Rare Plant and Vegetation Surveys of Damon Point, Griffith-Priday, Ocean City, and Pacific Beach State Parks

Pacific Biodiversity Institute

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Table of Contents

Introduction

Damon Point, Griffith-Priday, Ocean City, and Pacific Beach State Parks were surveyed for rare plant occurrences and vegetation by Pacific Biodiversity Institute (PBI) under contract with the Washington State Parks and Recreation Commission. These parks are located in Grays Harbor County. Most of these parks except Damon Point are on the outer Washington coast north of Grays Harbor (Figure 1). This report summarizes the activities and findings of the contracted work.

Figure 1: Locational overview of the four parks surveyed during this project.

Survey Conditions and Survey Routes

The project area was surveyed by two botanists from May 9 - 15, 2006 and then revisited by two more botanists from August 9 - 15, 2006. Details on personnel and survey dates are provided in Appendix A. Our routes from these surveys are illustrated in Figures 2 -6. Portions of all the units were accessible by maintained roads and trails, however penetrating the interior of some of the units was very difficult in places due to extremely dense shrub thickets, overgrown wetlands and dense second-growth forest conditions. A few polygons were impossible to survey due to their inaccessibility. The vegetation conditions in these polygons were estimated from aerial photography, topographic information and knowledge of similar vegetation types and adjacent vegetation.

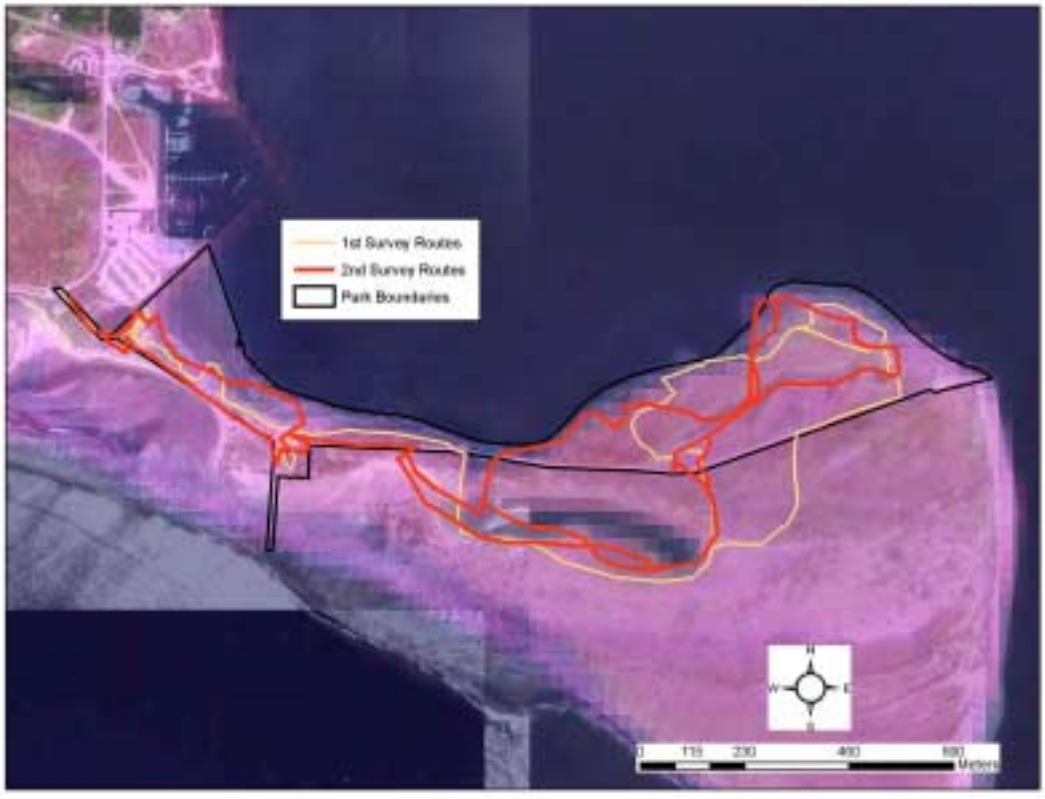


Figure 2. Survey routes for the vegetation community mapping and rare and endangered plant surveys conducted by PBI in 2006 for Damon Point State Park.

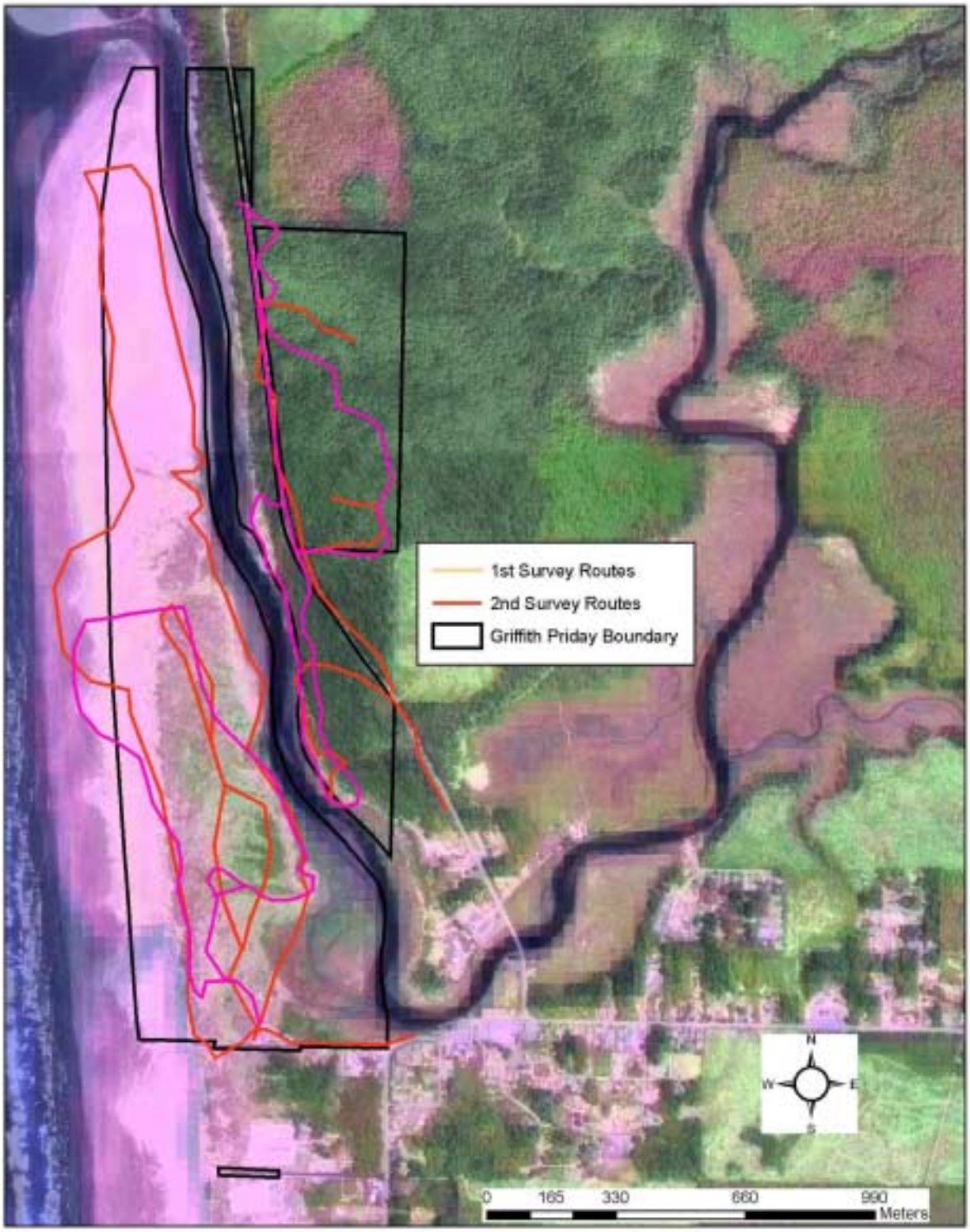


Figure 3. Survey routes for the vegetation community mapping and rare and endangered plant surveys conducted by PBI in 2006 for Griffith-Priday State Park.

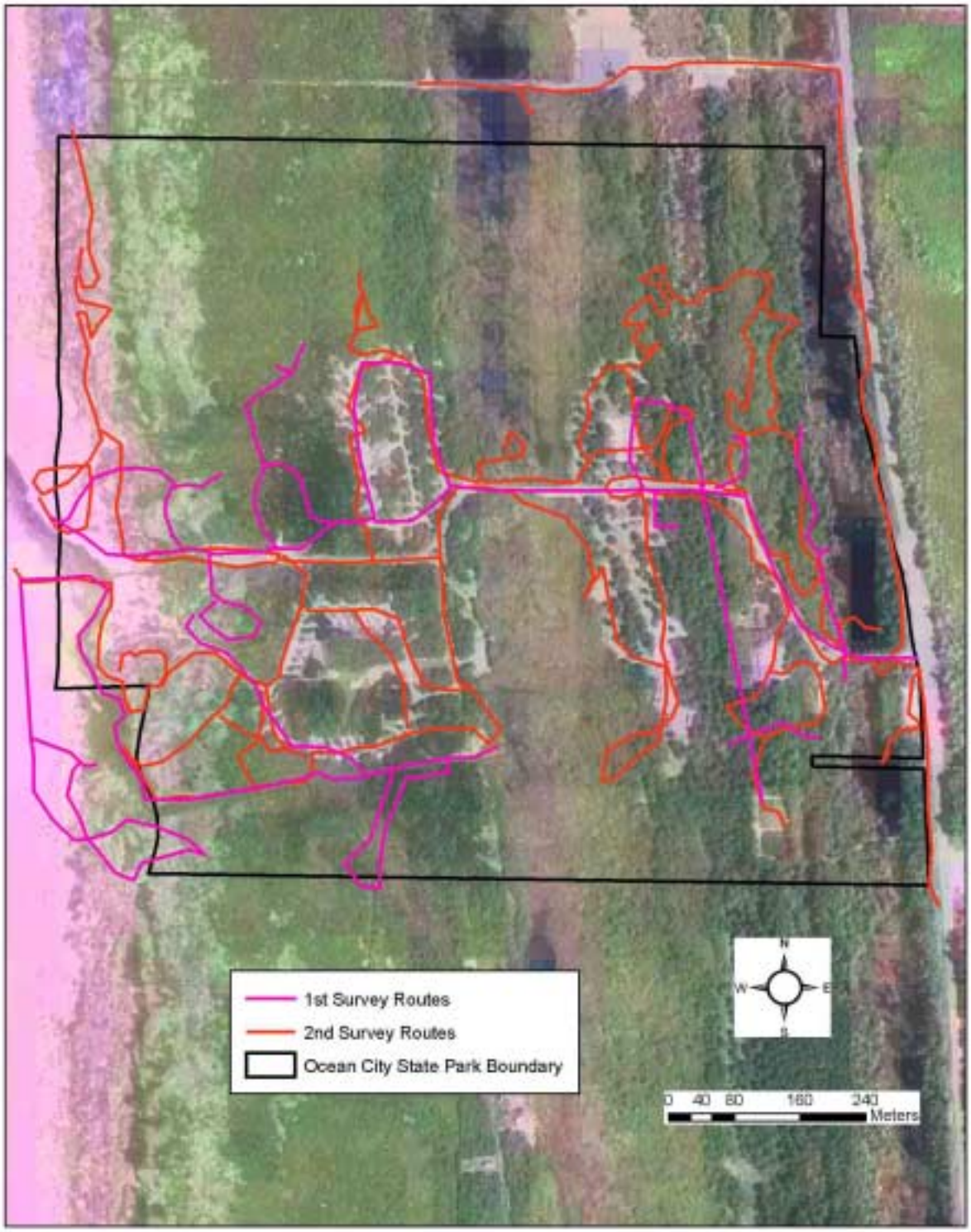


Figure 4. Survey routes for the vegetation community mapping and rare and endangered plant surveys conducted by PBI in 2006 for Ocean City State Park.

Figure 5. Survey routes for the vegetation community mapping and rare and endangered plant surveys conducted by PBI in 2006 for Pacific Beach State Park.

Vegetation Communities

Methods

Vegetation communities for Damon Point, Griffith-Priday, Ocean City, and Pacific Beach State Parks were delineated and classified using a combination of field survey and remote sensing techniques. We relied on plant community descriptions from the Baseline Inventory of Rare, Threatened and Endangered Plant Species/Communities along Washington's Pacific Coast (Kunze and Cornelius, 1982), freshwater wetland vegetation (Kunze 1994), Forested Plant Associations of the Olympic National Forest (Henderson et al., 1985), Plant Associations of the Oregon Dunes National Recreation Area (Christy et al 1998), Draft Guide to Plant Associations on the Olympic Experimental Forest (Bigley and Hull, 1995), and Ecological classification of low-elevation riparian vegetation on the Olympic Experimental State Forest (Chappell, 1999) to make final vegetation community assignments. In a few cases, the existing plant community descriptions were not adequate in describing existing vegetation associations. In these cases, alternative vegetation communities or plant associations were created by PBI or found in alternative reference material.

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 ASTER and LANDSAT Thematic Mapper satellite images for discernable vegetation or landform patterns. When available, we also used high-resolution true color orthorectified aerial photography. Topographic maps, digital elevation models (DEMs), and light detection and ranging imagery (LIDAR) were also employed to assist the process of vegetation community delineation. The 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 12 vegetation community polygons, comprised of 9 vegetation community types within Damon Point State Park. Within Griffith–Priday we mapped 20 vegetation community polygons, comprised of 20 vegetation community types. Ocean City contained 23 vegetation community polygons, comprised of 20 vegetation community types. We mapped and surveyed 6 vegetation community polygons, comprised of 5 vegetation community types within Pacific Beach State Park. Vegetation community polygons are either stand-alone plant associations or mosaics of multiple plant associations. Tables 1 – 4 list the plant associations and/or cover types found in Damon Point, Griffith-Priday, Ocean City, and Pacific Beach State Parks. See Appendix B for interpretation of "Status" codes. Figures 6 – 13 on the following pages illustrate the location of the vegetation community polygons. Note that Figures 7, 9, 11, and 13 only show the primary plant associations in each polygon (PA1 in the database). A printout of the complete set of data we collected for each polygon is attached in Appendix D. The ecological condition of each polygon was evaluated according to a simple ranking system described in Appendix C.

Table 1. Vegetation Community Types Encountered in Damon Point State Park.

Abbreviation	Association Name	English Name	Reference	Status
AMAR4 Dune	*Ammophila arenaria* Dune Community	European beachgrass Community	Kunze and Cornelius 1982	
ARMA6-POPA7	*Armeria maritima - Potentilla pacifica*	thrift seapink - Pacific silverweed	PBI	
DISP-SAVI	*Distichlis spicata - Salicornia virginica* Community	saltgrass - picklweed Community	Kunze and Cornelius 1982	G4
ELMO9	*Elymus mollis* Community	American dunegrass Community	Kunze and Cornelius 1982	G2?
PICO/CYSC4/AMAR4	*Pinus contorta / Cytisus scoparius / Ammophila arenaria*	Shore Pine / scotchbroom / European beachgrass	Christy et al 1998	
SAVI	*Salicornia virginica* Community	picklweed Community	Kunze and Cornelius 1982	G3G4
water				
beach				
developed				

Table 2. Vegetation Community Types Encountered in Griffith-Priday State Park.

Abbreviation	Association Name	English Name	Reference	Status
AMAR4 Dune	*Ammophila arenaria* Dune Community	European beachgrass Community	Kunze and Cornelius 1982	
CALY3	*Carex lyngbyei* Community	Lyngbye's sedge Community	Kunze and Cornelius 1982	G4
CALY3-TRMA20	*Carex lyngbyei - Triglochin maritima* Community	Lyngbye's sedge - seaside arrow grass Community	Kunze and Cornelius 1982	G4
CAOB3 c.t.	*Carex obnupta* community type	slough sedge community type	Kunze 1994	G4
CAOB3-POPA23	*Carex obnupta - Potentilla pacifica*	slough sedge - Pacific silverweed	Christy et al 1998	G4
ELMO9-FERU2-GRIN	*Elymus mollis* - Festuca rubra - Grindelia integrifolia	American dunegrass - red fescue - Puget Sound gumweed	PBI	
FERU2-AGAL3-POPA23	*Festuca rubra - Agrostis alba - Potentilla pacifica* Community	red fescue - redtop - Pacific silverweed Community	Kunze and Cornelius 1982	G1
PICO/CYSC4/AMAR4	*Pinus contorta / Cytisus scoparius / Ammophila arenaria*	shore pine / scotchbroom / European beachgrass	Christy et al 1998	
PICO/VAOV2-GASH	*Pinus contorta / Vaccinium ovatum - Gaultheria shallon*	shore pine / evergreen huckleberry - salal	Kunze and Cornelius 1982	G3G4
PISI/GASH	*Picea sitchensis / Gaultheria shallon*	Sitka spruce / salal	Christy et al 1998	G3
PISI/POMU	*Picea sitchensis / Polystichum munitum*	Sitka spruce / swordfern	Christy et al 1998	??
PISI/VAOV2	*Picea sitchensis / Vaccinium ovatum*	Sitka spruce / evergreen huckleberry	Christy et al 1998	??
SAHO/CAOB3 c.t.	*Salix hookeriana / Carex obnupta* community type	dune willow / slough sedge community type	Kunze 1994	G3
SAHO/CAOB3-POPA23	*Salix hookeriana / Carex obnupta - Potentilla pacifica*	dune willow / slough sedge - Pacific silverweed	Christy et al 1998	??
SAVI	*Salicornia virginica* Community	picklweed Community	Kunze and Cornelius 1982	G3G4
SAVI-JACA4-DISP-TRMA20	*Salicornia virginica - Jaumea carnosa - Distichlis spicata - Triglochin maritima* Community	picklweed - marsh jaumea - saltgrass - seaside arrow grass Community	Kunze and Cornelius 1982	G3
SAVI-TRMA20	*Salicornia virginica - Triglochin maritima* Community	picklweed - seaside arrow grass Community	Kunze and Cornelius 1982	G4

TSHE/GASH/POMU	*Tsuga heterophylla / Gaultheria shallon / Polystichum munitum*	Western hemlock / salal / swordfern	Henderson et al 1989	G4
developed				
beach				

Table 3. Vegetation Community Types Encountered in Ocean City State Park.

Abbreviation	Association Name	English Name	Reference	Status
ALRU2/RUSP/CAOB3-LYAM3	*Alnus rubra / Rubus spectabilis / Carex obnupta - Lysichiton americanus*	red alder / salmonberry / slough sedge - skunkcabbage	Christy et al 1998	G3G4
AMAR4 Dune	*Ammophila arenaria* Dune Community	European beachgrass Community	Kunze and Cornelius 1982	
CAOB3 c.t.	*Carex obnupta* community type	slough sedge community type	Kunze 1994	G4
CAOB3-POPA23	*Carex obnupta - Potentilla pacifica*	slough sedge - Pacific silverweed	Christy et al 1998	G4
Carex sp.	*Carex spp.*	sedge spp.	PBI	
MYGA/TYLA	*Myrica gale / Typha latifolia*	sweetgale / broadleaf cattail	PBI	
MYGA-SPDO/Boykinia sp.-CAOB3 c.t.	*Myrica gale - Spiraea douglasii / Boykinia spp. - Carex obnupta* community type	sweetgale - rose spirea / brookfoam spp. - slough sedge community type	Kunze 1994	G1
NUPO2 c.t.	*Nuphar polysepala* community type	yellow pond-lilly community type	Kunze 1994	G5
PICO/CAOB3	*Pinus contorta / Carex obnupta*	shore pine / slough sedge	Christy et al 1998	G2
PICO/CYSC4/AMAR4	*Pinus contorta / Cytisus scoparius / Ammophila arenaria*	shore pine / scotchbroom / European beachgrass	Christy et al 1998	
PICO-PISI/VAOV2	*Pinus contorta - Picea sitchensis / Vaccinium ovatum*	shore pine - Sitka spruce / evergreen huckleberry	Christy et al 1998	G3
PISI wetland	*Picea sitchensis* wetland	Sitka spruce wetland	Kunze and Cornelius 1982	??
PISI/GASH	*Picea sitchensis / Gaultheria shallon*	Sitka spruce / salal	Christy et al 1998	G3
PISI/VAOV2-GASH	*Picea sitchensis / Vaccinium ovatum - Gaultheria shallon*	Sitka spruce / evergreen huckleberry - salal	Kunze and Cornelius 1982	G3

PYFU-SAHO/CAOB3 c.t.	*Pyrus fusca* - *Salix hookeriana* / *Carex obnupta* community type	crab apple - dune willow / slough sedge community type	Kunze 1994	G3
SAHO/CAOB3 c.t.	*Salix hookeriana* / *Carex obnupta* community type	dune willow / slough sedge community type	Kunze 1994	G3
SAHO-PYFU/CAOB3-LYAM3	*Salix hookeriana* - *Pyrus fusca* / *Carex obnupta* - *Lysichiton americanus*	dune willow - crab apple / slough sedge - American skunkcabbage	Christy et al 1998	G3
SPDO c.t.	*Spiraea douglasii* community type	rose spirea community type	Kunze 1994	G5
TYLA c.t.	*Typha latifolia* community type	broadleaf cattail community type	Kunze 1994	G5
developed				

Table. 4 Vegetation Community Types Encountered in Pacific Beach State Park.

Abbreviation	Association Name	English Name	Reference	Status
AMAR4 Dune	*Ammophila arenaria* Dune Community	European beachgrass Community	Kunze and Cornelius 1982	
SAHO/CAOB3 c.t.	*Salix hookeriana* / *Carex obnupta* community type	dune willow / slough sedge community type	Kunze 1994	G3
beach				
developed				
disturbed shrub area				

Figure 6. Layout of the vegetation community polygons in Damon Point State Park, overlaying a 1998 digital ortho-photo combined with ASTER spectral imagery.

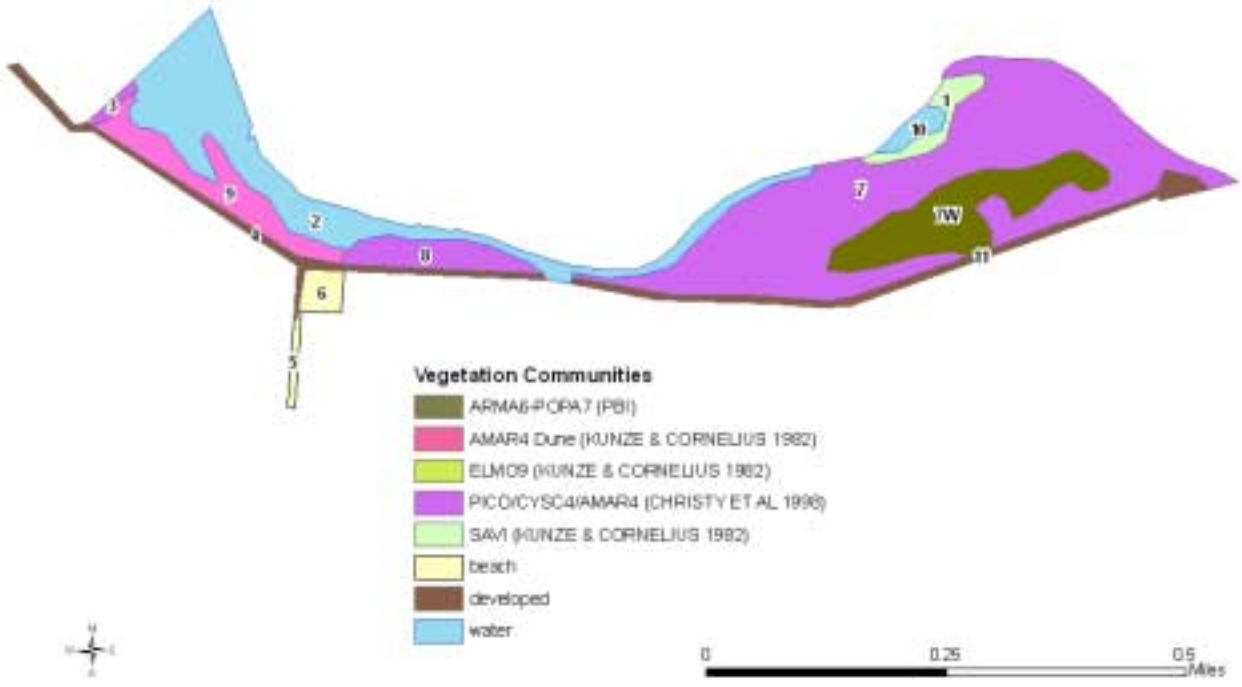


Figure 7. The primary vegetation community types within Damon Point State Park.

Figure 8. Layout of the vegetation community polygons in Griffith-Priday State Park, overlaying a 1998 digital ortho-photo combined with ASTER spectral imagery.

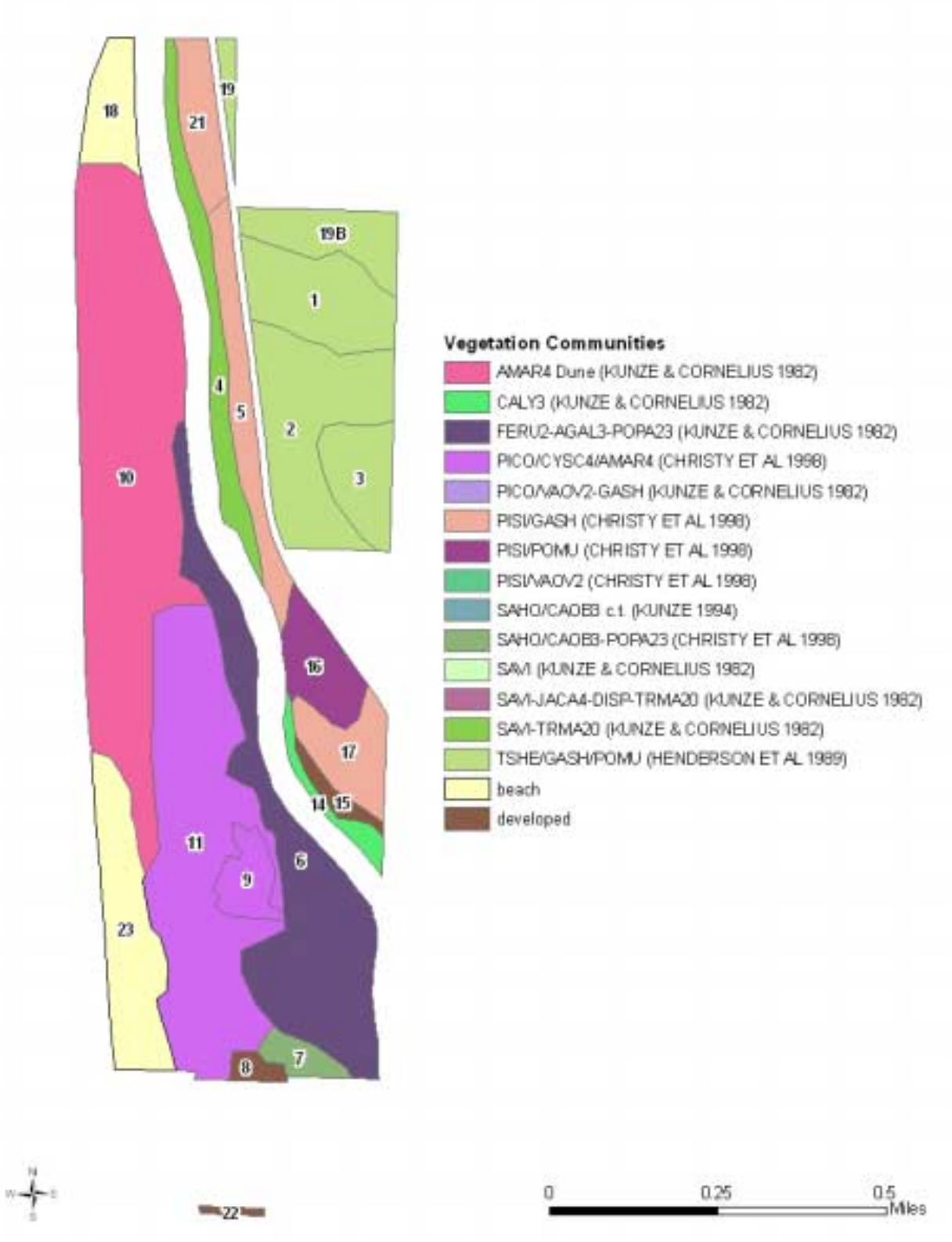


Figure 9. The primary vegetation community types within Griffith-Priday State Park.

Figure 10. Layout of the vegetation community polygons in Ocean City State Park, overlaying a 1998 digital ortho-photo combined with TM7 spectral imagery.

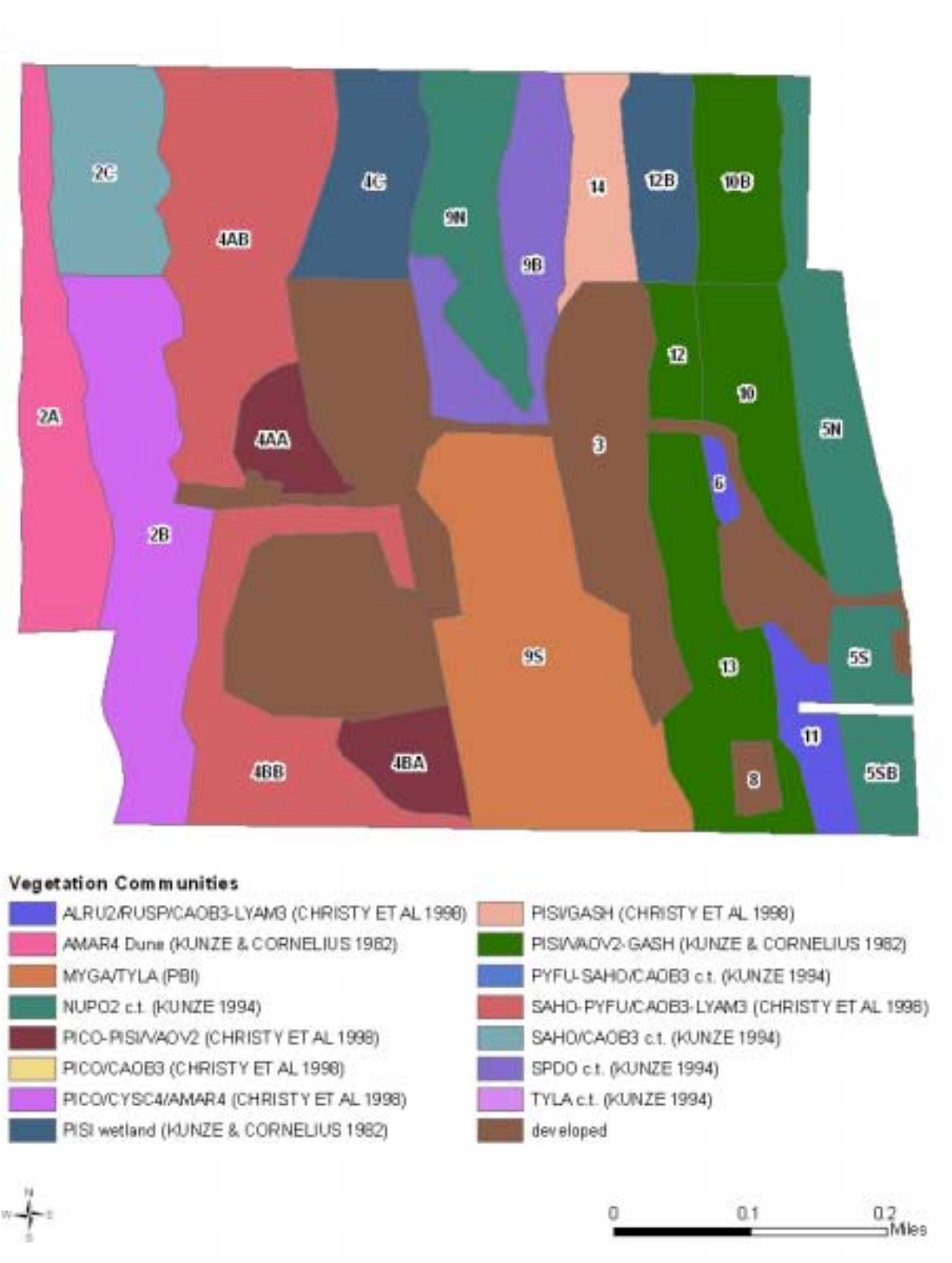


Figure 11. The primary vegetation community types within Ocean City State Park.

Figure 12. Layout of the vegetation community polygons in Pacific Beach State Park, overlaying a 1998 digital ortho-photo combined with TM7 spectral imagery.

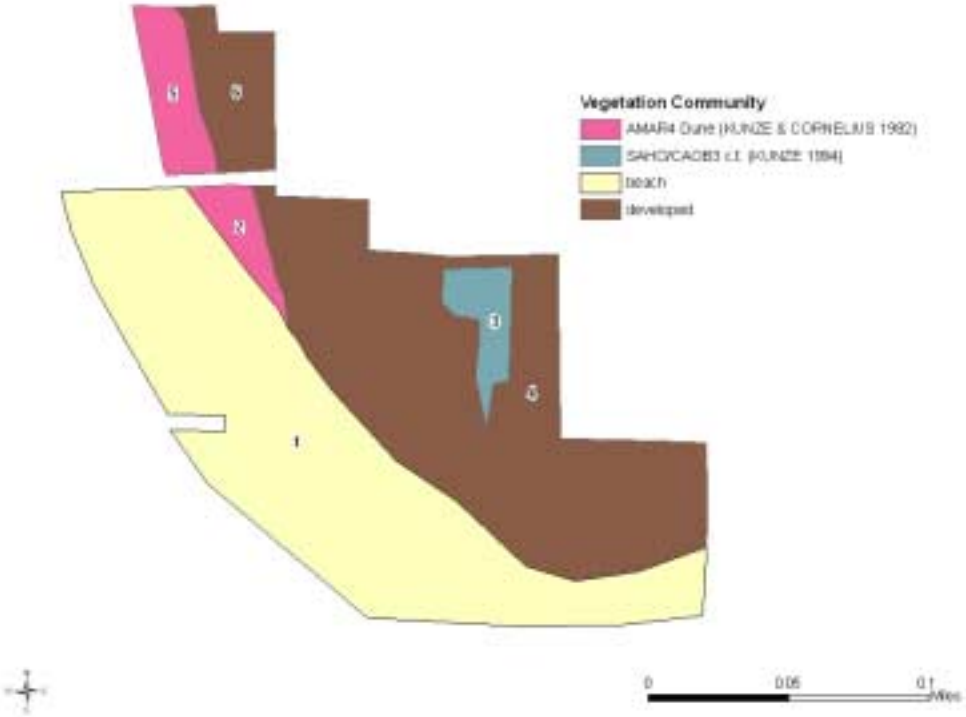


Figure 13. The primary vegetation community types within Pacific Beach State Park.

Examples of Vegetation Community Types

Alnus rubra / Rubus spectabilis / Carex obnupta - Lysichiton americanus forest (ALRU2/RUSP/CAOB3-LYAM3)

This plant association was described by Christy et al (1998). It is typified by the presence and overstory canopy dominance by red alder (*Alnus rubra*). Salmonberry (*Rubus spectabilis*) is a dominant shrub in the understory. This plant association occurs on wet sites that may be seasonally saturated or flooded.

Ammophila arenaria Dunes community (AMAR4) – Ammophila dunes

This plant association was described by Kunze and Cornelius (1982). It is found on the foredune and secondary dunes along the coast in all of the parks covered by this report. *Ammophila arenaria* is a European grass species that was introduced for dune stabilization. It has become widespread throughout the dune systems along the outer coast of Washington and is often the dominant plant. *Ammophila breviligulata* (another grass introduced from Europe) is also found in this plant community. *Lathyrus japonicus* (beach pea) is also common.

Armeria maritima - Polygonum paronychia (ARMA6-POPA7)

This plant community has not been described before. Pacific Biodiversity Institute decided that it was a unique association that warranted a name and description. This plant community was found at Damon Point State Park, and is dominated by *Armeria maritima* and *Polygonum paronychia*.

Carex lyngbyei Community (CALY3)
Carex lyngbyei - Triglochin maritima Community (CALY3-TRMA20)

The CALY3 and CALY3-TRMA20 assocations were described by Kunze and Cornelius (1982). Both communities occur in Griffith-Priday State Park, along the intertidal marsh lands along the Copalis River. These are brackish water marshlands where other inter-tidal communities such as SAVI-TRMA and SAVI-JACA4-DISP-TRMA20 occur.

Carex obnupta community type (CAOB3 c.t.)
Carex obnupta - Potentilla pacifica (CAOB3-POPA23)

The COAB3 community type was described by Kunze (1994). The CAOB3-POPA23 community was described by Christy et al (1998). Both these communities occur throughout the non-forested dunes behind the fore-dune, typically as a small patch inclusion in the AMAR4 or PICO/CYSC/AMR4 matrix.

Elymus mollis Community (ELMO9)

This plant association was described by Kunze and Cornelius (1982). American dunegrass (*Elymus mollis*) is a critical member of a small community of plants that are adapted to grow in an environment of shifting sand and salt spray; the foredunes of the beach strand. European beachgrass (*Ammophila arenaria*), which is also present on Washington's outer beaches, is an introduced species that is capable of outcompeting American dunegrass and displacing it in the dune and beach communities.

Elymus mollis - Festuca rubra - Grindelia integrifolia (ELMO9-FERU2-GRIN)

This plant community has not been described before. Pacific Biodiversity Institute decided that it was a unique association that warranted a name and description. It was found in Griffith-Priday State Park. It is characterized by the cover dominance of *Elymus mollis, Festuca rubra,* and *Grindelia integrifolia* in the upper areas of the intertidal marshlands along the Copalis River.

Myrica gale – Spiraea douglasii / Boykinia sp. – Carex obnupta community type (MYGA-SPDO/Bokinia-CAOB3 c.t.)
Spiraea douglasii community type (SPDO c.t.)

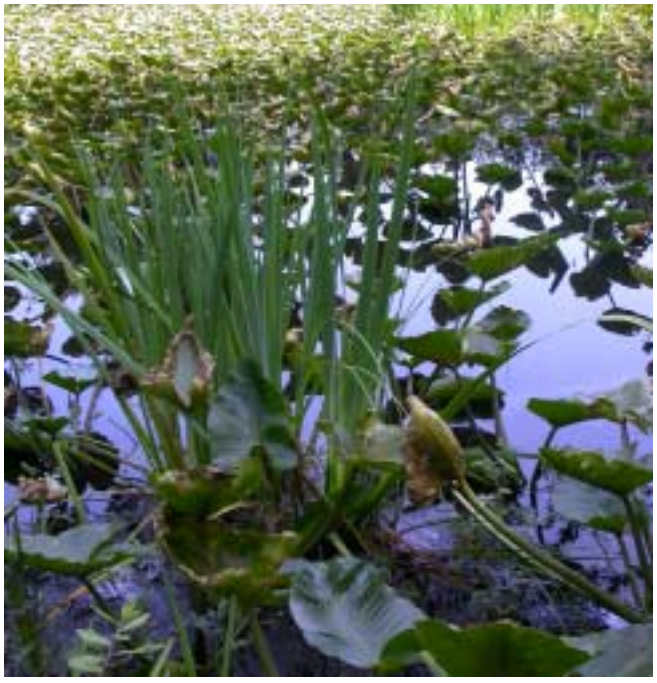
These plant communities were described by Kunze (1994). MYGA-SPDO/Bokinia-CAOB3 c.t. occurs in dune trough wetlands within Ocean City State Park, often mixed with the *Typha latifolia* community type. There is standing water in this community most, if not all year. Kunze describes it as occurring around Lake Ozette, and the community that we found here did not appear to contain *Boykinia* species, so this may be a variant of what Kunze describes. It is dominated by *Myrica gale* and *Spiraea douglasii.*

The SPDO community type is also a wetland community that occurs in Ocean City State Park. This association is characterized by the nearly homogenous shrub cover of *Spiraea douglasii.*

Myrica gale / Typha latifolia (MYGA/TYLA) community type

This plant community has not been described before. Pacific Biodiversity Institute decided that it was a unique association that warranted a name and description. It might be considered a variant of the *Myrica gale/Lysichitum americanum* community type described by Kunze (1994), but *Lysichitum americanum* is replaced by *Typha latifolia*. It might also be considered a combination of the *Myrica gale* (Kunze 1994) community type and the *Typha latifolia* (Kunze 1994) community type.

Nuphar polysepalum community type (NUPO2 c.t.)



This plant community was described by Kunze (1994). It is characterized by Nuphar polysepalum floating in ponds of otherwise open water. It often forms the center of the largest dune trough wetlands.

Pinus contorta / Carex obnupta forest (PICO/CAOB3)

This plant association was described by Christy et al. (1998). Within patches of this community, *Carex obnupta* forms a dense understory cover under a forested canopy consisting of *Pinus contorta*.

Pinus contorta / Cytisus scoparius / Ammophila arenaria (PICO/CYSC4/AMAR4)

The PICO/CYSC4/AMAR4 plant community was described by Christy et al. (1998). It is very common within most of the parks we visited. It occurs throughout the dune environment where the invasives *Cytisus scoparius* and *Ammophila arenaria* have become established to the point that they dominate huge patches of the dunal landscape. Young shorepine (*Pinus contorta*) are found throughout these patches, indicating a dramatic shift in dunal successional patterns. The exotic invaders have stabilized the once shifting dunes to the point that shoreline pine seeds can germinate and grow in areas once too dynamic for their establishment.

Pinus contorta / Vaccinium ovatum - Gaultheria shallon forest (PICO/VAOV2-GASH)
Pinus contorta - Picea sitchensis / Vaccinium ovatum forest (PICO-PISI/VAOV2)


These plant associations were described by Christy et al (1998). Both have a forest overstory dominated by Pinus contorta, although the PICO-PISI/VAOV2 forest has *Picea sitchensis* present as well. *Vaccinium ovatum* and *Gaultheria shallon* are present and dominant in the shrub layer in both forested associations.

Picea sitchensis wetland (PISI wetland)

This plant association was described by Kunze and Cornelius (1982). It is a forested wetland community that occurs in depressions on stabilized dunes, usually within a matrix of other associations from the *Picea sitchensis* dune forest alliance.

Picea sitchensis / Gaultheria shallon forest (PISI/GASH)
Picea sitchensis / Polystichum munitum forest (PISI/POMU)
Picea sitchensis / Vaccinium ovatum forest (PISI/VAOV2)
Picea sitchensis / Vaccinium ovatum - Gaultheria shallon forest (PISI/VAOV2-GASH)


The PISI/GASH, PISI/POMU, and PISI/VAOV2 forested plant associations were described by Christy et al. (1998). The PISI/VAOV2-GASH association was described by Kunze and Cornelius (1982). All of these forest types have a dominant tree cover of Sitka spruce (*Picea sitchensis*). Understory composition can be similar between all four associations, differing in the amounts of cover by each indicator understory plant. Many of these Sitka spruce alliance forests mosaic with one another within a continuous forest patch.

Pyrus fusca - Salix hookeriana / Carex obnupta community type (PYFU-SAHO/CAOB3 c.t.)

Kunze (1994) described this shrub wetland type. *Pyrus fusca* dominates the shrub layer with *Salix hookeriana,* while *Carex obnupta* grows in dense patches in the understory. This plant association occurs in dune troughs, typically in a mosaic with other dune trough wetland community types.

***Salix hookeriana / Carex obnupta* community type (SAHO/CAOB3 c.t.)**
***Salix hookeriana / Carex obnupta - Potentilla pacifica* (SAHO/CAOB3-POPA23)**
***Salix hookeriana - Pyrus fusca / Carex obnupta - Lysichiton americanus* (SAHO-PYFU/CAOB3-LYAM3)**

SAHO c.t. and SAHO/CAOB3 c.t. were described by Kunze (1994). SAHO/CAOB3-POPA23 and SAHO-PYFU/CAOB3-LYAM3 were described by Christy et al. (1998). All of these associations are clearly dominated by *Salix hookeriana* often to the exclusion of most other shrubs (besides *Pyrus Fusca* in the SAHO-PYFU/CAOB3-LYAM3 association). These wetland communities occur in areas that are flooded either seasonally or year-round in deflation plains, dune troughs and around the margins of some lakes and ponds.

***Salicornia virginica* Community (SAVI)**
***Salicornia virginica - Triglochin maritima* Community (SAVI-TRMA20)**
***Salicornia virginica - Jaumea carnosa - Distichlis spicata - Triglochin maritima* Community (SAVI-JACA4-DISP-TRMA20)**
***Distichlis spicata - Salicornia virginica* Community (DISP-SAVI)**

These plant associations were described by Kunze and Cornelius (1982). They are all low intertidal communities associated with sandy or silty marshlands or beach flats. *Salicornia virginica* is a dominant herbaceous plant occurring throughout these communities. Each of these communities mosaics with one another within continuous patches.

Tsuga heterophylla / Gaultheria shallon / Polystichum munitum forest (TSHE/GASH/POMU)

This plant associations was described by Henderson et al. (1989). This is more of an inland forest type that occurs only in Griffith-Priday State Park, in the most inland area of the park property. Previous logging probably removed most of the Picea sitchensis component from these forest patches.

Typha latifolia community type (TYLA c.t.)

This plant community was described by Kunze (1994). It occurs next to the *Nuphar polysepalum* community type in shallow water at the inner edge of ponds and wetlands.

Rare Plant Surveys

Methods

We visited Damon Point, Griffith-Priday, Ocean City, and Pacific Beach State Parks multiple times during the 2006 field season to conduct rare plant surveys. We used the Washington Department of Natural Resources Natural Heritage Program's (DNR NHP) rare plant list to determine the conservation status of vascular plants encountered in the field. When a plant from the DNR NHP list was located, we used the standard DNR NHP rare plant sighting form to complete field descriptions for the observation. These forms are attached as Appendix E.

Specific dates of field surveys for each park can be found in Appendix A of this report. 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 for each park (Figures 2-5).

Rare Plant Survey Results

Rare Plants

We located a population of floating marsh pennywort *(Hydrocotyle ranunculoides)* that is currently listed as sensitive in the WA DNR NHP rare plant list at several locations within Ocean City State Park. Figures 14 and 15 illustrate the location and provide some pictures of floating marsh pennywort in Ocean City State Park. No other rare plants were found in any of the other parks covered in this report. No rare plants are currently recorded to occur in these park in the WADNR Natural Heritage database.

Species	**Common Name**	**Status**
Hydrocotyle ranunculoides L. f.	floating marsh pennywort	G5 S2 S

We should note that we have recommended to WADNR NHP that *Hydrocotyle ranunculoides* be delisted. It is actually quite common in the wetlands of western Washington and often occurs in disturbed areas. WADNR NHP has accepted our recommendation and will be delisting this plant in the near future.

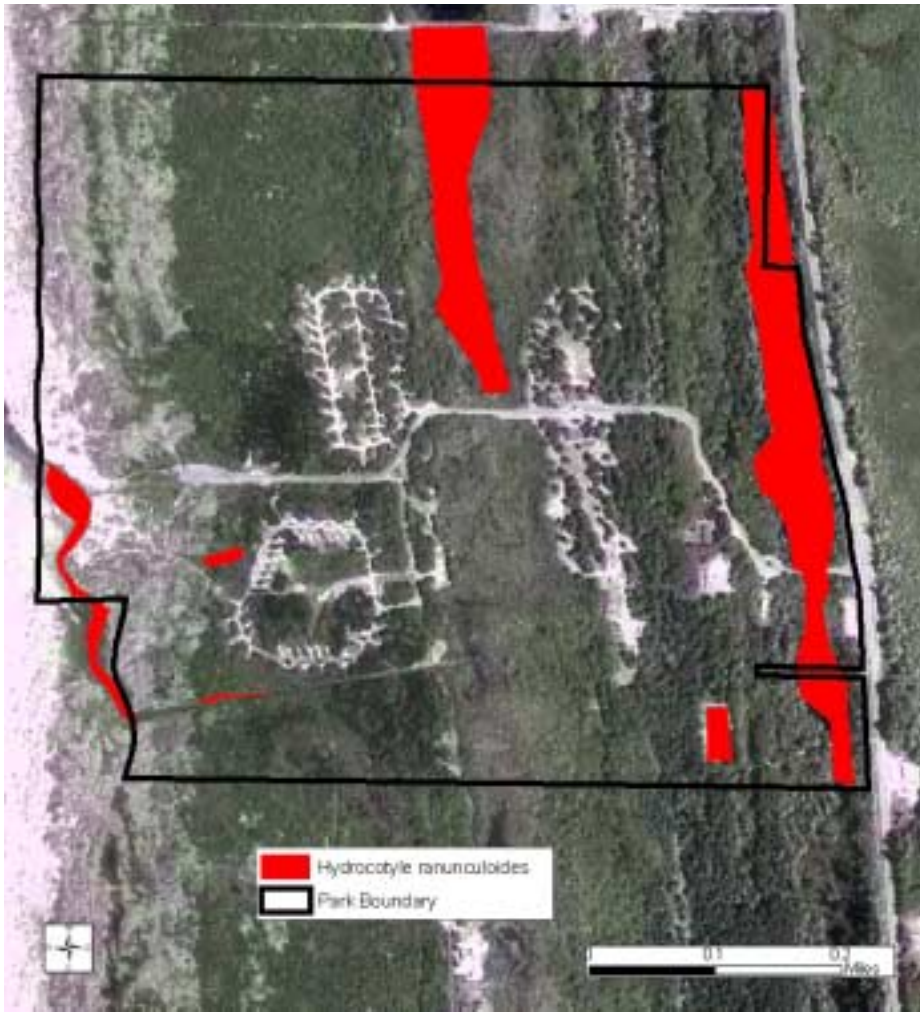


Figure 14. Map showing the locations (in red) where floating marsh pennywort was seen during field surveys.

Figure 15. Photos of floating marsh pennywort in Ocean City State Park.

Vascular Plant List for Damon Point State Park

A total of 98 vascular plant species were identified during the 2006 surveys at Damon Point State Park. Of these, 34 of the plant species are non-native, accounting for 35% of the total.

Key to Vascular Plant Species Lists

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

"Alien?": species that are not native to the park are indicated with an "a"

"Common Name / Accepted 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 or general common names are shown in this column when they exist.

Num	Code	Scientific Name	Common Name/Synonym	Family	alien
1	ABLA2	Abronia latifolia Eschsch.	coastal sand verbena	Nyctaginaceae	
2	ACMI2	Achillea millefolium L.	yarrow	Asteraceae	
3	AICA	Aira caryophyllea L.	silver hairgrass	Poaceae	a
4	AIPR	Aira praecox L.	yellow hairgrass	Poaceae	a
5	ALRU2	Alnus rubra Bong.	red alder	Betulaceae	
6	AMCH4	Ambrosia chamissonis (Less.) Greene	silver burr ragweed	Asteraceae	
7	AMAR4	Ammophila arenaria (L.) Link	European beachgrass	Poaceae	a
8	AMBR	Ammophila breviligulata Fern.	American beachgrass	Poaceae	a
9	ANMA	Anaphalis margaritacea (L.) Benth.	western pearly everlasting	Asteraceae	
10	ANLU	Angelica lucida L.	seacoast angelica	Apiaceae	
11	ANOD	Anthoxanthum odoratum L.	sweet vernalgrass	Poaceae	a
12	ARUV	Arctostaphylos uva-ursi (L.) Spreng.	kinnikinnick	Ericaceae	
13	ARMA6	Armeria maritima (P. Mill.) Willd.	thrift seapink	Plumbaginaceae	
14	ASFO	Aster foliaceus Lindl. ex DC.	>>Symphyotrichum foliaceum var. foliaceum	Asteraceae	
15	ATFI	Athyrium filix-femina (L.) Roth	common ladyfern	Dryopteridaceae	
16	BAOR	Barbarea orthoceras Ledeb.	American yellowrocket	Brassicaceae	a
17	CAED	Cakile edentula (Bigelow) Hook.	American searocket	Brassicaceae	
18	CAMA	Cakile maritima Scop.	European searocket	Brassicaceae	a
19	CAOL	Cardamine oligosperma Nutt.	little western bittercress	Brassicaceae	
20	CARA3	Cardionema ramosissimum (Weinm.) A. Nels. & J.F. Macbr.	sandcarpet	Caryophyllaceae	
21	CAMA10	Carex macrocephala Willd. ex Spreng.	largehead sedge	Cyperaceae	
22	CAOB3	Carex obnupta Bailey	slough sedge	Cyperaceae	
23	CAPA16	Carex pansa Bailey	sanddune sedge	Cyperaceae	
24	CEMU2	Centaurium muehlenbergii (Griseb.) W. Wight ex Piper	Muhlenberg's centaury	Gentianaceae	
25	CEGL2	Cerastium glomeratum Thuill.	sticky chickweed	Caryophyllaceae	a
26	CENU2	Cerastium nutans Raf.	nodding chickweed	Caryophyllaceae	
27	CHAL7	Chenopodium album L.	lambsquarters	Chenopodiaceae	a
28	CIDO	Cicuta douglasii (DC.) Coult. & Rose	western water hemlock	Apiaceae	
29	CIAR4	Cirsium arvense (L.) Scop.	Canada thistle	Asteraceae	a
30	COSO4	Convolvulus soldanella L.	>>Calystegia soldanella	Convolvulaceae	
31	CYSC4	Cytisus scoparius (L.) Link	scotchbroom	Fabaceae	a
32	DIPU	Digitalis purpurea L.	purple foxglove	Scrophulariaceae	a

33	DISP	Distichlis spicata (L.) Greene	inland saltgrass	Poaceae	
34	ELMO9	Elymus mollis Trin.	>>Leymus mollis ssp. mollis	Poaceae	
35	EPAN2	Epilobium angustifolium L.	>>Chamerion angustifolium ssp. angustifolium	Onagraceae	
36	EPGL	Epilobium glaberrimum Barbey	glaucus willowherb	Onagraceae	
37	FEAR3	Festuca arundinacea Schreb.	>>Schedonorus phoenix	Poaceae	a
38	FERU2	Festuca rubra L.	red fescue	Poaceae	
39	FILAG	Filago L.	cottonrose	Asteraceae	
40	FRCH	Fragaria chiloensis (L.) P. Mill.	beach strawberry	Rosaceae	
41	GAAP2	Galium aparine L.	stickywilly	Rubiaceae	a
42	GASH	Gaultheria shallon Pursh	salal	Ericaceae	
43	GLLI	Glehnia littoralis F. Schmidt ex Miq.	American silvertop	Apiaceae	
44	GRIN	Grindelia integrifolia DC.	Puget Sound gumweed	Asteraceae	
45	HOLA	Holcus lanatus L.	common velvetgrass	Poaceae	a
46	HOPE	Honckenya peploides (L.) Ehrh.	seaside sandplant	Caryophyllaceae	
47	HYRA3	Hypochaeris radicata L.	hairy cat's ear	Asteraceae	a
48	IRPS	Iris pseudacorus L.	paleyellow iris	Iridaceae	a
49	JACA4	Jaumea carnosa (Less.) Gray	marsh jaumea	Asteraceae	
50	LAJA	Lathyrus japonicus Willd.	beach pea	Fabaceae	
51	LALI2	Lathyrus littoralis (Nutt.) Endl.	silky beach pea	Fabaceae	
52	LOIN5	Lonicera involucrata (Richards.) Banks ex Spreng.	twinberry honeysuckle	Caprifoliaceae	
53	LOCO6	Lotus corniculatus L.	bird's-foot trefoil	Fabaceae	a
54	LUAR	Lupinus arboreus Sims	yellow bush lupine	Fabaceae	
55	LULI2	Lupinus littoralis Dougl.	seashore lupine	Fabaceae	
56	LUCA*	Luzula campestris (L.) DC.	field woodrush	Juncaceae	
57	MELIL	Melilotus P. Mill.	sweetclover	Fabaceae	a
58	MYDI	Myosotis discolor Pers.	changing forget-me-not	Boraginaceae	a
59	MYCA13	Myrica californica Cham.	>>Morella californica	Myricaceae	
60	ORPU3	Orthocarpus pusillus Benth.	>>Triphysaria pusilla	Scrophulariaceae	a
61	PHCA11	Physocarpus capitatus (Pursh) Kuntze	Pacific ninebark	Rosaceae	
62	PISI	Picea sitchensis (Bong.) Carr.	Sitka spruce	Pinaceae	
63	PICOC	Pinus contorta Dougl. ex Loud. var. contorta	beach pine	Pinaceae	
64	PLLA	Plantago lanceolata L.	narrowleaf plantain	Plantaginaceae	a
65	PLMA3	Plantago maritima L.	goose tongue	Plantaginaceae	
66	POPR	Poa pratensis L.	Kentucky bluegrass	Poaceae	a
67	POPA7	Polygonum paronychia Cham. & Schlecht.	beach knotweed	Polygonaceae	
68	POMU	Polystichum munitum (Kaulfuss) K. Presl	swordfern	Polypodiaceae	
69	POBAT	Populus balsamifera L. ssp. trichocarpa (Torr. & Gray ex Hook.) Brayshaw	black cottonwood	Salicaceae	
70	POPA23	Potentilla pacifica T.J. Howell	>>Argentina egedii ssp. egedii	Rosaceae	
71	PYFU	Pyrus fusca Raf.	>>Malus fusca	Rosaceae	
72	RONU	Rosa nutkana K. Presl	Nootka rose	Asteraceae	
73	RUDI2	Rubus discolor Weihe & Nees	>>Rubus armeniacus	Rosaceae	a
74	RULA	Rubus laciniatus Willd.	cutleaf blackberry	Rosaceae	a
75	RUSP	Rubus spectabilis Pursh	salmonberry	Rosaceae	
76	RUUR	Rubus ursinus Cham. & Schlecht.	California blackberry	Rosaceae	

77	RUAC3	Rumex acetosella L.	common sheep sorrel	Polygonaceae	a
78	SAVI	Salicornia virginica L.	>>Salicornia depressa	Chenopodiaceae	
79	SAHO	Salix hookeriana Barratt ex Hook.	dune willow	Salicaceae	
80	SCAN2	Scleranthus annuus L.	German knotgrass	Caryophyllaceae	a
81	SEVU	Senecio vulgaris L.	old-man-in-the-Spring	Asteraceae	a
82	SOCA6	Solidago canadensis L.	Canada goldenrod	Asteraceae	
83	SPDO	Spiraea douglasii Hook.	rose spirea	Rosaceae	
84	SPRO	Spiranthes romanzoffiana Cham.	hooded lady's tresses	Orchidaceae	
85	SYAL	Symphoricarpos albus (L.) Blake	common snowberry	Caprifoliaceae	
86	TADO	Tanacetum douglasii DC.	>>Tanacetum camphoratum	Asteraceae	
87	TENU	Teesdalia nudicaulis (L.) Ait. f.	barestem teesdalia	Brassicaceae	a
88	TRAR4	Trifolium arvense L.	rabbitfoot clover	Fabaceae	a
89	TRRE3	Trifolium repens L.	white clover	Fabaceae	a
90	TRWO	Trifolium wormskioldii Lehm.	cows clover	Fabaceae	
91	TRMA20	Triglochin maritima L.	seaside arrowgrass	Juncaginaceae	
92	TSHE	Tsuga heterophylla (Raf.) Sarg.	western hemlock	Pinaceae	
93	ULEU	Ulex europaeus L.	common gorse	Fabaceae	a
94	VAOV2	Vaccinium ovatum Pursh	California huckleberry	Ericaceae	
95	VAPA	Vaccinium parvifolium Sm.	red huckleberry	Ericaceae	
96	VIGI	Vicia gigantea Hook.	>>Vicia nigricans ssp. gigantea	Fabaceae	
97	VIHI	Vicia hirsuta (L.) S.F. Gray	tiny vetch	Fabaceae	a
98	VISA	Vicia sativa L.	garden vetch	Fabaceae	a

Vascular Plant List for Griffith-Priday State Park

A total of 136 vascular plant species were identified during the 2006 surveys at Griffith-Priday State Park. Of these, 44 of the plant species are non-native, accounting for 32% of the total.

Num	Code	Scientific Name	Common Name/Synonym	Family	alien
1	ABLA2	Abronia latifolia Eschsch.	coastal sand verbena	Nyctaginaceae	
2	ACMI2	Achillea millefolium L.	yarrow	Asteraceae	
3	AGPA8	Agrostis pallens Trin.	seashore bentgrass	Poaceae	
4	AICA	Aira caryophyllea L.	silver hairgrass	Poaceae	a
5	ALRU2	Alnus rubra Bong.	red alder	Betulaceae	
6	ALGE2	Alopecurus geniculatus L.	water foxtail	Poaceae	a
7	AMAR4	Ammophila arenaria (L.) Link	European beachgrass	Poaceae	a
8	AMBR	Ammophila breviligulata Fern.	American beachgrass	Poaceae	a
9	ANMA	Anaphalis margaritacea (L.) Benth.	western pearly everlasting	Asteraceae	
10	ANLU	Angelica lucida L.	seacoast angelica	Apiaceae	
11	ANOD	Anthoxanthum odoratum L.	sweet vernalgrass	Poaceae	a
12	ARMA6	Armeria maritima (P. Mill.) Willd.	thrift seapink	Plumbaginaceae	
13	ASFO	Aster foliaceus Lindl. ex DC.	>>Symphyotrichum foliaceum var. foliaceum	Asteraceae	
14	ATFI	Athyrium filix-femina (L.) Roth	common ladyfern	Dryopteridaceae	
15	BAOR	Barbarea orthoceras Ledeb.	American yellowrocket	Brassicaceae	a
16	BEPE2	Bellis perennis L.	lawn daisy	Asteraceae	a
17	BLSP	Blechnum spicant (L.) Sm.	deer fern	Blechnaceae	
18	BOMU	Botrychium multifidum (Gmel.) Trev.	leathery grapefern	Ophioglossaceae	

19	BRMO2	Bromus mollis auct. non L. [misapplied]	>>Bromus hordeaceus ssp. hordeaceus	Poaceae	a
20	BRVU	Bromus vulgaris (Hook.) Shear	Columbia brome	Poaceae	
21	CAED	Cakile edentula (Bigelow) Hook.	American searocket	Brassicaceae	
22	CAMA	Cakile maritima Scop.	European searocket	Brassicaceae	a
23	CANU	Calamagrostis nutkaensis (J. Presl) J. Presl ex Steud.	Pacific reedgrass	Poaceae	
24	CAOL	Cardamine oligosperma Nutt.	little western bittercress	Brassicaceae	
25	CARA3	Cardionema ramosissimum (Weinm.) A. Nels. & J.F. Macbr.	sandcarpet	Caryophyllaceae	
26	CADE9	Carex deweyana Schwein.	Dewey sedge	Cyperaceae	
27	CALY3	Carex lyngbyei Hornem.	Lyngbye's sedge	Cyperaceae	
28	CAOB3	Carex obnupta Bailey	slough sedge	Cyperaceae	
29	CAPA16	Carex pansa Bailey	sanddune sedge	Cyperaceae	
30	CEGL2	Cerastium glomeratum Thuill.	sticky chickweed	Caryophyllaceae	a
31	CEVU	Cerastium vulgatum L. 1762, non 1755	>>Cerastium fontanum ssp. vulgare	Caryophyllaceae	a
32	CHAL7	Chenopodium album L.	lambsquarters	Chenopodiaceae	a
33	CHLE80	Chrysanthemum leucanthemum L.	>>Leucanthemum vulgare	Asteraceae	a
34	CIDO	Cicuta douglasii (DC.) Coult. & Rose	western water hemlock	Apiaceae	
35	CIAR4	Cirsium arvense (L.) Scop.	Canada thistle	Asteraceae	a
36	COMA2	Conium maculatum L.	poison hemlock	Apiaceae	a
37	COCO7	Cotula coronopifolia L.	common brassbuttons	Asteraceae	a
38	CYSC4	Cytisus scoparius (L.) Link	scotchbroom	Fabaceae	a
39	DECA18	Deschampsia caespitosa (L.) Beauv.	tufted hairgrass	Poaceae	
40	DIPU	Digitalis purpurea L.	purple foxglove	Scrophulariaceae	a
41	DIHOO	Disporum hookeri (Torr.) Nichols. var. oreganum (S. Wats.) Q. Jones	>>Prosartes hookeri var. oregana	Liliaceae	
42	DISP	Distichlis spicata (L.) Greene	inland saltgrass	Poaceae	
43	DREX2	Dryopteris expansa (K. Presl) Fraser-Jenkins & Jermy	spreading woodfern	Dryopteridaceae	
44	ELPA3	Eleocharis palustris (L.) Roemer & J.A. Schultes	common spikerush	Cyperaceae	
45	ELMO9	Elymus mollis Trin.	>>Leymus mollis ssp. mollis	Poaceae	
46	EPAN2	Epilobium angustifolium L.	>>Chamerion angustifolium ssp. angustifolium	Onagraceae	
47	EPGL	Epilobium glaberrimum Barbey	glaucus willowherb	Onagraceae	
48	EQAR	Equisetum arvense L.	field horsetail	Equisetaceae	
49	FEAR3	Festuca arundinacea Schreb.	>>Schedonorus phoenix	Poaceae	a
50	FERU2	Festuca rubra L.	red fescue	Poaceae	
51	FRCH	Fragaria chiloensis (L.) P. Mill.	beach strawberry	Rosaceae	
52	GATR3	Galium triflorum Michx.	fragrant bedstraw	Rubiaceae	
53	GASH	Gaultheria shallon Pursh	salal	Ericaceae	
54	GRIN	Grindelia integrifolia DC.	Puget Sound gumweed	Asteraceae	
55	HEHE	Hedera helix L.	English ivy	Araliaceae	a
56	HELA4	Heracleum lanatum Michx.	>>Heracleum maximum	Apiaceae	
57	HOLA	Holcus lanatus L.	common velvetgrass	Poaceae	a
58	HOPE	Honckenya peploides (L.) Ehrh.	seaside sandplant	Caryophyllaceae	
59	HYRA3	Hypochaeris radicata L.	hairy cat's ear	Asteraceae	a
60	ILAQ80	Ilex aquifolium L.	English ivy	Aquifoliaceae	a
61	IRPS	Iris pseudacorus L.	paleyellow iris	Iridaceae	a
62	JACA4	Jaumea carnosa (Less.) Gray	marsh jaumea	Asteraceae	

63	JUBA	Juncus balticus Willd.	Baltic rush	Juncaceae	
64	JUFA	Juncus falcatus E. Mey.	falcate rush	Juncaceae	
65	LAJA	Lathyrus japonicus Willd.	beach pea	Fabaceae	
66	LOIN5	Lonicera involucrata (Richards.) Banks ex Spreng.	twinberry honeysuckle	Caprifoliaceae	
67	LOCO6	Lotus corniculatus L.	bird's-foot trefoil	Fabaceae	a
68	LUAR	Lupinus arboreus Sims	yellow bush lupine	Fabaceae	
69	LULI2	Lupinus littoralis Dougl.	seashore lupine	Fabaceae	
70	LUCA*	Luzula campestris (L.) DC.	field woodrush	Juncaceae	
71	LUPA4	Luzula parviflora (Ehrh.) Desv.	smallflowered woodrush	Juncaceae	
72	LYAM3	Lysichiton americanus Hultén & St. John	American skunkcabbage	Araceae	
73	MADI	Maianthemum dilatatum (Wood) A. Nels. & J.F. Macbr.	false lily of the valley	Liliaceae	
74	MELU	Medicago lupulina L.	black medick	Fabaceae	a
75	MEPIC2	Mentha piperita L. ssp. citrata (Ehrh.) Briq.	>>Mentha aquatica	Lamiaceae	a
76	MEFE	Menziesia ferruginea Sm.	rusty menziesia	Ericaceae	
77	MOPE3	Montia perfoliata (Donn ex Willd.) T.J. Howell	>>Claytonia perfoliata ssp. perfoliata	Caryophyllaceae	
78	MOSI2	Montia sibirica (L.) T.J. Howell	>>Claytonia sibirica var. sibirica	Portulacaceae	
79	MYCA13	Myrica californica Cham.	>>Morella californica	Myricaceae	
80	OECE	Oemleria cerasiformis (Torr. & Gray ex Hook. & Arn.) Landon	Indian plum	Rosaceae	
81	OESA	Oenanthe sarmentosa K. Presl ex DC.	water parsely	Apiaceae	
82	ORPU3	Orthocarpus pusillus Benth.	>>Triphysaria pusilla	Scrophulariaceae	a
83	PISI	Picea sitchensis (Bong.) Carr.	Sitka spruce	Pinaceae	
84	PICOC	Pinus contorta Dougl. ex Loud. var. contorta	beach pine	Pinaceae	
85	PLLA	Plantago lanceolata L.	narrowleaf plantain	Plantaginaceae	a
86	PLMA3	Plantago maritima L.	goose tongue	Plantaginaceae	
87	POAN	Poa annua L.	annual bluegrass	Poaceae	a
88	POCO2	Poa confinis Vasey	coastline bluegrass	Poaceae	
89	POPR	Poa pratensis L.	Kentucky bluegrass	Poaceae	a
90	POPA7	Polygonum paronychia Cham. & Schlecht.	beach knotweed	Polygonaceae	
91	POGL8	Polypodium glycyrrhiza D.C. Eat.	licorice fern	Polypodiaceae	
92	POSC4	Polypodium scouleri Hook. & Grev.	leathery polypody	Polypodiaceae	
93	POMU	Polystichum munitum (Kaulfuss) K. Presl	swordfern	Polypodiaceae	
94	POPA23	Potentilla pacifica T.J. Howell	>>Argentina egedii ssp. egedii	Rosaceae	
95	POPA14	Potentilla palustris (L.) Scop.	>>Comarum palustre	Rosaceae	
96	PRVU	Prunella vulgaris L.	common selfheal	Lamiaceae	
97	PTAQ	Pteridium aquilinum (L.) Kuhn	bracken fern	Dennstaedtiaceae	
98	PYAS	Pyrola asarifolia Michx.	liverleaf wintergreen	Pyrolaceae	
99	PYFU	Pyrus fusca Raf.	>>Malus fusca	Rosaceae	
100	RHPU	Rhamnus purshiana DC.	>>Frangula purshiana	Rhamnaceae	
101	RONU	Rosa nutkana K. Presl	Nootka rose	Asteraceae	
102	RUDI2	Rubus discolor Weihe & Nees	>>Rubus armeniacus	Rosaceae	a
103	RULA	Rubus laciniatus Willd.	cutleaf blackberry	Rosaceae	a
104	RUPA	Rubus parviflorus Nutt.	thimbleberry	Rosaceae	
105	RUSP	Rubus spectabilis Pursh	salmonberry	Rosaceae	

106	RUUR	Rubus ursinus Cham. & Schlecht.	California blackberry	Rosaceae	
107	RUAC3	Rumex acetosella L.	common sheep sorrel	Polygonaceae	a
108	RUCR	Rumex crispus L.	curly dock	Polygonaceae	a
109	SAVI	Salicornia virginica L.	>>Salicornia depressa	Chenopodiaceae	
110	SAHO	Salix hookeriana Barratt ex Hook.	dune willow	Salicaceae	
111	SARA2	Sambucus racemosa L.	red elderberry	Caprifoliaceae	
112	SCAN2	Scleranthus annuus L.	German knotgrass	Caryophyllaceae	a
113	SEVU	Senecio vulgaris L.	old-man-in-the-Spring	Asteraceae	a
114	SMST	Smilacina stellata (L.) Desf.	>>Maianthemum stellatum	Liliaceae	
115	SOCA6	Solidago canadensis L.	Canada goldenrod	Asteraceae	
116	SOAR2	Sonchus arvensis L.	field sowthistle	Asteraceae	a
117	SOAS	Sonchus asper (L.) Hill	spiny sowthistle	Asteraceae	a
118	SOAU	Sorbus aucuparia L.	European mountain ash	Rosaceae	a
119	SPDO	Spiraea douglasii Hook.	rose spirea	Rosaceae	
120	SPRO	Spiranthes romanzoffiana Cham.	hooded lady's tresses	Orchidaceae	
121	STCR2	Stellaria crispa Cham. & Schlecht.	curled starwort	Caryophyllaceae	
122	STLO2	Stellaria longipes Goldie	longstalk starwort	Caryophyllaceae	
123	STAM2	Streptopus amplexifolius (L.) DC.	claspleaf twistedstalk	Liliaceae	
124	TADO	Tanacetum douglasii DC.	>>Tanacetum camphoratum	Asteraceae	
125	TAOF	Taraxacum officinale G.H. Weber ex Wiggers	dandelion	Asteraceae	a
126	TENU	Teesdalia nudicaulis (L.) Ait. f.	barestem teesdalia	Brassicaceae	a
127	THPL	Thuja plicata Donn ex D. Don	western red cedar	Cupressaceae	
128	TRRE3	Trifolium repens L.	white clover	Fabaceae	a
129	TRSU3	Trifolium subterraneum L.	subterranean clover	Fabaceae	a
130	TRWO	Trifolium wormskioldii Lehm.	cows clover	Fabaceae	
131	TRMA20	Triglochin maritima L.	seaside arrowgrass	Juncaginaceae	
132	TSHE	Tsuga heterophylla (Raf.) Sarg.	western hemlock	Pinaceae	
133	VAOV2	Vaccinium ovatum Pursh	California huckleberry	Ericaceae	
134	VAPA	Vaccinium parvifolium Sm.	red huckleberry	Ericaceae	
135	VESE	Veronica serpyllifolia L.	thymeleaf speedwell	Scrophulariaceae	
136	VIGI	Vicia gigantea Hook.	>>Vicia nigricans ssp. gigantea	Fabaceae	

Vascular Plant List for Ocean City State Park

A total of 114 vascular plant species were identified during the 2006 surveys at Ocean City State Park. Of these, 34 of the plant species are non-native, accounting for 30% of the total.

num	Code	Scientific Name	Common Name/Synonym	Family	alien
1	ACMI2	Achillea millefolium L.	yarrow	Asteraceae	
2	AICA	Aira caryophyllea L.	silver hairgrass	Poaceae	a
3	AJRE	Ajuga reptans L.	common bugle	Lamiaceae	a
4	ALRU2	Alnus rubra Bong.	red alder	Betulaceae	
5	ALGE2	Alopecurus geniculatus L.	water foxtail	Poaceae	a
6	AMAR4	Ammophila arenaria (L.) Link	European beachgrass	Poaceae	a
7	AMBR	Ammophila breviligulata Fern.	American beachgrass	Poaceae	a
8	ANMA	Anaphalis margaritacea (L.) Benth.	western pearly everlasting	Asteraceae	
9	ANLU	Angelica lucida L.	seacoast angelica	Apiaceae	
10	ANOD	Anthoxanthum odoratum L.	sweet vernalgrass	Poaceae	a
11	ASFO	Aster foliaceus Lindl. ex DC.	>>Symphyotrichum foliaceum var. foliaceum	Asteraceae	
12	ATFI	Athyrium filix-femina (L.) Roth	common ladyfern	Dryopteridaceae	
13	BEPE2	Bellis perennis L.	lawn daisy	Asteraceae	a
14	BLSP	Blechnum spicant (L.) Sm.	deer fern	Blechnaceae	
15	BRVU	Bromus vulgaris (Hook.) Shear	Columbia brome	Poaceae	
16	CAED	Cakile edentula (Bigelow) Hook.	American searocket	Brassicaceae	
17	CAMA	Cakile maritima Scop.	European searocket	Brassicaceae	a
18	CAST	Callitriche stagnalis Scop.	pond water-starwort	Callitrichaceae	a
19	CAOL	Cardamine oligosperma Nutt.	little western bittercress	Brassicaceae	
20	CARA3	Cardionema ramosissimum (Weinm.) A. Nels. & J.F. Macbr.	sandcarpet	Caryophyllaceae	
21	CAAR2	Carex arcta Boott	northern cluster sedge	Cyperaceae	
22	CALY3	Carex lyngbyei Hornem.	Lyngbye's sedge	Cyperaceae	
23	CAOB3	Carex obnupta Bailey	slough sedge	Cyperaceae	
24	CAPA16	Carex pansa Bailey	sanddune sedge	Cyperaceae	
25	CAVE6	Carex vesicaria L.	blister sedge	Cyperaceae	
26	CEMU2	Centaurium muehlenbergii (Griseb.) W. Wight ex Piper	Muhlenberg's centaury	Gentianaceae	
27	CEGL2	Cerastium glomeratum Thuill.	sticky chickweed	Caryophyllaceae	a
28	CENU2	Cerastium nutans Raf.	nodding chickweed	Caryophyllaceae	
29	CHAL7	Chenopodium album L.	lambsquarters	Chenopodiaceae	a
30	CIDO	Cicuta douglasii (DC.) Coult. & Rose	western water hemlock	Apiaceae	
31	COCO7	Cotula coronopifolia L.	common brassbuttons	Asteraceae	a
32	CYSC4	Cytisus scoparius (L.) Link	scotchbroom	Fabaceae	a
33	DREX2	Dryopteris expansa (K. Presl) Fraser-Jenkins & Jermy	spreading woodfern	Dryopteridaceae	
34	ELPA3	Eleocharis palustris (L.) Roemer & J.A. Schultes	common spikerush	Cyperaceae	
35	ELMO9	Elymus mollis Trin.	>>Leymus mollis ssp. mollis	Poaceae	
36	EPGL	Epilobium glaberrimum Barbey	glaucus willowherb	Onagraceae	
37	EQAR	Equisetum arvense L.	field horsetail	Equisetaceae	
38	EQTE	Equisetum telmateia Ehrh.	giant horsetail	Equisetaceae	
39	FEAR3	Festuca arundinacea Schreb.	>>Schedonorus phoenix	Poaceae	a
40	FERU2	Festuca rubra L.	red fescue	Poaceae	
41	FRCH	Fragaria chiloensis (L.) P. Mill.	beach strawberry	Rosaceae	
42	GAAP2	Galium aparine L.	stickywilly	Rubiaceae	a
43	GATR3	Galium triflorum Michx.	fragrant bedstraw	Rubiaceae	
44	GASH	Gaultheria shallon Pursh	salal	Ericaceae	
45	GLOC	Glyceria occidentalis (Piper) J.C. Nels.	northwestern mannagrass	Poaceae	

46	HEHE	Hedera helix L.	English ivy	Araliaceae	a
47	HIVU2	Hippuris vulgaris L.	common mare's-tail	Hippuridaceae	
48	HOLA	Holcus lanatus L.	common velvetgrass	Poaceae	a
49	HYRA	Hydrocotyle ranunculoides L. f.	floating marshpennywort	Apiaceae	
50	HYRA3	Hypochaeris radicata L.	hairy cat's ear	Asteraceae	a
51	IRPS	Iris pseudacorus L.	paleyellow iris	Iridaceae	a
52	JUFA	Juncus falcatus E. Mey.	falcate rush	Juncaceae	
53	LAJA	Lathyrus japonicus Willd.	beach pea	Fabaceae	
54	LAPA4	Lathyrus palustris L.	marsh pea	Fabaceae	
55	LOIN5	Lonicera involucrata (Richards.) Banks ex Spreng.	twinberry honeysuckle	Caprifoliaceae	
56	LOCO6	Lotus corniculatus L.	bird's-foot trefoil	Fabaceae	a
57	LULI2	Lupinus littoralis Dougl.	seashore lupine	Fabaceae	
58	LUCA*	Luzula campestris (L.) DC.	field woodrush	Juncaceae	
59	LUPA4	Luzula parviflora (Ehrh.) Desv.	smallflowered woodrush	Juncaceae	
60	LYUN	Lycopus uniflorus Michx.	northern bugleweed	Lamiaceae	
61	LYAM3	Lysichiton americanus Hultén & St. John	American skunkcabbage	Araceae	
62	MADI	Maianthemum dilatatum (Wood) A. Nels. & J.F. Macbr.	false lily of the valley	Liliaceae	
63	MEFE	Menziesia ferruginea Sm.	rusty menziesia	Ericaceae	
64	MOPE3	Montia perfoliata (Donn ex Willd.) T.J. Howell	>>Claytonia perfoliata ssp. perfoliata	Caryophyllaceae	
65	MYCA13	Myrica californica Cham.	>>Morella californica	Myricaceae	
66	MYGA	Myrica gale L.	sweetgale	Myricaceae	
67	NUPO2	Nuphar polysepala Engelm.	>>Nuphar lutea ssp. polysepala	Nymphaeaceae	
68	OESA	Oenanthe sarmentosa K. Presl ex DC.	water parsely	Apiaceae	
69	ORPU3	Orthocarpus pusillus Benth.	>>Triphysaria pusilla	Scrophulariaceae	a
70	PAVI3	Parentucellia viscosa (L.) Caruel	yellow glandweed	Scrophulariaceae	a
71	PHAR3	Phalaris arundinacea L.	reed canarygrass	Poaceae	a
72	PISI	Picea sitchensis (Bong.) Carr.	Sitka spruce	Pinaceae	
73	PICOC	Pinus contorta Dougl. ex Loud. var. contorta	beach pine	Pinaceae	
74	PLLA	Plantago lanceolata L.	narrowleaf plantain	Plantaginaceae	a
75	POAN	Poa annua L.	annual bluegrass	Poaceae	a
76	POBU	Poa bulbosa L.	bulbous bluegrass	Poaceae	a
77	POPR	Poa pratensis L.	Kentucky bluegrass	Poaceae	a
78	PONA3	Polygonum natans Eat.	>>Polygonum amphibium var. stipulaceum	Polygonaceae	
79	POPA7	Polygonum paronychia Cham. & Schlecht.	beach knotweed	Polygonaceae	
80	POSA4	Polygonum sachalinense F. Schmidt ex Maxim.	giant knotweed	Polygonaceae	a
81	POGL8	Polypodium glycyrrhiza D.C. Eat.	licorice fern	Polypodiaceae	
82	POMU	Polystichum munitum (Kaulfuss) K. Presl	swordfern	Polypodiaceae	
83	POPA23	Potentilla pacifica T.J. Howell	>>Argentina egedii ssp. egedii	Rosaceae	
84	POPA14	Potentilla palustris (L.) Scop.	>>Comarum palustre	Rosaceae	
85	PTAQ	Pteridium aquilinum (L.) Kuhn	bracken fern	Dennstaedtiaceae	
86	PYAS	Pyrola asarifolia Michx.	liverleaf wintergreen	Pyrolaceae	
87	PYFU	Pyrus fusca Raf.	>>Malus fusca	Rosaceae	
88	RARE3	Ranunculus repens L.	creeping buttercup	Ranunculaceae	a
89	RHPU	Rhamnus purshiana DC.	>>Frangula purshiana	Rhamnaceae	
90	RIBR	Ribes bracteosum Dougl. ex Hook.	stink currant	Grossulariaceae	
91	RONU	Rosa nutkana K. Presl	Nootka rose	Asteraceae	
92	RUDI2	Rubus discolor Weihe & Nees	>>Rubus armeniacus	Rosaceae	a

93	RULA	Rubus laciniatus Willd.	cutleaf blackberry	Rosaceae	a
94	RUSP	Rubus spectabilis Pursh	salmonberry	Rosaceae	
95	RUUR	Rubus ursinus Cham. & Schlecht.	California blackberry	Rosaceae	
96	RUAC3	Rumex acetosella L.	common sheep sorrel	Polygonaceae	a
97	SAHO	Salix hookeriana Barratt ex Hook.	dune willow	Salicaceae	
98	SALA5	Salix lasiandra Benth.	>>Salix lucida ssp. lasiandra	Salicaceae	
99	SARA2	Sambucus racemosa L.	red elderberry	Caprifoliaceae	
100	SCAM2	Scirpus americanus Pers.	>>Schoenoplectus americanus	Equisetaceae	
101	SCCY	Scirpus cyperinus (L.) Kunth	woolgrass	Cyperaceae	
102	SOCA6	Solidago canadensis L.	Canada goldenrod	Asteraceae	
103	SPEME2	Sparganium emersum Rehmann ssp. emersum Rehmann [superfluous autonym]	>>Sparganium emersum	Sparganiaceae	a
104	SPDO	Spiraea douglasii Hook.	rose spirea	Rosaceae	
105	STCR2	Stellaria crispa Cham. & Schlecht.	curled starwort	Caryophyllaceae	
106	STLO2	Stellaria longipes Goldie	longstalk starwort	Caryophyllaceae	
107	TADO	Tanacetum douglasii DC.	>>Tanacetum camphoratum	Asteraceae	
108	TENU	Teesdalia nudicaulis (L.) Ait. f.	barestem teesdalia	Brassicaceae	a
109	TSHE	Tsuga heterophylla (Raf.) Sarg.	western hemlock	Pinaceae	
110	TYLA	Typha latifolia L.	broadleaf cattail	Typhaceae	
111	VAOV2	Vaccinium ovatum Pursh	California huckleberry	Ericaceae	
112	VAPA	Vaccinium parvifolium Sm.	red huckleberry	Ericaceae	
113	VEAM2	Veronica americana Schwein. ex Benth.	American speedwell	Scrophulariaceae	
114	VIGI	Vicia gigantea Hook.	>>Vicia nigricans ssp. gigantea	Fabaceae	

Vascular Plant List for Pacific Beach State Park

A total of 64 vascular plant species were identified during the 2006 surveys at Pacific Beach State Park. Of these, 29of the plant species are non-native, accounting for 45% of the total.

Num	Code	Scientific Name	Common Name/Synonym	Family	alien
1	ACMI2	Achillea millefolium L.	yarrow	Asteraceae	
2	AIPR	Aira praecox L.	yellow hairgrass	Poaceae	a
3	ALRU2	Alnus rubra Bong.	red alder	Betulaceae	
4	AMCH4	Ambrosia chamissonis (Less.) Greene	silver burr ragweed	Asteraceae	
5	AMAR4	Ammophila arenaria (L.) Link	European beachgrass	Poaceae	a
6	AMBR	Ammophila breviligulata Fern.	American beachgrass	Poaceae	a
7	ANMA	Anaphalis margaritacea (L.) Benth.	western pearly everlasting	Asteraceae	
8	ANOD	Anthoxanthum odoratum L.	sweet vernalgrass	Poaceae	a
9	ASFO	Aster foliaceus Lindl. ex DC.	>>Symphyotrichum foliaceum var. foliaceum	Asteraceae	
10	ATFI	Athyrium filix-femina (L.) Roth	common ladyfern	Dryopteridaceae	
11	CAED	Cakile edentula (Bigelow) Hook.	American searocket	Brassicaceae	
12	CAMA	Cakile maritima Scop.	European searocket	Brassicaceae	a
13	CARA3	Cardionema ramosissimum (Weinm.) A. Nels. & J.F. Macbr.	sandcarpet	Caryophyllaceae	
14	CAOB3	Carex obnupta Bailey	slough sedge	Cyperaceae	
15	CEMU2	Centaurium muehlenbergii (Griseb.) W. Wight ex Piper	Muhlenberg's centaury	Gentianaceae	
16	CEGL2	Cerastium glomeratum Thuill.	sticky chickweed	Caryophyllaceae	a
17	CHAL7	Chenopodium album L.	lambsquarters	Chenopodiaceae	a
18	COAR4	Convolvulus arvensis L.	field bindweed	Convolvulaceae	a

19	CYSC4	Cytisus scoparius (L.) Link	scotchbroom	Fabaceae	a
20	DISP	Distichlis spicata (L.) Greene	inland saltgrass	Poaceae	
21	ELMO9	Elymus mollis Trin.	>>Leymus mollis ssp. mollis	Poaceae	
22	FEAR3	Festuca arundinacea Schreb.	>>Schedonorus phoenix	Poaceae	a
23	FRCH	Fragaria chiloensis (L.) P. Mill.	beach strawberry	Rosaceae	
24	GASH	Gaultheria shallon Pursh	salal	Ericaceae	
25	HEHE	Hedera helix L.	English ivy	Araliaceae	a
26	HOLA	Holcus lanatus L.	common velvetgrass	Poaceae	a
27	HOPE	Honckenya peploides (L.) Ehrh.	seaside sandplant	Caryophyllaceae	
28	HYRA3	Hypochaeris radicata L.	hairy cat's ear	Asteraceae	a
29	LAJA	Lathyrus japonicus Willd.	beach pea	Fabaceae	
30	LOIN5	Lonicera involucrata (Richards.) Banks ex Spreng.	twinberry honeysuckle	Caprifoliaceae	
31	LUCA*	Luzula campestris (L.) DC.	field woodrush	Juncaceae	
32	MADI	Maianthemum dilatatum (Wood) A. Nels. & J.F. Macbr.	false lily of the valley	Liliaceae	
33	MYCA13	Myrica californica Cham.	>>Morella californica	Myricaceae	
34	PHAR3	Phalaris arundinacea L.	reed canarygrass	Poaceae	a
35	PISI	Picea sitchensis (Bong.) Carr.	Sitka spruce	Pinaceae	
36	PICOC	Pinus contorta Dougl. ex Loud. var. contorta	beach pine	Pinaceae	
37	PLLA	Plantago lanceolata L.	narrowleaf plantain	Plantaginaceae	a
38	POAN	Poa annua L.	annual bluegrass	Poaceae	a
39	POPR	Poa pratensis L.	Kentucky bluegrass	Poaceae	a
40	POPA7	Polygonum paronychia Cham. & Schlecht.	beach knotweed	Polygonaceae	
41	POMU	Polystichum munitum (Kaulfuss) K. Presl	swordfern	Polypodiaceae	
42	POPA23	Potentilla pacifica T.J. Howell	>>Argentina egedii ssp. egedii	Rosaceae	
43	PYFU	Pyrus fusca Raf.	>>Malus fusca	Rosaceae	
44	RARE3	Ranunculus repens L.	creeping buttercup	Ranunculaceae	a
45	RONU	Rosa nutkana K. Presl	Nootka rose	Asteraceae	
46	RUDI2	Rubus discolor Weihe & Nees	>>Rubus armeniacus	Rosaceae	a
47	RULA	Rubus laciniatus Willd.	cutleaf blackberry	Rosaceae	a
48	RUPA	Rubus parviflorus Nutt.	thimbleberry	Rosaceae	
49	RUSP	Rubus spectabilis Pursh	salmonberry	Rosaceae	
50	RUAC3	Rumex acetosella L.	common sheep sorrel	Polygonaceae	a
51	RUCR	Rumex crispus L.	curly dock	Polygonaceae	a
52	SAHO	Salix hookeriana Barratt ex Hook.	dune willow	Salicaceae	
53	SARA2	Sambucus racemosa L.	red elderberry	Caprifoliaceae	
54	SEVU	Senecio vulgaris L.	old-man-in-the-Spring	Asteraceae	a
55	SOCA6	Solidago canadensis L.	Canada goldenrod	Asteraceae	
56	SOAS	Sonchus asper (L.) Hill	spiny sowthistle	Asteraceae	a
57	TADO	Tanacetum douglasii DC.	>>Tanacetum camphoratum	Asteraceae	
58	TAOF	Taraxacum officinale G.H. Weber ex Wiggers	dandelion	Asteraceae	a
59	TENU	Teesdalia nudicaulis (L.) Ait. f.	barestem teesdalia	Brassicaceae	a
60	TRDU2	Trifolium dubium Sibthorp	suckling clover	Fabaceae	a
61	TRPR2	Trifolium pratense L.	red clover	Fabaceae	a
62	TRRE3	Trifolium repens L.	white clover	Fabaceae	a
63	VAOV2	Vaccinium ovatum Pursh	California huckleberry	Ericaceae	
64	VIGI	Vicia gigantea Hook.	>>Vicia nigricans ssp. gigantea	Fabaceae	

Ecological Condition of Damon Point, Griffith-Priday, Ocean City, and Pacific Beach State Parks

Damon Point

Damon Point State Park is in generally poor ecological condition. Many of the vegetation polygons occurring in the park are dominated by non-native plants. However, the tidal communities are in better condition and are dominated by native plants. One unusual community, *Armeria maritima* - *Polygonum paronychia,* was found and described by PBI here and was not seen elsewhere in any of the parks we surveyed along the coast. Damon Point has been and continues to be subjected to considerable disturbance from human activities and natural weather events.

Griffith-Priday

Some of the forests at Griffith-Priday State Park are fairly young forests that have regenerated after clearcutting. They have virtually no understory and are in a stem exclusion phase. These forests are rated as poor ecological condition, but they lack many non-native plants. The forests below the road, toward the coast are older and have well-developed understories, generally also without non-native plants. They are generally in good ecological condition.

The portion of Giffith-Priday that is adjacent to the ocean and the estuary are covered by beach, stabilized dunes and salt marsh vegetation. The tidal areas are generally dominated by native plants and are in good ecological condition. Some exemplary salt marsh communities exist here. The vegetation polygons occurring on the stabilized dunes are largely dominated by non-native plants and are in poor ecological condition.

Ocean City

Ocean City State Park consists of a series of dunes, dune troughs and deflation plains. In most of the areas closest to the ocean, the dunes have stabilized and are covered with either non-native and native grasses or a combination of shore pine (*Pinus contorta*), Scot's broom (*Cytisus scoparius*) and non-native beachgrasses (*Ammophilla* sp.). These areas are generally in poor ecological condition due to the abundance of non-native plant cover. In the more landward portion of the park, the dune succession is more advanced and dense, wet to mesic forests cover the dunes. These areas are generally in good ecological condition and have low cover of non-native plants. The dune troughs are inundated most (if not all) of the year and contain wetland vegetation. Generally, the wetlands of Ocean City State Park are in relatively good condition. Some represent exemplary ecological communities. Some invasive plants are present in some areas, but generally not a great problem.

Pacific Beach

Pacific Beach State Park has very little vegetation. It is largely a parking and camping area. The portions of the park that are vegetated receive intensive recreational activity. The park has a high cover and abundance of non-native plants and is rated as having a very low ecological condition.

GIS Products Produced

Associated with this report are polygon layers created by PBI depicting the vegetation community types mapped in Damon Point, Griffith-Priday, Ocean City, and Pacific Beach State Parks. The datasets have been converted into ESRI shapefile format and provided to the Washington State Parks and Recreation Commission. Shapefiles depicting rare plant locations have been provided as well. The spatial datasets are complete with metadata meeting FGDC standards. Refer to the associated metadata for descriptions and attribute definitions for each spatial dataset.

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Appendix A – Field Survey Schedule

May 9 - 15, 2006
Field Staff: Hans Smith, Phyllis Murra

August 9 - 15, 2006
Field Staff: Peter Morrison, Juliet Rhodes

Appendix B – Description of Rare Element Status Codes

Global Rank (GRank)

Global Rank characterizes the relative rarity or endangerment of the element world-wide. Two codes (e.g. G1G2) represent an intermediate rank.

G1 = Critically imperiled globally (5 or fewer occurrences).
G2 = Imperiled globally (6 to 20 occurrences).
G3 = Either very rare and local throughout its range or found locally in a restricted range (21 to 100 occurrences).
G4 = Apparently secure globally.
G5 = Demonstrably secure globally.
GH = Of historical occurrence throughout its range.
GU = Possibly in peril range-wide but status uncertain.
GX = Believed to be extinct throughout former range.
GNR = Not yet ranked.
Tn = Rarity of an infraspecific taxon. Numbers and codes similar to those for Gn ranks above.
Q = Questionable.

State Rank (SRank)

State Rank characterizes the relative rarity or endangerment within the state of Washington. Two codes (e.g. S1S2) represents an intermediate rank.

S1 = Critically imperiled (5 or fewer occurrences).
S2 = Imperiled (6 to 20 occurrences), very vulnerable to extirpation.
S3 = Rare or uncommon (21 to 100 occurrences).
S4 = Apparently secure, with many occurrences.
S5 = Demonstrably secure in state.
SA = Accidental in state.
SE = An exotic established in state.
SH = Historical occurrences only but still expected to occur.
SN = Regularly occurring, usually migratory, nonbreeding animals.
SU = Unrankable; need more information.
SX = Apparently extirpated from the state.
SP = Likely to occur or to have occurred but without documentation.
SZ = Not of conservation concern (not SE or SA).
SNR = Not yet ranked.
"B" and "N" qualifiers are used to indicate breeding and nonbreeding status, respectively, of migrant species whose nonbreeding status (rank) may be quite different from their breeding status in the state (e.g. S1B, S4N for a very rare breeder that is a common winter resident).

State Status (StStat)

State Status of plant species is determined by the Washington Natural Heritage Program. Factors considered include abundance, occurrence patterns, vulnerability, threats, existing protection, and taxonomic distinctness. Values include:

E = Endangered. In danger of becoming extinct or extirpated from Washington.
T = Threatened. Likely to become Endangered in Washington.
S = Sensitive. Vulnerable or declining and could become Endangered or Threatened in the state.
X = Possibly extinct or Extirpated from Washington.
P1 = Priority 1. Rare nonvascular plant but with insufficient information to assign another rank.
P2 = Priority 2. Nonvascular plant of concern but with insufficient information to assign another rank.
R1 = Review group 1. Of potential concern but needs more field work to assign another rank.
R2 = Review group 2. Of potential concern but with unresolved taxonomic questions.
W = Watch. More abundant and/or less threatened than previously thought.

Federal Status

Federal Status under the U.S. Endangered Species Act (USESA) as published in the Federal Register:

LE = Listed Endangered. In danger of extinction.
LT = Listed Threatened. Likely to become endangered.
PE = Proposed Endangered.
PT = Proposed Threatened.
C = Candidate species. Sufficient information exists to support listing as Endangered or Threatened.
SC = Species of Concern. An unofficial status, the species appears to be in jeopardy, but insufficient information to support listing.
NL = Not Listed. Used when two portions of a taxon have different federal status.

Appendix C – Ecological Condition Ranking System

Ecological Condition Ranks

When assessing conservation priorities and management decisions, it can be useful to rank natural communities into levels of ecological condition. For example, an unfragmented area with high native species diversity, absence of non-native species and little soil erosion often has greater conservation value than another area in the same habitat type that is fragmented, infested with weeds or has erosion problems. Likewise, areas with a lower ecological condition rank may be targets for restoration activities.

The flowing ecological condition ranks were applied to vegetation polygons that were surveyed in this project:

Condition Rank 1. This condition class represents areas that have been altered to the point where the ecological condition often deviates dramatically from baseline conditions found in areas where stressors are much less prevalent. Areas characterized by Condition Class 1 often have high amounts of bare ground and/or non-native plant cover. The structure is often significantly altered from baseline conditions. Often one or more of the structural layers (trees, shrubs, herbs, grasses, mosses & lichens, biotic crust) may be significantly altered or even missing from the community. The composition of native vegetation is skewed toward species that can survive despite regular disturbance. Species diversity of native plants is usually low and native grass species are usually absent or in very low abundance (for a given community type). Evidence of accelerated erosion and soil compaction may be present. Hydrologic alteration may also be present. Significant direct evidence of various stress factors is usually abundant. Rare plant and animal species generally do not occur in this condition class.

Condition Rank 2. This condition class represents areas that show a fairly broad range of stress ranging from high to moderately low impact from a variety of stressors. Areas characterized by Condition Class 2 usually have moderate levels of non-native plant cover. The structure of the natural community present in Condition Class 2 areas is often relatively intact when compared to baseline conditions. Usually all structural layers are present, but form and stature may be altered from baseline conditions. Soil surface conditions are often intermediate between those in Condition Class 1 and Condition Class 3. Species diversity of native plants is often moderate for that community. Non-native species are usually present, but not as common or abundant as in Condition Class 1. Native grass species are often present, but usually in low abundance for that community type. Diversity of native grass species is relatively low when compared to baseline conditions. Evidence of accelerated erosion and soil compaction may be present in isolated areas, but is not dramatic or widespread. Hydrologic alteration is absent. Direct signs of stressors may be present, but not widespread or abundant. Rare plant and animal species may be found in this condition class, but are not common. Rare species that are found in this condition class are relatively tolerant of the stressors that are present.

Condition Rank 3. This condition class represents areas that show the least stress in the project area and are the closest to representing baseline conditions. Areas characterized by Condition Class 3 have little evidence of non-native plant invasion. The composition and

structure of native vegetation in this condition class correspond to the natural ranges of variation characteristic to this habitat type. Old-growth conditions may exist. Species diversity of native plants is often high relative to the community under consideration. Native grass species are usually present and often fairly abundant for the community type. Species diversity of native grass species is also often high. Soil compaction, accelerated erosion and hydrologic alteration are absent. Direct signs of stressors are usually absent. Certain rare species may only exist within this condition class and rare species are generally more common than in the lower condition classes.

Appendix D – 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 years 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 – Damon Point State Park

Polygon Number	**1**
Survey Intensity	1
Observer	PRM, PM
Date	8/14/2006
Specific Location	On the north point along the beach.
Total Vegetation	5
Trees Total	0
Dominant Trees	
emergent	0
maincanopy	0
subcanopy	0
Shrubs Total	0
Dominant Shrubs	
> 1.5' tall	0
< 1.5' tall	0
Graminoids Total	2
Dominant Graminoids	collected
Graminoids Perennial	2
Graminoids Annual	0
Forbs Total	5
Dominant Forbs	SAVI, PLMA, CAED, JACA4
Forbs Perennial	5
Forbs Annual	0
Ferns Total	0
Ferns Evergreen	0
Ferns Deciduous	0
ExoticsTotal	0
Exotics Perennial	0
Exotics Annual	0
Water	
Rock Outcrop	0
Gravel	10
Bare Ground	30
Moss Lichen	0
Litter	60
Logging	0
Stand Age	0
Agriculture	0
Livestock	0
Development	0
Wildlife	7
Recreation Severity	2
Recreation Type	3
Hydrology	1

Exotic Species

Primary Exotic

Secondary Exotic

Noxious Exotic

Plant Associations

	Percent	Pattern	Rank
1. SAVI (KUNZE & CORNELIUS 1982)	100	Matrix	2
2.	0		0
3.	0		0

Notes:

Polygon Number	**10**
Survey Intensity	1
Observer	HS
Date	5/15/2006
Specific Location	

Total Vegetation
Trees Total
Dominant Trees
emergent
maincanopy
subcanopy
Shrubs Total
Dominant Shrubs
> 1.5' tall
< 1.5' tall
Graminoids Total
Dominant Graminoids
Graminoids Perennial
Graminoids Annual
Forbs Total
Dominant Forbs
Forbs Perennial
Forbs Annual
Ferns Total
Ferns Evergreen
Ferns Deciduous
ExoticsTotal
Exotics Perennial
Exotics Annual
Water
Rock Outcrop
Gravel
Bare Ground
Moss Lichen
Litter
Logging
Stand Age
Agriculture
Livestock
Development
Wildlife
Recreation Severity
Recreation Type
Hydrology

Exotic Species

Primary Exotic

Secondary Exotic

Noxious Exotic

Plant Associations

		Percent	Pattern	Rank
1.	water	100	Matrix	3
2.				
3.				

Notes:

Polygon Number	**11**
Survey Intensity	1
Observer	HS
Date	5/15/2006
Specific Location	

Total Vegetation
Trees Total
Dominant Trees
emergent
maincanopy
subcanopy
Shrubs Total
Dominant Shrubs
> 1.5' tall
< 1.5' tall
Graminoids Total
Dominant Graminoids
Graminoids Perennial
Graminoids Annual
Forbs Total
Dominant Forbs
Forbs Perennial
Forbs Annual
Ferns Total
Ferns Evergreen
Ferns Deciduous
ExoticsTotal
Exotics Perennial
Exotics Annual
Water
Rock Outcrop
Gravel
Bare Ground
Moss Lichen
Litter
Logging
Stand Age
Agriculture
Livestock
Development
Wildlife
Recreation Severity
Recreation Type
Hydrology

Exotic Species

Primary Exotic

Secondary Exotic

Noxious Exotic

Plant Associations

	Percent	Pattern	Rank
1. developed	100	Matrix	1
2.			
3.			

Notes:

Polygon Number	**2**
Survey Intensity	1
Observer	HS
Date	5/15/2006
Specific Location	

Total Vegetation
Trees Total
Dominant Trees
emergent
maincanopy
subcanopy
Shrubs Total
Dominant Shrubs
> 1.5' tall
< 1.5' tall
Graminoids Total
Dominant Graminoids
Graminoids Perennial
Graminoids Annual
Forbs Total
Dominant Forbs
Forbs Perennial
Forbs Annual
Ferns Total

Ferns Evergreen
Ferns Deciduous
ExoticsTotal
Exotics Perennial
Exotics Annual
Water
Rock Outcrop
Gravel
Bare Ground
Moss Lichen
Litter
Logging
Stand Age
Agriculture
Livestock
Development
Wildlife
Recreation Severity
Recreation Type
Hydrology

Exotic Species

Primary Exotic

Secondary Exotic

Noxious Exotic

Plant Associations

		Percent	Pattern	Rank
1.	water	100	Matrix	3
2.				
3.				

Notes:

Polygon Number	**3**
Survey Intensity	1
Observer	PRM
Date	5/8/2006
Specific Location	The only polygon with shrubs.
Total Vegetation	6
Trees Total	1
Dominant Trees	ALRU2
emergent	0
maincanopy	1
subcanopy	0
Shrubs Total	5
Dominant Shrubs	CYSC4, SPDO
> 1.5' tall	5
< 1.5' tall	2
Graminoids Total	3
Dominant Graminoids	AMAR4, CAOB3
Graminoids Perennial	3
Graminoids Annual	
Forbs Total	2
Dominant Forbs	POMU
Forbs Perennial	2
Forbs Annual	1
Ferns Total	1
Ferns Evergreen	1
Ferns Deciduous	0
ExoticsTotal	3
Exotics Perennial	3
Exotics Annual	0
Water	
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	2
Recreation Type	3
Hydrology	1

Exotic Species

Primary Exotic
CYSC4
Secondary Exotic
RULA
Noxious Exotic
RUDI2

Plant Associations

	Percent	Pattern	Rank
1. PICO/CYSC4/AMAR4 (CHRISTY ET AL	100	Matrix	2
2.	0		0
3.	0		0

Notes:

Polygon Number **4**
Survey Intensity 1
Observer HS
Date 5/15/2006
Specific Location

Total Vegetation
Trees Total
Dominant Trees
emergent
maincanopy
subcanopy
Shrubs Total
Dominant Shrubs
> 1.5' tall
< 1.5' tall
Graminoids Total
Dominant Graminoids
Graminoids Perennial
Graminoids Annual
Forbs Total
Dominant Forbs
Forbs Perennial
Forbs Annual
Ferns Total

Ferns Evergreen
Ferns Deciduous
ExoticsTotal
Exotics Perennial
Exotics Annual
Water
Rock Outcrop
Gravel
Bare Ground
Moss Lichen
Litter
Logging
Stand Age
Agriculture
Livestock
Development
Wildlife
Recreation Severity
Recreation Type
Hydrology

Exotic Species

Primary Exotic

Secondary Exotic

Noxious Exotic

Plant Associations

		Percent	Pattern	Rank
1.	developed	100	Matrix	1
2.				
3.				

Notes:

Polygon Number	**5**
Survey Intensity	1
Observer	JR
Date	8/14/2006
Specific Location	
Total Vegetation	1
Trees Total	0
Dominant Trees	
emergent	0
maincanopy	0
subcanopy	0
Shrubs Total	0
Dominant Shrubs	
> 1.5' tall	0
< 1.5' tall	0
Graminoids Total	1
Dominant Graminoids	AMAR4
Graminoids Perennial	1
Graminoids Annual	0
Forbs Total	1
Dominant Forbs	CAED
Forbs Perennial	1
Forbs Annual	0
Ferns Total	0
Ferns Evergreen	0
Ferns Deciduous	0
ExoticsTotal	1
Exotics Perennial	0
Exotics Annual	0
Water	
Rock Outcrop	0
Gravel	0
Bare Ground	99
Moss Lichen	0
Litter	1
Logging	0
Stand Age	0
Agriculture	0
Livestock	0
Development	2
Wildlife	7, shorebirds
Recreation Severity	3
Recreation Type	3
Hydrology	1

Exotic Species

Primary Exotic
AMAR4
Secondary Exotic

Noxious Exotic

Plant Associations

	Percent	Pattern	Rank
1. beach	100	Matrix	1
2.	0		0
3.	0		0

Notes: The percentage of water in this polygon depends on the tide.

Polygon Number	**6**
Survey Intensity	1
Observer	PM
Date	8/14/2006
Specific Location	
Total Vegetation	3
Trees Total	0
Dominant Trees	
emergent	0
maincanopy	0
subcanopy	0
Shrubs Total	0
Dominant Shrubs	
> 1.5' tall	0
< 1.5' tall	0
Graminoids Total	2
Dominant Graminoids	AMAR4
Graminoids Perennial	2
Graminoids Annual	0
Forbs Total	2
Dominant Forbs	CAED, CAMA, LAJA
Forbs Perennial	2
Forbs Annual	0
Ferns Total	0
Ferns Evergreen	0
Ferns Deciduous	0
ExoticsTotal	1
Exotics Perennial	1
Exotics Annual	0
Water	
Rock Outcrop	
Gravel	1
Bare Ground	70
Moss Lichen	0
Litter	19
Logging	0
Stand Age	0
Agriculture	0
Livestock	0
Development	2
Wildlife	7, gulls
Recreation Severity	2
Recreation Type	3
Hydrology	1

Exotic Species

Primary Exotic
AMAR4
Secondary Exotic

Noxious Exotic

Plant Associations

	Percent	Pattern	Rank
1. beach	75	Matrix	2
2. ELMO9 (KUNZE & CORNELIUS 1982)	15	Large	2
3. water	10	Large	3

Notes:

Polygon Number	**7**
Survey Intensity	1
Observer	PRM, PM, JR
Date	8/14/2006
Specific Location	Higher areas in polygon 7
Total Vegetation	6
Trees Total	3
Dominant Trees	POTR15, PICO, PISI
emergent	0
maincanopy	3
subcanopy	0
Shrubs Total	4
Dominant Shrubs	CYSC4, SAHO, VAOV2, MYCA13
> 1.5' tall	4
< 1.5' tall	0
Graminoids Total	4
Dominant Graminoids	AMAR4, grass collected, ANOD
Graminoids Perennial	4
Graminoids Annual	0
Forbs Total	4
Dominant Forbs	FRCH, TADO, POPA7, CAMA
Forbs Perennial	4
Forbs Annual	0
Ferns Total	2
Ferns Evergreen	2
Ferns Deciduous	0
ExoticsTotal	5
Exotics Perennial	5
Exotics Annual	0
Water	
Rock Outcrop	0
Gravel	0
Bare Ground	5
Moss Lichen	15
Litter	80
Logging	5
Stand Age	0
Agriculture	0
Livestock	0
Development	2
Wildlife	7
Recreation Severity	2
Recreation Type	3
Hydrology	1

Exotic Species

Primary Exotic
AMAR4
Secondary Exotic
HYRA3
Noxious Exotic
CYSC4

Plant Associations

	Percent	Pattern	Rank
1. PICO/CYSC4/AMAR4 (CHRISTY ET AL	40	Matrix	2
2. AMAR4 Dune (KUNZE & CORNELIUS	40	Large	2
3. ARMA6-POPA7 (PBI)	20	Small	2

Notes: Ferns: POMU.

Polygon Number	**7W**
Survey Intensity	1
Observer	PRM
Date	5/9/2006
Specific Location	Lower area in the middle of Polygon 7.
Total Vegetation	5
Trees Total	0
Dominant Trees	
emergent	0
maincanopy	0
subcanopy	0
Shrubs Total	3
Dominant Shrubs	CYSC4, MYCA13
> 1.5' tall	2
< 1.5' tall	1
Graminoids Total	4
Dominant Graminoids	AMAR4, ANOD
Graminoids Perennial	4
Graminoids Annual	
Forbs Total	3
Dominant Forbs	FRCH, ARMA6, POPA7, LULI2, SCAN2, ACMI
Forbs Perennial	3
Forbs Annual	0
Ferns Total	0
Ferns Evergreen	0
Ferns Deciduous	0
ExoticsTotal	3
Exotics Perennial	3
Exotics Annual	0
Water	
Rock Outcrop	0
Gravel	8
Bare Ground	15
Moss Lichen	3
Litter	74
Logging	0
Stand Age	0
Agriculture	0
Livestock	0
Development	0
Wildlife	7
Recreation Severity	2
Recreation Type	3
Hydrology	1

Exotic Species

Primary Exotic
CYSC4
Secondary Exotic
HYRA3
Noxious Exotic

Plant Associations

	Percent	Pattern	Rank
1. ARMA6-POPA7 (PBI)	100	Matrix	2
2.	0		0
3.	0		0

Notes: Birds seen in the area.

Polygon Number	**8**
Survey Intensity	1
Observer	PRM
Date	5/9/2006
Specific Location	North side of the road after the road bends north.
Total Vegetation	5
Trees Total	1
Dominant Trees	PICO
emergent	0
maincanopy	1
subcanopy	0
Shrubs Total	2
Dominant Shrubs	VAOV2, CYSC4
> 1.5' tall	2
< 1.5' tall	0
Graminoids Total	5
Dominant Graminoids	AMAR4, ELMO9
Graminoids Perennial	5
Graminoids Annual	
Forbs Total	3
Dominant Forbs	FRCH, POPA7, POMU
Forbs Perennial	3
Forbs Annual	0
Ferns Total	1
Ferns Evergreen	1
Ferns Deciduous	0
ExoticsTotal	2
Exotics Perennial	2
Exotics Annual	0
Water	
Rock Outcrop	0
Gravel	3
Bare Ground	20
Moss Lichen	2
Litter	75
Logging	0
Stand Age	1
Agriculture	0
Livestock	0
Development	0
Wildlife	7
Recreation Severity	2
Recreation Type	3
Hydrology	1

Exotic Species

Primary Exotic
CYSC4
Secondary Exotic

Noxious Exotic

Plant Associations

	Percent	Pattern	Rank
1. PICO/CYSC4/AMAR4 (CHRISTY ET AL	100	Matrix	2
2.	0		0
3.	0		0

Notes: Seagulls observed in the area.

Polygon Number	**9**
Survey Intensity	1
Observer	PRM
Date	5/8/2006
Specific Location	Grassy area in what is polygon 9 on the Ortho photo map.
Total Vegetation	5
Trees Total	1
Dominant Trees	ALRU2
emergent	0
maincanopy	1
subcanopy	0
Shrubs Total	1
Dominant Shrubs	SPDO, CYSC4
> 1.5' tall	1
< 1.5' tall	0
Graminoids Total	4
Dominant Graminoids	AMAR4
Graminoids Perennial	4
Graminoids Annual	
Forbs Total	2
Dominant Forbs	ANLU, LAJA
Forbs Perennial	2
Forbs Annual	1
Ferns Total	0
Ferns Evergreen	0
Ferns Deciduous	0
ExoticsTotal	1
Exotics Perennial	1
Exotics Annual	0
Water	
Rock Outcrop	0
Gravel	50
Bare Ground	0
Moss Lichen	0
Litter	50
Logging	0
Stand Age	1
Agriculture	0
Livestock	0
Development	0
Wildlife	7
Recreation Severity	2
Recreation Type	3
Hydrology	1

Exotic Species

Primary Exotic
CYSC4
Secondary Exotic
FEAR3
Noxious Exotic

Plant Associations

	Percent	Pattern	Rank
1. AMAR4 Dune (KUNZE & CORNELIUS	60	Matrix	2
2. DISP-SAVI (KUNZE & CORNELIUS 1982)	40	Large	2
3.	0		0

Notes: Seagulls were observed in the area.

Vegetation Polygon Data – Griffith-Priday State Park

Polygon Number	**1**
Survey Intensity	2
Observer	PRM
Date	5/12/2006
Specific Location	
Total Vegetation	6
Trees Total	6
Dominant Trees	TSHE, PISI
emergent	2
maincanopy	5
subcanopy	1
Shrubs Total	3
Dominant Shrubs	RUSP, GASH
> 1.5' tall	3
< 1.5' tall	1
Graminoids Total	0
Dominant Graminoids	
Graminoids Perennial	0
Graminoids Annual	0
Forbs Total	0
Dominant Forbs	
Forbs Perennial	0
Forbs Annual	0
Ferns Total	0
Ferns Evergreen	0
Ferns Deciduous	0
ExoticsTotal	0
Exotics Perennial	0
Exotics Annual	0
Water	
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	2
Recreation Severity	2
Recreation Type	3
Hydrology	1

Exotic Species

Primary Exotic

Secondary Exotic

Noxious Exotic

Plant Associations

	Percent	Pattern	Rank
1. TSHE/GASH/POMU (HENDERSON ET	100	Matrix	2
2.	0		0
3.	0		0

Notes: Many small stumps and no OG trees.

Polygon Number	**10**
Survey Intensity	1
Observer	PRM
Date	5/12/2006
Specific Location	Along the Ocean shore.
Total Vegetation	4
Trees Total	0
Dominant Trees	
emergent	0
maincanopy	0
subcanopy	0
Shrubs Total	0
Dominant Shrubs	
> 1.5' tall	0
< 1.5' tall	0
Graminoids Total	4
Dominant Graminoids	AMAR4
Graminoids Perennial	4
Graminoids Annual	0
Forbs Total	2
Dominant Forbs	LAJA, CAED
Forbs Perennial	2
Forbs Annual	0
Ferns Total	0
Ferns Evergreen	0
Ferns Deciduous	0
ExoticsTotal	0
Exotics Perennial	0
Exotics Annual	0
Water	
Rock Outcrop	0
Gravel	10
Bare Ground	80
Moss Lichen	0
Litter	10
Logging	0
Stand Age	1
Agriculture	0
Livestock	0
Development	0
Wildlife	7
Recreation Severity	3
Recreation Type	3
Hydrology	1

Exotic Species

Primary Exotic

Secondary Exotic

Noxious Exotic

Plant Associations

	Percent	Pattern	Rank
1. AMAR4 Dune (KUNZE & CORNELIUS	100	Matrix	2
2.	0		0
3.	0		0

Notes:

Polygon Number	**11**
Survey Intensity	1
Observer	PRM
Date	5/12/2006
Specific Location	
Total Vegetation	6
Trees Total	4
Dominant Trees	PICO, PISI
emergent	0
maincanopy	4
subcanopy	2
Shrubs Total	5
Dominant Shrubs	CYSC4, MYCA13
> 1.5' tall	5
< 1.5' tall	0
Graminoids Total	5
Dominant Graminoids	AMAR4
Graminoids Perennial	5
Graminoids Annual	0
Forbs Total	4
Dominant Forbs	TADO, FRCH, POMU
Forbs Perennial	4
Forbs Annual	0
Ferns Total	1
Ferns Evergreen	1
Ferns Deciduous	0
ExoticsTotal	5
Exotics Perennial	5
Exotics Annual	0
Water	
Rock Outcrop	0
Gravel	0
Bare Ground	0
Moss Lichen	1
Litter	99
Logging	0
Stand Age	1
Agriculture	0
Livestock	0
Development	0
Wildlife	3
Recreation Severity	2
Recreation Type	4
Hydrology	1

Exotic Species

Primary Exotic
CYSC4
Secondary Exotic
AMAR4
Noxious Exotic
SCAN2

Plant Associations

	Percent	Pattern	Rank
1. PICO/CYSC4/AMAR4 (CHRISTY ET AL	75	Matrix	1
2. PICO/VAOV2-GASH (KUNZE &	20	Large	2
3. CAOB3-POPA23 (CHRISTY ET AL 1998)	5	Small	2

Notes: Recreation includes pedestrian and some wheeled use. The PICO/VAOV2/GASH community is dominated by MYCA13. There is PISI and TSHE.

Polygon Number	**14**
Survey Intensity	1
Observer	HS
Date	5/12/2006
Specific Location	E margin of river.
Total Vegetation	5
Trees Total	0
Dominant Trees	
emergent	0
maincanopy	0
subcanopy	0
Shrubs Total	1
Dominant Shrubs	
> 1.5' tall	1
< 1.5' tall	0
Graminoids Total	4
Dominant Graminoids	CALY, CAOB3, FERU2
Graminoids Perennial	4
Graminoids Annual	0
Forbs Total	4
Dominant Forbs	SAVI, GRIN, POPA23
Forbs Perennial	4
Forbs Annual	0
Ferns Total	0
Ferns Evergreen	0
Ferns Deciduous	0
ExoticsTotal	2
Exotics Perennial	2
Exotics Annual	0
Water	
Rock Outcrop	0
Gravel	0
Bare Ground	1
Moss Lichen	0
Litter	99
Logging	0
Stand Age	0
Agriculture	0
Livestock	0
Development	0
Wildlife	7 BIRDS
Recreation Severity	3
Recreation Type	3
Hydrology	1

Exotic Species

Primary Exotic
Ammophila
Secondary Exotic
CYSC4
Noxious Exotic

Plant Associations

	Percent	Pattern	Rank
1. CALY3 (KUNZE & CORNELIUS 1982)	50	Large	3
2. SAVI (KUNZE & CORNELIUS 1982)	25	Small	3
3. ELMO9-FERU2-GRIN (PBI)	25	Small	2

Notes:

Polygon Number	**15**
Survey Intensity	1
Observer	HS
Date	5/12/2006
Specific Location	

Total Vegetation
Trees Total
Dominant Trees
emergent
maincanopy
subcanopy
Shrubs Total
Dominant Shrubs
> 1.5' tall
< 1.5' tall
Graminoids Total
Dominant Graminoids
Graminoids Perennial
Graminoids Annual
Forbs Total
Dominant Forbs
Forbs Perennial
Forbs Annual
Ferns Total
Ferns Evergreen
Ferns Deciduous
ExoticsTotal
Exotics Perennial
Exotics Annual
Water
Rock Outcrop
Gravel
Bare Ground
Moss Lichen
Litter
Logging
Stand Age
Agriculture
Livestock
Development
Wildlife
Recreation Severity
Recreation Type
Hydrology

Exotic Species

Primary Exotic

Secondary Exotic

Noxious Exotic

Plant Associations

	Percent	Pattern	Rank
1. developed	100	Matrix	3
2.			
3.			

Notes:

Polygon Number	**16**
Survey Intensity	1
Observer	HS
Date	5/12/2006
Specific Location	S section along E side of river.
Total Vegetation	6
Trees Total	6
Dominant Trees	PISI, TSHE
emergent	3
maincanopy	5
subcanopy	2
Shrubs Total	3
Dominant Shrubs	VAOV2, GASH, VAPA
> 1.5' tall	3
< 1.5' tall	1
Graminoids Total	1
Dominant Graminoids	
Graminoids Perennial	1
Graminoids Annual	0
Forbs Total	4
Dominant Forbs	MADI, POMU
Forbs Perennial	4
Forbs Annual	0
Ferns Total	4
Ferns Evergreen	4
Ferns Deciduous	1
ExoticsTotal	1
Exotics Perennial	1
Exotics Annual	0
Water	
Rock Outcrop	0
Gravel	0
Bare Ground	0
Moss Lichen	2
Litter	98
Logging	3
Stand Age	6
Agriculture	0
Livestock	0
Development	0
Wildlife	3
Recreation Severity	0
Recreation Type	0
Hydrology	1

Exotic Species

Primary Exotic
ILAQ80
Secondary Exotic

Noxious Exotic

Plant Associations

	Percent	Pattern	Rank
1. PISI/POMU (CHRISTY ET AL 1998)	80	Matrix	2
2. PISI/GASH (CHRISTY ET AL 1998)	20	Small	2
3.	0		0

Notes:

Polygon Number	**17**
Survey Intensity	1
Observer	HS
Date	5/12/2006
Specific Location	S section of park.
Total Vegetation	6
Trees Total	5
Dominant Trees	PISI, TSHE, ALRU2
emergent	3
maincanopy	5
subcanopy	2
Shrubs Total	5
Dominant Shrubs	VAOV2, GASH, RUSP
> 1.5' tall	5
< 1.5' tall	1
Graminoids Total	2
Dominant Graminoids	CAOB3
Graminoids Perennial	2
Graminoids Annual	0
Forbs Total	3
Dominant Forbs	MADI, POMU
Forbs Perennial	3
Forbs Annual	0
Ferns Total	3
Ferns Evergreen	3
Ferns Deciduous	1
ExoticsTotal	1
Exotics Perennial	1
Exotics Annual	0
Water	
Rock Outcrop	0
Gravel	0
Bare Ground	0
Moss Lichen	3
Litter	97
Logging	3
Stand Age	6
Agriculture	0
Livestock	0
Development	0
Wildlife	3
Recreation Severity	0
Recreation Type	0
Hydrology	1

Exotic Species

Primary Exotic
ILAQ80
Secondary Exotic

Noxious Exotic

Plant Associations

	Percent	Pattern	Rank
1. PISI/GASH (CHRISTY ET AL 1998)	90	Matrix	2
2. PISI/VAOV2 (CHRISTY ET AL 1998)	10	Small	2
3.	0		0

Notes:

Polygon Number	**18**
Survey Intensity	1
Observer	PM
Date	8/15/2006
Specific Location	end of spit
Total Vegetation	3
Trees Total	0
Dominant Trees	
emergent	0
maincanopy	0
subcanopy	0
Shrubs Total	0
Dominant Shrubs	
> 1.5' tall	0
< 1.5' tall	0
Graminoids Total	3
Dominant Graminoids	AMAR4
Graminoids Perennial	3
Graminoids Annual	0
Forbs Total	2
Dominant Forbs	CAED, CAMA, HOPE
Forbs Perennial	2
Forbs Annual	0
Ferns Total	0
Ferns Evergreen	0
Ferns Deciduous	0
ExoticsTotal	3
Exotics Perennial	3
Exotics Annual	0
Water	
Rock Outcrop	0
Gravel	0
Bare Ground	90
Moss Lichen	0
Litter	10
Logging	0
Stand Age	0
Agriculture	0
Livestock	0
Development	0
Wildlife	7, gulls
Recreation Severity	3
Recreation Type	3
Hydrology	1

Exotic Species

Primary Exotic
AMAR4
Secondary Exotic

Noxious Exotic

Plant Associations

	Percent	Pattern	Rank
1. beach	90	Matrix	3
2. AMAR4 Dune (KUNZE & CORNELIUS	10	Small	2
3.	0		0

Notes: Sparsely vegetated area of blowing sand.

Polygon Number	**19**
Survey Intensity	2
Observer	PRM
Date	5/12/2006
Specific Location	
Total Vegetation	5
Trees Total	5
Dominant Trees	TSHE, PISI
emergent	3
maincanopy	5
subcanopy	1
Shrubs Total	4
Dominant Shrubs	GASH, RUSP
> 1.5' tall	4
< 1.5' tall	1
Graminoids Total	0
Dominant Graminoids	0
Graminoids Perennial	0
Graminoids Annual	0
Forbs Total	0
Dominant Forbs	POMU
Forbs Perennial	0
Forbs Annual	0
Ferns Total	1
Ferns Evergreen	1
Ferns Deciduous	0
ExoticsTotal	0
Exotics Perennial	0
Exotics Annual	0
Water	
Rock Outcrop	0
Gravel	0
Bare Ground	0
Moss Lichen	5
Litter	95
Logging	2
Stand Age	2
Agriculture	0
Livestock	0
Development	0
Wildlife	2
Recreation Severity	2
Recreation Type	3
Hydrology	1

Exotic Species

Primary Exotic

Secondary Exotic

Noxious Exotic

Plant Associations

	Percent	Pattern	Rank
1. TSHE/GASH/POMU (HENDERSON ET	100	Matrix	2
2.	0		0
3.	0		0

Notes:

Polygon Number	**19B**
Survey Intensity	2
Observer	PRM
Date	5/12/2006
Specific Location	
Total Vegetation	5
Trees Total	5
Dominant Trees	TSHE, PISI
emergent	3
maincanopy	5
subcanopy	1
Shrubs Total	4
Dominant Shrubs	GASH, RUSP
> 1.5' tall	4
< 1.5' tall	1
Graminoids Total	0
Dominant Graminoids	0
Graminoids Perennial	0
Graminoids Annual	0
Forbs Total	0
Dominant Forbs	POMU
Forbs Perennial	0
Forbs Annual	0
Ferns Total	1
Ferns Evergreen	1
Ferns Deciduous	0
ExoticsTotal	0
Exotics Perennial	0
Exotics Annual	0
Water	
Rock Outcrop	0
Gravel	0
Bare Ground	0
Moss Lichen	5
Litter	95
Logging	2
Stand Age	2
Agriculture	0
Livestock	0
Development	0
Wildlife	2
Recreation Severity	2
Recreation Type	3
Hydrology	1

Exotic Species

Primary Exotic

Secondary Exotic

Noxious Exotic

Plant Associations

	Percent	Pattern	Rank
1. TSHE/GASH/POMU (HENDERSON ET	100	Matrix	2
2.	0		0
3.	0		0

Notes:

Polygon Number	**2**
Survey Intensity	2
Observer	PRM
Date	5/12/2006
Specific Location	
Total Vegetation	6
Trees Total	5
Dominant Trees	TSHE, PISI
emergent	3
maincanopy	5
subcanopy	1
Shrubs Total	4
Dominant Shrubs	RUSP, GASH
> 1.5' tall	4
< 1.5' tall	2
Graminoids Total	0
Dominant Graminoids	
Graminoids Perennial	0
Graminoids Annual	0
Forbs Total	1
Dominant Forbs	MADI, POMU
Forbs Perennial	1
Forbs Annual	0
Ferns Total	3
Ferns Evergreen	3
Ferns Deciduous	0
ExoticsTotal	0
Exotics Perennial	0
Exotics Annual	0
Water	
Rock Outcrop	0
Gravel	0
Bare Ground	0
Moss Lichen	10
Litter	90
Logging	2
Stand Age	3
Agriculture	0
Livestock	0
Development	0
Wildlife	2
Recreation Severity	2
Recreation Type	3
Hydrology	1

Exotic Species

Primary Exotic

Secondary Exotic

Noxious Exotic

Plant Associations

		Percent	Pattern	Rank
1.	TSHE/GASH/POMU (HENDERSON ET	100	Matrix	2
2.		0		0
3.		0		0

Notes: There are many large stumps and OG PISI trees here. There is also trash 30-40 feet from the road.

Polygon Number	**21**
Survey Intensity	2
Observer	PRM
Date	5/12/2006
Specific Location	
Total Vegetation	6
Trees Total	4
Dominant Trees	PISI, ALRU2
emergent	1
maincanopy	4
subcanopy	1
Shrubs Total	6
Dominant Shrubs	GASH
> 1.5' tall	6
< 1.5' tall	1
Graminoids Total	0
Dominant Graminoids	
Graminoids Perennial	0
Graminoids Annual	0
Forbs Total	0
Dominant Forbs	POMU
Forbs Perennial	0
Forbs Annual	0
Ferns Total	2
Ferns Evergreen	2
Ferns Deciduous	0
ExoticsTotal	1
Exotics Perennial	1
Exotics Annual	0
Water	
Rock Outcrop	0
Gravel	0
Bare Ground	0
Moss Lichen	20
Litter	80
Logging	5
Stand Age	2
Agriculture	0
Livestock	0
Development	0
Wildlife	2
Recreation Severity	2
Recreation Type	3
Hydrology	1

Exotic Species

Primary Exotic
RUDI2
Secondary Exotic

Noxious Exotic

Plant Associations

	Percent	Pattern	Rank
1. PISI/GASH (CHRISTY ET AL 1998)	100	Matrix	2
2.	0		0
3.	0		0

Notes:

Polygon Number	**22**
Survey Intensity	
Observer	HS
Date	5/12/2006
Specific Location	

Total Vegetation
Trees Total
Dominant Trees
emergent
maincanopy
subcanopy
Shrubs Total
Dominant Shrubs
> 1.5' tall
< 1.5' tall
Graminoids Total
Dominant Graminoids
Graminoids Perennial
Graminoids Annual
Forbs Total
Dominant Forbs
Forbs Perennial
Forbs Annual
Ferns Total
Ferns Evergreen
Ferns Deciduous
ExoticsTotal
Exotics Perennial
Exotics Annual
Water
Rock Outcrop
Gravel
Bare Ground
Moss Lichen
Litter
Logging
Stand Age
Agriculture
Livestock
Development
Wildlife
Recreation Severity
Recreation Type
Hydrology

Exotic Species

Primary Exotic

Secondary Exotic

Noxious Exotic

Plant Associations

	Percent	Pattern	Rank
1. developed	100	Matrix	3
2.			
3.			

Notes:

Polygon Number	**23**
Survey Intensity	1
Observer	HS
Date	5/12/2006
Specific Location	beach at sw end

Total Vegetation
Trees Total
Dominant Trees
emergent
maincanopy
subcanopy
Shrubs Total
Dominant Shrubs
> 1.5' tall
< 1.5' tall
Graminoids Total
Dominant Graminoids
Graminoids Perennial
Graminoids Annual
Forbs Total
Dominant Forbs
Forbs Perennial
Forbs Annual
Ferns Total

Exotic Species

Ferns Evergreen
Ferns Deciduous
ExoticsTotal
Exotics Perennial
Exotics Annual
Water
Rock Outcrop
Gravel
Bare Ground
Moss Lichen
Litter
Logging
Stand Age
Agriculture
Livestock
Development
Wildlife
Recreation Severity
Recreation Type
Hydrology

Primary Exotic

Secondary Exotic

Noxious Exotic

Plant Associations

		Percent	Pattern	Rank
1.	beach	100	Matrix	3
2.				
3.				

Notes:

Polygon Number	**3**
Survey Intensity	2
Observer	PRM
Date	5/12/2006
Specific Location	Middle east side of the Park.
Total Vegetation	6
Trees Total	6
Dominant Trees	TSHE, PICO
emergent	3
maincanopy	5
subcanopy	1
Shrubs Total	2
Dominant Shrubs	VAOV2
> 1.5' tall	2
< 1.5' tall	0
Graminoids Total	0
Dominant Graminoids	
Graminoids Perennial	0
Graminoids Annual	0
Forbs Total	2
Dominant Forbs	MADI, POMU, PTAQ
Forbs Perennial	2
Forbs Annual	0
Ferns Total	3
Ferns Evergreen	3
Ferns Deciduous	2
ExoticsTotal	0
Exotics Perennial	0
Exotics Annual	0
Water	
Rock Outcrop	0
Gravel	0
Bare Ground	0
Moss Lichen	15
Litter	85
Logging	2
Stand Age	2
Agriculture	0
Livestock	0
Development	0
Wildlife	2
Recreation Severity	2
Recreation Type	3
Hydrology	1

Exotic Species

Primary Exotic

Secondary Exotic

Noxious Exotic

Plant Associations

	Percent	Pattern	Rank
1. TSHE/GASH/POMU (HENDERSON ET	100	Matrix	2
2.	0		0
3.	0		0

Notes: There are huge stumps in this area and a lot of downed wood. There is some OG TSHE and PISI here.

Polygon Number	**4**
Survey Intensity	1
Observer	HS
Date	5/12/2006
Specific Location	E side of river.
Total Vegetation	4
Trees Total	1
Dominant Trees	PISI
emergent	0
maincanopy	1
subcanopy	0
Shrubs Total	1
Dominant Shrubs	
> 1.5' tall	1
< 1.5' tall	0
Graminoids Total	3
Dominant Graminoids	ELMO, AMAR4, FERU2
Graminoids Perennial	3
Graminoids Annual	0
Forbs Total	4
Dominant Forbs	SAVI, PLMA, HOMA, LAJA
Forbs Perennial	4
Forbs Annual	0
Ferns Total	0
Ferns Evergreen	0
Ferns Deciduous	0
ExoticsTotal	2
Exotics Perennial	2
Exotics Annual	0
Water	
Rock Outcrop	0
Gravel	30
Bare Ground	10
Moss Lichen	0
Litter	60
Logging	0
Stand Age	0
Agriculture	0
Livestock	0
Development	0
Wildlife	7 BIRDS
Recreation Severity	3
Recreation Type	1
Hydrology	1

Exotic Species

Primary Exotic
Ammophila
Secondary Exotic
CYSC4
Noxious Exotic

Plant Associations

	Percent	Pattern	Rank
1. SAVI-TRMA20 (KUNZE & CORNELIUS	50	Large	3
2. beach	50	Large	2
3.	0		0

Notes:

Polygon Number	**5**
Survey Intensity	1
Observer	HS
Date	5/12/2006
Specific Location	Along road (W) on E side of river.
Total Vegetation	6
Trees Total	5
Dominant Trees	PISI, ALRU2
emergent	1
maincanopy	4
subcanopy	3
Shrubs Total	4
Dominant Shrubs	SAHO, RUSP, GASH, LOIN5
> 1.5' tall	4
< 1.5' tall	0
Graminoids Total	4
Dominant Graminoids	CAOB3, CANU (?)
Graminoids Perennial	4
Graminoids Annual	0
Forbs Total	2
Dominant Forbs	POMU
Forbs Perennial	2
Forbs Annual	0
Ferns Total	2
Ferns Evergreen	2
Ferns Deciduous	1
ExoticsTotal	1
Exotics Perennial	1
Exotics Annual	0
Water	
Rock Outcrop	0
Gravel	0
Bare Ground	0
Moss Lichen	1
Litter	99
Logging	2
Stand Age	3
Agriculture	0
Livestock	0
Development	0
Wildlife	0
Recreation Severity	0
Recreation Type	0
Hydrology	1

Exotic Species

Primary Exotic
HEHE
Secondary Exotic

Noxious Exotic

Plant Associations

	Percent	Pattern	Rank
1. PISI/GASH (CHRISTY ET AL 1998)	60	Matrix	2
2. SAHO/CAOB3 c.t. (KUNZE 1994)	20	Large	3
3. PISI/POMU (CHRISTY ET AL 1998)	20	Large	2

Notes:

Polygon Number	**6**
Survey Intensity	2
Observer	PM, JR
Date	8/15/2006
Specific Location	
Total Vegetation	5
Trees Total	0
Dominant Trees	
emergent	0
maincanopy	0
subcanopy	0
Shrubs Total	1
Dominant Shrubs	GASH, SAHO
> 1.5' tall	1
< 1.5' tall	0
Graminoids Total	5
Dominant Graminoids	CALY3, FERU2
Graminoids Perennial	5
Graminoids Annual	0
Forbs Total	3
Dominant Forbs	ANLU, GRIN, HOPE, JACA4, SAVI
Forbs Perennial	3
Forbs Annual	0
Ferns Total	0
Ferns Evergreen	0
Ferns Deciduous	0
ExoticsTotal	1
Exotics Perennial	1
Exotics Annual	0
Water	8
Rock Outcrop	0
Gravel	0
Bare Ground	4
Moss Lichen	0
Litter	88
Logging	0
Stand Age	1
Agriculture	0
Livestock	0
Development	0
Wildlife	2
Recreation Severity	3
Recreation Type	3
Hydrology	1

Exotic Species

Primary Exotic
RUCR
Secondary Exotic

Noxious Exotic

Plant Associations

	Percent	Pattern	Rank
1. FERU2-AGAL3-POPA23 (KUNZE &	65	Matrix	3
2. CALY3-TRMA20 (KUNZE & CORNELIUS	25	Large	3
3. SAVI-JACA4-DISP-TRMA20 (KUNZE &	10	linear	3

Notes:

Polygon Number	**7**
Survey Intensity	2
Observer	JR
Date	8/15/2006
Specific Location	N of residence
Total Vegetation	6
Trees Total	3
Dominant Trees	PISI, PICO, ALRU2
emergent	0
maincanopy	3
subcanopy	1
Shrubs Total	5
Dominant Shrubs	GASH, CYSC4, SAHO, MYCA13
> 1.5' tall	5
< 1.5' tall	2
Graminoids Total	3
Dominant Graminoids	AMAR4, CAOB3
Graminoids Perennial	3
Graminoids Annual	0
Forbs Total	2
Dominant Forbs	POPA23, FRCH, TADO
Forbs Perennial	2
Forbs Annual	0
Ferns Total	0
Ferns Evergreen	0
Ferns Deciduous	0
ExoticsTotal	4
Exotics Perennial	4
Exotics Annual	0
Water	
Rock Outcrop	0
Gravel	0
Bare Ground	1
Moss Lichen	0
Litter	99
Logging	0
Stand Age	2
Agriculture	0
Livestock	0
Development	6 (road, house)
Wildlife	3
Recreation Severity	3
Recreation Type	3
Hydrology	1

Exotic Species

Primary Exotic
CYSC4
Secondary Exotic

Noxious Exotic

Plant Associations

	Percent	Pattern	Rank
1. SAHO/CAOB3-POPA23 (CHRISTY ET AL	65	Matrix	1
2. PICO/CYSC4/AMAR4 (CHRISTY ET AL	20	Small	1
3. PISI/GASH (CHRISTY ET AL 1998)	15	linear	1

Notes:

Polygon Number	**8**
Survey Intensity	1
Observer	HS
Date	5/12/2006
Specific Location	

Total Vegetation
Trees Total
Dominant Trees
emergent
maincanopy
subcanopy
Shrubs Total
Dominant Shrubs
> 1.5' tall
< 1.5' tall
Graminoids Total
Dominant Graminoids
Graminoids Perennial
Graminoids Annual
Forbs Total
Dominant Forbs
Forbs Perennial
Forbs Annual
Ferns Total

Ferns Evergreen
Ferns Deciduous
ExoticsTotal
Exotics Perennial
Exotics Annual
Water
Rock Outcrop
Gravel
Bare Ground
Moss Lichen
Litter
Logging
Stand Age
Agriculture
Livestock
Development
Wildlife
Recreation Severity
Recreation Type
Hydrology

Exotic Species

Primary Exotic

Secondary Exotic

Noxious Exotic

Plant Associations

	Percent	Pattern	Rank
1. developed	100	Matrix	3
2.			
3.			

Notes:

Polygon Number	**9**
Survey Intensity	2
Observer	PRM
Date	5/12/2006
Specific Location	
Total Vegetation	6
Trees Total	5
Dominant Trees	ALRU2, PISI
emergent	2
maincanopy	5
subcanopy	1
Shrubs Total	4
Dominant Shrubs	SAHO, MYCA13, RUSP
> 1.5' tall	4
< 1.5' tall	1
Graminoids Total	5
Dominant Graminoids	CAOB3
Graminoids Perennial	5
Graminoids Annual	0
Forbs Total	3
Dominant Forbs	OESA, MADI, POMU
Forbs Perennial	3
Forbs Annual	0
Ferns Total	1
Ferns Evergreen	1
Ferns Deciduous	0
ExoticsTotal	1
Exotics Perennial	1
Exotics Annual	0
Water	
Rock Outcrop	0
Gravel	0
Bare Ground	0
Moss Lichen	0
Litter	100
Logging	0
Stand Age	1
Agriculture	0
Livestock	0
Development	0
Wildlife	2
Recreation Severity	2
Recreation Type	3
Hydrology	1

Exotic Species

Primary Exotic
RUDI2
Secondary Exotic

Noxious Exotic

Plant Associations

	Percent	Pattern	Rank
1. PICO/CYSC4/AMAR4 (CHRISTY ET AL	50	Scattered	2
2. SAHO/CAOB3 c.t. (KUNZE 1994)	45	Scattered	2
3. CAOB3 c.t. (KUNZE 1994)	5	Small	1

Notes:

Vegetation Polygon Data – Ocean City State Park

Polygon Number	**10**
Survey Intensity	2
Observer	PRM
Date	5/11/2006
Specific Location	
Total Vegetation	6
Trees Total	5
Dominant Trees	ALRU2, PISI, TSHE
emergent	2
maincanopy	5
subcanopy	2
Shrubs Total	4
Dominant Shrubs	RUSP, VAOV2, GASH
> 1.5' tall	4
< 1.5' tall	1
Graminoids Total	2
Dominant Graminoids	CAOB3
Graminoids Perennial	2
Graminoids Annual	1
Forbs Total	3
Dominant Forbs	MADI, PTAQ, POMU
Forbs Perennial	3
Forbs Annual	0
Ferns Total	2
Ferns Evergreen	2
Ferns Deciduous	2
ExoticsTotal	1
Exotics Perennial	1
Exotics Annual	0
Water	
Rock Outcrop	0
Gravel	0
Bare Ground	1
Moss Lichen	4
Litter	95
Logging	0
Stand Age	2
Agriculture	0
Livestock	0
Development	0
Wildlife	3
Recreation Severity	3
Recreation Type	3
Hydrology	1

Exotic Species

Primary Exotic
HEHE
Secondary Exotic

Noxious Exotic

Plant Associations

	Percent	Pattern	Rank
1. PISI/VAOV2-GASH (KUNZE &	60	Matrix	2
2. ALRU2/RUSP/CAOB3-LYAM3 (CHRISTY	40	Large	2
3.	0		0

Notes:

Polygon Number	**10B**
Survey Intensity	2
Observer	JR
Date	8/13/2006
Specific Location	SOUTHERN EDGE
Total Vegetation	6
Trees Total	6
Dominant Trees	PISI, ALRU2
emergent	2
maincanopy	5
subcanopy	3
Shrubs Total	4
Dominant Shrubs	RUSP, GASH, VAPA
> 1.5' tall	4
< 1.5' tall	2
Graminoids Total	1
Dominant Graminoids	CAOB3
Graminoids Perennial	1
Graminoids Annual	0
Forbs Total	3
Dominant Forbs	MADI
Forbs Perennial	3
Forbs Annual	0
Ferns Total	2
Ferns Evergreen	2
Ferns Deciduous	0
ExoticsTotal	0
Exotics Perennial	0
Exotics Annual	0
Water	0
Rock Outcrop	0
Gravel	0
Bare Ground	0
Moss Lichen	3
Litter	97
Logging	0
Stand Age	3
Agriculture	0
Livestock	0
Development	0
Wildlife	3
Recreation Severity	3
Recreation Type	3
Hydrology	1

Exotic Species

Primary Exotic

Secondary Exotic

Noxious Exotic

Plant Associations

	Percent	Pattern	Rank
1. PISI/VAOV2-GASH (KUNZE &	100	Matrix	3
2.	0		0
3.	0		0

Notes: Ferns: POMU

Polygon Number	**11**
Survey Intensity	2
Observer	PRM
Date	5/11/2006
Specific Location	
Total Vegetation	6
Trees Total	5
Dominant Trees	ALRU2, PISI
emergent	2
maincanopy	5
subcanopy	1
Shrubs Total	4
Dominant Shrubs	RUSP, VAOV2
> 1.5' tall	4
< 1.5' tall	1
Graminoids Total	2
Dominant Graminoids	CAOB3
Graminoids Perennial	2
Graminoids Annual	0
Forbs Total	2
Dominant Forbs	MADI, POMU, PTAQ
Forbs Perennial	2
Forbs Annual	0
Ferns Total	2
Ferns Evergreen	2
Ferns Deciduous	0
ExoticsTotal	1
Exotics Perennial	1
Exotics Annual	0
Water	
Rock Outcrop	0
Gravel	0
Bare Ground	1
Moss Lichen	9
Litter	90
Logging	2
Stand Age	2
Agriculture	0
Livestock	0
Development	2
Wildlife	2
Recreation Severity	3
Recreation Type	3
Hydrology	1

Exotic Species

Primary Exotic
BEPE2
Secondary Exotic

Noxious Exotic

Plant Associations

		Percent	Pattern	Rank
1.	ALRU2/RUSP/CAOB3-LYAM3 (CHRISTY	100	Matrix	2
2.		0		0
3.		0		0

Notes: There is an old road and a culvert in this polygon.

Polygon Number	**12**
Survey Intensity	2
Observer	PRM, PM, JR
Date	5/11/2006
Specific Location	
Total Vegetation	6
Trees Total	5
Dominant Trees	PISI, ALRU2
emergent	3
maincanopy	3
subcanopy	1
Shrubs Total	5
Dominant Shrubs	VAOV2, GASH
> 1.5' tall	5
< 1.5' tall	1
Graminoids Total	3
Dominant Graminoids	CAOB3
Graminoids Perennial	3
Graminoids Annual	0
Forbs Total	3
Dominant Forbs	MADI, POMU
Forbs Perennial	3
Forbs Annual	0
Ferns Total	2
Ferns Evergreen	2
Ferns Deciduous	1
ExoticsTotal	0
Exotics Perennial	0
Exotics Annual	0
Water	
Rock Outcrop	0
Gravel	0
Bare Ground	2
Moss Lichen	3
Litter	95
Logging	0
Stand Age	5
Agriculture	0
Livestock	0
Development	0
Wildlife	7
Recreation Severity	2
Recreation Type	3
Hydrology	1

Exotic Species

Primary Exotic

Secondary Exotic

Noxious Exotic

Plant Associations

		Percent	Pattern	Rank
1.	PISI/VAOV2-GASH (KUNZE &	50	Matrix	2
2.	PISI wetland (KUNZE & CORNELIUS	25	Large	2
3.	SPDO c.t. (KUNZE 1994)	25	Large	2

Notes: There are some OG PISI trees in this polygon. Two wood ducks flew off as I approached a pool in a wet area in this polygon.

Polygon Number	**12B**
Survey Intensity	2
Observer	JR
Date	8/14/2006
Specific Location	SOUTH END
Total Vegetation	6
Trees Total	4
Dominant Trees	ALRU2, PISI
emergent	3
maincanopy	4
subcanopy	2
Shrubs Total	5
Dominant Shrubs	GASH, SPDO, PYFU, RUSP, VAPA
> 1.5' tall	5
< 1.5' tall	3
Graminoids Total	3
Dominant Graminoids	CAOB3
Graminoids Perennial	3
Graminoids Annual	0
Forbs Total	2
Dominant Forbs	OESA, HYRA, LYAM3
Forbs Perennial	2
Forbs Annual	0
Ferns Total	1
Ferns Evergreen	0
Ferns Deciduous	1
ExoticsTotal	0
Exotics Perennial	0
Exotics Annual	0
Water	2
Rock Outcrop	0
Gravel	0
Bare Ground	1
Moss Lichen	1
Litter	96
Logging	0
Stand Age	5
Agriculture	0
Livestock	0
Development	0
Wildlife	3
Recreation Severity	3
Recreation Type	3
Hydrology	2, SEE NOTE

Exotic Species

Primary Exotic

Secondary Exotic

Noxious Exotic

Plant Associations

		Percent	Pattern	Rank
1.	PISI wetland (KUNZE & CORNELIUS	90	Matrix	3
2.	SPDO c.t. (KUNZE 1994)	10	Small	3
3.		0		0

Notes: Ferns: ATFI. Lots of PISI snags. Has been flooded, perhaps due to the road to the casino may have dammed polygon thus increasing wetlands.

Polygon Number	**13**
Survey Intensity	2
Observer	PRM
Date	5/11/2006
Specific Location	South side of road near east end just east of entrence booth.
Total Vegetation	6
Trees Total	5
Dominant Trees	PISI, ALRU2
emergent	2
maincanopy	5
subcanopy	3
Shrubs Total	5
Dominant Shrubs	GASH, VAOV2
> 1.5' tall	5
< 1.5' tall	1
Graminoids Total	3
Dominant Graminoids	CAOB3,
Graminoids Perennial	3
Graminoids Annual	0
Forbs Total	1
Dominant Forbs	MADI, POMU
Forbs Perennial	1
Forbs Annual	0
Ferns Total	2
Ferns Evergreen	2
Ferns Deciduous	1
ExoticsTotal	1
Exotics Perennial	1
Exotics Annual	0
Water	
Rock Outcrop	0
Gravel	0
Bare Ground	5
Moss Lichen	5
Litter	90
Logging	2
Stand Age	2
Agriculture	0
Livestock	0
Development	4, campground,
Wildlife	3
Recreation Severity	2
Recreation Type	3
Hydrology	2

Exotic Species

Primary Exotic
ILAQ80
Secondary Exotic

Noxious Exotic

Plant Associations

		Percent	Pattern	Rank
1.	PISI/VAOV2-GASH (KUNZE &	100	Matrix	2
2.		0		0
3.		0		0

Notes: There are old tires and culverts near the pond and along the road leading to the pond. There are also a number of trails on the west side of the polygon along the campground.

Polygon Number	**14**
Survey Intensity	2
Observer	JR
Date	8/13/2006
Specific Location	SOUTHERN END
Total Vegetation	6
Trees Total	5
Dominant Trees	ALRU2, PISI
emergent	3
maincanopy	5
subcanopy	2
Shrubs Total	5
Dominant Shrubs	RUSP, GASH
> 1.5' tall	5
< 1.5' tall	3
Graminoids Total	4
Dominant Graminoids	CAOB3
Graminoids Perennial	4
Graminoids Annual	0
Forbs Total	3
Dominant Forbs	MADI, LYAM3
Forbs Perennial	3
Forbs Annual	0
Ferns Total	2
Ferns Evergreen	2
Ferns Deciduous	0
ExoticsTotal	0
Exotics Perennial	0
Exotics Annual	0
Water	0
Rock Outcrop	0
Gravel	0
Bare Ground	0
Moss Lichen	3
Litter	97
Logging	0
Stand Age	2
Agriculture	0
Livestock	0
Development	1, campground at
Wildlife	3
Recreation Severity	3
Recreation Type	3
Hydrology	1

Exotic Species

Primary Exotic

Secondary Exotic

Noxious Exotic

Plant Associations

	Percent	Pattern	Rank
1. PISI/GASH (CHRISTY ET AL 1998)	85	Matrix	2
2. ALRU2/RUSP/CAOB3-LYAM3 (CHRISTY	15	linear	2
3.	0		0

Notes: Ferns: POMU

Polygon Number	**2A**
Survey Intensity	1
Observer	HS
Date	5/11/2006
Specific Location	W Side of park.
Total Vegetation	6
Trees Total	3
Dominant Trees	PICO
emergent	0
maincanopy	3
subcanopy	0
Shrubs Total	3
Dominant Shrubs	SALHOO, MYRCAL
> 1.5' tall	3
< 1.5' tall	1
Graminoids Total	6
Dominant Graminoids	AMAR4, AICA
Graminoids Perennial	6
Graminoids Annual	3
Forbs Total	3
Dominant Forbs	POMU
Forbs Perennial	3
Forbs Annual	1
Ferns Total	2
Ferns Evergreen	2
Ferns Deciduous	1
ExoticsTotal	6
Exotics Perennial	6
Exotics Annual	2
Water	
Rock Outcrop	0
Gravel	0
Bare Ground	2
Moss Lichen	5
Litter	93
Logging	0
Stand Age	2
Agriculture	0
Livestock	0
Development	3
Wildlife	7 BIRDS, DEER
Recreation Severity	2
Recreation Type	3
Hydrology	2

Exotic Species

Primary Exotic
AMAR4
Secondary Exotic
AICA
Noxious Exotic

Plant Associations

	Percent	Pattern	Rank
1. AMAR4 Dune (KUNZE & CORNELIUS	90	Matrix	2
2. PICO/CYSC4/AMAR4 (CHRISTY ET AL	6	Small	3
3. CAOB3-POPA23 (CHRISTY ET AL 1998)	4	Small	3

Notes:

Polygon Number	**2B**
Survey Intensity	1
Observer	HS
Date	5/11/2006
Specific Location	
Total Vegetation	6
Trees Total	4
Dominant Trees	PICO, PISI
emergent	2
maincanopy	4
subcanopy	1
Shrubs Total	4
Dominant Shrubs	GASH, MAFU, VAOV2, SAHO, MYCA13
> 1.5' tall	4
< 1.5' tall	1
Graminoids Total	5
Dominant Graminoids	Ammophila, AICA
Graminoids Perennial	5
Graminoids Annual	3
Forbs Total	2
Dominant Forbs	
Forbs Perennial	2
Forbs Annual	0
Ferns Total	2
Ferns Evergreen	2
Ferns Deciduous	1
ExoticsTotal	5
Exotics Perennial	5
Exotics Annual	3
Water	
Rock Outcrop	0
Gravel	0
Bare Ground	1
Moss Lichen	1
Litter	98
Logging	?
Stand Age	2
Agriculture	0
Livestock	0
Development	3
Wildlife	7 DEER
Recreation Severity	3
Recreation Type	3
Hydrology	1

Exotic Species

Primary Exotic
Ammophila
Secondary Exotic
AICA
Noxious Exotic
CYSC4

Plant Associations

	Percent	Pattern	Rank
1. PICO/CYSC4/AMAR4 (CHRISTY ET AL	80	Matrix	2
2. SAHO/CAOB3 c.t. (KUNZE 1994)	15	Large	3
3. CAOB3-POPA23 (CHRISTY ET AL 1998)	5	Small	3

Notes:

Polygon Number	**2C**
Survey Intensity	2
Observer	JR
Date	8/14/2006
Specific Location	WESTERN EDGE
Total Vegetation	6
Trees Total	4
Dominant Trees	PISI, PICO
emergent	0
maincanopy	4
subcanopy	0
Shrubs Total	5
Dominant Shrubs	MYCA13, SAHO, GASH, VAOV2
> 1.5' tall	5
< 1.5' tall	1
Graminoids Total	5
Dominant Graminoids	CAOB3, AMAR4
Graminoids Perennial	5
Graminoids Annual	0
Forbs Total	1
Dominant Forbs	POPA23
Forbs Perennial	1
Forbs Annual	0
Ferns Total	1
Ferns Evergreen	1
Ferns Deciduous	0
ExoticsTotal	2
Exotics Perennial	2
Exotics Annual	0
Water	0
Rock Outcrop	0
Gravel	0
Bare Ground	2
Moss Lichen	1
Litter	97
Logging	0
Stand Age	1
Agriculture	0
Livestock	0
Development	0
Wildlife	3
Recreation Severity	3
Recreation Type	3
Hydrology	1

Exotic Species

Primary Exotic
AMAR4
Secondary Exotic
POPA23
Noxious Exotic

Plant Associations

	Percent	Pattern	Rank
1. SAHO/CAOB3 c.t. (KUNZE 1994)	50	Large	2
2. PICO-PISI/VAOV2 (CHRISTY ET AL	50	Large	2
3.	0		0

Notes: Ferns: POMU.

Polygon Number	**3**
Survey Intensity	1
Observer	HS
Date	5/11/2006
Specific Location	
Total Vegetation	0
Trees Total	0
Dominant Trees	
emergent	0
maincanopy	0
subcanopy	0
Shrubs Total	0
Dominant Shrubs	
> 1.5' tall	0
< 1.5' tall	0
Graminoids Total	0
Dominant Graminoids	
Graminoids Perennial	0
Graminoids Annual	0
Forbs Total	0
Dominant Forbs	
Forbs Perennial	0
Forbs Annual	0
Ferns Total	0
Ferns Evergreen	0
Ferns Deciduous	0
ExoticsTotal	0
Exotics Perennial	0
Exotics Annual	0
Water	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 Exotic

Secondary Exotic

Noxious Exotic

Plant Associations

	Percent	Pattern	Rank
1. developed	100	Matrix	1
2.	0		0
3.	0		0

Notes:

Polygon Number	**4AA**
Survey Intensity	1
Observer	HS
Date	5/11/2006
Specific Location	NW Side of park, W of campground.
Total Vegetation	6
Trees Total	6
Dominant Trees	PICO, ALRU2, PISI
emergent	1
maincanopy	6
subcanopy	2
Shrubs Total	4
Dominant Shrubs	GASH, MYCA13, VAOV2
> 1.5' tall	4
< 1.5' tall	2
Graminoids Total	3
Dominant Graminoids	CAOB3
Graminoids Perennial	3
Graminoids Annual	0
Forbs Total	1
Dominant Forbs	
Forbs Perennial	1
Forbs Annual	0
Ferns Total	2
Ferns Evergreen	1
Ferns Deciduous	2
ExoticsTotal	1
Exotics Perennial	1
Exotics Annual	0
Water	
Rock Outcrop	0
Gravel	0
Bare Ground	0
Moss Lichen	2
Litter	98
Logging	3
Stand Age	1
Agriculture	0
Livestock	0
Development	3
Wildlife	0
Recreation Severity	2
Recreation Type	3
Hydrology	2

Exotic Species

Primary Exotic
RULA

Secondary Exotic

Noxious Exotic

Plant Associations

	Percent	Pattern	Rank
1. PICO-PISI/VAOV2 (CHRISTY ET AL	100	Matrix	2
2.	0		0
3.	0		0

Notes:

Polygon Number	**4AB**
Survey Intensity	1
Observer	HS
Date	5/11/2006
Specific Location	NW Side of park.
Total Vegetation	6
Trees Total	4
Dominant Trees	ALRU2, PISI, PICO
emergent	2
maincanopy	3
subcanopy	0
Shrubs Total	6
Dominant Shrubs	SAHO, GASH, MAFU
> 1.5' tall	6
< 1.5' tall	0
Graminoids Total	5
Dominant Graminoids	CAOB3
Graminoids Perennial	5
Graminoids Annual	0
Forbs Total	1
Dominant Forbs	
Forbs Perennial	1
Forbs Annual	0
Ferns Total	1
Ferns Evergreen	1
Ferns Deciduous	1
ExoticsTotal	2
Exotics Perennial	2
Exotics Annual	0
Water	
Rock Outcrop	0
Gravel	0
Bare Ground	0
Moss Lichen	0
Litter	100
Logging	0
Stand Age	2
Agriculture	0
Livestock	0
Development	0
Wildlife	0
Recreation Severity	3
Recreation Type	3
Hydrology	2

Exotic Species

Primary Exotic
RULA
Secondary Exotic
AMAR4
Noxious Exotic

Plant Associations

	Percent	Pattern	Rank
1. SAHO-PYFU/CAOB3-LYAM3 (CHRISTY	88	Matrix	2
2. PICO/CAOB3 (CHRISTY ET AL 1998)	7	Small	2
3. PICO/CYSC4/AMAR4 (CHRISTY ET AL	5	Small	2

Notes:

Polygon Number	**4BA**
Survey Intensity	1
Observer	HS
Date	5/11/2006
Specific Location	
Total Vegetation	6
Trees Total	6
Dominant Trees	PICO, PISI, ALRU2, TSHE
emergent	2
maincanopy	6
subcanopy	3
Shrubs Total	5
Dominant Shrubs	GASH, VAOV2, MYCA13, VAPA
> 1.5' tall	5
< 1.5' tall	2
Graminoids Total	2
Dominant Graminoids	CAOB3
Graminoids Perennial	2
Graminoids Annual	0
Forbs Total	1
Dominant Forbs	
Forbs Perennial	1
Forbs Annual	0
Ferns Total	2
Ferns Evergreen	1
Ferns Deciduous	1
ExoticsTotal	0
Exotics Perennial	0
Exotics Annual	0
Water	
Rock Outcrop	0
Gravel	0
Bare Ground	0
Moss Lichen	3
Litter	97
Logging	3
Stand Age	2
Agriculture	0
Livestock	0
Development	3
Wildlife	0
Recreation Severity	3
Recreation Type	3
Hydrology	2

Exotic Species

Primary Exotic

Secondary Exotic

Noxious Exotic

Plant Associations

	Percent	Pattern	Rank
1. PICO-PISI/VAOV2 (CHRISTY ET AL	90	Matrix	2
2. PISI/GASH (CHRISTY ET AL 1998)	10	Large	2
3.	0		0

Notes:

Polygon Number	**4BB**
Survey Intensity	1
Observer	HS
Date	5/11/2006
Specific Location	
Total Vegetation	6
Trees Total	3
Dominant Trees	ALRU2, PICO, PISI
emergent	1
maincanopy	3
subcanopy	0
Shrubs Total	5
Dominant Shrubs	SAHO, GASH, MAFU
> 1.5' tall	5
< 1.5' tall	1
Graminoids Total	5
Dominant Graminoids	CAOB3
Graminoids Perennial	5
Graminoids Annual	0
Forbs Total	2
Dominant Forbs	
Forbs Perennial	2
Forbs Annual	0
Ferns Total	2
Ferns Evergreen	1
Ferns Deciduous	1
ExoticsTotal	0
Exotics Perennial	0
Exotics Annual	0
Water	
Rock Outcrop	0
Gravel	0
Bare Ground	0
Moss Lichen	1
Litter	99
Logging	0
Stand Age	2
Agriculture	0
Livestock	0
Development	3
Wildlife	5 ACTIVE
Recreation Severity	3
Recreation Type	3
Hydrology	2

Exotic Species

Primary Exotic

Secondary Exotic

Noxious Exotic

Plant Associations

	Percent	Pattern	Rank
1. SAHO-PYFU/CAOB3-LYAM3 (CHRISTY	80	Matrix	2
2. CAOB3 c.t. (KUNZE 1994)	15	Small	2
3. TYLA c.t. (KUNZE 1994)	5	linear	2

Notes:

Polygon Number	**4C**
Survey Intensity	2
Observer	JR
Date	8/14/2006
Specific Location	SOUTH END
Total Vegetation	6
Trees Total	5
Dominant Trees	ALRU2, PISI, TSHE
emergent	2
maincanopy	4
subcanopy	4
Shrubs Total	5
Dominant Shrubs	PYFU, SAHO, MYCA13, GASH
> 1.5' tall	5
< 1.5' tall	2
Graminoids Total	5
Dominant Graminoids	CAOB3
Graminoids Perennial	5
Graminoids Annual	0
Forbs Total	2
Dominant Forbs	MADI
Forbs Perennial	2
Forbs Annual	0
Ferns Total	0
Ferns Evergreen	0
Ferns Deciduous	0
ExoticsTotal	0
Exotics Perennial	0
Exotics Annual	0
Water	0
Rock Outcrop	0
Gravel	0
Bare Ground	1
Moss Lichen	2
Litter	97
Logging	0
Stand Age	1
Agriculture	0
Livestock	0
Development	1, campground
Wildlife	7, birds
Recreation Severity	3
Recreation Type	3
Hydrology	2, ditch running

Exotic Species

Primary Exotic

Secondary Exotic

Noxious Exotic

Plant Associations

	Percent	Pattern	Rank
1. PISI wetland (KUNZE & CORNELIUS	100	Matrix	3
2.	0		0
3.	0		0

Notes:

Polygon Number	**5N**
Survey Intensity	2
Observer	PM
Date	8/14/2006
Specific Location	NORTHERN WETLAND ON EAST SIDE OF PARK
Total Vegetation	4
Trees Total	3
Dominant Trees	ALRU2, PISI, MAFU
emergent	2
maincanopy	3
subcanopy	2
Shrubs Total	3
Dominant Shrubs	SPDO, MYGA, GASH, RUSP, VAOV2, SAHO
> 1.5' tall	3
< 1.5' tall	2
Graminoids Total	3
Dominant Graminoids	CAOB3, ELPA3, Carex sp.
Graminoids Perennial	3
Graminoids Annual	0
Forbs Total	3
Dominant Forbs	NUPO2, TYLA, HYRA, OESA
Forbs Perennial	3
Forbs Annual	0
Ferns Total	1
Ferns Evergreen	0
Ferns Deciduous	1
ExoticsTotal	0
Exotics Perennial	0
Exotics Annual	0
Water	50
Rock Outcrop	0
Gravel	0
Bare Ground	1
Moss Lichen	1
Litter	48
Logging	0
Stand Age	3
Agriculture	0
Livestock	0
Development	2, road adjacent
Wildlife	7, ducks, great
Recreation Severity	3
Recreation Type	3
Hydrology	2, road on edge

Exotic Species

Primary Exotic

Secondary Exotic

Noxious Exotic

Plant Associations

	Percent	Pattern	Rank
1. NUPO2 c.t. (KUNZE 1994)	60	Matrix	3
2. MYGA-SPDO/Boykinia sp.-CAOB3 c.t.	30	Small	3
3. PISI wetland (KUNZE & CORNELIUS	10	Small	3

Notes: Ferns: ATFI. HYRA in wetland.

Polygon Number	**5S**
Survey Intensity	2
Observer	JR
Date	8/13/2006
Specific Location	NORTH BOUNDARY ALONG ROAD
Total Vegetation	5
Trees Total	3
Dominant Trees	ALRU2, TSHE, SAHO, PISI
emergent	2
maincanopy	3
subcanopy	1
Shrubs Total	3
Dominant Shrubs	SPDO, GASH, RUSP, VAOV2
> 1.5' tall	3
< 1.5' tall	1
Graminoids Total	3
Dominant Graminoids	ELPA3, Carex sp., CAOB3
Graminoids Perennial	3
Graminoids Annual	0
Forbs Total	4
Dominant Forbs	NUPO2, TYLA
Forbs Perennial	4
Forbs Annual	0
Ferns Total	1
Ferns Evergreen	1
Ferns Deciduous	0
ExoticsTotal	3
Exotics Perennial	3
Exotics Annual	0
Water	30
Rock Outcrop	0
Gravel	0
Bare Ground	0
Moss Lichen	1
Litter	69
Logging	0
Stand Age	3
Agriculture	0
Livestock	0
Development	2, road adjacent
Wildlife	7, GBH, water
Recreation Severity	3
Recreation Type	3
Hydrology	2, road on edge

Exotic Species

Primary Exotic
IRPS

Secondary Exotic

Noxious Exotic

Plant Associations

	Percent	Pattern	Rank
1. NUPO2 c.t. (KUNZE 1994)	65	Matrix	2
2. Carex sp. (unknown)	25	Large	1
3. PISI wetland (KUNZE & CORNELIUS	10	Small	1

Notes: Ferns: POMU

Polygon Number	**5SB**
Survey Intensity	2
Observer	JR
Date	8/13/2006
Specific Location	NORTH BOUNDARY ALONG ROAD
Total Vegetation	5
Trees Total	3
Dominant Trees	ALRU2, TSHE, SAHO, PISI
emergent	2
maincanopy	3
subcanopy	1
Shrubs Total	3
Dominant Shrubs	SPDO, GASH, RUSP, VAOV2
> 1.5' tall	3
< 1.5' tall	1
Graminoids Total	3
Dominant Graminoids	ELPA3, Carex sp., CAOB3
Graminoids Perennial	3
Graminoids Annual	0
Forbs Total	4
Dominant Forbs	NUPO2, TYLA
Forbs Perennial	4
Forbs Annual	0
Ferns Total	1
Ferns Evergreen	1
Ferns Deciduous	0
ExoticsTotal	3
Exotics Perennial	3
Exotics Annual	0
Water	30
Rock Outcrop	0
Gravel	0
Bare Ground	0
Moss Lichen	1
Litter	69
Logging	0
Stand Age	3
Agriculture	0
Livestock	0
Development	2, road adjacent
Wildlife	7, GBH, water
Recreation Severity	3
Recreation Type	3
Hydrology	2, road on edge

Exotic Species

Primary Exotic
IRPS

Secondary Exotic

Noxious Exotic

Plant Associations

	Percent	Pattern	Rank
1. NUPO2 c.t. (KUNZE 1994)	65	Matrix	2
2. Carex sp. (unknown)	25	Large	1
3. PISI wetland (KUNZE & CORNELIUS	10	Small	1

Notes: Ferns: POMU

Polygon Number	**6**
Survey Intensity	2
Observer	PM
Date	8/13/2006
Specific Location	
Total Vegetation	6
Trees Total	6
Dominant Trees	ALRU2, PISI
emergent	0
maincanopy	5
subcanopy	3
Shrubs Total	5
Dominant Shrubs	RUSP, VAOV2, GASH, SARA2, VAPA, RHPU, PYFU
> 1.5' tall	5
< 1.5' tall	3
Graminoids Total	2
Dominant Graminoids	CAOB3
Graminoids Perennial	2
Graminoids Annual	0
Forbs Total	1
Dominant Forbs	MADI, LYAM3
Forbs Perennial	1
Forbs Annual	0
Ferns Total	2
Ferns Evergreen	2
Ferns Deciduous	2
ExoticsTotal	1
Exotics Perennial	1
Exotics Annual	0
Water	0
Rock Outcrop	0
Gravel	0
Bare Ground	0
Moss Lichen	3
Litter	97
Logging	0
Stand Age	2
Agriculture	0
Livestock	0
Development	2
Wildlife	3
Recreation Severity	3
Recreation Type	3
Hydrology	1

Exotic Species

Primary Exotic
RUDI2
Secondary Exotic

Noxious Exotic

Plant Associations

		Percent	Pattern	Rank
1.	ALRU2/RUSP/CAOB3-LYAM3 (CHRISTY	90	Matrix	2
2.	PISI/VAOV2-GASH (KUNZE &	10	Small	2
3.		0		0

Notes: Ferns: PTAQ, POMU

Polygon Number	**8**
Survey Intensity	1
Observer	HS
Date	5/11/2006
Specific Location	
Total Vegetation	0
Trees Total	0
Dominant Trees	
emergent	0
maincanopy	0
subcanopy	0
Shrubs Total	0
Dominant Shrubs	
> 1.5' tall	0
< 1.5' tall	0
Graminoids Total	0
Dominant Graminoids	
Graminoids Perennial	0
Graminoids Annual	0
Forbs Total	0
Dominant Forbs	
Forbs Perennial	0
Forbs Annual	0
Ferns Total	0
Ferns Evergreen	0
Ferns Deciduous	0
ExoticsTotal	0
Exotics Perennial	0
Exotics Annual	0
Water	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 Exotic

Secondary Exotic

Noxious Exotic

Plant Associations

	Percent	Pattern	Rank
1. developed	100	Matrix	1
2.	0		0
3.	0		0

Notes:

Polygon Number	**9B**
Survey Intensity	3
Observer	PM
Date	8/14/2006
Specific Location	
Total Vegetation	6
Trees Total	4
Dominant Trees	SAHO, ALRU2, PYFU, PISI
emergent	1
maincanopy	3
subcanopy	2
Shrubs Total	4
Dominant Shrubs	SPDO, MYGA
> 1.5' tall	4
< 1.5' tall	2
Graminoids Total	4
Dominant Graminoids	TYLA, CAOB3, Carex sp.
Graminoids Perennial	4
Graminoids Annual	0
Forbs Total	3
Dominant Forbs	OESA
Forbs Perennial	3
Forbs Annual	0
Ferns Total	1
Ferns Evergreen	1
Ferns Deciduous	1
ExoticsTotal	0
Exotics Perennial	0
Exotics Annual	0
Water	2
Rock Outcrop	0
Gravel	0
Bare Ground	1
Moss Lichen	1
Litter	96
Logging	0
Stand Age	0
Agriculture	0
Livestock	0
Development	0
Wildlife	0
Recreation Severity	3
Recreation Type	3
Hydrology	1

Exotic Species

Primary Exotic

Secondary Exotic

Noxious Exotic

Plant Associations

	Percent	Pattern	Rank
1. SPDO c.t. (KUNZE 1994)	35	Large	3
2. TYLA c.t. (KUNZE 1994)	35	Large	3
3. PYFU-SAHO/CAOB3 c.t. (KUNZE 1994)	30	Large	3

Notes: Ferns: ATFI, POMU

Polygon Number	**9N**
Survey Intensity	3
Observer	PM
Date	8/14/2006
Specific Location	
Total Vegetation	4
Trees Total	2
Dominant Trees	ALRU2, PISI
emergent	0
maincanopy	2
subcanopy	0
Shrubs Total	3
Dominant Shrubs	SPDO, MYGA
> 1.5' tall	3
< 1.5' tall	2
Graminoids Total	3
Dominant Graminoids	TYLA, CAOB3, ELPA3
Graminoids Perennial	3
Graminoids Annual	0
Forbs Total	3
Dominant Forbs	NUPO2, HYRA, OESA
Forbs Perennial	3
Forbs Annual	0
Ferns Total	1
Ferns Evergreen	0
Ferns Deciduous	1
ExoticsTotal	0
Exotics Perennial	0
Exotics Annual	0
Water	30
Rock Outcrop	0
Gravel	0
Bare Ground	1
Moss Lichen	1
Litter	68
Logging	0
Stand Age	3
Agriculture	0
Livestock	0
Development	2, road adjacent
Wildlife	7, ducks
Recreation Severity	3
Recreation Type	3
Hydrology	2, road

Exotic Species

Primary Exotic

Secondary Exotic

Noxious Exotic

Plant Associations

	Percent	Pattern	Rank
1. NUPO2 c.t. (KUNZE 1994)	40	Matrix	3
2. TYLA c.t. (KUNZE 1994)	30	Large	3
3. MYGA-SPDO/Boykinia sp.-CAOB3 c.t.	30	Large	3

Notes: Ferns: ATFI. HYRA in this wetland.

Polygon Number	**9S**
Survey Intensity	2
Observer	PM, JR
Date	8/15/2006
Specific Location	
Total Vegetation	6
Trees Total	4
Dominant Trees	PISI, ALRU2
emergent	2
maincanopy	3
subcanopy	2
Shrubs Total	4
Dominant Shrubs	SAHO, RUSP, SPDO, PYFU, MYGA, MYCA13
> 1.5' tall	4
< 1.5' tall	2
Graminoids Total	4
Dominant Graminoids	CAOB3, TYLA
Graminoids Perennial	4
Graminoids Annual	0
Forbs Total	3
Dominant Forbs	LYAM3, MADI, HYRA, HIVU2, POPA23, POPA14
Forbs Perennial	3
Forbs Annual	0
Ferns Total	2
Ferns Evergreen	2
Ferns Deciduous	0
ExoticsTotal	0
Exotics Perennial	0
Exotics Annual	0
Water	2
Rock Outcrop	0
Gravel	0
Bare Ground	2
Moss Lichen	2
Litter	94
Logging	0
Stand Age	2
Agriculture	0
Livestock	0
Development	2, road on edge
Wildlife	3
Recreation Severity	3
Recreation Type	3
Hydrology	2

Exotic Species

Primary Exotic

Secondary Exotic

Noxious Exotic

Plant Associations

	Percent	Pattern	Rank
1. MYGA/TYLA (PBI)	50	Matrix	2
2. PYFU-SAHO/CAOB3 c.t. (KUNZE 1994)	35	Large	3
3. PISI wetland (KUNZE & CORNELIUS	15	Large	2

Notes: Lots of diversity. Channel on western edge ~ 4115300, 5209400. Probably more H2O during wetter time of year. Ferns: POMU, BLSP.

Vegetation Polygon Data – Pacific Beach State Park

Polygon Number	**1**
Survey Intensity	1
Observer	HS
Date	5/13/2006
Specific Location	beach
Total Vegetation	0
Trees Total	0
Dominant Trees	
emergent	0
maincanopy	0
subcanopy	0
Shrubs Total	0
Dominant Shrubs	
> 1.5' tall	0
< 1.5' tall	0
Graminoids Total	0
Dominant Graminoids	
Graminoids Perennial	0
Graminoids Annual	0
Forbs Total	0
Dominant Forbs	
Forbs Perennial	0
Forbs Annual	0
Ferns Total	0
Ferns Evergreen	0
Ferns Deciduous	0
ExoticsTotal	0
Exotics Perennial	0
Exotics Annual	0
Water	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 Exotic

Secondary Exotic

Noxious Exotic

Plant Associations

	Percent	Pattern	Rank
1. beach	100	Matrix	3
2.	0		0
3.	0		0

Notes:

Polygon Number	**2**
Survey Intensity	2
Observer	PRM
Date	5/9/2006
Specific Location	
Total Vegetation	5
Trees Total	0
Dominant Trees	
emergent	0
maincanopy	0
subcanopy	0
Shrubs Total	2
Dominant Shrubs	SAHO
> 1.5' tall	2
< 1.5' tall	0
Graminoids Total	5
Dominant Graminoids	AMAR4, ELMO9
Graminoids Perennial	5
Graminoids Annual	0
Forbs Total	2
Dominant Forbs	LAJA
Forbs Perennial	2
Forbs Annual	0
Ferns Total	0
Ferns Evergreen	0
Ferns Deciduous	0
ExoticsTotal	5
Exotics Perennial	5
Exotics Annual	0
Water	
Rock Outcrop	0
Gravel	0
Bare Ground	5
Moss Lichen	0
Litter	95
Logging	1
Stand Age	1
Agriculture	0
Livestock	0
Development	0
Wildlife	7
Recreation Severity	2
Recreation Type	3
Hydrology	1

Exotic Species

Primary Exotic
AMAR4
Secondary Exotic

Noxious Exotic

Plant Associations

	Percent	Pattern	Rank
1. AMAR4 Dune (KUNZE & CORNELIUS	100	Matrix	1
2.	0		0
3.	0		0

Notes:

Polygon Number	**3**
Survey Intensity	2
Observer	PRM
Date	5/9/2006
Specific Location	
Total Vegetation	6
Trees Total	0
Dominant Trees	
emergent	0
maincanopy	0
subcanopy	0
Shrubs Total	6
Dominant Shrubs	SAHO, RUSP, RONU
> 1.5' tall	6
< 1.5' tall	2
Graminoids Total	5
Dominant Graminoids	CAOB3
Graminoids Perennial	5
Graminoids Annual	0
Forbs Total	1
Dominant Forbs	POPA23
Forbs Perennial	1
Forbs Annual	0
Ferns Total	0
Ferns Evergreen	0
Ferns Deciduous	0
ExoticsTotal	2
Exotics Perennial	2
Exotics Annual	0
Water	
Rock Outcrop	0
Gravel	0
Bare Ground	0
Moss Lichen	2
Litter	98
Logging	1
Stand Age	1
Agriculture	0
Livestock	0
Development	0
Wildlife	7
Recreation Severity	0
Recreation Type	0
Hydrology	2

Exotic Species

Primary Exotic
RUDI2
Secondary Exotic

Noxious Exotic

Plant Associations

	Percent	Pattern	Rank
1. SAHO/CAOB3 c.t. (KUNZE 1994)	100	Matrix	2
2.	0		0
3.	0		0

Notes:

Polygon Number	**4**
Survey Intensity	1
Observer	HS
Date	5/13/2006
Specific Location	
Total Vegetation	0
Trees Total	0
Dominant Trees	
emergent	0
maincanopy	0
subcanopy	0
Shrubs Total	0
Dominant Shrubs	
> 1.5' tall	0
< 1.5' tall	0
Graminoids Total	0
Dominant Graminoids	
Graminoids Perennial	0
Graminoids Annual	0
Forbs Total	0
Dominant Forbs	
Forbs Perennial	0
Forbs Annual	0
Ferns Total	0
Ferns Evergreen	0
Ferns Deciduous	0
ExoticsTotal	0
Exotics Perennial	0
Exotics Annual	0
Water	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 Exotic

Secondary Exotic

Noxious Exotic

Plant Associations

	Percent	Pattern	Rank
1. developed	100	Matrix	1
2.	0		0
3.	0		0

Notes:

Polygon Number	**5**
Survey Intensity	1
Observer	JR
Date	8/15/2006
Specific Location	
Total Vegetation	4
Trees Total	0
Dominant Trees	
emergent	0
maincanopy	0
subcanopy	0
Shrubs Total	0
Dominant Shrubs	
> 1.5' tall	0
< 1.5' tall	0
Graminoids Total	4
Dominant Graminoids	AMAR4, ELMO9
Graminoids Perennial	4
Graminoids Annual	0
Forbs Total	2
Dominant Forbs	LAJA, HYRA3, TADO, CAED, CAMA
Forbs Perennial	2
Forbs Annual	2
Ferns Total	0
Ferns Evergreen	0
Ferns Deciduous	0
ExoticsTotal	4
Exotics Perennial	4
Exotics Annual	0
Water	
Rock Outcrop	0
Gravel	0
Bare Ground	30
Moss Lichen	0
Litter	70
Logging	0
Stand Age	0
Agriculture	0
Livestock	0
Development	3
Wildlife	3
Recreation Severity	3
Recreation Type	3
Hydrology	1

Exotic Species

Primary Exotic
AMAR4
Secondary Exotic
HYRA3
Noxious Exotic

Plant Associations

	Percent	Pattern	Rank
1. AMAR4 Dune (KUNZE & CORNELIUS	70	Matrix	1
2. beach	30	linear	1
3.	0		0

Notes:

Polygon Number	**6**
Survey Intensity	1
Observer	JR
Date	8/15/2006
Specific Location	
Total Vegetation	3
Trees Total	0
Dominant Trees	
emergent	0
maincanopy	0
subcanopy	0
Shrubs Total	2
Dominant Shrubs	SAHO, MYCA13, RUDI2
> 1.5' tall	2
< 1.5' tall	0
Graminoids Total	1
Dominant Graminoids	AMAR4
Graminoids Perennial	1
Graminoids Annual	0
Forbs Total	1
Dominant Forbs	HYRA3
Forbs Perennial	1
Forbs Annual	0
Ferns Total	0
Ferns Evergreen	0
Ferns Deciduous	0
ExoticsTotal	3
Exotics Perennial	3
Exotics Annual	0
Water	
Rock Outcrop	0
Gravel	95
Bare Ground	0
Moss Lichen	0
Litter	5
Logging	0
Stand Age	0
Agriculture	0
Livestock	0
Development	0
Wildlife	0
Recreation Severity	0
Recreation Type	0
Hydrology	0

Exotic Species

Primary Exotic
RUDI2
Secondary Exotic
HYRA3
Noxious Exotic

Plant Associations

	Percent	Pattern	Rank
1. developed	95	Matrix	1
2. disturbed shrub area	5	linear	1
3.	0		0

Notes: Developed since satellite picture taken. Mostly a parking lot now.

Appendix E – Washington Natural Heritage Program Rare Plant Sighting Forms

Washington Natural Heritage Program Rare Plant Sighting Form:

Taxon Name: *Hydrocotyle ranunculoides*

Are you confident of the identification? Yes Explain: seen many times before

Survey Site Name: Ocean City State Park
Surveyor's Name/Phone/Email: Peter Morrison, (509) 996-2490, peter@pacificbio.org
Survey Date: August 10, 2006
County: Pacific
Quad Name:
Township: Range: Section(s): of

Directions to site: Turn into east part of Twin Harbors State Park, walk into walk-in campground area and go to end of road, past dumpsite. HYRA is at edge of pond, east of end of road.

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

Please answer the following:
1. I used GPS to map the population: **Yes** (complete #1 & #3)
Coordinates are in electronic file on diskette (preferred)
Description of what coordinates represent: one spot where HYRA observed

GPS accuracy: Uncorrected
GPS datum: UTM NAD 83
GPS coordinates: 415864E 5189830N and other locations shown on attached map.

2. I used a topographic map to map the population: **No**.

3. I used the following features on the map to identify my location (stream, shoreline, bridge, road, cliff, etc.): **aerial photo**
To the best of my knowledge, I mapped the entire extent of this population at map scale: **No**
If no, or unknown, please explain: could not access entire wetland
Is a revisit needed? **No**
Ownership (if known): Washington State Parks Department
Population Size (# of individuals or ramets) or estimate: 100+

Population (EO) Data (include population vigor, microhabitat, phenology, etc.): Good population vigor, not blooming at this time.

Plant Association (include author, citation, or classification, e.g.Daubermire): *Nuphar polysepala* (Kunze 1994).

Associated Species (include % cover by layer and by individual species for dominants in each layer):
Lichen/moss layer: none

Herb layer: *Potamogeton natans* (30%)*, Carex obnupta* (3%)*, Nuphar polysepala* (2%)*, Oenanthe sarmentosa* (2%), *Callitriche stagnalis* (3%),

Shrub layer: *Rubus discolor* (1%), *Spiraea douglasii* (2%)

Tree layer: *Alnus rubra* (15%), *Picea sitchensis* (25%)

General Description (include description of landscape, surrounding plant communities, land forms, land use, etc.): HYRA at edge of pond/lake growing in shallow water and mud.

Minimum elevation (ft.): 7 Maximum elevation (ft.): 10
Size (acres): 1 Aspect: 0 Slope: 0
Photo taken? Yes

Management Comments (exotics, roads, shape/size, position in landscape, hydrology, adjacent land use, cumulative effects, etc.): IRP is invading, houses on east side and sewage plant in State Park to the west could both pollute wetland and cause ecological changes. Sea level rise and tsunamis would wipe out population.

Protection Comments (legal actions/steps/strategies needed to secure protection for the site): Close off-roading around wetland. There are really major threats to this plant at this location.

Additional Comments (discrepancies, general observations, etc.): HYRA is well established in the wetlands of this park and in parks to the south. It is also well established in wetlands in other parts of western Washington. I recommend delisting HYRA, it is just too abundant and grows in disturbed wetlands quite well.

Please mail completed form with map:
WASHINGTON NATURAL HERITAGE PROGRAM
DEPARTMENT OF NATURAL RESOURCES
PO BOX 47014, OLYMPIA WA 98504-7014