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TITLE: Distribution of Rhus Michauxii of Fort Pickett, Virginia

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Richmond, Virginia 23219

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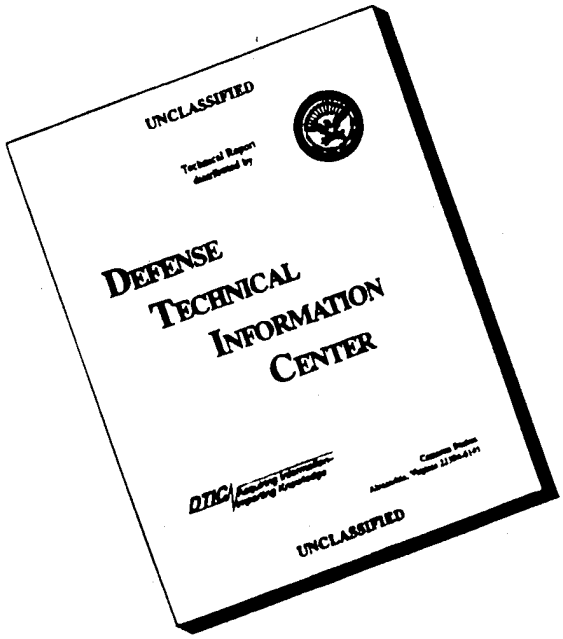

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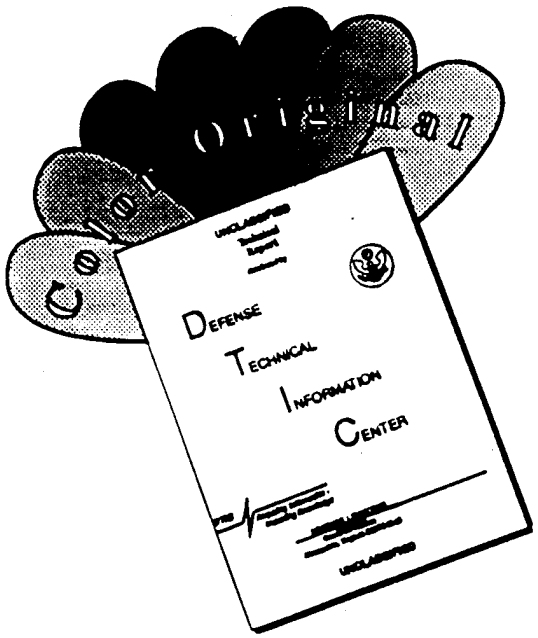

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Before 1993, extant populations of Michaux's sumac (Rhus michauxii), a shrub federally listed as endangered, were known only from North Carolina and Georgia. In 1993, a large population of Rhus michauxii was found in the southern Piedmont of Virginia at the Fort Pickett Military Reservation in habitats subjected to ordnance-caused fires and soil disturbances within the Fort's Controlled Access Area (CAA). After the initial surveys in 1993, additional areas of Fort Pickett remained to be searched for Michaux's sumac, and in October 1994-March 1995 an extensive survey was conducted by the Virginia Department of Conservation and Recreation. Selected areas both inside and outside the CAA were searched. This survey resulted in the discovery of 74 colonies of Rhus michauxii, with 36 colonies containing 1,800+ stems outside of the CAA and 38 colonies containing 6,000+ stems within the CAA. Most of the colonies were found in habitats subjected to ordnance-caused disturbances, but some were found in disturbed habitats around old homesites, strengthening that association found previously by Fort Pickett personnel.

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Thomas L Smith 10/30/95

PI - Signature Date

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Numerous personnel of the Virginia Department of Conservation and Recreation (DCR) aided in the completion of this project. Megan Rollins of the Data Management staff spent many long hours creating the maps on which the data are presented. Field Botanist Allen Belden, Jr., and Randolph-Macon College Student Interns Bo Mallory and Mark Rorrer assisted in field surveys. The 1993 field reports to DCR by Field Ecologist Gary P. Fleming detailing the areas surveyed for *Rhus michauxii* as part of the 1992-1994 Natural Heritage Inventory of Fort Pickett provided background data on what areas had been surveyed already; these field reports were invaluable in focusing the searches made in this project on areas that had not been surveyed or deserved more attention. On the administrative side, Leslie Trew contracted and administered the project, Pat Jarrell was responsible for financial affairs and the submission of quarterly reports, and Faye McKinney assisted with administrative details.

The 1: 25,000 scale map of Fort Pickett that served as the basis for the maps included in this report was originally developed by the 100th Engineer Company, 30th Engineer Battalion (Topographic) (Army). Photo Science Inc. of Gaithersburg, Maryland, scanned a raster image of this base map which was then used to create the maps in the Appendix.

INTRODUCTION

Before 1993, Michaux's sumac (*Rhus michauxii*), a low, rhizomatous, dioecious shrub in the Cashew Family, was known historically from the Inner Coastal Plain and Lower Piedmont of North Carolina, South Carolina, and Georgia (Sandhills Field Office 1993). At that time, only 21 extant populations were known, with twenty populations in North Carolina and one in Georgia. Because of the low number of extant populations, the mostly small population sizes, and the vulnerability of the roadside and power line rights-of-way habitat, *Rhus michauxii* was designated in September 1989 as an Endangered species by the U.S. Fish and Wildlife Service under the authority of the Endangered Species Act, as amended in 1973 (U.S. Fish and Wildlife Service 1989).

Further details about *Rhus michauxii* can be found in the *Rhus Michauxii* Element Stewardship Abstract (Sandhills Field Office 1993).

In 1993, while conducting a Natural Heritage Resources Inventory of Fort Pickett Military Reservation in the southern Piedmont of Virginia, Gary P. Fleming of the Virginia Department of Conservation and Recreation (DCR) found in Dinwiddie County the first population of Michaux's sumac known for Virginia. Subsequent surveys in 1993 by DCR personnel and staff of Fort Pickett's Fish and Wildlife Management Branch located numerous colonies of Michaux's sumac within the base's Controlled Access Area, in both Dinwiddie and Nottoway Counties. The Controlled Access Area (CAA), those lands within the pink boundary shown on Map 1 in the Appendix, consists of approximately 10,000 acres within which ordnance is tested; lands within this area are subject to frequent burning and soil disturbance caused by the ordnance testing. The *Rhus michauxii* colonies at Ft. Pickett were found in association with such disturbances in hardwood-dominated woodlands, savannas, and openings in fire-created coppices. By the end of 1993 an estimated 21,000+ stems of Michaux's sumac were found within 33 subpopulations over approximately 7,000 acres of the Controlled Access Area (Fleming and Van Alstine 1994). It was recognized at that time that more habitat remained to be surveyed to better assess the size and distribution of the *Rhus michauxii* population at Fort Pickett and, therefore, this project was developed to address that need.

METHODS

Additional subpopulations or colonies of *Rhus michauxii* were to be searched for through foot-surveys in selected areas of Fort Pickett. The extent of the study area at Fort Pickett is shown in Map 1 in the Appendix. It was decided that surveys would be conducted during the autumn and winter months because the pubescent *Rhus michauxii* stems, both sterile and fertile, were still present and identifiable at this time, but were less obscured by other vegetation. The areas to be surveyed were initially selected based on information provided by the following:

1. A review of past survey work done by both the staff of the Fish and Wildlife Management Branch at Fort Pickett and by DCR personnel in 1993 during the Natural Heritage Inventory. This review provided information not only on what areas had been previously surveyed and the appropriate habitat, but recommendations for areas with habitat that remained unsurveyed. Two major areas were eliminated from the scope of this survey because Ft. Pickett Fish and Wildlife Management Branch personnel would be covering those areas in the course of their field work. These unsurveyed areas include those lands north of Rt. 40 and those lands south of the Nottoway River.

2. Discussions with the staff of Fort Pickett's Fish and Wildlife Management Branch regarding what the priority survey areas were in terms of military operations. Most of the ranges outside of the Controlled Access Area boundary were targeted for surveys, as well as sites of proposed developments, particularly those associated with Range 15. Ranges 1, 2, 3, and 4 were exempted from the survey because of safety concerns.

3. Old homesite locations found on the U.S.G.S. 7.5' quadrangle maps and old aerial photos of the base. Shortly before the field work for this project began, Fort Pickett personnel found colonies of *Rhus michauxii* outside of the Controlled Access Area, including the first site known for Brunswick County. At least some of these new colonies were associated with old homesites and fence lines. These new colonies expanded the type of habitat to be targeted in the present survey, and building symbols on the maps and old aerial photos of the base provided clues to past homesite locations.

All field work was coordinated with the Range Operations Office so that military operations did not jeopardize the safety of DCR personnel.

When a colony of *Rhus michauxii* was found, the area was intensively searched so as to delimit the boundaries of the colony. Flagging (pink and black striped) was then tied on trees or tall shrubs at the boundaries of the colony. The following data were recorded for each new colony: location; estimates of the numbers of stems (ramets) including female, male, and sterile (vegetative) stems; estimated area ; and a brief habitat description. Colony locations were plotted in the field on 1:24,000 scale U.S.G.S. 7.5' quadrangle maps, but were later transferred to the 1: 25,000 scale Fort Pickett map, as requested by Fort Pickett staff (Alan Dyck, pers. comm.). (NOTE: Maps 2 and 5 are at the 1:25,000 scale while Maps 3, 4, 6, and 7 have been printed at a slightly smaller scale - 1:27,750.) When stems numbers were low in a colony (< 50), the estimates can be considered to be fairly accurate counts. Some stems that lacked inflorescences at the time of discovery could have been male plants that had lost

their inflorescences; consequently the numbers of male plants may be underestimated while the number of sterile plants may be overestimated.

When this project was started, it was suspected that plants that did not have densely pubescent stems or leaflets or had virtually glabrous stems, but pubescent leaflets, were likely hybrids between *Rhus michauxii* and smooth sumac (*Rhus glabra*). Such colonies were originally identified on the map as "hybrids", limited colony data were collected, and only a single flagging was placed at the site of these assumed "hybrids". In February 1995, when preliminary results of electrophoresis studies on *Rhus* colonies at Fort Pickett showed little difference between these presumed "hybrids" and the more pubescent *Rhus michauxii* (Burke and Hamrick 1995), Fort Pickett personnel decided that all *Rhus* colonies found that had pubescent leaflets would be treated as *Rhus michauxii*. (A. Dyck, pers. comm.). As some of the colonies found in October 1994-January 1995 were originally thought to be "hybrids", the descriptions of these colonies lack some of the data such as the estimated number of stems and the estimated area over which the colony was found. Descriptions of the pubescence on the stems and leaflets are usually noted in the colony descriptions that follow.

In the winter of 1994-95 there were numerous fires within the Controlled Access Area at Fort Pickett. This resulted in some identification problems with the more glabrous-stemmed sumacs *(Rhus)*, because the fire destroyed the leaflets lying on the ground upon which a determination would have been made. When found, these colonies received a single flag; they have not been given a colony designation and they are not discussed within the report, but are identified on the accompanying maps as needing additional work to make a determination.

RESULTS

The surveys for new *Rhus michauxii* colonies reported here were conducted primarily from October 1994 through March 1995. Several additional colonies were located in June and September 1995 while one of the authors (Van Alstine) was conducting other field work at Fort Pickett.

The first section of the **RESULTS** includes information on the new colonies found by DCR personnel during 1994-95. These colonies are reported below by Training Area, Vested Hunting Area, or the Danger Unexploded Ordnance Area within which they are located. Each new colony has been assigned a sequential number linking it to a Training Area, Vested Hunting Area, or Danger Unexploded Ordnance Area. Information on each colony includes: a colony number; description of the location; observations on the pubescence of the stems and leaflets; estimates of the numbers of total, female, male, and sterile stems; the estimated area over which the colony was found; a brief habitat description; and a site visit chronology including the date(s) visited and the surveyor(s). Locations of the new colonies are shown on Maps 2, 3, and 4 in the Appendix. Several colonies found by Fort Pickett personnel while they were accompanying DCR staff on revisits to recent finds are reported here, too.

The second section of the **RESULTS** includes a summary of the areas surveyed for new Michaux's sumac colonies and whether new colonies were found. These are also reported by Training Area, Vested Hunting Area, or Danger Unexploded Ordnance Area. Survey routes are shown on Maps 5, 6, and 7 in the Appendix.

COLONIES OF *RHUS MICHAUXII* FOUND

A total of 74 colonies of Michaux's sumac with an estimated 7,800+ stems were found in 1994-95 in the course of this project, with 36 colonies containing 1,800+ stems in the Training Areas and Vested Hunting Areas outside the Controlled Access Area and 38 colonies containing 6,000+ stems within the Controlled Access Area.

Areas Outside the Controlled Access Area

The colonies found outside of the Controlled Access Area are reported below by Training Area or Vested Hunting Area.

Training Area 23

Eleven colonies of *Rhus michauxii* were found in TA 23 with six around Range 13 and five to the west of Range 18.

Range 13 Colonies

Six colonies of *Rhus michauxii* were found on the slopes to the south of Range 13 with Colonies 23-1 through 23-4 along the southeast-facing slope on the west side of the Tommeheton Creek tributary drainage and 23-5 and 23-6 on the slopes on the east side of the tributary drainage. Colonies 23-5 and 23-6 are close enough to each other that the location could be combined when a GPS (Global Positioning System) location is determined, but the data are reported separately here. Locations of these six colonies are shown on Map 2 in the Appendix.

COLONY 23-1

Location: Ca. 0.3 mi. SE of the Rt. 40 crossing of Tommeheton Creek, south of Range 13 and on a SE-facing slope along a Tommeheton Creek tributary. (Between colonies 23-2 and 23-3)

Stem and Leaflet Characteristics: Stems were glabrous, but leaflets found had slight pubescence. Smooth sumac (*Rhus glabra*) was also present and the stem count below may include some smooth sumac. Should be reinvestigated when leaves are present.

Estimated Number of Stems

Total	Female	Male	Sterile
Ca. 55	0	0	Ca. 55

Area: Ca. 880 sq. ft. (82 m^2)

Habitat Description: On a SE-facing, moderately steep, lower to mid- slope in cut-over/burned, scrubby, young growth including Sweetgum (*Liquidambar styraciflua*), American hazelnut (*Corylus americana*), and flowering dogwood (*Cornus florida*). Other associated species: broom-sedge (*Andropogon virginicus*), a blackberry (*Rubus* sp.), deer-tongue panic grass (*Dichanthelium clandestinum*).

Site Visit Chronology

1995-02-23 N.E. Van Alstine

COLONY 23-2

Location: Ca. 0.3 mi. SE of the Rt. 40 crossing of Tommeheton Creek, south of Range 13 and on a SE-facing slope along a Tommeheton Creek tributary. (Northeast of Colony 23-1)

Stem and Leaflet Characteristics: Stems were glabrous, but leaflets found were pubescent. Some stems were tall, resembling smooth sumac (*Rhus glabra*) more than the typical *Rhus michauxii* stems.

Estimated Number of Stems

Total	Female	Male	Sterile
28	0	0	28

Area: Ca. 1200 sq. ft. (111 m^2)

Habitat Description: On a SE-facing, gentle, midslope in cut-over/burned, scrubby young growth including sweetgum (*Liquidambar styraciflua*), sycamore (*Platanus occidentalis*), and American hazelnut (*Corylus americana*). Other associated species: broom-sedge (*Andropogon virginicus*), panic grasses (*Dichanthelium* spp.), sericea bushclover (*Lespedeza cuneata*).

Site Visit Chronology

1995-02-23 N.E. Van Alstine

COLONY 23-3

Location: Ca. 0.35 mi. SE of the Rt. 40 crossing of Tommeheton Creek, south of Range 13 and on a SE-facing slope along a Tommeheton Creek tributary. (Between Colonies 23-1 and 23-4)

Stem and Leaflet Characteristics: Stems were glabrous, but leaflets were pubescent.

Estimated Number of Stems

Total	Female	Male	Sterile
5	0	0	5

Area: Ca. 500 sq. ft. (46 m^2)

Habitat Description: In a canopy opening on a SE-facing lower slope in scrubby young hardwoods including tulip-tree (*Liriodendron tulipifera*), sweetgum (*Liquidambar styraciflua*), and American hazelnut (*Corylus americana*). Other associated species: deer-tongue panic grass (*Dichanthelium clandestinum*).

Site Visit Chronology

1995-02-23 N.E. Van Alstine

COLONY 23-4

Location: Ca. 0.35 mi. SE of the Rt. 40 crossing of Tommeheton Creek, south of Range 13 and on a SE-facing slope along a Tommeheton Creek tributary.

Stem and Leaflet Characteristics: Stems were glabrous, but leaflets were pubescent.

Estimated Number of Stems

Total	Female	Male	Sterile
11	0	0	11

Area: 300 sq. ft. (28 m^2)

Habitat Description: On a lower, SE-facing, moderately steep slope under a canopy of older tulip-tree (*Liriodendron tulipifera*) and sycamore (*Platanus occidentalis*), younger sweetgum (*Liquidambar styraciflua*), American hazelnut (*Corylus americana*), and American beech (*Fagus grandifolia*). Evidence of old soil disturbance was present as well as evidence of beaver activity.

Site Visit Chronology

1995-02-23 N.E. Van Alstine

COLONY 23-05

Location: Ca. 0.4 mi. SE of the Rt. 40 crossing of Tommeheton Creek, south of Range 13 on a west-facing slope along a Tommeheton Creek tributary.

Stem and Leaflet Characteristics: Stems were glabrous, but leaflets were pubescent.

Estimated Number of Stems

Total	Female	Male	Sterile
Ca. 100	0	0	Ca. 100

Area: Ca. 600 sq. ft. (56 m^2)

Habitat Description: On a cut-over/burned, scrubby, gentle, upper slope of NW to SW-facing aspect. Soil disturbance was present. Young trees included sweetgum (*Liquidambar styraciflua*), sycamore (*Platanus occidentalis*), mockernut hickory (*Carya tomentosa*), and white oak (*Quercus alba*). Other associated species: sericea bushclover (*Lespedeza cuneata*), beardgrasses (*Andropogon* spp.), little bluestem (*Schizachyrium scoparium*), and redtop (*Tridens flavus*).

Site Visit Chronology

1995-02-23 N.E. Van Alstine
1995-03-27 N.E. Van Alstine

COLONY 23-06
Location: Ca. 0.4 mi. SE of the Rt. 40 crossing of Tommeheton Creek, south of Range 13 on a west-facing slope along a Tommeheton Creek tributary. (East of Colony 23-5)

Stem and Leaflet Characteristics: Pubescent stems and leaflets were present.

Estimated Number of Stems

Total	Female	Male	Sterile
Ca. 379	130	9	240

Area: Ca. 1100 sq. ft. (102 m^2)

Habitat Description: In a trail, on soil berms, and in the adjacent cut-over/burned scrub on slopes of variable aspect. Associated trail species included beardgrass (*Andropogon gyrans*), sericea bushclover (*Lespedeza cuneata*), and spotted knapweed (*Centaurea maculosa*). Associated scrub species included sweetgum (*Liquidambar styraciflua*), a hickory (*Carya* sp.), flowering dogwood (*Cornus florida*), sycamore (*Platanus occidentalis*), winged sumac (*Rhus copallinum*), a blackberry (*Rubus* sp.), goldenrods (*Solidago* spp.), and beardgrass (*Andropogon gyrans*).

Site Visit Chronology
1995-03-27 N.E. Van Alstine

Range 18 Colonies

Five colonies of *Rhus michauxii* (23-7 to 23-11) were found on slopes to the west of Range 18. The locations of these colonies are shown on Map 2 in the Appendix. There was much appropriate habitat present to the west of Range 18 and there are probably more colonies of *Rhus michauxii* present in the area.

COLONY 23-7
Location: In a NE-facing ravine ca. 0.2 mi. WNW of the easternmost section of Range 18.

Stem and Leaflet Characteristics: Light pubescence on some stems and leaflets were pubescent.

Estimated Number of Stems

Total	Female	Male	Sterile
14	0	0	14

Area: Ca. 180 sq. ft. (17 m^2)

Habitat Description: In a burned/cut-over hardwood woodland with scrubby undergrowth in a NE-trending, gently sloping, upper ravine. Down slope from a fire break. Tulip-tree (*Liriodendron tulipifera*), northern red oak (*Quercus rubra*), royal paulownia (*Paulownia tomentosa*), red maple (*Acer rubrum*) trees ca. 30 yrs old in the upper canopy. Young trees and shrubs included tulip-tree,

mockernut hickory (*Carya tomentosa*), flowering dogwood (*Cornus florida*), and American holly (*Ilex opaca*). Other associated species: tick-trefoils (*Desmodium* spp.), broad-leaf ironweed (*Vernonia glauca*), Bosc's panic grass (*Dichanthelium boscii*).

Site Visit Chronology
1995-03-06 N.E. Van Alstine

COLONY 23-8
Location: In a NE-facing, upper ravine bottom ca. 0.2 mi. WNW of the easternmost section of Range 18. (Ca. 50 ft. north of Colony 23-7)

Stem and Leaflet Characteristics: Stems were fairly glabrous, leaflets were pubescent.

Estimated Number of Stems

Total	Female	Male	Sterile
12	0	0	12

Area: 130 sq. ft. (12 m^2)

Habitat Description: In a burned/cut-over hardwood woodland with scrubby undergrowth in a NE-trending, gently sloping, upper ravine. Associated with an old firebreak/road. Older canopy (30-40 yrs. old) of mixed hardwoods - red oak (*Quercus rubra*), white oak (*Quercus alba*), tulip-tree (*Liriodendron tulipifera*). Young trees included tulip-tree, sweetgum (*Liquidambar styraciflua*), flowering dogwood (*Cornus florida*), and mockernut hickory (*Carya tomentosa*). Other associated species: Bosc's panic grass (*Dichanthelium boscii*), broom-sedge (*Andropogon virginicus*), and a tick-trefoil (*Desmodium* sp.).

Site Visit Chronology
1995-03-06 N.E. Van Alstine

COLONY 23-9
Location: On an ENE-facing slope ca. 0.25 mi. west of the easternmost section of Range 18. (Located on the slope to the west of the ravine bottom with Colonies 23-7 and 23-8)

Stem and Leaflet Characteristics: Stems were fairly glabrous, but hairs were present on some; leaflets were in poor condition and it was difficult to tell if they were pubescent. This colony should be revisited when leaves have emerged.

Estimated Number of Stems

Total	Female	Male	Sterile
7	0	0	7

Area: Ca. 30 sq. ft. (2.7 m^2)

Habitat Description: On an ENE-facing slope in a burned/cut-over scrubby young

hardwood woodland including hickory (*Carya* sp.), white oak (*Quercus alba*), and red oak (*Q. rubra*). Other associated species: broom-sedge (*Andropogon virginicus*), great mullein (*Verbascum thapsus*), a tick-trefoil (*Desmodium* sp.). Near a trail and a firebreak.

Site Visit Chronology
1995-03-06 N.E. Van Alstine

COLONY 23-10

Location: On a NW-facing slope ca. 0.25 mi. west of the easternmost section of Range 18. (Near a Controlled Access Area boundary sign and ca. 250 ft. south of Colony 23-09)

Stem and Leaflet Characteristics: Stems were young and very pubescent.

Estimated Number of Stems

Total	Female	Male	Sterile
28	0	0	28

Area: Ca. 120 sq. ft. (11 m^2)

Habitat Description: In a scrubby, burned, oak-hickory woodland in a midslope level area. Adjacent to a trail or firebreak. Older trees consisted of hickory (*Carya* sp.), white oak (*Quercus alba*), and tulip-tree (*Liriodendron tulipifera*). Young trees and shrubs include hickory, oaks, tulip-tree, and smooth sumac (*Rhus glabra*). Other associated species: sericea bushclover (*Lespedeza cuneata*), beardgrass (*Andropogon gyrans*), a tick-trefoil (*Desmodium* sp.).

Site Visit Chronology
1995-03-06 N.E. Van Alstine

COLONY 23-11

Location: On a knoll ca. 0.2 mi. west of the easternmost section of Range 18 and ca. 200 ft. the to west of the end of the mowed portion of Range 18. (Ca. 140 ft. southeast and uphill from Colony 23-10)

Stem and Leaflet Characteristics: Some stems were glabrous with pubescent leaflets, while other plants had both pubescent stems and leaflets.

Estimated Number of Stems

Total	Female	Male	Sterile
23	2	1	20

Area: Ca. 200 sq. ft. (19 m^2)

Habitat Description: On soil berms on the side of an old road through a scrubby oak-hickory woodland on a rocky knoll. Oaks (*Quercus* spp.) in the older canopy and young trees and shrubs including oaks, a hickory (*Carya* sp.), and smooth sumac (*Rhus glabra*). Other associated species: broom-sedge (*Andropogon*

virginicus), woolly plumegrass (*Erianthus alopecuroides*), sericea bushclover (*Lespedeza cuneata*), and a panic grass (*Dichanthelium* sp.).

Site Visit Chronology
1995-03-06 N.E. Van Alstine
1995-03-16 N.E. Van Alstine

Vested Hunting Area 32

Ten colonies of *Rhus michauxii* were found in Vested Hunting Area 32 located south of Birchin Creek and the Controlled Access Area, north of Wilcox Road, and east of Pelham Road. The area was not completely surveyed so additional colonies probably are present. The locations of the ten colonies are shown on Map 3 in the Appendix. Also shown on Map 3 are two unnamed colonies which contained glabrous-stemmed *Rhus* that could not be identified due recent fires that destroyed the leaflets; these two *Rhus* colonies need to be revisited after leaves emerge so that identifications can be made.

COLONY 32-1
Location: On the roadbank on the north side of Wilcox Road ca. 0.15 mi. ESE of the intersection of Pendlet and Wilcox Roads.

Stem and Leaflet Characteristics: Stems were glabrous, but the leaflets were pubescent.

Estimated Number of Stems

Total	Female	Male	Sterile
108	38	0	70

Area: Ca. 5400 sq. ft. (501 m^2)

Habitat Description: Recently burned, mixed hardwood and pine scrub on a roadbank and continuing on the level area to the north. Young trees and shrubs included sweetgum (*Liquidambar styraciflua*), unidentifiable, burned young hardwood tree species, loblolly pine (*Pinus taeda*), and winged sumac (*Rhus copallinum*). Other associated species: a blackberry (*Rubus* sp.), grasses, spotted knapweed (*Centaurea maculosa*). Some of the stems are growing at the road-grading line on the bank. A trail parallel to Wilcox Road splits the colony.

Site Visit Chronology
1994-12-06 N.E. Van Alstine
1995-03-13 N.E. Van Alstine

COLONY 32-2

Location: On a NW-facing slope ca. 0.4 mi. east of the intersection of Wilcox and Pelham Roads, south to the soil berms near Wilcox Road, and continuing in scattered groups along ca. 200 ft. of soil berms at tree line on the north side of Wilcox Road.

Stem and Leaflet Characteristics: Most of the stems in this area were glabrous with pubescent leaflets. Some stems on the roadside berms were pubescent.

Estimated Number of Stems

Total	Female	Male	Sterile
104	25	30	49

About 3/4 of the stems are on the slope extending from the soil berms near the road back in for ca. 115 ft.

Area: Ca. 4500 sq. ft. (418 m^2)

Habitat Description: The *Rhus michauxii* stems on the slope were found in openings in a mixed loblolly pine (*Pinus taeda*) and hardwood woodland-- southern red oak (*Quercus falcata*), mockernut hickory (*Carya tomentosa*), sweetgum (*Liquidambar styraciflua*) with young trees including sweetgum, flowering dogwood (Cornus *florida*), mockernut hickory, and loblolly pine. Shrubs included winged sumac (*Rhus copallinum*) and smooth sumac (*Rhus glabra*). Other associated species: little bluestem (*Schizachyrium scoparium*), beardgrass (*Gymnopogon ambiguus*), Indian grass (*Sorghastrum nutans*), beardgrasses (*Andropogon* spp.), and a tick-trefoil (*Desmodium* sp.). Pine needle litter dominated the ground layer. The soil berms paralleling the road are from an old road grading event. These disturbed soil mounds supported young sweetgum, winged sumac, sericea bushclover (*Lespedeza cuneata*), and little bluestem.

Site Visit Chronology

1995-01-30 N.E. Van Alstine

COLONY 32-3

Location: On a SE-facing slope ca. 0.4 mi. NE of the intersection of Pelham and Wilcox Roads, just NW of where two small ravines join and ca. 120 ft. east of Pelham Road.

Stem and Leaflet Characteristics: Stems were glabrous, but leaflets were pubescent.

Estimated Number of Stems

Total	Female	Male	Sterile
41	5	0	36

Area: Ca. 600 sq. ft. (56 m^2)

Habitat Description: On vegetated soil berms supporting woolly plumegrass (*Erianthus alopecuroides*), Japanese honeysuckle (*Lonicera japonica*), panic

grasses (*Dichanthelium* spp.), and winged sumac (*Rhus copallinum*). The berms are on a SE-facing slope within breaks in the canopy of the previously burned, woodland of mixed hardwoods-- white oak (*Quercus alba*) and tulip-tree (*Liriodendron tulipifera*).

Site Visit Chronology
1995-02-17 N.E. Van Alstine

COLONY 32-4
Location: On an ESE-facing slope ca. 0.5 mi. NE of the intersection of Pelham and Wilcox Roads.

Stem and Leaflet Characteristics: Stems were glabrous, but leaflets were pubescent. Smooth sumac (*Rhus glabra*) was present, and some young stems may have been smooth sumac rather than Michaux's sumac.

Estimated Number of Stems

Total	Female	Male	Sterile
20	7	0	13

Area: Ca. 500 sq. ft. (46 m^2)

Habitat Description: A scrubby opening in a mixed woodland of older (ca. 30 yrs.) hardwoods--white oak (*Quercus alba*), mockernut hickory (*Carya tomentosa*)-- and loblolly pine (*Pinus taeda*) on an ESE-facing slope. Evidence of past fires was present.

Site Visit Chronology
1995-02-17 N.E. Van Alstine

COLONY 32-5
Location: On a NW-facing slope ca. 0.6 mi. NE of the intersection of Pelham and Wilcox Roads and 0.1 mi. south of the Pelham Road crossing of Birchin Creek.

Stem and Leaflet Characteristics: Stems were young and pubescent.

Estimated Number of Stems

Total	Female	Male	Sterile
10	0	0	10

Area: Ca. 360 sq. ft. (33 m^2)

Habitat Description: In scrubby young growth on soil berms and in canopy openings within young (< 25 years old) hardwoods-- oaks (*Quercus* spp.), sweetgum (*Liquidambar styraciflua*), mockernut hickory (*Carya tomentosa*)-- on an upper, NW-facing slope. Young trees and shrubs included flowering dogwood (*Cornus florida*), oaks, sweetgum, and American hazelnut (*Corylus americana*). Other associated species: Christmas fern (*Polystichum acrostichoides*), black raspberry (*Rubus occidentalis*), Japanese honeysuckle (*Lonicera japonica*), and a panic grass

(*Dichanthelium* sp.). The soil has undergone past disturbance over much of the area. What appears to be an old homesite lies to the northeast.

Site Visit Chronology
1995-02-17 N.E. Van Alstine

COLONY 32-6
Location: North of OP3 on a N to NW-facing slope ca. 0.4 mi. NNW of the intersection of Wilcox Road and the road into OP3.

Stem and Leaflet Characteristics: Stems were pubescent.

Estimated Number of Stems

Total	Female	Male	Sterile
51	8	0	43

Area: Ca. 1000 sq. ft. (93 m^2)

Habitat Description: On a N to NW-facing, upper slope in a scrubby hardwood-dominated woodland subjected to ordnance-caused fire and soil disturbance. Young canopy probably less than 25 years old of oaks (*Quercus* spp.) with younger post oak (*Quercus stellata*), a hickory (*Carya* sp.), loblolly pine (*Pinus taeda*), and sweetgum (*Liquidambar styraciflua*). Other associated species: winged sumac (*Rhus copallinum*), smooth sumac (*Rhus glabra*), beardgrass (*Andropogon gyrans*), woolly plumegrass (Erianthus *alopecuroides*), Japanese honeysuckle (*Lonicera japonica*), and sericea bushclover (*Lespedeza cuneata*).

Site Visit Chronology
1995-03-13 N.E. Van Alstine

COLONY 32-7
Location: North of OP3 on a NE-facing slope ca. 0.4 mi. NNW of the intersection of Wilcox Road and the road into OP3. (Ca. 140 ft. to the NE and down slope from Colony 32-6)

Stem and Leaflet Characteristics: Stems were short and pubescent.

Estimated Number of Stems

Total	Female	Male	Sterile
16	0	0	16

Area: Ca. 80 sq. ft. (7.4 m^2)

Habitat Description: On a NE-facing slope with scrubby, mixed woodland of hickory (*Carya* sp.) and loblolly pine (*Pinus taeda*) (< 15 years old in the canopy) subjected to ordnance-caused fire and soil disturbance. Younger trees and shrubs included flowering dogwood (*Cornus florida*), winged sumac (*Rhus copallinum*), hickory (*Carya* sp.). Other associated species: beardgrasses (*Andropogon* spp.), beardgrass (*Gymnopogon ambiguus*), Japanese honeysuckle

(*Lonicera japonica*), sericea bushclover (*Lespedeza* cuneata), woolly plumegrass (*Erianthus* alopecuroides), and little bluestem (*Schizachyrium scoparium*).

Site Visit Chronology
1995-03-13 N.E. Van Alstine

COLONY 32-8
Location: North of OP3 on a NE-facing slope ca. 0.35 mi. NW of the intersection of Wilcox Road and the road into OP3. (Ca. 50 ft. east of Colony 32-6)

Stem and Leaflet Characteristics: Some of plants had pubescent stems and leaflets, but probably more plants had glabrous stems and pubescent leaflets.

Estimated Number of Stems

Total	Female	Male	Sterile
Ca. 300	0	0	Ca. 300

Area: Ca. 4800 sq. ft. (446 m^2)

Habitat Description: NE to E-facing slope with a scrubby hardwood-dominated woodland subjected to ordnance-caused fire and soil disturbance. Older trees (perhaps 20 years old) included hickory (*Carya* sp.) and younger trees and shrubs included hickory, tulip-tree (*Liriodendron tulipifera*), blackberry (*Rubus* spp.), smooth sumac (*Rhus glabra*), winged sumac (*R. copallinum*), sweetgum (*Liquidambar styraciflua*), and devil's walkingstick (*Aralia spinosa*). Other associated species: woolly plumegrass (*Erianthus alopecuroides*), Japanese honeysuckle (*Lonicera japonica*), beardgrass (*Andropogon gyrans*), and sericea bushclover (*Lespedeza cuneata*).

Site Visit Chronology
1995-03-29 N.E. Van Alstine

COLONY 32-9
Location: On a NE-facing slope ca. 0.5 mi. north of the intersection of Wilcox Road and the road into OP3.

Stem and Leaflet Characteristics: Stems were glabrous but there was some pubescence on the leaflets.

Estimated Number of Stems

Total	Female	Male	Sterile
10	0	0	10

Area: ca. 1100 sq. ft. (102 m^2)

Habitat Description: Mostly on soil berms on a NE-facing slope in a scrubby hardwood-dominated woodland. One young pubescent stem was found up slope from a berm. Site had recently burned. Canopy was young (20-25 yrs.) and included sweetgum (*Liquidambar styraciflua*) and tulip-tree (*Liriodendron tulipifera*).

Younger trees and shrubs included hickory (*Carya* sp.), loblolly pine (*Pinus taeda*),sweetgum, devil's walkingstick (*Aralia spinosa*), and winged sumac (*Rhus copallinum*). Other associated species: Christmas fern (*Polystichum acrostichoides*), a panic grass (*Dichanthelium* sp.), and broom-sedge (*Andropogon virginicus*).

Site Visit Chronology
1995-03-29 N.E. Van Alstine

COLONY 32-10
Location: On a NW-facing ridge top ca. 0.45 mi. north of the intersection of Wilcox Road and the road into OP3.

Stem and Leaflet Characteristics: Stems were mostly very pubescent with pubescent leaflets, but some stems were much less pubescent to glabrous, but with pubescent leaflets.

Estimated Number of Stems

Total	Female	Male	Sterile
52	0	9	43

Area: Data not recorded.

Habitat Description: Small, ridge top, scrubby opening in surrounding oak-pine canopy, associated with an old stone wall. Surrounding older trees were ca. 30 years old and included oaks (*Quercus* spp.), loblolly pine (*Pinus taeda*), and Virginia pine (*Pinus virginiana*). Young trees and shrubs in the opening included hickory (*Carya*. sp.), American holly (*Ilex opaca*), devil's walkingstick (*Aralia spinosa*), winged sumac (*Rhus copallinum*), and a blackberry (*Rubus* sp.). Other associated species: woolly plumegrass (*Erianthus alopecuroides*), a thoroughwort (*Eupatorium* sp.), sericea bushclover (*Lespedeza cuneata*), and Indian hemp (*Apocynum cannabinum*). The surrounding area burned recently, but this scrubby "island" did not. Associated with an old homesite.

Site Visit Chronology
1995-03-29 N.E. Van Alstine

Training Area 33

Six colonies of *Rhus michauxii* were found in Training Area 33, located on the far east side of the Fort between Lake Road and Birchin Creek. These six colonies, shown on Map 3 in the Appendix, are all in the vicinity of OP6.

COLONY 33-1

Location: Ca. 200 ft. west of the observation tower at OP6, immediately south of the dirt road running to the west from the tower.

Stem and Leaflet Characteristics: Stems were not densely pubescent, but had a few hairs, and the leaflets were pubescent.

Estimated Number of Stems

Total	Female	Male	Sterile
10	0	0	10

Area: Ca. 224 sq. ft. (21 m^2)

Habitat Description: A mowed field on a gentle, W-facing slope. Associated species: redtop (*Tridens flavus*), a beardgrass (*Andropogon* sp.), sericea bushclover (*Lespedeza cuneata*), winged sumac (*Rhus copallinum*), a blackberry (*Rubus* sp.), and spotted knapweed (*Centaurea maculosa*).

Site Visit Chronology

1994-10-27 N.E. Van Alstine
1994-11-15 N.E. Van Alstine, J. Proffitt, V. Emrick

COLONY 33-2

Location: On slopes of variable aspect ca. 0.2 mi.-0.25 mi. west of the OP6 tower.

Stem and Leaflet Characteristics: The degree of stem pubescence was variable, but leaflets were pubescent.

Estimated Number of Stems

Total	Female	Male	Sterile
107	71	2(?)	42

Area: Ca. 1 acre (0.4 hectare)

Habitat Description: Aspect varies from S-facing, ridge top, to NW, N and NE-facing. Variability in the habitat, but open to scrubby under scattered oak-hickory woodland subjected to periodic burning, but not recently burned. Tree and shrub species included mockernut hickory (*Carya tomentosa*), white oak (*Quercus alba*), black oak (*Quercus velutina*), southern red oak (*Quercus falcata*), tulip-tree (*Liriodendron tulipifera*), and winged sumac (*Rhus copallinum*). Also present was long-bristled Indian grass (*Sorghastrum elliottii*). Rocky on the S-facing slope. Weedy on the N-facing slope with Japanese honeysuckle (*Lonicera japonica*) and black raspberry (*Rubus* occidentalis).

Site Visit Chronology
1994-10-27 N.E. Van Alstine
1994-11-09 N.E. Van Alstine
1994-11-15 N.E. Van Alstine, J. Proffitt, V. Emrick

COLONY 33-3

Location: On a N-facing slope, ca. 0.3 mi. west of the observation tower at OP6.

Stem and Leaflet Characteristics: Stems were sparsely pubescent, but leaflets were pubescent. Included tall-stemmed plants.

Estimated Number of Stems

Total	Female	Male	Sterile
32*	23	0	9

*There were also some plants (fewer than 25) with stems that looked like smooth sumac (*Rhus glabra*), but no leaflets were present to check for pubescence.

Area: Ca. 0.3 acre (0.12 hectare)

Habitat Description: Predominately oak-hickory woodland on a NW-facing, mid to upper slope with less young growth than in Colony 33-2. Loblolly pine (*Pinus taeda*) was down slope. A few exposed rocks were present.

Site Visit Chronology
1994-11-09 N.E. Van Alstine
1994-11-15 N.E. Van Alstine, J. Proffitt, V. Emrick

COLONY 33-4

Location: On a NW-facing slope ca. 0.35 mi. west of the observation tower at OP6.

Stem and Leaflet Characteristics: Stems were not very pubescent, but leaflets were pubescent.

Estimated Number of Stems

Total	Female	Male	Sterile
56	44	0	12

Area: Ca. 1700 sq. ft. (160 m^2)

Habitat Description: Scrubby, somewhat weedy, oak-hickory woodland on a NW-facing, upper slope. The more mature trees were white oak (*Quercus alba*). Other species included mockernut hickory (*Carya tomentosa*), winged sumac (*Rhus copallinum*), goldenrods (*Solidago* spp.), Japanese honeysuckle (*Lonicera japonica*), great mullein (*Verbascum thapsus*), and black raspberry (*Rubus occidentalis*). Associated with an old homesite.

Site Visit Chronology
1994-11-09 N.E. Van Alstine
1994-11-15 N.E. Van Alstine, J. Proffitt, V. Emrick

COLONY 33-5
Location: On a W-facing slope ca. 0.4 mi. W of the observation tower at OP6.

Stem and Leaflet Characteristics: Thought to be a hybrid colony at time of discovery (stems were not very pubescent).

Estimated Number of Stems

Total	Female	Male	Sterile
12	12	0	0

Area: Data not collected.

Habitat Description: Oak-hickory scrub on a gentle, lower, W-facing slope. White oak (*Quercus alba*), winged sumac (*Rhus copallinum*), smooth sumac (*Rhus glabra*), Japanese honeysuckle (*Lonicera japonica*).

Site Visit Chronology
1994-11-09 N.E. Van Alstine
1994-11-15 N.E. Van Alstine, J. Proffitt, V. Emrick

COLONY 33-6
Location: On a SW-facing slope, ca. 0.1 mi. SW of the observation tower at OP6.

Stem and Leaflet Characteristics: Stems had varying degrees of pubescence, but leaflets found were pubescent. Thought to be a hybrid colony at the time of discovery so the site was flagged, but only limited data were collected. Needs to be rechecked when leaves have emerged.

Estimated Number of Stems
Total
50-75

Area: Ca. 2800 sq. ft. (252 m^2)

Habitat Description: SW-facing wooded slope associated with an old homesite and old township road. Oaks (*Quercus* spp.), tulip-tree (*Liriodendron tulipifera*), woolly plumegrass (*Erianthus alopecuroides*), redtop (*Tridens flavus*), winged sumac (*Rhus copallinum*), smooth sumac (*Rhus glabra*). Rocks clustered at the top of the slope.

Site Visit Chronology
1994-11-15 J. Proffitt, V. Emrick, N.E. Van Alstine

Training Area 47

Training Area 47 is located south of Wilcox Road and North of the Nottoway River. Two colonies of *Rhus michauxii* were found in the southeastern section of the Training Area, west of Pendlet Road and south of Gettysburg Road. The locations of these colonies are shown on Map 3 in the Appendix.

COLONY 47-1

Location: Ca. 0.25 mi. south of the intersection of Gettysburg and Pendlet Roads, 70 ft. west of Pendlet Road.

Stem and Leaflet Characteristics: Stems were mostly glabrous, but a few had some fine hairs. Leaflets found were pubescent. Originally thought to be a hybrid colony. Stems were tall for *Rhus michauxii*.

Estimated Number of Stems

Total	Female	Male	Sterile
50-75	50-75	0	0

Area: 1500 sq. ft. (140 m^2)

Habitat Description: Scrubby, weedy area with American hazelnut (*Corylus americana*), a blackberry (*Rubus* sp.), Japanese honeysuckle (*Lonicera japonica*).

Site Visit Chronology

1994-11-22 N.E. Van Alstine
1994-12-01 N.E. Van Alstine

COLONY 47-2

Location: Ca. 0.2 mi. south of the intersection of Gettysburg and Pendlet Roads, ca. 200 ft. west of Pendlet Road.

Stem and Leaflet Characteristics: Stems had variable degrees of pubescence. Leaflets were pubescent.

Estimated Number of Stems

Total	Female	Male	Sterile
12	11	0	1

Area: Ca. 340 sq. ft. (32 m^2)

Habitat Description: A weedy, scrubby opening on a gentle S-facing slope on the edge of and to the east of an old trail. Young trees included sweetgum (*Liquidambar styraciflua*) and loblolly pine (*Pinus taeda*). Deer-tongue panic grass (*Dichanthelium clandestinum*) was dense in places, covering up some of the Michaux's sumac stems. Other associated species: a blackberry (*Rubus* sp.), great mullein (*Verbascum thapsus*), shrubby bushclover (*Lespedeza bicolor*), Japanese honeysuckle (*Lonicera japonica*), goldenrods (*Solidago* spp.), Indian grass (*Sorghastrum nutans*), redtop (*Tridens flavus*), and others.

Site Visit Chronology

1994-12-01 N.E. Van Alstine

Training Area 48

Training Area 48 is located on the southeastern section of Fort Pickett, between Wilcox Road and the Nottoway River. Six colonies of *Rhus michauxii* were found in this Training Area and their locations are shown on Map 3 in the Appendix. All of the colonies except Colony 48-6 were originally identified as "hybrids".

COLONY 48-1

Location: Along a trail mid-slope on the east side of a drainage, west side of a cleared area, and ca. 0.2 mi. SE of the intersection of Gettysburg and Pendlet Roads.

Stem and Leaflet Characteristics: Thought to be a hybrid colony (a few plants?) when discovered. Flagged and only limited data were collected. Colony should be surveyed.

Habitat Description: On a scrubby, west-facing slope.

Site Visit Chronology
1994-12-06 N.E. Van Alstine

COLONY 48-2

Location: In an old homesite on a W-facing, upper slope ca. 0.2 mile SE of the intersection of Gettysburg and Pendlet Roads.

Stem and Leaflet Characteristics: Stems had a few, fine hairs. Thought to be hybrids at time of discovery so the site was flagged, but limited data were collected. Colony should be resurveyed.

Habitat Description: Old homesite with dense areas of Japanese honeysuckle (*Lonicera japonica*) and riveroats *(Chasmanthium latifolium*).

Site Visit Chronology
1994-12-06 N.E. Van Alstine

COLONY 48-3

Location: Ca. 0.2 mi. SE of the intersection of Gettysburg and Pendlet Roads.

Stem and Leaflet Characteristics: Thought to be a hybrid colony at the time of discovery so the area was flagged, but limited data were recorded.

Habitat Description: Part of an old homesite area. Young loblolly pine (*Pinus taeda*), redtop (*Tridens flavus*), Queen Anne's lace (*Daucus carota*), winged sumac (*Rhus copallinum*).

Site Visit Chronology
1994-12-06 N.E. Van Alstine

COLONY 48-4

Location: Ca. 0.4 mi. ESE of the intersection of Wilcox and Longstreet Roads on the east edge of a field.

Stem and Leaflet Characteristics: Stems were glabrous, but leaflets found had some hairs. Thought to be a hybrid colony at the time of discovery, so site was flagged, but limited data were collected. Site should be resurveyed

Habitat Description: Area of dense Japanese honeysuckle (*Lonicera japonica*)and a blackberry (*Rubus* sp.) on the edge of a spotted knapweed (*Centaurea maculosa*)-dominated field.

Site Visit Chronology

1994-12-08 N.E. Van Alstine

COLONY 48-5

Location: Ca. 0.2 mi. SE of the intersection of Wilcox and Longstreet Roads, associated with an old homesite.

Stem and Leaflet Characteristics: A few glabrous stems were present with pubescent leaflets. Thought to be a hybrid at the time of discovery, so the site was flagged, but limited data were recorded. Site should be resurveyed.

Habitat Description: In the open on an upper, W-facing slope with redtop (*Tridens flavus*) and Japanese honeysuckle (*Lonicera japonica*).

Site Visit Chronology

1994-12-08 N.E. Van Alstine

COLONY 48-6

Location: Ca. 0.4 mi. SE of the intersection of Wilcox and Longstreet Roads, immediately to the east of a scraped ridge top and ca. 50 ft. south of an unnamed road.

Stem and Leaflet Characteristics: Stem pubescence was variable, from densely pubescent to a few hairs.

Estimated Number of Stems*

Total	Female	Male	Sterile
112	88	0	24

*Also present, but not included in the stem count, were much less pubescent stems with pubescent leaflets that on the visit date were being considered as "hybrids". These were mainly seen immediately to north and south of area with the more pubescent stems.

Area: Ca. 2200 sq. ft. (204 m^2)

Habitat Description: On an E-facing, upper slope and at the top of a slope in a cut-over area with young loblolly pine (*Pinus taeda*), eastern redcedar (*Juniperus virginiana*), sericea bushclover (*Lespedeza cuneata*), Japanese honeysuckle (*Lonicera japonica*), redtop (*Tridens flavus*), and a blackberry (Rubus sp.).

Site Visit Chronology
1994-12-13 N.E. Van Alstine

Training Area 50

Training Area 50 is located in the southwestern corner of Fort Pickett on the south side of the Nottoway River. This Training Area was not targeted for surveys and this colony was found while other field work was being conducted. The location of this single colony is shown on Map 4 in the Appendix.

COLONY 50-1
Location: On the roadbank on the east side of an unnamed road ca. 0.7 mi. SE of the Rt. 46 crossing of the Nottoway River and 0.3 mi. east of Rt. 46.

Stem and Leaflet Characteristics: Stems had a few hairs and the leaflets were pubescent.

Estimated Number of Stems

Total	Female	Male	Sterile
16	0	0	16

Area: Ca. 640 sq. ft. (59 m^2)

Habitat Description: Weedy, periodically bush-hogged, W-facing roadbank with young sweetgum (*Liquidambar styraciflua*), privet(*Ligusticum* sp.), sericea bushclover (*Lespedeza cuneata*), a blackberry (*Rubus* sp.), poison ivy (*Toxicodendron radicans*), field garlic (*Allium vineale*), and winged sumac (*Rhus copallinum*).

Site Visit Chronology
1995-06-27 N.E. Van Alstine, M. Barnett-Lawrence
1995-10-16 N.E. Van Alstine

Areas Within the Controlled Access Area

These colonies are reported by Vested Hunting Area or by the Danger Unexploded Ordnance area.

Vested Hunting Area 20

This Vested Hunting Area is located in the northwestern section of the Controlled Access Area. Two colonies of *Rhus michauxii* were found here and their locations are shown on Map 2 in the Appendix.

COLONY 20-1

Location: On a N-facing slope overlooking a Tommeheton Creek tributary, ca. 0.35 mi. south of the intersection of Rt. 40 and Beaver Trail.

Stem and Leaflet Characteristics: Stems were glabrous and leaflets were pubescent. Originally thought to be a hybrid so a single flagging was placed at the site, but limited data were recorded.

Habitat Description: North-facing slope with scrubby young trees. Oaks (*Quercus* spp.), hickory (*Carya* sp.), sweetgum (Liquidambar *styraciflua*), winged sumac (*Rhus copallinum*).

Site Visit Chronology
1994-12-20 N.E. Van Alstine

COLONY 20-2

Location: Ca. 0.65 mi. NW of the intersection of Cherry Tree and Shacks Hole Roads and ca. 0.15 mi. east of Cherry Tree Road.

Stem and Leaflet Characteristics: Probably one very finely pubescent plant. Thought to be a hybrid at the time of discovery, so a single flagging was placed at the site, but limited data were collected.

Habitat Description: In a grassy area of beardgrasses (*Andropogon* spp.) and woolly plumegrass (*Erianthus alopecuroides*) with scattered young oak scrub under a canopy of mature tulip-trees (*Liriodendron tulipifera*) and sweetgum (*Liquidambar styraciflua*).

Site Visit Chronology
1995-01-04 N.E. Van Alstine

Vested Hunting Area 24

This Vested Hunting Area lies northwest of Tommeheton Lake and on the south side of Tommeheton Creek. Only the area west of Target Road was surveyed in Vested Hunting Area 24. Six colonies of *Rhus michauxii* were found in this area and their locations are shown on Map 2 in the Appendix. Much of the area had recently burned and there was one colony (shown on Map 2) with glabrous stems, but with no leaflets present to make a determination if it was *Rhus michauxii* or smooth sumac (*R. glabra*); this colony should be revisited when leaves are out. Colonies 24-3 and 24-6 were merged when the GPS location was determined, but the data are reported separately here.

COLONY 24-1

Location: On an east-facing slope ca. 0.3 mi. north of the intersection of Shacks Hole and Target Roads.

Stem and Leaflet Characteristics: Stems were pubescent. Glabrous stems were also present, but no identification could be made on those stems at the time of discovery because a recent fire had destroyed all of the leaflets.

Estimated Number of Stems *

Total	Female	Male	Sterile
43	3	10	30

* Another 50 stems (half were fruiting stems) had glabrous stems, but no leaflets were present to aid in making an identification. Additional glabrous stems up slope need to be checked to determine if they are smooth sumac (*Rhus glabra*).

Area: Ca. 4400 sq. ft. (409 m^2)

Habitat Description: On an ESE-facing, lower to mid-slope supporting scrubby young growth under mature oak-hickory canopy. White oak (*Quercus alba*), hickory (*Carya* sp.), and tulip-tree (*Liriodendron tulipifera*) were in the canopy. Young trees and shrubs included oaks (*Quercus* spp.), hickory (*Carya* spp.), tulip-tree, flowering dogwood (*Cornus florida*), smooth sumac, and winged sumac (*Rhus copallinum*). Most of the herbaceous layer had been burned off recently.

Site Visit Chronology

1995-03-14 N.E. Van Alstine

COLONY 24-2

Location: On a SE-facing, lower to mid-slope ca. 0.3 mi. north of the intersection of Shacks Hole and Target Roads. (Down slope from Colony 24-4)

Stem and Leaflet Characteristics: Stems were pubescent.

Estimated Number of Stems

Total	Female	Male	Sterile
222	37	45	140

Area: Ca. 0.4 acre (1 hectare)

Habitat Description: On a SE-facing, rocky slope in a scrubby, oak-hickory woodland. Recently burned. Several downed trees across site. Soil berms were to the northeast. Canopy trees (ca. 40 yrs. old) included white oak (*Quercus alba*), hickory (*Carya* sp.), and loblolly pine (*Pinus taeda*) while the young trees and shrubs included mockernut hickory (*Carya tomentosa*), oaks (*Quercus* spp.), winged sumac (*Rhus copallinum*), smooth sumac (*Rhus glabra*), tulip-tree (*Liriodendron tulipifera*), sweetgum (*Liquidambar styraciflua*), and blackberry (*Rubus* sp.). Herbaceous species had mostly been burned off, but a panic grass species (*Dichanthelium* sp.), sericea bushclover (*Lespedeza cuneata*), and a goldenrod species (*Solidago* sp.) were present. On the lower to mid-slope.

Site Visit Chronology

1995-03-14 N.E. Van Alstine
1995-03-15 J. Proffitt

COLONY 24-3

Location: On a level to NE-facing slope ca. 0.4 mi. north of the intersection of Target and Shacks Hole Roads.

Stem and Leaflet Characteristics: Stems were pubescent.

Estimated Number of Stems

Total	Female	Male	Sterile
137	27	55	55

Area: Ca. 3000 sq. ft. (279 m^2)

Habitat Description: Rocky opening in a mixed hardwood/pine woodland subjected to ordnance-caused burning and soil disturbance. Older canopy trees ca. 35 yrs old were white oak (*Quercus alba*). Young trees and shrubs included hickory (*Carya* sp.), sweetgum (*Liquidambar styraciflua*), flowering dogwood (*Cornus florida*), smooth sumac (*Rhus glabra*), winged sumac (*Rhus copallinum*), and a blackberry species (*Rubus* sp.). Other associated species: broom-sedge (*Andropogon virginicus*), little bluestem (*Schizachyrium scoparium*), sericea bushclover (*Lespedeza cuneata*), a panic grass species (*Dichanthelium* spp.), and a goldenrod species (*Solidago* sp.).

Site Visit Chronology

1995-03-14 N.E. Van Alstine
1995-03-15 J. Proffitt, N.E. Van Alstine

COLONY 24-4

Location: On a predominately SE-facing, upper slope ca. 0.3 mi. north of the intersection of Target and Shacks Hole Roads. (Ca. 150 ft. up slope from Colony 24-2.)

Stem and Leaflet Characteristics: A mix of pubescent stems and glabrous stems with pubescent leaflets.

Estimated Number of Stems

Total	Female	Male	Sterile
430 +	Ca. 180	0	250+

Area: 1+ acre (0.4 + hectare)

Habitat Description: A predominantly oak-hickory woodland on SE to NE-facing upper slopes with an occasional loblolly pine (*Pinus taeda*), subjected to periodic ordnance-caused fires. Canopy trees, ca. 35 yrs. old, included mockernut hickory (*Carya tomentosa*) and southern red oak (*Quercus falcata*). Most of site burned recently, but there were some unburned islands. Soil berms associated with an old roadbed supported most of the pubescent-stemmed plants.

Young trees and shrubs included mockernut hickory, white oak (*Quercus alba*), flowering dogwood (*Cornus florida*), smooth sumac (*Rhus glabra*), winged sumac (*Rhus copallinum*), tulip-tree (*Liriodendron tulipifera*), sweetgum (*Liquidambar styraciflua*). Other associated species: a panic grass (*Dichanthelium* sp.) sericea bushclover (*Lespedeza cuneata*), a goldenrod (*Solidago* sp.), and a blackberry (*Rubus* sp.).

Site Visit Chronology

1995-03-15 N.E. Van Alstine, J. Proffitt

COLONY 24-5

Location: On a level to NE-facing, upper slope ca. 0.5 mi. north of the intersection of Target and Shacks Hole Roads.

Stem and Leaflet Characteristics: Stems were pubescent.

Estimated Number of Stems

Total	Female	Male	Sterile
Ca. 100	80+	<5	ca. 20

Area: Over a small area. Quantitative data not recorded.

Habitat Description: Mostly in a canopy opening on soil berms associated with an old scrape, but extending into the surrounding oak-hickory woodland. Canopy of white oak (*Quercus alba*) and mockernut hickory (*Carya tomentosa*) probably less than 30 years old. Some young oak and hickory trees. Other associated species: beardgrass (*Andropogon gyrans*) and a goldenrod (*Solidago* sp.)

Site Visit Chronology

1995-03-15 J. Proffitt, N.E. Van Alstine

COLONY 24-6

Location: On a N-facing slope south of a ravine ca. 0.4 mi. north of the intersection of Shacks Hole and Target Roads.

Stem and Leaflet Characteristics: Stems were mostly small (< 1 ft. tall) and pubescent. Glabrous stems were also present, but the recent fire destroyed leaflets, so no identification could be made on those plants.

Estimated Number of Stems*

Total	Female	Male	Sterile
79	0	12	67

* Only the pubescent stems were counted.

Area: Ca. 2700 sq. ft. (250 m^2)

Habitat Description: Oak-hickory woodland on a N-facing slope with canopy trees less than 30 years old and subjected to periodic ordnance-caused fire. Canopy trees included white oak (*Quercus alba*) and mockernut hickory (*Carya* tomentosa). Young trees and shrubs included hickory, tulip-tree (Liriodendron *tulipifera*), smooth sumac (*Rhus glabra*) and winged sumac (*Rhus copallinum*). The herbaceous layer had been burned off. Past soil disturbance within the site from an old road.

Site Visit Chronology

1995-03-14 J. Proffitt, N.E. Van Alstine

Vested Hunting Area 26

Surveys of this area, south of Ranges 12, 13, and 14 on the south side of Tommeheton Creek, resulted in the discovery of 15 colonies of *Rhus michauxii*. The locations of these colonies are shown on Map 2 in the Appendix. Due to recent fires in the eastern section of this area, no leaflets were present with which to make identifications at two glabrous-stemmed *Rhus* colonies. These colonies are not discussed below and each needs to be rechecked to determine which *Rhus* species is present. These two unnamed colonies are also shown on Map 2 in the Appendix.

COLONY 26-1

Location: On a W-facing rocky knoll, the down slope saddle, the opposite lower E-facing slope, and the lower E-facing slope at the head of the ravine south of the saddle, ca. 0.5 mi. SSW of the Rt. 40 crossing of Tommeheton Creek.

Stem and Leaflet Characteristics: Stems showed a range of pubescence densities. Leaflets were pubescent.

Estimated Number of Stems

Total	Female	Male	Sterile
Ca. 380+	Ca.230	<5	Ca. 150

Area: Ca. 1 acre (0.4 hectare)

Habitat Description: Mostly dense scrub under scattered canopy of white oak (*Quercus alba*), mockernut hickory (*Carya tomentosa*), tulip-tree (*Liriodendron tulipifera*), loblolly pine (*Pinus taeda*). Oldest trees probably 40-50 years old. Young trees and shrubs included southern red oak (*Quercus falcata*), black oak (*Quercus velutina*), mockernut hickory (*Carya tomentosa*), flowering dogwood (*Cornus florida*), winged sumac (*Rhus copallinum*), smooth sumac (*Rhus glabra*), eastern redbud (*Cercis canadensis*), sweetgum (*Liquidambar styraciflua*), and smooth alder (*Alnus serrulata*). The aspect varied from west to east-facing and slope position ranged from lower to midslope. The area had undergone past fires and cutting and an old trail was evident. An old homesite was up on the slope to the west of this colony. Rocky on the west-facing slope.

Site Visit Chronology
1994-11-28 N.E. Van Alstine
1994-11-29 N.E. Van Alstine, J. Proffitt, L. Boyte

COLONY 26-2
Location: On a NE-facing slope overlooking a ponded tributary ca. 0.35 mi. SW of the Rt. 40 crossing of Tommeheton Creek.

Stem and Leaflet Characteristics: Thought to be a hybrid colony at the time of discovery so flagging was placed at the site, but limited data were collected.

Habitat Description: On a NE-facing slope in dense scrubby growth. Flowering dogwood (*Cornus florida*), sweetgum (*Liquidambar styraciflua*), smooth sumac (*Rhus glabra*).

Site Visit Chronology
1994-11-29 L. Boyte, N.E. Van Alstine, J. Proffitt
1994-12-20 N.E. Van Alstine

COLONY 26-3
Location: In a NE-trending ravine and the adjacent lower slope to the south, ca. 0.5 mi. SSW of the Rt. 40 crossing of Tommeheton Creek.

Stem and Leaflet Characteristics: Pubescence on some of the *Rhus* stems in the ravine. Smooth sumac (*Rhus glabra*) was present, too. One fruiting stem on the east-facing slope to the south was distinctly pubescent. Thought to be a hybrid colony at the time of discovery so limited data were collected. The upper and lower limits were flagged in the ravine and a single flagging was put up on the slope to the south. Additional survey work is needed here to delimit and estimate the colony size.

Habitat Description: In dense scrub within a ravine and the adjacent lower slope under an older oak canopy.

Site Visit Chronology
1994-11-29 J. Proffitt, L. Boyte, N.E. Van Alstine
1994-11-29 N.E. Van Alstine

COLONY 26-4

Location: On a W-facing slope along a SE-trending ravine ca. 0.6 mi. SSW of the Rt. 40 crossing of Tommeheton Creek.

Stem and Leaflet Characteristics: Stems were glabrous, but leaflets were pubescent. Thought to be a hybrid colony at the time of discovery so a single flagging was placed at the site, but limited data were collected.

Habitat Description: In scrubby growth under scattered older canopy of pine and mixed hardwoods. Past cutting and fire evident. Older trees included tulip-tree (*Liriodendron tulipifera*), loblolly pine (*Pinus taeda*), and white oak (*Quercus alba*). Scrubby young growth included oaks (*Quercus* spp.) and American hazelnut (*Corylus americana*).

Site Visit Chronology

1994-11-29 N.E. Van Alstine

COLONY 26-5

Location: On an E-facing slope ca. 0.65 mi. SSW of the Rt. 40 crossing of Tommeheton Creek.

Stem and Leaflet Characteristics: Thought to be a hybrid colony at the time of discovery so limited data were collected.

Habitat Description: Data not recorded; similar to Colonies 26-1 and 26-4.

Site Visit Chronology

1994-11-29 N.E. Van Alstine

COLONY 26-6

Location: On the east side of an old trail ca. 0.6 mi. SW of the Rt. 40 crossing of Tommeheton Creek and ca. 150 ft. east of where an old road splits into two. (The northeast fork in the road is not shown on the map.)

Stem and Leaflet Characteristics: Stems were pubescent.

Estimated Number of Stems

Total	Female	Male	Sterile
60	45	5*	10

*There was confusion over whether these were male inflorescences or aborted female inflorescences.

Area: Ca. 1600 sq. ft. (149 m^2)

Habitat Description: On soil berms along an old road and in less disturbed soil to the east in scrubby young growth under mixed hardwood/pine woodland. The more mature trees consisted of tulip-tree (*Liriodendron tulipifera*) and loblolly pine (*Pinus taeda*), with some less mature loblolly pine and white oak (*Quercus alba*).

Scrubby growth included white oak, southern red oak (*Quercus falcata*), flowering dogwood (*Cornus florida*), mockernut hickory (Carya *tomentosa*), and sweetgum (*Liquidambar styraciflua*). Other associated species: winged sumac (*Rhus copallinum*), little bluestem (*Schizachyrium scoparium*), beardgrass (*Gymnopogon ambiguus*), and goldenrods (*Solidago* spp.). Much pine needle ground litter. Area previously cut and burned.

Site Visit Chronology
1994-12-20 N.E. Van Alstine

COLONY 26-7
Location: On a S-facing slope of a E-trending ravine ca. 0.5 mi. SW of the Rt. 40 crossing of Tommeheton Creek.

Stem and Leaflet Characteristics: Stems were glabrous, but leaflets were pubescent. Thought to be a hybrid colony at the time of discovery so limited data were collected. Smooth sumac (*Rhus glabra*) was present.

Site Visit Chronology
1994-12-21 N.E. Van Alstine

COLONY 26-8
Location: Along the SW side of an old trail ca. 0.6 mi. SW of the Rt. 40 crossing of Tommeheton Creek.

Stem and Leaflet Characteristics: Stem was slightly pubescent. A smooth sumac (*Rhus glabra*) colony was in the area. Thought to be a hybrid at the time of discovery so limited data were collected.

Site Visit Chronology
1994-12-21 N.E. Van Alstine

COLONY 26-9
Location: On the east and west sides of a spur road (not on the Base map) ca. 0.75 mi. SSE of the Rt. 40 crossing of Tommeheton Creek and east of the unnamed road extending south from Range 13.

Stem and Leaflet Characteristics: Stems were pubescent. Potential "hybrids" were noted for the area (glabrous stem, pubescent leaflets), but the stem count below represents only the pubescent stems.

Estimated Number of Stems

Total	Female	Male	Sterile
119	29	0	90

Area: Ca. 1260 sq. ft. (117 m^2)

Habitat Description: Roadside disturbed soil berms and berm at the end of a

scrape resulting from bulldozing of the road. Habitat east of the road consisted of a weedy, open canopy roadside disturbance supporting sericea bushclover (*Lespedeza cuneata*), a blackberry (*Rubus* sp.), winged sumac (*Rhus copallinum*), Japanese honeysuckle (*Lonicera japonica*), and young sweetgum (*Liquidambar styraciflua*). Young hardwood trees were present on the west side of the road including post oak (*Quercus stellata*), black oak (*Quercus velutina*), sweetgum, and a hickory *Carya* sp.). Other associated species on the west side included sericea bushclover, little bluestem (*Schizachyrium scoparium*), redtop (*Tridens flavus*), winged sumac, and goldenrods (*Solidago* spp.). Some of the plants were growing on the road edge.

Site Visit Chronology
1994-12-22 N.E. Van Alstine

COLONY 26-10
Location: On a soil berm on the east side of a scraped target area ca. 0.75 mi. SSE of the Rt. 40 crossing of Tommeheton Creek and east of the unnamed road extending south from Range 13. (Up slope from Colony 26-9)

Stem and Leaflet Characteristics: Stems were not as pubescent as those in Colony 26-9, but the leaflets were pubescent.

Estimated Number of Stems

Total	Female	Male	Sterile
Ca. 161	6	0	Ca. 155

Area: Ca. 4800 sq. ft. (446 m^2)

Habitat Description: On a disturbed soil berm resulting from scraping and probably also from ordnance hits. The more disturbed portion supported sericea bushclover (*Lespedeza cuneata*), winged sumac (*Rhus copallinum*), a blackberry (*Rubus* sp.), a vine- probably kudzu (*Pueraria montana* var. *lobata*)-, Indian grass (*Sorghastrum nutans*), redtop (*Tridens flavus*), young mockernut hickory (*Carya tomentosa*). A less disturbed portion supported young oaks (*Quercus* spp.), mockernut hickory, sweetgum (*Liquidambar styraciflua*), little bluestem (*Schizachyrium scoparium*), sericea bushclover, and redtop.

Site Visit Chronology
1994-12-22 N.E. Van Alstine

COLONY 26-11
Location: On the SE-facing slope at the head of a ravine just east of the tall soil berm associated with the tracks ca. 1.1 mi. SSE of the Rt. 40 crossing of Tommeheton Creek.

Stem and Leaflet Characteristics: Stems were pubescent.

Estimated Number of Stems

Total	Female	Male	Sterile
81	3	7	71

Area: Ca. 2000 sq. ft. (186 m^2)

Habitat Description: An opening in the transitional zone between the hardwood stand to the south and the loblolly pine (*Pinus taeda*) stand to the north. Mature tulip-trees (*Liriodendron tulipifera*) surround the site with young loblolly pine within it. Gentle SE-facing slope at the head of a ravine. Other associated species: a hickory (*Carya* sp.), little bluestem (*Schizachyrium scoparium*), winged sumac (*Rhus copallinum*), beardgrass (*Gymnopogon ambiguus*), beardgrasses (*Andropogon* spp.), redtop (*Tridens flavus*), sericea bushclover (*Lespedeza cuneata*), and St. Andrew's cross (*Hypericum hypericoides*).

Site Visit Chronology

1994-12-22 N.E. Van Alstine

COLONY 26-12

Location: From just south to ca. 100 ft. south of the building at the east end of the tracks ca. 1.1 mi. SSE of the Rt. 40 crossing of Tommeheton Creek.

Stem and Leaflet Characteristics: Most of stems counted below were pubescent; ca. 100 ft. to the south of the area with the pubescent stems was a stem described as a probable "hybrid" at the time of discovery. This has been included in the total stem count for this colony.

Estimated Number of Stems

Total	Female	Male	Sterile
9	0	0	9

Area: Ca. 300 sq. ft. (28 m^2) (Area of pubescent-stemmed plants only)

Habitat Description: An opening at the edge of a mature oak-hickory forest. Goldenrods (*Solidago* spp.), broom-sedge (*Andropogon virginicus*), beardgrass (*Andropogon gyrans*), young flowering dogwood (*Cornus florida*) and hickory (*Carya* sp.). The more "hybrid"-looking stem was under the hardwood forest canopy and associated with woolly plumegrass (*Erianthus alopecuroides*).

Site Visit Chronology

1994-12-22 N.E. Van Alstine

COLONY 26 -13

Location: Ca. 0.9 mi. NW of the intersection of Target and Shacks Hole Roads, ca. 0.2 mi. north of Shacks Hole Road and immediately west of an old road.

Stem and Leaflet Characteristics: Stems were glabrous, but the leaflets found were pubescent. This colony should probably be checked when the leaves have emerged.

Estimated Number of Stems

Total	Female	Male	Sterile
139	13	0	126

Area: Ca. 1500 sq. ft. (140 m^2)

Habitat Description: On disturbed soil berms and in adjacent less disturbed forest on a west-facing slope at head of a ravine. Oak-hickory-pine woodland 35-40 yrs. old. Hickory (*Carya* sp.), white oak (*Quercus alba*), loblolly pine (*Pinus taeda*). Young trees and shrubs included hickory, southern red oak (*Quercus falcata*), flowering dogwood (*Cornus florida*), winged sumac (*Rhus copallinum*), sweetgum (*Liquidambar styraciflua*). Other associated species:(on the soil mounds) sericea bushclover (*Lespedeza cuneata*), thistle (*Cirsium* sp.), and a panic grass (*Dichanthelium* sp.).

Site Visit Chronology

1995-03-16 N.E. Van Alstine

COLONY 26-14

Location: On mostly east-facing slopes ca. 1.55 mi. northwest of the intersection of Target and Shacks Hole Roads and north of an old road.

Stem and Leaflet Characteristics: Identification based on pubescence on charred leaflet fragments; stems appeared glabrous.

Estimated Number of Stems

Total	Female	Male	Sterile
Several hundred	0	0	Several hundred

Area: Ca. 2 acres (0.8 hectare)

Habitat Description: Mostly east-facing slopes with moderately dense scrub under generally open canopy cover within an oak-hickory woodland. Oldest trees ca. 20-30 years old included white oak (Quercus alba) and hickory (*Carya* cf. *ovata*). Scrub included tree saplings and winged sumac (*Rhus copallinum*). Area had recently burned and had signs of past soil disturbance.

Site Visit Chronology

1995-03-29 A. Belden, Jr.

COLONY 26-15

Location: On a west-facing slope ca. 1.05 mi. NW of the intersection of Target and Shacks Hole Roads and ca. 200 ft. west of an old road.

Stem and Leaflet Characteristics: Identification based on pubescence on charred leaflet fragments; stems appeared glabrous.

Estimated Number of Stems

Total	Female	Male	Sterile
20-30	0	0	20-30

Area: Ca. 54 sq. ft. (5 m^2)

Habitat Description: Gentle, upper, west-facing slope supporting moderately dense low shrub layer consisting of one unidentified species and almost no canopy cover. Recently burned.

Site Visit Chronology
1995-03-29 A. Belden, Jr.

Vested Hunting Area 35

A single survey of this Vested Hunting Area, south of Lake Road and north and northeast of the Danger Unexploded Ordnance area resulted in the finding of one colony. The location of this colony is shown on Map 2 in the Appendix. Survey work in 1993 had already been conducted in the north and northeast sections where several colonies of *Rhus michauxii* had been located.

COLONY 35-1

Location: In a saddle, adjacent north and south-facing upper slopes, and a south-facing rocky knoll ca. 0.55 mi. south of the south end of Tommeheton Lake.

Stem and Leaflet Characteristics: Stems were mostly pubescent, but some were glabrous stems with pubescent leaflets.

Estimated Number of Stems

Total	Female	Male	Sterile
134	23	15	96

Area: Ca. 1 acre (0.4 hectare)

Habitat Description: Oak-hickory woodland within a saddle and its adjacent north and south-facing slopes. Subjected to periodic ordnance-caused fires. Open to dense scrub included sweetgum (*Liquidambar styraciflua*), mockernut hickory (*Carya tomentosa*), black oak (*Quercus velutina*), winged sumac (*Rhus copallinum*), smooth sumac (*Rhus glabra*). Other associated species: beardgrass (*Gymnopogon ambiguus*), woolly plumegrass (*Erianthus alopecuroides*), little bluestem (*Schizachyrium scoparium*), goldenrods (*Solidago* sp.), beardgrasses (*Andropogon* spp.), and a blackberry (*Rubus* sp.). A few stems were found on a SSW-facing rocky (granitic) knoll.

Site Visit Chronology
1994-12-15 N.E. Van Alstine

Danger Unexploded Ordnance Areas

Three areas known as Danger Unexploded Ordnance Areas occur within the Controlled Access Area (CAA), but only the one in the northern CAA associated with Range 15 was targeted in this survey. There were 13 colonies of *Rhus michauxii* found in the northern area and their locations are shown on Map 2 in the Appendix; the colonies are labeled as N-1, N-2, N-3, etc.. Due to recent fires in this area, no leaflets were present with which to make identifications at five glabrous-stemmed *Rhus* colonies. These unnamed colonies are also shown on Map 2, but are not discussed below and each needs to be rechecked to determine which *Rhus* species is present. *Rhus michauxii* was also found in the more southern of these areas during field work for another project and that colony, labeled S-1, is also reported below and shown on Map 2.

COLONY N-1

Location: On a knoll ca. 400 ft. east of the southernmost set of tracks at Range 15.

Stem and Leaflet Characteristics: Some pubescence on the stems, but none were densely pubescent. Leaflets were pubescent. This colony was thought to consist of hybrid plants at the time of discovery so limited data were collected. Marked with a single flagging.

Habitat Description: On a SE-facing, forested, rocky knoll associated with openings in the hardwood canopy. Evidence of past fires. Oaks (*Quercus* spp.), woolly plumegrass (*Erianthus alopecuroides*), smooth sumac (*Rhus glabra*). Remnants of an old well and drain pipes were present.

Site Visit Chronology

1995-01-05 N.E. Van Alstine

COLONY N-2

Location: On a SE-facing slope ca. 0.3 mi. NNE of the Target Road crossing of Tommeheton Creek.

Stem and Leaflet Characteristics: Stems were pubescent.

Estimated Number of Stems

Total	Female	Male	Sterile
500-600	125-150	250-300	125-150*

* sterile or with inflorescence broken off

Area: Ca. 0.2-0.3 acre (0.08-0.12 hectare)

Habitat Description: A SE to SSE-facing, gentle slope at the head of a draw supporting scrubby young trees and shrubs including oaks (Quercus spp.), sweetgum (*Liquidambar styraciflua*), smooth alder (*Alnus serrulata*), a rose (*Rosa* sp.), smooth sumac (*Rhus glabra*), winged sumac (*Rhus copallinum*) and almost no canopy trees. Other associated species: beardgrasses (*Andropogon* spp.), redtop (*Tridens*

flavus), goldenrods (*Solidago* spp.), sericea bushclover (*Lespedeza cuneata*), and Japanese honeysuckle (*Lonicera japonica*). The area was scraped in the past and there was evidence of past fire.

Site Visit Chronology
1995-01-30 A. Belden, Jr.

COLONY N-3
Location: On a NE-facing slope, ca. 0.4 mi. NNE of the Target Road crossing of Tommeheton Creek and ca. 0.25 mi. east of Target Road.

Stem and Leaflet Characteristics: Suspected to be a "hybrid" colony at the time of discovery and limited data were collected. No fruiting stems were seen.

Site Visit Chronology
1995-01-30 A. Belden, Jr.

COLONY N-4
Location: Ca. 0.25 mi. north of the Target Road crossing of Tommeheton Creek in a ravine on the east side of Target Road.

Stem and Leaflet Characteristics: Stems were pubescent.

Estimated Number of Stems

Total	Female	Male	Sterile
300-400	200-270	0	100-130 *

*sterile or with inflorescences broken off

Area: Ca. 0.3 acre (0.12 hectare) in 2-3 discrete areas.

Habitat Description: Along a densely scrubby, SE-facing slope with hickory (*Carya* sp.), sweetgum (*Liquidambar styraciflua*), oak (*Quercus* sp.). Dense herbaceous cover included a plumegrass (*Erianthus* sp.). Site suffered disturbance in the past.

Site Visit Chronology
1995-01-30 A. Belden, Jr.

COLONY N-5
Location: Ca. 0.2 mi. south of the southernmost set of tracks at Range 15 on the south to SE-facing slope ca. 400 ft. west of Target Road.

Stem and Leaflet Characteristics: Stems were glabrous, but leaflets were pubescent.

Estimated Number of Stems

Total	Female	Male	Sterile
68*	0	0	68

*Smooth sumac (*Rhus glabra*) was present in the area and it was sometimes difficult to identify the glabrous stems with certainty.

Area: Ca. 1200 sq. ft. (111 m^2)

Habitat Description: Periodically burned, scrubby, S to SE-facing, lower slope including young mockernut hickory (*Carya tomentosa*), flowering dogwood (*Cornus florida*), southern red oak (*Quercus falcata*), eastern redbud (*Cercis canadensis*), sassafras (*Sassafras albidum*), etc. under an older canopy of white oak (*Quercus alba*), and mockernut hickory (*Carya tomentosa*) . Other associated species: Christmas fern (*Polystichum acrostichoides*), a tick-trefoil (*Desmodium* sp.), and deer-tongue panic grass (*Dichanthelium clandestinum*). Some past soil disturbance was noted within the site.

Site Visit Chronology
1995-02-27 N.E. Van Alstine

COLONY N-6
Location: Ca. 0.3 mi. south of the southernmost set of tracks at Range 15 on the SE-facing slope 0.1 mile west of Target Road.

Stem and Leaflet Characteristics: Stems were glabrous, but leaflets were pubescent. Smooth sumac (*Rhus glabra*) was present and if leaflets were not found underneath the stem it was not clear which sumac species the glabrous stem was.

Estimated Number of Stems

Total	Female	Male	Sterile
6*	0	0	6

*Could be more; need to resurvey when leaves are present.

Area: Data not recorded.

Habitat Description: Midslope on an old soil berm on a SE-facing slope with scrubby young growth including oaks (*Quercus* spp.) and tulip-tree (*Liriodendron tulipifera*) in openings under older oaks and tulip-tree. Other associated species: sericea bushclover (*Lespedeza cuneata*), winged sumac (*Rhus copallinum*), and Bosc's panic grass (*Dichanthelium boscii*).

Site Visit Chronology
1995-02-27 N.E. Van Alstine

COLONY N-7

Location: Ca. 0.35 mi. south of the southernmost set of tracks at Range 15 on the SE-facing slope 0.1 mi. west of Target Road.

Stem and Leaflet Characteristics: Stems were glabrous, but leaflets were pubescent.

Estimated Number of Stems

Total	Female	Male	Sterile
55	0	0	55

Area: Ca. 1200 sq. ft. (111 m^2)

Habitat Description:* Scrubby young hardwoods on SE-facing upper slope. Canopy included tulip-tree (*Liriodendron tulipifera*). Other associated species: woolly plumegrass (*Erianthus alopecuroides*) and goldenrods (*Solidago* spp.)

*Limited habitat data were recorded because military operations were about to begin so the range had to be evacuated shortly after finding this colony.

Site Visit Chronology

1995-02-27 N.E. Van Alstine

COLONY N-8

Location: On a NE-facing slope ca. 0.65 mi. NW of the intersection of Target and Shacks Hole Roads and 0.15 mi. NE of Shacks Hole Road.

Stem and Leaflet Characteristics: Stems were mostly pubescent, but there were a few glabrous stems with pubescent leaflets.

Estimated Number of Stems

Total	Female	Male	Sterile
87	10	0	77

Area: Ca. 2400 sq. ft. (223 m^2)

Habitat Description: Disturbed soil mounds within scrubby, frequently burned, oak-hickory-loblolly pine woodland. Young sweetgum (*Liquidambar styraciflua*), hickories (*Carya* spp.), winged sumac (*Rhus copallinum*). Older oak-hickory trees (but less than 30 years old) were present outside of the Michaux's sumac colony. Other associated species: goldenrods (*Solidago* spp.), sericea bushclover (*Lespedeza cuneata*), redtop (*Tridens flavus*), broom-sedge (*Andropogon virginicus*), beardgrass (*A. gyrans*), little bluestem (*Schizachyrium scoparium*). Surrounding area recently burned, but the vegetation on the soil mounds did not. Military equipment debris around the mounds.

Site Visit Chronology

1995-03-15 N.E. Van Alstine

COLONY N-9

Location: On a NE-facing slope ca 0.7 mi. NW of the intersection of Target and Shacks Hole Roads and 0.15 mi. north of Shacks Hole Road.

Stem and Leaflet Characteristics: Stems were pubescent.

Estimated Number of Stems

Total	Female	Male	Sterile
Ca. 248	48	0	Ca. 200

Area: Ca. 2800 sq. ft. (260 m^2)

Habitat Description: NE-facing to SE-facing scrubby slopes northeast of a gully. Young trees and shrubs included sweetgum (*Liquidambar styraciflua*), black locust (*Robinia pseudoacacia*), hickory (*Carya* sp.), and a blackberry (*Rubus* sp.). Older trees were mainly loblolly pine (*Pinus taeda*). Other associated species: little bluestem (*Schizachyrium scoparium*), beardgrass (*Andropogon gyrans*), sericea bushclover (*Lespedeza cuneata*), and a goldenrod (*Solidago* sp.). There was a lot of military ordnance and equipment in the area.

Site Visit Chronology

1995-03-15 N.E. Van Alstine

COLONY N-10

Location: Ca. 0.8 mi. NW of the intersection of Target and Shacks Hole Roads, ca. 0.3 mi. north of Shacks Hole Road and ca. 200 ft. east of an old road.

Stem and Leaflet Characteristics: About 25 of the stems were pubescent, the rest were glabrous stems with pubescent leaflets.

Estimated Number of Stems

Total	Female	Male	Sterile
63	7	5	51

Area: Ca. 2800 sq. ft. (260 m^2)

Habitat Description: Recently burned, oak-hickory woodland on a SE-facing slope. Rocky and scrubby. Canopy of white oak (*Quercus alba*) and hickory (*Carya* sp.) with young hickory, sweetgum (*Liquidambar styraciflua*), flowering dogwood (*Cornus florida*), and smooth sumac (*Rhus glabra*). Herbaceous layer burned off recently.

Site Visit Chronology

1995-03-16 N.E. Van Alstine

Colony N-11

Location: Ca. 0.7 mi. NW of the intersection of Target and Shacks Hole Roads, ca. 0.15 mi. north of Shacks Hole Road and ca. 300 ft. east of an old road.

Stem and Leaflet Characteristics: Stems were glabrous with pubescence on the burned leaflet fragments.

Estimated Number of Stems

Total	Female	Male	Sterile
10	0	0	10

Area: Ca. 54 sq. ft. (5 m^2)

Habitat Description: Scrub-dominated opening in a forest of scattered trees on ESE-facing, gentle slope. Mockernut hickory (*Carya* tomentosa), sweetgum (*Liquidambar styraciflua*), winged sumac (*Rhus copallinum*). Area was recently burned and subjected to past soil disturbance.

Site Visit Chronology

1995-03-29 A. Belden, Jr.

COLONY N-12

Location: Ca. 0.85 mi. NW of the intersection of Target and Shacks Hole Roads, ca. 0.35 mi. north of Shacks Hole Road and ca. 600 ft. east of an old road.

Stem and Leaflet Characteristics: Stems appeared glabrous, but there was pubescence on the leaflet fragments.

Estimated Number of Stems

Total	Female	Male	Sterile
3	0	0	3

Area: Ca. 22 sq. ft. (2 m^2)

Habitat Description: Ca. 20 year old open forest on gentle SE-facing slope. White oak (*Quercus alba*), mockernut hickory (*Carya* tomentosa) and moderately dense shrub layer. Area was recently burned and subjected to past soil disturbance.

Site Visit Chronology

1995-03-29 A. Belden, Jr.

COLONY N-13

Location: From ca. 0.85-1 mi. NW of the intersection of Target and Shacks Hole Roads, 0.35-0.5 mi. north of Shacks Hole Road, and south of an old road.

Stem and Leaflet Characteristics: Many stems were distinctly pubescent while others were apparently glabrous, but with pubescent leaflets.

Estimated Number of Stems

Total	Female	Male	Sterile
Thousands	*	*	*

*Difficult to estimate the % of female, male, and sterile stems due to the large numbers and the recent fire, but many stems of all categories were present. The fire uprooted some stems and charred others.

Area: 10+ acres (4 hectares)

Habitat Description: Includes a variety of aspects (NE, E, SE, S, and SW-facing) with varying inclinations up to ca. 25 degrees. Growing both in scrub with scattered trees and in open forest. Tulip-tree (*Liriodendron tulipifera*), sweetgum (*Liquidambar styraciflua*), and American beech (*Fagus grandifolia*) were prevalent. Some plants were in an intermittent stream bed. The area was recently burned and subjected to extensive past soil disturbance.

Site Visit Chronology
1995-03-29 A. Belden, Jr

COLONY S-1

Location: On a S-facing slope ca. 0.4 mi. SE of the intersection of Lake and Pelham Roads in the southern Danger Unexploded Ordnance Area.

Stem and Leaflet Characteristics: Stems had varying degrees of pubescence and leaflets were pubescent.

Estimated Number of Stems

Total	Female	Male	Sterile
85	20	0	65

Habitat Description: On a S-facing, scrubby, upper slope subjected to frequent burning from ordnance-caused fires. Tulip-tree (Liriodendron *tulipifera*), black oak (*Quercus velutina*), sassafras (*Sassafras albidum*), winged sumac (*Rhus copallinum*), hyssopleaf thoroughwort (*Eupatorium hyssopifolium*), tick-trefoils (*Desmodium* spp.), etc.

Site Visit Chronology
1995-09-12 N.E. Van Alstine*

*A. Dyck of the Fort Pickett Fish and Wildlife Management Branch reported seeing a colony previously in this general vicinity, but it is not certain if these two finds are identical.

SUMMARY OF AREAS SURVEYED FOR *RHUS MICHAUXII*

All of the survey routes taken in this project in the search for *Rhus michauxii* colonies are shown in Maps 5, 6, and 7 in the Appendix.

Areas Outside the Controlled Access Area

Searches in the lands outside of the Controlled Access Area concentrated on the ranges northwest, north and east of the Controlled Access Area, clearings north of the Nottoway River, particularly those associated with old homesites and agricultural fields, and Vested Hunting Area 32 southeast of Pelham Road. Areas south of the Nottoway River and north of Rt. 40 were not surveyed by DCR staff during this project because these areas were being covered by Fort Pickett personnel (J. Proffitt, pers. comm.).

Vested Hunting Area 20
Surveys were conducted on Ranges 7, 8, and 9 and the routes are shown on Map 5 in the Appendix. Although some appropriate habitat was present, particularly on Range 9, no *Rhus michauxii* was found.

Training Area 22
Several roadside clearings north and south of Butterwood Road were surveyed as well as an area north of Range 9. Surveys were conducted on Ranges 10, 11, and 12. The survey routes are shown on Map 5 in the Appendix. No *Rhus michauxii* was found.

Training Area 23
Areas associated with Ranges 13, 14, 15, 17, 18, and 19 were surveyed. The survey routes are shown on Map 5 in the Appendix. Colonies of *Rhus michauxii* were found on Ranges 13 and 18. Additional possible habitat remains to be surveyed on Range 14, north of the Controlled Access Area boundary.

Vested Hunting Area 32
The areas surveyed included part of the area between Pelham Road and Pendleton Road, the area around and north of OP2, the area around and to the north and northeast of OP3, and slopes between OP2 and OP3. Survey routes are shown on Map 6 in the Appendix. Colonies of *Rhus michauxii* were found in the area between Pelham Road and Pendleton Road and on the slopes north and northeast of OP3. No *Rhus michauxii* was found around OP2. Additional areas remain to be surveyed in this training area.

Training Area 33
Areas associated with Range 20 and OP6 were surveyed. Survey routes are shown on Maps 5 and 6. *Rhus michauxii* colonies were found west of OP6.

Training Area 42
Clearings on the north side of Gettysburg Road were surveyed. An area north of Gettysburg Road was briefly surveyed with Joe Proffitt of Fort Pickett's Fish and Wildlife Management Branch who had noted a possible old homesite/opening on aerial photos. Survey routes are shown on Map 7 in the Appendix. No *Rhus michauxii* was found.

Training Area 44
The clearing northeast of the intersection of Gettysburg Road and Old Oak Road was surveyed. The survey route is shown on Map 7 in the Appendix. No *Rhus michauxii* was found.

Training Area 45
Clearings both north and south of J.E.B. Stuart Road were surveyed. The survey routes are shown on Map 7 in the Appendix. No *Rhus michauxii* was found.

Training Area 47
Clearings north and south of Gettysburg Road as well as the clearing associated with OP1 were searched. The survey routes are shown on Maps 6 and 7 in the Appendix. Colonies of *Rhus michauxii* were found in the southeast corner of the Training Area, just west of Pendlet Road.

Training Area 48
Clearings south of Wilcox Road were surveyed. Colonies of *Rhus michauxii* were found in several locations, associated with an old homesite on the west side of the Training Area. Clearings east, west, and north of Longstreet Road were also surveyed. Colonies of *Rhus michauxii* were found east and north of Longstreet Road. The survey routes are shown on Map 6 in the Appendix.

Training Area 50
Training Area 50 was not originally targeted in this survey, but some plants with stems glabrous to sparsely pubescent and with pubescent leaflets were found here in a roadside area during field work being conducted for another project. Only a limited survey was done along the eastern roadside, shown on Map 7, and additional survey work is needed.

Areas within the Controlled Access Area

Surveys in the Controlled Access Area focused on two general areas:
1. The northwest section which had received less attention than other areas in previous surveys.

2. Areas around and downrange from Range 15 that were associated with future expansion plans.

Some other areas outside of two above were also surveyed. More details on all of the areas surveyed within the Controlled Access Area are summarized below by Vested Hunting Area or the Danger Unexploded Ordnance Areas.

Vested Hunting Area 20
Areas surveyed in this area included slopes southwest of Cherry Tree Road to the north end of Birchin Lake, areas to the northeast of Cherry Tree Road out to a Tommeheton Creek tributary, and areas around Ranges 5 and 6. The survey routes are shown on Map 5 in the Appendix. Two colonies of Michaux's sumac were found northeast of Cherry Tree Road.

Vested Hunting Area 24

The area west of Target Road over to Shacks Hole Road was surveyed. The survey routes are shown on Map 5 in the Appendix. Six colonies of Michaux's sumac were located. One burned colony of glabrous-stemmed sumacs (*Rhus* sp.) West of Target Road needs to be revisited to determine which species is present.

Vested Hunting Area 26

An extensive area north and northeast of the intersection of Shacks Hole Road and Cherry Tree Road and downrange from Ranges 12 and 13 was surveyed in this Vested Hunting Area. The survey routes are shown in Map 5 in the Appendix. Fifteen colonies of Michaux's sumac were discovered here. Two burned sumac (*Rhus* sp.) colonies need to be revisited to determine the species present.

Vested Hunting Area 27

An area west of Cherry Tree Road over to the north end of Birchin Lake was surveyed. The survey routes taken are shown in Map 5 in the Appendix. No Michaux's sumac was found.

Vested Hunting Area 35

Slopes on the west side of Tommeheton Creek and south of Lake Road were surveyed, a continuation of searches done in 1993. The survey route is shown on Map 5 in the Appendix. A colony of Michaux's sumac was found.

Danger Unexploded Ordnance Areas

In the northern area associated with Range 15 lands were surveyed around Range 15, on slopes east and west of Target Road on the north side of Tommeheton Creek, and on the south side of Tommeheton Creek. These survey routes are shown in Map 5 in the Appendix. Thirteen colonies of Michaux's sumac were found.

The Danger Unexploded Ordnance area in the southeastern section of the Controlled Access Area was not targeted for survey work in the 1994-95 project period, but one colony of Michaux's sumac was found in September 1995 while other field work was being conducted. The route taken into this area when the *Rhus michauxii* was found is shown on Map 5 in the Appendix.

CONCLUSIONS

The Virginia Department of Conservation and Recreation's 1994-95 survey for additional *Rhus michauxii* colonies has resulted in significantly expanding knowledge about the distribution of this federally listed species at Fort Pickett. Numerous colonies were found in the formerly little-surveyed section of the Controlled Access Area (CAA) north of Shacks Hole Road and Cherry Tree Road (Vested Hunting Areas 20, 24, and 26 and the northern Danger Unexploded Ordnance Area). Outside of the CAA, colonies were found associated with Ranges 13 and 18, OP3, and OP6. Vested Hunting Area 32, outside the Controlled Access Area, but subject to some of the same disturbance factors (ordnance-caused fire and soil disturbance) as inside the Controlled Access Area was found to harbor numerous colonies and much appropriate habitat. Also found were colonies removed from the ordnance-caused disturbances, but seemingly associated with disturbances from old homesites, fencerows, and agricultural fields in Training Areas 47, 48, and 50; these finds strengthened that association initially found by personnel of the Fort's Fish and Wildlife Management Branch in 1994 (J. Proffitt, pers. comm.). The association with old homesites was also found in this survey in some of the colonies near OP6, in Vested Hunting Area 32, and inside the Controlled Access Area at some of the colonies in Vested Hunting Area 26.

Additional areas remain to be surveyed for Michaux's sumac at Fort Pickett; an exhaustive discussion of the areas that remain will not be attempted here, however, a few recommendations can be made.

1. The area of Vested Hunting Area 32 east of OP3 is likely to have more colonies.

2. *Rhus michauxii* has now been found south of the Nottoway River on both the east and west sides of the Base; other colonies may remain to be found in the intervening area, probably associated with old homesites. The area around Colony 50-1 needs to be searched more thoroughly.

3. *Rhus michauxii* has yet to be found in the portion of the Controlled Access Area west of Cherry Tree Road and north of Lake Road; appropriate habitat was only patchy in the areas surveyed. Additional work may be warranted in the northernmost area west of Cherry Tree Road that was surveyed in this project and on the slopes on the east side of the drainage east of Range 6 (See Map 5 in the Appendix showing survey routes taken in these areas).

4. Some additional appropriate habitat south of Range 14 in the eastern portion surveyed (See Map 5 in the Appendix) needs more intensive surveying.

5. There is additional habitat to be surveyed in the area west of Range 18, west of the Controlled Access Area signs.

6. The south boundary of the Danger Unexploded Ordnance South area (See Map 6 in the Appendix) has not been adequately documented, but safety is a concern in surveying there because of the density of potentially unexploded ordnance.

7. Although Ranges 1, 2, 3, and 4 were exempted from this survey because of safety concerns from unexploded ordnance, it is possible that *Rhus michauxii*

colonies would be found associated with these ranges if ordnance-caused fires, soil disturbances and/or old homesites are present; if these areas are ever determined to be safe for foot-surveys searches for *Rhus michauxii* should be made.

The decision to conduct surveys for *Rhus michauxii* in the autumn, winter, and early spring months had some advantages and disadvantages and deserves some discussion here. Stems were definitely easier to find without the visual distraction of the other vegetation present in the growing season. In addition, surveyors were not subjected to the heat, humidity, ticks, and chiggers found at Fort Pickett during the summer months and, except for a few weeks in January and February, weather conditions during the course of this survey were favorable. The strategy for surveying outside of the growing season, however, was formulated when it was thought that only the distinctly pubescent *Rhus* stems were *Rhus michauxii* and the less pubescent to glabrous stems were hybrids between *Rhus michauxii* and smooth sumac (*Rhus glabra*). When the results of the electrophoresis work (Burke and Hamrick 1995) indicated that the *Rhus* plants with less pubescent to glabrous stems, but with pubescent leaflets, were also *Rhus michauxii*, it became essential to find old leaflets on the ground underneath the glabrous stems in order to make an identification. Finding the remains of leaflets became increasingly more difficult over the course of the winter because of their decomposition. Even more of a problem resulted from the numerous fires that occurred in the Controlled Access Area and Vested Hunting Area 32; the fires usually left the stems intact, but burned the ground layer, including the *Rhus* leaflets. This resulted in the finding of glabrous-stemmed *Rhus* which could not be further identified until the new leaves emerged. It was probably easier to return to these colonies later, however, than to attempt to find them initially in the growing season. Overall, therefore, non-growing season surveys are recommended for any future extensive surveys for *Rhus michauxii*.

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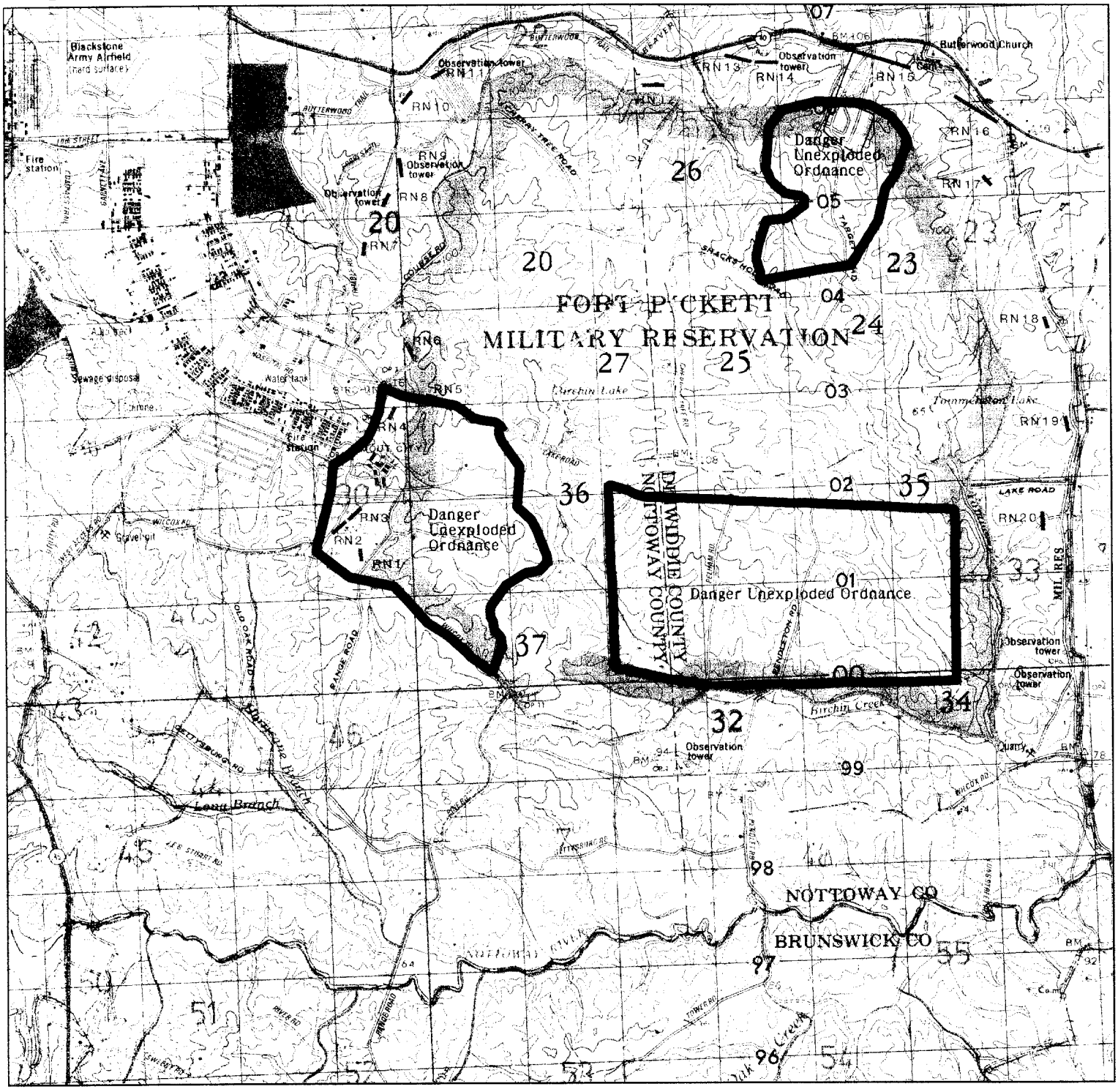
APPENDIX

NOTE: MAPS IN THE APPENDIX WERE CREATED IN COLOR. DETAILS ON THE MAPS MAY NOT REPRODUCE WELL IN BLACK AND WHITE COPIES.

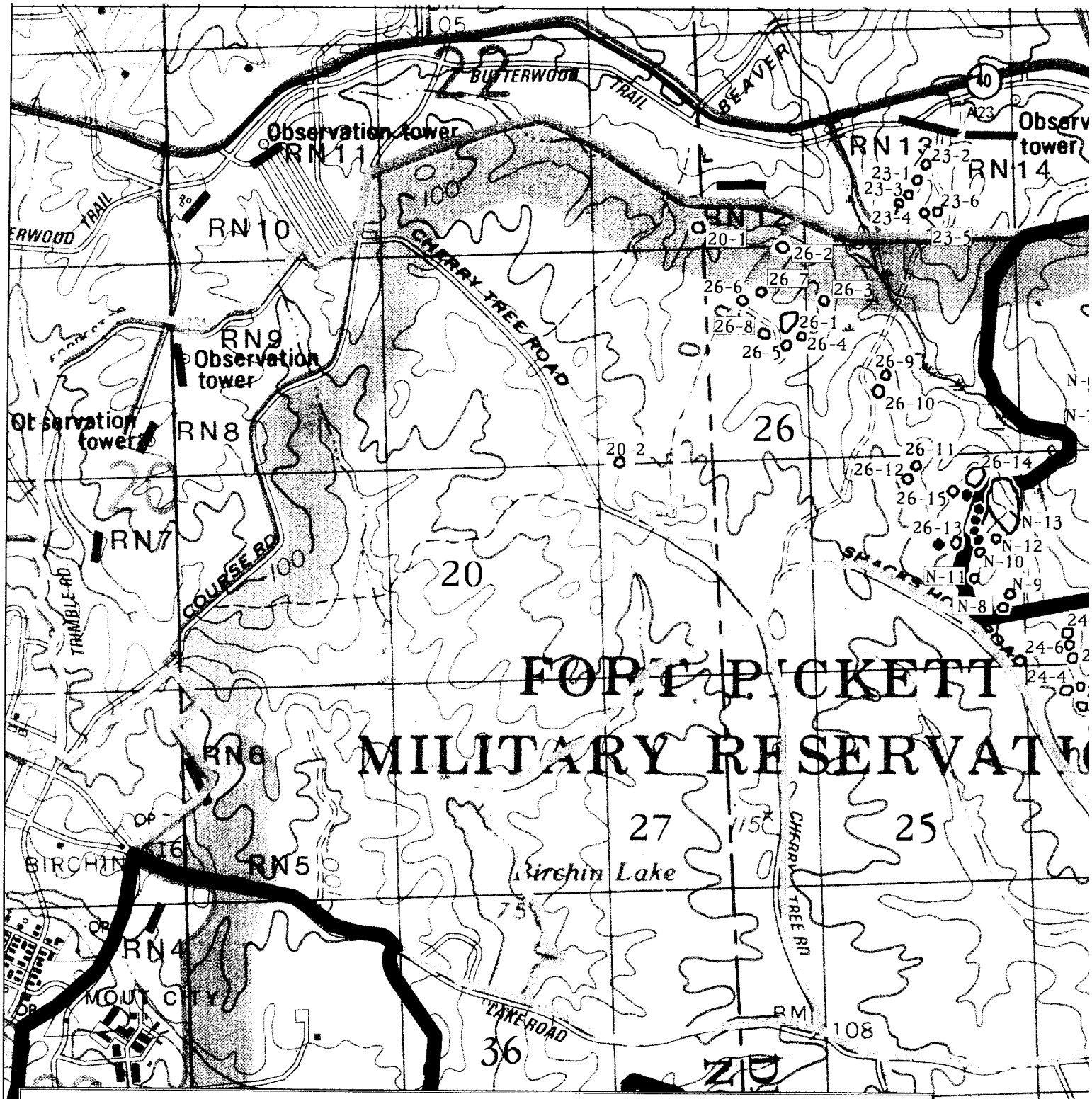
Map 1. *Rhus michauxii* Survey Study Area at Fort Pickett



Controlled Access Area Boundary
Danger Unexploded Ordnance Area
Vested Hunting Area Boundary
Training Area Boundary

Location of Ft. Pickett Military Reservation

Map by: VA Dept. of Conservation & Recreation, Division of Natural Heritage 10/95



Map 2 - *Rhus michauxii* Colonies Found in East Central Fort Pickett

Controlled Access Area Boundary

Training Area Boundary

Vested Hunting Area Boundary

Danger Unexploded Ordnance Area

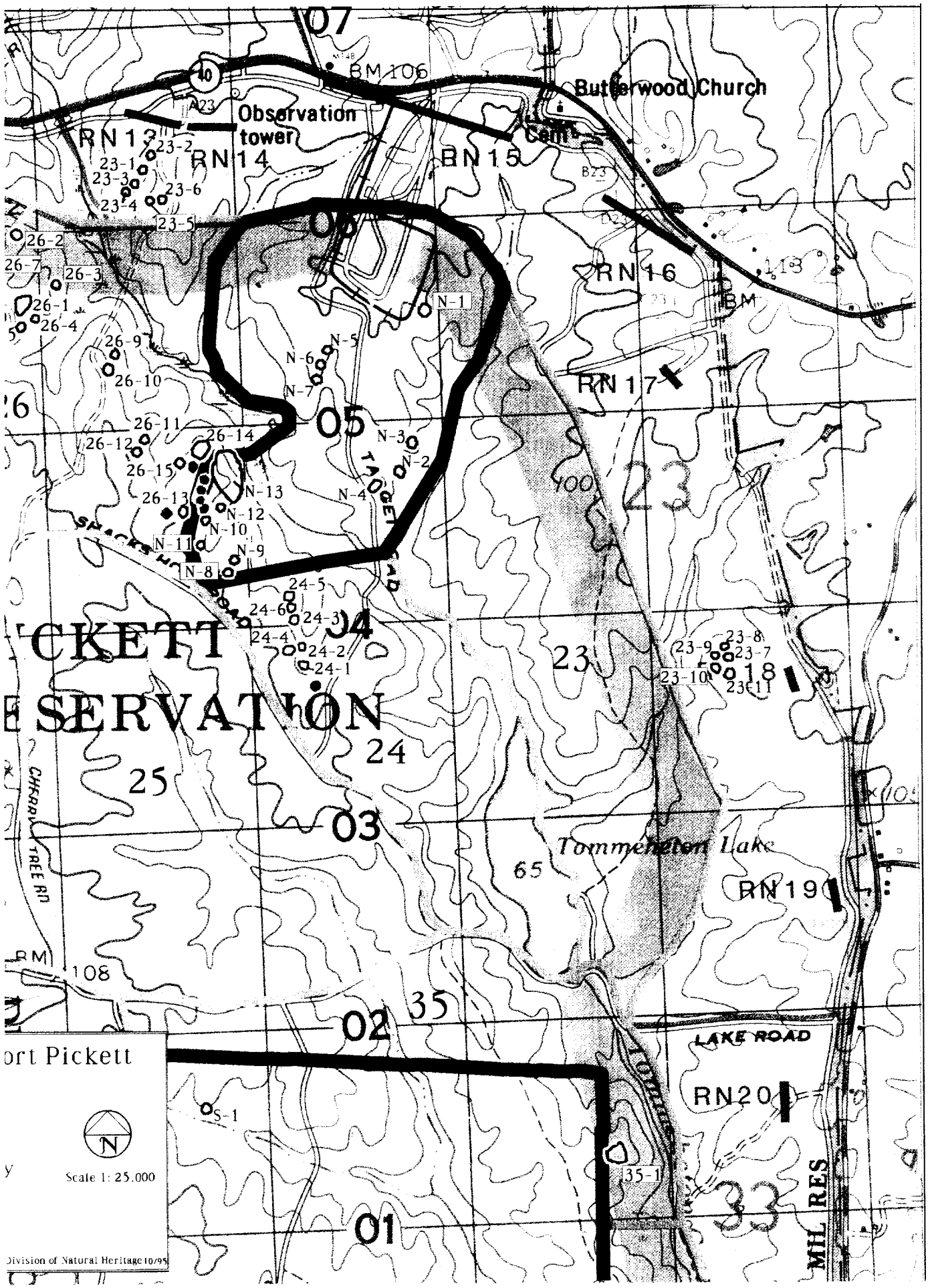
○ *Rhus michauxii* Colony

● Unidentifiable *Rhus* Colony

N

Scale 1: 25,000

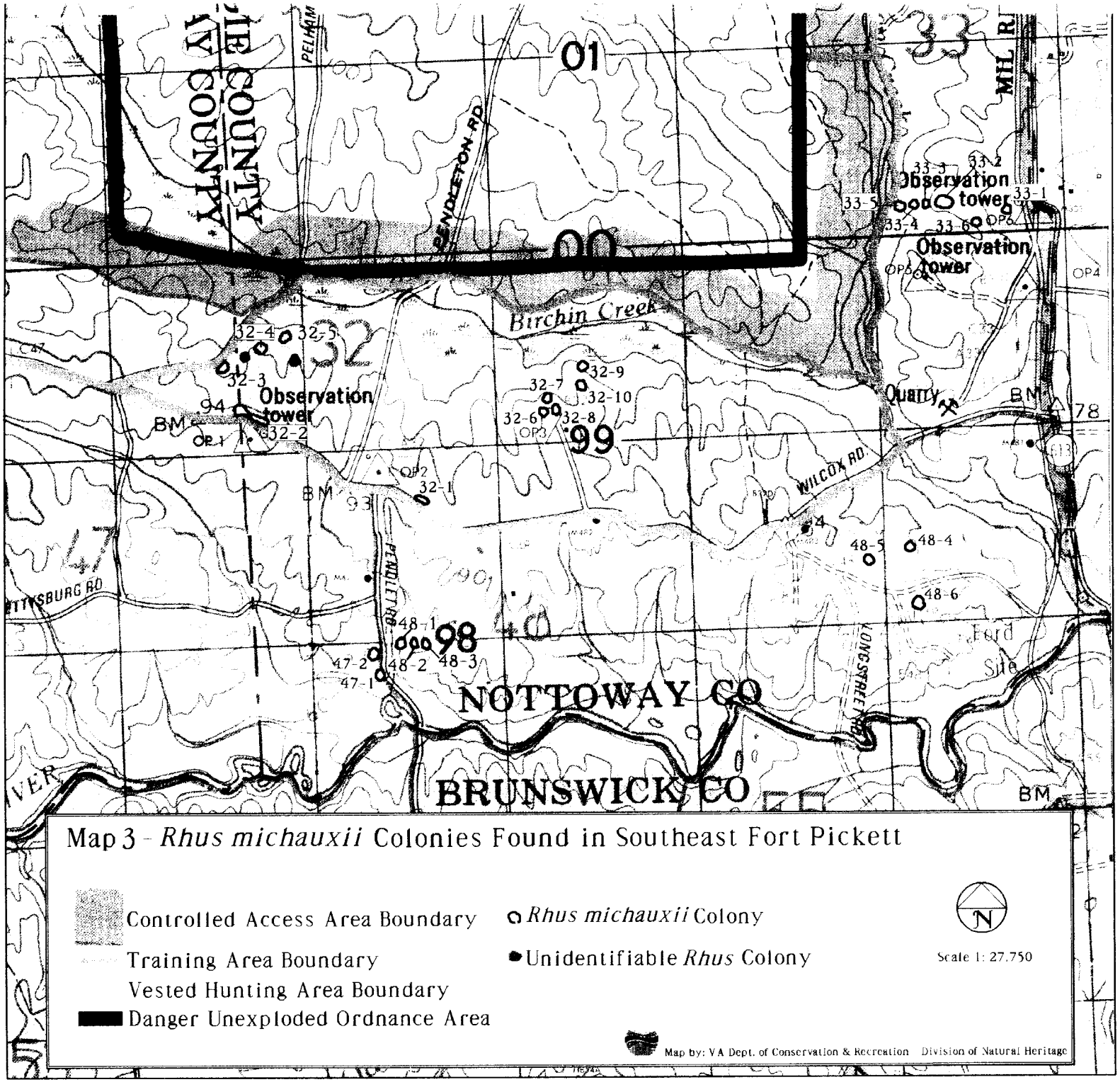
Map by: VA Dept. of Conservation & Recreation Division of Natural Heritage 10/95



ort Pickett

Scale 1: 25,000

Division of Natural Heritage 10/95



Map 3 - *Rhus michauxii* Colonies Found in Southeast Fort Pickett

Controlled Access Area Boundary

Training Area Boundary

Vested Hunting Area Boundary

Danger Unexploded Ordnance Area

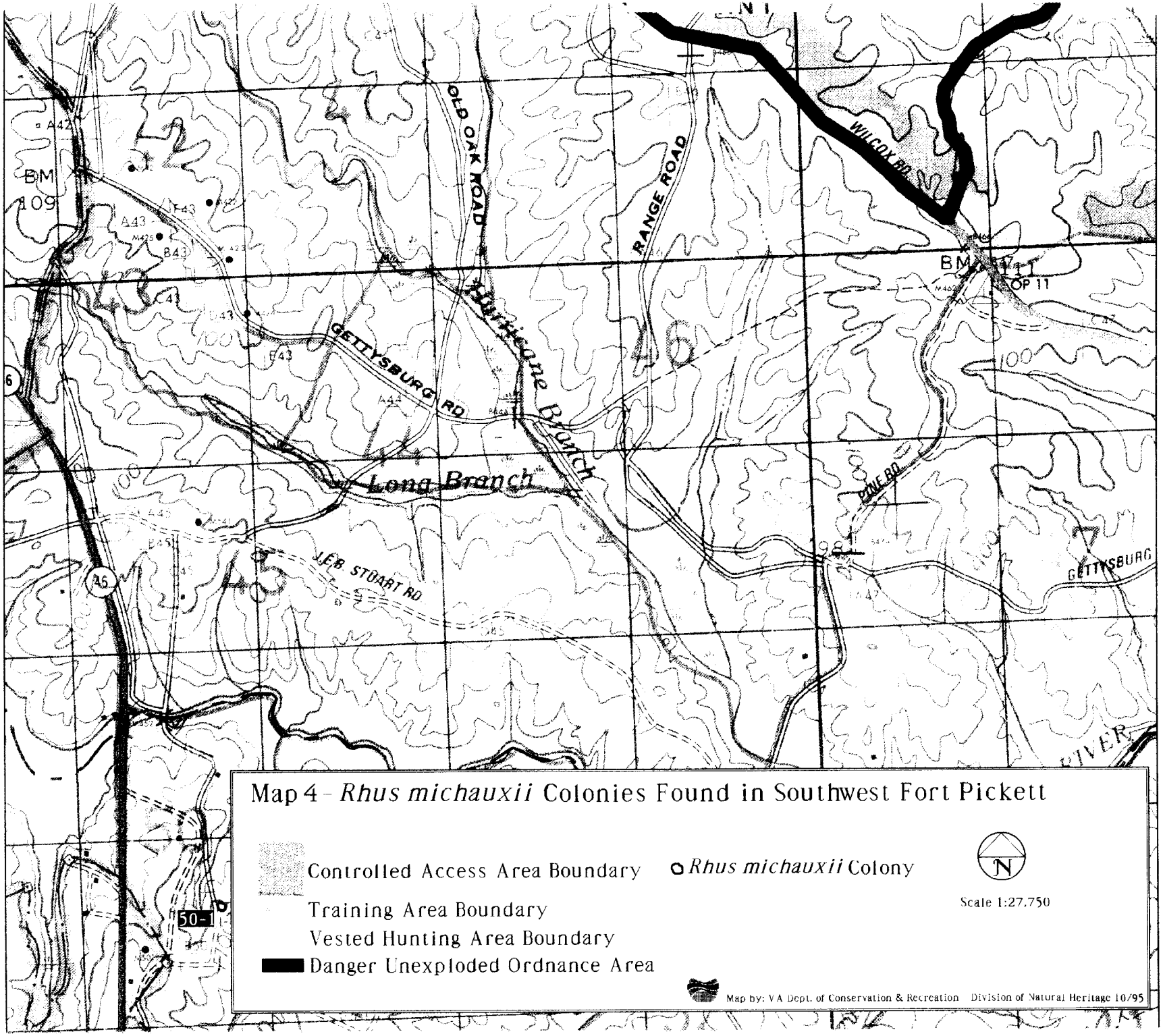
Rhus michauxii Colony

Unidentifiable *Rhus* Colony

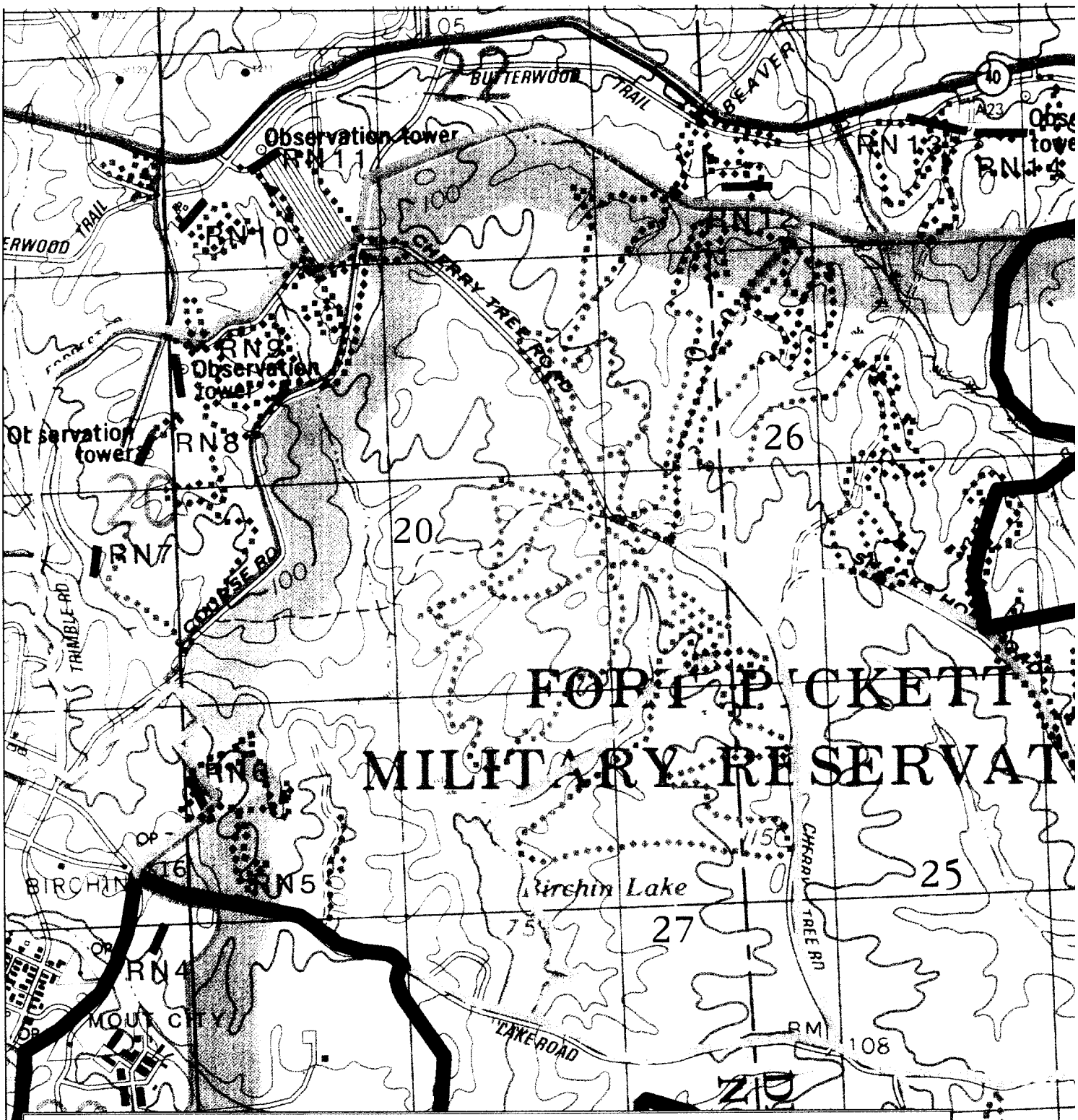
N

Scale 1: 27,750

Map by: VA Dept. of Conservation & Recreation Division of Natural Heritage



Map 4 - *Rhus michauxii* Colonies Found in Southwest Fort Pickett



Map 5 - *Rhus michauxii* Survey Routes in East Central Fort Pickett

Survey Routes

Controlled Access Area Boundary

Training Area Boundary

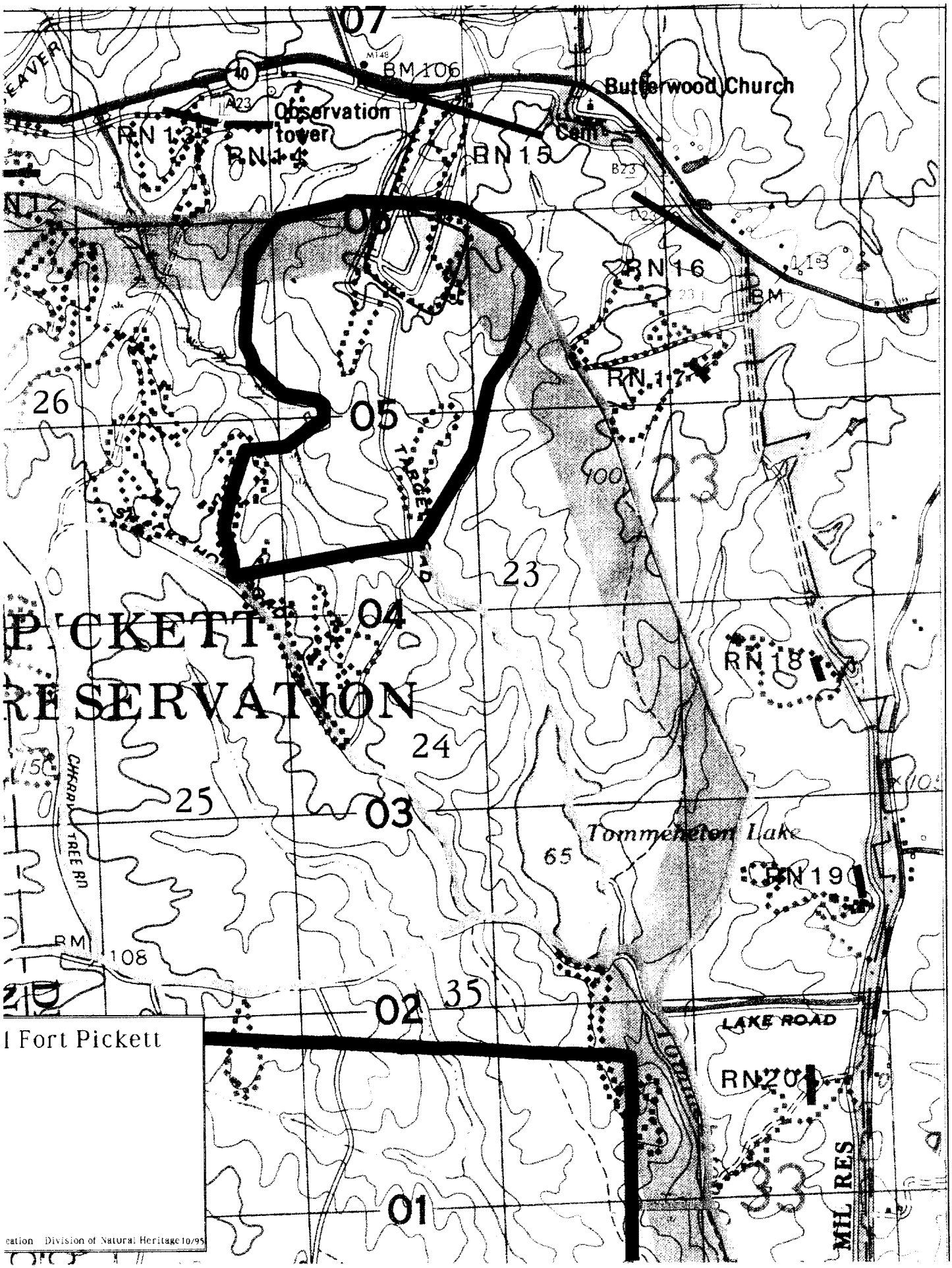
Vested Hunting Area Boundary

Danger Unexploded Ordnance Area

N

Scale 1: 25,000

Map by: VA Dept. of Conservation & Recreation Division of Natural Heritage 10/95



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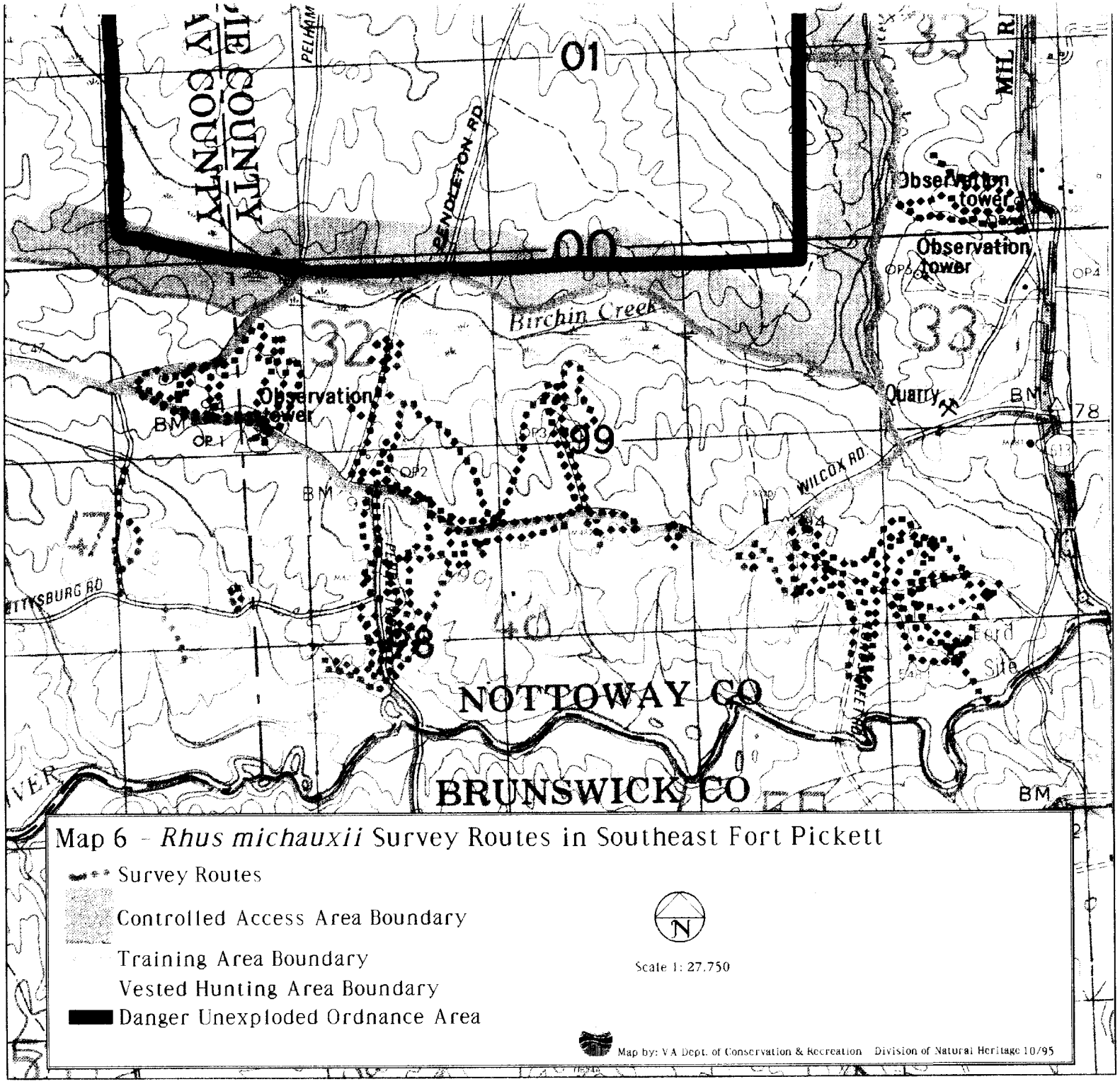

Map 6 - *Rhus michauxii* Survey Routes in Southeast Fort Pickett

- Survey Routes
- Controlled Access Area Boundary
- Training Area Boundary
- Vested Hunting Area Boundary
- Danger Unexploded Ordnance Area

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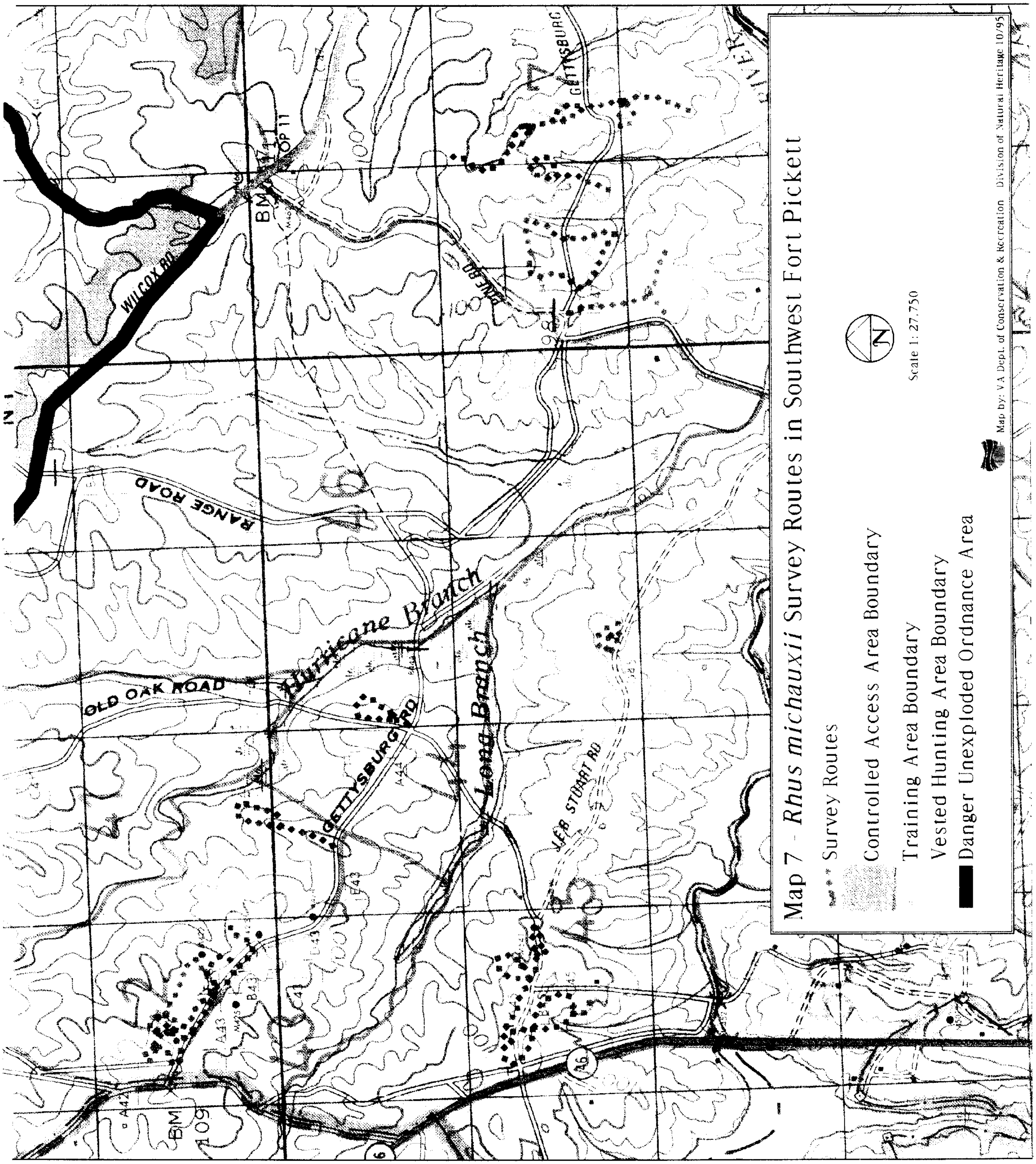
Scale 1: 27,750

Map by: VA Dept. of Conservation & Recreation Division of Natural Heritage 10/95


Map 7 - Rhus michauxii Survey Routes in Southwest Fort Pickett
Survey Routes
Controlled Access Area Boundary
Training Area Boundary
Vested Hunting Area Boundary
Danger Unexploded Ordnance Area
Scale 1: 27,750
Map by: VA Dept. of Conservation & Recreation Division of Natural Heritage 10/95
WILCOX RD
RANGE ROAD
OLD OAK ROAD
Hurricane Branch
GETTYSBURG RD
Long Branch
J.E.B. STUART RD
GETTYSBURG