

A FLORISTIC STUDY OF THE VASCULAR PLANTS
ON 11.77 ACRES OF
MOORES CREEK NATIONAL BATTLEFIELD

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by

David J. Sieren
Consultant and Principal Investigator
332 Sabra Drive
Wilmington, North Carolina 28405

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INTRODUCTION

This study is a continuation of a floristic survey of the entire Battlefield which was undertaken between 1980 and 1982. In the introduction to the report based on that survey (Sieren 1982, 1982a), the Battlefield was described as was its location in southeastern North Carolina; therefore, those descriptions will not be repeated here. The current study site of 11.77 acres was acquired by the National Park Service in 1982 and prior to this study had not been surveyed from a floristic standpoint. Because of developmental changes which are planned for the area, it was desirable to have the vascular plants catalogued, with special attention paid to any rare, threatened, or endangered species which might be present.

The area surveyed includes all of the Battlefield property to the west of Moores Creek and is limited on the south, east, and west by the current Battlefield boundary lines extending (see map page 5) from quadrangle 87 at Moores Creek, west to quadrangle 86, then northeast to quadrangle 17, and then east to Moores Creek. The study area consists mostly of the lowlands which are adjacent to Moores Creek, but some upland areas are found on both sides of route N.C. 210 as well as all of quadrangle 64 and parts of quadrangles 54, 65, and 76. The latter area was formerly the site of a privately owned fishing cabin and is considerably more open and modified from what would have been its natural condition.

The lowlands, which are periodically flooded, are dominated by tree and shrub species including Acer rubrum (Red Maple), Taxodium distichum (Bald Cypress), Taxodium ascendens (Pond Cypress), Fraxinus

caroliniana (Water Ash), Nyssa sylvatica (Black Gum), Itea virginica (Virginia Willow), Alnus serrulata (Tag Alder), and various ericaceous shrubs. Herbaceous vegetation is relatively sparse. The upland areas vary depending on location, but Liquidambar styraciflua (Sweet Gum), Ilex opaca (American Holly), Pinus taeda (Loblolly Pine), Sassafras albidum (Sassafras), and various oak species are frequent tree species. Except for the roadside strips which were occasionally mowed, the study site was undisturbed during the study period.

As time permitted, previously surveyed portions of the Battlefield were explored for new records and additional materials of species for which previous identifications were somewhat uncertain. Accordingly, some of the new records reported here are from areas east of Moores Creek.

METHODS

Collections were made on 16 field trips between March 29 and November 17, 1984. Initially the entire 11.77 acre site was covered each trip, but as the number of species in flower and/or fruiting condition increased, alternate halves of the area were surveyed every other trip. Although an attempt was made to collect all species observed at least once, special emphasis was placed on searching for those species not previously observed or collected elsewhere in the Battlefield and for any species of special interest or concern. Some common species were noted as to their presence,

but were not collected. These activities resulted in nearly 250 preserved specimens upon which this report is primarily based. All voucher specimens are housed in the Herbarium of the University of North Carolina at Wilmington (WNC) and are available to anyone wishing to examine them.

EXPLANATION AND SUMMARY OF THE ANNOTATED CHECKLIST

Within the major groups of vascular plants, Ferns and Fern Allies, Gymnosperms, and Flowering Plants, the families are arranged alphabetically as are the subordinate taxa. This arrangement facilitates the use of the checklist by non-taxonomists. Within the Flowering Plants, monocotyledonous families are indicated by (M). As in the first report (Sieren 1982, 1982a), nomenclature follows that of Radford, et al. (1968).

The following plant families are arranged in the Annotated Checklist under their traditional names:

<u>Traditional Name</u>	<u>Acceptable Alternative</u>
Compositae	Asteraceae
Cruciferae	Brassicaceae
Gramineae	Poaceae
Labiatae	Lamiaceae
Leguminosae	Fabaceae
Palmae	Arecaceae
Umbelliferae	Apiaceae

For all species, the following annotations are presented:

common name.

habit (tree, shrub, perennial herb, etc.).

relative frequency of occurrence within the study area.

map quadrates in which the species were collected. All
in which the species were collected are listed.

dates of collection. Most plants were in flowering and/or
fruiting stages on the dates given.

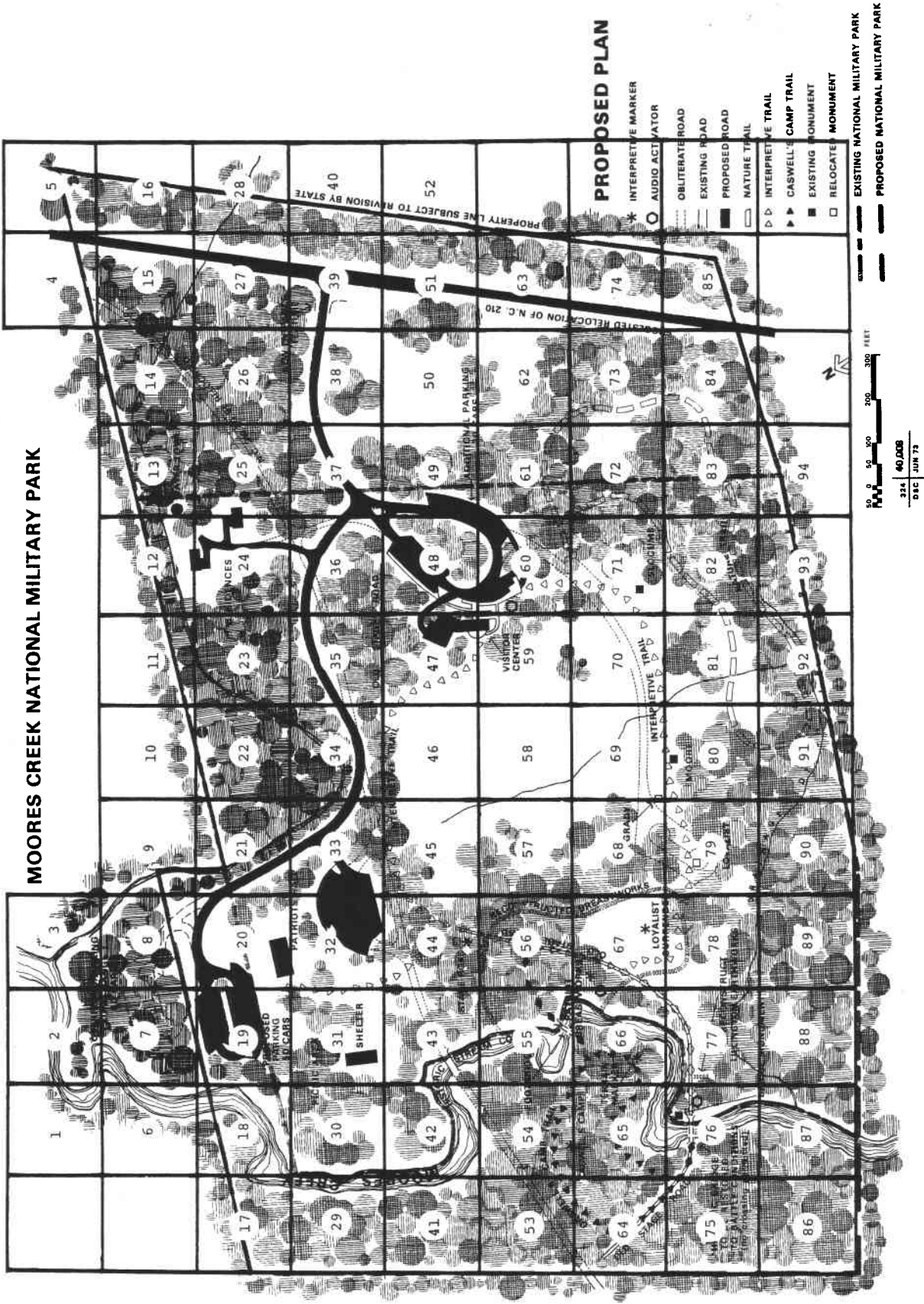
specific habitats in which the plants were collected.

The quadrates, dates, and habitats are given so that the species or variety can be found again if desired. Those species which are asterisked (*) are discussed further in the section of this report entitled Species of Special Interest or Concern.

Summary

The data presented below are a summary of the results of the current study, i.e., the results of the survey of the 11.77 acres west of Moores Creek as well as the occasional excursions into the previously explored areas. The totals in parentheses are the totals to date for the entire Battlefield.

	<u>Families</u>	<u>Genera</u>	<u>Species</u>
Ferns and Fern Allies	2	2	2
Gymnosperms	2	2	3
Flowering Plants			
Monocots	9	28	43
Dicots	51	115	150
Totals	64 (109)	147 (317)	198 (585)



ANNOTATED CHECKLIST

Taxon	Habit	Frequency	Quadrat	Date	Habitat
<u>FERNS AND FERN ALLIES</u>					
<u>BLECHNACEAE</u>					
<u>Woodwardia areolata</u> (L.) Moore. (Netted Chain-Fern)	perennial herb	occasional, locally abundant	87	October 27	low woods
<u>POLYPODIACEAE</u>					
<u>Polypodium polypodioides</u> (L). Watt. (Resurrection Fern)	perennial herb	occasional	54	March 29	on oak trees
<u>GYMNOSPERMS</u>					
<u>PINACEAE</u>					
<u>Pinus taeda</u> L. (Loblolly Pine)	Observed but not collected.				
<u>TAXODIACEAE</u>					
<u>Taxodium ascendens</u> Brongn.	Observed but not collected.	(Pond Cypress)			
<u>Taxodium distichum</u> (L.) Richard.	Observed but not collected.	(Bald Cypress)			
<u>ANGIOSPERMS</u>					
<u>ACANTHACEAE</u>					
<u>Justicia ovata</u> (Walter) Lindau. (Water-Willow)	perennial herb	frequent	43	May 28	creekbank

ANNOTATED CHECKLIST. CONTINUED.

Taxon	Habit	Frequency	Quadrat	Date	Habitat
ACERACEAE					
<u>Acer rubrum</u> L. (Red Maple)	Observed but not collected.				
ALISMATACEAE (M)					
* <u>Sagittaria graminea</u> Michaux (Narrow-Leaved Sagittaria)	perennial herb	rare	41	July 19	drainage flow
* <u>Sagittaria subulata</u> Buch. (Sagittaria)	perennial herb	infrequent, locally abundant	87	August 2	drainage flow
AMARYLLIDACEAE (M)					
<u>Hymenocallis crassifolia</u> Herbert (Spider-Lily)	perennial herb	occasional	65	June 6	upland site
<u>Hypoxis micrantha</u> Pollard (Yellow Star-Grass)	perennial herb	occasional	64	May 28	fence row
ANACARDIACEAE					
<u>Rhus radicans</u> L. (Poison Ivy)	Observed but not collected.				
AQUIFOLIACEAE					
* <u>Ilex amelanchier</u> M. A. Curtis (Sarvis Holly)	small tree	rare	53	May 5	low woods

ANNOTATED CHECKLIST. CONTINUED.

Taxon	Habit	Frequency	Quadrat	Date	Habitat
AQUIFOLIACEAE (Continued)					
* <u>Ilex cassine</u> (L.) var. <u>myrtifolia</u> (Walter) Sargent. (Dahoon, Cassena)	tree	infrequent	41	May 28	low woods
<u>Ilex glabra</u> (L.) Gray (Inkberry)	shrub	common	53	May 28	woods margin
<u>Ilex opaca</u> Aiton (Holly)	tree	common	64	May 5	mixed woods
<u>Ilex verticillata</u> (L.) Gray (Winterberry)	shrub or tree	frequent	41 54	May 28 June 6	low woods edge of low woods
BETULACEAE					
<u>Alnus serrulata</u> (Aiton) Willd. (Tag Alder)	shrub	Observed but not collected.			
<u>Betula nigra</u> L. (River Birch)	Observed but not collected.				
<u>Carpinus caroliniana</u> Walter (American Hornbeam)	tree	very infrequent	55	October 17	low woods
BIGNONIACEAE					
<u>Anisostichus capreolata</u> (L.) Bureau. (Cross Vine)	Observed but not collected.				
<u>Campsis radicans</u> (L.) Seemann (Trumpet-Creeper)	woody vine	occasional	55	July 7	creekbank

ANNOTATED CHECKLIST. CONTINUED.

Taxon	Habit	Frequency	Quadrat	Date	Habitat
BROMELIACEAE (M)					
<u>Tillandsia usneoides</u> L. (Spanish Moss)	Observed but not collected.				
CAMPANULACEAE					
<u>Lobelia elongata</u> Small (Purple Lobelia)	perennial herb	occasional	66	September 8	low woods
<u>Lobelia glandulosa</u> Walter (Purple Lobelia)	perennial herb	frequent	29	September 15	low woods
<u>Lobelia nuttallii</u> R. & S. (Lobelia)	perennial herb	occasional	65	July 7	creekbank
<u>Specularia perfoliata</u> (L.) A. DC. (Venus' Looking-Glass)	annual herb	infrequent	54	May 28	road bank
CARYOPHYLLACEAE					
<u>Cerastium glomeratum</u> Thuillier (Mouse-Ear Chickweed)	annual herb	very common, locally abundant	42	March 29	road bank
* <u>Cerastium holosteoides</u> var. <u>vulgare</u> (Hartmann) Hylander (Mouse-Ear Chickweed)	perennial herb	very common, locally abundant	42	March 29	road bank
<u>Paronychia riparia</u> Chapman (Whitlow-Wort)	perennial herb	infrequent	64	August 2	ditch bank

ANNOTATED CHECKLIST. CONTINUED.

Taxon	Habit	Frequency	Quadrat	Date	Habitat
COMMELINACEAE (M)					
<u>Tradescantia rosea</u> Vent. var. <u>graminea</u> (Small) Anderson & Woodson. (Spiderwort)	perennial herb	infrequent	54	June 6	clearing
COMPOSITAE (ASTERACEAE)					
* <u>Anthemis arvensis</u> L. (Dog Fennel)	annual herb	rare	43	June 12	on bridge
<u>Aster dumosus</u> L. (Bushy Aster)	perennial herb	occasional	53	September 15	ditch bank
<u>Aster racemosus</u> Ell. (Aster)	perennial herb	frequent	66	October 27	low woods
<u>Bidens bipinnata</u> L. (Spanish Needles)	annual herb	infrequent	43	September 15	bridge embankment
* <u>Eclipta alba</u> (L.) Hasskarl. (Yerba-De-Tajo)	annual herb	infrequent	64	August 16	old cabin site
<u>Elephantopus nudatus</u> Gray (Elephant's-Foot)	perennial herb	infrequent	64	August 16	old cabin site
<u>Erechtites hieracifolia</u> (L.) Raf. (Pilewort)	annual herb	occasional	66	October 27	low woods
<u>Erigeron strigosus</u> Muhl. ex Willd. (Daisy Fleabane)	annual herb	infrequent	53	May 28	woods margin

ANNOTATED CHECKLIST. CONTINUED.

Taxon	Habit	Frequency	Quadrat	Date	Habitat
COMPOSITAE (ASTERACEAE) (Continued)					
<u>Erigeron vernus</u> (L.) T. & G.	perennial herb	infrequent	75	June 6	old woods road
<u>Eupatorium semiserratum</u> DC. (Eupatorium)	perennial herb	occasional	66	September 8	low woods
<u>Helenium flexuosum</u> Raf. (Sneezeweed)	perennial herb	common	53	June 22	fence row
<u>Heterotheca gossypina</u> (Michaux) Shinners. (Golden Aster)	perennial herb	infrequent	53	September 29	dry bank
<u>Hieracium gronovii</u> L. (Hawkweed)	perennial herb	frequent	64	August 2	dry bank
<u>Hypochoeris radicata</u> L. (Cat's-Ear)	perennial herb	occasional	54	June 6	roadbank
<u>Krigia virginica</u> (L.) Willd. (Dwarf Dandelion)	annual herb	common, locally abundant	53	May 5	roadside
<u>Lactuca graminifolia</u> Michaux (Wild Lettuce)	biennial herb	occasional	54	June 6	roadside
<u>Pluchea foetida</u> (L.) DC. (Stinking Fleabane)	perennial herb	infrequent	66	September 29	thin woods

ANNOTATED CHECKLIST. CONTINUED.

Taxon	Habit	Frequency	Quadrat	Date	Habitat
COMPOSITAE (ASTERACEAE) (Continued)					
<u>Senecio smallii</u> Britton (Southern Ragwort)	perennial herb	infrequent	53	April 22	roadside
* <u>Solidago verna</u> M. A. Curtis (Spring Goldenrod)	perennial herb	occasional	35	May 28	power line right-of-way
CONVOLVULACEAE					
<u>Bonamia humistrata</u> (Walter) Gray. (Bonamia)	herbaceous vine	infrequent	53	July 7	mixed woods margin
<u>Cuscuta compacta</u> Jussieu. (Compact Dodder)	parasitic annual vine	occasional	53	September 15	low woods
<u>Jacquemontia tannifolia</u> (L.) Grisebach. (Jacquemontia)	herbaceous vine	rare	27	November 17	old homesite
CORNACEAE					
<u>Cornus florida</u> L. (Flowering Dogwood)	Observed but not collected.				
<u>Cornus stricta</u> Lam. (Swamp Dogwood)	shrub	frequent	43	May 28	creek bank
CRUCIFERAE (BRASSICACEAE)					
<u>Arabidopsis thaliana</u> (L.) Heynhold. (Mouse-Ear Cress)	annual herb	occasional, locally abundant	42 54	March 29 March 29	roadside roadbank

ANNOTATED CHECKLIST. CONTINUED.

Taxon	Habit	Frequency	Quadrat	Date	Habitat
CRUCIFERAE (BRASSICACEAE) (Continued)					
* <u>Brassica juncea</u> (L.) Cosson. (Chinese Mustard)	annual herb	rare	53	March 29	roadside ditch
<u>Cardamine hirsuta</u> L. (Bitter Cress)	annual herb	occasional, locally abundant	54	March 29	roadbank
<u>Lepidium virginicum</u> L.	annual herb	frequent	42	May 5	roadside
CYPERACEAE (M)					
* <u>Carex bullata</u> Schkuhr. (Sedge)	perennial herb	infrequent	54	July 19	depression
* <u>Carex complanata</u> Torrey & Hooker (Sedge)	perennial herb	occasional	54	May 28	depression
<u>Carex intumescens</u> Rudge. (Sedge)	perennial herb	occasional	64	July 7	low woods
* <u>Dulichium arundinaceum</u> (L) Britton. (Three-Way Sedge)	perennial herb	infrequent	54	June 22	depression
* <u>Eleocharis acicularis</u> (L.) R. & S. (Spike Rush)	perennial herb	infrequent, locally abundant	76	September 8	creek margin
<u>Eleocharis tuberculosa</u> (Michaux) R. & S. (Spike Rush)	perennial herb	frequent, locally abundant	54	September 15	depression

ANNOTATED CHECKLIST. CONTINUED.

Taxon	Habit	Frequency	Quadrat	Date	Habitat
CYPERACEAE (Continued) (M)					
<u>Rhynchospora corniculata</u> (Lam.) Gray. (Beak-Rush)	perennial herb	rare	65	September 8	creek bank
* <u>Rhynchospora rariflora</u> (Michaux) Ell. (Beak-Rush)	perennial herb	occasional, locally abundant	45	July 7	meadow
CYRILLACEAE					
<u>Cyrilla racemiflora</u> L. (Leatherwood)	tree	common	54	June 22	woods margin
ERICACEAE					
<u>Gaylussacia frondosa</u> (L.) T. & G. var. <u>frondosa</u> (Dangleberry)	shrub	frequent	64	April 22	mixed woods
<u>Leucothoe racemosa</u> (L.) Gray (Fetter-Bush)	shrub	frequent	76	June 6	creek bank
<u>Lyonia lucida</u> (Lam.) K. Koch. (Fetter-Bush)	shrub	common	53	April 22	mixed woods
<u>Lyonia mariana</u> (L.) D. Don. (Stagger-Bush)	shrub	infrequent	65	June 6	mixed woods
<u>Vaccinium arboreum</u> Marshall (Sparkleberry)	shrub	frequent	54	May 28	woods margin

ANNOTATED CHECKLIST. CONTINUED.

Taxon	Habit	Frequency	Quadrat	Date	Habitat
ERICACEAE (Continued)					
<u>Vaccinium elliotii</u> Chapman (Elliott's Blueberry)	shrub	frequent	54 53	March 29 March 29	mixed woods mixed woods
<u>Vaccinium stamineum</u> L. (Squaw-Huckleberry)	shrub	frequent	64	May 5	mixed woods
<u>Vaccinium tenellum</u> Aiton (Slender Blueberry)	shrub	occasional	54	May 5	clearing
EUPHORBIACEAE					
<u>*Croton glandulosus</u> L. (Croton)	annual herb	infrequent	43 54	September 8 August 2	roadbank roadbank
<u>Euphorbia corollata</u> L. (Flowering Spurge)	perennial herb	infrequent	64	June 6	open woods
<u>Euphorbia ipecacuanhae</u> L. (Carolina Ipecac)	perennial herb	occasional	64	May 5	mixed woods
<u>Euphorbia maculata</u> L. (Wartweed)	annual herb	occasional	43	September 8	open site
FAGACEAE					
<u>*Quercus alba</u> L. (White Oak)	tree	infrequent	66	November 17	low woods

ANNOTATED CHECKLIST. CONTINUED.

Taxon	Habit	Frequency	Quadrat	Date	Habitat
GENTIANACEAE					
* <u>Bartonia virginica</u> (L.) BSP. (Bartonia)	annual herb	infrequent, locally abundant	64	August 2	open woods
<u>Sabatia difformis</u> (L.) Druce (Marsh Pink)	perennial herb	frequent	18 54	August 16 July 7	low woods low woods
GERANIACEAE					
<u>Geranium carolinianum</u> L. (Wild Geranium)	annual herb	common	43	April 22	bridge embankment
GRAMINEAE (POACEAE) (M)					
<u>Anthoxanthum odoratum</u> L. (Sweet Vernal Grass)	perennial herb	occasional, locally abundant	42	March 29	roadside
<u>Danthonia sericea</u> Nuttall var. <u>sericea</u> (Wild Oat-Grass)	perennial herb	infrequent	53	May 5	woods road
* <u>Erianthus contortus</u> Baldwin ex Ell. (Woolly Beard Grass)	perennial herb	infrequent	54	September 15	roadbank
* <u>Erianthus strictus</u> Baldwin (Woolly Beard Grass)	perennial herb	infrequent	66	September 8	low thin woods
<u>Festuca elatior</u> L. (Meadow Fescue)	perennial herb	occasional	54	May 5	weedy roadside

ANNOTATED CHECKLIST, CONTINUED.

Taxon	Habit	Frequency	Quadrat	Date	Habitat
GRAMINEAE (POACEAE) (M) (Continued)					
<u>*Leersia oryzoides</u> (L) Swartz (Rice-Cutgrass)	perennial herb	infrequent	66	September 29	low thin woods
<u>Panicum dichotomum</u> L. (Panic Grass)	perennial herb	frequent	54	September 29	low woods
<u>Panicum laxiflorum</u> Lam. (Panic Grass)	perennial herb	occasional	65 54	June 22 May 28	sandy clearing roadbank
<u>*Panicum tenue</u> Muhl. (Panic Grass)	perennial herb	occasional	54	May 28	roadbank
<u>Panicum verrucocum</u> Muhl. (Panic Grass)	annual herb	infrequent, locally abundant	54	September 15	depression
<u>*Panicum villosissimum</u> Nash (Panic Grass)	perennial herb	occasional, locally abundant	54 53	October 13 July 7	depression ditchbank
<u>Paspalum floridanum</u> Michaux (Paspalum)	perennial herb	occasional	54	September 15	mowed roadside
<u>Poa annua</u> L. (Low Speargrass)	annual herb	common	54	March 29	roadbank
<u>Sphenopholis obtusata</u> (Michaux) Scribner (Prairie Wedge- grass)	perennial herb	occasional	53	May 5	ditch

ANNOTATED CHECKLIST. CONTINUED.

Taxon	Habit	Frequency	Quadrat	Date	Habitat
HALORAGACEAE					
<u>Proserpinaca palustris</u> L. (Mermaid-Weed)	perennial herb	occasional	54	June 22	depression
HAMAMELIDACEAE					
<u>Liquidambar styraciflua</u> L. (Sweet Gum)	Observed but not collected.				
HYPERICACEAE					
<u>Hypericum cistifolium</u> Lam. (St. John's-Wort)	shrub	infrequent	54	August 2	low woods margin
<u>Hypericum hypericoides</u> (L.) Crantz (St. Andrew's Cross)	shrub	occasional	43	August 16	low thicket
<u>Hypericum mutilum</u> L. (St. John's-Wort)	perennial herb	frequent	43	August 16	low thicket
* <u>Hypericum walteri</u> Gmelin (St. John's-Wort)	perennial herb	rare	41	August 16	low woods
IRIDACEAE (M)					
<u>Iris virginica</u> L. (Blue Flag)	perennial herb	rare	90	June 1	ditchbank
<u>Sisyrinchium mucronatum</u> Michaux var. <u>atlanticum</u> (Bicknell) Ahles (Blue- Eyed Grass)	perennial herb	occasional	43	May 5	creek bank
<u>Sisyrinchium rosulatum</u> Michaux (Blue-Eyed Grass)	annual herb	frequent	53 24	May 28 June 6	roadside lawn

ANNOTATED CHECKLIST. CONTINUED.

Taxon	Habit	Frequency	Quadrat	Date	Habitat
JUNCACEAE (M)					
<u>Juncus biflorus</u> Ell. (Rush)	perennial herb	infrequent	65	June 22	clearing
* <u>Juncus canadensis</u> J. Gay ex La Harpe (Rush)	perennial herb	infrequent	65	September 29	creek margin
* <u>Juncus coriaceus</u> Mackenzie (Rush)	perennial herb	infrequent	53	July 7	roadside ditch
<u>Juncus dichotomus</u> Ell. (Rush)	perennial herb	frequent	65	June 22	clearing
<u>Juncus elliotii</u> Chapman (Rush)	perennial herb	frequent	53	May 28	ditch
LABIATAE (LAMIACEAE)					
<u>Dracocephalum purpureum</u> (Walter) McClintock (False Dragonhead)	perennial herb	infrequent, locally abundant	43	June 22	woods margin
* <u>Glechoma hederacea</u> L. (Ground Ivy)	perennial herb	infrequent, locally abundant	12	April 22	lawn
<u>Lycopus rubellus</u> Moench var. <u>rubellus</u> (Bugleweed)	perennial herb	frequent	76	September 8	creek bank
* <u>Prunella vulgaris</u> L. (Heal-All)	perennial herb	infrequent	75	September 8	grassy depression

ANNOTATED CHECKLIST. CONTINUED.

Taxon	Habit	Frequency	Quadrat	Date	Habitat
LABIATAE (LAMIACEAE) (Continued)					
<u>Salvia lyrata</u> L. (Lyre-Leaved Sage)	perennial herb	occasional	54	May 5	cleared area
<u>Scutellaria integrifolia</u> L. var. <u>integrifolia</u> (Narrow-Leaved Skullcap)	perennial herb	occasional	53	June 22	fencerow
<u>Trichostema dichotomum</u> L. (Blue Curls)	annual herb	infrequent	43	September 8	open site
LAURACEAE					
<u>Persea borbonia</u> (L.) Sprengel (Red Bay)	Observed but not collected				
<u>Sassafras albidum</u> (Nuttall) (Sassafras)	Observed but not collected				
LEGUMINOSAE (FABACEAE)					
<u>Desmodium paniculatum</u> (L.) DC. (Beggar's-Ticks)	perennial herb	occasional	64	August 16	thin woods
* <u>Galactia volubilis</u> (L.) Britton (Twining Milk-Pea)	perennial vine	infrequent	53	August 2	woods edge

ANNOTATED CHECKLIST. CONTINUED.

Taxon	Habit	Frequency	Quadrat	Date	Habitat
LEGUMINOSAE (FABACEAE) (Continued)					
* <u>Lathyrus latifolius</u> L. (Everlasting Pea)	perennial herb	infrequent	24	May 28	shady bank
* <u>Lespedeza angustifolia</u> (Pursh) Ell. (Narrow-Leaved Lespedeza)	perennial herb	infrequent	65	September 29	dry bank
<u>Lespedeza cuneata</u> (Dumont) G. Don (Sericea)	perennial herb	occasional	53	August 2	woods margin
<u>Lupinus villosus</u> Willd. (Lady Lupine)	perennial herb	infrequent	64	May 28	fence row
* <u>Robinia nana</u> Ell. (Dwarf Locust)	shrub	infrequent	24	May 5	shady bank
* <u>Trifolium dubium</u> Sibthorp (Low Hop Clover)	annual herb	occasional, locally abundant	53	May 5	roadside
<u>Trifolium repens</u> L. (White Clover)	perennial herb	frequent	54	May 5	roadside
<u>Vicia angustifolia</u> Reichard (Vetch)	annual herb	occasional	43	April 22	near bridge
<u>Wisteria frutescens</u> (L.) Poiret (Wisteria)	woody vine	occasional	53	May 5	woods margin

ANNOTATED CHECKLIST. CONTINUED.

Taxon	Habit	Frequency	Quadrat	Date	Habitat
LILIACEAE (M)					
* <u>Aletris aurea</u> Walter (Yellow Star-Grass)	perennial herb	rare	46	July 7	Seepage slope
* <u>Ornithogalum umbellatum</u> L. (Star-of-Bethlehem)	perennial herb	Infrequent	33	April 19	parking lot island
<u>Smilax rotundifolia</u> L. (Common Greenbrier)	woody vine	common	66	May 5	low woods
* <u>Tofieldia racemosa</u> (Walter) BSP. (False Asphodel)	perennial herb	rare	46	July 7	seepage slope
<u>Yucca filamentosa</u> L. var. <u>filamentosa</u> (Adam's- Needle)	observed but not collected				
LINACEAE					
<u>Linum virginianum</u> L. (Flax)	perennial herb	infrequent	53 54	July 7 September 29	ditch fence row
LOGANIACEAE					
* <u>Gelsemium rankinii</u> Small (Yellow Jessamine)	woody vine	occasional	55	May 5	low woods
<u>Polypremum procumbens</u> L. (Polypremum)	perennial herb	common	53	July 7	roadside

ANNOTATED CHECKLIST. CONTINUED.

Taxon	Habit	Frequency	Quadrant	Date	Habitat
MAGNOLIACEAE					
<u>Magnolia grandiflora</u> L. (Bull Bay)	Observed but not collected.				
MELASTOMATACEAE					
<u>Rhexia mariana</u> L. (Pale Meadow-Beauty)	perennial herb	occasional	43	August 2	creek bank
MYRICACEAE					
<u>Myrica cerifera</u> L. var. <u>cerifera</u> (Wax Myrtle)	Observed but not collected.				
NYMPHAEACEAE					
<u>Nuphar luteum</u> ssp. <u>sagittifolium</u> (Walter) E. O. Beal (Yellow Pond-Lily)	Observed but not collected.				
NYSSACEAE					
<u>Nyssa sylvatica</u> Marshall var. <u>sylvatica</u> (Black Gum)	tree	frequent, locally abundant	64	May 5	mixed woods
ONAGRACEAE					
<u>Ludwigia alternifolia</u> L. (Seed box)	perennial herb	occasional	64 76	August 2 September 8	sandy bank creek bank

ANNOTATED CHECKLIST. CONTINUED.

Taxon	Habit	Frequency	Quadrant	Date	Habitat
ONAGRACEAE (CONTINUED)					
<u>*Ludwigia glandulosa</u> Walter (Ludwigia)	perennial herb	infrequent	66	October 27	low woods
<u>Ludwigia palustris</u> (L.) Ell. (Water-Purslane)	perennial herb	common, locally abundant	54 18	June 22 August 18	depression creek margin
<u>Oenothera laciniata</u> Hill laciniata (Evening Primrose)	biennial herb	frequent	42	May 5	roadside
OLEACEAE					
<u>Fraxinus caroliniana</u> Miller (Water Ash)	Observed but not collected.				
OXALIDACEAE					
<u>Oxalis dillenii</u> Jacquin (Wood Sorrel)	perennial herb	frequent, locally abundant	24 54	May 5 May 5	lawn roadside
PLANTAGINACEAE					
<u>Plantago aristata</u> Michaux (Bracted Plantain)	annual herb	occasional	53	July 7	roadside
<u>Plantago lanceolata</u> L. (English Plantain)	perennial herb	infrequent	54	May 5	roadside
<u>*Plantago rugellii</u> Dcne. (Common Plantain)	perennial herb	occasional, locally abundant	54 53	August 16 June 22	fence row roadside

ANNOTATED CHECKLIST. CONTINUED.

Taxon	Habit	Frequency	Quadrat	Date	Habitat
PLANTAGINACEAE					
<u>Plantago virginica</u> L. (Hoary Plantain)	annual herb	frequent, locally abundant	54	April 22	roadside
POLYGONACEAE					
<u>Polygonum hydropiperoides</u> Michaux. (Mild Water-Pepper)	perennial herb	frequent	41	August 16	low woods
<u>Polygonum pennsylvanicum</u> L. (Lady's-Thumb)	annual herb	infrequent	54	September 15	depression
<u>Polygonum sagittatum</u> L. (Tearthumb)	annual herb	infrequent, locally abundant	54	September 15	depression
<u>Rumex crispus</u> L. (Sour Dock)	biennial herb	infrequent	53	May 28	roadside ditch
<u>Rumex hastatulus</u> Baldwin ex Ell. (Wild Sorrel)	annual herb	occasional, locally abundant	54	May 28	roadbank
PONTEDERIACEAE (M)					
<u>Pontederia cordata</u> L. (Pickerelweed)	perennial herb	infrequent	54	June 22	depression
RANUNCULACEAE					
<u>Clematis crispa</u> L. (Leather-Flower)	herbaceous vine	infrequent	53	April 22	roadside

ANNOTATED CHECKLIST. CONTINUED.

Taxon	Habit	Frequency	Quadrat	Date	Habitat
RANUNCULACEAE (Continued)					
* <u>Ranunculus bulbosus</u> L. (Bulbous Buttercup)	perennial herb	rare	24	May 5	lawn
ROSACEAE					
* <u>Amelanchier spicata</u> (Lam.) K. Koch. (Serviceberry)	shrub	infrequent	36	March 29	woods margin
<u>Crataegus flava</u> Aiton (Thornapple)	shrub	infrequent	53	May 5	woods margin
<u>Potentilla simplex</u> Michaux (Cinquefoil)	perennial herb	infrequent, locally abundant	53	April 22	roadside
<u>Rubus cuneifolius</u> Pursh (Blackberry)	shrub	infrequent	54	May 28	open site
<u>Rubus trivialis</u> Michaux (Dewberry)	shrub	infrequent	54	April 22	cleared area
<u>Sorbus arbutifolia</u> (L.) Heynhold var. <u>arbutifolia</u> (Red Chokeberry)	shrub	frequent	53	March 29	woods edge
RUBIACEAE					
<u>Cephalanthus occidentalis</u> L. (Buttonbush)	shrub	infrequent	54	June 22	depression

ANNOTATED CHECKLIST. CONTINUED.

Taxon	Habit	Frequency	Quadrat	Date	Habitat
RUBIACEAE (Continued)					
<u>Diodia virginiana</u> L. (Buttonweed)	perennial herb	frequent	65	August 2	creek bank
<u>Galium pilosum</u> Aiton (Bedstraw)	perennial herb	occasional	64	July 19	roadbank
<u>Mitchella repens</u> L. (Partridge Berry)	perennial herb	infrequent, locally abundant	54	May 28	fence row
SAURURACEAE					
<u>Saururus cernuus</u> L. (Lizard's Tail)	Observed but not collected.				
SAXIFRAGACEAE					
* <u>Decumaria barbara</u> L. (Climbing Hydrangea)	woody vine	occasional	41	July 19	low woods
<u>Itea virginica</u> L. (Virginia willow)	shrub	frequent	87	June 6	swampy woods
SCROPHULARIACEAE					
<u>Agalinis setacea</u> (J. F. Gmelin) Raf. (Gerardia)	annual herb	infrequent	53	September 29	roadbank
<u>Gratiola aurea</u> Pursh (Golden-Pert)	Observed but not collected.				

ANNOTATED CHECKLIST. CONTINUED.

Taxon	Habit	Frequency	Quadrat	Date	Habitat
SCROPHULARIACEAE (Continued)					
<u>Gratiola virginiana</u> L. (Virginia Gratiola)	annual herb	frequent	42	July 19	woods margin
<u>Linaria canadensis</u> (L.) Dumont (Toad-Flax)	biennial herb	frequent	42	April 22	roadbank
<u>Penstemon australis</u> Small (Beard-Tongue)	perennial herb	infrequent	53	May 5	old woods road
* <u>Verbascum thapsus</u> L. (Woolly Mullein)	perennial herb	rare	24	July 7	shady bank
<u>Veronica arvensis</u> L. (Corn-Speedwell)	annual herb	occasional, locally abundant	54	April 22	roadside
SOLANACEAE					
* <u>Physalis angulata</u> L. (Ground-Cherry)	annual herb	rare	27	November 17	old homesite
<u>Solanum americanum</u> Miller (Nightshade)	annual herb	infrequent	55	September 29	on stump
SYMPLOCACEAE					
<u>Symplocos tinctoria</u> (L.) L'Her (Sweet Leaf)	Observed but not collected.				
UMBELLIFERAE (APIACEAE)					
<u>Centella asiatica</u> (L.) Urban (Centella)	perennial herb	occasional, locally abundant	43	November 17	depression

ANNOTATED CHECKLIST. CONTINUED.

Taxon	Habit	Frequency	Quadrat	Date	Habitat
UMBELLIFERAE (APIACEAE) (Continued)					
<u>Hydrocotyle verticillata</u> Thunb. var. <u>verticillata</u> (Water-Pennywort)	perennial herb	occasional, locally abundant	66	July 7	clearing
URTICACEAE					
<u>Boehmeria cylindrica</u> (L.) Swartz (False Nettle)	perennial herb	very common	66	September 8	low woods
VALERIANACEAE					
<u>Valerianella radiata</u> (L.) Dufr. (Corn Salad)	annual herb	occasional, locally abundant	54	April 22	roadside
VIOACEAE					
* <u>Viola esculenta</u> Ell. (Violet)	perennial herb	rare, locally abundant	43	May 5	under bridge
<u>Viola lanceolata</u> L. (Lance-Leaved Violet)	perennial herb	occasional	43	May 5	creek bank
<u>Viola papilionacea</u> Pursh (Meadow Violet)	perennial herb	infrequent, locally abundant	53	April 22	roadside
* <u>Viola primulifolia</u> L. (Primrose-Leaved Violet)	perennial herb	infrequent, locally abundant	51 66	March 29 October 27	old field low woods
* <u>Viola villosa</u> Walter (Hairy Violet)	perennial herb	rare, locally abundant	43	March 29	roadbank

ANNOTATED CHECKLIST. CONTINUED.

Taxon	Habit	Frequency	Quadrat	Date	Habitat
VITACEAE					
<u>Parthenocissus quinquefolia</u> (L.) Planchon (Virginia Creeper)	Observed but not collected.				
XYRIDACEAE (M)					
<u>Xyris lupical</u> Richard (Yellow-Eyed Grass)	perennial herb	infrequent	66	September 29	low woods

SPECIES OF SPECIAL INTEREST OR CONCERN

The following species are new records for the Battlefield based on collected and preserved specimens (vouchers). None require any special concern.

ALISMATACEAE

Sagittaria graminea Michaux

Sagittaria subulata Buch.

AQUIFOLIACEAE

Ilex cassine (L.) var. myrtifolia (Walter) Sargent

CARYOPHYLLACEAE

Cerastium holosteoides var. vulgare (Hartmann) Hylander

COMPOSITAE

Anthemis arvensis L.

Eclipta alba (L.) Hasskarl.

CONVOLVULACEAE

Jacquemontia tamnifolia (L.) Grisebach

CRUCIFERAE

Brassica juncea (L.) Cosson.

CYPERACEAE

Carex bullata Schkuhr.

Carex complanata Torrey & Hooker

Dulichium arundinaceum (L.) Britton

Eleocharis acicularis (L.) R. & S.

EUPHORBIACEAE

Croton glandulosus L.

FAGACEAE

Quercus alba L. (May be a hybrid with Quercus stellata).

GENTIANACEAE

Bartonia virginica (L.) BSP.

GRAMINEAE

Erianthus sericea Nuttall var. sericea

Erianthus strictus Baldwin

Leersia oryzoides (L.) Swartz

Panicum tenue Muhl.

Panicum villosissimum Nash

HYPERICACEAE

Hypericum walteri Gmelin

IRIDACEAE

Iris virginica L.

JUNCACEAE

Juncus canadensis J. Gay ex La Harpe

Juncus coriaceus Mackenzie

LABIATAE

Glecoma hederacea L.

Prunella vulgaris L.

LEGUMINOSAE

Galactia volubilis (L.) Britton

Lathyrus latifolius L.

Lespedeza angustifolia (Pursh) Ell.

Robinia nana Ell.

Trifolium dubium Sibthorp

LILIACEAE

Aletris aurea Walter

Ornithogalum umbellatum L.

Tofieldia racemosa (Walter) BSP.

ONAGRACEAE

Ludwigia glandulosa Walter

PLANTAGINACEAE

Plantago rugellii Dcne.

RANUNCULACEAE

Ranunculus bulbosus L.

ROSACEAE

Amelanchier spicata (Lam.) K. Koch.

SAXIFRAGACEAE

Decumaria barbara L.

SCROPHULARIACEAE

Verbascum thapsus L.

SOLANACEAE

Physalis angulata L.

VIOLACEAE

Viola esculenta Ell.Viola villosa Walter

The species discussed below are of special interest or concern.

Gelsemium rankinii Small. Collected in the low woods west of Moores Creek and just south of route N.C. 210. Also previously collected along the east bank of the Creek. Although occasionally found and observed in the Battlefield it is rare in North Carolina and reported only from Columbus and Pender Counties.

Ilex amelanchier M. A. Curtis. Sarvis Holly is listed as an endangered species in the state of North Carolina by Sutter et al. (1983) and is currently under review for possible listing as either threatened or endangered by the Fish and Wildlife Service (1983). One plant was discovered along the

Battlefield boundary west of Moores Creek and north of route N.C. 210. Other specimens were searched for, but none were found; in addition, the plant had only a few fruits, perhaps indicating that if there are other plants in the vicinity, they are not numerous. The plant was tagged and its location described to Superintendent Stockert. (See Management Conclusions and Recommendations).

Rhynchospora rariflora (Michaux) Ell. The inclusion of this name is the result of a previous misidentification. R. stenophylla Chapman, rare in North Carolina, was previously reported to be present in the Battlefield (Sieren, 1982). Those plants have been reidentified, based on additional materials, as R. rariflora, which is of no special concern.

Solidago verna M. A. Curtis. This species was previously reported for the Battlefield (Sieren, 1982). An additional population was discovered during the current study by Superintendent Stockert in the power line right-of-way just west of the Battlefield residences and north of route N.C. 210. It is endangered in North Carolina and is still listed by the Fish and Wildlife Service as under consideration for listing as either threatened or endangered. The plants **should** therefore be considered in any environmental planning and **their** habitat preserved.

LIST OF INSECTIVOROUS SPECIES

The following species were reported in the previous study (Sieren 1982). No insectivorous species were observed in the present study - site west of Moores Creek.

DIONAEACEAE (DROSERACEAE)

Dionaea muscipula Ellis

DROSERACEAE

Drosera capillaris Poiret.

Drosera intermedia Hayne

Drosera leucantha Shinnars

LENTIBULARIACEAE

Utricularia subulata L.

SARRACENIACEAE

Sarracenia flava L.

Sarracenia purpurea L.

EXOTIC SPECIES

Exotic species are, according to National Park Service management policy, species that occur in a given place, area, or region as the result of direct or indirect, deliberate or accidental introduction of the species by humans. Such exotic species are not natural components of the ecological systems characteristic of the given location, and as a result, have not evolved in concert with the evolution of those species that are native to the location. Accordingly, the species discussed below is identified as an exotic. There are other species listed in the checklist of this report which have been introduced to our flora either deliberately or by accident, but which have become firmly established, naturalized components of that flora. One such example is Verbascum thapsus. Because it is considered unlikely that anyone would ever want to eliminate them from the Battlefield, they are not identified in this report.

Jacquemontia tamnifolia (L.) Grisebach. (Jacquemontia). A few plants were found by Superintendent Stockert growing on an old homesite near the eastern corner of the Battlefield. A subtropical species adventive in our area from further south, it could easily be eliminated if desired, and probably will be inasmuch as it is in the right-of-way for the construction of the route N.C. 210 bypass around the Battlefield.

CORRECTIONS, ADDITIONS, AND OTHER NOTES

Since the first report (Sieren 1982, 1982a) was submitted, a few identification errors have been detected. In addition, it was discovered that one species was inadvertently omitted, and two species were observed recently in photographs and should be mentioned. Also, one rare species which was previously not on the North Carolina protected plant list has been added to that list as an Endangered Species.

Inadvertent Omission

AMARYLLIDACEAE

Lycoris radiata (L'Her.) Herbert. (Magic Lily). Omitted from the first report, this is a cultivated species and was observed growing just northeast of the Battlefield residences in both 1980 and 1981.

Corrections

CYPERACEAE

Rhynchospora stenophylla Chapman. Additional material of this species collected during the current study indicates that the plants in the Battlefield are more appropriately referred to R. rariflora (Michaux) Ell.

GRAMINEAE

Cenchrus tribuloides L. A misidentification. C. incertus M. A. Curtis is the correct name.

OXALIDACEAE

Oxalis florida Salisb. The specimens referred to this species in the first report are more probably O. dillenii Jacquin.

ROSACEAE

Potentilla canadensis L. Should be changed to P. simplex Michaux.

Additions

The following two species are reported on the basis of photographs which were taken in the Battlefield by Superintendent Stockert. Specimens have not been seen.

CRASSULACEAE

Sedum sarmentosum Bunge. Photographed on the northwest side of the Battlefield residences in quadrate 13. If the identification is correct, this would be an exotic in the Battle field.

STYRACACEAE

Styrax americana Lam. Photographed on May 7, 1983 along the rail fence on the south side of route N.C. 210 just west of the Moores Creek bridge.

Other Notes

SAXIFRAGACEAE

Parnassia caroliniana Michaux. This species was previously reported only as rare in North Carolina. It has since (Sutter et al. 1983) been added to the North Carolina Protected Plant list as an Endangered Species in North Carolina.

Nearly 200 of the most conspicuous and unusual wildflowers of the Battlefield have been photographed by Superintendent Stockert. The color slides are stored at Battlefield headquarters. In addition, prints have been made from the slides and placed in an album where they are color coded for easy identification.

MANAGEMENT CONCLUSIONS AND RECOMMENDATIONS

Five species, either reported previously (Sieren 1982, 1982a) or referred to in this report, are of sufficient rarity so as to be of management concern. Of those five, three (Solidago verna, Ilex amelanchier, and Parnassia caroliniana) are all listed as Endangered in North Carolina (Sutter et al. 1983). This means that the continued existence of those species as viable components of the State's flora has been determined to be in jeopardy. There are very few populations in the state, "they are limited in distribution, and there is evidence of threats that are extirpating or reducing the vigor of populations." They are very near extinction in the state and they are protected by state statute. In addition, all three are listed by the Fish and Wildlife Service (1983) in category 2. This category "comprises taxa for which information now in possession of the Service indicates that proposing to list the taxa as Endangered or Threatened is possibly appropriate, but for which substantial data on biological vulnerability and threat(s) are not currently known or on file to support proposed rules." They "are candidates for possible addition to the List of Endangered and Threatened Plants, and therefore should receive consideration in environmental planning, such as in environmental impact analysis under the National Environmental Policy Act of 1969...".

The other two species (Dionaea muscipula and Macbridea caroliniana) are presented in the North Carolina list (Sutter et al. 1983) as Significantly Rare Species (SRS). These are species which need "continued monitoring" and "their status is reviewed every two years to determine whether they need further monitoring

and protection". These species also have some degree of protection under the North Carolina Plant Protection and Conservation Act. Macbridea caroliniana is not listed by the Fish and Wildlife Service (1983). The status of Dionaea muscipula has been downgraded from category 2 to category 3, which includes "taxa that are no longer being considered for listing as Threatened or Endangered Species." Apparently it was downgraded because it is one of those "taxa that have proven to be more abundant or widespread than was previously believed and/or those that are not subject to any identifiable threat. Should further research or changes in land use indicate significant decline in any of these taxa, they may be reevaluated for possible inclusion in category 1 or 2."

Ilex amelanchier, represented to date by a single specimen, is in a precarious position at the edge of a cut and maintained boundary fire lane. It is marked by a 4-inch square concrete post approximately 18 inches high. The post is less than 6 inches from the Ilex amelanchier specimen. Both the specimen and the post are about 11 feet from the west boundary line of the Battlefield. The spot on the boundary line which is closest to the specimen is about 49 feet NE of Thompson (July 1982) on-line Department of Interior capped monument N259,625.41/E2,267,027.55. It is to be hoped that the plant will not be inadvertently removed or damaged during routine maintainance activities and plans should be made to avoid that possibility.

Four of the five species (Solidago verna, Parnassia caroliniana, Dionaea muscipula, and Macbridea caroliniana) are growing in or on the fringes of a mild depression at the bottom of the hill behind the Visitor Center (parts of quadrates 46, 47, 58, and 59; see

map, page 5). This roughly rectangular area is essentially open with only a few scattered trees and is about 100 feet wide and 200 feet long. At present, it and the adjacent meadow are mowed with a bush-hog once a year, usually in December. Prior to 1979 and possibly back as far as the 1920's these areas were maintained as a lawn (personal communication from John Stockert). Because the plants in both areas seem to be thriving under current conditions, it is strongly recommended (1) that the present maintenance schedule be continued; i.e., that there be only one annual mowing during the winter months, and (2) that there be no consideration given to returning the two areas to a lawn situation with frequent mowings. Such harsh treatment would certainly jeopardize the existence of the plants in both areas, and the four rare species in particular.

For the purpose of providing visitor access to the meadow flora, the National Park Service in 1984 cut and began maintaining a few grassy trails into and through the meadow; in addition, they continued to maintain an access trail around, but not into the area containing the four rare species. All of the access trails are being periodically mowed and maintained similar to the adjacent lawns from and to which they lead. Because these activities do not appear to be placing any of the four rare species in jeopardy, it is suggested that the trails continue to be maintained as they currently are. It is strongly recommended, however, that no such trail be developed within the 100' x 200' area containing the rare species.

In general, it is recommended that efforts be made to protect all of the rare populations, that their habitats be preserved, and that they receive consideration in environmental planning. If minor habitat modification (such as mowing or trimming) in the vicinity of the populations is essential, it is recommended that it be done after they have flowered, fruited, and dropped their seeds.

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