

Control of Invasive Common Reed (*Phragmites Australis*) in North

Carolina State Parks

Jean Lynch, Coastal Region Biologist



Caroline Savage





Eight NC DPR Parks working on *Phragmites australis* control

- Carolina Beach
- Fort Fisher
- Fort Macon
- Goose Creek
- Hammocks Beach
- Jockey's Ridge
- Pettigrew
- Run Hill

Acreage Estimates

Carolina Beach State Park: 16 acres

Fort Fisher State Recreation Area: 4 acres

Fort Macon State Park: ½ acre

Goose Creek State Park: 5 acres

Hammocks Beach State Park: ½ acre

Jockey's Ridge State Park: 1 acre

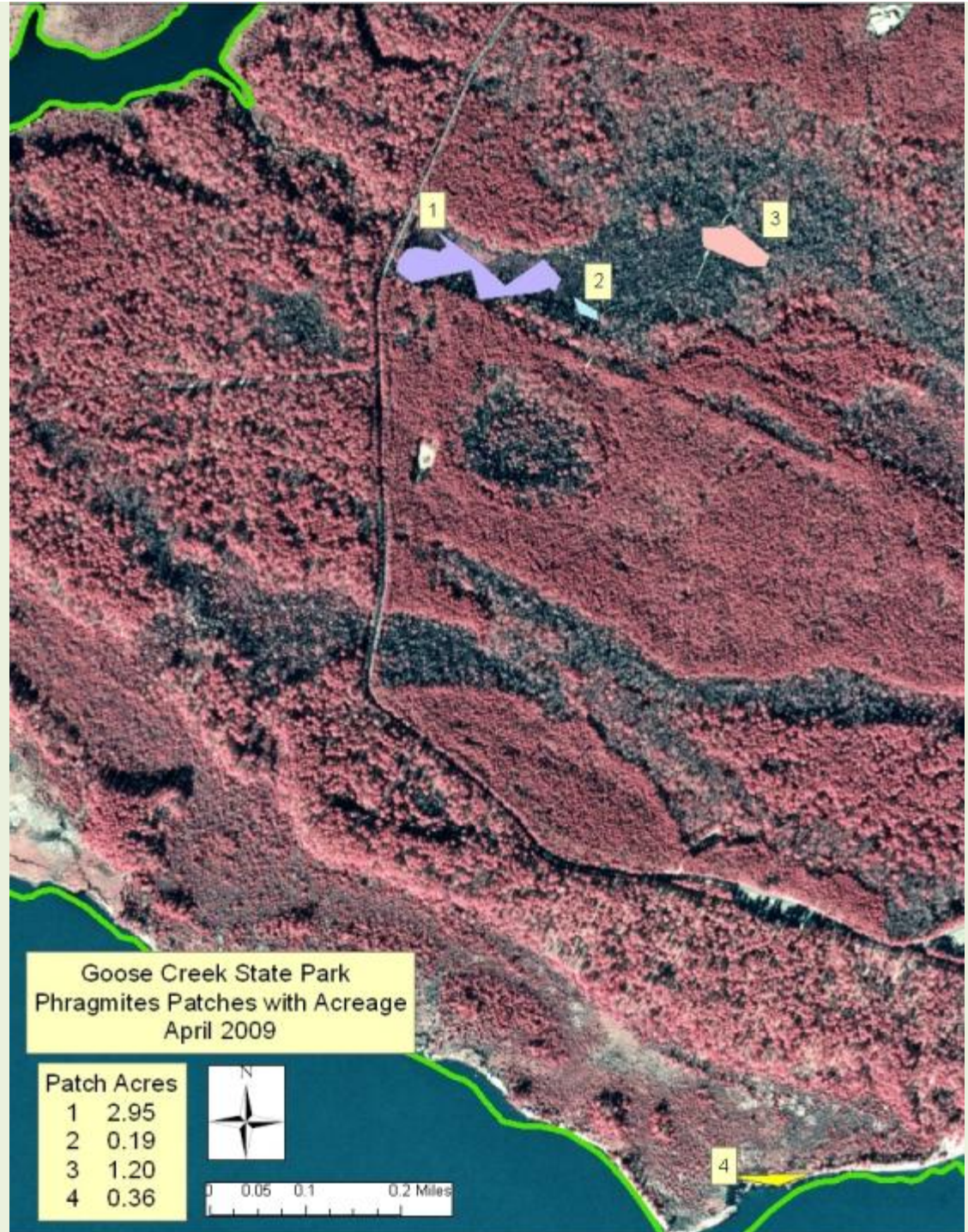
Pettigrew State Park: 5 acres*

Run Hill State Natural Area: 10 acres

Total: 42 acres

*Phragmites very rapidly colonized the Lake Phelps shoreline after the 2008 Evans Road Fire and resulting low water levels.

Mapping



Planning

GOCR PHRAGMITES CONTROL SITE PLAN: EXISTING PATCHES

This section addresses work that will be done by DPR and DWR on the 4 identified *Phragmites australis* patches in the park. The plan should be updated as new patches are identified. Refer to the attached map for the location of patches.

IMPORTANT NOTE ON PREVENTION

All infested areas may be prone to reinvasion by *Phragmites* and to invasion by other exotics as well. It is extremely important that equipment and shoes are cleaned of mud or any other material that may contain seeds or other plant propagules, both before and after work in an infested area.

MANAGEMENT GOALS

Table 1 states a management goal for each patch, based on its condition, available resources, and the likelihood of success. Eradication should be possible in the long term. Priority is based on the threat posed by the patch and the likelihood of success.

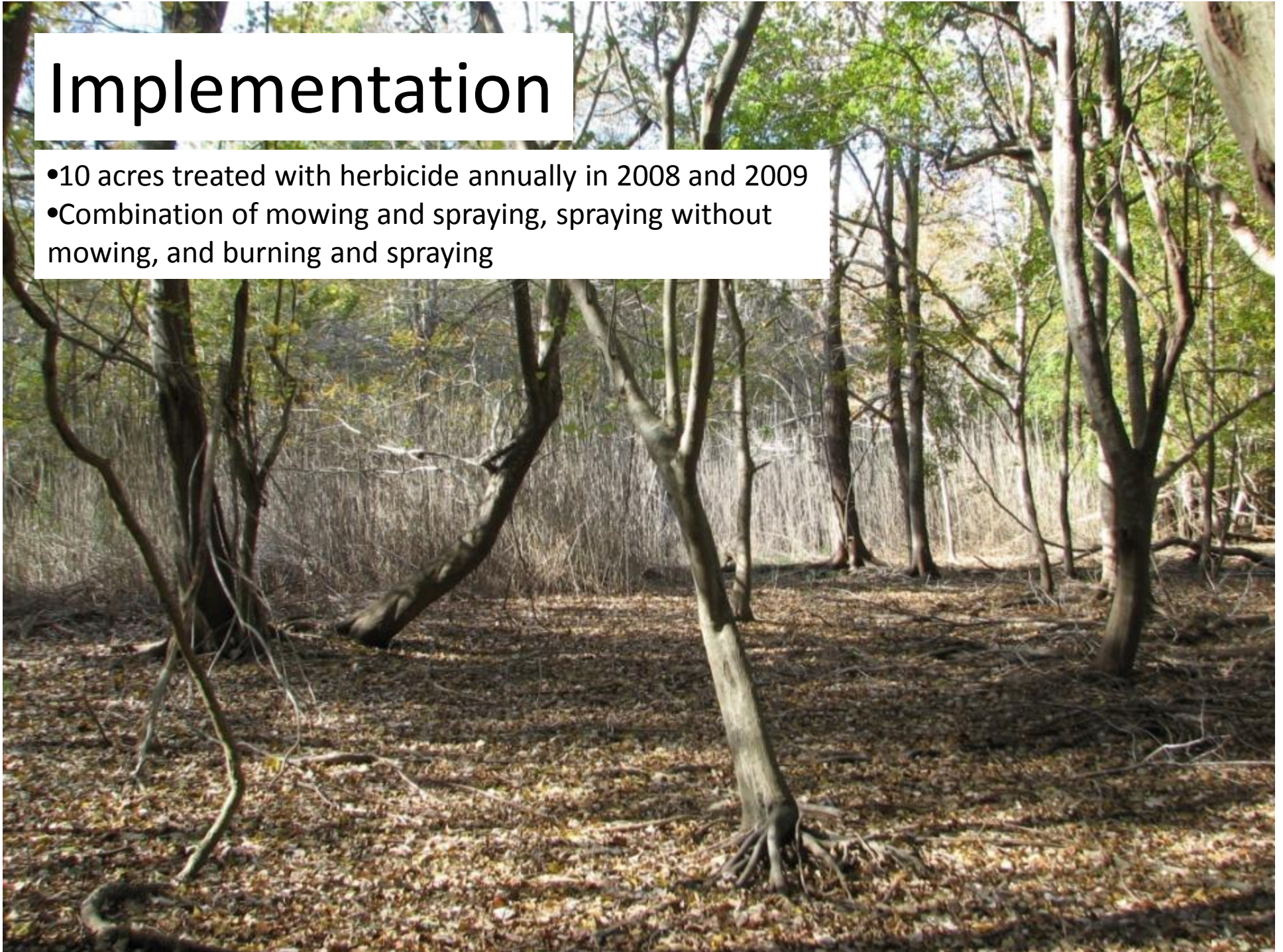
****Note:** Because of the difficulty of mowing and treating the patches 1-3 (in the swamp), the park staff may decide the higher priority is to get these patches worked on when they have help from the DWR Aquatic Weed Control program and may decide to leave patch 4 to treat on their own, if time is limited.

Table 1. Management Goals

Priority	Patch number	Acres	Immediate threat	Goal	Notes
1	4	.36	Expansion into native marsh grass (<i>Spartina cynosuroides</i>)	Eradication	It's important to nip small patches in the bud, before they become large monocultures
	2	.19	General expansion		
2	1	2.95	General expansion	Containment, suppression, eradication	Hydrologic obstruction by culverts is a classic cause behind <i>Phragmites</i> infestations. Note that both of these patches occur at what may be hydrologic obstructions—patch 1 at the culvert under the park road, and patch 3 at the boardwalk. DPR staff might consider if the culvert and boardwalk are contributing to the problem and if anything can be done to improve hydrology there.
	3	1.20			

Implementation

- 10 acres treated with herbicide annually in 2008 and 2009
- Combination of mowing and spraying, spraying without mowing, and burning and spraying



















Estimated costs

For chemicals: \$20-\$70/acre if generics or discount; \$135/acre at high end

Also consider costs of equipment, labor, transportation

For helicopter: add \$60/acre (estimate from USFWS, based on high-volume contract)

Herbicide (aquatic-safe formulation)	Imazapyr @ 4-6 pints/acre			Glyphosate @4 -6 pints/acre
	Herbicide volume needed	<i>Habitat Pricing by source</i>	<i>Ecomazapyr (Generic) Pricing</i>	<i>Rodeo Pricing</i>
	4 to 6 pints (.5-.75 gallons) per acre	Helena Chemical: \$850 (2 x 2.5-gal containers minimum=\$850) \$170/gal Cost per acre: \$85- \$128	C3M/Summit Helicopters (DOT contract): \$464.50 (2 x 2.5 gal = \$464.50) \$92.90/gal Cost per acre: \$46-\$67	Helena Chemical: \$170 (2 x 2.5- gal containers minimum) \$34/gal Cost per acre: \$17-\$26
		DWQ cost-share: \$446.25 (50% of 2 x 2.5 gal containers= \$446.25) \$89.25/gal Cost per acre: \$45- \$67		

Nonionic Surfactant	NIS volume needed	Sun Energy surfactant pricing	90-10 surfactant	
	1.3-2 pints (.166-.25 gallons) per acre	DWQ cost-share: \$18.13 (50% of 1-gallon container) Cost per acre: \$3.00-\$4.53	C3M/Summit Helicopters: \$35 (2.5 gallon minimum) \$14/gal Cost per acre: \$2.32-\$3.50/gal	
Marker Dye	Dye volume needed	Dye pricing		
	? (enough to make it visible when spraying)	DWQ cost-share: \$10.00 (50% of 1-gallon container)		

Future Work

- Complete Mapping
- Continue treating and monitoring
- Look for root causes that can be addressed (e.g., hydrologic restrictions)
- Improve efficiency for larger, hard-to-access sites (helicopter?)
- Monitor and encourage native recruitment
- Active restoration (planting)