinated with the GBF project manager to develop a strategy for treating the different infestations on separate parcels of land. Smaller, easily accessible tracts and isolated individual plants were treated with a basal chemical application, while larger, denser infestations on inaccessible parcels were treated with a foliar chemical application from ATVs or spray trucks. Portions of the project area were targeted with a large volume foliar application from ATVs or spray rig trucks depending on the density of vegetation and the location of the infestation. Both spray trucks and ATVs were rigged with hoses that allowed the contractor to treat infestations not accessible by the vehicles. Some of these infestations required as much as 200 feet of hose to reach the targeted trees.

Garlon is considered the most affective herbicide to use on Brazilian peppertree. Vista was recommended to increase the effectiveness of the Garlon and is commonly used to augment other herbicide treatments. The Arsenal Powerline is a soil active herbicide added to the mix to reduce the probability of new growth due to the established seed bank. Below is the mixture selected for foliar treatment throughout initial treatment for this project.

High Volume Foliar:

1 gal Garlon 3A (Triclopyr)
1.5 qts Vista (Fluroxypyr)
3 qts Arsenal Powerline (Imazapyr)
1 gal MSO
Per 100 gal of water

This mixture is considered a “Cadillac” for foliar treatment and gave us the best chance for initial kill. Follow up treatments will contain only Garlon and Arsenal at slightly lower rates. These plants are already stressed from initial treatment and will not require the same amount of chemical produce a lethal effect. This will also conserve grant dollars and allow us to cover a greater area during follow up treatment efforts.

Based on density, the contractor averaged 200-300 gallons total volume per acre (high volume foliar application) of infestation. Keep in mind it was rare to see an entire acre with 100% Brazilian pepper coverage. The majority of these infestations were growing in a linear formation along right of ways or other disturbed areas.

Basal Bark:
18% Element 4 (Triclopyr)
82% Penetrating Oil
Red dye

The basal herbicide application was used in areas that displayed sparse infestations or terrain inaccessible to ATVs and other motor vehicles. These areas included west Galveston Island, Moody Gardens Golf Course, Sweetwater preserve, and the Corps Woods. Two to Four man crews operated in these areas to cover large acreages, targeting each individual plant stem.

Gaining access to sites was particularly difficult as some temporary use permits were required for two large tracts of land owned by BNSF and Union Pacific railways. Close coordination with railroad personnel was required to maintain a safe working environment for the contractors.

Project Results

The initial control effort for this project was successful. We effectively treated an estimated 95% of the Brazilian peppertree infestation within our initial target area. The project was successfully expanded with funding from partnering agencies to include treatment of several other large infestations that were identified during the course of this project.

The foliar application was visibly effective within two to three days of treatment. The plants defoliated and appeared to die. However, the Brazilian peppertree is a very resilient plant and has now begun to re-sprout in some of the treated trees. This shows the importance of follow up treatment for Brazilian pepper control work.

Basal treatment areas took longer to display effects from the chemical. However, mortality rates were much higher for basal bark areas. A second round of treatment in 2012 will provide a higher kill percentage and will be much more financially efficient resulting from significantly less chemical required to treat the remaining plants on the same acreage covered during the initial control efforts.

Funds from participating partners in the effort to control Brazilian pepper on Galveston Island contributed to treatment of all but one major infestation within the project area. The remaining major infestation will be targeted once authorizations for access and control methods are approved by the City of Galveston.

The educational brochure was completed and disseminated to relevant parties within the Galveston Bay area. The brochure was also used when targeting smaller infested areas on private property to help landowners understand our project mission and allow us to treat infestations located on their property.

Lessons Learned

The overall scope of this project turned out to be much larger, geographically, than intended during the planning process. The goal of the project was to completely eradicate Brazilian pepper from Galveston Island, and initial plans targeted an isolated infestation along the I-45 corridor, a small US Army Corps of Engineers property, and small infestations on privately owned parcels throughout the island. Infestations discovered during the project were much larger than previous estimations, and the scope of the project was greatly expanded.

Optimism remains that sufficient funding will be in place to cover the majority of the initially treated area during follow up efforts. However, initial plans of multiple follow up treatments will not be feasible without requesting additional funding for this project.

The goal to completely eradicate Brazilian peppertree from Galveston Island is not unattainable, but will prove to be a long term effort with cooperation from local resource managers and the Galveston community. There is no doubt that the initial effort associated with this grant will

make significant improvements to the wildlife habitat found on Galveston Island. However, the established seed bank, unknown infestations, and isolated trees remaining in residential areas will provide opportunities for Brazilian peppertree to rebound and retake the native communities we are attempting to preserve. GBF and local resource personnel estimate that this project will need to be revisited on three to five year intervals for monitoring and follow up treatment in order to have long term success.

Project Funding:

Partner	**Contribution**	**Contribution Type**
GBEP (TCEQ)	$90,000.00	State
CMP (GLO)	$67,500.00	Federal
USFWS-CP	$45,500.00	Federal
Total	**$203,000.00**	

Project Photos:
Initial Treatment:
8/23/2010

Post treatment:
10/27/2010

Post Treatment:
12/1/2010