

Rare Plant and Vegetation Survey of Dosewallips State Park



Pacific Biodiversity Institute

Rare Plant and Vegetation Survey of Dosewallips State Park

Hans M. Smith IV

hans@pacificbio.org

Peter H. Morrison

peter@pacificbio.org

Dana Visalli

dana@methow.com

June 2005

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

Recommended Citation

Smith, H.M. IV, P.H. Morrison and D. Visalli. 2005. Rare Plant and Vegetation Survey of Dosewallips State Park. Pacific Biodiversity Institute, Winthrop, Washington. 112 p.

Acknowledgements

The photographs in this report are by Peter Morrison, Dana Visalli, 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
Survey Conditions and Survey Routes	5
Notes About Boundary Discrepancies:.....	7
Vegetation Communities	8
Methods.....	8
Results.....	8
Examples of Upland Vegetation Community Types	13
Examples of Intertidal Vegetation Communities.....	26
Rare Plant Surveys.....	32
Methods.....	32
Results.....	32
Vascular Plant List for Dosewallips State Park	33
Discussion.....	41
Ecological Condition of Dosewallips State Park	42
Additional Parcel Survey	43
References	48
Appendix A - Field Survey Schedule	49
Appendix B – Vegetation Survey Data	50

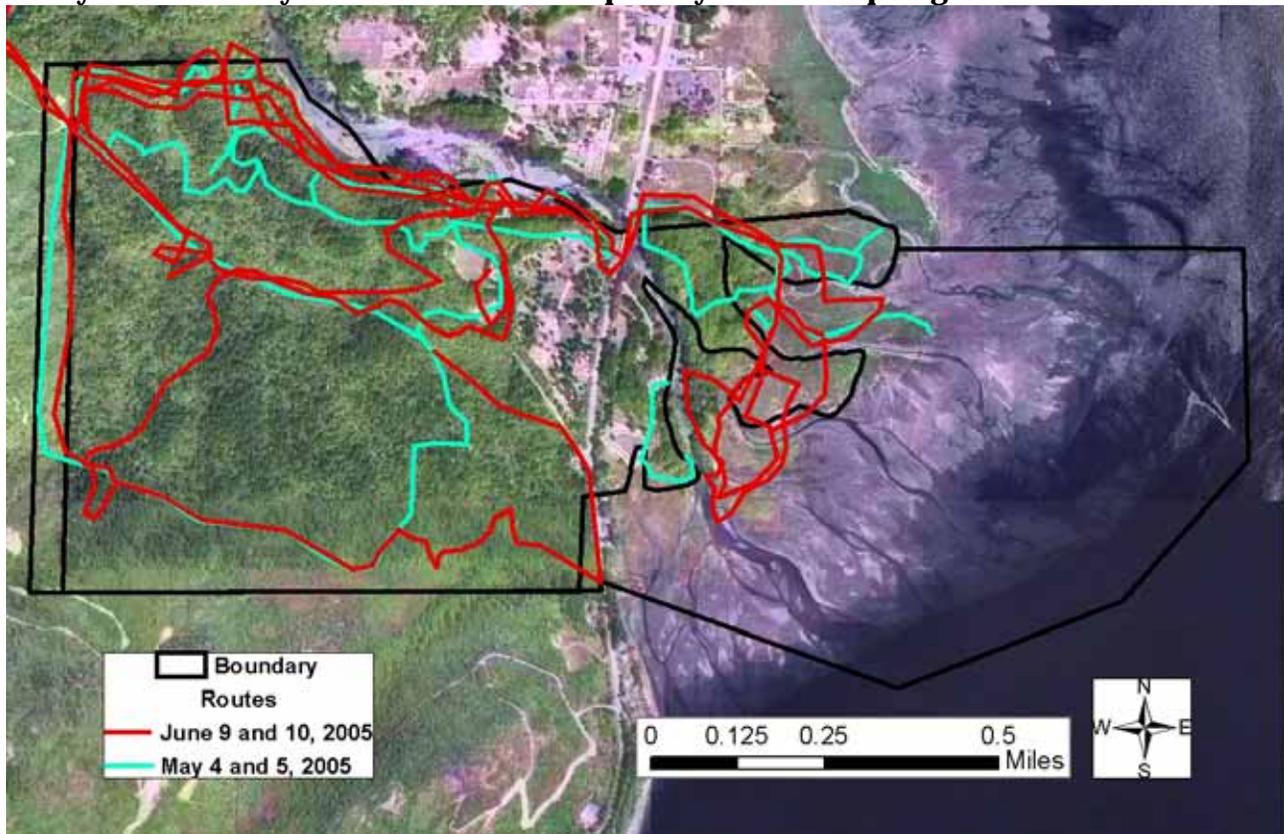
Introduction

Under two contracts with the Washington State Parks and Recreation Commission, Pacific Biodiversity Institute (PBI) surveyed Dosewallips State Park, located in Jefferson County, for rare plant occurrences and mapped according to vegetation communities. The primary work agreement between PBI and the Washington State Parks and Recreation Commission expired in late June 2005, which did not allow for middle and late summer blooming plants to be adequately surveyed. A subsequent service contract was granted in late July that extended the survey season to the end of August. Vegetation data was collected for all the mapped vegetation types during the course of both contracts. This report summarizes the activities and findings of the contracted work under both work agreements.

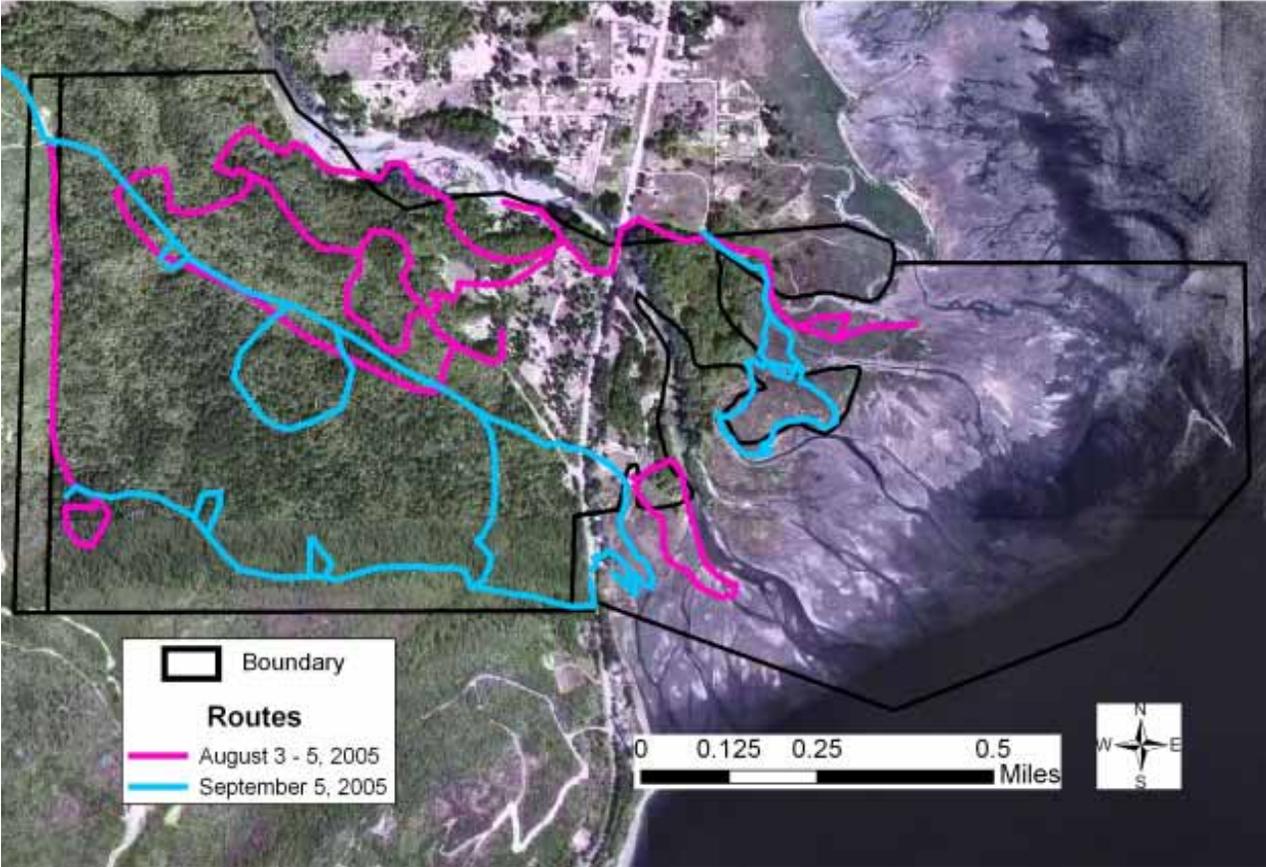
Survey Conditions and Survey Routes

Dosewallips State Park generally consists of three major habitat types: previously logged second growth conifer forests (around 100 years old), riparian floodplain forests and gravel/sand bars, and an intertidal zone estuary at the mouth of the Dosewallips River. All of this terrain was relatively accessible by foot. A network of trails provided easy access into many areas of the park.

Map 1. Survey routes for the vegetation community mapping and rare and endangered plant surveys conducted by PBI in 2005 under the primary contract expiring in June.



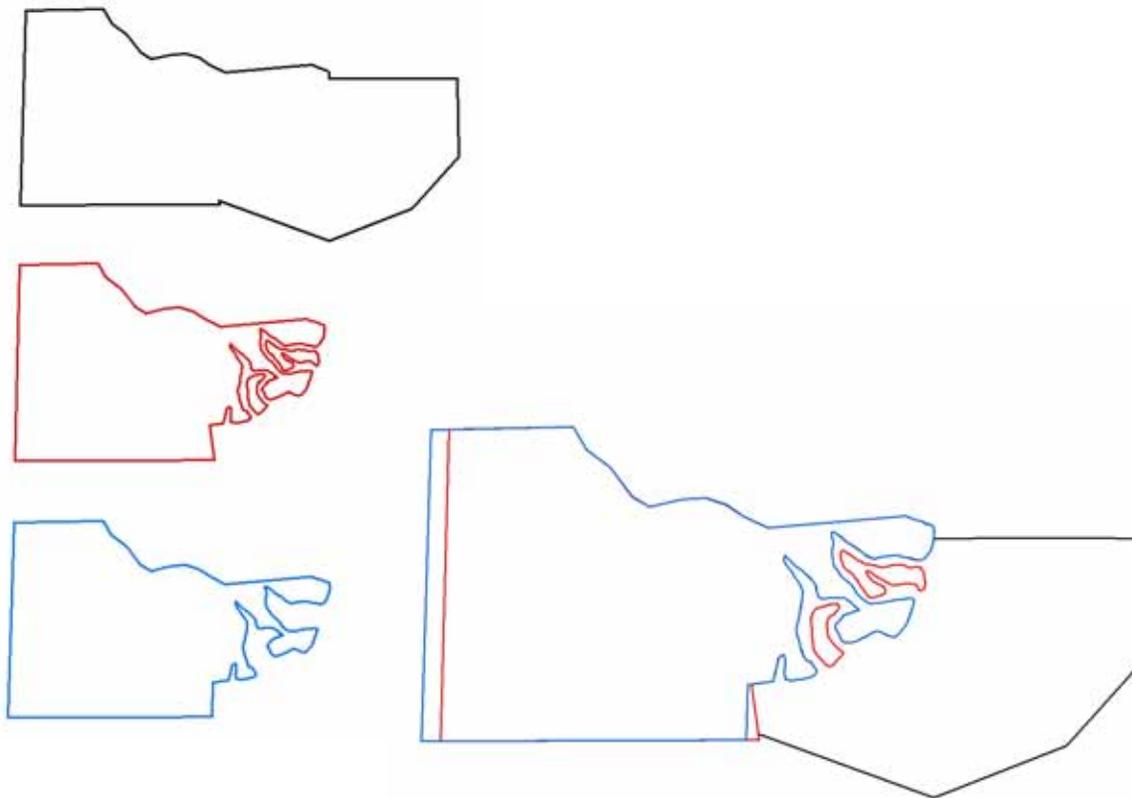
Map 2. Survey routes for the vegetation community mapping and rare and endangered plant surveys conducted by PBI in 2005 under the second contract.



Notes About Boundary Discrepancies:

Delineating the actual boundary of Dosewallips State Park proved to be difficult. We first incorporated the 2004 WA DNR Major Public Lands GIS layer (MPL) to locate the boundary of Dosewallips State Park. After discussions with State Park's staff on site, we determined the MPL layer was possibly incorrect, so Washington State Parks provided us with another more recent GIS layer specifically for the park. This second layer seemed to fit better than the first, but the extent of the Park's ownership in the tideland areas was not clear through either the MPL or State Park's provided data. The Dosewallips State Park Manager, Doug Hinton, assured us that the Park's ownership extended to the low-tide line in the intertidal flats. He showed us a USGS topographic survey map which faintly showed a boundary line extending further into the flats than the subsequent MPL and State Park's maps. We decided it would be best to incorporate all unknown or uncertain land title regions concerning Dosewallips State Park, so the data we have created encompasses the maximum possible area of Dosewallips State Park (Figure 1). There is also one other addition to the park boundary that we have made: the field east of Highway 101 near the trailhead to the intertidal area is part of the park (Doug Hinton) but doesn't exist in any of the GIS data layers. We included this area in our assessment.

Figure 1. The following Dosewallips State Park boundary layers came from the following sources (from top to bottom): 1:24,000 scale USGS quadrangle topographic map, WA State Parks (2005), WA DNR MPL (2004). Image on right is all three layers overlaid one another.



Vegetation Communities

Methods

Vegetation communities within Dosewallips State Park were delineated and classified using a combination of field survey and remote sensing techniques. We relied on descriptions from the Washington State Department of Natural Resources (WADNR) late-seral forested plant associations of the Puget Lowland (Chappell 2004), freshwater wetland vegetation (Kunze 1994), and intertidal vegetation (Chappell 2001) to make final vegetation community assignments. In some cases, the WADNR descriptions were not adequate in describing existing vegetation associations. In these cases, alternative vegetation communities or plant associations were created by PBI.

Remote sensing techniques consisted of manually delineating plant associations or mosaics of plant associations in a digital environment. We reviewed orthorectified aerial photography from the 1990s and recent LANDSAT Thematic Mapper satellite images for discernable vegetation or landform patterns. Topographic maps and digital elevation models (DEMs) were also employed to assist the process of vegetation community delineation. The final vegetation polygons were created by hand in a GIS by ocular assessment.

Field surveys consisted of visiting sites located within the vegetation polygons created during the remote sensing process. At representative sites within a polygon, vegetation data and site descriptions were recorded in a fashion consistent with the “plant community polygon” format provided by the Washington State Parks and Recreation Commission. Further refinements and editing of the drafted vegetation polygon layers were done by hand on hardcopy maps in the field, and later edited digitally in a GIS.

Results

We mapped and surveyed 38 vegetation community polygons, comprised of 22 vegetation community types, within Dosewallips State Park. Vegetation community types are either stand-alone plant associations or mosaics of multiple plant associations. The following table lists the vegetation community types mapped. Maps 3 and 4 on the following pages illustrate the location of these vegetation community types. Note that Map 4 only shows the primary plant associations in each polygon (PA1 in the database).

Upland Vegetation Community Types Encountered in Dosewallips State Park.

Abbreviation	Association Name	English Name	Reference	Status
ACMA-ALRU/POMU-TEGR	<i>Acer macrophyllum</i> – <i>Alnus rubra</i> / <i>Polystichum munitum</i> - <i>Tellima grandiflora</i>	Bigleaf maple – red alder / sword fern – fringecup	Chappell 2004	G2G3
ALRU/POMU	<i>Alnus rubra</i> / <i>Polystichum munitum</i>	red alder / sword fern	Chappell 2004	G4S4
ALRU/PTAQ	<i>Alnus rubra</i> / <i>Pteridium aquilinum</i>	Red alder / bracken fern	Chappell 2004	???
ALRU/RUSP	<i>Alnus rubra</i> / <i>Rubus spectabilis</i>	red alder / salmonberry – seasonally flooded forest	Kunze 1994	G4G5
PSME-ABGR/COCO/POMU	<i>Pseudotsuga menziesii</i> – <i>Abies grandis</i> / <i>Corylus cornuta</i> var <i>californica</i> / <i>Polystichum munitum</i>	Douglas-fir - grand fir / beaked hazelnut / sword fern	Chappell 2004	???
PSME-THPL/RHMA	<i>Pseudotsuga menziesii</i> – <i>Thuja plicata</i> / <i>Rhododendron macrophyllum</i>	Douglas-fir - western redcedar / Pacific rhododendron	Chappell 2004	G4S4
PSME-TSHE/GASH/POMU	<i>Pseudotsuga menziesii</i> - <i>Tsuga heterophylla</i> / <i>Gaultheria shallon</i> / <i>Polystichum munitum</i>	Douglas-fir - western hemlock / salal / sword fern	Chappell 2004	G4
PSME-TSHE/GASH-HODI	<i>Pseudotsuga menziesii</i> - <i>Tsuga heterophylla</i> / <i>Gaultheria shallon</i> - <i>Holodiscus discolor</i>	Douglas-fir - western hemlock / salal - oceanspray	Chappell 2004	G4
PSME-TSHE/HODI/POMU	<i>Pseudotsuga menziesii</i> - <i>Tsuga heterophylla</i> / <i>Holodiscus discolor</i> / <i>Polystichum munitum</i>	Douglas-fir - western hemlock / oceanspray / sword fern	Chappell 2004	G3
PSME-TSHE/MANE/POMU	<i>Pseudotsuga menziesii</i> - <i>Tsuga heterophylla</i> / <i>Mahonia nervosa</i> / <i>Polystichum munitum</i>	Douglas-fir - western hemlock / dwarf Oregongrape / sword fern	Chappell 2004	G4S3
TSHE-PSME/POMU-DREX	<i>Tsuga heterophylla</i> - <i>Pseudotsuga menziesii</i> / <i>Polystichum munitum</i> - <i>Dryopteris expansa</i>	western hemlock - Douglas-fir / sword fern - spreading woodfern	Chappell 2004	G3S3
Rocky Bald	Rocky bald	Rocky bald	PBI	
Floodplain sand/gravel bar	Floodplain sand and gravel bars	Floodplain sand and gravel bars	PBI	
River	River	River	PBI	
Developed area	Developed area	Developed area	PBI	

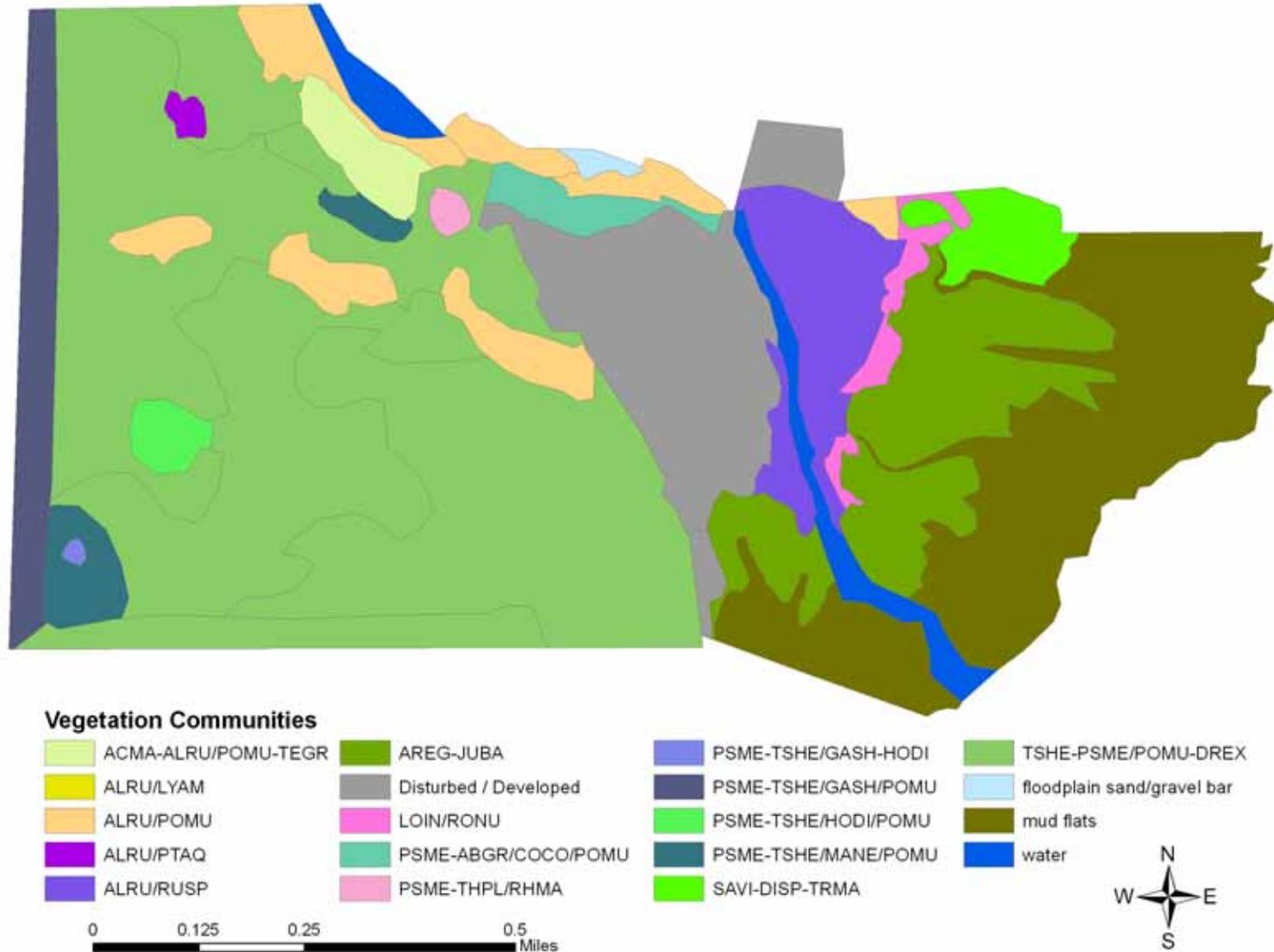
Intertidal Vegetation Community Types Encountered in Dosewallips State Park

Abbreviation	Association Name	English Name	Reference	Status
SAVI-DISP-TRMA	<i>Salicornia virginica</i> - <i>Distichlis spicata</i> - <i>Triglochin maritima</i> - (<i>Jaumea carnosa</i>) herbaceous vegetation	Virginia glasswort - saltgrass - seaside arrow-grass - (marsh jaumea) herbaceous vegetation	Chappell 2000	G3
DISP-SAVI	<i>Distichlis spicata</i> - (<i>Salicornia virginica</i>) herbaceous vegetation	Salt grass - (pickleweed) herbaceous vegetation	Chappell 2000	G4
AREG-JUBA	<i>Argentina egedii</i> - <i>Juncus balticus</i> herbaceous vegetation	Pacific silverweed - Baltic rush herbaceous vegetation	Chappell 2000	G3G4
JUBA	<i>Juncus balticus</i> herbaceous vegetation	Baltic rush herbaceous vegetation	Chappell 2000	G5
CALY	<i>Carex lyngbyei</i> herbaceous vegetation	Lyngby's sedge herbaceous vegetation	Chappell 2000	G4
CALY-AREG	<i>Carex lyngbyei</i> - <i>Argentina egedii</i> herbaceous vegetation	Lyngbye's sedge - Pacific silverweed herbaceous vegetation	Chappell 2000	G4
LOIN-RONU	<i>Lonicera involucrata</i> - <i>Rosa nutkana</i>	twinberry - Nootka rose	PBI	

Map 3. Layout of the vegetation community polygons overlaying a 1998 digital ortho-photo combined with TM7 spectral imagery.



Map 4. The primary vegetation community types represented by each polygon (note- a small rocky bald is located within the only PSME-TSHE/GASH-HODI polygon in the southwest corner of the park).



Examples of Upland Vegetation Community Types

Acer macrophyllum – *Alnus Rubra* / *Polystichum munitum* - *Tellima grandiflora* forest (ACMA-ALRU/POMU-TEGR)



This plant association is limited to a small area in the north side of Dosewallips State Park, on a steep hill just above the Dosewallips River. Logging and recreation use have impacted the vegetation of this community, and inclusions of the TSHE-PSME/POMU-DREX are frequent within the patch. *Geranium robertianum*, a weedy herb, is profuse along the trail in this association, and in some areas off the trail as well.



Alnus rubra / *Polystichum munitum* forest (ALRU/POMU)



ALRU/POMU forests occur throughout Dosewallips State Park. A wide variety of age classes and understory species composition exists between different ALRU/POMU patches, depending on the historical disturbances that have affected each patch. Patches located in the park's uplands were influenced by historical logging and associated activities that deflected natural succession of the native conifer forests into a largely deciduous forest canopy. These ALRU/POMU patches tend to be similar in understory vegetation to the surrounding native upland conifer forests (ie.. TSHE-PSME/POMU-DREX). In other cases, saturated soils and continued periodic flooding have maintained a competitively advantageous growing environment for red alder versus native conifer species. In these areas, *Populus trichocarpa* is commonly a canopy emergent and understory vegetation is more of a wetland/riparian type.



Alnus rubra / *Pteridium aquilinum* forest (ALRU/PTAQ)

The ALRU/PTAQ plant association has a limited distribution within Dosewallips State Park. Its occurrence is probably associated with logging and associated disturbances as well as local soil characteristics. The largest patch occurs on a poorly drained flat plateau above Phantom Creek. This area shows signs of having standing surface water during times of high rainfall, which is probably why the forest overstory is a homogeneous cover of red alder with no signs of conifer regeneration in the understory. *Carex deweyana* (Dewey's sedge) covers much of the forest floor with *Pteridium aquilinum* (bracken fern) the dominant fern cover.



***Pseudotsuga menziesii* - *Thuja plicata* / *Rhododendron macrophyllum* forest
(PSME-THPL/RHMA)**



This plant association occurs sporadically in Dosewallips State Park. Its distribution seems to be limited to well-drained areas with a degree of southern exposure. Patch sizes are small, no greater than an acre in size, with the PSME-TSHE/MANE/POMU plant association also relegated to similar sites. The park's Maple Valley Trail traverses two known patches of this community along the primary ridgeline of the steepest north facing slopes above the Dosewallips River. Another patch exists below the rocky bald in the southwestern corner of the park. All patches have endured historical logging which may or may not have influenced the current distribution and character of this plant association.



***Pseudotsuga menziesii* - *Abies grandis* / *Corylus cornuta* var *californica* / *Polystichum munitum* forest (PSME-ABGR/COCO/POMU)**

Most of the coniferous forests within Dosewallips State Park have a significant composition of *Abies grandis* in the overstory and understory. However, *Thuja plicata* and *Tsuga heterophylla* occur with enough frequency in most of the forests that the patches typically key out to the TSHE-PSME/POMU-DREX plant association as opposed to an association in the PSME-ABGR series. In some cases, there is enough *Abies grandis* as well as other necessary associated species such as beaked hazelnut and vine maple to merit the classification of PSME-ABGR/COCO/POMU, but these patches tend to be small and intermixed into the larger TSHE-PSME/POMU-DREX matrix. The flat coniferous forest surrounding the tent platform site and along the northern perimeter of the common campground fields is one area where the PSME-ABGR/COCO/POMU plant association is dominant. Understory influences on vegetation vitality by campers and off-trail hikers are apparent in this area, though for the most part vegetation not directly within a campsite or along a road seems to be in a good natural condition.



***Pseudotsuga menziesii* - *Tsuga heterophylla* / *Mahonia nervosa* / *Polystichum munitum* forest (PSME-TSHE/MANE/POMU)**

This plant association occurs in the same limited areas as the PSME-THPL/RHMA plant association and frequently grades between that association and the TSHE-PSME/POMU-DREX association. A dense overstory of conifer trees along or near ridgeline with a slight southern aspect typifies the regions where this plant association is found. The understory tends to be composed of mostly dwarf Oregongrape, with infrequent occurrences of swordfern and red huckleberry as well as a scarce presence of herbaceous composition. As with the PSME-THPL/RHMA patches, it is not known how past logging may have influenced the current distribution and character of this plant association. The Maple Valley Trail passes directly through some representative sites for the PSME-TSHE/MANE/POMU forest.



***Tsuga heterophylla* - *Pseudotsuga menziesii* / *Polystichum munitum* - *Dryopteris expansa* forest (TSHE-PSME/POMU-DREX)**



This plant association is the matrix forest type of the upland coniferous forests in Dosewallips State Park. Though grand fir is present throughout the TSHE-PSME/POMU-DREX areas of the park, profuse understory regeneration of both *Tsuga heterophylla* and *Thuja plicata* indicate that these will be Douglas-fir - western hemlock - western redcedar series forests for a long time to come. No old-growth or late successional examples of this plant association exist within the park's boundary, but a few individual trees that escaped recent logging activities might be as old as 150 years. As the matrix community of the upland forests, Dosewallips State Park's TSHE-PSME/POMU-DREX forests are relatively noxious weed free and in good condition to mature into functional old-growth forests.



***Pseudotsuga menziesii* - *Tsuga heterophylla* / *Gaultheria shallon* / *Polystichum munitum* forest (PSME-TSHE/GASH/POMU)**

The clearcut on the western boundary of the park seems to be regenerating PSME-TSHE/GASH/POMU forest, though it may be too early of a successional phase to accurately predict the resulting plant association. This is the only known location of PSME-TSHE/GASH/POMU in the park. It is not known if this clear-cut area is owned by the park or not (see Notes About Boundary Discrepancies).



***Pseudotsuga menziesii* - *Tsuga heterophylla* / *Gaultheria shallon* - *Holodiscus discolor* forest (PSME-TSHE/GASH-HODI)**

In the southwest corner of the park, the PSME-TSHE/GASH-HODI plant association is found where the parent bedrock comes to the soil surface on a steep hill. The substrate rock is mostly covered by thick mosses, and the forest understory is mostly oceanspray and salal. It is unclear whether logging took place here historically, though it is likely that the site was logged as no large old trees were seen around the site. Douglas-fir is the dominant overstory tree, though a few western hemlocks occur in the understory.



***Pseudotsuga menziesii* - *Tsuga heterophylla* / *Holodiscus discolor* / *Polystichum munitum* forest (PSME-TSHE/HODI/POMU)**

A small patch of PSME-TSHE/HODI/POMU can be found in the western part of the park. The site is relatively flat and forest succession seems to be farther along here than many other forested areas of the park. A thick cover of oceanspray and sword fern dominate the understory of this forest patch, and a nearly 100 year old cohort of western hemlock and Douglas-fir share the overstory canopy.



Rocky Bald

A small rocky bald is located in the southwestern corner of Dosewallips State Park. This site is surrounded by the PSME-TSHE/GASH-HODI association, which occurs below the summit of the large rock extrusion the bald is located on. Heartleaf twayblade (*Listera cordata*) and some unidentified lilies (*Fritillaria sp.* or *Lilium sp.* - not identified because they had recently emerged and were not flowering) were found in the bald area and not seen elsewhere within the park. This is a unique plant community within the park in relatively good condition. There are no currently used roads or paths near the site, though the site may have been historically logged or burned. *Digitalis purpurea*, an exotic herb, is becoming established in some areas of the bald.



***Alnus rubra* / *Rubus spectabilis* forest - seasonally flooded (ALRU/RUSP forest)**



This forest type occurs in the riparian regions along the Dosewallips River on the east side of the Highway 101 bridge. Shrub density is high in these forests, with Indian plum (*Oemleria cerasiformis*) and salmonberry (*Rubus spectabilis*) growing thick up to 3 meters tall. Seasonal flooding is apparent in most of the forest, with deposits of previous flooding debris apparent at the base of some shrubs and trees. A large network of secondary channels of the Dosewallips River, as well as some high tidal sloughs dissect the forest floor.

Himalayan blackberry (*Rubus discolor*), and to a much lesser extent English ivy (*Hedera helix*) are taking over the under-story of some of this forest. See the Discussion Section for information on infestation and weed control strategies.

Floodplain sand/gravel bar



Along the Dosewallips River exists the Floodplain sand/gravel bar community. This community is constantly disturbed and altered by the river during flooding events, and thus its plant composition is mostly pioneering broadleaf trees, shrubs, herbs, and grasses. A rocky to sandy substrate strewn with coarse woody debris is typical of this community. An escaped ornamental shrub, butterfly bush (*Buddleja davidii*) is starting to effectively colonize some regions of this community, as well as the invasive plants scott's broom (*Cytisus scoparius*) and Himalayan blackberry (*Rubus discolor*).



Examples of Intertidal Vegetation Communities

The intertidal vegetation communities of Dosewallips State Park proved difficult to map discreetly. We found it was better to map the general patches of seemingly related mosaics, such as the AREG-JUBA, JUBA, CALY, CALY-AREG, and SAVI-DISP-TRMA patches versus the LOIN-RONU patches or the DISP-SAVI low intertidal zones. Within any given polygon we mapped in the intertidal zones, it is important to keep in mind that other intertidal vegetation communities could occur whether we described them or not. Possible patches of the *Glaux maritima* herbaceous vegetation community could occur in the intertidal zone, as well as *Salicornia virginica* herbaceous vegetation. These species were common in the area but did not occur in such sole abundance as seeming to warrant a separate vegetation community classification.



***Salicornia virginica* - *Distichlis spicata* - *Triglochin maritima* - (*Jaumea carnosa*)
herbaceous vegetation (SAVI-DISP-TRMA)**



SAVI-DISP-TRMA is a common herbaceous cover of the lower intertidal areas of Dosewallips State Park. Human disturbances such as dike construction, shellfish harvesting, hiking paths, and exotic plant controls have impacted these salt marshes, but for the most part the SAVI-DISP-TRMA areas seem quite vigorous and relatively invasive species free. It is known that *Spartina patens* (a class A noxious weed in Washington State) has become established in a limited area of the intertidal marshland, and that over a decade of diverse treatments and control tactics by Washington State Department of Agriculture personnel have diminished the area of infection to around 0.2 acres within the park.



***Distichlis spicata* - *Salicornia virginica* herbaceous vegetation (DISP-SAVI)**

DISP-SAVI is a common herbaceous cover along the sloughs of the lower intertidal areas along the low tide mud flats of Dosewallips State Park. This community frequently mosaics with the SAVI-DISP-TRMA community as well as the AREG-JUBA and JUBA communities.



***Argentina egedii* - *Juncus balticus* herbaceous vegetation (AREG-JUBA) and *Juncus balticus* herbaceous vegetation (JUBA)**



AREG-JUBA and JUBA occupy the intertidal regions above the DISP-SAVI salt marshes and below the CALY high intertidal marsh and/or the LOIN/RONU patches. Like the DISP-SAVI regions, AREG-JUBA and JUBA have been impacted by dike construction, shellfish harvesting, hiking trails, and even roads/vehicle paths. Tall fescue (*Festuca arundinacea*) and quackgrass (*Agropyron repens*) are two exotic grasses that occur with intense abundance within the AREG-JUBA and JUBA communities. In places, these grasses completely cover the native vegetation and may in the long term replace the native communities.



***Carex lyngbyei* herbaceous vegetation (CALY) and *Carex lyngbyei* - *Argentina egedii* herbaceous vegetation (CALY-AREG)**



Along the intertidal sloughs, higher up than the DISP/CALY herbaceous vegetation, exists the *Carex lyngbyei* high intertidal marsh. These areas are dominated mostly by *Carex lyngbyei*, with little other vegetation present. In some areas higher up from the sloughs, but usually near by, *Argentina egedii* (Pacific silverweed) grows underneath the *Carex lyngbyei* cover, indicating the presence of the *Carex lyngbyei* - *Argentina egedii* herbaceous vegetation community. CALY and CALY-AREG mosaic with the AREG/JUBA, and LOIN/RONU plant communities.



***Lonicera involucrata* - *Rosa nutkana* (LOIN-RONU)**



Slightly above the AREG-JUBA tidelands, along the western margins of the ALRU-RUSP forest on the west side of the Dosewallips River, an abundance *Lonicera involucrata* and *Rosa nutkana* create a unique shrubby vegetation cover that we feel should be mapped as a distinct vegetation community. Characterized by being composed of >6 feet tall impenetrable clumps of shrubs, this community has very little tree or graminoid presence in its interior, a contrasting feature to the compositional and structural norms of the surrounding plant associations. Other shrubby plants, such as willows and Oregongrape also contribute to the mass of shrubs characterizing this community.



Rare Plant Surveys

Methods

We visited Dosewallips State Park multiple times during the 2005 field season to conduct a rare plant survey. Field surveys were conducted on May 4 - 5, and June 9 -10 under the first contract with Washing State Parks and Recreation Commission. Later surveys were then conducted under a second contract on August 3 – 5, and September 5. During the field surveys, we were equipped with reference literature, rare plant lists for the area, maps showing rare plant locations from previous surveys, and a portable plant identification lab. We looked for rare plants in habitats previously identified as being likely occurrence sites. So as not to miss a rare plant, all vascular plant species encountered during the inventory were identified on site, at base camp in the portable laboratory, or back at our office.

Survey routes were determined based on the desire to efficiently cover a large proportion of the park's area throughout the field season. We surveyed habitats of the park where we felt rare plants were more likely to occur more intensively. Survey routes for the rare plant inventory and rare plant locations were recorded either by hand, on a hardcopy topographic map, or as GPS waypoints and trackpoints, all of which were later compiled into a single GIS data layer (Maps 1 and 2).

Results

A total of 228 vascular plant species were identified during the 2005 surveys at Dosewallips State Park. Of these, 79 of the plant species are non-native, accounting for 35% of the total. No listed plant species were found during our surveys.

Looking at the abundance of the weeds present, while no species had an abundance rating of 1 (common throughout the park) or 2 (common) in multiple habitats, 37 species were given rating 3 (common in specific habitats), while 33 species were uncommon (rating 4) and 9 species are level 5 (rare, 5 or fewer sightings).

There is a considerable amount of potential habitat for the rare fern *Woodwardia fimbriata* in the park. This fern is associated with the *Acer macrophyllum* – *Alnus rubra* / *Polystichum munitum* - *Tellima grandiflora* plant association and only occurs near sea level. We searched all the potential habitat for this fern, but did not find any occurrences. However, the park does contain habitat where this fern could be introduced and might flourish.

Vascular Plant List for Dosewallips State Park

Key to Vascular Plant Species List

Field 2, "Ab": Abundance. An abundance rating system has been used to indicate how common each species is in the park. There are 5 rating levels, as follows:

- 1—Abundant in multiple plant communities
- 2—Common in multiple plant communities
- 3—Common in specific plant communities
- 4—Uncommon in specific plant associations
- 5—Rare, five or fewer sightings in the park.

Field 3, "Code": Four-letter plant code as shown on the USDA PLANTS database.

Field 6, "Rank": Any species classified by the WNHP as endangered, threatened, sensitive or "watch" will have a letter in this field indicating its rank.

Field 9, "Type": t= tree, s= shrub, p= perennial, a= annual, g= graminoid, f= fern

Field 10, "Alien": species that are not native to the park are indicated with a "a"

Field 11, "Synonym": The species list uses Hitchcock and Cronquist, *Flora of the Pacific Northwest* as the taxonomic authority, as this is still the standard reference for our area. Updated nomenclature when it exists is shown in this column.

Asterisked species: The fern species *Dryopteris expansa* is shown in the species list with this updated nomenclature because this name is now in such wide circulation. *D. expansa* was not recognized by Hitchcock and Cronquist.

The list of species identified during this project is below. Note: An asterisk (*) in the species code indicates that the species was not identified to variety and no official USDA 4-letter code exists for the species.

#	Ab	Code	Scientific Name	Common Name	Family- Scientific	Family- Common	Type	Alien?	Synonym
1	3	ABGR	<i>Abies grandis</i>	grand fir	Pinaceae	Pine	t		
2	3	ACCI	<i>Acer circinatum</i>	vine maple	Aceraceae	Maple	s		
3	3	ACMA3	<i>Acer macrophyllum</i>	bigleaf maple	Aceraceae	Maple	t		
4	4	ACMIC	<i>Achillea millefolium</i> var. <i>californica</i>	yarrow	Compositae	Composite	p		
5	3	ACTR	<i>Achlys triphylla</i>	vanillaleaf	Ranunculaceae	Buttercup	p		
6	3	ADBI	<i>Adenocaulon bicolor</i>	pathfinder	Compositae	Composite	p		
7	3	ADPE	<i>Adiantum pedatum</i>	northern maidenhair fern	Polypodiaceae	Common Fern	f		<i>Adianum aleuticum</i>
8	5	AEHI	<i>Aesculus hippocastanum</i>	horse chestnut	Hippocastanaceae	Buckeye	t	a	
9	3	AGRE2	<i>Agropyron repens</i>	quackgrass	Gramineae	Grass	g	a	
10	5	AGTE	<i>Agrostis tenuis</i>	colonial bentgrass	Gramineae	Grass	g	a	
11	3	AIPR	<i>Aira praecox</i>	little hairgrass	Gramineae	Grass	g	a	
12	3	ALRU2	<i>Alnus rubra</i>	red alder	Betulaceae	Birch	t		
13	4	AMAL2	<i>Amelanchier alnifolia</i>	serviceberry	Rosaceae	Rose	s		
14	4	ANMA	<i>Anaphalis margaritacea</i>	pearly everlasting	Compositae	Composite	p		
15	4	ANOD5	<i>Anthoxanthum odoratum</i>	sweet vernalgrass	Gramineae	Grass	g	a	
16	5	AQFO	<i>Aquilegia formosa</i>	red columbine	Ranunculaceae	Buttercup	p		
17	4	ARME	<i>Arbutus menziesii</i>	Pacific madrone	Ericaceae	Heather	t		
18	4	ARM12	<i>Arctium minus</i>	common burdock	Compositae	Composite	p	a	
19	5	ARUV	<i>Arctostaphylos uva-ursi</i>	kinnikinnick	Ericaceae	Heather	s		
20	3	ARDO3	<i>Artemisia douglasiana</i>	Douglas sagebrush	Compositae	Composite	p		
21	3	ARSY	<i>Aruncus sylvestris</i>	goatsbeard	Rosaceae	Rose	s		<i>Aruncus dioicus</i> var. <i>acuminatus</i>
22	4	ASSU4	<i>Aster subspicatus</i>	douglas aster	Compositae	Composite	p		
23	3	ATFI	<i>Athyrium filix-femina</i>	lady-fern	Polypodiaceae	Common Fern	f		
24	4	BAOR	<i>Barbarea orthoceras</i>	American wintercress	Brassicaceae	Mustard	p		
25	5	BAVU	<i>Barbarea vulgaris</i>	yellow rocket	Brassicaceae	Mustard	p	a	
26	3	BEPE2	<i>Bellis perennis</i>	English daisy	Compositae	Composite	p	a	
27	3	BEAQ	<i>Berberis aquifolium</i>	tall Oregongrape	Berberidaceae	Barberry	s		<i>Mahonia aquifolium</i>
28	3	BENE	<i>Berberis nervosa</i>	Cascade Oregongrape	Berberidaceae	Barberry	s		<i>Mahonia nervosa</i>
29	4	BRCO4	<i>Bromus commutatus</i>	hairy brome	Gramineae	Grass	g	a	
30	4	BRJA	<i>Bromus japonicus</i>	Japanese brome	Gramineae	Grass	g	a	
31	4	BRMO2	<i>Bromus mollis</i>	soft brome	Gramineae	Grass	g	a	
32	3	BRPA3	<i>Bromus pacificus</i>	Pacific brome	Gramineae	Grass	g		
33	3	BUDA2	<i>Buddleja davidii</i>	butterfly bush	Buddlejaceae	Buddleja	s	a	
34	3	CAOL	<i>Cardamine oligosperma</i>	little western bittercress	Cruciferae	Mustard	a		

35	3	CADE9	Carex deweyana	Dewey's sedge	Cyperaceae	Sedge	g		
36	3	CAHE7	Carex hendersonii	Henderson's sedge	Cyperaceae	Sedge	g		
37	3	CALY3	Carex lyngbyei	Lyngby's sedge	Cyperaceae	Sedge	g		
38	4	CAME6	Carex mertensii	Merten's sedge	Cyperaceae	Sedge	g		
39	4	CAPA58	Carex pachystachya	thick-headed sedge	Cyperaceae	Sedge	g		
40	3	CEVI3	Cerastium viscosum	sticky chickweed	Caryophyllaceae	Pink	a	a	Cerastium glomeratum
41	3	CHAL7	Chenopodium album	lambsquarters	Chenopodiaceae	Goosefoot	a	a	
42	5	CHLE4	Chenopodium leptophyllum	narrowleaf goosefoot	Chenopodiaceae	Goosefoot	a		
43	3	CHLE80	Chrysanthemum leucanthemum	oxeye daisy	Compositae	Composite	p	a	Leucanthemum vulgare
44	3	CIAL	Circaea alpina	enchanter's nightshade	Onagraceae	Evening-primrose	p		
45	4	CIAR4	Cirsium arvense	Canada thistle	Compositae	Composite	p	a	
46	4	CIVU	Cirsium vulgare	bull thistle	Compositae	Composite	b	a	
47	3	COGR	Collinsia grandiflora	big-eyed Mary	Scrophulariaceae	Figwort	a		
48	4	COHE2	Collomia heterophylla	varied-leaved collomia	Polemoniaceae	Phlox	a		
49	4	COSE13	Convolvulus sepium	hedge false bindweed	Convolvulaceae	Morning Glory	p	a	
50	4	COMA4	Corallorhiza maculata	spotted coralroot	Orchidaceae	Orchid	p		
51	3	COST4	Cornus stolonifera	redosier dogwood	Cornaceae	Dogwood	s		Cornus sericea ssp. sericea
52	3	COCO6	Corylus cornuta	western hazel	Betulaceae	Birch	s		
53	5	CUSA	Cuscuta salina	saltmarsh dodder	Cuscutaceae	Dodder	p		
54	3	CYSC4	Cytisus scoparius	Scot's broom	Leguminosae	Pea	s	a	
55	3	DAGL	Dactylis glomerata	orchardgrass	Gramineae	Grass	g	a	
56	3	DACA6	Daucus carota	Queen Anne's lace	Umbelliferaeae	Parsley	b	a	
57	3	DEEL	Deschampsia elongata	slender hairgrass	Gramineae	Grass	g		
58	5	DIAR	Dianthus armeria	Deptford pink	Caryophyllaceae	Pink	a	a	
59	3	DIFO	Dicentra formosa	Pacific bleedingheart	Fumariaceae	Fumitory	p		
60	3	DIPU	Digitalis purpurea	foxglove	Scrophulariaceae	Figwort	a	a	
61	3	DIHO3	Disporum hookeri	Hooker's fairybells	Liliaceae	Lily	p		
62	3	DISP	Distichlis spicata	seashore saltgrass	Gramineae	Grass	g		
63	3	DREX2	Dryopteris expansa*	spreading wood-fern	Polypodiaceae	Common Fern	f		
64	3	ELGL	Elymus glaucus	blue wild rye	Gramineae	Grass	g		
65	3	EPAN2	Epilobium angustifolium	fireweed	Onagraceae	Evening-primrose	p		Chamerion angustifolium
66	3	EPCIW	Epilobium ciliatum ssp. watsonii	glaucus willow-herb	Onagraceae	Evening-primrose	p		Epilobium watsonii
67	3	EPMI	Epilobium minutum	small-flowered willow-herb	Onagraceae	Evening-primrose	a		
68	4	EPPAP	Epilobium paniculatum ssp. paniculatum	autumn willow-herb	Onagraceae	Evening-primrose	a		
69	3	EQAR	Equisetum arvense	field horsetail	Equisetaceae	Horsetail	p		
70	3	FEAR3	Festuca arundinacea	tall fescue	Gramineae	Grass	g	a	Lolium arundinaceum

71	3	FEBR.	<i>Festuca bromoides</i>	six-weeks fescue	Gramineae	Grass	g	a	<i>Vulpia bromoides</i>
72	3	FEMY2	<i>Festuca myuros</i>	rat-tail fescue	Gramineae	Grass	g	a	<i>Vulpia myuros</i> , <i>V. megalura</i>
73	4	FEOC	<i>Festuca occidentalis</i>	western fescue	Gramineae	Grass	g		
74	3	FERU	<i>Festuca rubra</i>	red fescue	Gramineae	Grass	g		
75	3	GAAP2	<i>Galium aparine</i>	cleavers	Rubiaceae	Madder	a	a	
76	3	GATR2	<i>Galium trifidum</i>	threepetal bedstraw	Rubiaceae	Madder	p		
77	4	GEDI	<i>Geranium dissectum</i>	cutleaf geranium	Geraniaceae	Geranium	a	a	<i>Geranium laxum</i>
78	3	GEMO	<i>Geranium molle</i>	dovefoot geranium	Geraniaceae	Geranium	a	a	
79	3	GERO	<i>Geranium robertianum</i>	Robert geranium	Geraniaceae	Geranium	a	a	
80	3	GEMA4	<i>Geum macrophyllum</i>	large-leaved avens	Rosaceae	Rose	p		
81	3	GLMA	<i>Glaux maritima</i>	saltwort	Primulaceae	Primrose	p		
82	4	GLHE2	<i>Glechoma hederacea</i>	ground ivy	Labiatae	Mint	p	a	
83	3	GLEL	<i>Glyceria elata</i>	tall mannagrass	Gramineae	Grass	g		
84	4	GNAPH	<i>Gnaphalium</i> sp	cudweed	Compositae	Composite	a		
85	3	GRIN	<i>Grindelia integrifolia</i>	low gumweed	Compositae	Composite	p		
86	4	HEHE	<i>Hedera helix</i>	English ivy	Araliaceae	Ginseng	s	a	
87	5	HELA4	<i>Heracleum lanatum</i>	cow parsnip	Umbelliferaeae	Parsley	p		
88	5	HEMI7	<i>Heuchera micrantha</i>	crevice alumroot	Saxifragaceae	Saxifrage	p		
89	3	HOLA	<i>Holcus lanatus</i>	common velvetgrass	Gramineae	Grass	g	a	
90	3	HODI	<i>Holodiscus discolor</i>	oceanspray	Rosaceae	Rose	s		
91	3	HOBR2	<i>Hordeum brachyantherum</i>	meadow barley	Gramineae	Grass	g		
92	3	HYTE	<i>Hydrophyllum tenuipes</i>	slender-stem waterleaf	Hydrophyllaceae	Waterleaf	p		
93	3	HYPE	<i>Hypericum perforatum</i>	St. John's-wort	Hypericaceae	St. Johns-wort	p	a	
94	4	HYRA3	<i>Hypochaeris radicata</i>	hairy cat's-ear	Compositae	Composite	a	a	
95	4	ILAQ80	<i>Ilex aquifolium</i>	English holly	Aquifoliaceae	Holly	s	a	
96	3	JACA4	<i>Jaumea carnosa</i>	jaumea	Compositae	Composite	p		
97	4	JUAC	<i>Juncus acuminatus</i>	tapered rush	Juncaceae	Rush	g		
98	4	JUAR4	<i>Juncus articulatus</i>	jointed rush	Juncaceae	Rush	g		
99	3	JUBA	<i>Juncus balticus</i>	Baltic rush	Juncaceae	Rush	g		
100	4	JUBU	<i>Juncus bufonius</i>	toad rush	Juncaceae	Rush	g		
101	4	JUEN	<i>Juncus ensifolius</i>	swordleaf rush	Juncaceae	Rush	g		
102	3	JULE	<i>Juncus lesueurii</i>	salt rush	Juncaceae	Rush	g		
103	4	JUSU3	<i>Juncus supiniformis</i>	hairyleaf rush	Juncaceae	Rush	g		
104	5	JUTE	<i>Juncus tenuis</i>	poverty rush	Juncaceae	Rush	g		
105	3	LAMU	<i>Lactuca muralis</i>	wall lettuce	Compositae	Composite	a	a	<i>Mycelis muralis</i>
106	5	LAPU2	<i>Lamium purpureum</i>	purple deadnettle	Labiatae	Mint	a	a	

107	4	LACO3	Lapsana communis	common nipplewort	Compositae	Composite	a	a	
108	3	LASY	Lathyrus sylvestris	narrow-leaved peavine	Leguminosae	Pea	p	a	
109	3	LEHE2	Lepidium heterophyllum	varied-leaved peppergrass	Cruciferae	Mustard	p	a	
110	3	LIBO3	Linnaea borealis	twinflor	Scrophulariaceae	Figwort	p		
111	5	LICO6	Listera cordata	heartleaf twayblade	Orchidaceae	Orchid	p		
112	3	LOCI3	Lonicera ciliosa	orange honeysuckle	Caprifoliaceae	Honeysuckle	s		
113	3	LOIN5	Lonicera involucrata	black twinberry	Caprifoliaceae	Honeysuckle	s		
114	4	LOCO6	Lotus corniculatus	birdsfoot trefoil	Leguminosae	Pea	p	a	
115	4	LUPO2	Lupinus polyphyllus	many-leaved lupine	Leguminosae	Pea	p		
116	4	LUCA2	Luzula campestris	field woodrush	Juncaceae	Rush	g		
117	3	LUPA	Luzula parviflora	small-flowered woodrush	Juncaceae	Rush	g		
118	4	LYAL	Lychnis alba	white campion	Caryophyllaceae	Pink	p	a	
119	5	LYCO	Lychnis coronaria	rose campion	Caryophyllaceae	Pink	p	a	
120	3	MADI	Maianthemum dilatatum	may-lily	Liliaceae	Lily	p		
121	4	MANE	Malva neglecta	dwarf mallow	Malvaceae	Mallow	p	a	
122	3	MELU	Medicago lupulina	black medic	Leguminosae	Pea	p	a	
123	3	MEHA2	Melica hartfordii	Hartford's melic	Gramineae	Grass	g		
124	3	MESM	Melica smithii	Smith's melic	Gramineae	Grass	g		
125	5	MEOF2	Melissa officinalis	lemon balm	Labiatae	Mint	p	a	
126	4	MEAR4	Mentha arvensis	field mint	Labiatae	Mint	p		
127	4	MIGU	Mimulus guttatus	yellow monkeyflower	Scrophulariaceae	Figwort	p		
128	5	MOUN3	Monatropa uniflora	Indian pipe	Ericaceae	Heather	p		
129	4	MOPA5	Montia parvifolia	littleleaf montia	Caryophyllaceae	Pink	p		
130	3	MOSI2	Montia sibirica	Siberian miner's lettuce	Caryophyllaceae	Pink	a		Claytonia sibirica
131	3	MYSC	Myosotis scirpoides	common forgetmenot	Boraginaceae	Borage	a	a	
132	4	NEPA	Nemophila parviflora	small-flowered nemophila	Hydrophyllaceae	Waterleaf	a		
133	3	OECE	Oemleria cerasiformis	Indian plum	Rosaceae	Rose	s		
134	3	OSCH	Osmorhiza chilensis	mountain sweet-cicely	Umbelliferaceae	Parsley	p		Osmorhiza berteroi
135	3	PEFRP	Petasites frigidus var. plamatus	sweet coltsfoot	Compositae	Composite	p		
136	3	PHHE2	Phacelia heterophylla	varileaf phacelia	Hydrophyllaceae	Waterleaf	p		
137	5	PHCA11	Physocarpus capitatus	Pacific ninebark	Rosaceae	Rose	s		
138	3	PISI	Picea sitchensis	Sitka spruce	Pinaceae	Pine	t		
139	3	PLLA	Plantago lanceolata	narrowleaf plantain	Plantaginaceae	Plantain	p	a	
140	3	PLMA2	Plantago major	common plantain	Plantaginaceae	Plantain	p	a	
141	3	PLMA	Plantago maritima	seaside plantain	Plantaginaceae	Plantain	p		
142	3	POAN	Poa annua	annual bluegrass	Gramineae	Grass	g	a	

143	3	POPR	<i>Poa pratensis</i>	Kentucky bluegrass	Gramineae	Grass	g	a	
144	3	POSC	<i>Poa scabrella</i>	pine bluegrass	Gramineae	Grass	g		
145	3	POTR2	<i>Poa trivialis</i>	rough bluegrass	Gramineae	Grass	g	a	
146	4	POCO	<i>Polygonum convolvulus</i>	bindweed	Polygonaceae	Buckwheat	a	a	
147	4	POPE3	<i>Polygonum persicaria</i>	heartweed	Polygonaceae	Buckwheat	p	a	
148	4	POPU5	<i>Polygonum punctatum</i>	dotted smartweed	Polygonaceae	Buckwheat	p		
149	5	POSA4	<i>Polygonum sachalinense</i>	giant knotweed	Polygonaceae	Buckwheat	p	a	
150	3	POGL8	<i>Polypodium glycyrrhiza</i>	licorice fern	Polypodiaceae	Common Fern	f		
151	3	POMU	<i>Polystichum munitum</i>	sword-fern	Polypodiaceae	Common Fern	f		
152	3	POTR15	<i>Populus trichocarpa</i>	black cottonwood	Salicaceae	Willow	t		<i>Populus balsamifera</i> ssp. <i>trichocarpa</i>
153	3	POPA23	<i>Potentilla pacifica</i>	Pacific silverweed	Rosaceae	Rose	p		<i>Argentina egedii</i> (Wormsk.) Rydb. ssp. <i>egedii</i>
154	4	PRVU	<i>Prunella vulgaris</i>	self-heal	Labiatae	Mint	p		
155	4	PRSP	<i>Prunus spinosa</i>	blackthorn	Rosaceae	Rose	s	a	
156	4	PRSU2	<i>Prunus subcordata</i>	Klamath plum	Rosaceae	Rose	s		
157	2	PSME	<i>Pseudotsuga menziesii</i>	Douglas fir	Pinaceae	Pine	t		
158	3	PTAQ	<i>Pteridium aquilinum</i>	bracken fern	Polypodiaceae	Common Fern	f		
159	5	PYPI2	<i>Pyrola picta</i>	whitevein pyrola	Ericaceae	Heather	p		
160	4	PYFU	<i>Pyrus fusca</i>	pacific crabapple	Rosaceae	Rose	t		<i>Malus fusca</i>
161	4	RAAC3	<i>Ranunculus acris</i>	meadow buttercup	Ranunculaceae	Buttercup	p	a	
162	4	RABU	<i>Ranunculus bulbosus</i>	bulbous buttercup	Ranunculaceae	Buttercup	p	a	
163	3	RAOC	<i>Ranunculus occidentalis</i>	western buttercup	Ranunculaceae	Buttercup	p		
164	3	RARER	<i>Ranunculus repens</i> var. <i>repens</i>	creeping buttercup	Ranunculaceae	Buttercup	p	a	
165	4	RAUN	<i>Ranunculus uncinatus</i>	woodland buttercup	Ranunculaceae	Buttercup	p		
166	4	RHPU	<i>Rhamnus purshiana</i>	casara	Rhamnaceae	Buckthorn	s		<i>Frangula pershiana</i>
167	4	RHMA3	<i>Rhododendron macrophyllum</i>	western rhododendron	Ericaceae	Heather	s		
168	4	RIDI	<i>Ribes divericatum</i>	coast gooseberry	Grossulariaceae	Current	s		
169	4	RILA	<i>Ribes lacustre</i>	swamp currant	Grossulariaceae	Current	s		
170	3	ROGY	<i>Rosa gymnocarpa</i>	baldhip rose	Rosaceae	Rose	s		
171	3	RONU	<i>Rosa nutkana</i>	Nootka rose	Rosaceae	Rose	s		
172	3	RUDI2	<i>Rubus discolor</i>	Himalayan blackberry	Rosaceae	Rose	s	a	
173	4	RULA	<i>Rubus laciniatus</i>	evergreen blackberry	Rosaceae	Rose	s	a	
174	3	RUPA	<i>Rubus parviflorus</i>	thimbleberry	Rosaceae	Rose	s		
175	3	RUUR	<i>Rubus ursinus</i>	trailing blackberry	Rosaceae	Rose	s		
176	3	RUAC3	<i>Rumex acetosella</i>	sheep sorrel	Polygonaceae	Buckwheat	a	a	
177	3	RUOC3	<i>Rumex occidentalis</i>	western dock	Polygonaceae	Buckwheat	p		
178	4	SAAP	<i>Sagina apetala</i>	pearlwort	Caryophyllaceae	Pink	a	a	

179	4	SASA	<i>Sagina saginoides</i>	alpine pearlwort	Caryophyllaceae	Pink	p		
180	3	SAVI	<i>Salicornia virginica</i>	pickleweed	Chenopodiaceae	Buckwheat	p		
181	4	SALA5	<i>Salix lasiandra</i>	pacific willow	Salicaceae	Willow	t		<i>Salix lucida</i>
182	4	SASC	<i>Salix scouleriana</i>	Scouler's willow	Salicaceae	Willow	t		
183	3	SASI2	<i>Salix sitchensis</i>	Sitka willow	Salicaceae	Willow	t		
184	3	SARA2	<i>Sambucus racemosa</i>	red elderberry	Caprifoliaceae	Honeysuckle	s		
185	4	SAOF4	<i>Saponaria officinalis</i>	bouncing bett	Caryophyllaceae	Pink	p	a	
186	3	SCMI2	<i>Scirpus microcarpus</i>	panicled bulrush	Cyperaceae	Sedge	g		
187	4	SCLA2	<i>Scutellaria lateriflora</i>	blue skullcap	Labiatae	Mint	p		
188	3	SEJA	<i>Senecio jacobaea</i>	tansy ragwort	Compositae	Composite	a	a	
189	4	SEVU	<i>Senecio vulgaris</i>	common groundsel	Compositae	Composite	p	a	
190	4	SHAR2	<i>Sherardia arvensis</i>	blue field madder	Rubiaceae	Madder	a	a	
191	5	SMRA	<i>Smilacina racemosa</i>	western solomon's seal	Liliaceae	Lily	p		<i>Maianthemum racemosum</i>
192	3	SMST	<i>Smilacina stellata</i>	star-flowered solomon's seal	Liliaceae	Lily	p		<i>Maianthemum stellatum</i>
193	4	SODU	<i>Solanum dulcamara</i>	bittersweet nightshade	Solanaceae	Nightshade	p	a	
194	4	SOCA6	<i>Solidago canadensis</i>	goldenrod	Compositae	Composite	p		
195	4	SOAS	<i>Sonchus asper</i>	spiny sowthistle	Compositae	Composite	a	a	
196	5	SPPA	<i>Spartina patens</i>	saltmeadow cordgrass	Gramineae	Grass	g	a	
197	4	SPCAO	<i>Spergularia canadensis</i> var. <i>occidentalis</i>	Canada sandspurry	Caryophyllaceae	Pink	p		
198	4	SPRU	<i>Spergularia rubra</i>	red sandspurry	Caryophyllaceae	Pink	a	a	
199	3	STCO14	<i>Stachys cooleyae</i>	cooley's hedge-nettle	Labiatae	Mint	p		<i>Stachys chamissonis</i> var. <i>cooleyae</i>
200	4	STCAS	<i>Stellaria calycantha</i> var. <i>sitchensis</i>	northern starwort	Caryophyllaceae	Pink	a		
201	3	STCR2	<i>Stellaria crispa</i>	crisped starwort	Caryophyllaceae	Pink	p		
202	3	STNI	<i>Stellaria nitens</i>	shining chickweed	Caryophyllaceae	Pink	a		
203	4	STSI2	<i>Stellaria simcoei</i>	Simcoe Mountain starwort	Caryophyllaceae	Pink	a		
204	3	STST3	<i>Streptopus streptopoides</i>	twisted-stalk	Liliaceae	Lily	p		
205	3	SYAL	<i>Symphoricarpos albus</i>	common snowberry	Caprifoliaceae	Honeysuckle	s		
206	3	TAOF	<i>Taraxacum officinale</i>	common dandelion	Compositae	Composite	b	a	
207	3	TEGR2	<i>Tellima grandiflora</i>	fringecup	Saxifragaceae	Saxifrage	p		
208	3	THPL	<i>Thuja plicata</i>	western redcedar	Cupressaceae	Cyperess	t		
209	3	TITR	<i>Tiarella trifoliata</i>	foamflower	Saxifragaceae	Saxifrage	p		
210	3	TOME	<i>Tolmiea menziesii</i>	youth-on-age	Saxifragaceae	Saxifrage	p		
211	3	TRLA6	<i>Trientalis latifolia</i>	western starflower	Primulaceae	Primrose	p		<i>Trientalis borealis</i> ssp. <i>latifolia</i>
212	3	TRMA3	<i>Trifolium macrocephalum</i>	bighead clover	Leguminosae	Pea	p		
213	3	TRPR2	<i>Trifolium pratense</i>	red clover	Leguminosae	Pea	p	a	
214	3	TRRE3	<i>Trifolium repens</i>	white clover	Leguminosae	Pea	p	a	

215	4	TRWO	<i>Trifolium wormskjoldii</i>	springbank clover	Leguminosae	Pea	p		<i>Trifolium willdenovii</i>
216	4	TRMA4	<i>Triglochin maritimum</i>	sea arrow-grass	Juncaginaceae	Arrow-grass	p		
217	3	TROV	<i>Trillium ovatum</i>	white trillium	Liliaceae	Lily	p		
218	3	TSHE	<i>Tsuga heterophylla</i>	Pacific hemlock	Pinaceae	Pine	t		
219	3	URDI	<i>Urtica dioica</i>	stinging nettle	Urticaceae	Nettle	p		
220	3	VAOV2	<i>Vaccinium ovatum</i>	evergreen blueberry	Ericaceae	Heather	s		
221	3	VAPA	<i>Vaccinium parvifolium</i>	red huckleberry	Ericaceae	Heather	s		
222	4	VETH	<i>Verbascum thapsus</i>	common mullein	Scrophulariaceae	Figwort	b	a	
223	3	VEAM2	<i>Veronica americana</i>	American brooklime	Scrophulariaceae	Figwort	p		
224	4	VEAR	<i>Veronica arvensis</i>	field speedwell	Scrophulariaceae	Figwort	a	a	
225	4	VESE	<i>Veronica serpyllifolia</i>	thymeleaf speedwell	Scrophulariaceae	Figwort	p		
226	4	VIHI	<i>Vicia hirsuta</i>	hairy vetch	Leguminosae	Pea	p	a	
227	3	VISA	<i>Vicia sativa</i>	common vetch	Leguminosae	Pea	p	a	
228	3	VIGL	<i>Viola glabella</i>	pioneer violet	Violaceae	Violet	p		

Discussion

Previous to Pacific Biodiversity Institute's 2005 surveys, no state or federally listed vascular plants had been documented within Dosewallips State Park. Our 2005 project did not locate any new populations of rare plants.

We encountered few sites within Dosewallips State Park that had not been disturbed or impacted by resource extraction or recreational activities at some point in the last century. Roads and trails, both maintained and abandoned, permeate the diversity of habitats within the park, indicating a high intensity of human influence on native ecosystems over the last century. All of Dosewallips State Park's coniferous forests have been logged at least once in the last century, and shellfish harvesting and recreational activities in the park's intertidal zones have had clear residual effects upon the topography and vegetation. Invasive plant species have overwhelmingly infested some regions of the park, specifically the riparian ALRU/RUSP forest bordering the east and west banks of the Dosewallips River near the mouth. The intertidal zones have a controlled population of *Spartina patens*, and *Festuca arundinacea* and *Agropyron repens* are well established in the higher intertidal zone.



***Rubus discolor* infestation along the Dosewallips River, east of the Highway 101 bridge. Infestation control activities are evident in some areas, but eradication of this population is not likely without causing severe effects to surrounding terrestrial and aquatic ecosystems.**

Exotic species infestation control and eradication projects were currently taking place within Dosewallips State Park during the time of these surveys. Most of these projects were aimed at controlling or eradicating *Rubus discolor* and *Spartina patens* infestations. Maintaining or increasing the efforts of current exotic species control/eradication projects may be instrumental in prohibiting the spread of infestations to other areas of the park.

Ecological Condition of Dosewallips State Park

Relatively, the ecological condition of Dosewallips State Park is good, especially when compared to the surrounding developed and more recently logged landscape in the immediate area. Though activities of historical logging and development have made some drastic alterations to forest structure and composition throughout the park, many of Dosewallips's upland forests are now mature forests dominated by native plants. Due to the high productivity of the soils in the area and the ample rainfall, these forests have the potential to develop into outstanding old-growth stands in the next century.

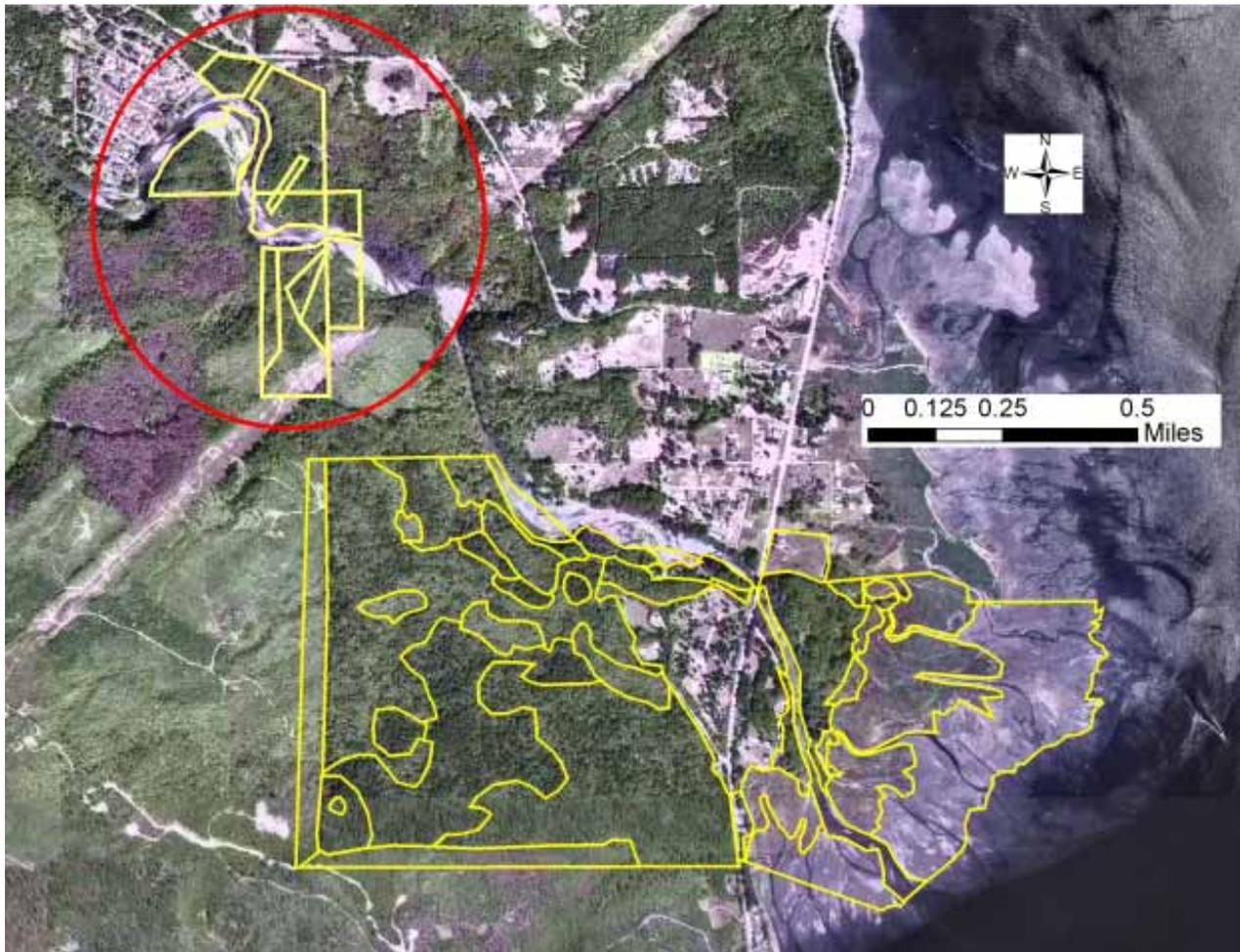
Though the ecological quality of most of Dosewallips's forested plant associations were devalued due to logging and resource extraction activities, much of the park's interior coniferous forest areas are recovering and will develop into high quality habitat given time and proper management. Minimizing intentional human caused canopy and substrate disturbances such as logging, bulldozing, and road/trail creation should help to reduce new exotic plant infestations in areas that currently possess mostly native species composition. Minimizing perpetual off-trail hiking would be helpful in allowing natural understory regeneration to occur, especially in areas where pedestrian caused erosion is becoming apparent.

Wildlife does and will continue to use Dosewallips State Park for permanent and migratory habitat. An assortment of shore and song birds, as well as raptors, owls, amphibians, elk, and other mammals are known to use the park as well as salmon in the Dosewallips River. As surrounding private lands are continually logged and developed, and as the ecological condition of Dosewallips State Park continues to improve over time, the park's role as an important provider of increasingly marginalized habitat types will increase. Managing the park's landscape to provide minimally disturbed natural habitat conditions for the areas wildlife will increase the park's ecological value over time.

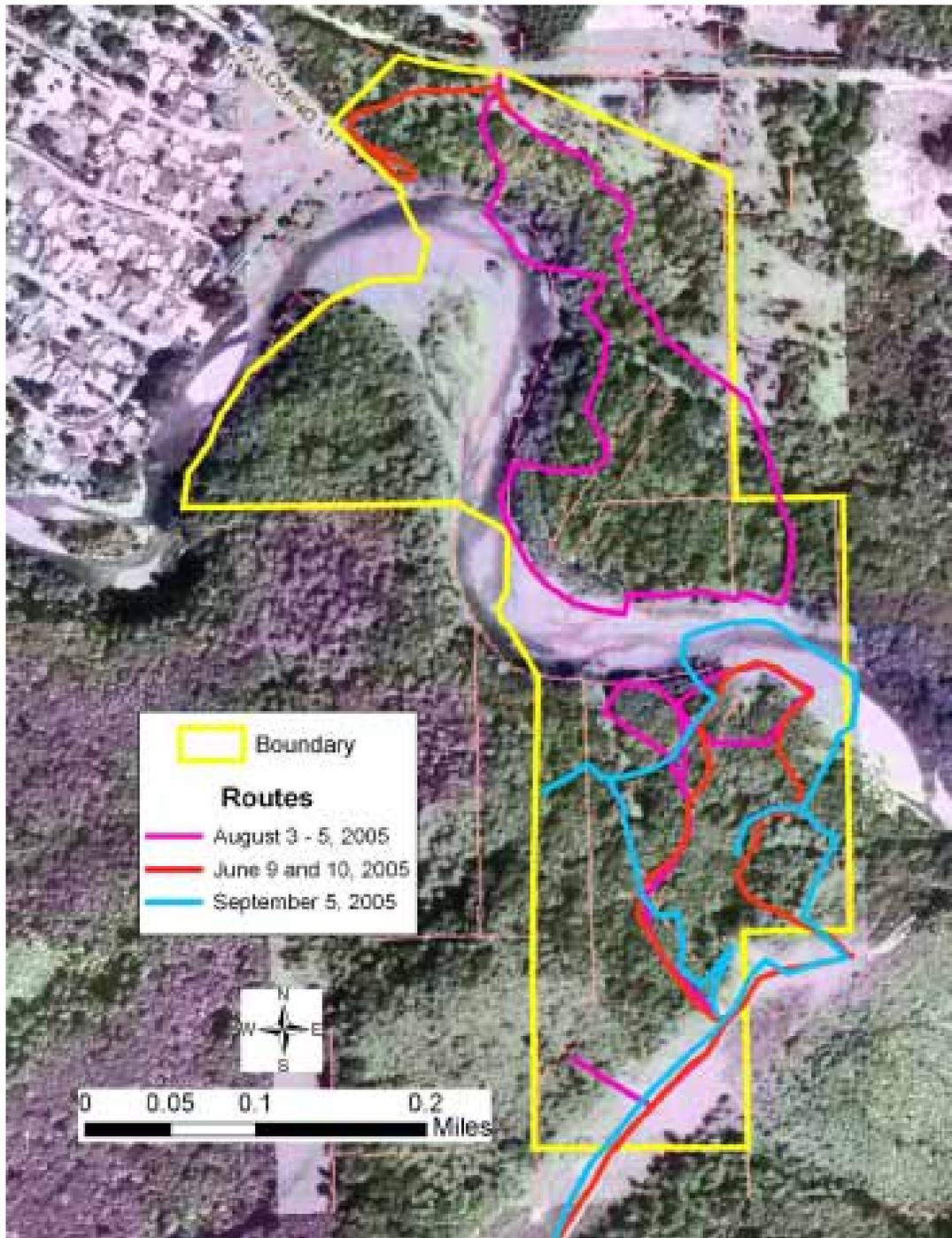
Additional Parcels Survey

Included in the June and August survey efforts, we visited several parcels of land, currently owned by Jefferson County, that are slated to be turned over to Dosewallips State Park. Our June visit was only a short visit where we looked for interesting habitats for rare plants, but we did not perform vegetation community mapping or extensive rare plant surveys on site. In August, under the second contract, we returned to more completely survey for rare plants as well as perform vegetation community mapping. In general, the parcels we visited were covered by second or third growth conifer and deciduous forests in early to mid successional stages. Impacts of logging and firewood harvesting were apparent in the forests. A large part of the parcels are on the Dosewallips River floodplain or adjacent seasonally flooded alder forests. There is much evidence of intensive human caused disturbances throughout the parcels, including a dispersal of old-structures, roads, fences, trails, and abandoned vehicles. Relatively recent camping and recreation (fishing, hiking, etc...) seemed apparent on the south side of the Dosewallips River along the floodplain. Typical floodplain weeds such as those found downstream in the floodplain portion of Dosewallips State Park were present in similar quantities.

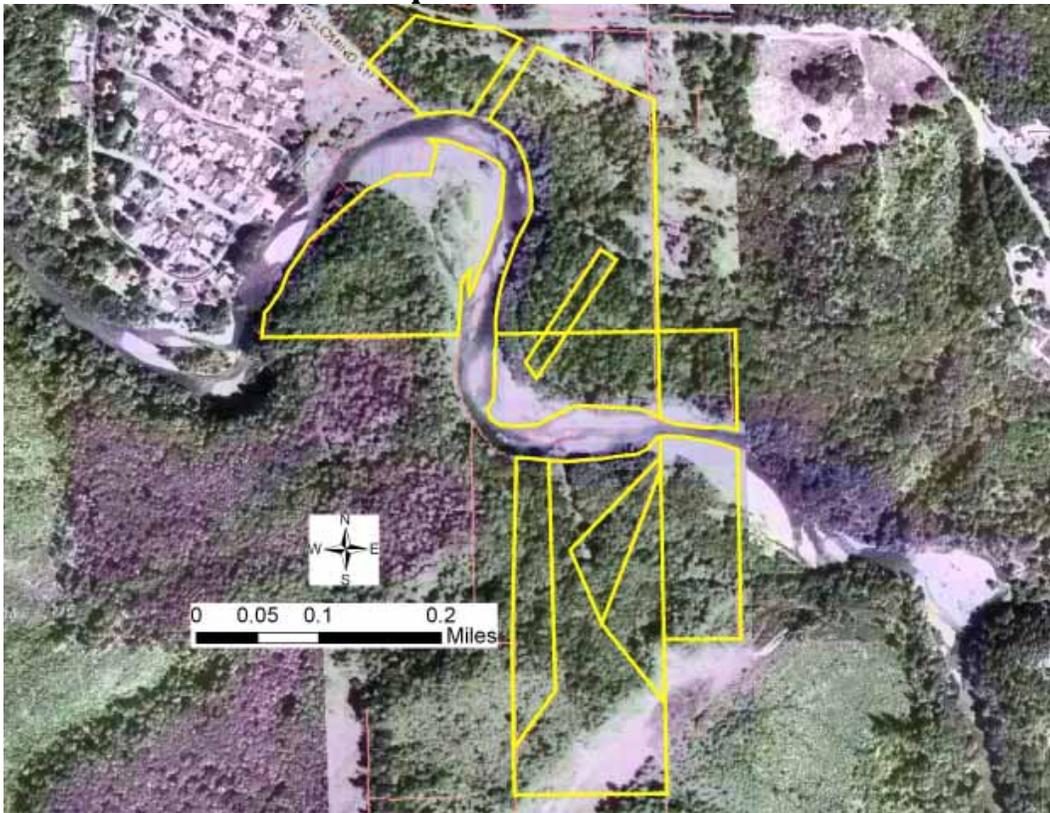
Map 4. The location of the additional parcels surveyed by PBI in 2005. They are visible in the upper left hand corner of this map. The additional parcels boundaries displayed here come from the Jefferson County GIS Parcel Database.



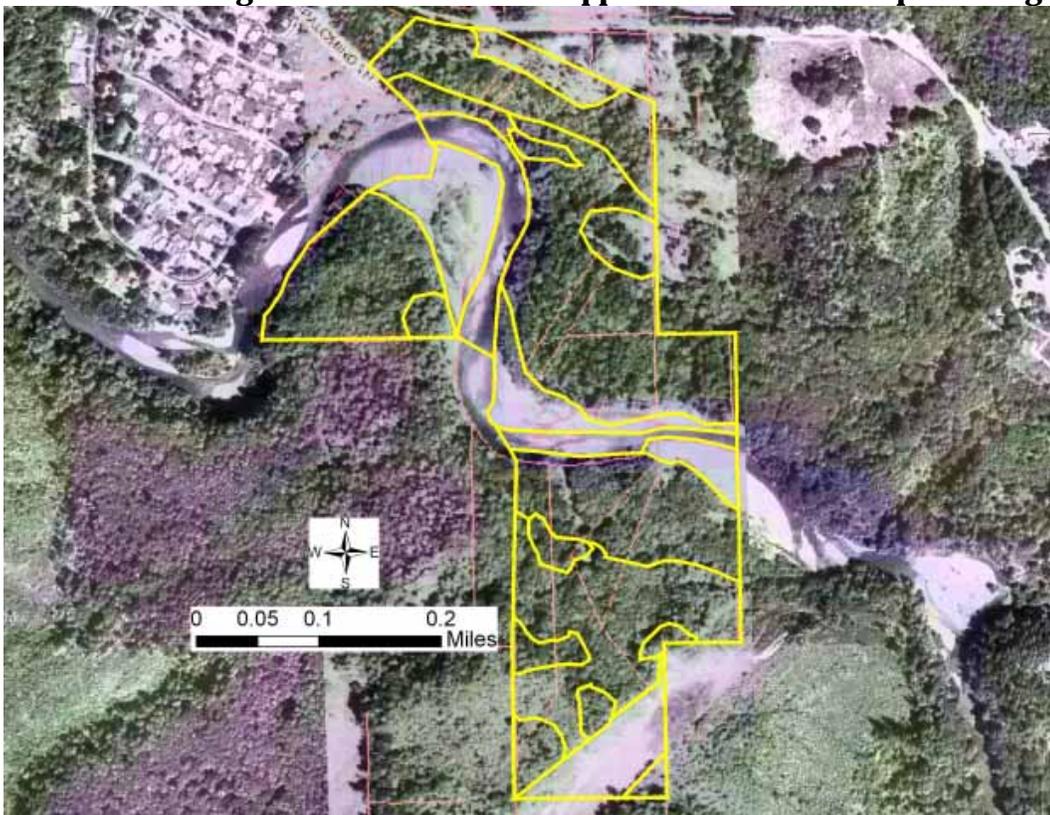
Map 5. Survey routes within the additional parcels.



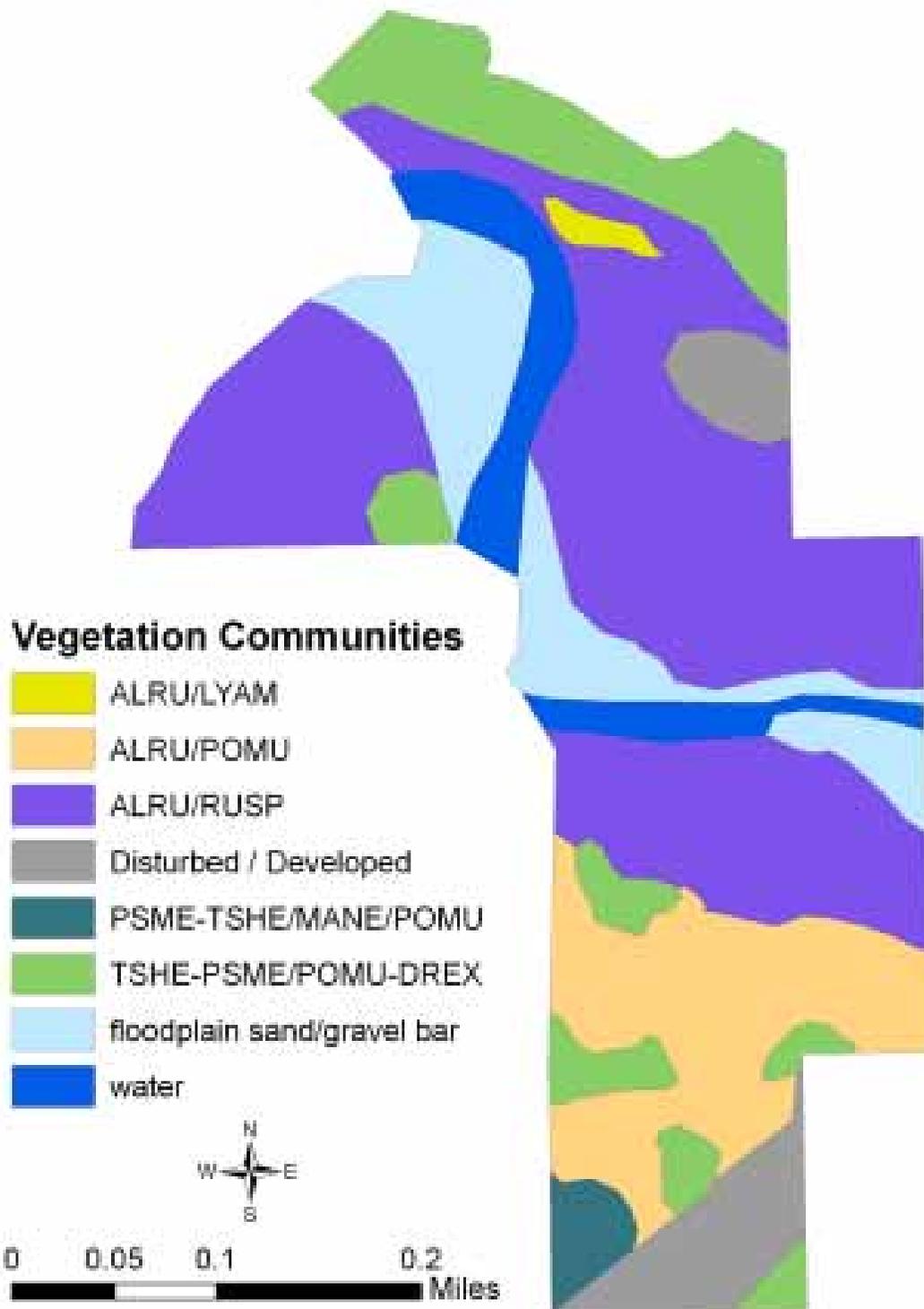
Map 6. A closer view of the additional parcels.



Map 7. Outlines of the vegetation communities mapped for the additional parcels region.



Map 8. The vegetation communities mapped for the additional parcels region.



Additional Vascular Plants found in the Additional Parcels Area

#	Ab	Code	Scientific Name	Common Name	Family- Scientific	Family- Common	Type	Alien?
1	5	CEUM	<i>Centaurium umbellatum</i>	European centaury	Gentianaceae	Gentian	a	a
2	4	ESCA2	<i>Eschscholzia californica</i>	California poppy	Papaveraceae	Poppy	p	
3	5	LEMI3	<i>Lemna minor</i>	common duckweed	Lemnaceae	Duckweed	p	
4	5	LYAM3	<i>Lysichiton americanus</i>	American skunkcabbage	Araceae	Arum	p	
5	5	PICO	<i>Pinus contorta</i>	lodgepole pine	Pinus	Pine	t	

Additional Vegetation Communities found in the Additional Parcels Area

Alnus rubra / *Lysichiton americanum* wetland (ALRU/LYAM)

This wetland community exists just below the steep south facing hill slope along the northern side of the Dosewallips River. Surface water was present in the area in August, and the water did seem to be flowing westward, albeit at a very slow rate. The wetland is probably replenished perennially by the hyporheic flow of the Dosewallips River, which dramatically bends south against a steep hill very near to the wetlands source. The ALRU/LYAM community does not currently occur within Dosewallips State Park and the addition of these satellite parcels to the park would increase the diversity of vegetation communities within the parks management.

Discussion on the Additional Parcels

Aside from the weed infested electrical transmission line clearing at the south end of the parcel, the forests and floodplain communities in this area could benefit ecologically if managed under an “ecosystem management” perspective, rather than the “resource extraction” perspective they’ve been managed under recently. Prohibiting off-road vehicle and large machinery use, protecting large trees from timber harvest, and selectively thinning and replanting the upland deciduous forests with native conifer species will help improve the ecological condition of this site. Given proper management, the site has potential to provide excellent streamside habitat for migrating and spawning salmon, and browsing habitat for Roosevelt elk. The site represents a great opportunity for Washington State Parks to acquire and manage some critical streamside salmon habitat.

A more intensive environmental assessment would be beneficial in establishing adequate management strategies for restoring this piece of the Dosewallips watershed to better ecological conditions.

GIS Products Produced

Associated with this report is a polygon layer created by PBI depicting the vegetation community types mapped in Dosewallips State Park. The dataset has been converted into ESRI shapefile format and provided to the Washington State Parks and Recreation Commission. The spatial datasets are complete with metadata meeting FGDC standards. Refer to the associated metadata for descriptions and attribute definitions for each spatial dataset.

References

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

Floberg, J., M. Goering, G. Wilhere, C. MacDonald, C. Chappell, C. Rumsey, Z. Ferdana, A. Holt, P. Skidmore, T. Horsman, E. Alverson, C. Tanner, M. Bryer, P. Iachetti, A. Harcombe, B. McDonald, T. Cook, M. Summers, D. Rolph. 2004. Willamette Valley-Puget Trough-Georgia Basin Ecoregional Assessment, Volume One: Report. Prepared by The Nature Conservancy with support from the Nature Conservancy of Canada, Washington Department of Fish and Wildlife, Washington Department of Natural Resources (Natural Heritage and Nearshore Habitat programs), Oregon State Natural Heritage Information Center and the British Columbia Conservation Data Centre.

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.

Western Ecology Working Group of NatureServe. No date. International Ecological Classification Standard: International Vegetation Classification. Terrestrial Vegetation. NatureServe, Boulder, CO.

Appendix A - Field Survey Schedule

Primary Contract Field Surveys:

May 4 - 5, 2005

Field Staff: Hans Smith, Dana Visalli

July 9 - 10, 2005

Field Staff: Hans Smith, Peter Morrison, Dana Visalli

Secondary Contract Field Surveys:

August 3 - 5, 2005

Field Staff: Hans Smith,

September 5, 2005

Field Staff: Peter Morrison

Appendix B – Vegetation Survey Data

Legend:

Site = name of locality of map project

Polygon = number you put on map

Name/Date = your name / day-month-year completed polygon survey

Photo roll/number = number of roll (on canister) and number of shot

Survey intensity

1 = walked or could see most of polygon (high confidence in survey data)

2 = walked or could see part of polygon interior (moderate confidence)

3 = walked perimeter or could see part of polygon interior (low confidence)

4 = photo interpretation or other remote survey

VEGETATION COVER

This is canopy cover, i.e. the space between leaves/branches is included in “cover”. Each Life form category canopy cover must be 0-100%. Therefore, the sum of all life forms (layers) can exceed 100%. List most abundant species in each life form category; when trees are cored, note DBH, species, length of core, number of rings counted.

TOTAL VEGETATION COVER includes all vascular plants, mosses, lichens and foliose lichens (crustose lichens excluded they are considered rock); this never exceeds 100%.

SOIL SURFACE estimate to nearest % the following, the sum of the categories adds to 100%

Rock outcrop = exposed bedrock including detached boulders over 1m across

Gravel/cobble = large fragments between sand and boulder

Bareground = exposed mineral soil

Mosses/lichens = nonvascular plant cover on soil

Litter = includes logs, branches, and basal area of plants

Describe in comments if there is wide variation in any category; note % standing water if it is persistent or characteristic of site.

LAND USE - put 0 (zero) if not applicable to site.

Logging

1 = unlogged, no evidence of past logging or occasional cut stumps not part of systematic harvest of trees, no or very little impact on stand composition

2 = selectively logged: frequent cut stumps but origin of dominant or co-dominant cohort appears to be natural disturbance

3 = heavy logging disturbance with natural regeneration: many cut stumps that predate the dominant or co-dominant cohort with no tree planting

4 = tree plantation: dominant cohort appears to be planted after clearcutting

Stand Age

- 1 = very young 0-40 yr
- 2 = young 40-90 yr
- 3 = mature 90-200 yr
- 4 = old-growth 200+ yr
- 5 = young with scattered old trees (2-10 old trees per acre)
- 6 = mature with scattered old trees

Agriculture

- 1 = active annual cropping
- 2 = active perennial herbaceous cropping
- 3 = active woody plant cultivation
- 4 = fallow, plowed no crops this yr
- 5 = Federal CRP
- 6 = other

Livestock

- 1 = active heavy grazing (most forage used to ground soil compaction or churning)
- 2 = active moderate grazing (25-75% forage used)
- 3 = active light grazing (lots of last yr's litter left)
- 4 = no current, heavy past grazing
- 5 = no current, light past grazing
- 6 = no obvious sign of grazing

Development

- 1 = actively used facilities
- 2 = roads
- 3 = established trails
- 4 = abandoned facilities
- 5 = none obvious
- 6 = multiple types (detail in comments)

Wildlife

- 1 = heavy ungulate use
- 2 = moderate ungulate use
- 3 = light to no ungulate use
- 4 = burrowing animals
- 5 = active beaver
- 6 = active porcupine
- 7 = other, list animal

Recreation Use Severity

- 1 = heavy use, abundant soil and vegetation displacement off trail/road
- 2 = moderate use, frequent soil and vegetation displacement off trail/road
- 3 = light use, little sign of activity off trail/road

Recreation Use Primary Type

- 1 = wheeled
- 2 = hoofed
- 3 = pedestrian
- 4 = combination of above
- 5 = other

Hydrology

- 1 = unaltered
- 2 = altered; dams, dikes, ditches, culverts, etc
- 3 = not assessed

Plant Association (PA) = list all PAs encountered in polygon survey, in comments list source of name if not on provided key.

Condition Rank of PA in key or estimate

% of Polygon = your estimate

Pattern = how PA is distributed in polygon

- 1 = matrix (most of polygon)
- 2 = large patches
- 3 = small patches
- 4 = clumped, clustered, contiguous
- 5 = scattered, more or less evenly repeating
- 6 = linear
- 7 = other

Exotic = primary species observed; secondary species observed.

Plot Number = number of any plots established for EO (element occurrence), or other more detail sheets within polygon.

Vegetation Polygon Data

Polygon Number	1
Survey Intensity	1
Observer	HS
Date	6/9/05
Specific Location	cut area S side of park
Total Vegetation	100
Trees Total	100
Dominant Tree Sp	ALRU/PSME/ABGR/TS
emergent	2
main canopy	58
subcanopy	40
Shrubs Total	70
Dominant Shrub Sp	ACCI/HODI/RUSP/RUUC
> 1.5' tall	60
< 1.5' tall	10
Graminoids Total	1
Dominant Graminoid Sp	LUCA
Graminoids perennial	1
Graminoids annual	0
Forbs Total	2
Dominant Forb Sp	
Forbs perennial	2
Forbs annual	0
Ferns - evergreen	15
Ferns - deciduous	2
Exotics Total	1
Exotics perennial	1
Exotics annual	0
Rock Outcrop	0
Gravel	0
Bare Ground	0
Moss-Lichen	0
Litter	100
Logging	3
Stand Age	2
Agriculture	0
Livestock	0
Development	0
Wildlife	3
Recreation Severity	0
Recreation Type	0
Hydrology	2

Exotic Species

primary spp
Digitalis purpurea

secondary spp
Dactylis glomerata

Plant Associations

	Percent	Pattern
1. TSHE-PSME/POMU-DREX	70	Matrix
2. ALRU/POMU	30	patches
3.	0	

Notes:

Polygon Number	2
Survey Intensity	1
Observer	Hans
Date	5/4/05
Specific Location	Riverine forest on E side of Dosewallips R, E of Hwy 101
Total Vegetation	100
Trees Total	85
Dominant Tree Sp	ALRU
emergent	10
main canopy	75
subcanopy	0
Shrubs Total	90
Dominant Shrub Sp	OECE / RUSP
> 1.5' tall	87
< 1.5' tall	3
Graminoids Total	2
Dominant Graminoid Sp	CADE
Graminoids perennial	2
Graminoids annual	0
Forbs Total	50
Dominant Forb Sp	TEGR
Forbs perennial	50
Forbs annual	0
Ferns - evergreen	1
Ferns - deciduous	1
Exotics Total	15
Exotics perennial	15
Exotics annual	0
Rock Outcrop	0
Gravel	0
Bare Ground	10
Moss-Lichen	0
Litter	90
Logging	1
Stand Age	2
Agriculture	0
Livestock	0
Development	3
Wildlife	3
Recreation Severity	3
Recreation Type	3
Hydrology	1

Exotic Species

primary spp
 Rubus Discolor
secondary spp

Plant Associations	Percent	Pattern
1. ALRU/RUSP	100	Matrix
2.	0	
3.	0	

Notes: Very dramatic infestation of RUDI - apparent control / eradication activities taking place.

Polygon Number 3
Survey Intensity 2

Observer Hans
Date 6/21/05
Specific Location Ranger Station and Campground

Total Vegetation 0
Trees Total 0
Dominant Tree Sp
emergent 0
main canopy 0
subcanopy 0
Shrubs Total 0
Dominant Shrub Sp
> 1.5' tall 0
< 1.5' tall 0
Graminoids Total 0
Dominant Graminoid Sp
Graminoids perennial 0
Graminoids annual 0
Forbs Total 0
Dominant Forb Sp
Forbs perennial 0
Forbs annual 0
Ferns - evergreen 0
Ferns - deciduous 0
Exotics Total 0
Exotics perennial 0
Exotics annual 0
Rock Outcrop 0
Gravel 0
Bare Ground 0
Moss-Lichen 0
Litter 0
Logging
Stand Age
Agriculture
Livestock
Development
Wildlife
Recreation Severity
Recreation Type
Hydrology

Exotic Species

primary spp

secondary spp

Plant Associations

	Percent	Pattern
1. Disturbed / Developed	100	Matrix
2.	0	
3.	0	

Notes:

Polygon Number 4
 Survey Intensity

Observer
 Date
 Specific Location

Total Vegetation 0
 Trees Total 0

Dominant Tree Sp

emergent 0
 main canopy 0
 subcanopy 0
 Shrubs Total 0

Dominant Shrub Sp

> 1.5' tall 0
 < 1.5' tall 0
 Graminoids Total 0

Dominant Graminoid Sp

Graminoids perennial 0
 Graminoids annual 0

Forbs Total 0

Dominant Forb Sp

Forbs perennial 0
 Forbs annual 0
 Ferns - evergreen 0
 Ferns - deciduous 0
 Exotics Total 0

Exotics perennial 0
 Exotics annual 0

Rock Outcrop 0

Gravel 0

Bare Ground 0

Moss-Lichen 0

Litter 0

Logging

Stand Age

Agriculture

Livestock

Development

Wildlife

Recreation Severity

Recreation Type

Hydrology

Exotic Species

primary spp

secondary spp

Plant Associations

	Percent	Pattern
1. water	0	
2.	0	
3.	0	

Notes:

Polygon Number	5
Survey Intensity	2
Observer	DV
Date	6/9/05
Specific Location	Floodplain forest near camp adj. to river
Total Vegetation	95
Trees Total	85
Dominant Tree Sp	ACMA/ALRU
emergent	5
main canopy	75
subcanopy	5
Shrubs Total	50
Dominant Shrub Sp	SYAL
> 1.5' tall	30
< 1.5' tall	20
Graminoids Total	5
Dominant Graminoid Sp	
Graminoids perennial	5
Graminoids annual	0
Forbs Total	20
Dominant Forb Sp	
Forbs perennial	10
Forbs annual	10
Ferns - evergreen	10
Ferns - deciduous	0
Exotics Total	5
Exotics perennial	0
Exotics annual	5
Rock Outcrop	0
Gravel	0
Bare Ground	0
Moss-Lichen	10
Litter	90
Logging	3
Stand Age	2
Agriculture	0
Livestock	6
Development	5
Wildlife	3
Recreation Severity	3
Recreation Type	3
Hydrology	1

Exotic Species

primary spp
Geranium robertianum

secondary spp

Plant Associations	Percent	Pattern
1. ALRU/POMU	100	Matrix
2.	0	
3.	0	

Notes:

Polygon Number	6
Survey Intensity	1
Observer	Hans
Date	5/5/05
Specific Location	wooded areas N of campground - (included tent platform area)
Total Vegetation	100
Trees Total	98
Dominant Tree Sp	ALRU / ACMA / ABGR /
emergent	8
main canopy	84
subcanopy	6
Shrubs Total	60
Dominant Shrub Sp	OECE / SYAL
> 1.5' tall	58
< 1.5' tall	2
Graminoids Total	1
Dominant Graminoid Sp	CADE
Graminoids perennial	1
Graminoids annual	0
Forbs Total	5
Dominant Forb Sp	CIAP / TEGR
Forbs perennial	5
Forbs annual	0
Ferns - evergreen	50
Ferns - deciduous	2
Exotics Total	2
Exotics perennial	1
Exotics annual	1
Rock Outcrop	0
Gravel	0
Bare Ground	0
Moss-Lichen	2
Litter	98
Logging	2
Stand Age	2
Agriculture	0
Livestock	0
Development	6
Wildlife	3
Recreation Severity	1
Recreation Type	3
Hydrology	2

Exotic Species

primary spp

Rubus discolor

secondary spp

Poa Annua

Plant Associations	Percent	Pattern
1. PSME-ABGR/COCO/POMU	95	Matrix
2. ALRU/POMU	5	small
3.	0	

Notes: ALRU/POMU in lower floodplain terrace. Development is actively used facilities, roads, and trails.

Polygon Number 7
Survey Intensity 2

Observer Hans
Date 6/21/05
Specific Location Field and parking area for tideland access

Total Vegetation 0
Trees Total 0
Dominant Tree Sp
emergent 0
main canopy 0
subcanopy 0
Shrubs Total 0
Dominant Shrub Sp
> 1.5' tall 0
< 1.5' tall 0
Graminoids Total 0
Dominant Graminoid Sp
Graminoids perennial 0
Graminoids annual 0
Forbs Total 0
Dominant Forb Sp
Forbs perennial 0
Forbs annual 0
Ferns - evergreen 0
Ferns - deciduous 0
Exotics Total 0
Exotics perennial 0
Exotics annual 0
Rock Outcrop 0
Gravel 0
Bare Ground 0
Moss-Lichen 0
Litter 0
Logging
Stand Age
Agriculture
Livestock
Development
Wildlife
Recreation Severity
Recreation Type
Hydrology

Exotic Species

primary spp

secondary spp

Plant Associations

	Percent	Pattern
1. Disturbed / Developed	100	Matrix
2.	0	
3.	0	

Notes:

Polygon Number	8
Survey Intensity	2
Observer	Hans
Date	6/21/05
Specific Location	Just E of tidal access parking lot
Total Vegetation	100
Trees Total	85
Dominant Tree Sp	ALRU / ACMA
emergent	4
main canopy	80
subcanopy	1
Shrubs Total	15
Dominant Shrub Sp	OECE, RUSP
> 1.5' tall	15
< 1.5' tall	0
Graminoids Total	1
Dominant Graminoid Sp	
Graminoids perennial	1
Graminoids annual	0
Forbs Total	3
Dominant Forb Sp	
Forbs perennial	0
Forbs annual	0
Ferns - evergreen	1
Ferns - deciduous	0
Exotics Total	40
Exotics perennial	40
Exotics annual	0
Rock Outcrop	0
Gravel	0
Bare Ground	0
Moss-Lichen	0
Litter	100
Logging	2
Stand Age	2
Agriculture	
Livestock	
Development	3
Wildlife	
Recreation Severity	3
Recreation Type	3
Hydrology	1

Exotic Species

primary spp
 Rubus discolor
secondary spp

Plant Associations	Percent	Pattern
1. ALRU/POMU	100	Matrix
2.	0	
3.	0	

Notes: Highly weed infested small isolated patch

Polygon Number	11
Survey Intensity	2
Observer	DV
Date	6/9/05
Specific Location	NW quadrant of park
Total Vegetation	100
Trees Total	85
Dominant Tree Sp	ALRU/ACMA
emergent	0
main canopy	70
subcanopy	15
Shrubs Total	35
Dominant Shrub Sp	ACCI
> 1.5' tall	25
< 1.5' tall	10
Graminoids Total	5
Dominant Graminoid Sp	
Graminoids perennial	5
Graminoids annual	0
Forbs Total	10
Dominant Forb Sp	
Forbs perennial	8
Forbs annual	2
Ferns - evergreen	5
Ferns - deciduous	0
Exotics Total	5
Exotics perennial	5
Exotics annual	0
Rock Outcrop	0
Gravel	0
Bare Ground	3
Moss-Lichen	15
Litter	82
Logging	3
Stand Age	2
Agriculture	0
Livestock	6
Development	3
Wildlife	3
Recreation Severity	3
Recreation Type	3
Hydrology	3

Exotic Species

primary spp
Digitalis purpurea

secondary spp

Plant Associations

	Percent	Pattern
1. ALRU/POMU	100	Matrix
2.	0	
3.	0	

Notes:

Polygon Number	12
Survey Intensity	2
Observer	DV
Date	6/9/05
Specific Location	smallish polygon nearly 1 m. center of park, on fire road
Total Vegetation	100
Trees Total	85
Dominant Tree Sp	
emergent	0
main canopy	80
subcanopy	5
Shrubs Total	30
Dominant Shrub Sp	
> 1.5' tall	25
< 1.5' tall	5
Graminoids Total	2
Dominant Graminoid Sp	
Graminoids perennial	2
Graminoids annual	0
Forbs Total	10
Dominant Forb Sp	
Forbs perennial	8
Forbs annual	2
Ferns - evergreen	20
Ferns - deciduous	5
Exotics Total	2
Exotics perennial	2
Exotics annual	0
Rock Outcrop	0
Gravel	0
Bare Ground	2
Moss-Lichen	15
Litter	83
Logging	3
Stand Age	2
Agriculture	0
Livestock	6
Development	3
Wildlife	3
Recreation Severity	3
Recreation Type	3
Hydrology	0

Exotic Species

- primary spp**
Ranunculus repens v. repens
- secondary spp**
Digitalis purpurea

Plant Associations	Percent	Pattern
1. ALRU/POMU	100	Matrix
2.	0	
3.	0	

Notes:

Polygon Number	13
Survey Intensity	2
Observer	DV
Date	5/5/05
Specific Location	junction of fire road & "steam donkey trail"
Total Vegetation	95
Trees Total	90
Dominant Tree Sp	
emergent	0
main canopy	80
subcanopy	10
Shrubs Total	10
Dominant Shrub Sp	
> 1.5' tall	10
< 1.5' tall	0
Graminoids Total	2
Dominant Graminoid Sp	
Graminoids perennial	2
Graminoids annual	0
Forbs Total	10
Dominant Forb Sp	
Forbs perennial	10
Forbs annual	0
Ferns - evergreen	30
Ferns - deciduous	0
Exotics Total	1
Exotics perennial	0
Exotics annual	1
Rock Outcrop	0
Gravel	0
Bare Ground	0
Moss-Lichen	15
Litter	85
Logging	3
Stand Age	2
Agriculture	0
Livestock	5
Development	3
Wildlife	3
Recreation Severity	3
Recreation Type	3
Hydrology	1

Exotic Species

primary spp
Geranium robertianum
secondary spp

Plant Associations	Percent	Pattern
1. ALRU/POMU	100	Matrix
2.	0	
3.	0	

Notes: Deciduous forest ACMA dominant;

Polygon Number	15
Survey Intensity	1
Observer	Hans
Date	5/5/05
Specific Location	Near N border on hill above Dosewallips River
Total Vegetation	100
Trees Total	99
Dominant Tree Sp	ACMA / TSHE / THPL
emergent	5
main canopy	84
subcanopy	10
Shrubs Total	4
Dominant Shrub Sp	VAPA / BENE / VAOV
> 1.5' tall	3
< 1.5' tall	1
Graminoids Total	1
Dominant Graminoid Sp	
Graminoids perennial	1
Graminoids annual	0
Forbs Total	5
Dominant Forb Sp	GAAP / TRLA / MOSI
Forbs perennial	5
Forbs annual	0
Ferns - evergreen	80
Ferns - deciduous	1
Exotics Total	1
Exotics perennial	1
Exotics annual	0
Rock Outcrop	0
Gravel	0
Bare Ground	0
Moss-Lichen	2
Litter	98
Logging	3
Stand Age	2
Agriculture	0
Livestock	0
Development	3
Wildlife	3
Recreation Severity	3
Recreation Type	3
Hydrology	1

Exotic Species

primary spp

secondary spp

Plant Associations	Percent	Pattern
1. TSHE-PSME/POMU-DREX	99	Matrix
2. ALRU/POMU	1	Small
3.	0	

Notes: Includes lower Phantom CR

Polygon Number	16
Survey Intensity	1
Observer	Hans
Date	5/5/05
Specific Location	NW corner of Park
Total Vegetation	100
Trees Total	96
Dominant Tree Sp	TSHE / PSME / ABGR /
emergent	7
main canopy	81
subcanopy	8
Shrubs Total	70
Dominant Shrub Sp	ACCI / HODI / BENE /
> 1.5' tall	65
< 1.5' tall	5
Graminoids Total	4
Dominant Graminoid Sp	CADE / CAHE / LUPA
Graminoids perennial	4
Graminoids annual	0
Forbs Total	25
Dominant Forb Sp	TITR / GAAP
Forbs perennial	25
Forbs annual	0
Ferns - evergreen	50
Ferns - deciduous	2
Exotics Total	1
Exotics perennial	1
Exotics annual	0
Rock Outcrop	0
Gravel	0
Bare Ground	0
Moss-Lichen	3
Litter	97
Logging	3
Stand Age	2
Agriculture	0
Livestock	0
Development	6
Wildlife	2
Recreation Severity	3
Recreation Type	3
Hydrology	1

Exotic Species

- primary spp**
- Dactylis glomerata
- secondary spp**

Plant Associations	Percent	Pattern
1. TSHE-PSME/POMU-DREX	80	Matrix
2. ALRU/POMU	10	Scattered,
3. PSME-ABGR/COCO/POMU	10	Scattered,

Notes: historical logging and fires evident - abandoned roads apparent. Development is roads and trails.

Polygon Number	17
Survey Intensity	1
Observer	HS
Date	6/10/05
Specific Location	Conifer stand - SW boundary (W side)
Total Vegetation	100
Trees Total	93
Dominant Tree Sp	PSME/TSHE/THPL
emergent	9
main canopy	75
subcanopy	9
Shrubs Total	60
Dominant Shrub Sp	HODI/BENE/RHMA/RU
> 1.5' tall	40
< 1.5' tall	20
Graminoids Total	1
Dominant Graminoid Sp	Melica
Graminoids perennial	1
Graminoids annual	0
Forbs Total	2
Dominant Forb Sp	GAAP/trientalis
Forbs perennial	2
Forbs annual	0
Ferns - evergreen	35
Ferns - deciduous	2
Exotics Total	0
Exotics perennial	0
Exotics annual	0
Rock Outcrop	0
Gravel	0
Bare Ground	0
Moss-Lichen	20
Litter	80
Logging	3
Stand Age	2
Agriculture	0
Livestock	0
Development	3
Wildlife	3
Recreation Severity	3
Recreation Type	3
Hydrology	1

Exotic Species

primary spp

secondary spp

Plant Associations	Percent	Pattern
1. TSHE-PSME/POMU-DREX	60	Matrix
2. PSME-TSHE/MANE/POMU	20	Small
3. PSME-TSHE/HODI/POMU	20	Small

Notes:

Polygon Number	18
Survey Intensity	1
Observer	Hans
Date	8/3/05
Specific Location	N of Ravine near Maple Valley Loop Trail
Total Vegetation	100
Trees Total	100
Dominant Tree Sp	PSME
emergent	2
main canopy	90
subcanopy	8
Shrubs Total	95
Dominant Shrub Sp	RHMA/BENE
> 1.5' tall	15
< 1.5' tall	80
Graminoids Total	1
Dominant Graminoid Sp	
Graminoids perennial	1
Graminoids annual	0
Forbs Total	1
Dominant Forb Sp	
Forbs perennial	1
Forbs annual	0
Ferns - evergreen	3
Ferns - deciduous	1
Exotics Total	1
Exotics perennial	0
Exotics annual	0
Rock Outcrop	0
Gravel	0
Bare Ground	0
Moss-Lichen	3
Litter	97
Logging	3
Stand Age	2
Agriculture	0
Livestock	0
Development	0
Wildlife	3
Recreation Severity	3
Recreation Type	3
Hydrology	1

Exotic Species

primary spp

secondary spp

Plant Associations Percent Pattern

- 1. PSME-TSHE/MANE/POMU
- 2.
- 3.

Notes:

Polygon Number	19
Survey Intensity	2
Observer	DV
Date	5/5/05
Specific Location	
Total Vegetation	95
Trees Total	70
Dominant Tree Sp	ACMA (40), PSME (10),
emergent	5
main canopy	55
subcanopy	10
Shrubs Total	10
Dominant Shrub Sp	ACCI (7), VAPA (3),
> 1.5' tall	5
< 1.5' tall	5
Graminoids Total	2
Dominant Graminoid Sp	CAHE (1)
Graminoids perennial	2
Graminoids annual	0
Forbs Total	10
Dominant Forb Sp	TRLA (2), LIBO (2)
Forbs perennial	10
Forbs annual	0
Ferns - evergreen	15
Ferns - deciduous	5
Exotics Total	1
Exotics perennial	0
Exotics annual	1
Rock Outcrop	0
Gravel	0
Bare Ground	0
Moss-Lichen	30
Litter	70
Logging	3
Stand Age	3
Agriculture	0
Livestock	6
Development	3
Wildlife	3
Recreation Severity	3
Recreation Type	3
Hydrology	1

Exotic Species

- primary spp**
- Lactuca sp.
- secondary spp**

Plant Associations	Percent	Pattern
1. TSHE-PSME/POMU-DREX	100	Matrix
2.	0	
3.	0	

Notes: Ferns (evergreen): POMU; (deciduous): PTAQ;

Polygon Number	22
Survey Intensity	1
Observer	Hans
Date	5/4/05
Specific Location	River bed N of campground
Total Vegetation	32
Trees Total	8
Dominant Tree Sp	POTR / ALRU
emergent	7
main canopy	0
subcanopy	1
Shrubs Total	15
Dominant Shrub Sp	Salix
> 1.5' tall	13
< 1.5' tall	2
Graminoids Total	4
Dominant Graminoid Sp	
Graminoids perennial	3
Graminoids annual	1
Forbs Total	5
Dominant Forb Sp	
Forbs perennial	3
Forbs annual	2
Ferns - evergreen	1
Ferns - deciduous	1
Exotics Total	6
Exotics perennial	5
Exotics annual	1
Rock Outcrop	0
Gravel	60
Bare Ground	30
Moss-Lichen	0
Litter	10
Logging	0
Stand Age	0
Agriculture	0
Livestock	0
Development	0
Wildlife	0
Recreation Severity	2
Recreation Type	3
Hydrology	1

Exotic Species

- primary spp**
- Buddleja davidii
- secondary spp**
- Rubus discolor

Plant Associations

	Percent	Pattern
1. floodplain sand/gravel bar	100	linear
2.	0	
3.	0	

Notes:

Polygon Number	23
Survey Intensity	1
Observer	Hans
Date	8/5/05
Specific Location	W side of Dosewallips R, near mouth
Total Vegetation	90
Trees Total	30
Dominant Tree Sp	ALRU
emergent	
main canopy	30
subcanopy	
Shrubs Total	50
Dominant Shrub Sp	LOIN, MAFU, Salix sp.,
> 1.5' tall	50
< 1.5' tall	
Graminoids Total	10
Dominant Graminoid Sp	Carex lyngbyei
Graminoids perennial	10
Graminoids annual	0
Forbs Total	9
Dominant Forb Sp	Aster subspicatus,
Forbs perennial	9
Forbs annual	0
Ferns - evergreen	1
Ferns - deciduous	1
Exotics Total	45
Exotics perennial	45
Exotics annual	0
Rock Outcrop	0
Gravel	5
Bare Ground	10
Moss-Lichen	0
Litter	85
Logging	2
Stand Age	2
Agriculture	0
Livestock	0
Development	0
Wildlife	7
Recreation Severity	0
Recreation Type	0
Hydrology	1

Exotic Species

primary spp

Rubus discolor

secondary spp

Aster subspicatus, Senecio jacobaea

Plant Associations	Percent	Pattern
1. ALRU/RUSP	80	Matrix
2. LOIN-RONU	17	small
3. CALY	3	linear

Notes: Large infestation of Rubus discolor, Wildlife = birds, fish

Polygon Number	24
Survey Intensity	1
Observer	Hans
Date	5/5/05
Specific Location	N border of Park, riparian forest near River
Total Vegetation	100
Trees Total	98
Dominant Tree Sp	ACMA / ALRU / POTR
emergent	3
main canopy	85
subcanopy	10
Shrubs Total	70
Dominant Shrub Sp	ACCI / COCO
> 1.5' tall	69
< 1.5' tall	1
Graminoids Total	3
Dominant Graminoid Sp	CADE
Graminoids perennial	3
Graminoids annual	0
Forbs Total	65
Dominant Forb Sp	TOME / HYTE / GAAP
Forbs perennial	63
Forbs annual	2
Ferns - evergreen	10
Ferns - deciduous	2
Exotics Total	1
Exotics perennial	1
Exotics annual	0
Rock Outcrop	0
Gravel	0
Bare Ground	0
Moss-Lichen	3
Litter	97
Logging	2
Stand Age	3
Agriculture	0
Livestock	0
Development	3
Wildlife	3
Recreation Severity	3
Recreation Type	3
Hydrology	1

Exotic Species

primary spp
Geranium robertianum

secondary spp

Plant Associations	Percent	Pattern
1. ALRU/POMU	100	Matrix
2.	0	
3.	0	

Notes:

Polygon Number	25
Survey Intensity	1
Observer	Hans
Date	5/5/05
Specific Location	Small hill summit S of Dosewallips River, E of Phantom Crk
Total Vegetation	100
Trees Total	97
Dominant Tree Sp	TSHE/THPL
emergent	4
main canopy	83
subcanopy	10
Shrubs Total	23
Dominant Shrub Sp	ACCI / OECE / BENE
> 1.5' tall	20
< 1.5' tall	3
Graminoids Total	1
Dominant Graminoid Sp	
Graminoids perennial	1
Graminoids annual	0
Forbs Total	3
Dominant Forb Sp	TRLA
Forbs perennial	3
Forbs annual	0
Ferns - evergreen	65
Ferns - deciduous	2
Exotics Total	1
Exotics perennial	1
Exotics annual	0
Rock Outcrop	0
Gravel	0
Bare Ground	0
Moss-Lichen	5
Litter	95
Logging	3
Stand Age	2
Agriculture	0
Livestock	0
Development	3
Wildlife	3
Recreation Severity	2
Recreation Type	3
Hydrology	1

Exotic Species

- primary spp**
- Ilex aquifolium
- secondary spp**

Plant Associations	Percent	Pattern
1. TSHE-PSME/POMU-DREX	97	Matrix
2. PSME-THPL/RHMA	2	Small
3. PSME-TSHE/MANE/POMU	1	Small

Notes: Was heavily logged - old abandoned roads apparent - old fire apparent. PSME-THPL/RHMA and PSME-

Polygon Number	26
Survey Intensity	1
Observer	Hans
Date	5/5/05
Specific Location	Ridge above River near tent platform campground
Total Vegetation	100
Trees Total	100
Dominant Tree Sp	PSME / THPL
emergent	5
main canopy	80
subcanopy	15
Shrubs Total	30
Dominant Shrub Sp	RHMA / BENE / VAOV
> 1.5' tall	22
< 1.5' tall	8
Graminoids Total	1
Dominant Graminoid Sp	
Graminoids perennial	1
Graminoids annual	0
Forbs Total	1
Dominant Forb Sp	
Forbs perennial	1
Forbs annual	0
Ferns - evergreen	3
Ferns - deciduous	0
Exotics Total	0
Exotics perennial	0
Exotics annual	0
Rock Outcrop	0
Gravel	0
Bare Ground	0
Moss-Lichen	0
Litter	100
Logging	3
Stand Age	2
Agriculture	
Livestock	0
Development	0
Wildlife	3
Recreation Severity	2
Recreation Type	3
Hydrology	1

Exotic Species

primary spp

secondary spp

Plant Associations	Percent	Pattern
1. PSME-THPL/RHMA	100	Matrix
2.	0	
3.	0	

Notes:

Polygon Number	27
Survey Intensity	1
Observer	Hans
Date	5/5/05
Specific Location	Alder Stand in NW region of Park
Total Vegetation	100
Trees Total	75
Dominant Tree Sp	ALRU
emergent	1
main canopy	73
subcanopy	1
Shrubs Total	10
Dominant Shrub Sp	HODI / COCO
> 1.5' tall	10
< 1.5' tall	0
Graminoids Total	87
Dominant Graminoid Sp	CADE
Graminoids perennial	87
Graminoids annual	0
Forbs Total	70
Dominant Forb Sp	CIAP / GAAP
Forbs perennial	70
Forbs annual	0
Ferns - evergreen	7
Ferns - deciduous	25
Exotics Total	5
Exotics perennial	5
Exotics annual	0
Rock Outcrop	0
Gravel	0
Bare Ground	0
Moss-Lichen	0
Litter	100
Logging	3
Stand Age	2
Agriculture	0
Livestock	0
Development	0
Wildlife	2
Recreation Severity	0
Recreation Type	0
Hydrology	1

Exotic Species

- primary spp**
- Dactylis glomerata
- secondary spp**

Plant Associations	Percent	Pattern
1. ALRU/PTAQ	100	Matrix
2.	0	
3.	0	

Notes: Saturated soils.

Polygon Number 29
Survey Intensity

Observer
Date
Specific Location

Total Vegetation 0
Trees Total 0

Dominant Tree Sp
emergent 0
main canopy 0
subcanopy 0
Shrubs Total 0

Dominant Shrub Sp
> 1.5' tall 0
< 1.5' tall 0
Graminoids Total 0

Dominant Graminoid Sp
Graminoids perennial 0
Graminoids annual 0
Forbs Total 0

Dominant Forb Sp
Forbs perennial 0
Forbs annual 0
Ferns - evergreen 0
Ferns - deciduous 0
Exotics Total 0
Exotics perennial 0
Exotics annual 0

Rock Outcrop 0
Gravel 0
Bare Ground 0
Moss-Lichen 0
Litter 0

Logging
Stand Age
Agriculture
Livestock
Development
Wildlife
Recreation Severity
Recreation Type
Hydrology

Exotic Species

primary spp

secondary spp

Plant Associations	Percent	Pattern
---------------------------	----------------	----------------

1. water	0	
2.	0	
3.	0	

Notes:

Polygon Number	30
Survey Intensity	2
Observer	Hans
Date	6/21/05
Specific Location	Restaurant and buildings / road
Total Vegetation	0
Trees Total	0
Dominant Tree Sp	
emergent	0
main canopy	0
subcanopy	0
Shrubs Total	0
Dominant Shrub Sp	
> 1.5' tall	0
< 1.5' tall	0
Graminoids Total	0
Dominant Graminoid Sp	
Graminoids perennial	0
Graminoids annual	0
Forbs Total	0
Dominant Forb Sp	
Forbs perennial	0
Forbs annual	0
Ferns - evergreen	0
Ferns - deciduous	0
Exotics Total	0
Exotics perennial	0
Exotics annual	0
Rock Outcrop	0
Gravel	0
Bare Ground	0
Moss-Lichen	0
Litter	0
Logging	
Stand Age	
Agriculture	
Livestock	
Development	
Wildlife	
Recreation Severity	
Recreation Type	
Hydrology	

Exotic Species

primary spp

secondary spp

Plant Associations

	Percent	Pattern
1. Disturbed / Developed	100	Matrix
2.	0	
3.	0	

Notes:

Polygon Number	37
Survey Intensity	2
Observer	DV
Date	5/5/05
Specific Location	estuary
Total Vegetation	95
Trees Total	0
Dominant Tree Sp	
emergent	0
main canopy	0
subcanopy	0
Shrubs Total	0
Dominant Shrub Sp	
> 1.5' tall	0
< 1.5' tall	0
Graminoids Total	40
Dominant Graminoid Sp	Distichlis (35), Juncus
Graminoids perennial	40
Graminoids annual	0
Forbs Total	55
Dominant Forb Sp	Salicornia (30), Jaumea
Forbs perennial	55
Forbs annual	0
Ferns - evergreen	0
Ferns - deciduous	0
Exotics Total	0
Exotics perennial	0
Exotics annual	0
Rock Outcrop	0
Gravel	0
Bare Ground	5
Moss-Lichen	0
Litter	95
Logging	0
Stand Age	0
Agriculture	0
Livestock	6
Development	3
Wildlife	7
Recreation Severity	2
Recreation Type	3
Hydrology	2

Exotic Species

primary spp

secondary spp

Plant Associations	Percent	Pattern
1. SAVI-DISP-TRMA	60	Matrix
2. AREG-JUBA	20	small
3. DISP-SAVI	20	linear

Notes: (shore birds)

Polygon Number	43
Survey Intensity	1
Observer	Hans
Date	5/5/05
Specific Location	Just W of viewing platform near Canal - intertidal region
Total Vegetation	100
Trees Total	2
Dominant Tree Sp	PISI / ALRU
emergent	2
main canopy	0
subcanopy	0
Shrubs Total	90
Dominant Shrub Sp	RONU / LOIN / BEAQ
> 1.5' tall	89
< 1.5' tall	1
Graminoids Total	40
Dominant Graminoid Sp	CALY / JUBA
Graminoids perennial	40
Graminoids annual	0
Forbs Total	20
Dominant Forb Sp	POSA / ACMI
Forbs perennial	20
Forbs annual	0
Ferns - evergreen	0
Ferns - deciduous	0
Exotics Total	4
Exotics perennial	4
Exotics annual	0
Rock Outcrop	0
Gravel	0
Bare Ground	0
Moss-Lichen	0
Litter	100
Logging	0
Stand Age	0
Agriculture	0
Livestock	0
Development	3
Wildlife	0
Recreation Severity	3
Recreation Type	3
Hydrology	2

Exotic Species

primary spp

Cytisus scoparius

secondary spp

Festuca arundinacea

Plant Associations

	Percent	Pattern
1. LOIN/RONU	90	Matrix
2. AREG-JUBA	8	Clumped,
3. CALY	2	Small

Notes:

Polygon Number	46
Survey Intensity	1
Observer	HS
Date	6/9/05
Specific Location	S end of intertidal area (shrubby)
Total Vegetation	100
Trees Total	0
Dominant Tree Sp	
emergent	0
main canopy	0
subcanopy	0
Shrubs Total	95
Dominant Shrub Sp	LOIN/RONU/BEAQ/MA
> 1.5' tall	95
< 1.5' tall	0
Graminoids Total	80
Dominant Graminoid Sp	??
Graminoids perennial	79
Graminoids annual	1
Forbs Total	4
Dominant Forb Sp	AREG
Forbs perennial	4
Forbs annual	0
Ferns - evergreen	0
Ferns - deciduous	1
Exotics Total	10
Exotics perennial	10
Exotics annual	0
Rock Outcrop	0
Gravel	0
Bare Ground	0
Moss-Lichen	0
Litter	100
Logging	0
Stand Age	0
Agriculture	0
Livestock	0
Development	0
Wildlife	7
Recreation Severity	0
Recreation Type	0
Hydrology	1

Exotic Species

primary spp
Festuca arundinacea

secondary spp

Plant Associations	Percent	Pattern
1. LOIN/RONU	98	Matrix
2. AREG-JUBA	2	Small
3.	0	

Notes: birds

Polygon Number	48
Survey Intensity	2
Observer	Hans
Date	6/21/05
Specific Location	upper intertidal zone
Total Vegetation	100
Trees Total	0
Dominant Tree Sp	
emergent	0
main canopy	0
subcanopy	0
Shrubs Total	1
Dominant Shrub Sp	
> 1.5' tall	1
< 1.5' tall	0
Graminoids Total	80
Dominant Graminoid Sp	Juncus balticus,
Graminoids perennial	80
Graminoids annual	0
Forbs Total	25
Dominant Forb Sp	Salicornia, Glaux
Forbs perennial	25
Forbs annual	0
Ferns - evergreen	0
Ferns - deciduous	0
Exotics Total	55
Exotics perennial	55
Exotics annual	0
Rock Outcrop	0
Gravel	0
Bare Ground	0
Moss-Lichen	0
Litter	100
Logging	0
Stand Age	0
Agriculture	
Livestock	
Development	3
Wildlife	7
Recreation Severity	2
Recreation Type	5
Hydrology	2

Exotic Species

- primary spp**
- Festuca arundinacea
- secondary spp**
- Elymus glaucus

Plant Associations	Percent	Pattern
1. AREG-JUBA	70	scattered,
2. DISP-SAVI	25	small
3. CALY	5	small

Notes: Wildlife = shorebirds, Rec Use = pedestrian and shellfish harvesting

Polygon Number	50
Survey Intensity	2
Observer	Hans
Date	6/21/05
Specific Location	low tide area
Total Vegetation	2
Trees Total	0
Dominant Tree Sp	
emergent	0
main canopy	0
subcanopy	0
Shrubs Total	0
Dominant Shrub Sp	
> 1.5' tall	0
< 1.5' tall	0
Graminoids Total	2
Dominant Graminoid Sp	Distichlis
Graminoids perennial	2
Graminoids annual	0
Forbs Total	0
Dominant Forb Sp	
Forbs perennial	0
Forbs annual	0
Ferns - evergreen	0
Ferns - deciduous	0
Exotics Total	0
Exotics perennial	0
Exotics annual	0
Rock Outcrop	0
Gravel	0
Bare Ground	100
Moss-Lichen	0
Litter	0
Logging	0
Stand Age	0
Agriculture	0
Livestock	
Development	
Wildlife	7
Recreation Severity	2
Recreation Type	3
Hydrology	1

Exotic Species

primary spp

secondary spp

Plant Associations

	Percent	Pattern
1. mud flats	96	Matrix
2. DISP-SAVI	4	linear
3.	0	

Notes:

Polygon Number	51
Survey Intensity	2
Observer	Hans
Date	6/21/05
Specific Location	upper intertidal zone
Total Vegetation	100
Trees Total	0
Dominant Tree Sp	
emergent	0
main canopy	0
subcanopy	0
Shrubs Total	1
Dominant Shrub Sp	
> 1.5' tall	1
< 1.5' tall	0
Graminoids Total	90
Dominant Graminoid Sp	Juncus balticus,
Graminoids perennial	90
Graminoids annual	0
Forbs Total	10
Dominant Forb Sp	AREG, Grindelia
Forbs perennial	10
Forbs annual	0
Ferns - evergreen	0
Ferns - deciduous	0
Exotics Total	55
Exotics perennial	55
Exotics annual	0
Rock Outcrop	0
Gravel	0
Bare Ground	0
Moss-Lichen	0
Litter	100
Logging	0
Stand Age	0
Agriculture	
Livestock	
Development	5
Wildlife	7
Recreation Severity	2
Recreation Type	3
Hydrology	1

Exotic Species

- primary spp**
- Festuca arundinacea
- secondary spp**
- Elymus glaucus

Plant Associations

	Percent	Pattern
1. AREG-JUBA	65	scattered,
2. CALY-AREG	28	clumped,
3. DISP-SAVI	7	linear

Notes: Wildlife = shorebirds,

Polygon Number	52
Survey Intensity	1
Observer	Hans
Date	8/5/05
Specific Location	upper intertidal zone
Total Vegetation	98
Trees Total	
Dominant Tree Sp	
emergent	
main canopy	0
subcanopy	0
Shrubs Total	1
Dominant Shrub Sp	Salix
> 1.5' tall	1
< 1.5' tall	0
Graminoids Total	90
Dominant Graminoid Sp	Juncus balticus, Carex
Graminoids perennial	90
Graminoids annual	0
Forbs Total	60
Dominant Forb Sp	Potentilla pacifica, Aster
Forbs perennial	60
Forbs annual	0
Ferns - evergreen	0
Ferns - deciduous	0
Exotics Total	10
Exotics perennial	10
Exotics annual	0
Rock Outcrop	0
Gravel	0
Bare Ground	2
Moss-Lichen	0
Litter	98
Logging	0
Stand Age	0
Agriculture	
Livestock	
Development	
Wildlife	7
Recreation Severity	3
Recreation Type	3
Hydrology	1

Exotic Species

primary spp

Festuca arundinacea

secondary spp

Elymus glaucus

Plant Associations

	Percent	Pattern
1. AREG-JUBA	55	scattered,
2. CALY-AREG	40	scattered,
3. Floodplain sand/gravel bar	5	linear

Notes: Wildlife = shorebirds

Polygon Number	55
Survey Intensity	2
Observer	Hans
Date	6/21/05
Specific Location	low tide area
Total Vegetation	2
Trees Total	0
Dominant Tree Sp	
emergent	0
main canopy	0
subcanopy	0
Shrubs Total	0
Dominant Shrub Sp	
> 1.5' tall	0
< 1.5' tall	0
Graminoids Total	2
Dominant Graminoid Sp	Distichlis
Graminoids perennial	2
Graminoids annual	0
Forbs Total	0
Dominant Forb Sp	
Forbs perennial	0
Forbs annual	0
Ferns - evergreen	0
Ferns - deciduous	0
Exotics Total	0
Exotics perennial	0
Exotics annual	0
Rock Outcrop	0
Gravel	0
Bare Ground	100
Moss-Lichen	0
Litter	0
Logging	0
Stand Age	0
Agriculture	0
Livestock	
Development	
Wildlife	7
Recreation Severity	2
Recreation Type	3
Hydrology	1

Exotic Species

primary spp

secondary spp

Plant Associations

	Percent	Pattern
1. mud flats	96	Matrix
2. DISP-SAVI	4	linear
3.	0	

Notes:

Polygon Number	59
Survey Intensity	1
Observer	PM
Date	6/9/05
Specific Location	below Maple Valley trail about 1/2 mile from trailhead (steep slope)
Total Vegetation	100
Trees Total	80
Dominant Tree Sp	ACMA, ALRU, THPL
emergent	10
main canopy	65
subcanopy	5
Shrubs Total	52
Dominant Shrub Sp	ACCI, CEOS, VAPA,
> 1.5' tall	50
< 1.5' tall	2
Graminoids Total	1
Dominant Graminoid Sp	
Graminoids perennial	1
Graminoids annual	0
Forbs Total	11
Dominant Forb Sp	TEGR, DIFO, CIAL
Forbs perennial	10
Forbs annual	1
Ferns - evergreen	45
Ferns - deciduous	10
Exotics Total	1
Exotics perennial	1
Exotics annual	0
Rock Outcrop	0
Gravel	0
Bare Ground	0
Moss-Lichen	2
Litter	98
Logging	1
Stand Age	3
Agriculture	0
Livestock	0
Development	0
Wildlife	0
Recreation Severity	3
Recreation Type	3
Hydrology	0

Exotic Species

- primary spp**
Geranium robertianum
- secondary spp**

Plant Associations	Percent	Pattern
1. ACMA-ALRU/POMU-TEGR	70	Matrix
2. TSHE-PSME/POMU-DREX	30	Small
3.	0	

Notes: Ferns (evergreen): POMU; (deciduous): ATFI, DREX

Polygon Number	150
Survey Intensity	1
Observer	HS
Date	6/9/05
Specific Location	older forest stand; Central Forest area
Total Vegetation	100
Trees Total	99
Dominant Tree Sp	TSHE/PSME/ABGR
emergent	6
main canopy	88
subcanopy	5
Shrubs Total	70
Dominant Shrub Sp	HODI/ACCI/BENE
> 1.5' tall	60
< 1.5' tall	10
Graminoids Total	1
Dominant Graminoid Sp	
Graminoids perennial	1
Graminoids annual	0
Forbs Total	1
Dominant Forb Sp	
Forbs perennial	1
Forbs annual	0
Ferns - evergreen	40
Ferns - deciduous	1
Exotics Total	0
Exotics perennial	0
Exotics annual	0
Rock Outcrop	0
Gravel	0
Bare Ground	0
Moss-Lichen	50
Litter	50
Logging	3
Stand Age	2
Agriculture	0
Livestock	0
Development	0
Wildlife	3
Recreation Severity	0
Recreation Type	0
Hydrology	1

Exotic Species

primary spp

secondary spp

Plant Associations

	Percent	Pattern
1. PSME-TSHE/HODI/POMU	100	Matrix
2.	0	
3.	0	

Notes:

Polygon Number	151
Survey Intensity	2
Observer	DV
Date	5/5/05
Specific Location	clearcut along NW border
Total Vegetation	95
Trees Total	30
Dominant Tree Sp	ACMA
emergent	2
main canopy	28
subcanopy	0
Shrubs Total	80
Dominant Shrub Sp	GASH (60), VAPA (10)
> 1.5' tall	20
< 1.5' tall	60
Graminoids Total	0
Dominant Graminoid Sp	
Graminoids perennial	0
Graminoids annual	0
Forbs Total	0
Dominant Forb Sp	
Forbs perennial	0
Forbs annual	0
Ferns - evergreen	2
Ferns - deciduous	0
Exotics Total	1
Exotics perennial	1
Exotics annual	0
Rock Outcrop	0
Gravel	0
Bare Ground	0
Moss-Lichen	0
Litter	100
Logging	3
Stand Age	1
Agriculture	0
Livestock	6
Development	5
Wildlife	3
Recreation Severity	3
Recreation Type	0
Hydrology	3

Exotic Species

primary spp
Ilex aquifolium

secondary spp

Plant Associations	Percent	Pattern
1. PSME-TSHE/GASH/POMU	100	Matrix
2.	0	
3.	0	

Notes: Ferns (evergreen): POMU;

Polygon Number	152
Survey Intensity	1
Observer	HS
Date	6/10/05
Specific Location	SW corner, S of creek
Total Vegetation	100
Trees Total	95
Dominant Tree Sp	PSME
emergent	2
main canopy	92
subcanopy	1
Shrubs Total	90
Dominant Shrub Sp	HODI/RHMA/BENE
> 1.5' tall	60
< 1.5' tall	30
Graminoids Total	0
Dominant Graminoid Sp	
Graminoids perennial	0
Graminoids annual	0
Forbs Total	1
Dominant Forb Sp	
Forbs perennial	1
Forbs annual	0
Ferns - evergreen	5
Ferns - deciduous	1
Exotics Total	0
Exotics perennial	0
Exotics annual	0
Rock Outcrop	1
Gravel	0
Bare Ground	0
Moss-Lichen	49
Litter	50
Logging	3
Stand Age	2
Agriculture	0
Livestock	0
Development	0
Wildlife	3
Recreation Severity	0
Recreation Type	0
Hydrology	1

Exotic Species

primary spp

secondary spp

Plant Associations	Percent	Pattern
1. PSME-TSHE/MANE/POMU	60	Matrix
2. PSME-THPL/RHMA	40	Large
3.	0	

Notes:

Polygon Number	153
Survey Intensity	1
Observer	HS
Date	6/10/05
Specific Location	Bald - SW corner
Total Vegetation	85
Trees Total	60
Dominant Tree Sp	PSME/THPL/TSHE
emergent	4
main canopy	50
subcanopy	6
Shrubs Total	60
Dominant Shrub Sp	GASH/HODI/VAPA
> 1.5' tall	58
< 1.5' tall	2
Graminoids Total	2
Dominant Graminoid Sp	Melica + Luzula, Aira
Graminoids perennial	2
Graminoids annual	0
Forbs Total	2
Dominant Forb Sp	Fragaria/Montia
Forbs perennial	1
Forbs annual	1
Ferns - evergreen	2
Ferns - deciduous	1
Exotics Total	1
Exotics perennial	1
Exotics annual	0
Rock Outcrop	2
Gravel	0
Bare Ground	0
Moss-Lichen	68
Litter	30
Logging	3
Stand Age	2
Agriculture	0
Livestock	0
Development	0
Wildlife	3
Recreation Severity	0
Recreation Type	0
Hydrology	1

Exotic Species

primary spp
Digitalis purpurea

secondary spp

Plant Associations

	Percent	Pattern
1. PSME-TSHE/GASH-HODI	70	matrix
2. Rocky Bald	30	Small
3.	0	

Notes:

Polygon Number	154
Survey Intensity	2
Observer	Hans
Date	6/21/05
Specific Location	Along S side of Dosewallips - W of bridge
Total Vegetation	100
Trees Total	87
Dominant Tree Sp	ALRU / ACMA
emergent	4
main canopy	80
subcanopy	3
Shrubs Total	60
Dominant Shrub Sp	OECE / SYAL
> 1.5' tall	58
< 1.5' tall	2
Graminoids Total	3
Dominant Graminoid Sp	
Graminoids perennial	3
Graminoids annual	0
Forbs Total	5
Dominant Forb Sp	CIAP / TEGR
Forbs perennial	5
Forbs annual	0
Ferns - evergreen	20
Ferns - deciduous	2
Exotics Total	2
Exotics perennial	3
Exotics annual	0
Rock Outcrop	0
Gravel	0
Bare Ground	0
Moss-Lichen	2
Litter	98
Logging	2
Stand Age	2
Agriculture	0
Livestock	0
Development	3
Wildlife	3
Recreation Severity	1
Recreation Type	3
Hydrology	1

Exotic Species

- primary spp**
- Rubus discolor
- secondary spp**
- Dactylis glomerata

Plant Associations	Percent	Pattern
1. ALRU/POMU	100	Matrix
2.	0	
3.	0	

Notes:

Polygon Number	155
Survey Intensity	1
Observer	HS
Date	8/4/05
Specific Location	Deforested area just S of water towers - addon parcels
Total Vegetation	80
Trees Total	15
Dominant Tree Sp	PSME/ALRU/ARME
emergent	5
main canopy	5
subcanopy	5
Shrubs Total	20
Dominant Shrub Sp	RUDI / GASH
> 1.5' tall	15
< 1.5' tall	5
Graminoids Total	3
Dominant Graminoid Sp	
Graminoids perennial	3
Graminoids annual	0
Forbs Total	7
Dominant Forb Sp	DIPU / GERO
Forbs perennial	6
Forbs annual	1
Ferns - evergreen	2
Ferns - deciduous	3
Exotics Total	12
Exotics perennial	11
Exotics annual	1
Rock Outcrop	0
Gravel	3
Bare Ground	17
Moss-Lichen	1
Litter	79
Logging	3
Stand Age	1
Agriculture	0
Livestock	0
Development	4
Wildlife	3
Recreation Severity	2
Recreation Type	3
Hydrology	1

Exotic Species

primary spp

Rubus discolor

secondary spp

Geranium robertianum

Plant Associations

	Percent	Pattern
1. PSME-TSHE/GASH/POMU	100	Matrix
2.		
3.		

Notes: Area is was heavily logged, is on steep slope, and contains an abandoned road and road cut.

Polygon Number	156
Survey Intensity	1
Observer	HS
Date	8/4/05
Specific Location	S facing bank above Dosewallips R, below water towers - addon
Total Vegetation	100
Trees Total	100
Dominant Tree Sp	ACMA, PSME,
emergent	10
main canopy	75
subcanopy	15
Shrubs Total	15
Dominant Shrub Sp	COCO / BENE
> 1.5' tall	12
< 1.5' tall	3
Graminoids Total	2
Dominant Graminoid Sp	
Graminoids perennial	2
Graminoids annual	
Forbs Total	60
Dominant Forb Sp	GERO
Forbs perennial	
Forbs annual	60
Ferns - evergreen	6
Ferns - deciduous	1
Exotics Total	70
Exotics perennial	10
Exotics annual	60
Rock Outcrop	0
Gravel	0
Bare Ground	0
Moss-Lichen	0
Litter	100
Logging	3
Stand Age	2
Agriculture	0
Livestock	0
Development	3
Wildlife	3
Recreation Severity	2
Recreation Type	3
Hydrology	1

Exotic Species

- primary spp**
Geranium robertianum
- secondary spp**
Rubus discolor

Plant Associations

	Percent	Pattern
1. TSHE-PSME/POMU-DREX	50	Large
2. ALRU/POMU	40	Large
3. ACMA-ALRU/POMU-TEGR	10	small

Notes:

Polygon Number	157
Survey Intensity	1
Observer	HS
Date	8/4/05
Specific Location	Wetland along N side Riverbank below water towers
Total Vegetation	100
Trees Total	80
Dominant Tree Sp	POTR, ALRU
emergent	30
main canopy	40
subcanopy	10
Shrubs Total	70
Dominant Shrub Sp	RUSP / ACCI / RUDI
> 1.5' tall	65
< 1.5' tall	5
Graminoids Total	20
Dominant Graminoid Sp	DAGL / GLEL
Graminoids perennial	19
Graminoids annual	1
Forbs Total	10
Dominant Forb Sp	EQAL, COAR
Forbs perennial	10
Forbs annual	9
Ferns - evergreen	1
Ferns - deciduous	1
Exotics Total	60
Exotics perennial	50
Exotics annual	10
Rock Outcrop	0
Gravel	0
Bare Ground	0
Moss-Lichen	0
Litter	100
Logging	2
Stand Age	2
Agriculture	0
Livestock	0
Development	0
Wildlife	3
Recreation Severity	0
Recreation Type	0
Hydrology	1

Exotic Species

- primary spp**
Dactylis glomerata
- secondary spp**
Rubus discolor

Plant Associations	Percent	Pattern
1. ALRU/RUSP	85	Matrix
2. ALRU/LYAM	15	small
3.		

Notes:

Polygon Number	158
Survey Intensity	1
Observer	HS
Date	8/4/05
Specific Location	Forested flats N of Dosewallips R on additional parcels
Total Vegetation	100
Trees Total	98
Dominant Tree Sp	ALRU, ABGR
emergent	10
main canopy	83
subcanopy	5
Shrubs Total	60
Dominant Shrub Sp	SYAL / RUUR
> 1.5' tall	55
< 1.5' tall	5
Graminoids Total	3
Dominant Graminoid Sp	DAGL
Graminoids perennial	3
Graminoids annual	0
Forbs Total	60
Dominant Forb Sp	URDI, GERO, VISE
Forbs perennial	58
Forbs annual	2
Ferns - evergreen	10
Ferns - deciduous	1
Exotics Total	15
Exotics perennial	13
Exotics annual	2
Rock Outcrop	0
Gravel	2
Bare Ground	2
Moss-Lichen	1
Litter	95
Logging	3
Stand Age	2
Agriculture	0
Livestock	5
Development	4
Wildlife	2
Recreation Severity	3
Recreation Type	3
Hydrology	1

Exotic Species

- primary spp**
- Rubus discolor
- secondary spp**
- Geranium robertianum

Plant Associations	Percent	Pattern
1. ALRU/RUSP	50	scattered,
2. ALRU/POMU	50	Scattered,
3.		

Notes:

Polygon Number	159
Survey Intensity	1
Observer	HS
Date	8/4/05
Specific Location	Forested wetland below water tanks - addon
Total Vegetation	100
Trees Total	100
Dominant Tree Sp	ALRU, ACMA
emergent	2
main canopy	96
subcanopy	2
Shrubs Total	12
Dominant Shrub Sp	ACCI / RUSP
> 1.5' tall	4
< 1.5' tall	0
Graminoids Total	2
Dominant Graminoid Sp	
Graminoids perennial	2
Graminoids annual	0
Forbs Total	5
Dominant Forb Sp	TOME / VEAM
Forbs perennial	5
Forbs annual	0
Ferns - evergreen	20
Ferns - deciduous	4
Exotics Total	2
Exotics perennial	0
Exotics annual	2
Rock Outcrop	0
Gravel	0
Bare Ground	2
Moss-Lichen	5
Litter	93
Logging	3
Stand Age	2
Agriculture	0
Livestock	0
Development	0
Wildlife	2
Recreation Severity	0
Recreation Type	0
Hydrology	1

Exotic Species

primary spp
Geranium robertianum

secondary spp

Plant Associations

	Percent	Pattern
1. ALRU/LYAM	90	Matrix
2. ALRU/POMU	10	small
3.		

Notes:

Polygon Number 160
Survey Intensity
Observer HS
Date 8/4/05
Specific Location River - addon

Total Vegetation
Trees Total
Dominant Tree Sp
 emergent
 main canopy
 subcanopy
Shrubs Total
Dominant Shrub Sp
 > 1.5' tall
 < 1.5' tall
Graminoids Total
Dominant Graminoid Sp
 Graminoids perennial
 Graminoids annual
Forbs Total
Dominant Forb Sp
 Forbs perennial
 Forbs annual
Ferns - evergreen
Ferns - deciduous
Exotics Total
 Exotics perennial
 Exotics annual
Rock Outcrop
Gravel
Bare Ground
Moss-Lichen
Litter
Logging
Stand Age
Agriculture
Livestock
Development
Wildlife
Recreation Severity
Recreation Type
Hydrology

Exotic Species

primary spp

secondary spp

Plant Associations

Percent

Pattern

1. water
- 2.
- 3.

Notes:

Polygon Number	161
Survey Intensity	1
Observer	HS
Date	8/4/05
Specific Location	Old cleared field, around abandoned homesites N of Dosewallips R
Total Vegetation	100
Trees Total	60
Dominant Tree Sp	THPL, TSHE, ALRU
emergent	10
main canopy	35
subcanopy	15
Shrubs Total	50
Dominant Shrub Sp	RUDI / SYAL / RUSP
> 1.5' tall	50
< 1.5' tall	0
Graminoids Total	80
Dominant Graminoid Sp	POPA / DAGL
Graminoids perennial	80
Graminoids annual	0
Forbs Total	20
Dominant Forb Sp	WISE, GERO
Forbs perennial	10
Forbs annual	10
Ferns - evergreen	6
Ferns - deciduous	5
Exotics Total	80
Exotics perennial	75
Exotics annual	5
Rock Outcrop	0
Gravel	0
Bare Ground	0
Moss-Lichen	0
Litter	100
Logging	3
Stand Age	2
Agriculture	0
Livestock	5
Development	4
Wildlife	3
Recreation Severity	2
Recreation Type	3
Hydrology	1

Exotic Species

primary spp

Rubus discolor

secondary spp

Geranium robertianum

Plant Associations

	Percent	Pattern
1. Disturbed / Developed	90	Matrix
2. TSHE-PSME/POMU-DREX	5	small
3. ALRU/POMU	5	small

Notes:

Polygon Number	162
Survey Intensity	2
Observer	HS
Date	8/4/05
Specific Location	Floodplain sand/gravel bar south of big bend in Dosewallips River- add-on parcels
Total Vegetation	50
Trees Total	15
Dominant Tree Sp	ALRU
emergent	0
main canopy	15
subcanopy	0
Shrubs Total	35
Dominant Shrub Sp	Salix sp., RUSP, RUDI
> 1.5' tall	50
< 1.5' tall	0
Graminoids Total	8
Dominant Graminoid Sp	GLEL, DAGL
Graminoids perennial	8
Graminoids annual	0
Forbs Total	10
Dominant Forb Sp	SEJA, CHLE, LASY
Forbs perennial	10
Forbs annual	0
Ferns - evergreen	0
Ferns - deciduous	1
Exotics Total	40
Exotics perennial	40
Exotics annual	0
Rock Outcrop	0
Gravel	85
Bare Ground	0
Moss-Lichen	0
Litter	15
Logging	0
Stand Age	0
Agriculture	0
Livestock	0
Development	0
Wildlife	3
Recreation Severity	2
Recreation Type	3
Hydrology	1

Exotic Species

primary spp

Rubus discolor

secondary spp

Senecio jacobaea

Plant Associations	Percent	Pattern
1. floodplain sand/gravel bar	100	Matrix
2.		
3.		

Notes:

Polygon Number	163
Survey Intensity	2
Observer	HS
Date	8/4/05
Specific Location	Deciduous forest on S side of big bend in Dosewallips River, W side of add-on parcels
Total Vegetation	100
Trees Total	98
Dominant Tree Sp	ALRU, ABGR
emergent	10
main canopy	83
subcanopy	5
Shrubs Total	60
Dominant Shrub Sp	SYAL / RUUR
> 1.5' tall	55
< 1.5' tall	5
Graminoids Total	3
Dominant Graminoid Sp	DAGL
Graminoids perennial	3
Graminoids annual	0
Forbs Total	60
Dominant Forb Sp	URDI, GERO, VISE
Forbs perennial	58
Forbs annual	2
Ferns - evergreen	10
Ferns - deciduous	1
Exotics Total	15
Exotics perennial	13
Exotics annual	2
Rock Outcrop	0
Gravel	2
Bare Ground	2
Moss-Lichen	1
Litter	95
Logging	3
Stand Age	2
Agriculture	0
Livestock	5
Development	4
Wildlife	2
Recreation Severity	3
Recreation Type	3
Hydrology	1

Exotic Species

primary spp

Rubus discolor

secondary spp

Geranium robertianum

Plant Associations

	Percent	Pattern
1. ALRU/RUSP	50	scattered,
2. ALRU/POMU	50	
3.		

Notes:

Polygon Number	164
Survey Intensity	2
Observer	HS
Date	8/4/05
Specific Location	Small coniferous forest patch S of big bend in Dosewallips River - add-on parcels
Total Vegetation	100
Trees Total	100
Dominant Tree Sp	TSHE , THPL, ALRU,
emergent	4
main canopy	87
subcanopy	8
Shrubs Total	3
Dominant Shrub Sp	HODI / VAPA
> 1.5' tall	3
< 1.5' tall	0
Graminoids Total	1
Dominant Graminoid Sp	
Graminoids perennial	1
Graminoids annual	0
Forbs Total	4
Dominant Forb Sp	TOME
Forbs perennial	4
Forbs annual	0
Ferns - evergreen	40
Ferns - deciduous	2
Exotics Total	2
Exotics perennial	2
Exotics annual	0
Rock Outcrop	0
Gravel	0
Bare Ground	0
Moss-Lichen	2
Litter	98
Logging	3
Stand Age	3
Agriculture	0
Livestock	0
Development	2
Wildlife	3
Recreation Severity	0
Recreation Type	0
Hydrology	1

Exotic Species

- primary spp**
- Rubus discolor
- secondary spp**

Plant Associations	Percent	Pattern
1. TSHE-PSME/POMU-DREX	90	Matrix
2. ALRU/POMU	10	small
3.		

Notes:

Polygon Number	165
Survey Intensity	1
Observer	HS
Date	8/4/05
Specific Location	Floodplain gravel and sandbars - addon parcels
Total Vegetation	50
Trees Total	15
Dominant Tree Sp	ALRU
emergent	0
main canopy	15
subcanopy	0
Shrubs Total	35
Dominant Shrub Sp	Salix sp., RUSP, RUDI
> 1.5' tall	50
< 1.5' tall	0
Graminoids Total	8
Dominant Graminoid Sp	GLEL, DAGL
Graminoids perennial	8
Graminoids annual	0
Forbs Total	10
Dominant Forb Sp	SEJA, CHLE, LASY
Forbs perennial	10
Forbs annual	0
Ferns - evergreen	0
Ferns - deciduous	1
Exotics Total	40
Exotics perennial	40
Exotics annual	0
Rock Outcrop	0
Gravel	85
Bare Ground	0
Moss-Lichen	0
Litter	15
Logging	0
Stand Age	0
Agriculture	0
Livestock	0
Development	0
Wildlife	3
Recreation Severity	2
Recreation Type	3
Hydrology	1

Exotic Species

primary spp

Rubus discolor

secondary spp

Senecio jacobaea

Plant Associations	Percent	Pattern
1. floodplain sand/gravel bar	100	Matrix
2.		
3.		

Notes:

Polygon Number	165
Survey Intensity	1
Observer	HS
Date	8/4/05
Specific Location	Floodplain gravel and sandbars - addon parcels
Total Vegetation	50
Trees Total	15
Dominant Tree Sp	ALRU
emergent	0
main canopy	15
subcanopy	0
Shrubs Total	35
Dominant Shrub Sp	Salix sp., RUSP, RUDI
> 1.5' tall	50
< 1.5' tall	0
Graminoids Total	8
Dominant Graminoid Sp	GLEL, DAGL
Graminoids perennial	8
Graminoids annual	0
Forbs Total	10
Dominant Forb Sp	SEJA, CHLE, LASY
Forbs perennial	10
Forbs annual	0
Ferns - evergreen	0
Ferns - deciduous	1
Exotics Total	40
Exotics perennial	40
Exotics annual	0
Rock Outcrop	0
Gravel	85
Bare Ground	0
Moss-Lichen	0
Litter	15
Logging	0
Stand Age	0
Agriculture	0
Livestock	0
Development	0
Wildlife	3
Recreation Severity	2
Recreation Type	3
Hydrology	1

Exotic Species

primary spp

Rubus discolor

secondary spp

Senecio jacobaea

Plant Associations

	Percent	Pattern
1. floodplain sand/gravel bar	100	Matrix
2.		
3.		

Notes:

Polygon Number 165
Survey Intensity

Observer

Date

Specific Location Dosewallips River - addon

Total Vegetation

Trees Total

Dominant Tree Sp

emergent

main canopy

subcanopy

Shrubs Total

Dominant Shrub Sp

> 1.5' tall

< 1.5' tall

Graminoids Total

Dominant Graminoid Sp

Graminoids perennial

Graminoids annual

Forbs Total

Dominant Forb Sp

Forbs perennial

Forbs annual

Ferns - evergreen

Ferns - deciduous

Exotics Total

Exotics perennial

Exotics annual

Rock Outcrop

Gravel

Bare Ground

Moss-Lichen

Litter

Logging

Stand Age

Agriculture

Livestock

Development

Wildlife

Recreation Severity

Recreation Type

Hydrology

Exotic Species

primary spp

secondary spp

Plant Associations

Percent

Pattern

1. water

2.

3.

Notes:

Polygon Number	168
Survey Intensity	1
Observer	HS
Date	8/4/05
Specific Location	Alder forest directly South of Dosewallips River in addon parcels
Total Vegetation	100
Trees Total	90
Dominant Tree Sp	ALRU
emergent	3
main canopy	85
subcanopy	2
Shrubs Total	70
Dominant Shrub Sp	RUDI / RUSP / RUUR
> 1.5' tall	60
< 1.5' tall	10
Graminoids Total	60
Dominant Graminoid Sp	DAGL, POPA
Graminoids perennial	60
Graminoids annual	0
Forbs Total	10
Dominant Forb Sp	TOME
Forbs perennial	10
Forbs annual	0
Ferns - evergreen	7
Ferns - deciduous	2
Exotics Total	60
Exotics perennial	60
Exotics annual	0
Rock Outcrop	0
Gravel	8
Bare Ground	2
Moss-Lichen	0
Litter	90
Logging	3
Stand Age	2
Agriculture	0
Livestock	0
Development	4
Wildlife	3
Recreation Severity	2
Recreation Type	3
Hydrology	1

Exotic Species

- primary spp**
- Rubus discolor
- secondary spp**
- Digitalis purpurea

Plant Associations	Percent	Pattern
1. ALRU/RUSP	98	Matrix
2. ALRU/POMU	2	small
3.		

Notes:

Polygon Number	169
Survey Intensity	2
Observer	HS
Date	8/4/05
Specific Location	Small coniferous forest patch in S part of add-on parcels
Total Vegetation	100
Trees Total	100
Dominant Tree Sp	TSHE , THPL, ALRU,
emergent	4
main canopy	87
subcanopy	8
Shrubs Total	3
Dominant Shrub Sp	HODI / VAPA
> 1.5' tall	3
< 1.5' tall	0
Graminoids Total	1
Dominant Graminoid Sp	
Graminoids perennial	1
Graminoids annual	0
Forbs Total	4
Dominant Forb Sp	TOME
Forbs perennial	4
Forbs annual	0
Ferns - evergreen	40
Ferns - deciduous	2
Exotics Total	2
Exotics perennial	2
Exotics annual	0
Rock Outcrop	0
Gravel	0
Bare Ground	0
Moss-Lichen	2
Litter	98
Logging	3
Stand Age	3
Agriculture	0
Livestock	0
Development	2
Wildlife	3
Recreation Severity	0
Recreation Type	0
Hydrology	1

Exotic Species

- primary spp**
- Rubus discolor
- secondary spp**

Plant Associations	Percent	Pattern
1. TSHE-PSME/POMU-DREX	90	Matrix
2. ALRU/POMU	10	small
3.		

Notes:

Polygon Number	170
Survey Intensity	1
Observer	HS
Date	8/4/05
Specific Location	Deciduous forest around abandoned home site on S side of Dosewallips River - addon
Total Vegetation	100
Trees Total	100
Dominant Tree Sp	ALRU
emergent	2
main canopy	93
subcanopy	5
Shrubs Total	60
Dominant Shrub Sp	RUUR / RUSP
> 1.5' tall	30
< 1.5' tall	30
Graminoids Total	50
Dominant Graminoid Sp	BRPA, DAGL
Graminoids perennial	50
Graminoids annual	0
Forbs Total	10
Dominant Forb Sp	TOME, URDI
Forbs perennial	10
Forbs annual	0
Ferns - evergreen	40
Ferns - deciduous	10
Exotics Total	30
Exotics perennial	0
Exotics annual	0
Rock Outcrop	0
Gravel	0
Bare Ground	0
Moss-Lichen	0
Litter	100
Logging	3
Stand Age	2
Agriculture	0
Livestock	0
Development	4
Wildlife	3
Recreation Severity	2
Recreation Type	3
Hydrology	1

Exotic Species

primary spp

Rubus discolor

secondary spp

Dactylis glomerata

Plant Associations

	Percent	Pattern
1. ALRU/POMU	90	Matrix
2. TSHE-PSME/POMU-DREX	10	small
3.		

Notes:

Polygon Number	171
Survey Intensity	2
Observer	HS
Date	8/4/05
Specific Location	Small coniferous forest patch in S part of add-on parcels
Total Vegetation	100
Trees Total	100
Dominant Tree Sp	TSHE , THPL, ALRU,
emergent	4
main canopy	87
subcanopy	8
Shrubs Total	3
Dominant Shrub Sp	HODI / VAPA
> 1.5' tall	3
< 1.5' tall	0
Graminoids Total	1
Dominant Graminoid Sp	
Graminoids perennial	1
Graminoids annual	0
Forbs Total	4
Dominant Forb Sp	TOME
Forbs perennial	4
Forbs annual	0
Ferns - evergreen	40
Ferns - deciduous	2
Exotics Total	2
Exotics perennial	2
Exotics annual	0
Rock Outcrop	0
Gravel	0
Bare Ground	0
Moss-Lichen	2
Litter	98
Logging	3
Stand Age	3
Agriculture	0
Livestock	0
Development	2
Wildlife	3
Recreation Severity	0
Recreation Type	0
Hydrology	1

Exotic Species

- primary spp**
- Rubus discolor
- secondary spp**

Plant Associations	Percent	Pattern
1. TSHE-PSME/POMU-DREX	90	Matrix
2. ALRU/POMU	10	small
3.		

Notes:

Polygon Number	172
Survey Intensity	2
Observer	HS
Date	8/4/05
Specific Location	Small coniferous forest patch in S part of add-on parcels
Total Vegetation	100
Trees Total	100
Dominant Tree Sp	TSHE , THPL, ALRU,
emergent	4
main canopy	87
subcanopy	8
Shrubs Total	3
Dominant Shrub Sp	HODI / VAPA
> 1.5' tall	3
< 1.5' tall	0
Graminoids Total	1
Dominant Graminoid Sp	
Graminoids perennial	1
Graminoids annual	0
Forbs Total	4
Dominant Forb Sp	TOME
Forbs perennial	4
Forbs annual	0
Ferns - evergreen	40
Ferns - deciduous	2
Exotics Total	2
Exotics perennial	2
Exotics annual	0
Rock Outcrop	0
Gravel	0
Bare Ground	0
Moss-Lichen	2
Litter	98
Logging	3
Stand Age	3
Agriculture	0
Livestock	0
Development	2
Wildlife	3
Recreation Severity	0
Recreation Type	0
Hydrology	1

Exotic Species

- primary spp**
- Rubus discolor
- secondary spp**

Plant Associations	Percent	Pattern
1. TSHE-PSME/POMU-DREX	90	Matrix
2. ALRU/POMU	10	small
3.		

Notes:

Polygon Number	173
Survey Intensity	1
Observer	HS
Date	8/4/05
Specific Location	South west corner of addon pannels - W of power line area
Total Vegetation	100
Trees Total	93
Dominant Tree Sp	ALRU, PSME, ABGR,
emergent	3
main canopy	70
subcanopy	20
Shrubs Total	80
Dominant Shrub Sp	HODI / VAPA / BENE /
> 1.5' tall	40
< 1.5' tall	40
Graminoids Total	2
Dominant Graminoid Sp	
Graminoids perennial	2
Graminoids annual	0
Forbs Total	2
Dominant Forb Sp	
Forbs perennial	2
Forbs annual	0
Ferns - evergreen	25
Ferns - deciduous	3
Exotics Total	2
Exotics perennial	2
Exotics annual	0
Rock Outcrop	0
Gravel	1
Bare Ground	1
Moss-Lichen	2
Litter	96
Logging	3
Stand Age	2
Agriculture	0
Livestock	0
Development	0
Wildlife	3
Recreation Severity	0
Recreation Type	0
Hydrology	1

Exotic Species

- primary spp**
Digitalis purpurea
- secondary spp**
Rubus discolor

Plant Associations

	Percent	Pattern
1. PSME-TSHE/MANE/POMU	70	Matrix
2. TSHE-PSME/POMU-DREX	20	small
3. ALRU/POMU	10	small

Notes:

Polygon Number 174
Survey Intensity
Observer HS
Date 8/4/05
Specific Location Powerline area in S part of add-on parcels

Total Vegetation
Trees Total
Dominant Tree Sp
 emergent
 main canopy
 subcanopy
Shrubs Total
Dominant Shrub Sp
 > 1.5' tall
 < 1.5' tall
Graminoids Total
Dominant Graminoid Sp
 Graminoids perennial
 Graminoids annual
Forbs Total
Dominant Forb Sp
 Forbs perennial
 Forbs annual
 Ferns - evergreen
 Ferns - deciduous
Exotics Total
 Exotics perennial
 Exotics annual
Rock Outcrop
Gravel
Bare Ground
Moss-Lichen
Litter
Logging
Stand Age
Agriculture
Livestock
Development
Wildlife
Recreation Severity
Recreation Type
Hydrology

Exotic Species

primary spp
 secondary spp

Plant Associations

Percent **Pattern**

1. Disturbed / Developed
- 2.
- 3.

Notes:

Polygon Number	175
Survey Intensity	2
Observer	HS
Date	8/4/05
Specific Location	southeast corner of add-on parcels
Total Vegetation	100
Trees Total	100
Dominant Tree Sp	PSME, ABGR, TSHE,
emergent	10
main canopy	80
subcanopy	10
Shrubs Total	25
Dominant Shrub Sp	BENE, COCO, HODI,
> 1.5' tall	20
< 1.5' tall	5
Graminoids Total	2
Dominant Graminoid Sp	
Graminoids perennial	2
Graminoids annual	
Forbs Total	2
Dominant Forb Sp	
Forbs perennial	2
Forbs annual	
Ferns - evergreen	10
Ferns - deciduous	4
Exotics Total	3
Exotics perennial	3
Exotics annual	0
Rock Outcrop	0
Gravel	0
Bare Ground	0
Moss-Lichen	0
Litter	100
Logging	3
Stand Age	2
Agriculture	0
Livestock	0
Development	0
Wildlife	3
Recreation Severity	0
Recreation Type	0
Hydrology	1

Exotic Species

primary spp
 Rubus discolor
secondary spp

Plant Associations

	Percent	Pattern
1. TSHE-PSME/POMU-DREX	100	1
2.		
3.		

Notes:

Polygon Number	176
Survey Intensity	2
Observer	HS
Date	8/4/05
Specific Location	Small coniferous forest patch in S part of add-on parcels
Total Vegetation	100
Trees Total	100
Dominant Tree Sp	TSHE , THPL, ALRU,
emergent	4
main canopy	87
subcanopy	8
Shrubs Total	3
Dominant Shrub Sp	HODI / VAPA
> 1.5' tall	3
< 1.5' tall	0
Graminoids Total	1
Dominant Graminoid Sp	
Graminoids perennial	1
Graminoids annual	
Forbs Total	4
Dominant Forb Sp	TOME
Forbs perennial	4
Forbs annual	
Ferns - evergreen	40
Ferns - deciduous	2
Exotics Total	2
Exotics perennial	2
Exotics annual	0
Rock Outcrop	0
Gravel	0
Bare Ground	0
Moss-Lichen	2
Litter	98
Logging	3
Stand Age	3
Agriculture	0
Livestock	0
Development	2
Wildlife	3
Recreation Severity	0
Recreation Type	0
Hydrology	1

Exotic Species

primary spp

Rubus discolor

secondary spp

Plant Associations

	Percent	Pattern
1. TSHE-PSME/POMU-DREX	90	Matrix
2. ALRU/POMU	10	small
3.		

Notes: