

Small Whorled Pogonia Survey, 2004

Portsmouth Bypass, SCI-823-0.00

PID 19415

PREPARED FOR: ODOT, Office of Environmental Services

PREPARED BY: Robert Hook

DATE: June 7, 2004

Introduction

Pursuant to coordination with the US Fish and Wildlife Service (USFWS) and the Ohio Department of Transportation (ODOT) Office of Environmental Services, CH2MHILL was authorized to conduct a follow-up field survey for the federally endangered Small Whorled Pogonia (*Isotria medeoloides*) for the Portsmouth Bypass project. Previous surveys for the species during 2003 found no populations of the plant, although a number of sites were found which appeared to have suitable habitat and populations of associate species. Given that the species can be dormant for several years at a time, a second season of study was undertaken.

On June 3 and 4, 2004, selected plots were re-surveyed (Table 1). The selection of plots to revisit was coordinated in advance through ODOT-OES and the USFWS. Plot 2, previously recommended for re-survey, was not re-surveyed because:

- 1) Permission to enter the property had been denied by the landowner.
- 2) This property is not located within any alternatives.
- 3) The area of the nearest alternative to this site has been actively logged and substantially cleared since before the 2003 SWP survey. This survey followed a field investigation at the known SWP site in Hocking County with the USFWS and Paul Knoop, the naturalist who located this population, on May 19, 2004. The population was not visible at this site during this visit.

TABLE 1

Sites Re-Surveyed for the Small Whorled Pogonia during 2004

Plot Number	Large Whorled Pogonia present during 2003 Survey	Alternative Segments (per DEIS, 2004)
3	Yes	H3
14	Yes	V3
15	No	H1, V1
17	No	H4
18	Yes	H4
19	No	H4
21	Yes	V3
22	No	H3, V3
27	No	V3

The ground layer vegetation was visually re-surveyed in each plot and in the surrounding area (within the proposed alternatives) by two scientists, to the extent of the associate species' populations and suitable habitat. Populations of *Isotria verticillata*, the large whorled pogonia (LWP), were examined and counted. In the absence of flowers or fruits, the two species are differentiated based on stem color, the LWP having wholly or partially purplish stem, the SWP having an entirely pale colored stem.

The area of survey around each plot was sketched on a map (Appendix A). The original data forms were referenced at each site to determine the conditions of the site compared with the previous survey (Appendix B). Additional plants not previously recorded at each plot were added to the forms with additional notes as needed. The survey begin and end times were also recorded.

Results and Conclusion

Most plots were found to be in a condition comparable to the 2003 survey, with essentially the same species composition as previously noted. The exceptions were Plots 15 and 27. Plot 15 had been subject to canopy opening due to ice damage and some logging in Spring of 2003. As a result, by June 2004, the ground layer vegetation had become somewhat more dense through expansion of existing plants and invasion of others, notably Japanese honeysuckle. At Plot 27, additional logging had been performed all around the plot, leaving some slash in the plot and an opened canopy. These conditions would seem to make these plots less suitable for the SWP.

The LWP was identified in the same plots as previously recorded (3, 14, 18, 19, 21), with a count of between 65 to 150+ at each location. All of these plants were in vegetative state, and were differentiated from the SWP primarily based on the purplish color of their stems.

Although the SWP was not found during either survey year, some areas may still represent unoccupied, potentially suitable habitats. Further, the plant may be present but may not have been found because it may lie dormant for several years. Therefore, there remains a possibility for effects to potential unoccupied habitat and dormant individuals no matter which alternative is selected. Consequently, a **“May Affect, Not Likely to Adversely Affect”** determination is appropriate for construction along all alternatives. This is the same conclusion reported in the Ecological Survey Report.

One additional species was recorded during these studies: the woodrush *Luzula multiflora*, recorded near Plots 3 and 21.

Appendix A

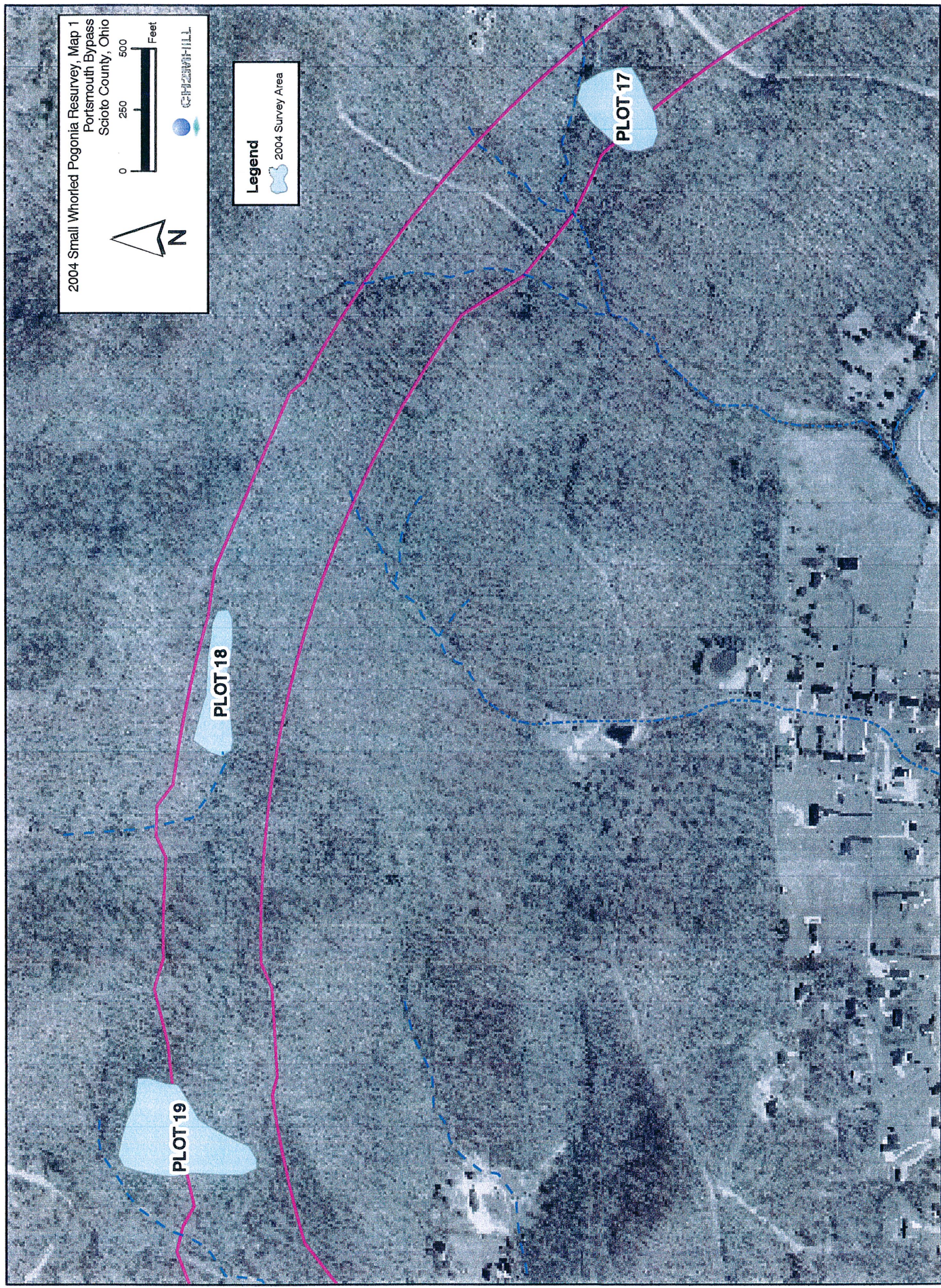
Maps

2004 Small Whorled Pogonia Resurvey, Map 1
Portsmouth Bypass
Scioto County, Ohio



Legend

-  2004 Survey Area



2004 Small Whorled Pogonia Resurvey, Map 2
Portsmouth Bypass
Scioto County, Ohio



Feet

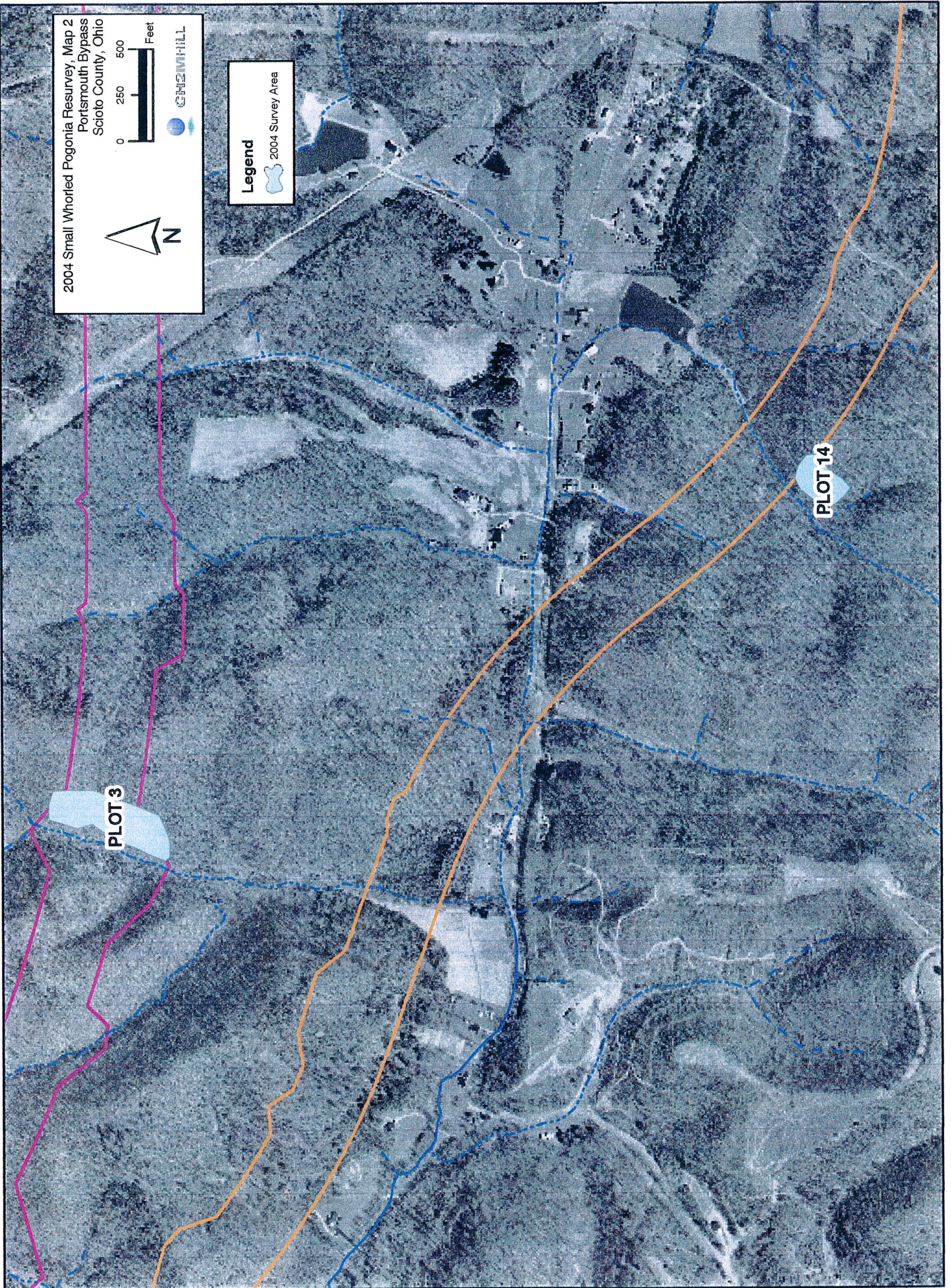
CHEM-HILL

Legend

2004 Survey Area

PLOT 3

PLOT 14



2004 Small Whorled Pogonia Resurvey, Map 3
Portsmouth Bypass
Scioto County, Ohio



Feet

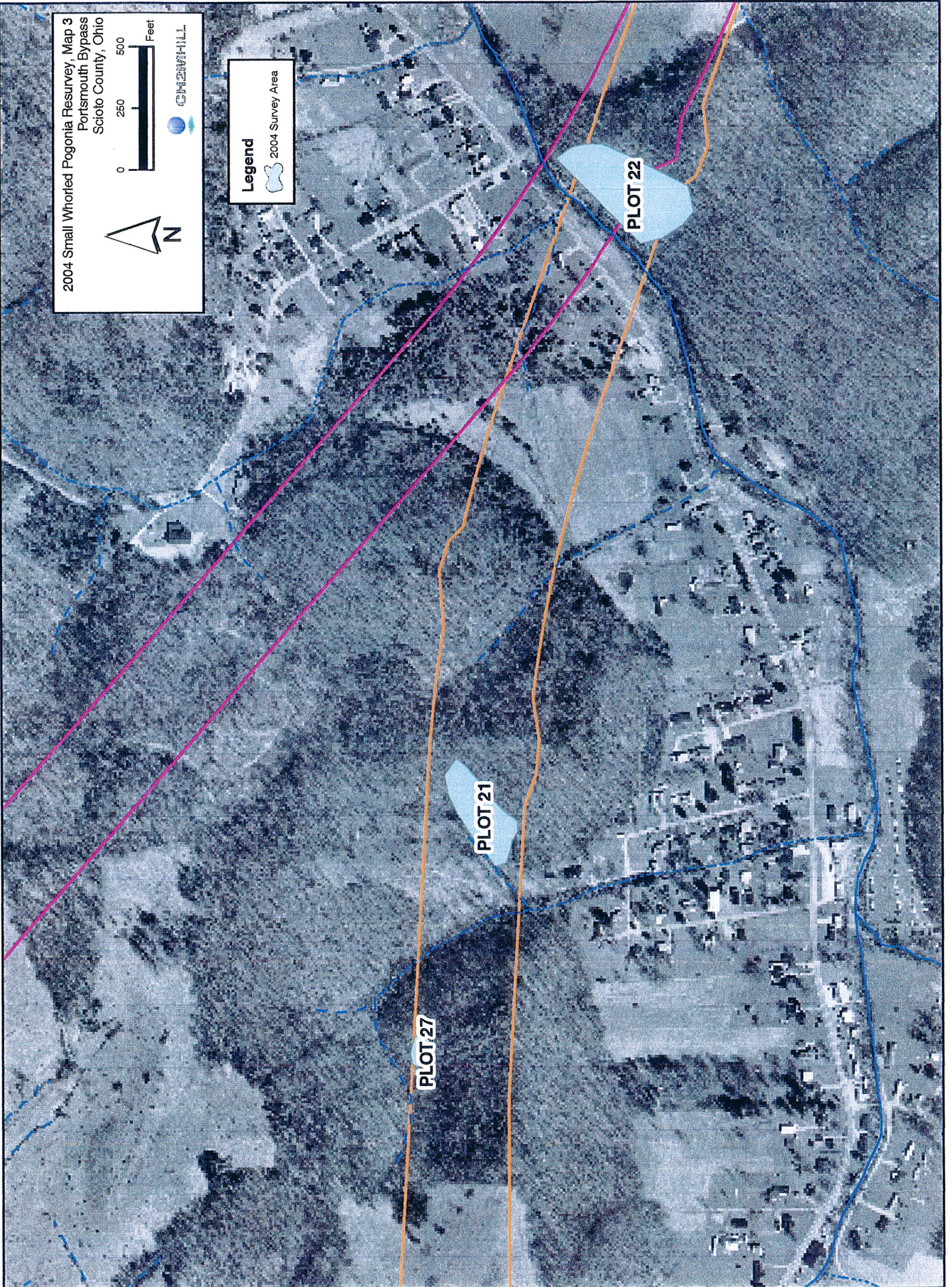
0 250 500



Legend



2004 Survey Area



2004 Small Whorled Pogonia Resurvey, Map 4
Portsmouth Bypass
Scioto County, Ohio



0 250 500 Feet

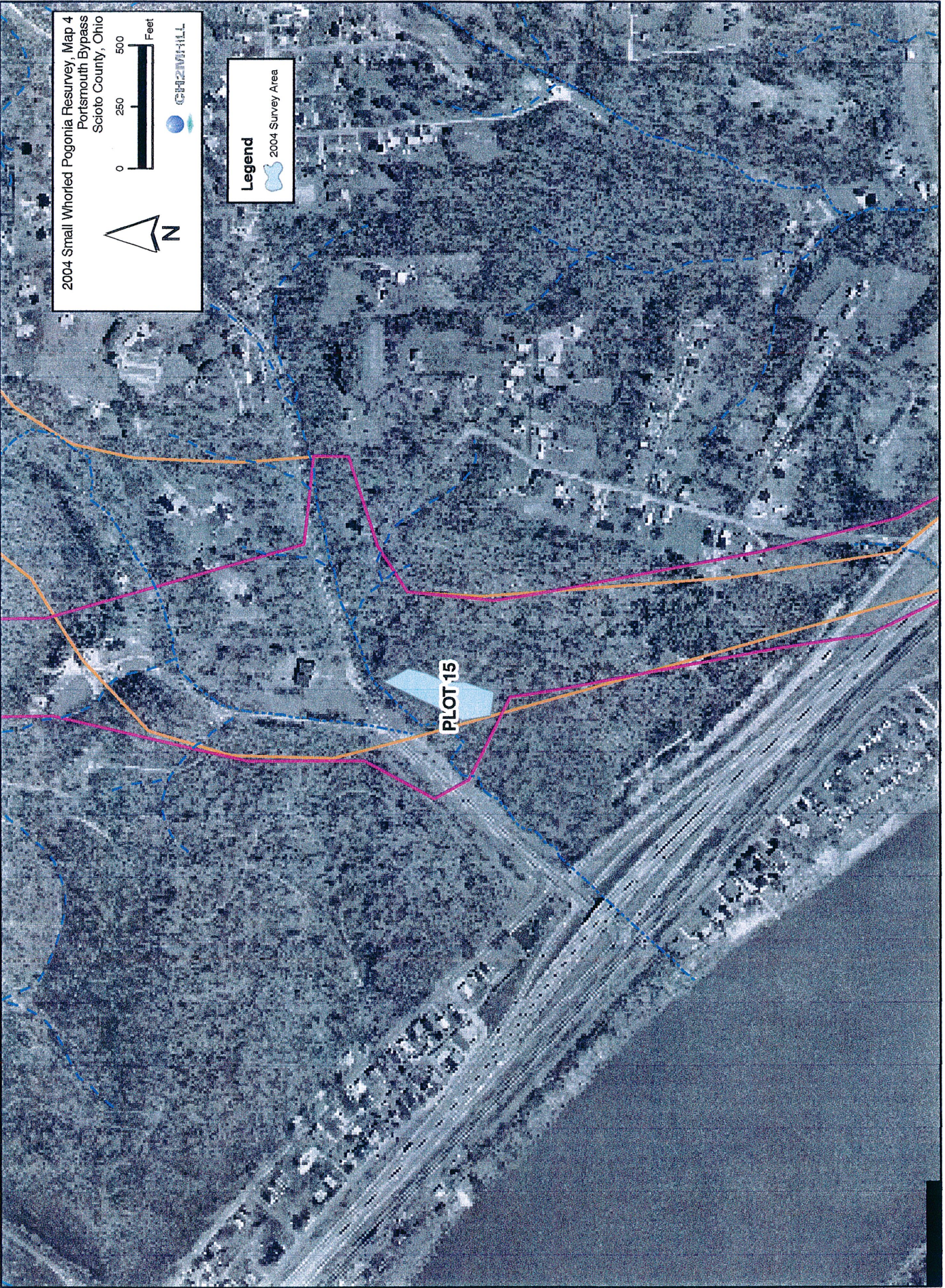


Legend



2004 Survey Area

PLOT 15



Appendix B

Data Forms

Rare plant species survey data form

Date: June 20, 2003 County, State: Scioto Co. OHIO

Project Title: PB

Target Species: Isotria medeoloides

Plot ID: PL3 Plot size: 1/2 Acre

Coordinates: N 38° 52.077 W 82° 55.673

Investigator(s): Rob Hook & Stuart Jennings

Survey Begin Time: 1:18 Survey End Time: 1:48

Slope position (U, M, L): Middle Slope angle (%): 35°

Slope aspect: N NE E SE S SW W NW

Soil description to 12 inches:

Depth (inches)	Layer	Matrix color	Mottle color	Mottle abundance	Texture/Notes
0-1in	Litter				
0-2	A	10YR 3-3	-	-	Silty
2-8	B	2.5Y 6-4	-	-	Silty clay
8+	Stone	-	-	-	-

General Site Description/Notes:

- Leaf Litter variable. Deep in patches
 good Hummus Layer Below.
 - good moss cover

6/3/04 RESURVEY - BEGIN 2:20PM END 3:10 PM
 General forest condition intact.

1:18 - 1:48

PLOT ID 3

Canopy Species Visual estimate of canopy closure (%): 60%

<i>Acer rubrum</i>	8", 12"
<i>Quercus prinus</i>	6", 18", 12"
<i>Nyssa sylvatica</i>	6"

Subcanopy Species (woodies > 1 meter height and climbing vines)

Visual estimate of canopy closure (%): 50%

<i>Fagus grandifolia</i>
<i>Sassafras albidum</i>
<i>Oxydendrum arboreum</i>
<i>Amelanchier albor.</i>
<i>Smylax rotundifolia</i>

PLOT ID 3

Ground Layer (non-woody plants and woody < 1 meter height)

Visual estimate of total ground cover (%): 60%

Oxydendrum arboreum

Quercus prinus

Medeola virg. - abundant - Confirmed 6/3/04

Rhododendron sp.

Sassafras alb.

Acer rubrum

Cypripedium sp.

Whorled loosestrife

Nyssa sylv.

Vaccinium vacillans

Panicum spp.

Aralia nudicaulis

Epigaea repens

Smilax glauca

Fagus grand.

Smilax rotund.

Polygonatum acrost. (few)

Smilax bona-nox

Dioscorea quaternata

Smilacina (few)

Prenanthes sp.

Liriodendron tulip. (few)

Isotria verticillata } downslope within 150' of flag

Goodenura

6/3/04 - *Isotria verticillata* - \pm 100 plants total
in a band 30-50' wide along slope
contour, below flag location.

Also - *Luzula multiflora*

Rare plant species survey data form

Date: June 23, 2003 County, State: Scioto Co., Ohio

Project Title: Portsmouth Bypass

Target Species: Isotria medeoloides

Plot ID: PL 14 Plot size: 1/2 acre

Coordinates: N 38° 51.433 W 82° 55.293

Investigator(s): Rob Hook & Stuart Lemmon

Survey Begin Time: 4:25 pm Survey End Time: 5:15

Slope position (U, M, L): Lower Slope angle (%): 18°

Slope aspect: N NE E SE S SW W NW

Soil description to 12 inches:

Depth (inches)	Layer	Matrix color	Mottle color	Mottle abundance	Texture/Notes
1-2 in	Litter	—	—	—	oak, maple, etc. Twigs
0-2	A	10YR 3-7	—	—	silty clay
2-6	B	10YR 5-6	—	—	silty clay

General Site Description/Notes:

- Fern (New York Fern) Hugging Road side to South
 - Large whorled Pegonia (?) in Large amounts
 ↳ small individuals than what we have seen thus far

6/31/04 RESURVEY - BEGIN 3:45 PM END 4:20 PM
General forest condition intact.

PLOT ID 114

Canopy Species

Visual estimate of canopy closure (%): 70%

- Nyssa sylv.* 6"
- Oxydendrum* 6"
- Liriodendron t.* 4", 6", 10"
- Acer saccharum* 12", 8"

Subcanopy Species (woodies > 1 meter height and climbing vines)

Visual estimate of canopy closure (%): 20%

- Liriodendron tulip.*
- Nyssa sylv.*
- Smilax rotund.*

PLOT ID 14

Ground Layer (non-woody plants and woodies < 1 meter height)

Visual estimate of total ground cover (%): 30-40%

Goodyera - several within plot.

Thelypt. novaboracensis

Smilax rotund.

Quercus rubra

Quercus prinus

Panicum spp.

Sassafras alb.

Acer rubrum

Lindera benz.

Lycopodium lucidulum

Carya sp.

Dioscorea quat.

Oxydendrum asbor.

Quercus alba

Toxicodendron radicans

Prenanthes sp.

Desmodium sp.

Nyssa sylv.

Rubus sp.

20+ indiv. spreading irregularly north along contour ± 130' from flag

Smilacina racemosa

40' North of flag

Isotria verticillata x 9 (smaller but leaves not reflexed reddish stem)

Antennaria?

Hieracium venosum

New York fern extends north of LWP area along trail

Potentilla sp.

Vaccinium vacillans

beyond alignment limit searched for LWP/SWP.

6/3/04 -

Isotria verticillata - 140+ plants

30' to 200' north of flag location

Medeola generally absent.

rare. under dense small tree canopy

Rare plant species survey data form

Date: June 24, 2003 County, State: Scioto Co., Ohio

Project Title: PIB

Target Species: Isotria Medeoloides

Plot ID: PL 15 Plot size: 1/4 - 1/2 acre

Coordinates: N 38° 45. 201 W 82° 52. 404

Investigator(s): Rob Hook & Stewart Jamming

Survey Begin Time: 8:40 A Survey End Time: 9:00 A

Slope position (U, M, L): Middle Slope angle (%): 30°

Slope aspect: N NE E SE S SW W NW

Soil description to 12 inches:

Depth (inches)	Layer	Matrix color	Mottle color	Mottle abundance	Texture/Notes
2 in	Litter	—	—	—	Good Hummus
0-2	A	10yR 3-2	—	—	silty clay
2-6	B	2.5y 5-4	—	—	silty clay

General Site Description/Notes:

- Very Steep slope !! Near Route 140
 - Possible wind / ice damage
 - Difficult to keep one's Balance on this slope

6/3/04 RESURVEY - BEGIN 5:45 PM END 6:25 PM

General forest condition - open canopy has allowed ground layer vegetation to increase. Survey extended south to somewhat more developed canopy area. Logging along top of slope east of site.

PLOT ID 15

Canopy Species

Visual estimate of canopy closure (%):

40%

Fagus grandifolia 30", 10", 10", 12", 12", 6", 6"

Quercus prinus 24"

Nyssa sylvatica 6" ice/wind damaged area

Subcanopy Species (woodies > 1 meter height and climbing vines)

Visual estimate of canopy closure (%):

20%

Acer saccharum

Viburnum acerifolium

Oxydendrum arboreum

Vitis sp.

Fagus grandifolia

PLOT ID 15

Ground Layer (non-woody plants and woodies < 1 meter height)

Visual estimate of total ground cover (%): 30% - 40%

Medeola virginiana - in plot - expanding East around slope to

Acer rubrum

Smilax rotundifolia

Epitagus Virg.

Acoela sp.

Polystichum acrostichoides

Nyssa sylvatica

Fagus grand.

Prunus serotina

Polygonatum

Unica japonica (low end - steep slope)

Cornus florida - small, scattered.

Fraxinus seedlings

Lindera (few)

Juncus sp.

Aesculus glabra

Amelanchier (few)

Quercus seedlings.

Arisaema

Panicum sp (upslope)

(nice crop) 100' from flag

(M.V. Also located 2-3000' South of plot)

population confirmed 6/3/04
2 small populations of *Medeola* found south of original plot

6/3/04 - Add. species in plot

Oxydendrum

Vaccinium sp.

Saxatrac

Rare plant species survey data form

Date: 6/30/03 County, State: Scioto OH

Project Title: PB

Target Species: Isotria medeoloides

Plot ID: 17 Plot size: 1/4 acre

Coordinates: N 38° 53.611' W 82° 57.301'

Investigator(s): HOOK/OLSON

Survey Begin Time: 11:20 Survey End Time: 12:00

Slope position (U, M, L): M Slope angle (%): 30°

Slope aspect: N NE E SE S SW W NW

Soil description to 12 inches:

Depth (inches)	Layer	Matrix color	Mottle color	Mottle abundance	Texture/Notes
1-1	Litter				(oak leaves)
0-3		2.5Y 3/2			silt loam
3+		2.5Y 4/3			silt loam
	stony below 6"				

General Site Description/Notes:

oak tending to yellow poplar down slope.
 Very steep sided "cove" at lower end of slope w
 N.Y fern. (40% slope angle)
 Medeola pop. just NW of plot perimeter
 = 6/3/04 RESURVEY - BEGIN 1:10 PM END 1:40 PM
 General forest condition intact.

Bottom of "cave" - kilow plot
(*Asplenium thelypteroides*)

Silvery spleenwort.

Caprirea

Cinnamom fern.

Carya sp.

Disporum

Ariseema

Tritium

Hydrangea arborescens

Podoglyxium

Lindera

Circaea

Thalictrum

Osmunda

Urtica

Understory
Acer saccharum.

June 20, 2003

PLOT ID 17

Canopy Species

Visual estimate of canopy closure (%): 60

Liriodendron tulipifera tulip poplar

Carya ovata pignut hickory

Acer saccharum sugar maple

Quercus rubra red oak

Subcanopy Species (woodies > 1 meter height and climbing vines)

Visual estimate of canopy closure (%): 50

Acer saccharum sugar maple

Lindera benzoin spice bush

Asimina triloba paw paw

June 30, 2003

PLOT ID 17

Ground Layer (non-woody plants and woodies < 1 meter height)

Visual estimate of total ground cover (%): 35%

- Arisaema triphyllum* jack-in-the-pulpit
- Galium circaezans* bedstraw.
- Disporum (maculatum?)* ~~fair~~ fairy bells
- Podophyllum peltatum* mayapple.
- Uvularia perfoliata* bell flower
- Toxicodendron radicans* poison ivy
- Polystichum achrosticoides* Christmas fern.
- Collinsonia canadensis* horse balm
- Prenanthes alba* lions tooth
- Actaea sp (pachypoda)* Dolls eyes
- Viburnum acerifolium* maple-ld viburnum.
- Smitax rotundifolia* round-ld briar
- Acer saccharum* sugar maple.
- Carex plantaginea* (bluish film)
- Iris cristata* dwarf crested iris
- Parthenocissus quinquefolia* Virginia creeper
- Thelypteris hexagonoptera* beech fern.
- Panicum (hairy nodes) boscii* Bosc's panicum.
- Geranium sp. (maculatum)* wild geranium.
- Carex sp. (thin "W" shaped blade)* ?
- Medeola virginiana* cucumber root.
- ~~Anemone~~ *Thalictrum sp.* Rue
- Menispermum canadense* moonseed
- Athyrium thelypteroides* silvery spleenwort
- Adiantum pedatum* maidenhair fern.
- Botrychium virginianum* Virginia grape fern
- Dioscorea quaternata* wild yam.

scattered small populations found along slope - 6/3/03

Rare plant species survey data form

Date: 6/30/03 County, State: Scioto OH

Project Title: PB

Target Species: Isotria medeoloides

Plot ID: 18 Plot size: 1/2 acre

Coordinates: N 38° 53.875' W 82° 57.822'

Investigator(s): Hook / Olson

Survey Begin Time: 1:55 Survey End Time: 2:40

Slope position (U, M, L): M Slope angle (%): 10° - 20°

Slope aspect: N NE E SE S (SW) W (NW)

Soil description to 12 inches: *(see also opposing slope on sketch)*

Depth (inches)	Layer	Matrix color	Mottle color	Mottle abundance	Texture/Notes
<1"	Litter				
0-3	A	15YR 3/2			silt loam
3+					Stony

General Site Description/Notes:

Selective cut on going - plot in undisturbed area, above temporary valley.

LWD site NW of PL 18 approx ± 150' on SW slope across valley

~~6/3/04 RESURVEY - BEGIN 9:40 END 10:40~~

General forest condition intact.

LWP site - SW slope

GL

25%
TERR

Isotria verticillata
Medeola

Fagus

Oxydendron

Sassafras

Acer rubrum

Amelanchier

Smilax rotund.

Vaccinium sp.

Fris

Hieracium

Koeleria sp.

Liriodendron

overstory - 75%

D. prinus

Acer rubrum

Fagus grandifolia

under

30%

Nyssa

Fagus

Sassafras

6/3/04 *Medeola* abundant.

Isotria vert. - ±150 plants
counted

Goodyera also present.

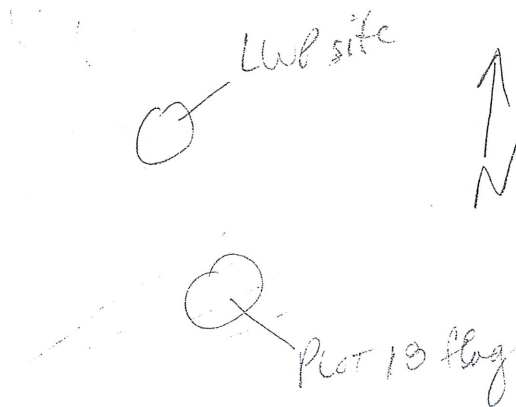
Litter

1" - compacted/stable

Unmarked flag.

20° slope

(SW)



June 30, 2005

PLOT ID 18

Canopy Species

Visual estimate of canopy closure (%):

25

Liriodendron tulipifera tulip poplar

Fagus grandifolia beech

Oxydendron arboreum sourwood

Acer saccharum sugar maple

Nyssa sylvatica Black gum

Subcanopy Species (woodies > 1 meter height and climbing vines)

Visual estimate of canopy closure (%):

20

Acer saccharum sugar maple

Nyssa sylvatica black gum

Fagus grandifolia beech

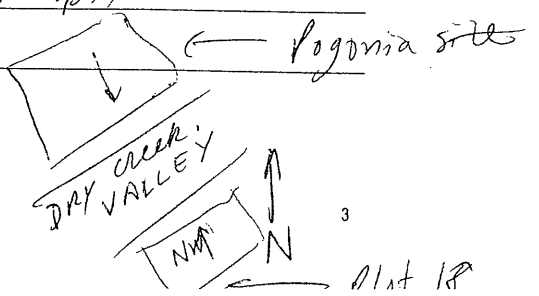
Prinus triloba paw paw

Ground Layer (non-woody plants and woodies < 1 meter height)

Visual estimate of total ground cover (%):

<i>Iris cristata</i>	dwarf crested iris
<i>Smilax</i>	briar
<i>Prenanthes alba</i>	lions foot
<i>Medeola virginiana</i>	cucumber root
<i>Collinsonia</i>	horse balm
<i>Dioscorea</i>	wild yam
<i>Solidago caesia</i> (flexicaulis?)	zig-zag goldenrod
<i>Carex cf. pennsylvanica</i>	Pennsylvania sedge
<i>Polystichum archrosticoides</i>	Christmas fern
<i>Sanicula marylandica</i>	snake root
<i>Quercus rubra</i>	N. red oak
<i>Fagus grandifolia</i>	beech
<i>Amphicarpa bracteata</i>	hog plant
<i>Botrichium virginiana</i>	grape fern
<i>Cimicifuga racemosa</i>	bugbane
* <i>Pogonia</i> <i>verticillata</i>	large-whorled <i>Pogonia</i>
<i>Sassafras albidum</i>	wild sassafras
<i>Carpinus</i> (?)	
<i>Viola</i> (heart-shaped lv) sp.	violet sp.
<i>Oxularia perfoliata</i>	bell flower
<i>Oxydendron arboreum</i>	sourwood
<i>Rosa multiflora</i>	multiflora rose
<i>Rubus</i> (allegheniensis)	raspberry
<i>Thalictrum</i> sp.	me.
<i>Carex plantaginea</i>	sedge
<i>Disporum maculatum</i>	fairbelle
<i>Arisaema triphyllum</i>	j-se-tle-plant

50' on slope opposite of plot. Plot faces NW. *Pogonia* slope faces Southeast to SW



Rare plant species survey data form

Date: 6/30/03 County, State: Scioto OH
 Project Title: PB
 Target Species: Isotria medeoloides
 Plot ID: 19 Plot size: 1/4 acre
 Coordinates: N 38° 53.922' W 82° 58.209
 Investigator(s): Hook/olson
 Survey Begin Time: 5:00 Survey End Time: 5:40
 Slope position (U, M, L): M Slope angle (%): 20°
 Slope aspect: N NE E SE S SW W NW

Soil description to 12 inches:

Depth (inches)	Layer	Matrix color	Mottle color	Mottle abundance	Texture/Notes
1.5"	Litter				Compacted litter
0-1	A	2.5Y3/2			silt loam
1-6		2.5Y5/4			silt loam
6+	stony				

General Site Description/Notes:

Plot in undisturbed woods along new logging road.
 Bench slightly up slope/top part of plot.

6/3/04 RESURVEY - BEGIN 11:08 AM END 11:58 AM
 General forest condition intact.

June 30, 2003

PLOT ID 19

Canopy Species

Visual estimate of canopy closure (%):

50

Acer saccharum sugar maple

Oxydendrum arboreum sourwood

Black gum \leftrightarrow *Nyssa sylvatica*

Liriodendron tulipifera tulip poplar

Subcanopy Species (woodies > 1 meter height and climbing vines)

Visual estimate of canopy closure (%):

20-30

Carya ovata

pinnut hickory

Quercus rubra

W. red oak

Quercus ^{prinoides} prinoides

Chestnut oak

Fagus grandifolia

Beech

Ostrya virginiana

hop hornbeam

June 30, 2003

PLOT ID 19

Ground Layer (non-woody plants and woodies < 1 meter height)

Visual estimate of total ground cover (%): 40

<i>Smilax rotundifolia</i>	briar
<i>Uvularia perfoliata</i>	bellflower
<i>Goodyera pubescens</i>	rattlesnake plantain (in bloom)
<i>Medeola virginiana</i>	cucumber root (v. abundant!)
<i>Thelypteris novaboreacensis</i>	new York fern
<i>Collinsonia canadensis</i>	horse balm
<i>Disporum maculatum</i>	fairy bells
<i>Rubus allegheniensis</i>	raspberry
<i>Oxydendrum arboreum</i>	sourwood
<i>Lindera benzoin</i>	spice bush
<i>Galium circaeum</i>	bedstraw
<i>Artemisia triphyllum</i>	j-in-the-r
<i>Desmodium sp.</i>	tick trefoil
<i>Sassafras albidum</i>	sassafras
<i>Lysimachia quadrifolia</i>	wild loosestrife
<i>Osmunda cinnamomea</i>	cinnamon fern
<i>Botrychium virginiana</i>	grape fern
<i>Carex pennsylvanicum</i>	Penn. sedge
<i>Rosa multiflora</i>	multiflora rose
<i>Panicum alba</i>	iron's tooth
<i>Parthenocissus quin.</i>	Virg. creeper
<i>Toxicodendron radicans</i>	poison ivy
<i>Podophyllum peltatum</i>	May apple
<i>Hammamelis virginiana</i>	witch hazel

6/3/04 - *Medeola* found to extend slightly downhill but well uphill of plot flag location. Abundant.

Other spp. *Panax quinquefolia*
Solidago caesia
Lycopodium lucidulum

Silene stellata

Rare plant species survey data form

Date: July 1, 2003 County, State: Scioto OH

Project Title: PB

Target Species: Isotria medeoloides

Plot ID: 21 Plot size: _____

Coordinates: N 38° 51.277' W 82. 53.428'

Investigator(s): HOOK/OLSON

Survey Begin Time: 12:45 Survey End Time: 1105

Slope position (U, M, L): U-M Slope angle (%): 20°

Slope aspect: N NE E SE S SW W NW

Soil description to 12 inches:

Depth (inches)	Layer	Matrix color	Mottle color	Mottle abundance	Texture/Notes
<u>0-2</u>	<u>Litter</u>				<u>compacted many fine roots!</u>
<u>0-2</u>	<u>A</u>	<u>10YR3/2</u>			<u>silt loam</u>
<u>2+</u>	<u>B</u>	<u>2.5Y 5/4</u>			<u>silt loam</u>

General Site Description/Notes:

6/4/04 RESURVEY - BEGIN 11:08 END 12:08
General forest condition intact.

PLOT ID 21

Canopy Species

Visual estimate of canopy closure (%): 50%

Oxydendrum arboreum

Quercus prinus Even-aged structure -

Quercus alba no signs of recent

Acer saccharum logging.

Fagus grandifolia general - 18-24" dbh

Nyssa sylvatica

Subcanopy Species (woodies > 1 meter height and climbing vines)

Visual estimate of canopy closure (%):

Fagus grandifolia

Acer saccharum

Cornus florida

Sassafras albidum

Castanea dentata x1

Ostrya virginiana

6/4/04 2 small Tsuga canadensis in plot vicinity.

Ground Layer (non-woody plants and woodies < 1 meter height)

Visual estimate of total ground cover (%): 25%*Isotria verticillata**Smilax rotundifolia**Saxifraga albiflora**Vaccinium vacillans**Quercus rubra**Medeola virginiana**Quercus prinus**Smilacina racemosa**Carex pensylvanica**Parthenocissus quinquefolia**Toxicodendron radicans* (sparse)*Carya ovata* (?)

→ ± 200' down slope ^{of flag} slightly west - large patch
of *Medeola*/*Goodyera*
near large *Carpinus*.

6/4/04

Isotria verticillata - 15 plants @ center of plot

± 50 plants located 30' north of flag

Medeola - scattered population along slope down from
flag elevation. Particularly large population
± 100 yd. NE of flag along contour.

Also: *Goodyera**Luzula multiflora*

→ *Mitchella* - with *Medeola*/*Goodyera*/200' down slope
of flag.

Rare plant species survey data form

Date: 7/1/03 County, State: Scioto, OH

Project Title: PB

Target Species: Isotria medeoloides

Plot ID: 22 Plot size: 1/2 acre

Coordinates: N 38° 51.209' W 82° 52.940'

Investigator(s): Hook/Olson

Survey Begin Time: 3:45 Survey End Time: 4:20

Slope position (U, M, L): Upper-Middle Slope angle (%): 30°

Slope aspect: N NE E SE S SW W NW

Soil description to 12 inches:

Depth (inches)	Layer	Matrix color	Mottle color	Mottle abundance	Texture/Notes
1.5	Litter				slightly compacted
0-1		10YR 3/2			silt loam
1-4		2.5Y 5/4			silt loam
4+					stony

General Site Description/Notes:

Plot area roughly ± 100' and west of flag
medeola/codyera primary associates.

6/4/04 - RESURVEY BEGIN ~~9:30~~ **9:30** AM END 10:30

General forest condition intact.
 Survey extended across both alternatives.
 Lowest slope position has dense understory

PLOT ID #22

Canopy Species

Visual estimate of canopy closure (%): 50%

Acer saccharum

Quercus prinus

Carya glabra

Subcanopy Species (woodies > 1 meter height and climbing vines)

Visual estimate of canopy closure (%): 35%

Liriodendron tulipifera

Ostrya virginiana

Oxydendron arboreum

Cornus florida

Ground Layer (non-woody plants and woodies < 1 meter height)

Visual estimate of total ground cover (%):

Smilacina racemosa

Medeola virginiana

Vaccinium vacillans

Dioscorea

Q. prinus

Amphicarpa bracteata,

Smilax rotundifolia,

Prunus serotina,

Nyssa sylvatica

Goodyera pubescens (4 ind. about 100 ft down slope),

Parthenocissus quin.

Viburnum acerifolium,

Ostrya virginiana

Quercus rubra,

Azalea sp.

Desmodium sp.

→ *Mitchella repens* partridge berry, 3 individuals

↳ extends NE along contour ± 200'

Plot 1 flag
30 feet NE of flag

6/4/04

Medeola - scattered population across slope, down hill from flag.

Mitchella - additional population found ± 100 yds. N of flag.

Other spp.:

associated w *Medeola*.

Uvularia

Acer rubrum

Saxifraga glauca

Sassafras

Carex rosea

Plant survey data form

Date: 7-16-03 County, State: Scioto Co.

Project Title: PB

Target Species: Isotria medeoloides

Plot ID: PL27 Plot size: _____

Coordinates: N 38° 51.333 W 92° 53.631

Investigator(s): HOOP/JENNINGS

Survey Begin Time: 6:35 pm Survey End Time: 6:52

Slope position (U, M, L): Middle Slope angle (%): 16°

Slope aspect: N NE E SE S SW W NW

Soil description to 12 inches:

Depth (inches)	Layer	Matrix color	Mottle color	Mottle abundance	Texture/Notes
1-2	Litter	—	—	—	Pine, maple, oak
0-5	A	4-3 10yr	—	—	clay loam

General Site Description/Notable Features:

- open understory (Red maple)
 - Detrital layer similar to PL25
 - Ice storm damage; Hard to get to area
 - Isolated population of *Medeola*.

6/14/04 RESURVEY BEGIN 10:50 END 11:00
 Additional recent logging activity in entire valley.
 Select cutting along plot slope. Canopy open all around plot - dense understory west.

Canopy Species

Visual estimate of canopy closure (%):

50%

Pinus 14" x 3

Oxydendrum 6" x 5

Quercus velutina (?) 3 x 18"

Acer saccharum

Quercus coccinea 24, 24

Subcanopy Species (woodies > 1 meter height and climbing vines)

Visual estimate of canopy closure (%):

50%

Acer rubrum

Sassafras

Smilax rotund.

Fagus grandifolia

Rosa multiflora

PLOT ID PL27

Ground Layer (non-woody plants and woodies < 1 meter height)

Visual estimate of total ground cover (%): 25%

<i>Sassafras</i>	center East
<i>Medeola</i> - center of plot	50-60% west
<i>Acer rubrum</i>	North
<i>Vaccinium stamineum</i>	
<i>Polystichum</i>	
<i>Parthenocissus quaque.</i>	
<i>Carya sp.</i>	
<i>Smilax glauca</i>	
<i>Oxydendrum</i>	
<i>Acer saccharum</i>	
<i>Liriodendron</i>	
<i>Nyssa</i>	
<i>Podophyllum</i>	
<i>Vaccinium vacillans</i>	
<i>Smilax rotundifolia</i>	
<i>Sarcocolla</i>	
<i>Potentilla</i>	
<i>Rhododendron nudiflorum?</i>	
<i>Rubus sp.</i>	
<i>Panicum sphaerocarpon</i>	
<i>Toxicodendron radicans</i>	
<i>Betula lenta (?)</i>	
<i>Lonicera japonica</i>	
<i>Scutellaria</i>	
<i>Rosa multiflora</i>	
<i>Lysimachia quadrifolia</i>	