Sparta Mountain WMA

Rare Plant Surveys

Addendum: Spring - Summer 2014

Wild Ridge Plants

Growers and Stewards of Native Plants

Prepared by Wild Ridge Plants, LLC

August 2014

Sparta Mountain WMA Rare Plant Surveys
Addendum: Spring - Summer 2014
Project Narrative

Submitted by Wild Ridge Plants, LLC, on Monday, August 25th, 2014

Project Overview

Rare plant species survey work was conducted at Sparta Mountain Wildlife Management Area from May through June 2014, as an addendum to surveys performed in later summer and fall of 2013.

Surveys were conducted on behalf of NJ Audubon as an element of forestry planning at the site. The project was coordinated by Jared Rosenbaum and Rachel Mackow of Wild Ridge Plants LLC. Field surveys were conducted by consulting botanists Janet Ebert and Jack Holt. The botanical survey team amassed over 100 hours of field survey time during 2014.

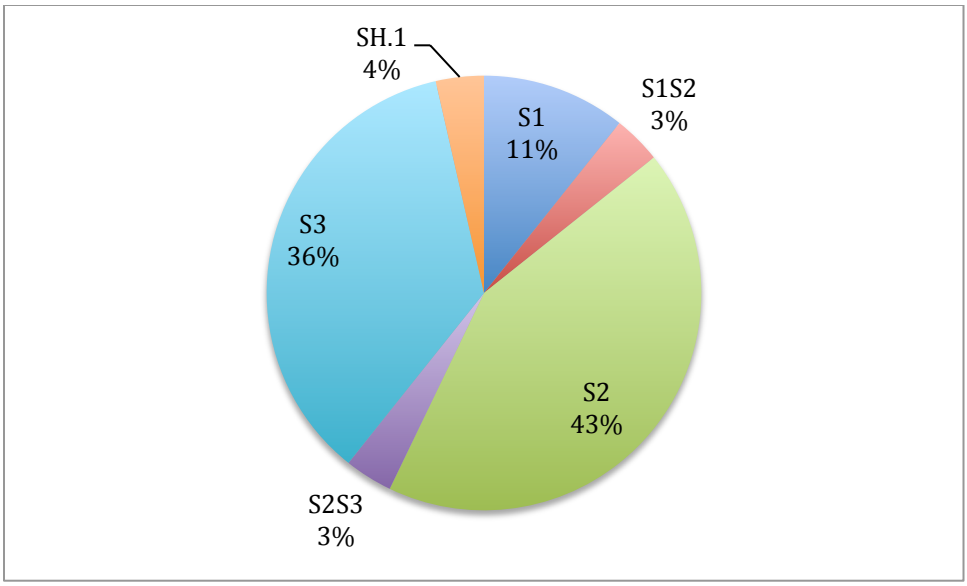
This report indicates the rare plant species found, their locations, and summary notes on their habitat and abundance. See *Appendix A: Occurrences by Location and Habitat* for details. Maps for all occurrences are included as *Appendix B: Maps.*

For further background on the project, site, and rare species found in 2013, please consult the *Sparta WMA Rare Species Surveys Report 2013*.

Summary of Findings

Eighteen plant species listed on the most current New Jersey Natural Heritage list of rare plants were observed during surveys, with 32 total occurrences (See Figure 1). Three of those species are listed as endangered (S1), comprising 11% of the total rare species found. One species known only from a single, historic occurrence in the state was found during survey work.

Figure 1. *Species Observed, by NJ Natural Heritage Program Rank*



*Rank current as of September 2013
Key to State Element Ranks:
S1 - Critically imperiled in New Jersey because of extreme rarity (5 or fewer occurrences or very few remaining individuals or acres).
S2 - Imperiled in New Jersey because of rarity (6 to 20 occurrences).
S3 - Rare in state with 21 to 100 occurrences (plant species and ecological communities in this category have only 21 to 50 occurrences).
? - Either it has not been determined if the record is indicative of significant habitat or the identification of the species or community may be confusing or disputed.
SX - Elements that have been determined or are presumed to be extirpated from New Jersey. All historical occurrences have been searched and a reasonable search of potential habitat has been completed. Extirpated taxa are not a current conservation priority.

Discussion of Rare Species Occurrences

As was the case with 2013 surveys, most rare species found occupied either open, anthropogenically maintained or disturbed habitats (such as ROWs, roadsides, trail edges, etc.) or wetlands. The latter were primarily open or scrub-shrub habitats and were arguably anthropogenically altered in large part as well. A small but significant percentage of rare species occurrences, however, were found in shaded, upland forest habitats or open rocky woods.

Examples of rare plant species found along powerline ROWs and roadsides included *Carex aggregata*, *Lilium philadelphicum*, and *Selaginella rupestris*. Note that the two occurrences of the latter may have been severely damaged by

ROW herbicide application. An extremely notable and somewhat atypical occurrence of *Dicentra canadensis* was found in thin woods along the edge of the ROW and partially in open habitat within the ROW.

As even more rarities along the ROWs have been found, the continued aggressive herbicide use in ROW maintenance becomes even less appropriate. As was noted in the 2013 *Report*, rare species and notable plant communities are under significant pressure from ROW maintenance activities.

Over one third of the species found were associated with wetland habitats ranging from open waters to scrub-shrub wetlands. Examples included *Utricularia intermedia*, *Epilobium leptophyllum*, and *Carex haydenii*.

At least once species found was associated with a shaded, upland habitat without obvious recent anthropogenic disturbance. This was *Milium effusum*, a grass known in New Jersey only from a single, historical occurrence. The occurrence at Sparta was found in mesic, somewhat rocky woods.

Both the mesic/rich habitat and the rarity of the occurrence suggest a conservative approach to any forestry management in the vicinity of the occurrence. A nearby tree-fall gap was noted as colonized by a significant amount of *Berberis thunbergii*, and in general, mesic forests are more susceptible to species invasion following forestry activities than the poorer, drier, less diverse oak/heath upland forests that dominate much of the WMA.

Because the rare species were largely found in habitat types and locations consistent with those found in 2013 surveys, please refer to the 2013 *Report* for a discussion of forest management implications and monitoring recommendations for Sparta WMA.

Attached Appendices:

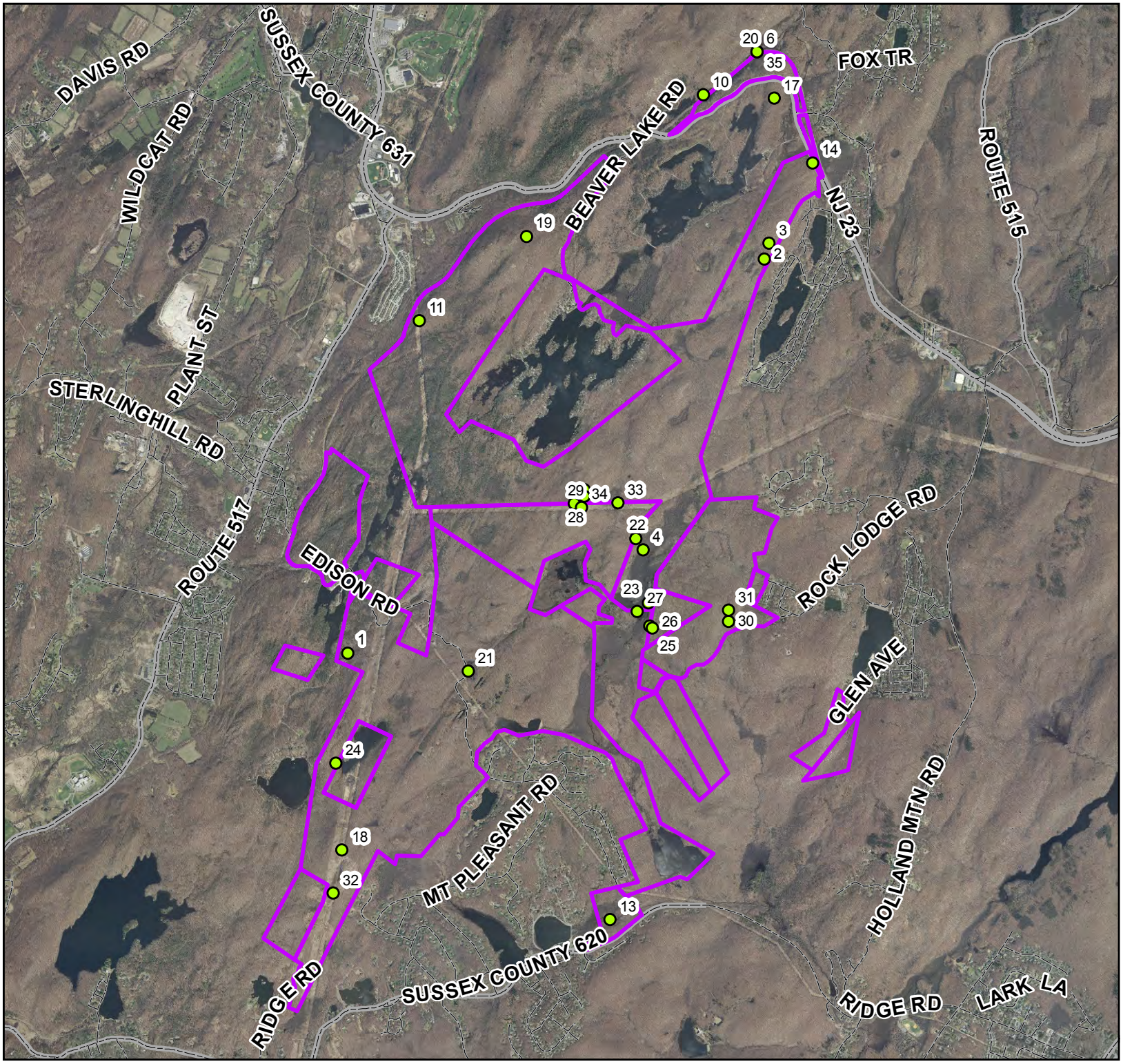
Appendix A. Sparta WMA Element Occurrences by Location and Habitat
Appendix B. Maps
Appendix C. Field Survey Sheets

Addendix A. Sparta WMA Element Occurrences by Location and Habitat
Sparta Mountain WMA Rare Plant Surveys, Spring - Summer 2014
Wild Ridge Plants, LLC

Waypoint	Map ID	Species	NJ_Rank	# of Individuals	Habitat	Notes	Y	X
105	1	*Aplectrum hyemale*	S2	3 leaves	Open shrubby bench over road		41.067450	-74.583233
118 & 119	2 & 3	*Asclepias quadrifolia*	S3	4 genets	Thin woods, gap & along trail		41.097900	-74.540800
none	4	*Calla palustris*	S3	500+	Scrub-shrub swamp		41.075417	-74.553100
none	5	*Carex aggregata*	S1S2	~25	Powerline ROW - dry thin soil		0.000000	0.000000
none	6	*Carex haydenii*	S1	unknown	Large open marsh		41.113883	-74.541533
	7, 8, & 9	*Ceratophyllum echinatum*	S1	over 10,000	Shallow quiet water	W side Edison Swamp, Rock Lodge Road, Glen Road	0.000000	0.000000
115	10	*Dendrolycopodium hickeyi*	S2S3	<2 sq meters	Cindery edge of RR track, part shade		41.110533	-74.547017
110	11	*Dicentra canadensis*	S1	10 to 15	Edge of thin woods by ROW		41.093100	-74.575967
none	12	*Epilobium leptophyllum*	S2	16+	Open wetland on sedge tussocks	Glen Road Marsh	41.071683	-74.551667
138	13	*Epilobium leptophyllum*	S2	6 or 7	Open wetland on sedge tussocks		41.046867	-74.556450
none	14	*Equisetum sylvaticum*	S3	100+ stems	Deep shade down bank from Rt 23		41.105317	-74.535833
	15	*Juncus articulatus*	S2	50 to 100?	Moist edge of ROW access road	*Gentianopsis crinita* nearby	0.000000	0.000000
none	16	*Lilium philadelphicum*	S2	3	Sapling woods		41.080083	-74.559150
117	17	*Lilium philadelphicum*	S2	2	Open oak woods		41.110317	-74.539750
129	18	*Lilium philadelphicum*	S2	4	Edge of ROW		41.052250	-74.583817
113	19	*Lilium philadelphicum*	S2	1	Near ATV trail, well-drained slope	ID not positive	41.099617	-74.565067
none	20	*Lysimachia thyrsiflora*	S3	100+	Open marsh between RR and slope	same as C. haydenii	41.113883	-74.541533
137	21	*Lysimachia thyrsiflora*	S3	25 to 50	Shrubby road edge wet area		41.066050	-74.570983
121	22	*Lysimachia thyrsiflora*	S3	25 to 50	Scrub-shrub edge of large wetland	Possibly many more	41.076317	-74.553850
none	23	*Lysimachia thyrsiflora*	S3	~10	Scrub-shrub wetland		41.071350	-74.552600
131	24	*Lysimachia thyrsiflora*	S3	10 to 15	Shallow, partly shaded pond edge	Collins Pond	41.058933	-74.584467
133 &134	25 & 26	*Milium effusum*	SH.1	30 to 40	Rocky mesic sloping woods	Two loose groups; Shade	41.069550	-74.552417
none	27	*Nymphoides cordata*	S3	~25	Saturated red maple scrub-shrub	Not positive ID	41.070683	-74.553700
123 & 125	28 & 29	*Poa languida*	S2	~60	Young woods and thicket		41.079583	-74.559150
136	30 & 31	*Poa languida*	S2	15-20	Trail edge in open woods		41.069900	-74.544400
126	32	*Selaginella rupestris*	S2	n/a	Exposed rock in ROW	small, partly dead	41.048917	-74.584717
120 & 122	33 & 34	*Selaginella rupestris*	S2	~3 sq meters	Exposed rock in ROW		41.079033	-74.555700
none	35	*Utricularia intermedia*	S3	over 100	Open wetland	same as C. haydenii	41.113883	-74.541533

Appendix B: Maps

Sparta Mountain WMA Rare Plant Surveys
Spring - Summer 2014
Wild Ridge Plants, LLC



Sparta Mountain

Rare Plant Survey

Full Project Area

2012 Aerial Photography

N

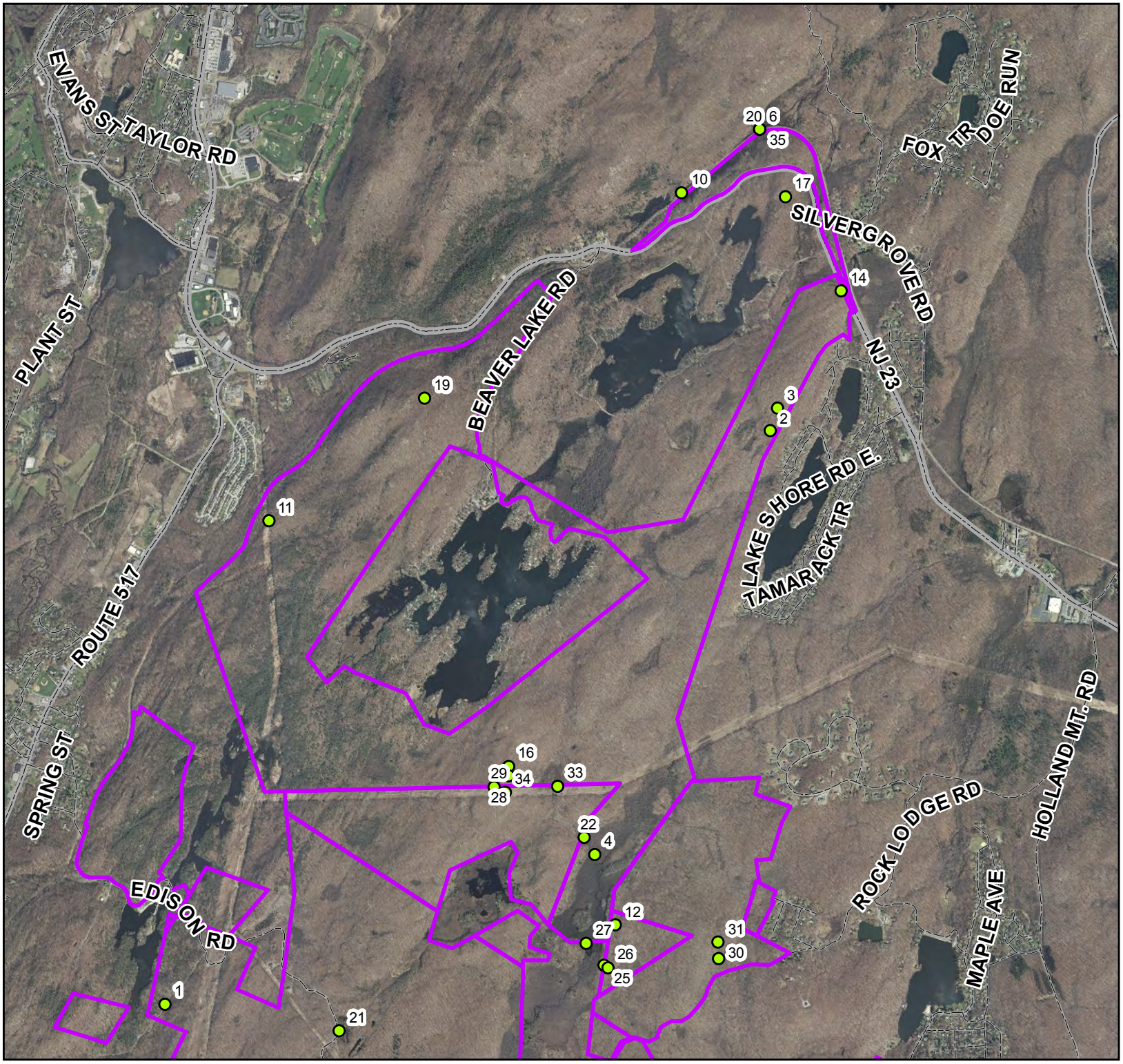
Map prepared by
Wild RIdge Plants, LLC

Legend

Rare Plant Locations

Sparta WMA

0 1,500 3,000 4,500 Feet



Sparta Mountain

Rare Plant Survey

Northern Area

2012 Aerial Photography

N

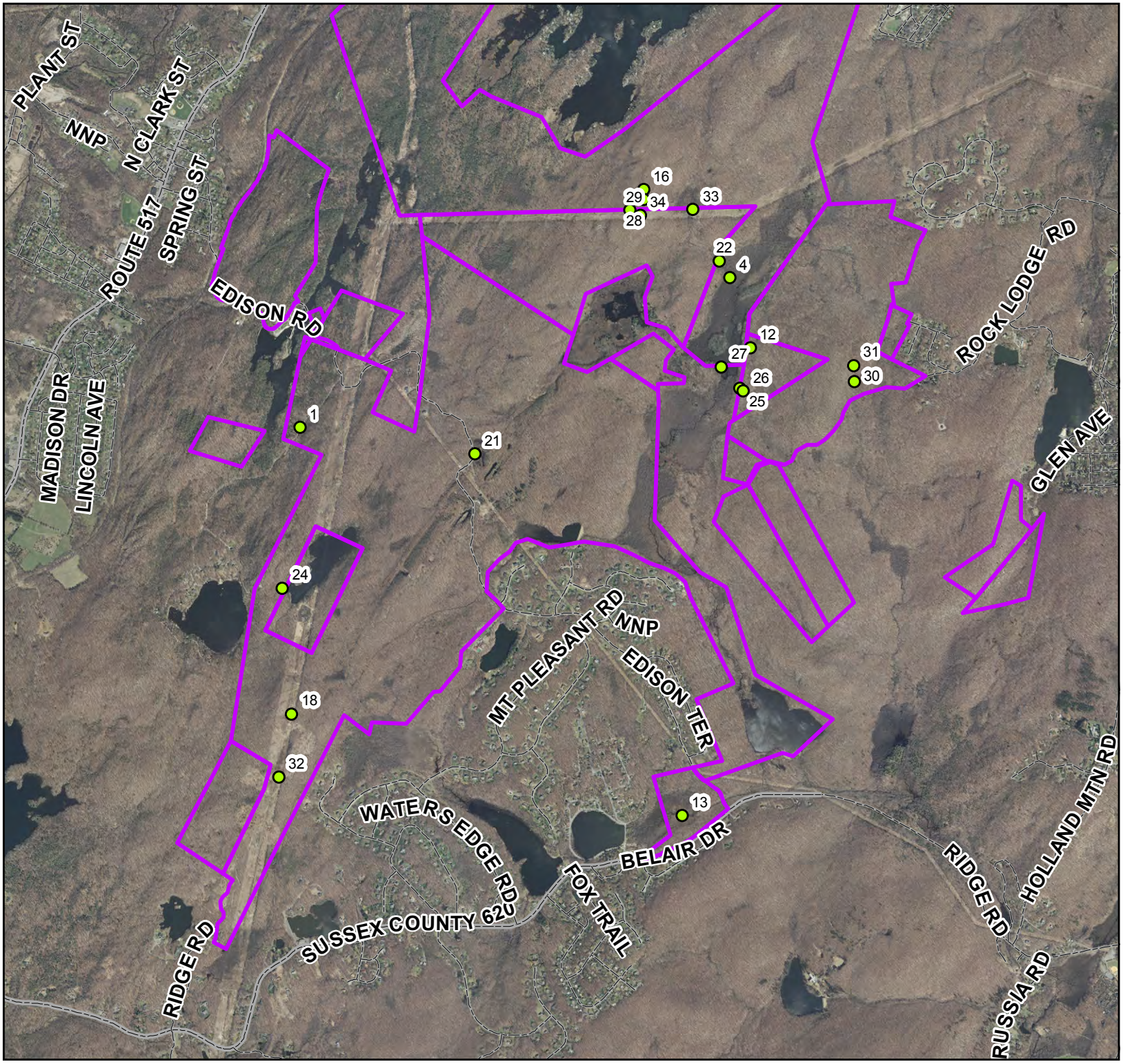
Map prepared by
Wild RIdge Plants, LLC

Legend

Rare Plant Locations

Sparta WMA

0 1,500 3,000 4,500 Fee



Sparta Mountain

Rare Plant Survey

Southern Area

2012 Aerial Photography

N

Map prepared by
Wild RIdge Plants, LLC

Legend

Rare Plant Locations

Sparta WMA

0 1,500 3,000 4,500 Fee

Appendix C. Field Survey Sheets

as prepared by botanists Janet Ebert and Jack Holt

Sparta Mountain WMA Rare Plant Surveys
Spring - Summer 2014
Wild Ridge Plants, LLC

Sparta Mountain WMA Rare Plant Survey - *Use the back of sheet for additional notes.*

Sheet Number:

Surveyor Name(s): Janet Ebert & Jack Holt

Date: May 10, 2014

GPS Point #: 105

X Coordinate: N 41° 04.047

Y Coordinate: W 74° 34.994

Scientific Name: Aplectrum hyemale (Muhl. ex Willd.) Nutt S2

Number of Individuals: 3 leaves within 1 square meter area ? genets

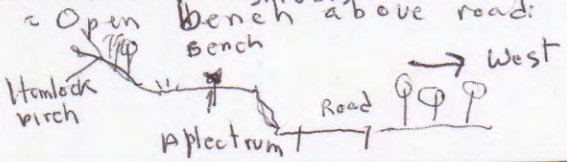
Estimated Percentage of Flowering/Fruiting Individuals: No sign of old seed-flower stalks

Life Stages Present: All medium-sized

Condition of Plants Found: No sign of senescence

Habitat (Plant Community, Structure, Estimated Percent Canopy Cover):

~ Open bench shrubby above road: partly shaded by birch-hemlock woodland



Around Aplectrum woody vegetation is mostly < 1 m. tall and not dense (50-60% cover?)

Co-occurring Plant Species (Dominant and notable):

Betula lenta, Tsuga canadensis, Viburnum acerifolium, Tilia americana, Polystichum acrostichoides, Solidago caesia

Substrate: Gneiss, glacial deposits?

% Slope: Nearly level

Aspect: Road is west of Aplectrum

Hydrology: Well drained, no sign of erosion from upslope water

Threats (Invasive Species, Deer Browse): No immediate threat from invasives
Bench is probably kept from reforesting by occasional cutting or spraying (???)

Sparta Mountain WMA Rare Plant Survey - *Use the back of sheet for additional notes.*

Sheet Number:

Surveyor Name(s): Janet Ebert and Jack Holt

Date: May 31, 2014

GPS Point #: ① 118 16' accuracy ② 119

X Coordinate: 41° 05.874 41° 05.945

Y Coordinate: 74° 32.448 74° 32.416

Scientific Name: Asclepias quadrifolia Jacq. S3

Number of Individuals: ① 3 genets - 8 ramets ② 1 genet - 2 ramets

Estimated Percentage of Flowering/Fruiting Individuals: ① 2 ramets in bud ② 1 ramet in bud

Life Stages Present: Rather non-flowering or in bud

Condition of Plants Found: Healthy - normal

Habitat (Plant Community, Structure, Estimated Percent Canopy Cover): Thin oak-hickory-cherry woods on dry ridge, some rocks
① In small opening, partial sun ② Along trail, filtered sun
Partly under a hickory sapling
Thin ground cover

Co-occurring Plant Species (Dominant and notable): Prunus virginiana, Rubus flagellaris, Danthonia spicata, Viola sp.
Much of thin woods on ridge is heath-dominated and low in diversity
Rocky openings, old disturbances and trail edges tend to be richer
There is considerable potential habitat nearby

Substrate: Thin rocky soil - gneiss (?)

% Slope: ① Nearly level ② 15-20° ?

Aspect: ① ~ South ② ~ South east

Hydrology: Very well drained, upper slope

Threats (Invasive Species, Deer Browse): There are a few Microstegium and Persicaria longiseta along trails and old human disturbances

Sparta Mountain WMA Rare Plant Survey - *Use the back of sheet for additional notes.*

Sheet Number:				
Surveyor Name(s):	Janet Ebert and Jack Holt			
Date:	June 1, 2014			
GPS Point #:	11 ft accuracy		10' accuracy	1,4 ft.
X Coordinate:	41° 04.525	41° 04.511	41° 04.485	41° 04.454
Y Coordinate:	74° 33.186	74° 33.187	74° 33.179	74° 33.220
Scientific Name:	Calla palustris L.			S3
Number of Individuals:	500 +			
Estimated Percentage of Flowering/Fruiting Individuals:	< 5% in flower			
Life Stages Present:	In flower			
Condition of Plants Found:	Healthy			
Habitat (Plant Community, Structure, Estimated Percent Canopy Cover):	Scrub shrub - swamp, 75% canopy cover Canopy ≈ 15' tall			
Co-occurring Plant Species (Dominant and notable):	Vaccinium corymbosum, Lyonia ligustrina, Alnus serrulata, Spirea latifolia, Carex stricta, Osmunda cinnamomea, sphagnum spp. In area Ceratophyllum echinatum - lots			
Substrate:	Muck			
% Slope:	—			
Aspect:	—			
Hydrology:	saturated to inundated - wettest part of swamp.			
Threats (Invasive Species, Deer Browse):	No Phragmites in immediate vicinity			

Sparta Mountain WMA Rare Plant Survey - *Use the back of sheet for additional notes.*

Sheet Number:

Surveyor Name(s): Janet Ebert and Jack Holt

Date: June 21, 2014

GPS Point #: Between Way Point 128 & 129

See Back

X Coordinate:

Y Coordinate:

Scientific Name: Carex aggregata mack. SISZ

Number of Individuals: 25 ± Clump-cluster in ≈5 x 5 meters?

Estimated Percentage of Flowering/Fruiting Individuals: All with immature fruit

Life Stages Present: —

Condition of Plants Found: Healthy

Habitat (Plant Community, Structure, Estimated Percent Canopy Cover): Powerline ROW - at least 20' from east edge
Dry thin soil

Co-occurring Plant Species (Dominant and notable): ? Corydalis sempervirens, Nuttallanthus canadensis

Substrate: Dry thin soil

% Slope: 10-15 %

Aspect: South

Hydrology: Xeric

Threats (Invasive Species, Deer Browse): ~~ROW~~ maintenance

This is not well documented. Carex aggregata is fairly common in SE. PA and we didn't realize that it was listed in NJ until we got back to "the office".

Sparta Mountain WMA Rare Plant Survey - *Use the back of sheet for additional notes.*

Sheet Number:

Surveyor Name(s): Janet Ebert and Jack Holt

Date: May 31, 2014

GPS Point #: Didn't record - Point is on RR ~~15~~ 10 to ~~20~~ 15 m from plants

X Coordinate: 41° 06.833

Y Coordinate: 74° 32.492

Scientific Name: Carex haydenii Dewey S1 see back

Number of Individuals: ??

Estimated Percentage of Flowering/Fruiting Individuals: ?

Life Stages Present: Mature to dispersing fruit

Condition of Plants Found: Healthy

Habitat (Plant Community, Structure, Estimated Percent Canopy Cover):
Large open marsh - Carex stricta, spp?, Nuphar lutea, Sagittaria latifolia Persicaria spp. Parts of the marsh have dead trees and shrubs and a drier ridge has thickety Acer rubrum. Wetter areas along the RR and the inner edge are more diverse

Co-occurring Plant Species (Dominant and notable): Carex stricta ↑
Slightly east of the Carex concentration there is a group of over 100 plants of Lysimachia thrysifolia

Substrate: Alluvium, muck

% Slope: 0

Aspect: There is a steep wooded slope south of the wetland

Hydrology: Saturated - pockets of standing water

Threats (Invasive Species, Deer Browse):
Farther east there is a large patch of Phragmites

Carex haydenii is practically impossible to distinguish from C. stricta without looking at a mature inflorescence carefully. Jack collected 4 specimens in an ~~patch~~ area of "Carex stricta" near the RR tracks and one of them turned out to be C. haydenii. The C. haydenii was probably not growing intermingled with C. stricta but in smaller groups near the C. stricta. - population probably in 10-20 plant range (guesstimate)

Carex stricta became semi dominant toward the eastern end of the "Creseent marsh" between the RR and rocky wooded slope and we did not check for more C. haydenii

Sparta Mountain WMA Rare Plant Survey - *Use the back of sheet for additional notes.*

Sheet Number:

Surveyor Name(s): Janet Ebert and Jack Holt

Date: June 1 point

GPS Point #: 1 point Big Swamp

X Coordinate: 41° 04.511

Y Coordinate: 74° 33.187

Scientific Name: Ceratophyllum echinatum A. Gray List. S1

Number of Individuals: >>> 10,000

Estimated Percentage of Flowering/Fruiting Individuals: —

Life Stages Present: —

Condition of Plants Found:

Habitat (Plant Community, Structure, Estimated Percent Canopy Cover): See Back

Co-occurring Plant Species (Dominant and notable):
Proserpinaca palustris, Utricularia macrorhiza
Persicaria spp, Impatiens capensis

Substrate: Aquatic

% Slope: —

Aspect: —

Hydrology: Shallow quiet water

Threats (Invasive Species, Deer Browse):

We saw Ceratophyllum echinatum twice in 2013, and in 2014 on both sides of the big central wetland, and in the wetland north of Glen Road. We saw C. demersum in Ryker Lake, Edison Pond, and Crescent Marsh and we did not focus on Ceratophyllums to see if they ever co-existed or were mutually exclusive, and possibly tracking pollution level, exposure, or water movement. C. echinatum seems to prefer quieter, less exposed water bodies (??). It is probably overlooked and may not merit an S1 rank.

See back

Sparta Mountain WMA Rare Plant Survey - *Use the back of sheet for additional notes.*

Sheet Number:

Surveyor Name(s): Janet Ebert & Jack Holt

Date: May 31, 2014

GPS Point #: 115 10 ft accuracy

X Coordinate: 41° 06.632

Y Coordinate: 74° 32.821

Scientific Name: (W.H. Wagner, Beitel & R.C. Moran) A. Haines 9253
Lycopodium hickeyi → now Dendrolycopodium hickeyi

Number of Individuals: ?
Covers < 2 square meters

Estimated Percentage of Flowering/Fruiting Individuals:
Not seen

Life Stages Present: —

Condition of Plants Found: - stressed ? - Exposed, harsh habitat

Habitat (Plant Community, Structure, Estimated Percent Canopy Cover):
Cindery edge of RR track. Partly shaded by Prunus serotina, Betula populifolia

Co-occurring Plant Species (Dominant and notable):
Hypericum gentianoides, Solidago bicolor, Danthonia spicata
Juniperus virginiana, Bulbostylus capillaris
With Diphasiastrum tristachyum

Substrate: Cinders,

% Slope: Level

Aspect: —

Hydrology: Xeric

Threats (Invasive Species, Deer Browse):
Centaurea stobe, RR maintenance

Sparta Mountain WMA Rare Plant Survey - *Use the back of sheet for additional notes.*

Sheet Number:

Surveyor Name(s): Janet Ebert & Jack Holt

Date: May 11, 2014

GPS Point #: 110

X Coordinate: N 41° 05.586

Y Coordinate: W 74° 34.558

Scientific Name: Dicentra canadensis (Goldie) Walp S1

Number of Individuals: 10-15

Estimated Percentage of Flowering/Fruiting Individuals: Saw fruits on ≈ 25% of clusters; 1 had very late flower

Life Stages Present: Smallest cluster had only 4-5 leaves, some larger clusters had fruits

Condition of Plants Found: All appeared healthy and had not started to senesce for year

Habitat (Plant Community, Structure, Estimated Percent Canopy Cover): ≈ 25-30% canopy cover, at edge of thin oak-hickory-cherry woods at edge of power line. The area is very bouldery, and all of the Dicentra canadense was nestled in cracks or right at the base of a large boulder

Co-occurring Plant Species (Dominant and notable): Carex pennsylvanica, Grass spp. including Schizachyrium scoparium, Danthonia spicata, Thalictrum thalictroides, Polygonatum biflorum, Hieracium sp, Dryopteris marginalis. Aquilegia canadensis and 1 Ribes americana in area

Substrate: Gneiss - thin soil with large boulders

% Slope: Level to ≈ 20% - near top of very steep slope

Aspect: North west

Hydrology: Well drained

Threats (Invasive Species, Deer Browse): Some of the clusters are at the edge of the ROW which was sprayed recently, but probably before the Dicentra emerged. Controlling woody vegetation on the ROW is probably beneficial to the Dicentra.
The mostly open, grassy, bouldery "bald" is not a common habitat.

Sparta Mountain WMA Rare Plant Survey - *Use the back of sheet for additional notes.*

Sheet Number:

Surveyor Name(s): Janet Ebert and Jack Holt

Date: June 23, 2014 Glen Road marsh

GPS Point #: 138 10' accuracy

X Coordinate: 41° 02.812

Y Coordinate: 74° 33.387

Scientific Name: Epilobium leptophyllum Raf. S2

Number of Individuals: Counted 16 - probably a few more in <100 square meters

Estimated Percentage of Flowering/Fruiting Individuals: ? early bud

Life Stages Present: —

Condition of Plants Found: Healthy

Habitat (Plant Community, Structure, Estimated Percent Canopy Cover): Open wetland with central stream, plants growing on Carex stricta tumps

Co-occurring Plant Species (Dominant and notable): Carex stricta-dom, with Impatiens capensis, Thelypteris palustris, occasional Acer rubrum seedlings

In area stachys species that we were too early to positively ID

Substrate: Alluvial - mud

% Slope: 0

Aspect: —

Hydrology: Wetland fed by seepage ?

Threats (Invasive Species, Deer Browse): Some deer browse, traffic in wetland. Scrub-shrub + maple advancing into south edge of wetland. North of wetland woods are weedy, probably because of houses upslope

Sparta Mountain WMA Rare Plant Survey - *Use the back of sheet for additional notes.*

Sheet Number:

Surveyor Name(s): Janet Ebert and Jack Holt

E of Rock Lodge Rd

Date: June 22, 2014

GPS Point #: [138] 115 ft. accuracy - not very good 10 ft accuracy

X Coordinate: 41° 04.301 41° 04.267

Y Coordinate: 74° 33.100 74° 33.178

Scientific Name: Epilobium leptophyllum Raf SJ

Number of Individuals: 6 to 7 5 to 10

Estimated Percentage of Flowering/Fruiting Individuals: Too early for flowering

Life Stages Present:

Condition of Plants Found: Healthy

Habitat (Plant Community, Structure, Estimated Percent Canopy Cover): ~~Large scrub shrub to red maple wetland~~ Open Carex stricta marsh with scattered shrubs

Co-occurring Plant Species (Dominant and notable): Growing on & Carex stricta tumps - strongly associated with Carex stricta Cicuta bulbifera, Triadenum virginicum

Substrate: Carex stricta tump

% Slope: ——

Aspect: ——

Hydrology: Surroundings saturated, Carex stricta tump better drained

Threats (Invasive Species, Deer Browse): Succession - slow

Sparta Mountain WMA Rare Plant Survey - *Use the back of sheet for additional notes.*

Sheet Number:

Surveyor Name(s): Janet Ebert and Jack Holt

Date: May 31, 2014

GPS Point #: —
10' accuracy

X Coordinate: 41° 06.319

Y Coordinate: 74° 32.150

Scientific Name: Equisetum sylvaticum L. S3

Number of Individuals: 100+ stems - stems annual from rhizomes

Estimated Percentage of Flowering/Fruiting Individuals:
? Didn't check for fertile stems

Life Stages Present: ↑ ↑

Condition of Plants Found:
Healthy - normal for shaded plants

Habitat (Plant Community, Structure, Estimated Percent Canopy Cover):
Heavily shaded wet depression in red maple-hickory woods. Down a steep bank with 15 meters of Rt 23. Depression may have been created by road work or run-off from road.

Co-occurring Plant Species (Dominant and notable): Ilex verticillata, Viburnum recognitum, Symplocarpus foetidus, Chrysosplenium americanum, Impatiens capensis, Carex stricta (?)

Substrate: Muck

% Slope: 0

Aspect: —

Hydrology: Saturated soil + pockets of shallow standing water - fed by road runoff? cut-off from open wetland to west by berm.

Threats (Invasive Species, Deer Browse):
Pollution from road ??

Sparta Mountain WMA Rare Plant Survey - *Use the back of sheet for additional notes.*

Sheet Number:

Surveyor Name(s): Janet Ebert and Jack Holt

Date: June 22, 2014

GPS Point #: Didn't get WP 33, July 28, 2013 for Bromus ciliatus in within 25' of road edge

X Coordinate: July 28, 13 41° 04.504

Y Coordinate: 74° 34.675

Scientific Name: Juncus articulatus L. 52

Number of Individuals: 50 to 100 + ramets ?, Linear population at edge of road, probably extends up to 50 yds

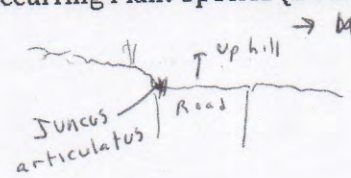
Estimated Percentage of Flowering/Fruiting Individuals: Most with immature fruits - rhizomatous perennial

Life Stages Present: Immature fruits

Condition of Plants Found: Healthy

Habitat (Plant Community, Structure, Estimated Percent Canopy Cover): Growing along moist edge of access/maintence road on power-line ROW, at base of low bank. Slope above has mix of forbs, grasses, and low shrubs

Co-occurring Plant Species (Dominant and notable):



? Solidago spp, Grass spp., Rubus spp.
Nearby Bromus ciliatus, Gentianopsis crinita
Spiranthes ~~cernua~~ ochroleuca

Substrate: Coarse, sandy soil

% Slope: 5-10%

Aspect: Face west

Hydrology: Slope above has seepy areas, and edge of road retains moisture

Threats (Invasive Species, Deer Browse): Melolotis alba, Artemisia vulgaris

Collected for positive ID and didn't realize it was a listed species until later. Have never seen this very far from a road-edge disturbance. In SW PA it seems to like roadside puddles near coal seams - not exactly pristine habitat.

See Back

Sparta Mountain WMA Rare Plant Survey - *Use the back of sheet for additional notes.*

Sheet Number:		
Surveyor Name(s):	Janet Ebert & Jack Holt	
Date:	June 1, 2014 N of E-W row	May 31, 2014 Summit Ridge
GPS Point #:	~~41° 04.805~~ 10 ft. accuracy	117 12 ft. accuracy
X Coordinate:	41° 04.805	41° 06.019
Y Coordinate:	74° 33.549	74° 32.385
Scientific Name:	Lilium philadelphicum	– POSSIBLE – too young for positive ID
Number of Individuals:	June 1 - 3 stems	May 31 - 2 stems
Estimated Percentage of Flowering/Fruiting Individuals:		
Life Stages Present:	Too early? - no sign of buds or too young	
Condition of Plants Found:	Healthy	
Habitat (Plant Community, Structure, Estimated Percent Canopy Cover):	June 1 Sapling woods with Carex pensylvanica	May 31 Open Quercus - Carya woods with Viburnum rafinesquianum Vaccinium staminium, Danthonia spicata
Co-occurring Plant Species (Dominant and notable):	↑	
Substrate:	Gneiss,	
% Slope:	< 15% ?	< 5%
Aspect:	North?	Northeast
Hydrology:	Upper slope well drained	
Threats (Invasive Species, Deer Browse):	Deer	

Sparta Mountain WMA Rare Plant Survey - *Use the back of sheet for additional notes.*

Sheet Number:

Surveyor Name(s):

Date: June 21, 2014 — N's ROW below cliff

GPS Point #: 129 10 ft accuracy

X Coordinate: 41° 03.135

Y Coordinate: 74° 35.029

Scientific Name: Lilium philadelphicum L. — NOT positive ID but buds erect — S2

Number of Individuals: 4 stems

Estimated Percentage of Flowering/Fruiting Individuals: All in bud

Life Stages Present: ↗

Condition of Plants Found: Healthy

Habitat (Plant Community, Structure, Estimated Percent Canopy Cover): Open powerline ROW in "valley" between 2 big rock outcrops ~~fairly near~~ 50' from wooded east edge of ROW, so partly shaded

Co-occurring Plant Species (Dominant and notable): In thick bed of Dennstaedtia punctiloba with a few Lysimachia quadrifolia

Substrate: Gneiss - probably thin soil

% Slope: 10-15%

Aspect: North

Hydrology: Well drained

Threats (Invasive Species, Deer Browse): Dennstaedtia may crowd lily out eventually, but it may also protect it from deer

Sparta Mountain WMA Rare Plant Survey - *Use the back of sheet for additional notes.*

Sheet Number:	
Surveyor Name(s):	Janet Ebert & Jack Holt
Date:	May 11, 2014
GPS Point #:	113
X Coordinate:	N 41° 05.977′
Y Coordinate:	W 74° 33.904
Scientific Name:	Lilium philadelphicum This is not a positive ID.
Number of Individuals:	1
Estimated Percentage of Flowering/Fruiting Individuals:	Too early for flowering Plant may be too small to flower?
Life Stages Present:	—
Condition of Plants Found:	No insect or deer damage
Habitat (Plant Community, Structure, Estimated Percent Canopy Cover):	
Co-occurring Plant Species (Dominant and notable):	
Substrate:	Gneiss
% Slope:	≈ 10°
Aspect:	North
Hydrology:	Upper slope - well drained
Threats (Invasive Species, Deer Browse):	≈ 2 meters from eroded ATV trail

Sparta Mountain WMA Rare Plant Survey - *Use the back of sheet for additional notes.*

Sheet Number:

Surveyor Name(s): Janet Ebert & Jack Holt

Date: May 31, 2014

GPS Point #: — No waypoint recorded

Crescent marsh

Use C. haydenii point

X Coordinate: 41° 06.833

Y Coordinate: 74° 32.494

Scientific Name: ~~Lysimachia thrysiflora L.~~ 53

Number of Individuals: 100+ plants

Estimated Percentage of Flowering/Fruiting Individuals: ? too early

Life Stages Present: Early bud / flower formation

Condition of Plants Found: Healthy

Habitat (Plant Community, Structure, Estimated Percent Canopy Cover):
Broad open marsh between RR and steep wooded slope
In whole marsh there are scattered trees, shrubs, and dead trees.
L. thrysiflora is in a wetter, open area with ≈ no woodies.

See Back

Co-occurring Plant Species (Dominant and notable):
Carex stricta, Sagittaria latifolia, Nuphar, Persicaria spp.
Notable: Carex haydenii, Utricularia intermedia

Substrate: Muck

% Slope: 0

Aspect: —

Hydrology: Highly saturated mud to standing water

Threats (Invasive Species, Deer Browse):
Phragmites bad in other parts of marsh and on N side of RR

Coordinates From RR-samp point for Lysimachia thrysifolia, Utricularia intermedia and Carex haydenii

See Back

Sparta Mountain WMA Rare Plant Survey - *Use the back of sheet for additional notes.*

Sheet Number:

Surveyor Name(s): Janet Ebert & Jack Holt

Date: June 22, 2014 Near Edison Mon

GPS Point #: 137 10 ft accuracy

X Coordinate: 41° 03.963

Y Coordinate: 74° 34.259

Scientific Name: Lysimachia thrysifolia L. S3

Number of Individuals: 25 to 50 plants

Estimated Percentage of Flowering/Fruiting Individuals: Most not flowering

Life Stages Present: In bud

Condition of Plants Found: - Healthy

Habitat (Plant Community, Structure, Estimated Percent Canopy Cover): Narrow wet area between Edison Road and access road (old RR?) Edges are shrubby with a few Cephalanthus in middle

Co-occurring Plant Species (Dominant and notable): Carex spp., Grass spp., Iris versicolor

Substrate: - mud

% Slope: 0

Aspect: Wetland / broad ditch runs roughly north-south

Hydrology: Gets runoff from roads

Threats (Invasive Species, Deer Browse): ——

Sparta Mountain WMA Rare Plant Survey - *Use the back of sheet for additional notes.*

Sheet Number:	
Surveyor Name(s):	Janet Ebert and Jack Holt
Date:	June 1, 2014
GPS Point #:	121 11 ft. accuracy
X Coordinate:	41° 04.579
Y Coordinate:	74° 33.231
Scientific Name:	Lysimachia thrysifolia L. 53
Number of Individuals:	25 to 50 — probably lots more, entire habitat not searched See Also June 22 - other side of large wetland
Estimated Percentage of Flowering/Fruiting Individuals:	? early
Life Stages Present:	Early bud
Condition of Plants Found:	- Healthy
Habitat (Plant Community, Structure, Estimated Percent Canopy Cover):	Edge of large central wetland - now mostly scrub-shrub with Acer rubrum 75% ± to 100% canopy cover
Co-occurring Plant Species (Dominant and notable):	Acer rubrum, Viburnum dentatum, Clethera, Alnus serrulata Carex spp., Iris versicolor near land edge
Substrate:	Muck
% Slope:	0
Aspect:	—
Hydrology:	Saturated soil, some water in early June, probably drier by late summer
Threats (Invasive Species, Deer Browse):	? Minor deer browse, Phragmites

Sparta Mountain WMA Rare Plant Survey - *Use the back of sheet for additional notes.*

Sheet Number:

Surveyor Name(s): Janet Ebert and Jack Holt

Date: June 22, 2014 — W. of Rock Lodge Rd

GPS Point #: Not recorded — 35 ft accuracy

X Coordinate: 41° 04.281 — See Back

Y Coordinate: 74° 33.156

Scientific Name: Lysimachia thrysifolia L. — S3

Number of Individuals: ± 10

Estimated Percentage of Flowering/Fruiting Individuals: Didn't look

Life Stages Present: Prime -- in flower/bud

Condition of Plants Found: Healthy

Habitat (Plant Community, Structure, Estimated Percent Canopy Cover): Scrub-shrub wetland with some trees, Canopy cover variable
Plants in more open Carex stricta marsh
Difficult terrain to navigate

Co-occurring Plant Species (Dominant and notable): Carex stricta, Clethra alnifolia, Ceratophyllum sp, Utricularia macrorhiza, Thelypteris palustris

Substrate: ~~Peat~~ Muck

% Slope: 0

Aspect: —

Hydrology: Saturated soil, water in June - drier later - rain & seepage fed?

Threats (Invasive Species, Deer Browse): Phragmites not near by

Jack went into the large central wet land from both the east and west side and found Lysimachia thrysifolia both times. There is a lot more suitable habitat that was not surveyed, so there are probably more plants out there.

Sparta Mountain WMA Rare Plant Survey - *Use the back of sheet for additional notes.*

Sheet Number:

Surveyor Name(s): Janet Ebert & Jack Holt

Date: June 27, 2014

GPS Point #: 131 11 ft accuracy

X Coordinate: 41° 03.536

Y Coordinate: 74° 35.068

Scientific Name: Lysimachia thrysiflora L. S3

Number of Individuals: 10 to 15 seen

Estimated Percentage of Flowering/Fruiting Individuals: ?, early + in bud

Life Stages Present: In bud

Condition of Plants Found: Healthy

Habitat (Plant Community, Structure, Estimated Percent Canopy Cover): Shallow, partly shaded west edge of Collins Pond

Co-occurring Plant Species (Dominant and notable): Juncus effusus, Dulichium arundinacium, Carex lurida, sp., Glyceria sp., Utricularia macrorhiza, Potamogeton epihydrus this was the largest shallow edge area on Collins Pond that we looked at but we couldn't find any thing unusual

Substrate:

% Slope: 0

Aspect: Open water is to the east, west side is wooded

Hydrology: shallow water

Threats (Invasive Species, Deer Browse): ? –

Sparta Mountain WMA Rare Plant Survey - *Use the back of sheet for additional notes.*

Sheet Number:

Surveyor Name(s): Janet Ebert and Jack Holt

Date: June 22, 2014

GPS Point #: 133, lower population; 134 cluster upslope 12' accuracy

X Coordinate: 10' accuracy 41° 04.173; 41° 04.164

Y Coordinate: 74° 33.145; 74° 33.130

Scientific Name: Milium effusum L. SH → S1

Number of Individuals: 30 to 40 in 2 loose groups ± 100' apart (?)

Estimated Percentage of Flowering/Fruiting Individuals: 50 to 75% in fruit

Life Stages Present: Non-flowering plants slightly smaller, but no conspicuously immature plants noticed

Condition of Plants Found: Healthy, normal vigor

Habitat (Plant Community, Structure, Estimated Percent Canopy Cover): Lower group near edge of tree-fall canopy gap in hickory-maple-ash woods. Group slightly upslope was in Betula lenta stand with fairly dense canopy/subcanopy. The entire area and slope to scrub-shrub wetland is wooded. See Back

Co-occurring Plant Species (Dominant and notable): The slope is ocasionally rocky but mesic with considerable Lindera benzoin, and rich woods species: Brachylectrum erectum Phegopteris hexagonoptera, Allium tricoccum

Substrate: Pyroxene gneiss - some surface rocks, seepy areas upslope

% Slope: Gentle, <10%?

Aspect: West

Hydrology: Mesic, moderately well drained, not near rocky seeps

Threats (Invasive Species, Deer Browse): Tree-fall canopy gap has considerable Berberis

When we found the lower patch, we thought it might have been related to the canopy gap, but the second patch is not near any opening. The only current man-made disturbances in the area are Rock Ledge trail (road) and several smaller trails. The populations we have seen in northern PA are denser, and in woods, but near the edge or along roads.

We did not search all the possible habitat, although the milium was fairly conspicuous in fruit - there are no other big dangling grasses in the woods

See back

Sparta Mountain WMA Rare Plant Survey - *Use the back of sheet for additional notes.*

Sheet Number:

Surveyor Name(s): Janet Ebert and Jack Holt

Date: June 22, 2014

GPS Point #: 55 ft. acc.

X Coordinate: 41° 04.241

Y Coordinate: 74° 33.222

Scientific Name: Nymphoides cordata (Elliott) Fernald S3

Number of Individuals: About 25 plants

Estimated Percentage of Flowering/Fruiting Individuals: No flowers / fruits, not positive ID (vegetative specimen collected, pressed)

Life Stages Present: All vegetative

Condition of Plants Found: Healthy

Habitat (Plant Community, Structure, Estimated Percent Canopy Cover): Scrub-shrub - 10 x 10 meter opening
Red maple at ↗

Co-occurring Plant Species (Dominant and notable): In opening Carex stricta, Lemna minor, Sparganium americanum, Ceratophyllum demersum. Nymphoides growing on mound of dead vegetation

Substrate: Dead vegetation

% Slope: —

Aspect: —

Hydrology: Saturated

Threats (Invasive Species, Deer Browse): —

Sparta Mountain WMA Rare Plant Survey - *Use the back of sheet for additional notes.*

Sheet Number:

Surveyor Name(s): Janet Ebert and Jack Holt

Date: June 1, 2014

GPS Point #: 123 Ash thicket 10' accuracy | 125 older trail 10' accuracy

X Coordinate: 41° 04.775 | 41° 04.740

Y Coordinate: 74° 33.549 | 74° 33.609

Scientific Name: Poa languida A. Hitchc. S2

Number of Individuals: - Flowering/Fruiting
Ash thicket ± 50 plants Older trail 10-15

Estimated Percentage of Flowering/Fruiting Individuals:
Over 75% ?? - hard to count non-flowering plants (easy to miss)

Life Stages Present:
Immature and plants with immature fruits

Condition of Plants Found:
Healthy but some browsed

Habitat (Plant Community, Structure, Estimated Percent Canopy Cover): These 2 groups are roughly 100 m apart and are considered one population. The area is a young woods with a ± closed canopy but an open understory/shrub layer, north of the east-west powerline ROW. The larger group is in an ash thicket that is conspicuously different than the surrounding - Carya - Betula - Quercus woods Sas Bent.

Co-occurring Plant Species (Dominant and notable): Fraxinus americana, Carex pensylvanica, Dichanthelium latifolium, Parthinocissus quin, Prunus virginiana, Rubus sp., Symphyotrichum sp.

Ant mounds in ash grove

Substrate: Gneiss

% Slope: Very gentle, < 10°

Aspect: North,

Hydrology: ~~Upland~~ Upper slope, well drained

Threats (Invasive Species, Deer Browse):
Browsing by deer?? or ?

Habitat (continued) The smaller group is closer to the ROW near an old trail with mostly ash mixed with some Carya-Betula-Quercus

Ash thicket is on a gentle knoll and may have been an old disturbed / building?? -site

Sparta Mountain WMA Rare Plant Survey - *Use the back of sheet for additional notes.*

Sheet Number:

Surveyor Name(s): Janet Ebert and Jack Hoh

Date: June 22, 2014

GPS Point #: 136 13' accuracy? No Way Pt. ~2 more plants

X Coordinate: 41° 04. 194 41° 04. 246

Y Coordinate: 74° 32. 664 74° 32. 666

Scientific Name: Poa languida A. Hitchc. S2

Number of Individuals: 15-20

Estimated Percentage of Flowering/Fruiting Individuals: ~~Not counted~~ ≈ 75%

Life Stages Present: Flowered with immature fruit

Condition of Plants Found: Feeble-normal

Habitat (Plant Community, Structure, Estimated Percent Canopy Cover): Along edge of a trail in Carya-Betula-Quercus woods. Closed but not dense canopy, open sparse shrub layer

Co-occurring Plant Species (Dominant and notable): See above

Substrate: Gneiss -

% Slope: < 10% - Trail on a slight bench below a rocky ridge

Aspect: East - southeast

Hydrology: Rocky, well drained

Threats (Invasive Species, Deer Browse): Some plants infested with aphids

Sparta Mountain WMA Rare Plant Survey - *Use the back of sheet for additional notes.*

Sheet Number:

Surveyor Name(s): Janet Ebert and Jack Holt

Date: June 21, 2014

GPS Point #: 126

X Coordinate: 41° 02.935

Y Coordinate: 74° 35.083

Scientific Name: Selaginella rupestris (L.) Spring S2

Number of Individuals: Small feeble, partly dead patches around edge of rock

Estimated Percentage of Flowering/Fruiting Individuals: No sign of sporophylls

Life Stages Present:

Condition of Plants Found: Unhealthy - you had to look closely to see living plant material

Habitat (Plant Community, Structure, Estimated Percent Canopy Cover): Edges of large flat rock exposure in powerline ROW Scu Rudo

Co-occurring Plant Species (Dominant and notable): Moss spp, Potentilla canadensis (?) Dichanthelium depauperatum Centaurea stoebe

Substrate: Bare rock (gneiss) and thin soil

% Slope: Almost level

Aspect: —

Hydrology: Xeric, on a ridge

Threats (Invasive Species, Deer Browse): Herbicide from ROW maintenance

After we found the 2 Selaginella patches on the east-west powerline ROW on June 1, 2, we realized that we may have overlooked other populations, so we started checking other "table rock exposures on the North-South powerline ROW; ~~too~~ We didn't check all possible habitat, but this feeble population → was the only one we could find. We also checked some rock flats that were not in the ROWs, but they seemed too closed in (?) and we didn't see anything. Don't know if the Selaginella moved from "natural rock outcrops onto the ROWs or whether it has never been anywhere but the ROWs.

See Back

Sparta Mountain WMA Rare Plant Survey - *Use the back of sheet for additional notes.*

Sheet Number:

Surveyor Name(s): Janet Ebert and Jack Holt

Date: June 1, 2014 | June 2

GPS Point #: 120 East population 10 ft accuracy | 122 West Population 10 ft accuracy

X Coordinate: 41° 04.742 | 41° 04.723

Y Coordinate: 74° 33.342 | 74° 33.563

Scientific Name: Selaginella rupestris (L.) Spring 52

Number of Individuals: Cover ≈ 1 square meter | cover < 2 square meters

Estimated Percentage of Flowering/Fruiting Individuals: Both populations shedding mega spores - sparsely

Life Stages Present: —

Condition of Plants Found: Much of east population dead Some of west population dead See Back

Habitat (Plant Community, Structure, Estimated Percent Canopy Cover): Edge of large ≈ flat rock exposures in powerline ROW, with low vegetation within several meters of rock. These two populations are on adjacent ridges about 2000' ft apart on the main E-W powerline

Co-occurring Plant Species (~~Dominant and notable~~): Moss spp, Poa compressa, Toxicodendron radicans, Rubus flagellaris, Centaurea stobe, Aquilegia canadensis, Micranthus virginiana, Carex argyranthra

Substrate: Bare rock (gneiss) and very thin soil at edges

% Slope: Nearly level

Aspect: —

Hydrology: Ridge top - xeric

Threats (Invasive Species, Deer Browse): Both of these populations are partly dead - possibly due to herbicide use on ROW

Condition: Both populations had considerable dead areas - possibly from spraying herbicide and/or adverse weather conditions?

Sparta Mountain WMA Rare Plant Survey - *Use the back of sheet for additional notes.*

Sheet Number:	
Surveyor Name(s):	Janet Ebert and Jack Holt
Date:	May 31, 2014
GPS Point #: On RR	C. haydenii RR point
X Coordinate:	41° 06.833
Y Coordinate:	74° 32.494
Scientific Name:	Utricularia intermedia Hayne S3
Number of Individuals:	Patches, ≥100+
Estimated Percentage of Flowering/Fruiting Individuals:	Too early
Life Stages Present:	Pre flowering
Condition of Plants Found:	Healthy
Habitat (Plant Community, Structure, Estimated Percent Canopy Cover):	Open wetland, partly back-up wetland along RR. This is the wetter side of the marsh with scattered shrubs but no trees
Co-occurring Plant Species (Dominant and notable):	In area Carex stricta, Nuphar, Sagittaria latifolia, Persicaria spp. In vicinity - Carex haydenii, Lysimachia thrysifolia
Substrate:	Muck - ~~[illegible]~~
% Slope:	0
Aspect:	—
Hydrology:	~~[illegible]~~ Saturated
Threats (Invasive Species, Deer Browse):	Phragmites in other parts of wetland

Sparta Mountain WMA Rare Plant Survey - *Use the back of sheet for additional notes.*

Sheet Number:

Surveyor Name(s): Janet Ebert • Jack Holt

Date: June 21, 2014 - - searched for site

GPS Point #: From map - approx area

X Coordinate: 41° 03.694

Y Coordinate: 74° 33.680

Scientific Name: Phegopteris connectilis (Michx.) D. Walt S2

Number of Individuals:

Estimated Percentage of Flowering/Fruiting Individuals:

Life Stages Present:

Condition of Plants Found:

Habitat (Plant Community, Structure, Estimated Percent Canopy Cover):
Had very good directions for site - "From dam at Edison Pond follow outlet stream approx. 500' east, before stream breaks into several branches."

Co-occurring Plant Species (Dominant and notable):
We found several groups of Phegopteris hexagonoptera along the stream, but no P. connectilis. Habitat seemed better for hexagonoptera. - slopes above stream had some Tsuga - often associated with P. Connectilis - but were relatively dry and open with almost no ground cover.

Substrate: We only saw P hexagonoptera 7 times in the whole survey

% Slope:

Aspect:

Hydrology:

Threats (Invasive Species, Deer Browse):

Sparta Mountain WMA Rare Plant Survey - *Use the back of sheet for additional notes.*

Sheet Number:

Surveyor Name(s): Janet Ebert + Jack Holt

Date: May 10, 2014 June 22, 2014

GPS Point #: 101 12' accuracy

X Coordinate: 41° 04.279 41° 04.288

Y Coordinate: 74° 32.655 74° 32.652

Scientific Name: Stellaria borealis Bigelow ??? S1

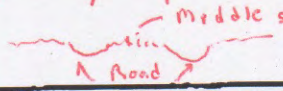
Number of Individuals: ± 50 ??

Estimated Percentage of Flowering/Fruiting Individuals: In bud May 10 Most fruit dispersed June 22

Life Stages Present:

Condition of Plants Found:

Habitat (Plant Community, Structure, Estimated Percent Canopy Cover): Growing in middle of old road/jeep trail for ± 10 meters in rocky open maple-oak woods, with thin shrub layer



Co-occurring Plant Species (Dominant and notable): This is almost definitely a stellaria, but I was never confident of ID, and we missed the best ID time. We have never seen S. borealis for sure and the habitat is not notably moist, although the habit of the plants seems OK. S. borealis was the closest fit in the Keys, but there might be a similar alien? The site is easy to relocate.

Substrate: Gneiss

% Slope: < 10%

Aspect: Northeast

Hydrology: Mesic, well drained. Middle strip is raised above ruts site is on upper slope of ridge

Threats (Invasive Species, Deer Browse): —

Sparta Mountain WMA Rare Plant Survey - *Use the back of sheet for additional notes.*

Sheet Number:

Surveyor Name(s): Janet Ebert and Jack Hoh

Date: May 31, 2014

GPS Point #: —

X Coordinate: —

Y Coordinate: —

Scientific Name: Thaspium barbinode (Michx.) Nutt SX

Number of Individuals:

Estimated Percentage of Flowering/Fruiting Individuals:

Life Stages Present:

Condition of Plants Found:

Habitat (Plant Community, Structure, Estimated Percent Canopy Cover):
Revisited site of possible Thaspium barbinode seen last fall. It was all Zizia aurea.

Co-occurring Plant Species (Dominant and notable):

Substrate:

% Slope:

Aspect:

Hydrology:

Threats (Invasive Species, Deer Browse):