

Botanical Survey of the Four Notch Area Sam Houston National Forest

I. Introduction

This report analyzes the potential effects of the proposed activities in the Four Notch area of the Sam Houston National Forest (NF) on the species on the Regional Forester's Sensitive List and also three endangered species that are known or have in the past existed in east Texas (Table 1).

As either the habitat is unsuitable or because there are no known occurrences of these species within the Four Notch Area, none of these species are of concern.

II. Project Description

The Four Notch area is located in Compartments 69, 70, 72, 73, 74, 75, 76, 77, and 83 of the Sam Houston NF. Prescribed fire and tree thinning have been proposed for this area.

III. Methods

In order to determine if Proposed, Endangered, Threatened, and Sensitive Species (PETS) plant species are known from the area, I examined coverages of plant locations in the Geographic Information System (GIS). No such records were found for the Four Notch area. I also examined Orzell (1990) for records of plant locations and did not find any pertaining to this area. I also examined the distribution information in Correll and Johnston (1979) and Nesom and Brown (1998).

I used sources such as Correll and Johnston (1979), MacRoberts et al (2002) and the NatureServe website to determine the habitat requirements for the plants in Table 1. By examining aerial photographs and soils maps of Walker County (Soil Conservation Service, 1979) I determined which habitat types were present. The examination of aerial photographs indicated that the Four Notch area does not contain such habitat types as baygalls or forested seeps, xeric sandylands, and barrens or glades, and post oak savanna. Orzell (1990; Table 5, pp. 185-186) does not report any sites containing sensitive plants or plant communities in these compartments. An examination of soils maps for Walker County (Soil Conservation Service, 1979) indicated that the soils in the area are acidic to very acidic, and are sandy loams or loamy fine sands at the surface, with perhaps more clay below.

In order to confirm that these species were unlikely to be found in the area, on March 6-7, 2003 I surveyed the area, visiting Compartments 70, 72, 75, 76 and 77 (Figure 1). These areas were selected because of the relatively mature forest canopy, as opposed to areas covered by pine plantations, was most likely to contain herbaceous understory plants. An effort was made to travel across the elevation contours in order to observe different temperature and moisture microenvironments.

IV. Rationale for the Elimination of Sensitive and Endangered Species from Consideration

Lack of Suitable Habitat

I found that of the 24 plant species on the Regional Forester's Sensitive List, four species are known to have occurred in the counties containing the Sam Houston NF (Table 1). None of the endangered species are known to have occurred in the area. These four species known to occur in the vicinity of the Sam Houston NF are Texas Bartonian (*Bartonia texana*), Warner's Hawthorn (*Crataegus warneri*), Branched Gayfeather (*Liatris cymosa*), and Texas Sunbells (*Schoenolirion wrightii*). However, suitable habitat does not exist in the Four Notch area for these species, as they either require a different moisture regime (Texas Bartonian), or a less wooded and more open habitat (Branched Gayfeather and Texas Sunbells) or sandy soils as well as a more open habitat (Warner's Hawthorn). Suitable habitat also does not exist for two of the three endangered species, White bladderpod (*Lesquerella pallida*), which requires calcareous soils, and the Navasota ladies-tresses (*Spiranthes parksii*), which requires a more open habitat than a closed canopy forest.

Suitable habitat does not at present exist in the Four Notch area for any of the species on the Regional Forester's Sensitive List. Nor does it exist for the endangered Chaffseed (*Schwalbea americana*), which is believed extirpated from Texas (NatureServe). The proposed actions could make the habitat suitable for four other species on the sensitive list, *Agrimonia incisa*, *Liatris tenuis*, *Silene subciliata*, and *Streptanthus maculatus*, but these species are not known to occur in the area containing the Sam Houston NF (Table 1). In the event that viable propagules of Chaffseed are present in the Four Notch area, then the proposed actions will improve the habitat for this species by creating a more open woodland habitat with greater light penetration to the forest floor.

V. Direct, Indirect and Cumulative Effects

Given the lack of currently suitable habitat for any of the sensitive or endangered plant species listed in Table 1, and the probability that the ranges of those species for which the proposed actions might actually improve the habitat (*Agrimonia incisa*, *Liatris tenuis*, *Silene subciliata*, and *Streptanthus maculatus*) do not encompass the Sam Houston NF, the direct, indirect and cumulative effects of the proposed actions are unlikely to have a significant adverse effect on these sensitive and endangered species, although it is possible that individuals might be negatively impacted.

VI. Management Recommendations

Invasive Species

One of the species observed during my visits to Four Notch (Table 2), Japanese climbing fern (*Lygodium japonicum*) is an invasive species. It is considered a Category One Weed on the May 18, 2001 Regional Invasive Exotic Plant Species List. It was mainly seen along an old, unused Forest Service (FS) Road off of road FS 200 in Compartment 75 (approximately 1.5 miles

northeast of the intersection of FS 200 and Four Notch Road), and along a utility right-of-way in the same compartment. In the absence of any information on how the species is spread, it is difficult to make any recommendations to prevent further occurrences. It does seem to prefer open canopies, so perhaps after thinning in this compartment a search could be made for this plant and any individuals present then killed through the use of a 1 to 2 percent concentration glyphosate herbicide applied to the foliage with a backpack sprayer (Williamson 2002).

VII. Mitigation and Monitoring

As there is no evidence for the presence of any sensitive or endangered species in the Four Notch area, no specific mitigation or monitoring for these species is required.

VIII. Determination

The actions planned for the Four Notch area are not likely to adversely affect the sensitive plants, although individuals may be impacted. The actions planned for the Four Notch area are not likely to adversely affect the endangered plant species Chaffseed, White Bladderpod, and Navasota ladies'-tresses.

/s/ Converse Griffith_____ 8/18/03

Converse Griffith, Trainee Forest Botanist Date

Table 1. The habitats of and known occurrences of plants on the Regional Forester’s Sensitive List, and two endangered species, within the Sam Houston National Forest (NF). Flowering times are given only for the four species known to occur in one of the counties in which the Sam Houston NF is located. The column headed by the word “Status” indicates whether the plant is from the Regional Forester’s Sensitive List (S) or is considered endangered (E) by the U.S. Fish and Wildlife Service (USFWS).

Scientific Name	Family	Status	Occurrences known from				References	Habitat Description	Suitable habitat in project area?	Could the habitat become suitable?	Reason for Determination of Not Likely to Adversely Affect the Species
			Sam Houston NF	Montgomery Co	San Jacinto Co	Walker Co					
<i>Agrimonia incise</i>	Rosaceae	S					Orzell	Upland pine savanna, mixed woodlands	No	Yes	No known occurrences in area.
<i>Bartonia texana</i>	Gentianaceae	S			Yes		Nesom & Brown; MacRoberts et al.	Baygall, loamy wet forested seeps	No	No	No suitable habitat even after proposed actions.
<i>Crataegus warneri</i>	Rosaceae	S				Yes	Nesom & Brown; Correll & Johnston; NatureServe	Edges of oak-hickory & hardwood-pine forests on sandy soils	No	No	No suitable habitat even after proposed actions.
<i>Cyperus grayioides</i>	Cyperaceae	S					Orzell	Barrens, glades and weches barrens	No	No	No suitable habitat even after proposed actions.
<i>Cypripedium kentuckiense</i>	Orchidaceae	S					Orzell	Beech slopes, mesic lower slopes and terraces	No	No	No suitable habitat even after proposed actions.
<i>Dalea reverchonii</i>	Fabaceae	S					Diggs et al.	Sandy, limestone based soils	No	No	No suitable habitat even after proposed actions.
<i>Hibiscus dasycalyx</i>	Malvaceae						USFWS	Floodplain, bottomland hardwood, river bottom communities	No	No	No suitable habitat even after proposed actions.

Table 1 continued.

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			Sam Houston NF	Montgomery Co	San Jacinto Co	Walker Co					
<i>Lachnocaulon digynum</i>	Eriocaulaceae	S					NatureServe	Bogs, wet pine savannas, with wet herbaceous seeps	No	No	No suitable habitat even after proposed actions.
<i>Leavenworthia aurea</i> var. <i>texana</i>	Brassicaceae	S					MacRoberts et al.	Limestone cedar glades on the Weches geological formation	No	No	No suitable habitat even after proposed actions.
<i>Lesquerella pallida</i>	Brassicaceae	E					Poole & Riskind; MacRoberts et al.	Open glades on the calcareous outcrops in the Weches formation	No	No	No suitable habitat even after proposed actions.
<i>Liatris cymosa</i>	Asteraceae	S				Yes	Nesom & Brown; NatureServe	Grassy openings in post oak woodlands or post oak savanna-blackland prairie ecotone	No	No	No suitable habitat even after proposed actions.
<i>Liatris tenuis</i>	Asteraceae	S					Orzell	Upland pine savanna, mixed woodlands	No	Yes	No known occurrences in area.
<i>Platanthera integra</i>	Orchidaceae	S					Orzell	Bogs, wet pine savannas, with wet herbaceous seeps	No	No	No suitable habitat even after proposed actions.

Table 1 continued.

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<i>Prenanthes barbata</i>	Asteraceae	S					Correll & Johnston	Sandy forested areas	No	No	No suitable habitat even after proposed actions.
<i>Quercus boyntonii</i>	Fagaceae	S					NatureServe	Deep sandy soils near creeks	No	No	No suitable habitat even after proposed actions.
<i>Rhynchospora macra</i>	Cyperaceae	S					Correll & Johnston	Bogs	No	No	No suitable habitat even after proposed actions.
<i>Rudbeckia scabrifolia</i>	Asteraceae	S					Orzell	Baygall, loamy wet forested seeps	No	No	No suitable habitat even after proposed actions.
<i>Schoenolirion wrightii</i>	Liliaceae	S				Yes	Nesom & Brown	Barrens, glades and weches barens	No	No	No suitable habitat even after proposed actions.
<i>Schwalbea Americana</i>	Scrophulariaceae	E					Nesom & Brown; NatureServe	Open pinewoods with acidic and sandy soils	No	Yes	No known occurrences in area.
<i>Silene subciliata</i>	Caryophyllaceae	S					Orzell	Upland pine savanna, mixed woodlands	No	Yes	No known occurrences in area.
<i>Spiranthes parksii</i>	Orchidaceae	E					Nesom & Brown; NatureServe; Poole & Riskind	Wooded open margins in the Post Oak woodlands; Barrens and glades	No	No	No suitable habitat even after proposed actions.
<i>Streptanthus maculatus</i>	Brassicaceae	S					Correll & Johnston	Moist woods	No	Yes	No suitable habitat even after proposed actions.
<i>Thalictrum arkansanum</i>	Ranunculaceae	S					MacRoberts et al.	Floodplain, bottomland hardwood, river bottom communities	No	No	No suitable habitat even after proposed actions.

Table 1 continued.

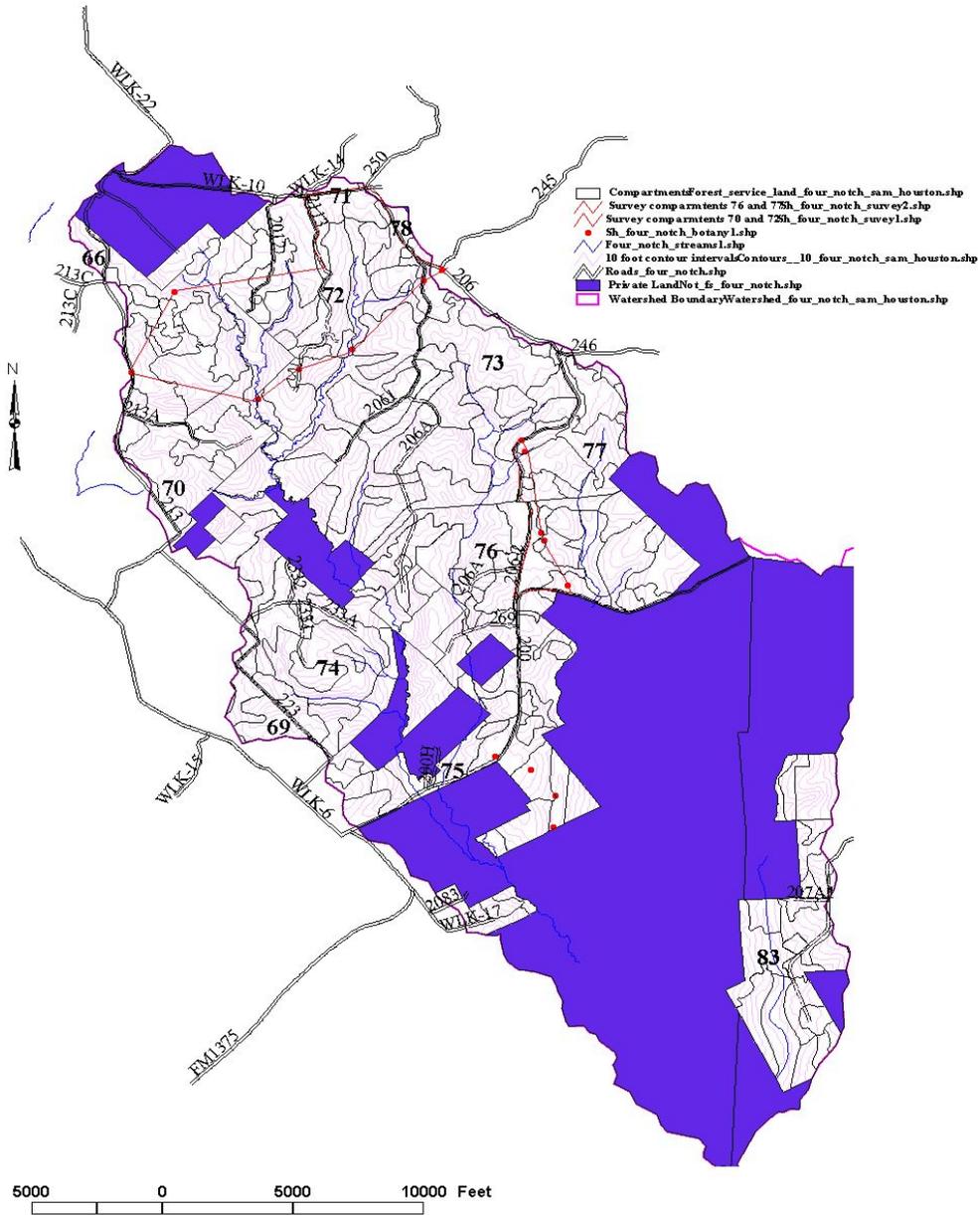
Scientific Name	Family	Status	Occurrences known from				References	Habitat Description	Suitable habitat in project area?	Could the habitat become suitable?	Reason for Determination of Not Likely to Adversely Affect the Species
			Sam Houston NF	Montgomery Co	San Jacinto Co	Walker Co					
<i>Trillium texanum</i>	Liliaceae	S					MacRoberts et al.	Baygall, loamy wet forested seeps	No	No	No suitable habitat even after proposed actions.
<i>Xyris drummondii</i>	Xyridaceae	S					Orzell	Bogs, wet pine savannas, with wet herbaceous seeps	No	No	No suitable habitat even after proposed actions.
<i>Xyris scabrifolia</i>	Xyridaceae	S					Orzell	Bogs, wet pine savannas, with wet herbaceous seeps	No	No	No suitable habitat even after proposed actions.

Table 2. Plant species observed in four notch area on March 6-7, 2003.

Species	Phenology
<i>Arudinaria gigantean</i>	Vegetative
<i>Chasmanthium laxum</i> var. <i>sessiflorum</i>	Vegetative
<i>Creatagus marshalli</i>	Vegetative
<i>Frangula caroliniana</i>	Vegetative
<i>Gelsemium sempervirens</i>	Flowering
<i>Hustonia pusilla</i>	Flowering
<i>Ilex opaca</i>	Vegetative
<i>Ilex vomitoria</i>	Vegetative
<i>Lygodium japonicum</i>	Vegetative
<i>Magnolia grandiflora</i>	Vegetative
<i>Myrica cerifera</i>	Vegetative
<i>Northoscordum bivalve</i>	Flowering
<i>Pinus teada</i>	Vegetative
<i>Podophyllum peltatum</i>	Vegetative
<i>Polystichum aurostichoides</i>	Vegetative
<i>Pteridium aquilinum</i>	Vegetative
<i>Quercus alba</i>	Vegetative
<i>Quercus falcata</i>	Vegetative
<i>Sabal minor</i>	Vegetative
<i>Smilax bona-nox</i>	Vegetative
<i>Smilax glauca</i>	Vegetative
<i>Viola triloba</i> var. <i>triloba</i>	Flowering
<i>Yucca</i> sp.	Vegetative

Figure 1. Four Notch area with survey routes indicated.

Forest Service Land Four Notch Area Sam Houston National Forest



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compiled by Converse Griffith 17 March 2003

References

- Correll, Donovan Stewart, and Marshall Conring Johnston. 1979. *Manual of the Vascular Plants of Texas*. Second Printing. The University of Texas at Dallas, Richardson, Texas.
- Diggs, George M., Barney L. Lipscomb, and Robert J. O'Kennon. 1999. *Shinners and Mahler's Illustrated Flora of North Central Texas*. Botanical Research Institute of Texas, Fort Worth, Texas.
- MacRoberts, Michael H., Barbara R. MacRoberts, Bruce A. Sorrie, and Robert E. Evans. 2002. Endemism in the West Gulf Coastal Plain: Importance of Xeric Habitats. *Sida* 20(2):767-780.
- NatureServe Explorer. 2003: an online encyclopedia of life [Web application]. Comprehensive reports on *Crataegus warneri*, *Liatris cymosa* (H. Ness) K. Schum, *Quercus boyntonii* Beadle, *Lachnocaulon digynum*, and *Leavenworthia aurea* var. *texana*. <http://www.natureserve.org/explorer>.
- Nesom, Guy L., and Larry E. Brown. 1998. Annotated checklist of the vascular plants of Walker, Montgomery, and San Jacinto counties, east Texas. *Phytologia* 84(2):107-153.
- Orzell, Steve L. 1990. *Inventory of National Forests and National Grasslands in Texas*. Texas Natural Heritage Program, Texas Parks and Wildlife Department, Austin, Texas.
- Poole, Jackie M., and David H. Riskind. 1987. *Endangered, Threatened, or Protected Native Plants of Texas*. Texas Parks and Wildlife Department.
- Soil Conservation Service. 1979. *Soil Survey of Walker County*. U. S. Department of Agriculture.
- U. S. Fish and Wildlife Service. January 31, 2000. Letter from Kathy Nemec, Chair of Neches River Rose-mallow Conservation Team, to Raoul W. Gagne, Ranger of the Davy Crockett National Forest.
- Williamson, Max. 2002. Controlling Japanese Climbing Fern Control: with herbicides having no residual soil activity. In: *Invasive Plants Control: an easy to follow guide for controlling common invasive plants in eastern U. S.*