

# Rare Plant Survey of Lewis and Clark State Park



*Pacific Biodiversity Institute*



# Rare Plant Survey of Lewis and Clark State Park

*Peter H. Morrison*

[peter@pacificbio.org](mailto:peter@pacificbio.org)

*Hans M. Smith IV*

[hans@pacificbio.org](mailto:hans@pacificbio.org)

*Dana Visalli*

[dana@methow.com](mailto:dana@methow.com)

January 2005

**Pacific Biodiversity Institute  
P.O. Box 298  
Winthrop, Washington 98862  
509-996-2490**

## **Recommended Citation**

Morrison, P.H., H.M. Smith IV, and D. Visalli. 2005. Rare Plant Survey of Lewis and Clark State Park. Pacific Biodiversity Institute, Winthrop, Washington. 23 p.

## **Acknowledgements**

Florence Caplow, botanist with the Washington Natural Heritage Program, spent part of the day in the field with us at Lewis and Clark State Park. State Park personnel assisted us by answering our questions and providing information about the park. The photographs in this report are by Peter Morrison and Hans Smith.

## **Project Funding**

This project was conducted under a contract with the Washington State Parks and Recreation Commission.

# Table of Contents

Introduction.....	5
Methods.....	6
Survey Conditions.....	7
Natural Communities and Ecological Condition .....	7
Primary Habitat Types in Lewis and Clark State Park .....	7
Forests.....	7
Grasslands.....	7
Wetlands .....	7
Ecological Condition of Lewis and Clark State Park .....	8
Botanical Inventory and Rare Plant Sightings.....	8
<i>Lathyrus vestitus</i> ssp. <i>bolanderi</i> .....	9
<i>Euonymus occidentalis</i> .....	10
Maps of rare plant locations.....	11
Vascular Plant List for Lewis and Clark State Park .....	13
References.....	18
Appendix A - Field Survey Dates and Personnel .....	19
Appendix B - Washington Natural Heritage Program Rare Plant Sighting Form #1 .....	20
Appendix C - Washington Natural Heritage Program Rare Plant Sighting Form #2.....	22

## *Introduction*

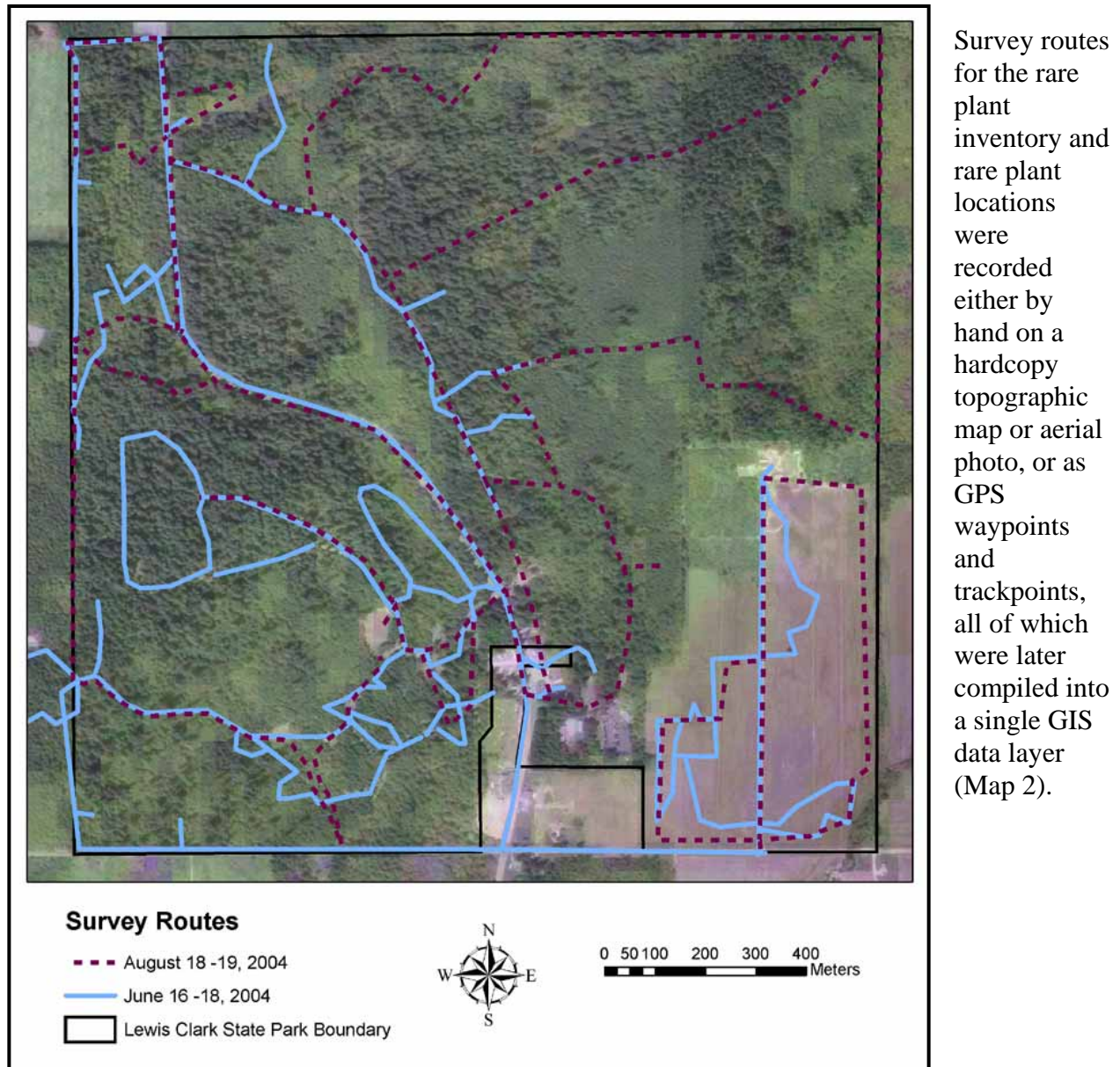
Under contract with the Washington State Parks and Recreation Commission, Pacific Biodiversity Institute (PBI) surveyed the 621-acre parcel known as Lewis and Clark State Park in the southwest Washington Puget Trough lowlands for rare plant occurrences. This report summarizes the activities and findings of the contracted work. Lewis and Clark State Park was established in 1922 to protect some of the last remaining lowland forests. It is now surrounded by tree farms, agriculture and residential areas (Map 1.)



**Map 1. Lewis and Clark State Park and surrounding lands illustrated with a background of digital aerial photography combined with Landsat 7 ETM satellite imagery.**

## Methods

We visited the State Park equipped with botanical reference literature, rare plant lists for the greater area, a map showing rare plant locations from previous surveys, and a portable plant identification lab. We searched for rare plants throughout the park, but we surveyed habitats previously identified as being possible areas of rare plant abundance (e.g. wetlands, old-growth forests) more intensely. So as to not miss a rare plant not currently listed in Lewis and Clark State Park, all vascular plant species encountered during the inventory were identified either on site, at base camp in the portable laboratory, or back at our headquarters in Winthrop, WA.



**Map 2. 2004 rare plant survey routes overlaying a one-meter resolution digital ortho-photo combined with Landsat 7 ETM spectral imagery.**

## **Survey Conditions**

Access to most of the park is relatively good with a major road running through the park and a road bounding the south boundary. There are also numerous trails through parts of the park. The old-growth forest is moderately open in many places. Some parts of the park have very dense undergrowth and travel through these areas is exceedingly difficult. But in general these areas are limited in extent.

## ***Natural Communities and Ecological Condition***

### **Primary Habitat Types in Lewis and Clark State Park**

#### **Forests**

Lewis and Clark State Park was primarily established to protect some of the last remaining low-elevation old-growth forests in Western Washington. The park contains some excellent examples of Douglas-fir – western hemlock plant associations with many large-diameter Douglas-fir (*Pseudotsuga menziesii*), western hemlock (*Tsuga heterophylla*) and western red cedar (*Thuja plicata*). The dominant plant association in the park is the *Pseudotsuga menziesii* - *Tsuga heterophylla* / *Mahonia nervosa* / *Polystichum munitum* association (PSME-TSHE/MANE/POMU) (per Chappell 2004). There are also significant areas covered by the *Pseudotsuga menziesii* - *Tsuga heterophylla* / *Polystichum munitum* – *Dryopteris expansa* plant association (PSME-TSHE/POMU-DREX) (per Chappell 2004) and other forested plant associations.

There is at least one area where mixed deciduous-coniferous old-growth forests exist which contain old growth Oregon ash (*Fraxinus latifolia*) and big-leaf maple (*Acer macrophyllum*) trees. This type of old-growth forest is very rare in western Washington and Oregon and represents an element of biodiversity that warrants a high degree of protection.

#### **Grasslands**

Lewis and Clark state park is in a transition zone between the lowland forests and the Lamas prairie ecosystem (Caplow and Miller 2004). In presettlement conditions frequent wildfires probably exerted considerable influence on the transition between forest and grassland ecosystems. Soil type and hydrologic conditions also exert strong influences.

In the southeastern corner of the park there is a non-forested block that contains many of the species that are found in the grassland/prairie ecosystem. This non-forested block appears to be largely the consequence of past farming activities and was probably cleared of forest for agriculture many years ago. Part of it is currently mowed annually. Other parts of this block are undergoing succession into shrub and deciduous tree dominated communities. Some parts of the south-eastern block of the park are small swamps and marshes.

#### **Wetlands**

There are numerous small wetlands throughout the park. Some are western red cedar (*Thuja plicata*) swamps with abundant skunk cabbage (*Lysichitum americanum*) and slough sedge (*Carex obnupta*). Forested wetlands with red alder (*Alnus rubra*) and pacific crabapple (*Pyrus fusca*) are present in the park. There are several small streams that run though a portion of the

park that are lined with riparian vegetation. In the southeast corner of the park there are wet areas dominated by shrubby vegetation (*Spiraea douglasii*, young *Alnus rubra*, *Pyrus fusca* etc.) and other marshy areas covered by a diversity of sedges, rushes and other herbaceous vegetation.

### ***Ecological Condition of Lewis and Clark State Park***

The dominant plant association within the park boundary is the PSME-TSHE/MANE/POMU association, of which there are some spectacular old-growth patches remaining in the park. There are also significant patches of the PSME-TSHE/POMU-DREX association and other forest associations.

An open field maintained for horse back riding in the southeast section of the park bears a little resemblance to the prairie ecosystem that once covered the Lacamas prairie to the south of the park. Some prairie species are found in this area. But this area was probably largely coniferous forest before logging and agriculture modified the environment here. Agricultural cultivation and mowing as well as other human disturbances have led to the establishment of non-native and invasive species.

We found 51 species of alien plants within Lewis and Clark State Park. This represents about 23% of the park's vascular flora. Some of the forests are in very good condition, without any significant alien plant invasion. Developed areas and high use areas have the greatest degree of alien plant invasion. Alien grasses dominate much of the grassland area in the southeastern portion of the park.

## ***Botanical Inventory and Rare Plant Sightings***

We observed and identified 226 species of plants during our 2004 site visits. We encountered one state endangered species – Bolander's peavine (*Lathyrus vestitus* ssp. *bolanderi*) and one state threatened species - western wahoo (*Euonymus occidentalis*) in the park. The sightings of *Lathyrus vestitus* represent a new record for the park.

Washington State's Natural Heritage Program (WANHP) has two additional state listed species recorded in their GIS database with locations in the park. Tall bugbane (*Cimicifuga elata*) and hairy-stemmed checker-mallow (*Sidalcea hirtipes*) both have past locations in the park in the GIS database. We searched for both of these species exhaustively, but did not find either during our 2004 field visits.

*Cimicifuga elata* was last observed in the forested portion of the park in 1995. According to the WANHP, it was not found in a 2002 search of the park. We searched the past sighting region shown in the WANHP GIS database repeatedly, as well as the rest of the park, but we were unable to locate this species. Most probably, it still exists within the park boundaries, but in a location that we did not visit. The previous sighting location may have been highly inaccurate (which is often the case). Hopefully, future surveys of the park will reveal that this rare species still has a robust population somewhere within the park. *Cimicifuga elata* (known by some herbalists as black cohosh or black snake root) has received considerable notoriety as being an important medicinal plant. Collection of this listed species by herbalists is a potential threat in the park and might even account for our failure to find specimens.



*Sidalcea hirtipes* is recorded in the WANHP GIS database as occurring in the park in 1953, growing along the Jackson Highway north of the park office. Both our field team and Florence Caplow (WANHP botanist) searched this area for the plant in 2004 and did not find it. Further inquiry with Sandy Moody, the data custodian for the WANHP, revealed that the 1953 sighting was very inaccurate and not within the park. This is a prairie species and quite unlikely to occur within the park boundary. It does occur within a 5-mile radius of the park and one member of our team assisted Florence Caplow in an estimate of a population of *Sidalcea hirtipes* several miles south of the park boundary. Perhaps this was the actual location of the 1953 sighting.

***Lathyrus vestitus ssp. bolanderi* (S. Wats.) C.L. Hitchc.**

A relatively abundant and healthy population of Bolander's peavine (*Lathyrus vestitus ssp. bolanderi*) was found in the park during our 2004 field surveys. This state endangered species was generally found along forest edges, often where a road or trail had been cut through the forest. It appears to thrive in areas with significant sunlight, but also ample shade during part of the day. In most cases it was found adjacent to or in old-growth forest stands.



Raceme



Flowers



Foliage

**Status:** State Endangered

**Rank:** G5T?S1

Forest openings and edges appear to be very important for this plant. We did not find it growing in open areas or areas with high disturbance, but we also did not find the plant in closed canopy forests. Maintenance and clearing of existing trail systems in the park may actually benefit this rare plant. Ideally, maintenance crews could be taught to identify the species and treat it gently when engaging in clearing activities.

The completed Washington DNR Natural Heritage Program Rare Plant sighting form for *Lathyrus vestitus ssp. bolanderi* is attached to this report as Appendix B. Refer to that form for more information about the population of this rare plant in the park.

### ***Euonymus occidentalis* Nutt. ex Torr.**

Western wahoo (*Euonymus occidentalis*), a tall shrub, was found growing under the old-growth forest canopy at scattered locations throughout the park. Often there were only one or two individual plants at a site. Many of the shrubs appeared to be relatively old (for *Euonymus*) and only limited regeneration was observed. The population in the park is substantial, but may be in moderate decline, based on the more advancing age of many of the plants.



Flowers



Fruit



Typical branch

**Status:** State Threatened

**Rank:** G5S1

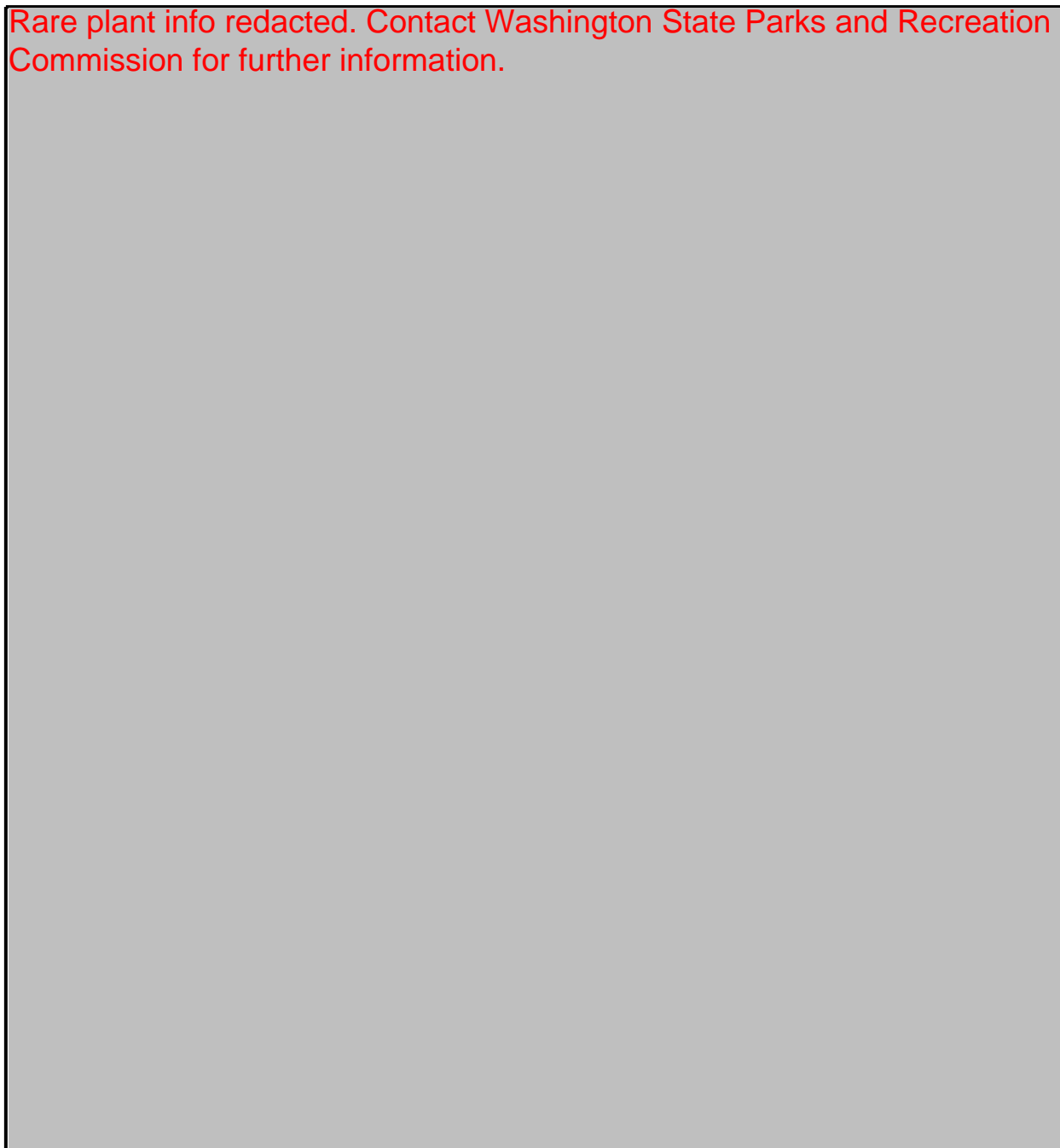
Some of the plants were growing close to trailheads and roads and could easily be disturbed by maintenance activities or by recreational activities. This shrub is quite robust once mature, but seedlings could be easily disturbed. Washington State Parks might want to consider restricting active management activities and maintenance that might disturb plants at known sites *Euonymus* sites and survey other areas for *Euonymus* before disturbing old-growth or mature forest.

Studies of regeneration and establishment of *Euonymus* would be beneficial to determine if there are ways to stimulate reproduction and establishment of young plants. Use of light surface fire may be a factor that should be investigated. Lewis and Clark State Park might be an appropriate site for such a study.

The completed Washington DNR Natural Heritage Program Rare Plant sighting form for *Euonymus occidentalis* is attached to this report as Appendix C. Refer to that form for more information about the population of this rare plant in the park.

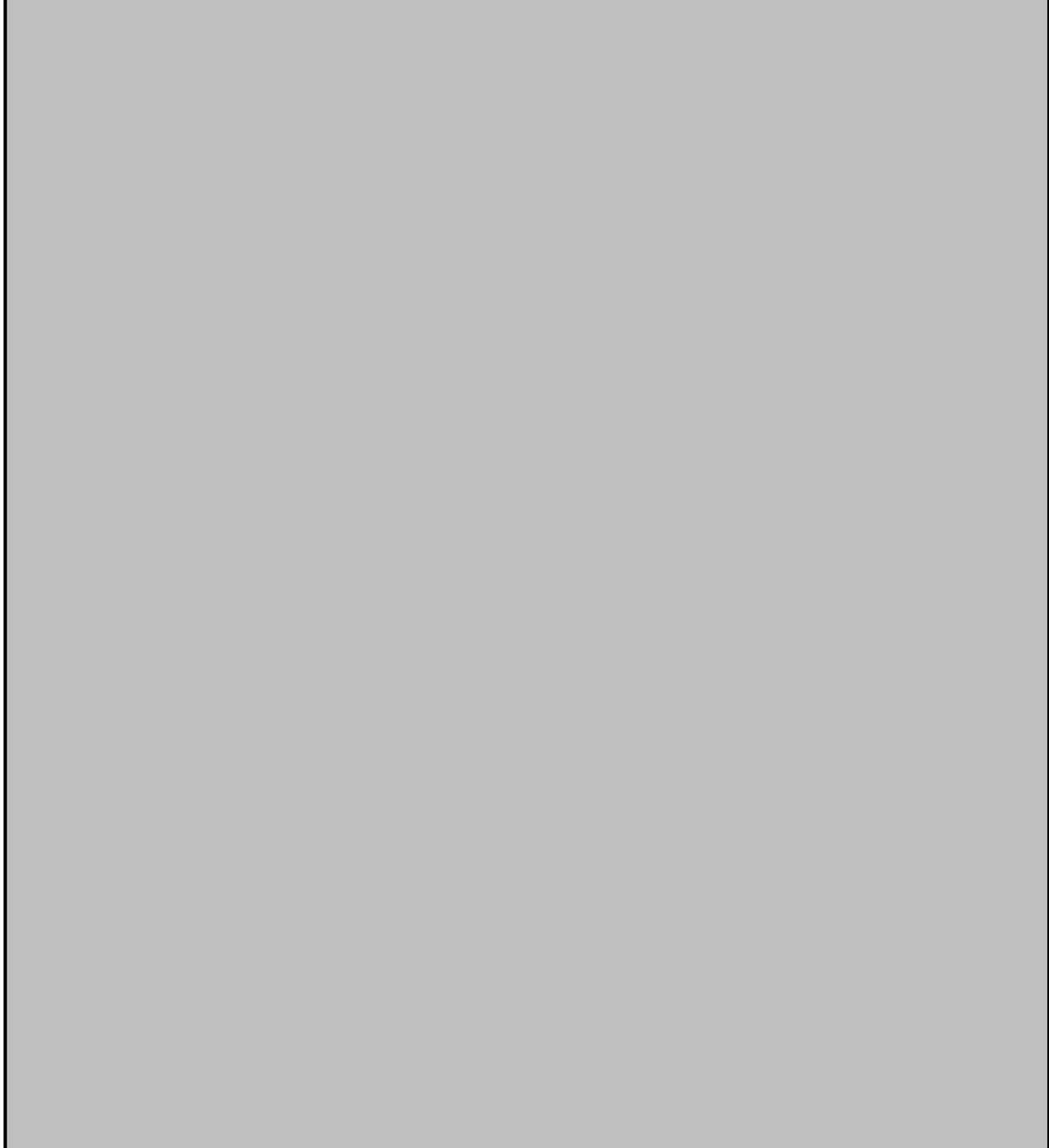
### ***Maps of rare plant locations***

Rare plant info redacted. Contact Washington State Parks and Recreation Commission for further information.



The map above illustrates locations where GPS waypoints were taken to mark rare plant sightings. Due to the heavy forest cover at some locations, it was not possible to get a GPS location. The GPS also exhibited a weak signal and somewhat inaccurate location in many of the forested areas, so the locations shown on this map should be considered approximate.

Rare plant info redacted. Contact Washington State Parks and Recreation Commission for further information.



The map above illustrates the approximate area where there is a reasonable likelihood of finding *Euonymus occidentalis* and *Lathyrus vestitus* based on the results of our field surveys.

## *Vascular Plant List for Lewis and Clark State Park*

#	Scientific Name	Common Name	Code	Family	Type	Alien?	Listed
1	<i>Abies grandis</i> var. <i>grandis</i>	grand fir	ABGR	Pinaceae	t		
2	<i>Acer circinatum</i>	vine maple	ACCI	Aceraceae	s		
3	<i>Acer macrophyllum</i>	bigleaf maple	ACMA3	Aceraceae	t		
4	<i>Achillea millefolium</i>	common yarrow	ACMI2	Compositae	p		
5	<i>Achlys triphylla</i>	valillaleaf	ACTR	Ranunculaceae	p		
6	<i>Actaea rubra</i>	baneberry	ACRU2	Ranunculaceae	p		
7	<i>Adenocaulon bicolor</i>	pathfinder	ADBI	Compositae	p		
8	<i>Adiantum pedatum</i>	northern maidenhair fern	ADPE	Polypodiaceae	f		
9	<i>Agropyron repens</i>	quackgrass	AGRE2	Gramineae	g	a	
10	<i>Agrostis exarata</i>	spike bentgrass	AGEX	Gramineae	g		
11	<i>Agrostis idahoensis</i>	idaho bentgrass	AGID	Gramineae	g		
12	<i>Alnus rubra</i>	red alder	ALRU2	Betulaceae	t		
13	<i>Amelanchier alnifolia</i>	serviceberry	AMAL2	Rosaceae	s		
14	<i>Anemone deltoidea</i>	Columbian windflower	ANDE3	Ranunculaceae	p		
15	<i>Anthemis cotula</i>	mayweed	ANCO2	Compositae	a	a	
16	<i>Anthoxanthum odoratum</i>	sweet vernalgrass	ANOD5	Gramineae	g	a	
17	<i>Aruncus sylvestris</i>	goatsbeard	ARSY	Rosaceae	s		
18	<i>Asarum caudatum</i>	wild ginger	ASCA	Aristolochiaceae	p		
19	<i>Aster subspicatus</i> var. <i>douglasii</i>	Douglas aster	ASSUD	Compositae	p		
20	<i>Athyrium filix-femina</i>	lady-fern	ATFI	Polypodiaceae	f		
21	<i>Bellis perennis</i>	english daisy	BEPE2	Compositae	p	a	
22	<i>Berberis aquifolium</i>	Tall Oregongrape	BEAQ	Berberidaceae	s		
23	<i>Berberis nervosa</i>	Cascade Oregongrape	BENE	Berberidaceae	s		
24	<i>Blechnum spicant</i>	deer-fern	BLSP	Polypodiaceae	f		
25	<i>Bromus carinatus</i>	California brome	BRCA	Gramineae	g		
26	<i>Bromus sitchensis</i> var. <i>sitchensis</i>	Alaska brome	BRSI	Gramineae	g		
27	<i>Callitriche</i> sp	water-starwort	CALLI	Callitrichaceae	p		
28	<i>Camassia quamash</i>	common camas	CAQU2	Liliaceae	p		
29	<i>Cardamine angulata</i>	seaside bittercress	CAAN5	Cruciferae	p		
30	<i>Carex athrostachya</i>	slenderbeaked sedge	CAAT3	Cyperaceae	g		
31	<i>Carex cusickii</i>	Cusick's sedge	CACU5	Cyperaceae	g		
32	<i>Carex deweyana</i>	Dewey's sedge	CADE9	Cyperaceae	g		
33	<i>Carex laeviculmis</i>	smooth-stem sedge	CALA	Cyperaceae	g		
34	<i>Carex obnupta</i>	slough sedge	CAOB3	Cyperaceae	g		
35	<i>Carex oederi</i>	green sedge	CAOE	Cyperaceae	g		
36	<i>Carex stipata</i>	sawbeak sedge	CAST5	Cyperaceae	g		
37	<i>Carex subfusca</i>	rusty sedge	CASU6	Cyperaceae	g		
38	<i>Carex unilateralis</i>	one-sided sedge	CAUN	Cyperaceae	g		
39	<i>Carex vesicaria</i> var. <i>major</i>	inflated sedge	CAVE	Cyperaceae	g		
40	<i>Cerastium vulgatum</i>	common chickweed	CEVU	Caryophyllaceae	p		
41	<i>Chrysanthemum leucanthemum</i>	oxeye daisy	CHLE80	Compositae	p	a	
42	<i>Circaea alpina</i>	enchanter's nightshade	CIAL	Onagraceae	p		
43	<i>Cirsium arvense</i>	Canada thistle	CIAR4	Compositae	p	a	
44	<i>Cirsium vulgare</i>	bull thistle	CIVU	Compositae	b	a	
45	<i>Collomia heterophylla</i>	varied-leaved collomia	COHE2	Polemoniaceae	a		
46	<i>Convolvulus arvensis</i>	field morning-glory	COAR4	Convolvulaceae	p	a	
47	<i>Conyza canadensis</i>	horseweed	COCA5	Compositae	a		

48	<i>Coptis laciniata</i>	cutleafed goldthread	COLC	Ranunculaceae	p	
49	<i>Corallorhiza</i> sp.	coral-root	CORAL	Orchidaceae	p	
50	<i>Cornus stolonifera</i>	redosier dogwood	COST4	Cornaceae	s	
51	<i>Corylus cornuta</i>	western hazel	COCO6	Betulaceae	s	
52	<i>Cynosurus cristatus</i>	crested dogtail	CYCR	Gramineae	g	a
53	<i>Cytisus scoparius</i>	Scot's broom	CYSC4	Leguminosae	s	a
54	<i>Dactylis glomerata</i>	orchardgrass	DAGL	Gramineae	g	a
55	<i>Danthonia californica</i>	California oatgrass	DACA3	Gramineae	g	
56	<i>Daucus carota</i>	Queen Ann's lace	DACA6	Umbelliferaeae	p	a
57	<i>Delphinium menziesii</i> var. <i>menziesii</i>	Menzie's larkspur	DEMEM	Ranunculaceae	p	
58	<i>Dianthus armeria</i>	grass pink	DIAR	Caryophyllaceae	a	a
59	<i>Dicentra formosa</i>	Pacific bleedingheart	DIFO	Fumariaceae	p	
60	<i>Digitalis purpurea</i>	foxglove	DIPU	Scrophulariaceae	a	a
61	<i>Digitaria sanguinalis</i>	crabgrass	DISA	Gramineae	p	a
62	<i>Disporum smithii</i>	largeflower fairybells	DISM2	Liliaceae	p	
63	<i>Dryopteris expansa</i>	spreading wood-fern	DREX2	Polypodiaceae	p	
64	<i>Eleocharis acicularis</i>	needle spike-rush	ELAC	Cyperaceae	g	
65	<i>Eleocharis palustris</i>	common spike-rush	ELPA3	Cyperaceae	g	
66	<i>Elymus glaucus</i>	blue wild rye	ELGL	Gramineae	g	
67	<i>Epilobium angustifolium</i>	fireweed	EPAN2	Onagraceae	p	
68	<i>Epilobium lactiflorum</i>	milkflower willowherb	EPLA3	Onagraceae	p	
69	<i>Epilobium watsonii</i>	Watson's willowherb	EPWA	Onagraceae	p	
70	<i>Equisetum arvense</i>	field horsetail	EQAR	Equisetaceae	p	
71	<i>Equisetum telmateia</i>	giant horsetail	EQTE	Equisetaceae	p	
72	<i>Euonymus occidentalis</i>	western wahoo	EUOC8	Celastraceae	s	ST
73	<i>Festuca rubra</i>	red fescue	FERU	Gramineae	g	
74	<i>Fragaria virginiana</i>	wild strawberry	FRVI	Rosaceae	p	
75	<i>Fraxinus latifolia</i>	Oregon ash	FRLA	Oleaceae	t	
76	<i>Galium aparine</i>	cleavers	GAAP2	Rubiaceae	a	a
77	<i>Galium cymosum</i>	Pacific bedstraw	GACY	Rubiaceae	p	
78	<i>Galium triflorum</i>	fragrant bedstraw	GATR3	Rubiaceae	p	
79	<i>Gaultheria shallon</i>	salal	GASH	Ericaceae	s	
80	<i>Geranium molle</i>	dovefoot geranium	GEMO	Geraniaceae	a	a
81	<i>Geranium robertianum</i>	Robert geranium	GERO	Geraniaceae	a	a
82	<i>Geum macrophyllum</i>	large-leaved avens	GEMA4	Rosaceae	p	
83	<i>Glechoma hederacea</i>	ground ivy	GLHE2	Labiatae	p	a
84	<i>Glyceria striata</i>	fowl mannagrass	GLST	Gramineae	g	
85	<i>Gnaphalium palustre</i>	lowland cudweed	GNPA	Compositae	a	
86	<i>Habenaria</i> sp.	bog-orchid	HABEN	Orchidaceae	p	
87	<i>Hedera helix</i>	English ivy	HEHE	Araliaceae	s	a
88	<i>Helenium autumnale</i> var. <i>grandiflorum</i>	sneezeweed	HEAU	Compositae	p	
89	<i>Heracleum lanatum</i>	cow parsnip	HELA4	Umbelliferaeae	p	
90	<i>Hieracium umbellatum</i>	narrow-leaved hawkweed	HIUM	Compositae	p	
91	<i>Holcus lanatus</i>	common velvetgrass	HOLA	Gramineae	g	a
92	<i>Holodiscus discolor</i>	oceanspray	HODI	Rosaceae	s	
93	<i>Hydrophyllum tenuipes</i>	slender-stem waterleaf	HYTE	Hydrophyllaceae	p	
94	<i>Hypericum anagalloides</i>	bog St. Johnswort	HYAN2	Hypericaceae	p	
95	<i>Hypericum formosum</i>	western St. johnswort	HYFO*	Hypericaceae	p	
96	<i>Hypericum perforatum</i>	St. Johnswort	HYPE	Hypericaceae	p	a
97	<i>Hypochaeris radicata</i>	hairy cat's-ear	HYRA3	Compositae	a	a

98	<i>Ilex aquifolium</i>	English holly	ILAQ	Aquifoliaceae	s	a
99	<i>Juncus acuminatus</i>	tapered rush	JUAC	Juncaceae	g	
100	<i>Juncus bufonius</i>	toad rush	JUBU	Juncaceae	g	
101	<i>Juncus effusus</i>	common rush	JUEF	Juncaceae	g	
102	<i>Juncus ensifolius</i>	dagger-leaved rush	JUEN	Juncaceae	g	
103	<i>Lactuca muralis</i>	wall lettuce	LAMU	Compositae	a	a
104	<i>Lamium maculatum</i>	spotted deadnettle	LAMA	Labiatae	p	a
105	<i>Lapsana communis</i>	common nipplewort	LACO3	Compositae	a	a
106	<i>Lathyrus polyphyllus</i>	leafy pea	LAPO3	Leguminosae	p	
107	<i>Lathyrus vestitus</i> ssp. <i>bolanderi</i>	Bolander's peavine	LAVEB	Leguminosae	p	SE
108	<i>Lemna minor</i>	duckweed	LEMI3	Lemnaceae	a	
109	<i>Ligusticum apiifolium</i>	parsley-leaved licorice-root	LIAP	Umbelliferaceae	p	
110	<i>Linnaea borealis</i>	twinflower	LIBO3	Scrophulariaceae	p	
111	<i>Lonicera ciliosa</i>	orange honeysuckle	LOCI3	Caprifoliaceae	s	
112	<i>Lonicera involucrata</i>	black twinberry	LOIN5	Caprifoliaceae	p	
113	<i>Lotus corniculatus</i>	birdsfoot trefoil	LOCO6	Leguminosae	p	a
114	<i>Lotus micranthus</i>	desert deervetch	LOMI	Leguminosae	a	
115	<i>Lotus purshiana</i>	Spanish clover	LOPU3	Leguminosae	a	
116	<i>Lupinus polyphyllus</i>	many-leaved lupine	LUPO2	Leguminosae	p	
117	<i>Luzula campestris</i>	field woodrush	LUCA*	Juncaceae	g	
118	<i>Luzula parviflora</i>	small-flowered woodrush	LUPA	Juncaceae	g	
119	<i>Lycopus uniflorus</i>	northern bungleweed	LYUN	Labiatae	p	
120	<i>Lysichitum americanum</i>	skunk cabbage	LYAM3	Araceae	p	
121	<i>Madia sativa</i>	Chilie tarweed	MASA	Compositae	a	
122	<i>Maianthemum dilatatum</i>	may-lily	MADI	Liliaceae	p	
123	<i>Matricaria matricarioides</i>	pineapple weed	MAMA11	Compositae	a	
124	<i>Melica smithii</i>	Smith's melic	MESM	Gramineae	g	
125	<i>Melica subulata</i>	Alaska oniongrass	MESU	Gramineae	g	
126	<i>Mentha</i> sp.	mint	MENTH	Labiatae	p	
127	<i>Mimulus moschatus</i>	musk monkeyflower	MIMO3	Scrophulariaceae	p	
128	<i>Montia parvifolia</i>	littleleaf montia	MOPA5	Caryophyllaceae	p	
129	<i>Montia perfoliata</i>	miner's lettuce	MOPE	Caryophyllaceae	a	
130	<i>Montia sibirica</i>	Siberian miner's lettuce	MOSI2	Caryophyllaceae	a	
131	<i>Myosotis arvensis</i>	field forgetmenot	MYAR	Boraginaceae	a	
132	<i>Myosotis laxa</i>	small-flowered forgetmenot	MYLA	Boraginaceae	p	
133	<i>Navarretia intertexta</i> var. <i>propinqua</i>	needle-leaf navarretia	NAINP	Polemoniaceae	a	
134	<i>Navarretia squarrosa</i>	skunkweed	NASQ	Polemoniaceae	a	
135	<i>Nemophila parviflora</i>	small-flowered nemophila	NEPA	Hydrophyllaceae	a	
136	<i>Oemleria cerasiformis</i>	Indian plum	OECE	Rosaceae	s	
137	<i>Oenanthe sarmentosa</i>	water-parsley	OESA	Umbelliferaceae	p	
138	<i>Oplopanax horridum</i>	devil's club	OPHO	Araliaceae	s	
139	<i>Osmorhiza chilensis</i>	mountain sweet-cicely	OSCH	Umbelliferaceae	p	
140	<i>Osmorhiza occidentalis</i>	western sweetroot	OSOC	Umbelliferaceae	p	
141	<i>Parentucellia viscosa</i>	yellow parentucellia	PAVI3	Scrophulariaceae	a	a
142	<i>Petasites frigidus</i> var. <i>plamatus</i>	sweet coltsfoot	PEFRP	Compositae	p	
143	<i>Phalaris arundinacea</i>	reed canarygrass	PHAR3	Gramineae	p	a
144	<i>Physocarpus capitatus</i>	Pacific ninebark	PACH11	Rosaceae	s	
145	<i>Pinus contorta</i>	lodgepole pine	PICO	Pinaceae	t	
146	<i>Plagiobothrys figuratus</i>	grant popcornflower	PLFI	Boraginaceae	p	
147	<i>Plantago lanceolata</i>	narrowleaf plantain	PLLA	Plantaginaceae	p	a

148	<i>Plantago major</i>	common plantain	PLMA2	Plantaginaceae	p	a
149	<i>Poa annua</i>	annual bluegrass	POAN	Gramineae	ag	a
150	<i>Poa pratensis</i>	Kentucky bluegrass	POPR	Gramineae	g	a
151	<i>Polygonum aviculare</i>	prostrate knotweed	POAV	Polygonaceae	a	
152	<i>Polygonum hydropiperoides</i>	waterpepper	POHY2	Polygonaceae	p	
153	<i>Polypodium glycyrrhiza</i>	licorice fern	POGL8	Polypodiaceae	f	
154	<i>Polystichum munitum</i>	sword-fern	POMU	Polypodiaceae	f	
155	<i>Populus trichocarpa</i>	black cottonwood	POTR15	Salicaceae	t	
156	<i>Potentilla gracilis</i>	slender cinquefoil	POGR9	Rosaceae	p	
157	<i>Prunella vulgaris</i>	self-heal	PRVU	Labiatae	p	
158	<i>Pseudotsuga menziesii</i>	Douglas fir	PSME	Pinaceae	t	
159	<i>Pteridium aquilinum</i>	bracken fern	PTAQ	Polypodiaceae	f	
160	<i>Pyrus fusca</i>	pacific crabapple	PYFU	Rosaceae	s	
161	<i>Quercus garryana</i>	white oak	QUGA4	Fagaceae	t	
162	<i>Ranunculus flammula</i>	spear-leaved buttercup	RAFL2	Ranunculaceae	p	
163	<i>Ranunculus repens</i> var. <i>repens</i>	creeping buttercup	RARER	Ranunculaceae	p	a
164	<i>Rhamnus purshiana</i>	cascara	RHPU	Rhamnaceae	s	
165	<i>Rhododendron macrophyllum</i>	western rhododendron	RHMA3	Ericaceae	s	
166	<i>Ribes bracteosum</i>	stink currant	RIBR	Grossulariaceae	s	
167	<i>Ribes lacustre</i>	swamp current	RILA	Grossulariaceae	s	
168	<i>Rosa gymnocarpa</i>	baldhip rose	ROGY	Rosaceae	s	
169	<i>Rosa nutkana</i>	Nootka rose	RONU	Rosaceae	s	
170	<i>Rubus discolor</i>	Himalayan blackberry	RUDI2	Rosaceae	s	a
171	<i>Rubus laciniatus</i>	evergreen blackberry	RULA	Rosaceae	s	a
172	<i>Rubus parviflorus</i>	thimbleberry	RUPA	Rosaceae	s	
173	<i>Rubus spectabilis</i>	salmonberry	RUSP	Rosaceae	s	
174	<i>Rubus ursinus</i>	trailing blackberry	RUUR	Rosaceae	s	
175	<i>Rumex acetosella</i>	sheep sorrel	RUAC3	Polygonaceae	a	a
176	<i>Rumex crispus</i>	curly dock	RUCR	Polygonaceae	p	a
177	<i>Rumex occidentalis</i>	western dock	RUOC3	Polygonaceae	p	
178	<i>Sagina procumbens</i>	birdeye pearlwort	SAPR	Caryophyllaceae	a	a
179	<i>Salix lasiandra</i>	pacific willow	SALA5	Salicaceae	s	
180	<i>Salix piperi</i>	Piper's willow	SAPI	Salicaceae	s	
181	<i>Salix rigida</i>	rigid (Mackenzie) willow	SARI	Salicaceae	s	
182	<i>Salix scouleriana</i>	Scouler's willow	SASC	Salicaceae	t	
183	<i>Sambucus racemosa</i>	red elderberry	SARA2	Caprifoliaceae	s	
184	<i>Satureja douglasii</i>	yerba buena	SADO5	Labiatae	p	
185	<i>Scirpus microcarpus</i>	panicled bulrush	SCMI2	Cyperaceae	g	
186	<i>Senecio jacobaea</i>	tansy ragwort	SEJA	Compositae	a	a
187	<i>Senecio sylvaticus</i>	wood groundsel	SESY	Compositae	p	
188	<i>Senecio vulgaris</i>	common groundsel	SEVU	Compositae	p	a
189	<i>Sisyrinchium idahoense</i>	Idaho sisyrinchium	SIID	Iridaceae	p	
190	<i>Smilacina racemosa</i>	western solomon's seal	SMRA	Liliaceae	p	
191	<i>Smilacina stellata</i>	star-flowered solomon's seal	SMST	Liliaceae	p	
192	<i>Solidago canadensis</i>	goldenrod	SOCA6	Compositae	p	
193	<i>Sonchus uliginosus</i>	marsh sowthistle	SOUL5	Compositae	a	a
194	<i>Spergula arvensis</i>	field stickwort	SPAR	Caryophyllaceae	a	
195	<i>Spiraea douglasii</i>	hardhack	SPDO	Rosaceae	s	
196	<i>Stachys cooleyae</i>	cooley's hedge-nettle	STCO14	Lamiaceae	p	
197	<i>Stachys mexicana</i>	Mexican hedgenettle	STME	Lamiaceae	p	



198	<i>Stellaria calycantha</i>	northern starwort	STCA	Caryophyllaceae	a
199	<i>Stellaria crispa</i>	crisped starwort	STCR2	Caryophyllaceae	p
200	<i>Streptopus amplexifolius</i>	twisted-stalk	STAM2	Liliaceae	p
201	<i>Symphoricarpos albus</i>	common snowberry	SYAL	Caprifoliaceae	s
202	<i>Symphoricarpos mollis</i>	creeping snowberry	SYMO*	Caprifoliaceae	s
203	<i>Taraxacum officinale</i>	common dandelion	TAOF	Compositae	b a
204	<i>Tellima grandiflora</i>	fringecup	TEGR2	Saxifragaceae	p
205	<i>Thuja plicata</i>	western redcedar	THPL	Cupressaceae	t
206	<i>Tiarella trifoliata</i>	foamflower	TITR	Saxifragaceae	p
207	<i>Tolmiea menziesii</i>	youth-on-age	TOME	Saxifragaceae	p
208	<i>Trientalis latifolia</i>	western starflower	TRLA6	Primulaceae	p
209	<i>Trifolium dubium</i>	least hop clover	TRDU2	Leguminosae	a
210	<i>Trifolium pratense</i>	red clover	TRPR2	Leguminosae	p a
211	<i>Trifolium repens</i>	white clover	TRRE3	Leguminosae	p a
212	<i>Trillium ovatum</i>	white trillium	TROV	Liliaceae	p
213	<i>Tsuga heterophylla</i>	Pacific hemlock	TSHE	Pinaceae	t
214	<i>Typha latifolia</i>	common cattail	TYLA	Typhaceae	p
215	<i>Urtica dioica</i>	stinging nettle	URDI	Urticaceae	p
216	<i>Vaccinium parvifolium</i>	red huckleberry	VAPA	Ericaceae	s
217	<i>Vancouveria hexandra</i>	inside-out flower	VAHE	Berberidaceae	p
218	<i>Veratrum californicum</i>	California false hellebore	VECA	Liliaceae	p
219	<i>Verbascum thapsus</i>	common mullein	VETH	Scrophulariaceae	b a
220	<i>Veronica americana</i>	American brooklime	VEAM2	Scrophulariaceae	p
221	<i>Veronica scutellata</i>	marsh speedwell	VESC2	Scrophulariaceae	p
222	<i>Vicia tetrasperma</i>	slender vetch	VITE	Leguminosae	p a
223	<i>Vicia sativa</i> var. <i>angustifolia</i>	common vetch	VISAN2	Leguminosae	p a
224	<i>Vicia villosa</i> ssp. <i>villosa</i>	winter vetch	VIVIV	Leguminosae	p a
225	<i>Vinca major</i>	periwinkle	VIMA	Apocynaceae	p a
226	<i>Viola</i> sp	violet	VIOLA	Violaceae	p

Note: The following plants have been reported in the park in the past but were not recorded by our field crews in 2004:

Scientific Name	Common Name	Family
<i>Cimicifuga elata</i>	Tall bugbane	Ranunculaceae
<i>Disporum hookeri</i>	Hooker fairy-bell	Liliaceae
<i>Hydrophyllum capitatum</i>	Woolly breeches	Hydrophyllaceae
<i>Mitella breweri</i>	Brewer's miterwort	Saxifragaceae
<i>Salix sitchensis</i>	Sitka willow	Salicaceae

We know that *Cimicifuga elata* has been seen by professional botanists in the past. Members of the Washington Native Plant Society reported the other four species as existing at the park.

## *References*

Caplow F. and J. Miller. 2004. Southwestern Washington prairies: using GIS to find rare plant habitat in historic prairies. Natural Heritage Program Report 2004-2. Washington Department of Natural Resources. Olympia WA.

Chappell C.B. 2004. Terrestrial plant associations of the Puget trough ecoregion, Washington. Washington Natural Heritage Program. Washington Department of Natural Resources. Olympia WA.

Kunze. L.M. 1994. Preliminary classification of native, low elevation, freshwater wetland vegetation in western Washington. Washington Natural Heritage Program. Washington Department of Natural Resources. Olympia WA.

## *Appendix A - Field Survey Dates and Personnel*

### **June 16, 17, 18, 2004**

Peter Morrison (with Florence Caplow for part of June 17)

### **August 18-19, 2004**

Hans Smith

Dana Visalli

## ***Appendix B - Washington Natural Heritage Program Rare Plant Sighting Form #1***

**Taxon Name:** *Lathyrus vestitus* ssp. *bolanderi*

**Are you confident of the identification?** **Yes** No **Explain:** Plant keyed out with confidence. The first sighting of *Lathyrus vestitus* at this location occurred during a visit to the Park with Florence Caplow, Washington Natural Heritage Program botanist. Florence was quite familiar with this taxon and confident in its identification.

**Survey Site Name:** Lewis and Clark State Park

**Surveyor's Name/Phone/Email:** Peter Morrison, Hans Smith and Dana Visalli,  
Pacific Biodiversity Institute, 509-996-2490, peter@pacificbio.org

**Survey Dates (yr/mo/day):** 2005/6/16-18 and 2005/8/18-19

**County:** Lewis

**Quad Name:** Jackson Prairie

**TRS1/41/4:**

**Directions to Site:** The population is found in several areas within Lewis and Clark State Park along mature and old-growth forest edges and openings within the forest. See map for more specific sites.

**Mapping:** Attach a copy of the USGS 7.5 minute quad with the location and extent of the rare plant population clearly drawn. Do not reduce or enlarge the photocopy or printout. If your map is a different scale (not recommended) please write the scale on the map.

**Answer the following:**

**1. I used GPS to map the population:** No (skip to #2) Yes (complete #1 and #3)

**Coordinates are in electronic file on diskette (preferred) or**

**Description of what coordinates represent:** both point locations for specific sightings and polygons for general area of population. Maps of the population are included.

**GPS accuracy:** Uncorrected Note that the area has dense forest cover and GPS signals are very weak in places and more inaccurate than in the open.

**GPS datum:** NAD27

**GPS coordinates:** projection UTM zone 10

**To the best of my knowledge, I mapped the entire extent of this population:**

Yes

**Is a revisit necessary?**

No

**Ownership (if known):** Washington State Parks and some private lands near the SW corner of Lewis and Clark State Park.

**Population Size (# of individuals or ramets) or estimate:** About 25 sites with between 5 and 65 individuals per site. Estimated population is 200-400 individuals in the park.

**Population (EO) Data (include population vigor, microhabitat, phenology, etc):** Population vigor is good. Reproduction is occurring. Plants flowering (20% in bloom on June 17) and forming fruit in mid June. By August, population has completed blooming.

**Plant Association:** This species is occurring along forest edges and openings in old-growth and mature PSME-TSHE/MANE/POMU (per Chappell, 2004) forests and PSME-TSHE/POMU-DREX (per Chappell, 2004) forests.

**Associated Species (include % cover by layer and by individual species for dominants in layers):**

**Lichen/moss layer:**

**Herb layer:** 40%, *Polystichum munitum*, *Galium aparine*, *Ozmorhiza chilensis*, *Melica sp.*, *Vancouveria hexandra*

**Shrub layer(s):** 30%, *Symphoricarpus albus*, *Mahonia nervosa*, *Rubus ursinus*, *Rubus parviflora*, *Acer circinatum*, *Gaultheria shallon*, *Rubus spectabilis*

**Tree layer:** 50%, *Pseudotsuga menziesii* (35%), *Alnus rubra* (5%), *Tsuga heterophylla* (1%), *Thuja plicata* (3%), *Acer macrophyllum* (5%), *Abies grandis* (1%)

**General Description (include description of landscape, surrounding plant communities, land forms, land use, etc):** Individual plants were found scattered throughout the park in well-drained, deep soils. They were restricted to openings in the forest and forest edges along roads and trails. The terrain is flat to gently rolling.

**Minimum elevation (ft):** 650      **Maximum elevation (ft):** 670  
**Size (acres):** 210 acres      **Aspect:** flat      **Slope:** flat to gently rolling  
**Photo taken?** Yes

**Management Comments (exotics, roads, shape/size, position in landscape, hydrology, adjacent land use, cumulative effects, etc):** Forest openings and edges appear to be very important for this plant. We did not find it growing in open areas or areas with high disturbance, but we also did not find the plant in closed canopy forests. Maintenance and clearing of existing trail systems in the park may actually benefit this rare plant. Ideally, maintenance crews could be taught to identify the species and treat it gently when engaging in clearing activities.

**Protection Comments (legal actions/steps/strategies needed to secure protection for the site):**

**Additional Comments (discrepancies, general observations, etc):**

## ***Appendix C - Washington Natural Heritage Program Rare Plant Sighting Form #2***

**Taxon Name:** *Euonymus occidentalis*

**Are you confident of the identification?** Yes      **Explain:** plants matched description exactly, plants keyed and photos taken.

**Survey Site Name:** Lewis and Clark State Park

**Surveyor's Name/Phone/Email:** Peter Morrison, Hans Smith and Dana Visalli,  
Pacific Biodiversity Institute, 509-996-2490, peter@pacificbio.org

**Survey Date (yr/mo/day):** 2005/6/16-18 and 2005/8/18-19

**County:** *Lewis*

**Quad Name:** Jackson Prairie

**TRS1/41/4:**

**Directions to Site:** The population is scattered throughout much of the mature and old-growth forests in Lewis and Clark State Park. See map for more specific sites.

**Mapping:** Attach a copy of the USGS 7.5 minute quad with the location and extent of the rare plant population clearly drawn. Do not reduce or enlarge the photocopy or printout. If your map is a different scale (not recommended) please write the scale on the map.

**Answer the following:**

**1. I used GPS to map the population:** No (skip to #2) Yes (complete #1 and #3

Coordinates are in electronic file on diskette (preferred) or

Description of what coordinates represent: both point locations for specific sightings and polygons for general area of population, GIS map included.

**GPS accuracy:** Uncorrected Note that the area has dense forest cover and GPS signals are very weak in places and more inaccurate than in the open.

**GPS datum:** NAD27

**GPS coordinates:** projection UTM zone 10

**To the best of my knowledge, I mapped the entire extent of this population:**

Yes

**Is a revisit necessary?**

No

**Ownership (if known):** Washington State Parks

**Population Size (# of individuals or ramets) or estimate:** 25 locations with an average of 4 plants per site for a total of about 100 individuals.

**Population (EO) Data (include population vigor, microhabitat, phenology, etc):** Most plants were mature individuals, though a limited amount of reproduction or very small plants were observed. Population vigor may be low. Plants flowering in mid June and fruit set in mid August.

**Plant Association (include author, citation or classification, e.g. Daubenmire):** PSME-TSHE/MANE/POMU and PSME-TSHE/POMU-DREX (Chappell, 2004)

**Associated Species (include % cover by layer and by individual species for dominants in layers):**

**Lichen/moss layer:** 5%

**Herb layer:** 35%, *Polystichum munitum* (15%), *Vancouveria hexandra* (10%)

**Shrub layer(s):** 60%, *Acer circinatum* (10%), *Cornus stolonifera* (10%), *Corylus cornuta* (5%), *Gaultheria shallon* (10%), *Mahonia nervosa* (20%), *Vaccinium parvifolium* (5%)

**Tree layer:** 90%, *Pseudotsuga menziesii* (60%), *Tsuga heterophylla* (5%), *Thuja plicata* (15%), *Acer macrophyllum* (10%)

**General Description (include description of landscape, surrounding plant communities, land forms, land use, etc):** Habitat includes old-growth and mature forest with moderately diverse species composition.

**Minimum elevation (ft):** 650    **Maximum elevation (ft):** 670

**Size (acres):** about 450 acres

**Aspect:** flat

**Slope:** flat to gently rolling

**Photo taken?** Yes

**Management Comments:** Some of the plants were close to trailheads and roads and could easily be disturbed by maintenance activities or by recreational activities. This shrub is quite robust once mature, but seedlings could be easily disturbed.

**Protection Comments:** Restrict active management activities and maintenance that might disturb plants at known sites and survey other areas for EUOC before disturbing old-growth or mature forest.

**Additional Comments:** Studies of regeneration and establishment of EUOC are suggested to determine if there are ways to stimulate reproduction and establishment of young plants. Use of light surface fire may be a factor that should be investigated.