

**Rare Plant and Vegetation Surveys of
Eagle Island, Harstine Island, Hope Island,
Jarrell Cove, McMicken Island, and
Squaxin Island State Parks**



Pacific Biodiversity Institute



Rare Plant and Vegetation Survey of Eagle Island, Harstine Island, Hope Island, Jarrell Cove, McMicken Island, and Squaxin Island State Parks

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Introduction

Pacific Biodiversity Institute (PBI) surveyed State Park properties on Eagle Island, Harstine Island, Hope Island, Jarrell Cove, McMicken Island, and Squaxin Island for rare plant occurrences and vegetation under contract with the Washington State Parks and Recreation Commission. Harstine Island, Hope Island, Jarrell Cove, McMicken Island, and Squaxin Island State Parks are located in Mason County. Eagle Island is located in Pierce County. Their location is illustrated in Figure 1. This report summarizes the activities and findings of the contracted work.



Figure 1. Locations of the six island parks covered in this report.

Survey Conditions and Survey Routes

Eagle Island, Harstine Island, Hope Island, Jarrell Cove, McMicken Island, and Squaxin Island State Parks were surveyed by two botanists from May 11 - 16, 2006 and then revisited by one more botanist from August 28 - 30, 2006. Details on personnel and survey dates are provided in Appendix A. Our routes from these surveys are illustrated in Figures 1 and 2. Portions of all the units were accessible by maintained roads, trails or beaches, however penetrating the interior of some of the polygons at some parks was difficult in places due to extremely dense shrub thickets and dense second-growth forests.

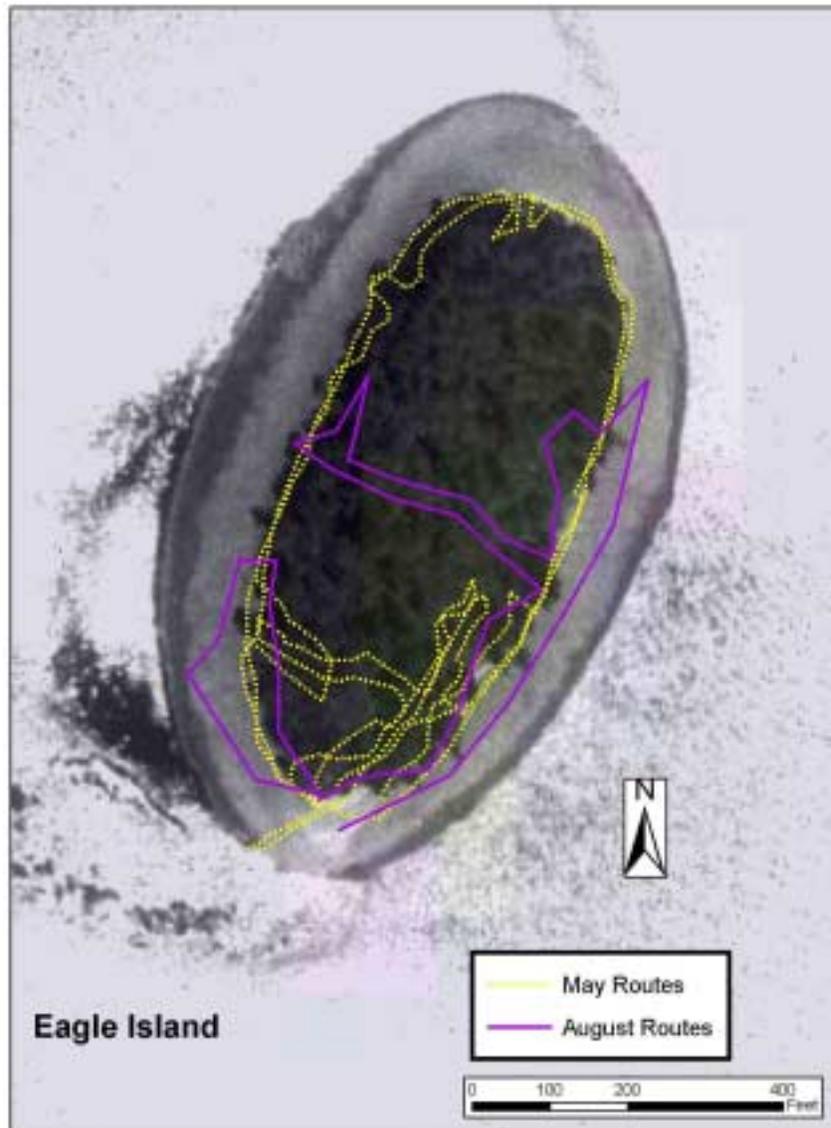


Figure 2. Survey routes for the vegetation community mapping and rare and endangered plant surveys conducted by PBI in 2006 for Eagle Island State Park.

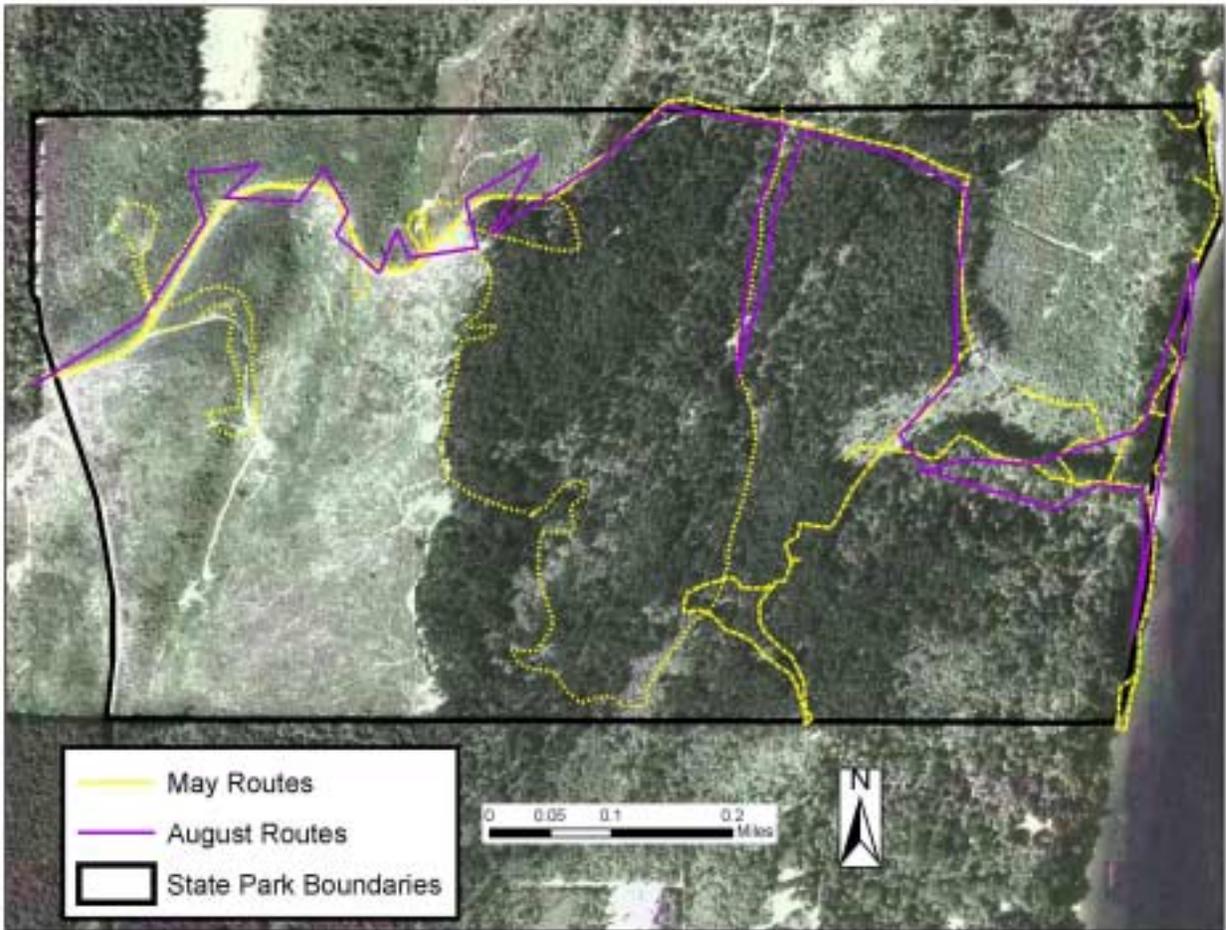


Figure 3. Survey routes for the vegetation community mapping and rare and endangered plant surveys conducted by PBI in 2006 for Harstine Island State Park.



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

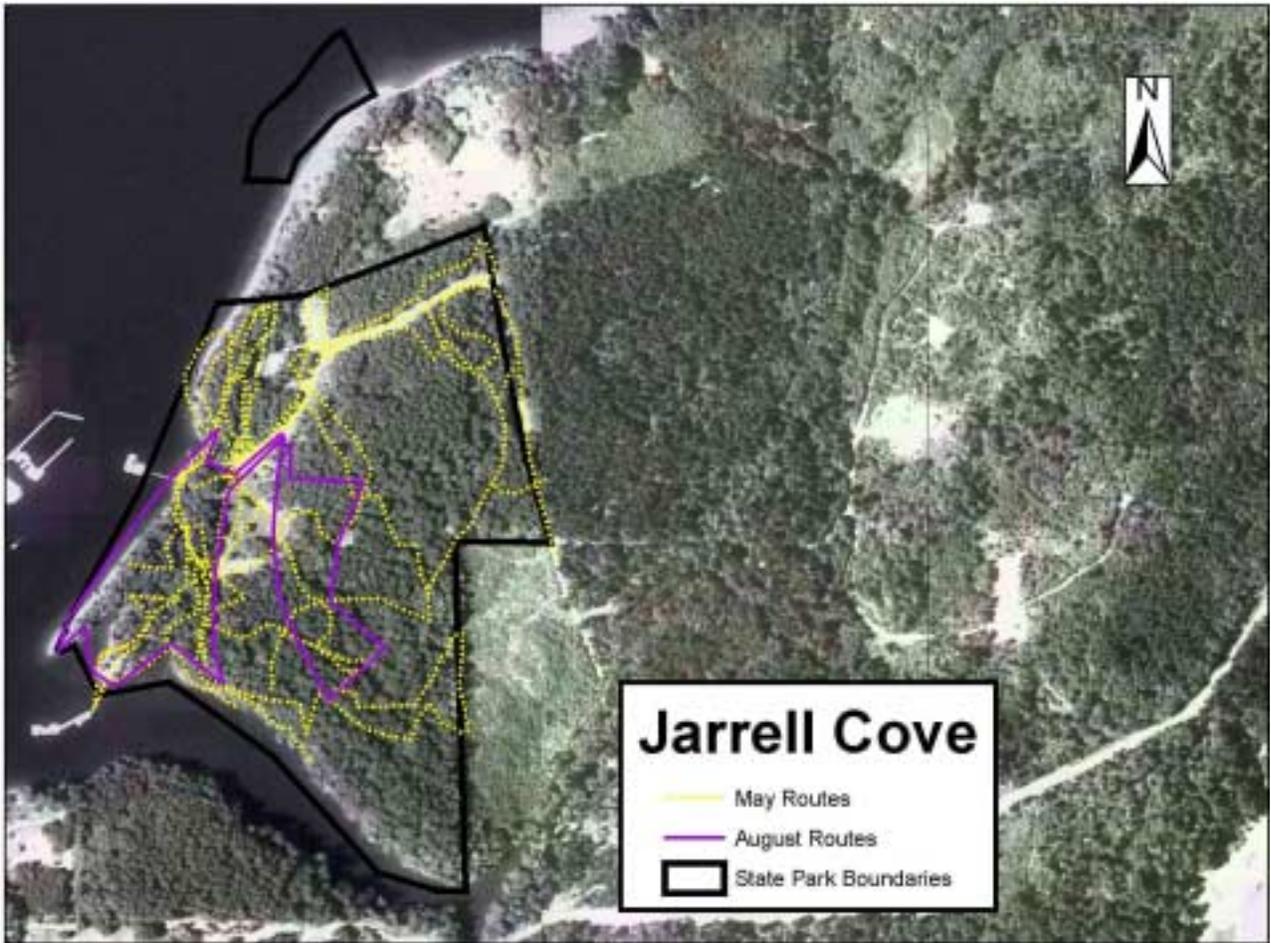


Figure 5. Survey routes for the vegetation community mapping and rare and endangered plant surveys conducted by PBI in 2006 for Jarrell Cove State Park.

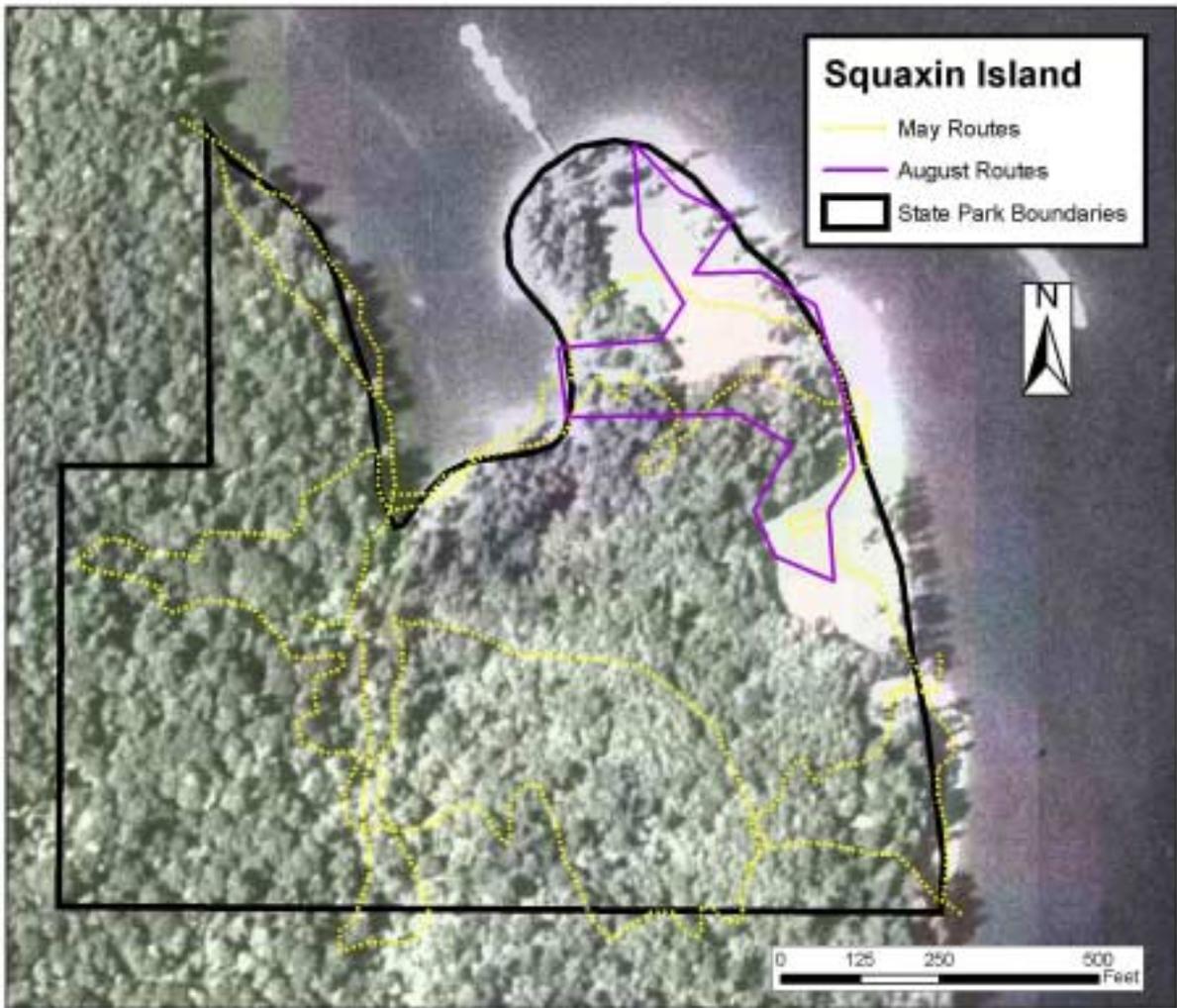


Figure 6. Survey routes for the vegetation community mapping and rare and endangered plant surveys conducted by PBI in 2006 for Squaxin Island State Park.



Figure 7. Survey routes for the vegetation community mapping and rare and endangered plant surveys conducted by PBI in 2006 for McMicken Island State Park.

Vegetation Communities

Methods – Vegetation Surveys

Vegetation communities within Eagle Island, Harstine Island, Hope Island, Jarrell Cove, McMicken Island, and Squaxin State Parks were delineated and classified using a combination of field survey and remote sensing techniques. We relied on descriptions from the Washington State Department of Natural Resources (WADNR) late-seral forested plant associations of the Puget Lowland (Chappell 2005), freshwater wetland vegetation (Kunze 1994), and intertidal vegetation (Kunze and Cornelius 1982) to make final vegetation community assignments. In some cases, the WADNR descriptions were not adequate in describing existing vegetation associations. In these cases, alternative vegetation communities or plant associations were created by PBI.

Remote sensing techniques consisted of manually delineating plant associations or mosaics of plant associations in a digital environment. We reviewed orthorectified aerial photography from the 1990s and recent LANDSAT Thematic Mapper satellite images for discernable vegetation or landform patterns. 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 (where available) 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 initial vegetation polygon layers were done by hand on hardcopy maps in the field, and later edited digitally in a GIS to create the final vegetation polygon layers.

Results – Vegetation Surveys

We mapped and surveyed 1 vegetation community polygon, comprised of 1 vegetation community within Eagle Island State Park. We mapped and surveyed 16 vegetation community polygons, comprised of 13 vegetation community or cover types, within Harstine Island State Park. Within Hope Island State Park we mapped and surveyed 22 vegetation community polygons, comprised of 17 vegetation community or cover types. Within Jarrell Cove State Park, we mapped and surveyed 13 vegetation community polygons, comprised of 9 vegetation community or cover types. 7 vegetation community polygons, comprised of 9 vegetation community or cover types were mapped and surveyed within McMicken Island State Park. Within Squaxin State Park we mapped and surveyed 5 vegetation community polygons, comprised of 4 vegetation community or cover types. Vegetation community polygons are either stand-alone plant associations or mosaics of multiple plant associations. Tables 1-6 list the plant communities and/or cover types found in Harstine Island, Hope Island, Jarrell Cove, McMicken Island, and Squaxin State Parks and Eagle Island. See Appendix C for interpretation of “Status” codes. Figures 8 – 19 on the following pages illustrate the location of the vegetation community polygons and the primary plant associations in each polygon (PA1 in the database) within each park. A printout of the complete set of data we collected for each polygon is attached in Appendix E. The ecological condition of each polygon was evaluated according to a simple ranking system described in Appendix B.

Table 1. Vegetation Community Types Encountered at Harstine Island State Park.

Abbreviation	Association Name	English Name	Reference	Status
ACMA3-ALRU2/POMU-TEGR2	<i>Acer macrophyllum</i> – <i>Alnus rubra</i> / <i>Polystichum munitum</i> - <i>Tellima grandiflora</i>	Bigleaf maple – red alder / sword fern – fringe cup	Chappell 2004	G2G3
ALRU2/ACTR-CADE9	<i>Alnus rubra</i> / <i>Achlys triphylla</i> - <i>Carex deweyana</i>	red alder / vanilla leaf - Dewey's sedge	PBI	
ALRU2/LYAM3 c.t.	<i>Alnus rubra</i> / <i>Lysichitum americanum</i>	red alder / skunk cabbage cover type	Kunze 1994	G3G4
ALRU2/POMU	<i>Alnus rubra</i> / <i>Polystichum munitum</i>	red alder / sword fern	Chappell 2004	G4S4
CAOB3 c.t.	<i>Carex obnupta</i> community type	slough sedge community type	Kunze 1994	G4
PSME-ARME/GASH	<i>Pseudotsuga menziesii</i> - <i>Arbutus menziesii</i> / <i>Gaultheria shallon</i>	Douglas-fir - madrone / salal	Chappell 2004	G3S2
PSME-ARME/VAOV2	<i>Pseudotsuga menziesii</i> - <i>Arbutus menziesii</i> / <i>Vaccinium ovatum</i>	Douglas-fir - madrone / evergreen huckleberry	Chappell 2004	GNRS1
PSME-TSHE/GASH/POMU	<i>Pseudotsuga menziesii</i> - <i>Tsuga heterophylla</i> / <i>Gaultheria shallon</i> / <i>Polystichum munitum</i>	Douglas-fir - western hemlock / salal / sword fern	Chappell 2004	G4
PSME-TSHE/VAOV2	<i>Pseudotsuga menziesii</i> - <i>Tsuga heterophylla</i> / <i>Vaccinium ovatum</i>	Douglas-fir - western hemlock / evergreen huckleberry	Chappell 2005	G2S2
PSME-TSHE/VAOV2/POMU	<i>Pseudotsuga menziesii</i> - <i>Tsuga heterophylla</i> / <i>Vaccinium ovatum</i> / <i>Polystichum munitum</i>	Douglas-fir - western hemlock / evergreen huckleberry / sword fern	Chappell 2005	G3S1
SPDO c.t.	<i>Spiraea douglasii</i> community type	rose spirea community type	Kunze 1994	G5
THPL-TSHE/OPHO/POMU	<i>Thuja plicata</i> - <i>Tsuga heterophylla</i> / <i>Oplonanax horridus</i> / <i>Polystichum munitum</i>	Red cedar - western hemlock / devil's club / sword fern	Chappell 2005	G4S4
TSHE-PSME/POMU-DREX2	<i>Tsuga heterophylla</i> - <i>Pseudotsuga menziesii</i> / <i>Polystichum munitum</i> - <i>Dryopteris expansa</i>	western hemlock - Douglas-fir / sword fern - spreading woodfern	Chappell 2005	G3S3

Table 2. Vegetation Community Types Encountered at Hope Island State Park.

Abbreviation	Association Name	English Name	Reference	Status
ALRU2/ACTR-CADE9	<i>Alnus rubra</i> / <i>Achyls triphylla</i> - <i>Carex deweyana</i>	red alder / vanilla leaf - Dewey's sedge	PBI	?
ALRU2/POMU	<i>Alnus rubra</i> / <i>Polystichum munitum</i>	red alder / swordfern	Chappell 2004	G4S4
DECA18-DISP-SAVI	<i>Deschampsia caespitosa</i> - <i>Distichlis spicata</i> - <i>Salicornia virginica</i> Community	tufted hairgrass - saltgrass - pickleweed community	Kunze and Cornelius 1982	G4
DISP community	<i>Distichlis spicata</i> Community	saltgrass community	Kunze and Cornelius 1982	G4
JUEF disturbed wet meadow	<i>Juncus effusus</i> disturbed wet meadow	common rush disturbed wet meadow	PBI	
PSME-ARME/GASH	<i>Pseudotsuga menziesii</i> - <i>Arbutus menziesii</i> / <i>Gaultheria shallon</i>	Douglas-fir - madrone / salal	Chappell 2004	G3S2
PSME-ARME/VAOV2	<i>Pseudotsuga menziesii</i> - <i>Arbutus menziesii</i> / <i>Vaccinium ovatum</i>	Douglas-fir - madrone / evergreen huckleberry	Chappell 2004	GNRS1
PSME-TSHE/ACTR	<i>Pseudotsuga menziesii</i> - <i>Tsuga heterophylla</i> / <i>Achlys triphylla</i>	Douglas-fir - western hemlock / vanilla leaf	PBI	?
PSME-TSHE/GASH/POMU	<i>Pseudotsuga menziesii</i> - <i>Tsuga heterophylla</i> / <i>Gaultheria shallon</i> / <i>Polystichum munitum</i>	Douglas-fir - western hemlock / salal / sword fern	Chappell 2004	G4
PSME-TSHE/MANE2/POMU	<i>Pseudotsuga menziesii</i> - <i>Tsuga heterophylla</i> / <i>Mahonia nervosa</i> / <i>Polystichum munitum</i>	Douglas-fir - western hemlock / dwarf Oregongrape / sword fern	Chappell 2004	G4S3
PSME-TSHE/VAOV2	<i>Pseudotsuga menziesii</i> - <i>Tsuga heterophylla</i> / <i>Vaccinium ovatum</i>	Douglas-fir - western hemlock / evergreen huckleberry	Chappell 2005	G2S2
PSME-TSHE/VAOV2/POMU	<i>Pseudotsuga menziesii</i> - <i>Tsuga heterophylla</i> / <i>Vaccinium ovatum</i> / <i>Polystichum munitum</i>	Douglas-fir - western hemlock / evergreen huckleberry / sword fern	Chappell 2005	G3S1
SAVI community	<i>Salicornia virginica</i> Community	pickleweed	Kunze and Cornelius 1982	G3G4
SAVI-JACA4-DISP-TRMA20	<i>Salicornia virginica</i> - <i>Jaumea carnosa</i> - <i>Distichlis spicata</i> - <i>Triglochin maritima</i>	Virginia glasswort - marsh jaumea - saltgrass - seaside arrow-grass	Kunze and Cornelius 1982	G3
beach	beach	beach	PBI	
developed	developed	developed	PBI	
saltwater	saltwater	saltwater	PBI	

Table 3. Vegetation Community Types Encountered at Jarrell Cove State Park.

Abbreviation	Association Name	English Name	Reference	Status
PSME-ARME/GASH	<i>Pseudotsuga menziesii</i> - <i>Arbutus menziesii</i> / <i>Gaultheria shallon</i>	Douglas-fir - madrone / salal	Chappell 2004	G3S2
PSME-ARME/VAOV2	<i>Pseudotsuga menziesii</i> - <i>Arbutus menziesii</i> / <i>Vaccinium ovatum</i>	Douglas-fir - madrone / evergreen huckleberry	Chappell 2004	GNRS1
PSME-THPL/GASH-MANE2/POMU	<i>Pseudotsuga menziesii</i> - <i>Thuja plicata</i> / <i>Gaultheria shallon</i> - <i>Mahonia nervosa</i> / <i>Polystichum munitum</i>	Douglas-fir - red cedar / salal - Cascade oregongrape / swordfern	Chappell 2004	G1S1
PSME-TSHE/VAOV2	<i>Pseudotsuga menziesii</i> - <i>Tsuga heterophylla</i> / <i>Vaccinium ovatum</i>	Douglas-fir - western hemlock / evergreen huckleberry	Chappell 2005	G2S2
PSME-TSHE/VAOV2/POMU	<i>Pseudotsuga menziesii</i> - <i>Tsuga heterophylla</i> / <i>Vaccinium ovatum</i> / <i>Polystichum munitum</i>	Douglas-fir - western hemlock / evergreen huckleberry / sword fern	Chappell 2005	G3S1
SAVI community	<i>Salicornia virginica</i> Community	pickleweed	Kunze and Cornelius 1982	G3G4
THPL-ABGR/POMU	<i>Thuja plicata</i> - <i>Abies grandis</i> / <i>Polystichum munitum</i>	red cedar - grand fir / swordfern	Chappell 2004	G1S1
developed				
saltwater				

Table 4. Vegetation Community Types Encountered at McMicken Island State Park.

Abbreviation	Association Name	English Name	Reference	Status
AGAL3-JUBA-POPA23	<i>Agrostis alba</i> - <i>Juncus balticus</i> – <i>Potentilla pacifica</i>	creeping bentgrass-Baltic rush- Pacific silverweed	Kunze and Cornelius 1982	G3G4
ALRU2/POMU	<i>Alnus rubra</i> / <i>Polystichum munitum</i>	red alder / swordfern	Chappell 2004	G4S4
PSME-TSHE/VAOV2/POMU	<i>Pseudotsuga menziesii</i> - <i>Tsuga heterophylla</i> / <i>Vaccinium ovatum</i> / <i>Polystichum munitum</i>	Douglas-fir - western hemlock / evergreen huckleberry / sword fern	Chappell 2005	G3S1
RONU (PBI)	<i>Rosa nutkana</i>	Nootka rose	PBI	
SAVI community	<i>Salicornia virginica</i> Community	pickleweed	Kunze and Cornelius 1982	G3G4
beach				
developed				
disturbed wet meadow				
saltwater				

Table 5. Vegetation Community Types Encountered at Squaxin State Park.

Abbreviation	Association Name	English Name	Reference	Status
ALRU2/POMU	<i>Alnus rubra</i> / <i>Polystichum munitum</i>	red alder / sword fern	Chappell 2004	G4S4
PSME-TSHE/VAOV2/POMU	<i>Pseudotsuga menziesii</i> - <i>Tsuga heterophylla</i> / <i>Vaccinium ovatum</i> / <i>Polystichum munitum</i>	Douglas-fir - western hemlock / evergreen huckleberry / sword fern	Chappell 2005	G3S1
THPL-ABGR/POMU	<i>Thuja plicata</i> - <i>Abies grandis</i> / <i>Polystichum munitum</i>	red cedar - grand fir / swordfern	Chappell 2004	G1S1
DISTURBED FIELD				

Table 6. Vegetation Community Types Encountered at Eagle Island State Park.

Abbreviation	Association Name	English Name	Reference	Status
PSME-ARME/VAOV2	<i>Pseudotsuga menziesii</i> - <i>Arbutus menziesii</i> / <i>Vaccinium ovatum</i>	Douglas-fir - madrone / evergreen huckleberry	Chappell 2004	GNRS1

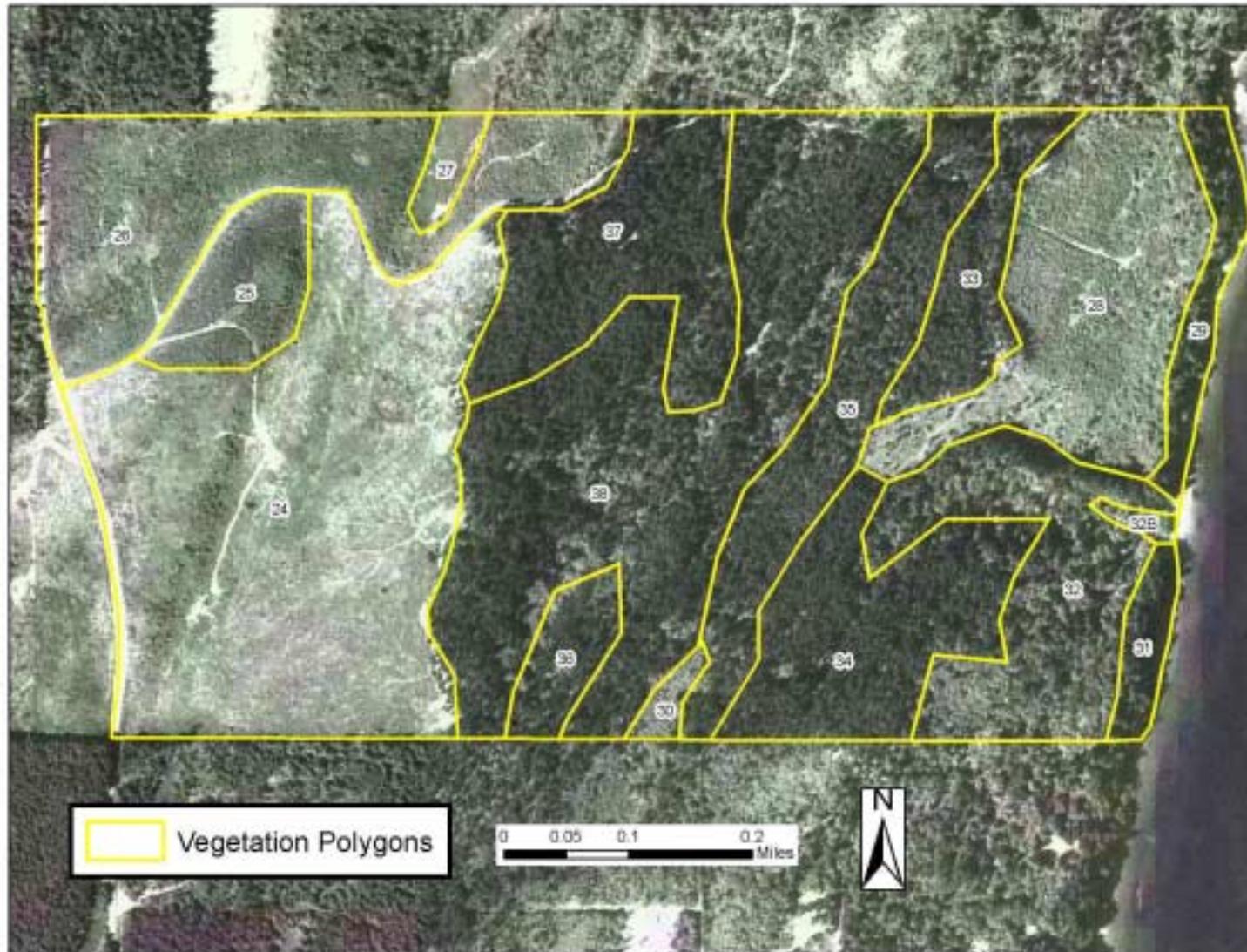


Figure 8. Layout of the vegetation community polygons at Harstine Island State Park, overlaying a 1990 digital orthophoto combined with TM7 spectral imagery.

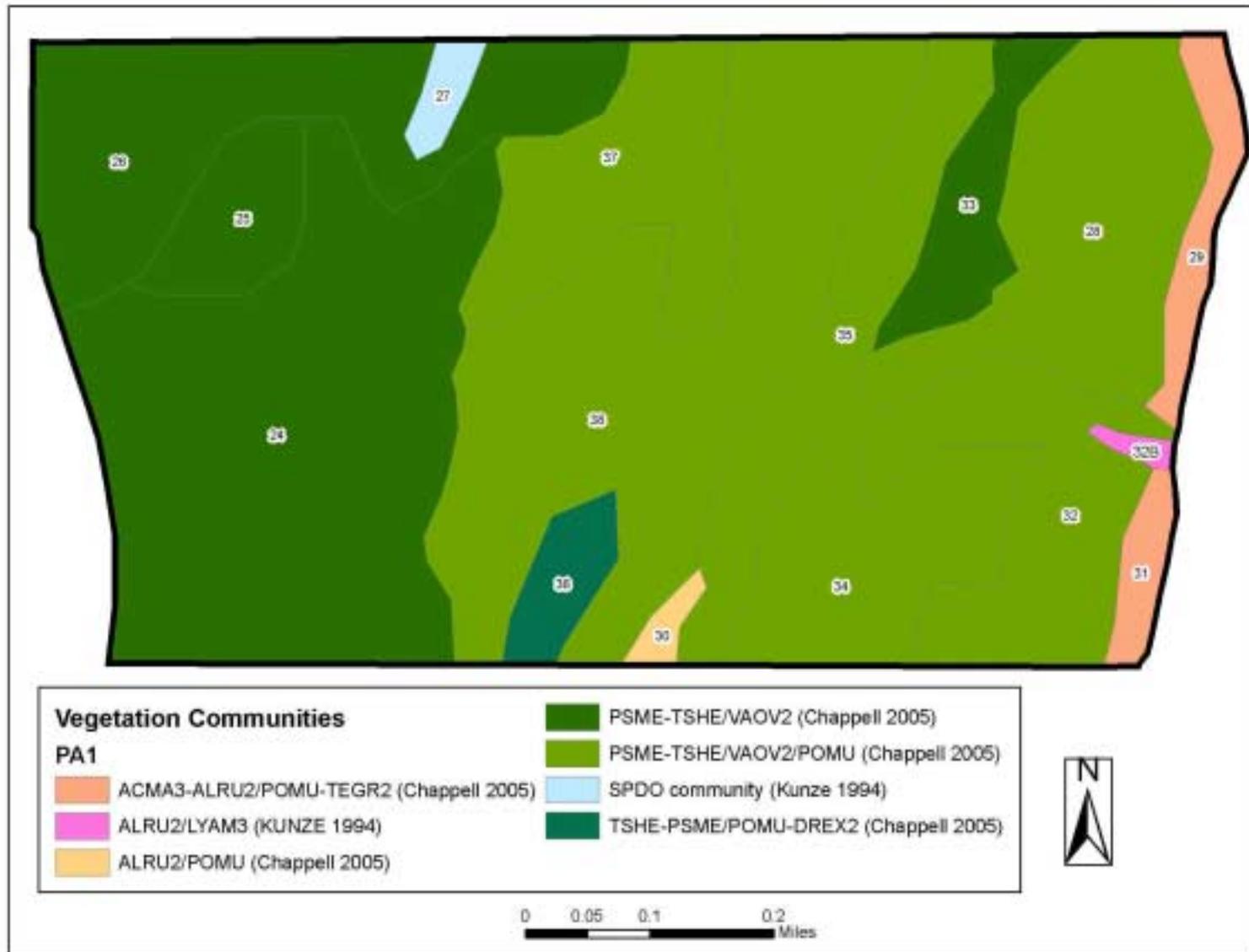


Figure 9. The primary vegetation community types within Harstine Island State Park.



Figure 10. Layout of the vegetation community polygons at Hope Island State Park, overlaying a recent color aerial photograph.



Figure 11. The primary vegetation community types within Hope Island State Park.



Figure 12. Layout of the vegetation community polygons at Jarrell Cove State Park, overlaying a 1990 digital orthophoto combined with TM7 spectral imagery.

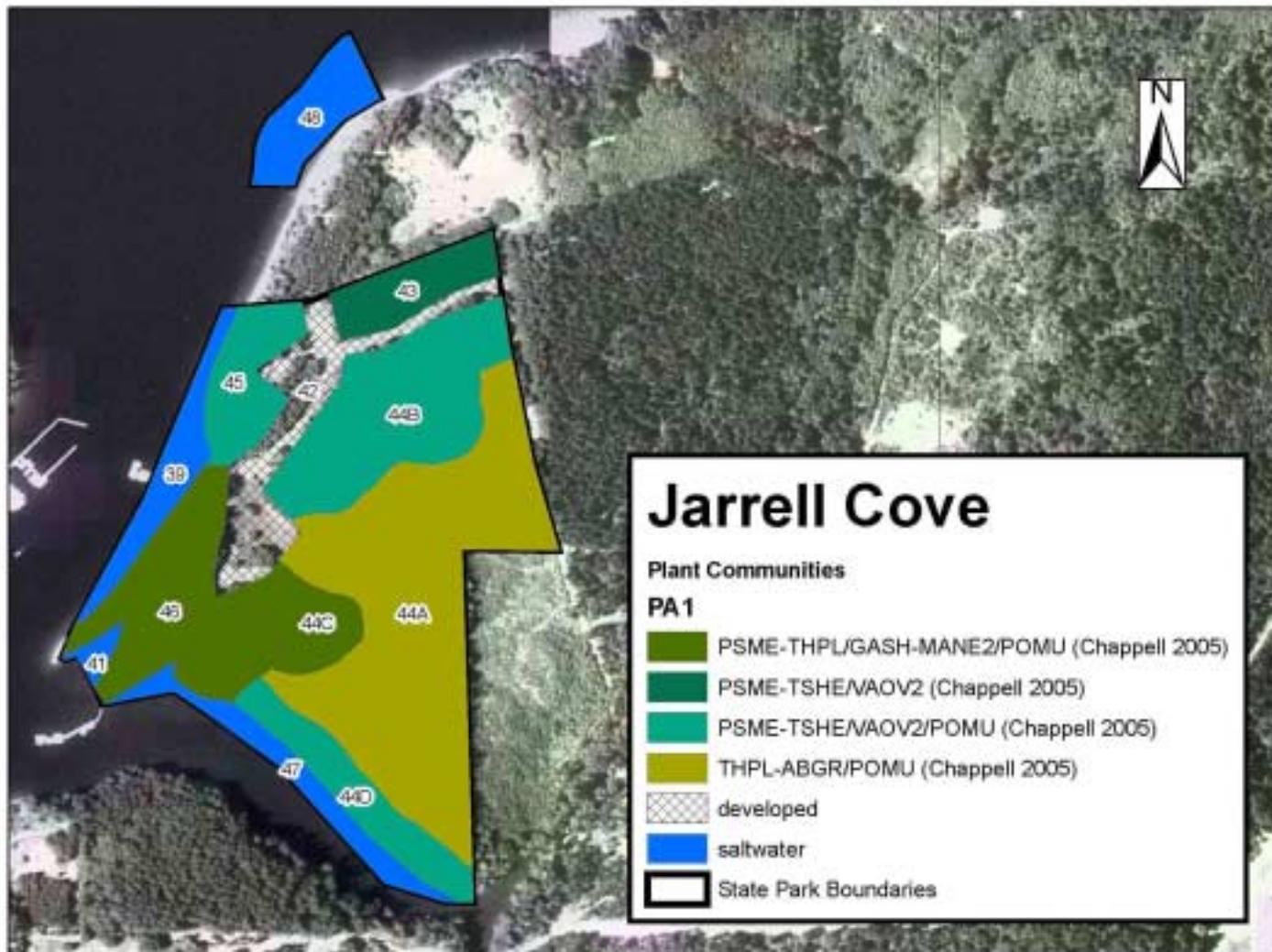


Figure 13. The primary vegetation community types within Jarrell Cove State Park.

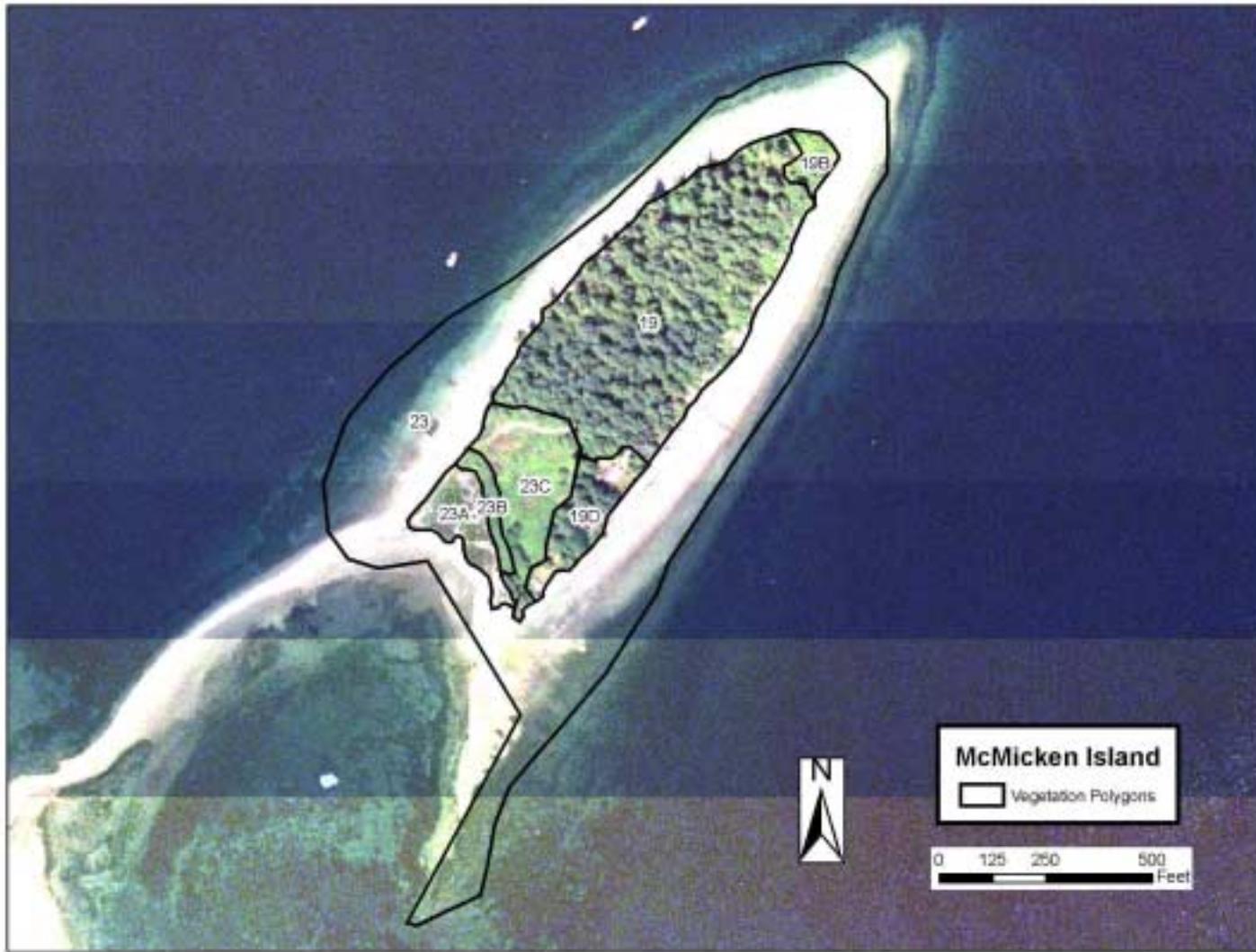


Figure 14. Layout of the vegetation community polygons at McMicken Island State Park, overlaying a recent color aerial photograph.

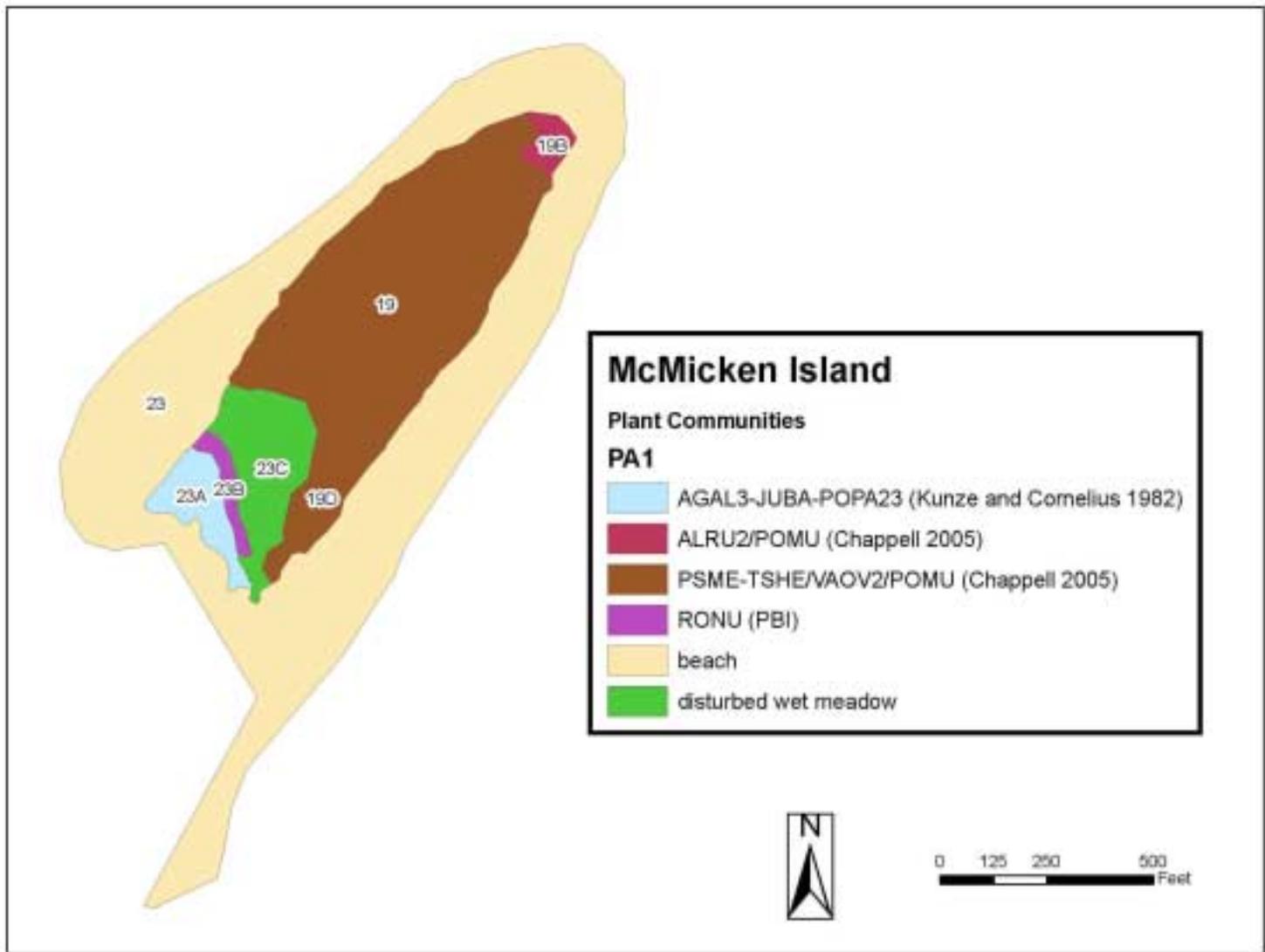


Figure 15. The primary vegetation community types within McMicken Island State Park.

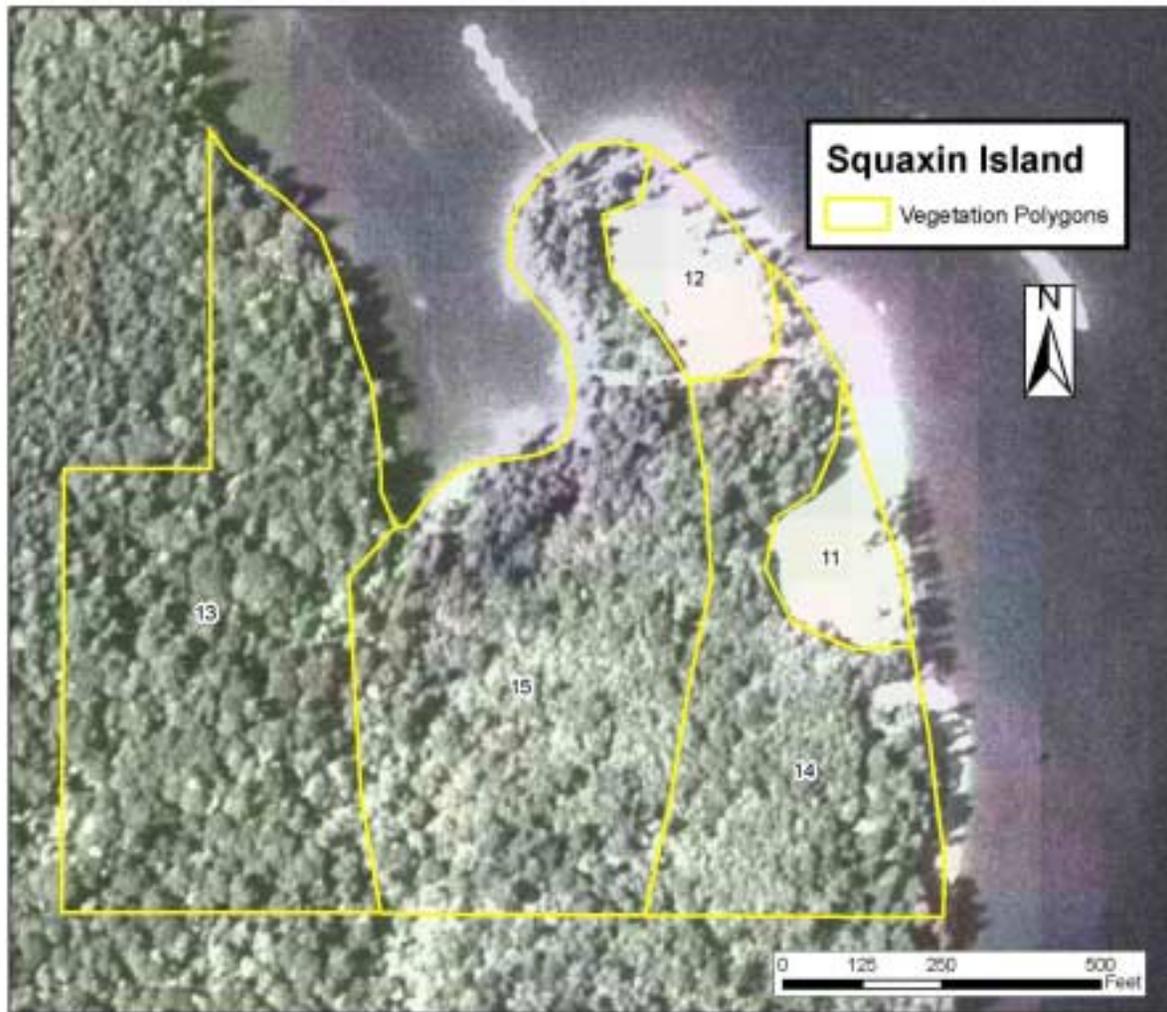


Figure 16. Layout of the vegetation community polygons at Squaxin Island State Park, overlaying a 1990 digital orthophoto combined with TM7 spectral imagery.

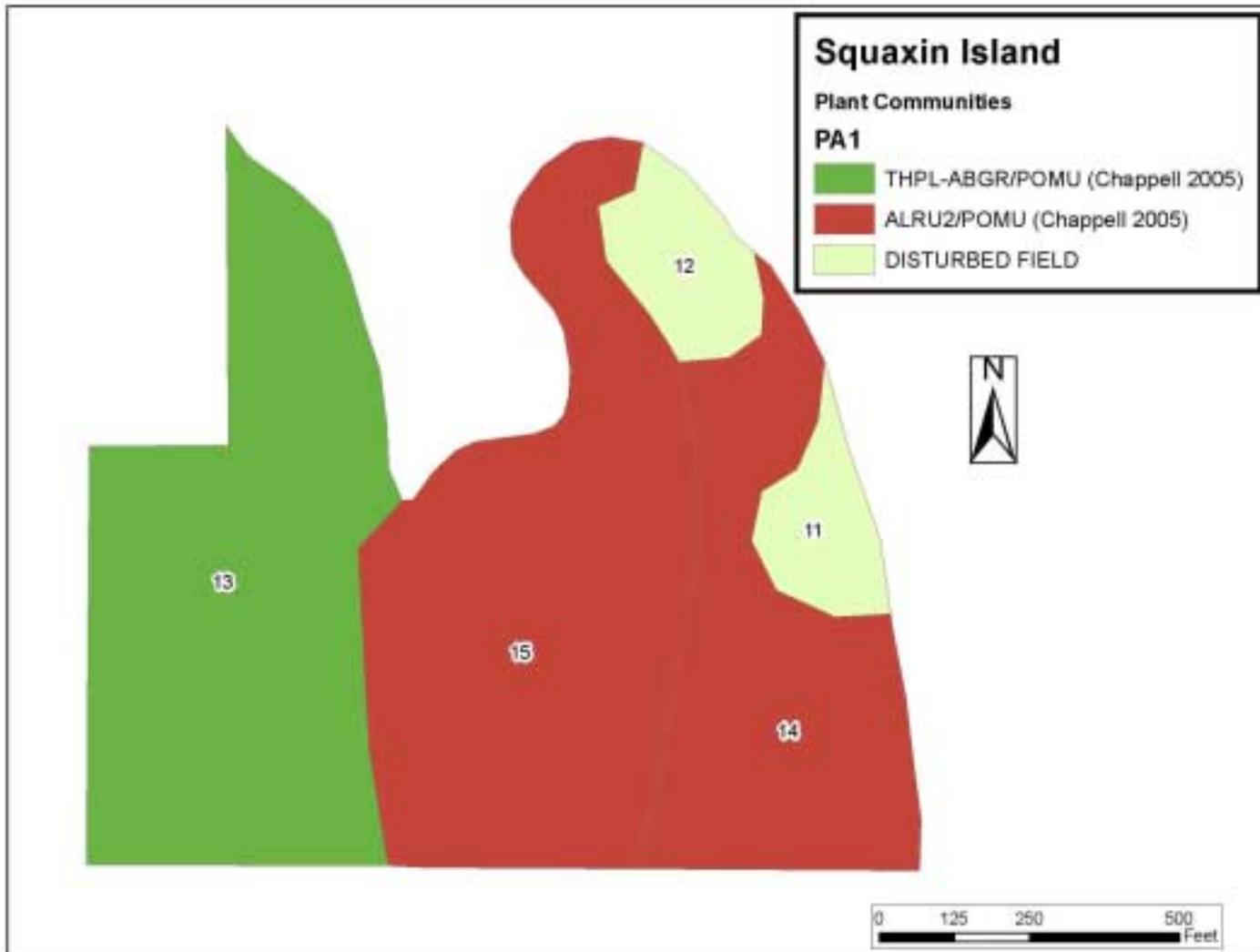


Figure 17. The primary vegetation community types within Squaxin Island State Park.

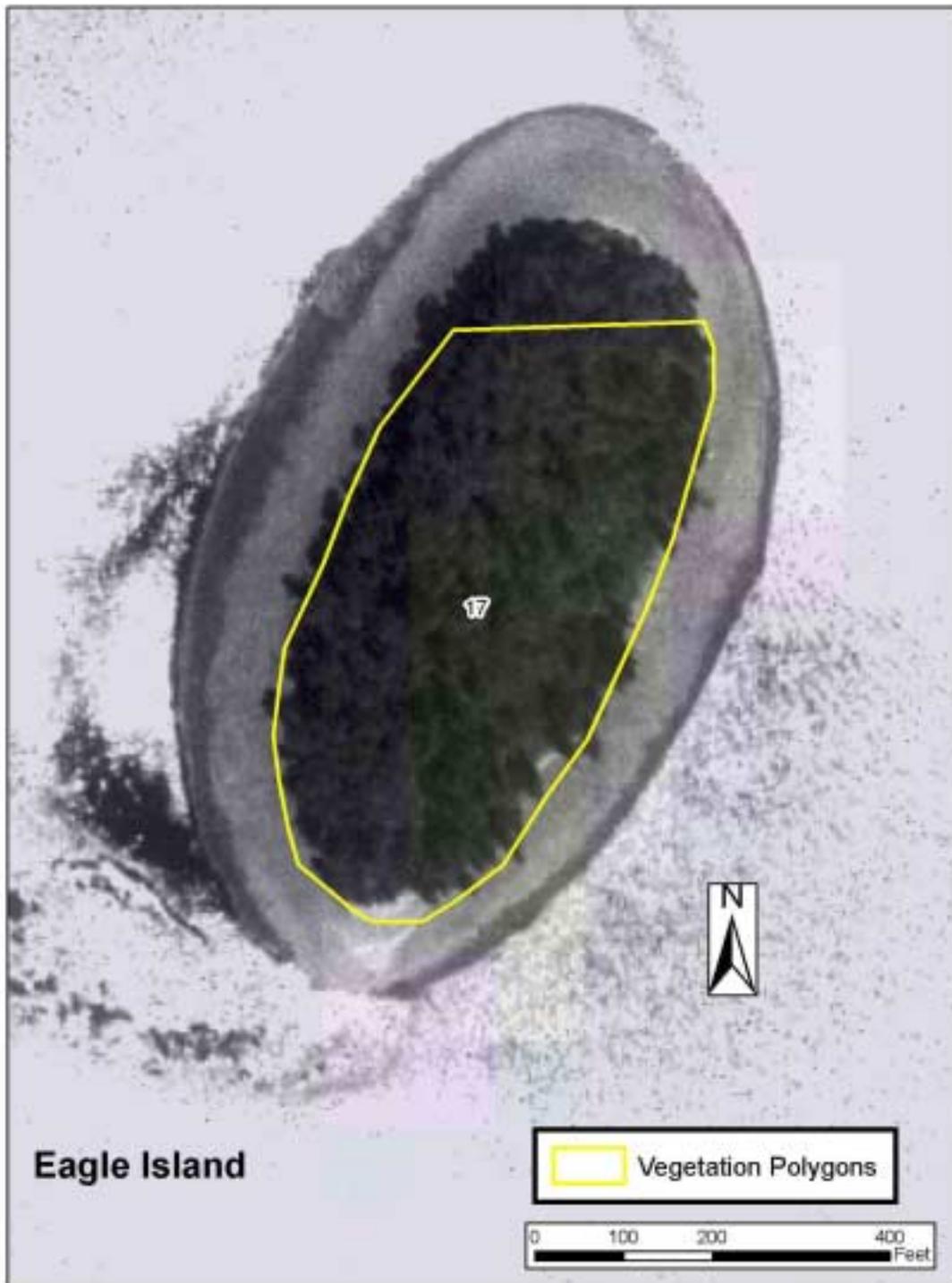


Figure 18. Layout of the vegetation community polygons at Eagle Island State Park, overlaying a 1990 digital orthophoto combined with TM7 spectral imagery.

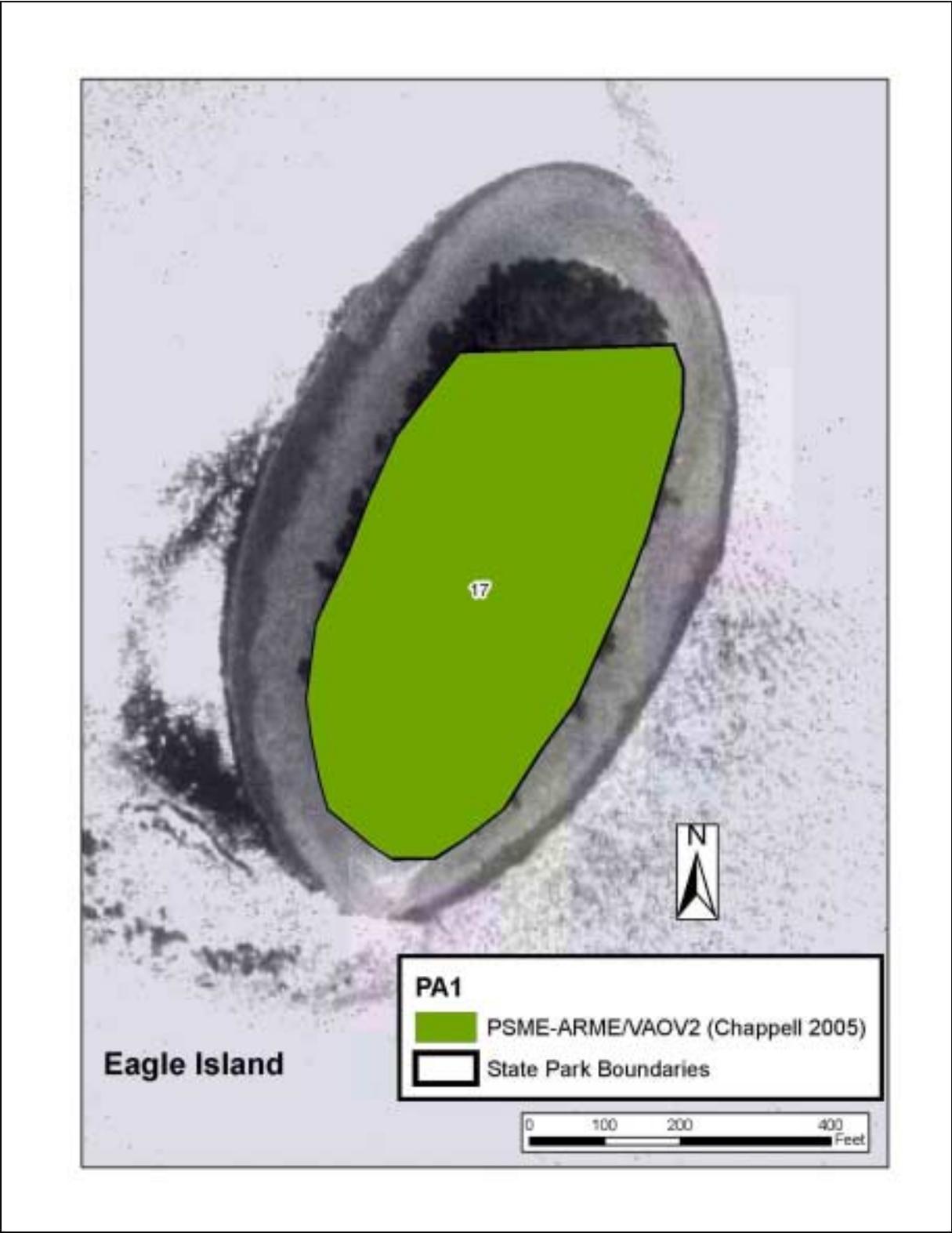


Figure 19. The primary vegetation community types within Eagle Island State Park.

Examples of Vegetation Community Types

Acer macrophyllum – *Alnus Rubra* / *Polystichum munitum* – *Tellima grandiflora*
forest (ACMA3-ALRU2/POMU-TEGR3)



This plant community was described by Chappell (2005). It is found primarily in the Puget Sound region, often on steep slopes, and typically not far from salt water. The steepness of the slope favors these broadleaf trees, bigleaf maple (*Acer macrophyllum*) and red alder (*Alnus rubra*) over coniferous species, in part because of soil creep and landslides down the slope. Bigleaf maple has the capacity to sprout from damaged stems after soil movement, and red alder is a nitrogen-fixing species, which gives it the ability to colonize disturbed soils where the nitrogen content of the soil is low. This plant community is found on the steep side-slopes and bluffs on Harstine Island State Park.

Alnus rubra / *Achlys triphylla* - *Carex deweyana* forest (ALRU2/ACTR-CADE9)



This plant community has not been described before. Pacific Biodiversity Institute decided that it was a unique community that warranted a name and description. It was found in small patches at Hope Island State Park. This plant community occurs near the center of the park and probably represents an early successional stage of the PSME-TSHE/ACTR community. It is characterized by an overstory of *Alnus rubra* and an open understory of *Achlys triphylla* and *Carex deweyana*. A similar plant community was found at Harstine Island as a minor type, but lacked the abundance of *Achlys triphylla*.

***Agrostis alba* – *Juncus balticus* – *Potentilla pacifica* (AGAL3-JUBA-POPA23)**



This plant community was described by Kunze and Cornelius (1982). This plant community is a common high marsh community in the Puget Sound. It occurs on silt beds that have little dissection by tidal channels. This community mosaics with the SAVI-JACA4-DISP-TRMA20 marsh community, a common low-marsh community.

***Alnus rubra* / *Polystichum munitum* forest (ALRU2/POMU)**



This plant community was described by Chappell (2005). Because of its ability to fix nitrogen from the atmosphere, Red alder (*Alnus rubra*) is an early-seral, colonizer species of disturbed soil. Accordingly, this is an early- to mid-seral association that can regenerate after fire, windthrow, or timber harvest. Red alder is prolific after disturbance that exposes mineral soil, and it has therefore thrived on productive sites where conifer forest have been harvested and herbicides were not applied. Alder is short-lived (about 100 years). If conifers establish in the understory, then they are expected to dominate after the alder dies in the absence of further disturbance.

Carex obnupta community type (CAOB3 c.t.)



This plant community was described by Kunze (1994). It occurs in a wet patches amidst the forest at Harstine Island State Park. It is characterized by slough sedge as the dominant plant.

***Deschampsia caespitosa* – *Distichlis spicata* – *Salicornia virginica* community
(DECA18-DISP-SAVI community)**



This plant community was described by Kunze and Cornelius (1982). It occurs along the south shore of Hope Island. In many ways, it represents a mosaic of the three dominant plants at the site on Hope Island.

***Juncus effusus* disturbed wet meadow (JUEF disturbed wet meadow)**



This plant community has not been described before. Pacific Biodiversity Institute decided that it was a unique community that warranted a name and description. It was found in one medium size patch at Hope Island State Park. It is a relatively wet area that has been farmed and probably grazed in the past. The plant community is dominated by *Juncus effusus*, but many other herbaceous and grass-like plants are also found here.

***Pseudotsuga menziesii* - *Arbutus menziesii* / *Gaultheria shallon* forest (PSME-ARME/GASH) and
Pseudotsuga menziesii - *Arbutus menziesii* / *Vaccinium ovatum* forest (PSME-ARME/VAOV2)**



These plant communities were described by Chappell (2005). These plant communities can be found at scattered locations in relatively hot, dry, and well-drained forested sites at the island parks.

Species in the genus *Arbutus* (Ericaceae) generally inhabit warm winter, dry summer (Mediterranean) climate areas in the Northern Hemisphere. Madrone is by far the most northerly broadleaf evergreen tree on the North American continent. For it to survive in the cool, wet climate of the Pacific Northwest, it only grows on sites with good soil drainage and bright sun. It is a fire-adapted species, resprouting after fires that will kill one of its local competitors, Douglas fir (*Pseudotsuga menziesii*). Douglas-fir is likely to increase in abundance without disturbance, but does not appear to be excluding or out-competing madrone, even when madrone is overtopped, because the canopy of fir remains relatively open on these dry sites.

***Pseudotsuga menziesii* - *Thuja plicata* / *Gaultheria shallon* – *Mahonia nervosa* / *Polystichum munitum* forest (PSME-THPL/GASH-MANE2/POMU)**



This plant community was described by Chappell (2005). This association presents a mild anomaly in its combination of three facultative upland plants (Douglas-fir, salal and Oregon grape) that are relatively rarely found in wetland sites, with red cedar (*Thuja plicata*), which prefers at least it's deep roots in mesic soils. Red cedar is more shade-tolerant than Douglas-fir (*Pseudotsuga menziesii*), and will slowly replace the latter species in the absence of disturbance.

***Pseudotsuga menziesii* - *Tsuga heterophylla* / *Achlys triphylla*, Douglas-fir - western hemlock / vanilla leaf**



This plant community has not been described before. Pacific Biodiversity Institute decided that it was a unique community that warranted a name and description. It was found in large patches at Hope Island State Park. It is characterized by an overstory of Douglas-fir and western hemlock and an open understory mixture of *Achlys triphylla*. Some stands have significant amounts of sword fern, deer fern and other understory plants.

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



This plant community was described by Chappell (2005). This is often post-logging association in dry to moderately moist soils. Douglas-fir (*Pseudotsuga menziesii*) can displace colonizer broadleaf trees over time, but once a dense canopy is established it cannot germinate and grow in its own shade. In the absence of recurring disturbance it will eventually be replaced by more shade-tolerant species. Salal (*Gaultheria shallon*) is a drought-tolerant, nitrogen-fixing species of acid soils and thus a common colonizer after logging. The light, wind-borne spores of swordfern (*Polystichum munitum*) enables this species to swiftly colonize new sites, however this capacity is limited by the specie's sensitivity to water stress. It is less drought tolerant than the other two species in this association and its presence indicates either deep soil or a site that accumulates sub-surface moisture.

***Pseudotsuga menziesii* – *Tsuga heterophylla* / *Vaccinium ovatum* / *Polystichum munitum* (PSME-TSHE/VAOV2/POMU) and
Pseudotsuga menziesii – *Tsuga heterophylla* / *Vaccinium ovatum* (PSME-TSHE/VAOV2) forests**



These plant communities were described by Chappell (2005). *Pseudotsuga menziesii* – *Tsuga heterophylla* / *Vaccinium ovatum* is common at many of the island State Parks surveyed. *Pseudotsuga menziesii* – *Tsuga heterophylla* / *Vaccinium ovatum* / *Polystichum munitum* sometimes occurs adjacent to the PSME-TSHE/VAOV2 association where there is a little more moisture.

Rosa nutkana (RONU)



This plant community has not been described before. Pacific Biodiversity Institute decided that it was a unique community that warranted a name and description. It was found in a small patch at McMicken Island State Park. This plant community is found only near saltwater shorelines above the high tide line. It is characterized by a dense cover of *Rosa nutkana*.

Salicornia virginica Community (SAVI)



This plant community was described by Kunze and Cornelius (1982). It is a low intertidal community associated with sandy or silty marshlands or beach flats. *Salicornia virginica* is a dominant herbaceous plant occurring in this community. This community mosaics with other intertidal communities. Small patches are found along the shorelines of many of the island State Parks.

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



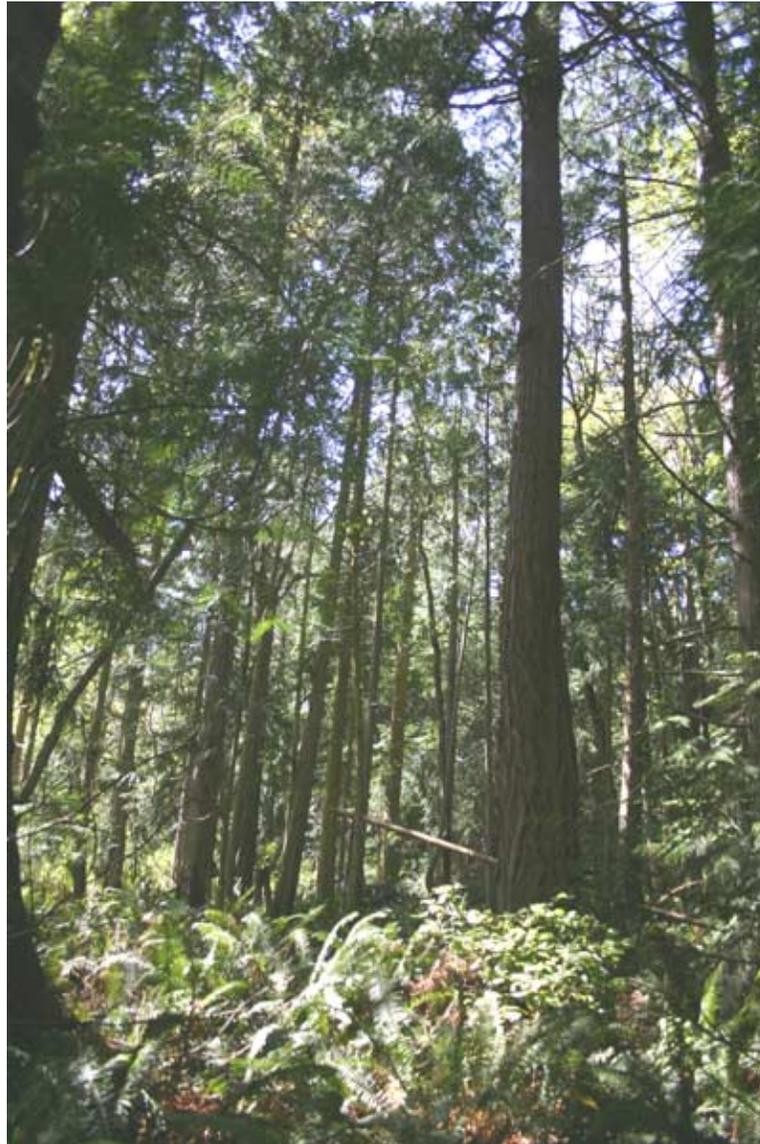
This plant community was described by Kunze and Cornelius (1982). This tideland community is found in high salinity areas of the low marsh on silty sands. It experiences daily inundation by the tide. It is more diverse than the SAVI community and occurs at slightly higher elevation.

Spiraea douglasii community type (SPDO c.t.)



This plant community was described by Kunze (1994). It occurs in a wetland at Harstine Island State Park where there is standing water most if not all year around. This association is characterized by the nearly homogenous shrub cover of *Spiraea douglasii*.

***Thuja plicata* - *Abies grandis* / *Polystichum munitum* forest
(THPL-ABGR/POMU)**



This plant community was described by Chappell (2005). Notably absent from the association is Douglas-fir (*Pseudotsuga menziesii*), which is a mid-seral species that is intolerant to shade relative to red cedar (*Thuja plicata*) and grand fir (*Abies grandis*), which have probably replace Douglas-fir in these sites over time. Grand fir prefers a drier moisture regimen than western hemlock, and indicates that either the annual precipitation is below 40" a year or the moisture-holding capacity of the soil is low.

***Tsuga heterophylla* - *Pseudotsuga menziesii* / *Polystichum munitum* - *Dryopteris expansa* forest (TSHE-PSME/POMU/DREX2)**



This plant community was described by Chappell (2005). This association occurs in the mesic areas at Harstine Island State Park. Most of the area covered by this association is very young forest that has regenerated after logging.

***Thuja plicata* - *Tsuga heterophylla* / *Ophloplanax horridus* / *Polystichum munitum* forest (THPL-TSHE/OPHO/POMU)**



This plant community was described by Chappell (2005). THPL-TSHE/OPHO/POMU occurs in a few the wet patches at Harstine Island State Park. It typically occurs within a matrix of the *Tsuga heterophylla* - *Pseudotsuga menziesii* / *Polystichum munitum* - *Dryopteris expansa* association. It is commonly associated with wetter areas of the forest near wetland margins or in topographic depressions.

Rare Plant Surveys

Methods - Rare Plants

We visited Eagle Island, Harstine Island, Hope Island, Jarrell Cove, McMicken Island, and Squaxin 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 D.

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 2-7).

Results - Rare Plants

We located one vascular plant currently listed in the WA DNR NHP rare plant list within Jarrell Cove State Park. A very small population of the rare giant chain fern, (*Woodwardia fimbriata*), a state sensitive species, was located along a steep, wet bank near the shore at Jarrell Cove State Park. Only 2 plants were found in this population. This is a new, previously unrecorded occurrence of *Woodwardia fimbriata*. The population vigor was rated as very low due to the very small population size and the lack of reproduction. The population is illustrated in the photos below and located in Figure 20 below. See Appendix D for a full printout of the DNR NHP field sighting forms. See Appendix C for definitions of Status codes.

Woodwardia fimbriata (WOFI) was found growing only about 1 meter above high tide line. It was growing in on a steep, wet bank with an open sky to the south and ample sunshine. WOFI was only growing in this one location and all similar locations were surveyed at this park, but no other WOFI was found. State Park management should be aware of the site and avoid any development activities in the vicinity. It would be very easy to wipe out this population by any habitat altering activity. Relocation of the population may be necessary if sea-level rises.

All other areas of Jarrell Cove were surveyed for other WOFI populations, but none were found. Although there was potential habitat for WOFI at some of the other island parks we surveyed, no other populations were found, despite careful surveys.

No other plants listed by the DNR Natural Heritage Program were found at any of the state parks covered in this report. No rare plants were previously known at these parks. The general lack of rare plants at these parks is not surprising. They have a long history of human activity and disturbance. Most of each of the island parks is covered with second-growth forest. The second-growth forests of the Puget Sound region do not contain suitable habitat for most rare plants and rare plants are generally absent from these forests.

Species	Common Name	Status
<i>Woodwardia fimbriata</i>	giant chain fern	G5-S2-S



Woodwardia fimbriata close-ups and one plant growing among other ferns on wet bank.

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

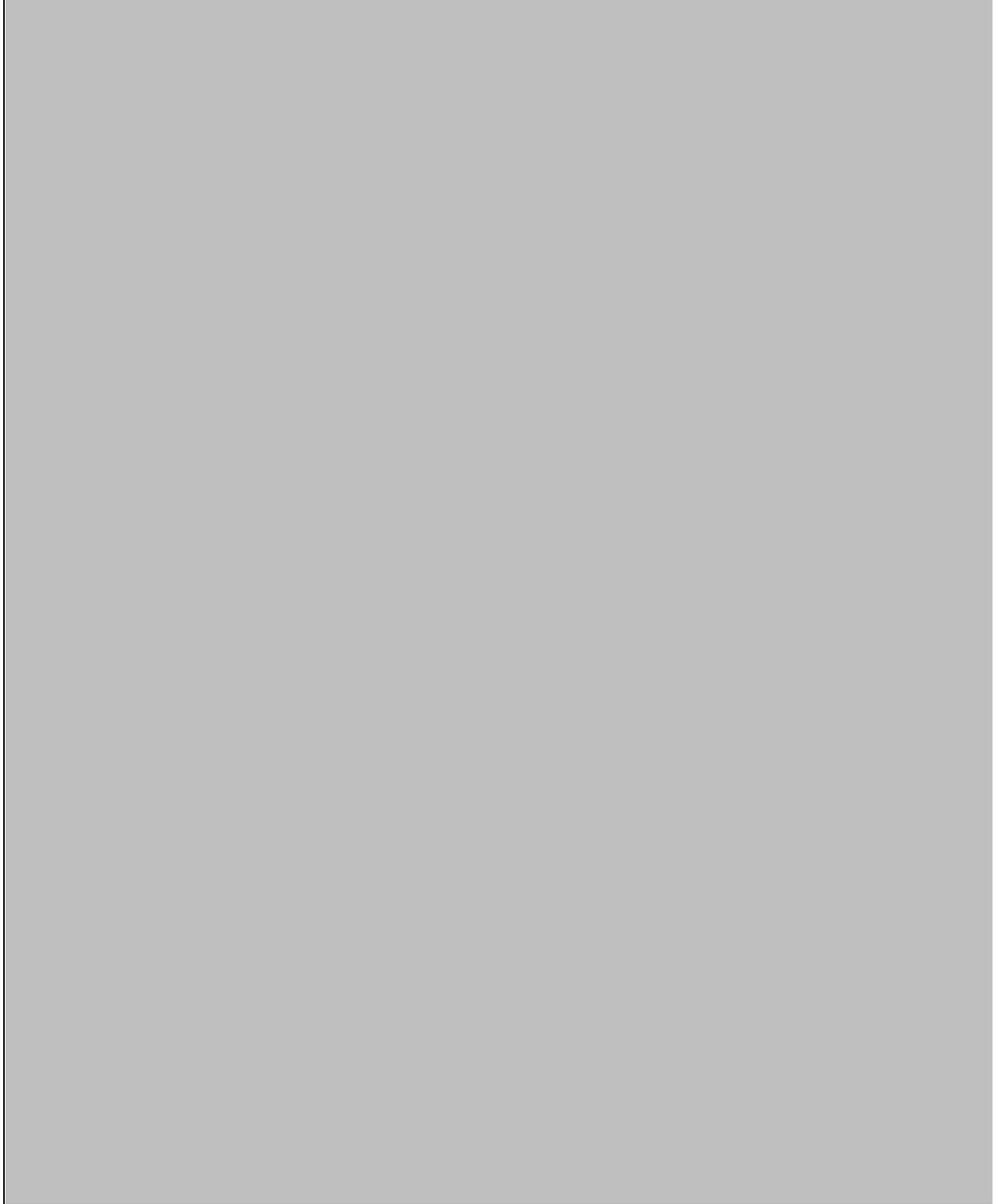


Figure 20. Location of *Woodwardia fimbriata* at Jarrell Cove State Park.

Vascular Plant List for Eagle Island State Park

A total of 45 vascular plant species were identified during the 2006 surveys at Eagle Island State Park. Of these, 11 of the plant species are non-native, accounting for about 24% of the total.

Key to Vascular Plant Species List

“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”

“Status”: Current status listings for WA DNR NHP tracked rare plants. See Appendix C for definitions of Status rankings.

“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.

#	Code	Scientific Name	Common Name/Accepted Synonym	Family	Alien
1	ACMA3	<i>Acer macrophyllum</i> Pursh	bigleaf maple	Aceraceae	
2	AGSC5	<i>Agrostis scabra</i> Willd.	rough bentgrass	Poaceae	
3	ALRU2	<i>Alnus rubra</i> Bong.	red alder	Betulaceae	
4	AMAL2	<i>Amelanchier alnifolia</i> (Nutt.) Nutt. ex M. Roemer	Saskatoon serviceberry	Rosaceae	
5	ANOD	<i>Anthoxanthum odoratum</i> L.	sweet vernalgrass	Poaceae	a
6	ARME	<i>Arbutus menziesii</i> Pursh	madrone	Ericaceae	
7	ATPA4	<i>Atriplex patula</i> L.	spear saltbush	Chenopodiaceae	
8	BEPE2	<i>Bellis perennis</i> L.	lawn daisy	Asteraceae	a
9	CYSC4	<i>Cytisus scoparius</i> (L.) Link	scotchbroom	Fabaceae	a
10	DISP	<i>Distichlis spicata</i> (L.) Greene	inland saltgrass	Poaceae	
11	EPAM	<i>Epilobium americanum</i> Hausskn.	>>Epilobium ciliatum ssp. ciliatum	Onagraceae	
12	EPAN2	<i>Epilobium angustifolium</i> L.	>>Chamerion angustifolium ssp. angustifolium	Onagraceae	
13	GASH	<i>Gaultheria shallon</i> Pursh	salal	Ericaceae	
14	HEHE	<i>Hedera helix</i> L.	English ivy	Araliaceae	a
15	HOLA	<i>Holcus lanatus</i> L.	common velvetgrass	Poaceae	a
16	HODI	<i>Holodiscus discolor</i> (Pursh) Maxim.	Indian plum	Rosaceae	
17	HYRA3	<i>Hypochaeris radicata</i> L.	hairy cat's ear	Asteraceae	a
18	ILAQ80	<i>Ilex aquifolium</i> L.	English ivy	Aquifoliaceae	a
19	JUNCU	<i>Juncus</i> L.	rush	Juncaceae	
20	LOCI3	<i>Lonicera ciliosa</i> (Pursh) Poir. ex DC.	orange honeysuckle	Caprifoliaceae	
21	OECE	<i>Oemleria cerasiformis</i> (Torr. & Gray ex Hook. & Arn.) Landon	Indian plum	Rosaceae	
22	POMU	<i>Polystichum munitum</i> (Kaulfuss) K. Presl	swordfern	Polypodiaceae	
23	PRAV	<i>Prunus avium</i> (L.) L.	sweet cherry	Rosaceae	a
24	PREM	<i>Prunus emarginata</i> (Dougl. ex Hook.) D. Dietr.	bitter cherry	Rosaceae	
25	PSME	<i>Pseudotsuga menziesii</i> (Mirbel) Franco	Douglas-fir	Pinaceae	
26	PTAQ	<i>Pteridium aquilinum</i> (L.) Kuhn	bracken fern	Dennstaedtiaceae	
27	RHPU	<i>Rhamnus purshiana</i> DC.	>>Frangula purshiana	Rhamnaceae	
28	RHDI6	<i>Rhus diversiloba</i> Torr. & Gray	>>Toxicodendron diversilobum	Anacardiaceae	
29	RISA	<i>Ribes sanguineum</i> Pursh	redflower currant	Grossulariaceae	
30	ROGY	<i>Rosa gymnocarpa</i> Nutt.	dwarf rose	Rosaceae	
31	ROSA5	<i>Rosa</i> L.	rose	Rosaceae	
32	RUDI2	<i>Rubus discolor</i> Weihe & Nees	>>Rubus armeniacus	Rosaceae	a
33	RUPA	<i>Rubus parviflorus</i> Nutt.	thimbleberry	Rosaceae	

34	RUUR	Rubus ursinus Cham. & Schlecht.	California blackberry	Rosaceae	
35	SAVI	Salicornia virginica L.	>>Salicornia depressa	Chenopodiaceae	
36	SALIX	Salix L.	willow	Salicaceae	
37	SARI*	Salix rigida Muhl.	>>Salix prolixa	Salicaceae	
38	SASC	Salix scouleriana Barratt ex Hook.	Scouler's willow	Salicaceae	
39	TAOF	Taraxacum officinale G.H. Weber ex Wiggers	dandelion	Asteraceae	a
40	THPL	Thuja plicata Donn ex D. Don	western red cedar	Cupressaceae	
41	TRDU2	Trifolium dubium Sibthorp	suckling clover	Fabaceae	a
42	TROV2	Trillium ovatum Pursh	Pacific trillium	Liliaceae	
43	VAOV2	Vaccinium ovatum Pursh	California huckleberry	Ericaceae	
44	VIGI	Vicia gigantea Hook.	>>Vicia nigricans ssp. gigantea	Fabaceae	
45	VICIA	Vicia L.	vetch	Fabaceae	

Vascular Plant List for Harstine Island State Park

A total of 113 vascular plant species were identified during the 2006 surveys at Harstine Island State Park. Of these, 26 of the plant species are non-native, accounting for about 23% of the total.

#	Code	Scientific Name	Common Name/Accepted Synonym	Family	Alien
1	ACMA3	Acer macrophyllum Pursh	bigleaf maple	Aceraceae	
2	ACTR	Achlys triphylla (Sm.) DC.	sweet after death	Berberidaceae	
3	ADBI	Adenocaulon bicolor Hook.	pathfinder	Asteraceae	
4	ADPE	Adiantum pedatum L.	>>Adiantum aleuticum	Pteridaceae	
5	AGEX	Agrostis exarata Trin.	spike bentgrass	Poaceae	
6	AGSC5	Agrostis scabra Willd.	rough bentgrass	Poaceae	
7	ALRU2	Alnus rubra Bong.	red alder	Betulaceae	
8	ANMA	Anaphalis margaritacea (L.) Benth.	western pearly everlasting	Asteraceae	
9	ANAR3	Angelica arguta Nutt.	Lyall's angelica	Apiaceae	
10	ANOD	Anthoxanthum odoratum L.	sweet vernalgrass	Poaceae	a
11	ARME	Arbutus menziesii Pursh	madrone	Ericaceae	
12	ARSU4	Artemisia suksdorfii Piper	coastal wormwood	Asteraceae	
13	ARUNC	Aruncus L.	aruncus	Rosaceae	
14	ASCA2	Asarum caudatum Lindl.	British Columbia wildginger	Aristolochiaceae	
15	ATFI	Athyrium filix-femina (L.) Roth	common ladyfern	Dryopteridaceae	
16	ATPA4	Atriplex patula L.	spear saltbush	Chenopodiaceae	
17	BEPE2	Bellis perennis L.	lawn daisy	Asteraceae	a
18	BENE2	Berberis nervosa Pursh	>>Mahonia nervosa	Berberidaceae	
19	BLSP	Blechnum spicant (L.) Sm.	deer fern	Blechnaceae	
20	BUDA2	Buddleja davidii Franch.	orange eye butterflybush	Buddlejaceae	a
21	CADE9	Carex deweyana Schwein.	Dewey sedge	Cyperaceae	
22	CAHE7	Carex hendersonii Bailey	Henderson's sedge	Cyperaceae	
23	CALEL2	Carex lenticularis Michx. var. limnophila (Holm) Cronq.	lakeshore sedge	Cyperaceae	
24	CAOB3	Carex obnupta Bailey	slough sedge	Cyperaceae	
25	CEVE	Ceanothus velutinus Dougl. ex Hook.	snowbrush ceanothus	Rhamnaceae	
26	CENU2	Cerastium nutans Raf.	nodding chickweed	Caryophyllaceae	
27	CIAL	Circaea alpina L.	small enchanter's nightshade	Onagraceae	
28	CIAR4	Cirsium arvense (L.) Scop.	Canada thistle	Asteraceae	a
29	CIVU	Cirsium vulgare (Savi) Ten.	bull thistle	Asteraceae	a
30	COMA25	Corallorhiza maculata (Raf.) Raf.	summer coralroot	Orchidaceae	

31	CONU4	<i>Cornus nuttallii</i> Audubon ex Torr. & Gray	Pacific dogwood	Cornaceae	
32	COST4	<i>Cornus stolonifera</i> Michx.	>> <i>Cornus sericea</i> ssp. <i>sericea</i>	Cornaceae	
33	COVA2	<i>Coronilla varia</i> L.	>> <i>Securigera varia</i>	Fabaceae	a
34	COCO6	<i>Corylus cornuta</i> Marsh.	California hazelnut	Betulaceae	
35	CYSC4	<i>Cytisus scoparius</i> (L.) Link	scotchbroom	Fabaceae	a
36	DAGL	<i>Dactylis glomerata</i> L.	orchardgrass	Poaceae	a
37	DIPU	<i>Digitalis purpurea</i> L.	purple foxglove	Scrophulariaceae	a
38	DREX2	<i>Dryopteris expansa</i> (K. Presl) Fraser-Jenkins & Jermy	spreading woodfern	Dryopteridaceae	
39	ELGL	<i>Elymus glaucus</i> Buckl.	blue wildrye	Poaceae	
40	ELMO9	<i>Elymus mollis</i> Trin.	>> <i>Leymus mollis</i> ssp. <i>mollis</i>	Poaceae	
41	EPCI	<i>Epilobium ciliatum</i> Raf.	fringed willowherb	Onagraceae	
42	EQAR	<i>Equisetum arvense</i> L.	field horsetail	Equisetaceae	
43	EQHY	<i>Equisetum hyemale</i> L.	scouringrush horsetail	Equisetaceae	
44	EQTE	<i>Equisetum telmateia</i> Ehrh.	giant horsetail	Equisetaceae	
45	ERMI6	<i>Erechtites minima</i> (Poir.) DC.	coastal burnweed	Asteraceae	a
46	FRLA	<i>Fraxinus latifolia</i> Benth.	Oregon ash	Oleaceae	
47	GAAP2	<i>Galium aparine</i> L.	stickywilly	Rubiaceae	a
48	GASH	<i>Gaultheria shallon</i> Pursh	salal	Ericaceae	
49	GERO	<i>Geranium robertianum</i> L.	Robert geranium	Geraniaceae	a
50	HEHE	<i>Hedera helix</i> L.	English ivy	Araliaceae	a
51	HIERA	<i>Hieracium</i> L.	hawkweed	Asteraceae	
52	HODI	<i>Holodiscus discolor</i> (Pursh) Maxim.	Indian plum	Rosaceae	
53	HYRA	<i>Hydrocotyle ranunculoides</i> L. f.	floating marshpennywort	Apiaceae	
54	ILAQ80	<i>Ilex aquifolium</i> L.	English ivy	Aquifoliaceae	a
55	IMCA	<i>Impatiens capensis</i> Meerb.	jewelweed	Balsaminaceae	a
56	JUBA	<i>Juncus balticus</i> Willd.	Baltic rush	Juncaceae	
57	LAMU	<i>Lactuca muralis</i> (L.) Fresen.	>> <i>Mycelis muralis</i>	Asteraceae	a
58	LENU2	<i>Leontodon nudicaulis</i> (L.) Banks ex Schinz & R. Keller	>> <i>Leontodon taraxacoides</i> ssp. <i>taraxacoides</i>	Asteraceae	a
59	LOCI3	<i>Lonicera ciliosa</i> (Pursh) Poir. ex DC.	orange honeysuckle	Caprifoliaceae	
60	LUPO2	<i>Lupinus polyphyllus</i> Lindl.	bigleaf lupine	Fabaceae	
61	LUPA4	<i>Luzula parviflora</i> (Ehrh.) Desv.	smallflowered woodrush	Juncaceae	
62	LYAM3	<i>Lysichiton americanus</i> Hultén & St. John	American skunkcabbage	Araceae	
63	MADI	<i>Maianthemum dilatatum</i> (Wood) A. Nels. & J.F. Macbr.	false lily of the valley	Liliaceae	
64	MIGU	<i>Mimulus guttatus</i> DC.	seep monkeyflower	Scrophulariaceae	
65	MIMO3	<i>Mimulus moschatus</i> Dougl. ex Lindl.	muskflower	Scrophulariaceae	
66	MOSI2	<i>Montia sibirica</i> (L.) T.J. Howell	>> <i>Claytonia sibirica</i> var. <i>sibirica</i>	Portulacaceae	
67	NEPA	<i>Nemophila parviflora</i> Dougl. ex Benth.	smallflower nemophila	Hydrophyllaceae	
68	OESA	<i>Oenanthe sarmentosa</i> K. Presl ex DC.	water parsely	Apiaceae	
69	OPHO	<i>Oplopanax horridus</i> Miq.	devilsclub	Araliaceae	
70	PEFRP	<i>Petasites frigidus</i> (L.) Fries var. <i>palmatus</i> (Ait.) Cronq.	arctic sweet coltsfoot	Asteraceae	
71	PHCA11	<i>Physocarpus capitatus</i> (Pursh) Kuntze	Pacific ninebark	Rosaceae	
72	PLMA2	<i>Plantago major</i> L.	common plantain	Plantaginaceae	
73	POPR	<i>Poa pratensis</i> L.	Kentucky bluegrass	Poaceae	a
74	POGL8	<i>Polypodium glycyrrhiza</i> D.C. Eat.	licorice fern	Polypodiaceae	
75	POMU	<i>Polystichum munitum</i> (Kaulfuss) K. Presl	swordfern	Polypodiaceae	

76	PRVU	<i>Prunella vulgaris</i> L.	common selfheal	Lamiaceae	
77	PREM	<i>Prunus emarginata</i> (Dougl. ex Hook.) D. Dietr.	bitter cherry	Rosaceae	
78	PSME	<i>Pseudotsuga menziesii</i> (Mirbel) Franco	Douglas-fir	Pinaceae	
79	PTAQ	<i>Pteridium aquilinum</i> (L.) Kuhn	bracken fern	Dennstaedtiaceae	
80	PYFU	<i>Pyrus fusca</i> Raf.	>> <i>Malus fusca</i>	Rosaceae	
81	RARE3	<i>Ranunculus repens</i> L.	creeping buttercup	Ranunculaceae	a
82	RHPU	<i>Rhamnus purshiana</i> DC.	>> <i>Frangula purshiana</i>	Rhamnaceae	
83	ROGY	<i>Rosa gymnocarpa</i> Nutt.	dwarf rose	Rosaceae	
84	RUDI2	<i>Rubus discolor</i> Weihe & Nees	>> <i>Rubus armeniacus</i>	Rosaceae	a
85	RULA	<i>Rubus laciniatus</i> Willd.	cutleaf blackberry	Rosaceae	a
86	RUPA	<i>Rubus parviflorus</i> Nutt.	thimbleberry	Rosaceae	
87	RUSP	<i>Rubus spectabilis</i> Pursh	salmonberry	Rosaceae	
88	RUUR	<i>Rubus ursinus</i> Cham. & Schlecht.	California blackberry	Rosaceae	
89	SASC	<i>Salix scouleriana</i> Barratt ex Hook.	Scouler's willow	Salicaceae	
90	SARA2	<i>Sambucus racemosa</i> L.	red elderberry	Caprifoliaceae	
91	SACR2	<i>Sanicula crassicaulis</i> Poepp. ex DC.	>> <i>Sagina maxima</i> ssp. <i>crassicaulis</i>	Apiaceae	
92	SEJA	<i>Senecio jacobaea</i> L.	stinking willie	Asteraceae	a
93	SMRA*	<i>Smilacina racemosa</i> (L.) Desf.	>> <i>Maianthemum racemosum</i> ssp. <i>amplexicaule</i>	Liliaceae	
94	SOAS	<i>Sonchus asper</i> (L.) Hill	spiny sowthistle	Asteraceae	a
95	SOAU	<i>Sorbus aucuparia</i> L.	European mountain ash	Rosaceae	a
96	SPDO	<i>Spiraea douglasii</i> Hook.	rose spirea	Rosaceae	
97	STME	<i>Stachys mexicana</i> Benth.	Mexican hedgenettle	Lamiaceae	
98	STCR2	<i>Stellaria crispa</i> Cham. & Schlecht.	curled starwort	Caryophyllaceae	
99	TAOF	<i>Taraxacum officinale</i> G.H. Weber ex Wiggers	dandelion	Asteraceae	a
100	TEGR2	<i>Tellima grandiflora</i> (Pursh) Dougl. ex Lindl.	bigflower tellima	Saxifragaceae	
101	THPL	<i>Thuja plicata</i> Donn ex D. Don	western red cedar	Cupressaceae	
102	TITR	<i>Tiarella trifoliata</i> L.	threeleaf foamflower	Saxifragaceae	
103	TOME	<i>Tolmiea menziesii</i> (Pursh) Torr. & Gray	youth on age	Saxifragaceae	
104	TRLA6	<i>Trientalis latifolia</i> Hook.	>> <i>Trientalis borealis</i> ssp. <i>latifolia</i>	Primulaceae	
105	TROV2	<i>Trillium ovatum</i> Pursh	Pacific trillium	Liliaceae	
106	TSHE	<i>Tsuga heterophylla</i> (Raf.) Sarg.	western hemlock	Pinaceae	
107	TYLA	<i>Typha latifolia</i> L.	broadleaf cattail	Typhaceae	
108	URDI	<i>Urtica dioica</i> L.	nettle	Urticaceae	
109	VAOV2	<i>Vaccinium ovatum</i> Pursh	California huckleberry	Ericaceae	
110	VAPA	<i>Vaccinium parvifolium</i> Sm.	red huckleberry	Ericaceae	
111	VIGI	<i>Vicia gigantea</i> Hook.	>> <i>Vicia nigricans</i> ssp. <i>gigantea</i>	Fabaceae	
112	VISAS2	<i>Vicia sativa</i> L. ssp. <i>sativa</i>	garden vetch	Fabaceae	a
113	VIOR	<i>Viola orbiculata</i> Geyer ex Holz.	darkwoods violet	Violaceae	

Vascular Plant List for Hope Island State Park

A total of 116 vascular plant species were identified during the 2006 surveys at Hope Island State Park. Of these, 26 of the plant species are non-native, accounting for about 22% of the total.

#	Code	Scientific Name	Common Name/Accepted Synonym	Family	Alien
1	ABGR	<i>Abies grandis</i> (Dougl. ex D. Don) Lindl.	grand fir	Pinaceae	
2	ACMA3	<i>Acer macrophyllum</i> Pursh	bigleaf maple	Aceraceae	
3	ACMI2	<i>Achillea millefolium</i> L.	yarrow	Asteraceae	
4	ACMIC	<i>Achillea millefolium</i> L. var. <i>californica</i> (Pollard) Jepson	California yarrow	Asteraceae	
5	ACTR	<i>Achlys triphylla</i> (Sm.) DC.	sweet after death	Berberidaceae	
6	ADBI	<i>Adenocaulon bicolor</i> Hook.	pathfinder	Asteraceae	
7	AGEX	<i>Agrostis exarata</i> Trin.	spike bentgrass	Poaceae	
8	AGSC5	<i>Agrostis scabra</i> Willd.	rough bentgrass	Poaceae	
9	ALRU2	<i>Alnus rubra</i> Bong.	red alder	Betulaceae	
10	AMCH4	<i>Ambrosia chamissonis</i> (Less.) Greene	silver burr ragweed	Asteraceae	
11	AMAL2	<i>Amelanchier alnifolia</i> (Nutt.) Nutt. ex M. Roemer	Saskatoon serviceberry	Rosaceae	
12	ARME	<i>Arbutus menziesii</i> Pursh	madrone	Ericaceae	
13	ARCO3	<i>Arctostaphylos columbiana</i> Piper	hairy manzanita	Ericaceae	
14	ATFI	<i>Athyrium filix-femina</i> (L.) Roth	common ladyfern	Dryopteridaceae	
15	ATPA4	<i>Atriplex patula</i> L.	spear saltbush	Chenopodiaceae	
16	BEPE2	<i>Bellis perennis</i> L.	lawn daisy	Asteraceae	a
17	BEAQ	<i>Berberis aquifolium</i> Pursh	>>Mahonia aquifolium	Berberidaceae	
18	BENE2	<i>Berberis nervosa</i> Pursh	>>Mahonia nervosa	Berberidaceae	
19	BLSP	<i>Blechnum spicant</i> (L.) Sm.	deer fern	Blechnaceae	
20	BUDA2	<i>Buddleja davidii</i> Franch.	orange eye butterflybush	Buddlejaceae	a
21	CAOLO	<i>Cardamine oligosperma</i> Nutt. var. <i>oligosperma</i>	little western bittercress	Brassicaceae	
22	CAAT3	<i>Carex athrostachya</i> Olney	slenderbeak sedge	Cyperaceae	
23	CADE9	<i>Carex deweyana</i> Schwein.	Dewey sedge	Cyperaceae	
24	CAHE7	<i>Carex hendersonii</i> Bailey	Henderson's sedge	Cyperaceae	
25	CALAA3	<i>Carex lanuginosa</i> Michx. var. <i>americana</i> (Fern.) Boivin	>>Carex lasiocarpa var. <i>americana</i>	Cyperaceae	
26	CALEL2	<i>Carex lenticularis</i> Michx. var. <i>limnophila</i> (Holm) Cronq.	lakeshore sedge	Cyperaceae	
27	CHAL7	<i>Chenopodium album</i> L.	lambsquarters	Chenopodiaceae	
28	CHLE80	<i>Chrysanthemum leucanthemum</i> L.	>>Leucanthemum vulgare	Asteraceae	a
29	CIAR4	<i>Cirsium arvense</i> (L.) Scop.	Canada thistle	Asteraceae	a
30	CIVU	<i>Cirsium vulgare</i> (Savi) Ten.	bull thistle	Asteraceae	a
31	COMA25	<i>Corallorhiza maculata</i> (Raf.) Raf.	summer coralroot	Orchidaceae	
32	COST4	<i>Cornus stolonifera</i> Michx.	>>Cornus sericea ssp. <i>sericea</i>	Cornaceae	
33	COCO6	<i>Corylus cornuta</i> Marsh.	California hazelnut	Betulaceae	
34	CRMO3	<i>Crataegus monogyna</i> Jacq.	oneseed hawthorn	Rosaceae	a
35	CYSC4	<i>Cytisus scoparius</i> (L.) Link	scotchbroom	Fabaceae	a
36	DAGL	<i>Dactylis glomerata</i> L.	orchardgrass	Poaceae	a
37	DACA6	<i>Daucus carota</i> L.	Queen Anne's lace	Apiaceae	a
38	DISP	<i>Distichlis spicata</i> (L.) Greene	inland saltgrass	Poaceae	
39	DREX2	<i>Dryopteris expansa</i> (K. Presl) Fraser-Jenkins & Jermy	spreading woodfern	Dryopteridaceae	

40	ELGL	<i>Elymus glaucus</i> Buckl.	blue wildrye	Poaceae	
41	EPCI	<i>Epilobium ciliatum</i> Raf.	fringed willowherb	Onagraceae	
42	EQTE	<i>Equisetum telmateia</i> Ehrh.	giant horsetail	Equisetaceae	
43	FEAR3	<i>Festuca arundinacea</i> Schreb.	>>Schedonorus phoenix	Poaceae	a
44	FRVE	<i>Fragaria vesca</i> L.	woodland strawberry	Rosaceae	
45	FRLA	<i>Fraxinus latifolia</i> Benth.	Oregon ash	Oleaceae	
46	GAAP2	<i>Galium aparine</i> L.	stickywilly	Rubiaceae	a
47	GASH	<i>Gaultheria shallon</i> Pursh	salal	Ericaceae	
48	GEMA4	<i>Geum macrophyllum</i> Willd.	largeleaf avens	Rosaceae	
49	GOOB2	<i>Goodyera oblongifolia</i> Raf.	western rattlesnake plantain	Orchidaceae	
50	GRIN	<i>Grindelia integrifolia</i> DC.	Puget Sound gumweed	Asteraceae	
51	HIAL2	<i>Hieracium albiflorum</i> Hook.	white hawkweed	Asteraceae	
52	HIERA	<i>Hieracium</i> L.	hawkweed	Asteraceae	
53	HOLA	<i>Holcus lanatus</i> L.	common velvetgrass	Poaceae	a
54	HODI	<i>Holodiscus discolor</i> (Pursh) Maxim.	Indian plum	Rosaceae	
55	HYRA3	<i>Hypochaeris radicata</i> L.	hairy cat's ear	Asteraceae	a
56	ILAQ80	<i>Ilex aquifolium</i> L.	English ivy	Aquifoliaceae	a
57	JACA4	<i>Jaumea carnosa</i> (Less.) Gray	marsh jaumea	Asteraceae	
58	JUEF	<i>Juncus effusus</i> L.	common rush	Juncaceae	
59	JUEN	<i>Juncus ensifolius</i> Wikstr.	swordleaf rush	Juncaceae	
60	JUTE	<i>Juncus tenuis</i> Willd.	poverty rush	Juncaceae	
61	LAMU	<i>Lactuca muralis</i> (L.) Fresen.	>>Mycelis muralis	Asteraceae	a
62	LAMA	<i>Lamium maculatum</i> L.	spotted henbit	Lamiaceae	a
63	LAPO3	<i>Lathyrus polyphyllus</i> Nutt.	leafy pea	Fabaceae	
64	LENU2	<i>Leontodon nudicaulis</i> (L.) Banks ex Schinz & R. Keller	>>Leontodon taraxacoides ssp. taraxacoides	Asteraceae	a
65	LOCI3	<i>Lonicera ciliosa</i> (Pursh) Poir. ex DC.	orange honeysuckle	Caprifoliaceae	
66	LYAM3	<i>Lysichiton americanus</i> Hultén & St. John	American skunkcabbage	Araceae	
67	MESM	<i>Melica smithii</i> (Porter ex Gray) Vasey	Smith's melicgrass	Poaceae	
68	MESU	<i>Melica subulata</i> (Griseb.) Scribn.	Alaska oniongrass	Poaceae	
69	MEPI	<i>Mentha piperata</i> L.	>>Mentha aquatica	Lamiaceae	
70	MIMO3	<i>Mimulus moschatus</i> Dougl. ex Lindl.	muskflower	Scrophulariaceae	
71	MOSI2	<i>Montia sibirica</i> (L.) T.J. Howell	>>Claytonia sibirica var. sibirica	Portulacaceae	
72	MYLA	<i>Myosotis laxa</i> Lehm.	bay forget-me-not	Boraginaceae	
73	NEPA	<i>Nemophila parviflora</i> Dougl. ex Benth.	smallflower nemophila	Hydrophyllaceae	
74	OESA	<i>Oenanthe sarmentosa</i> K. Presl ex DC.	water parsely	Apiaceae	
75	PEFRP	<i>Petasites frigidus</i> (L.) Fries var. palmatus (Ait.) Cronq.	arctic sweet coltsfoot	Asteraceae	
76	PHCA11	<i>Physocarpus capitatus</i> (Pursh) Kuntze	Pacific ninebark	Rosaceae	
77	PLLA	<i>Plantago lanceolata</i> L.	narrowleaf plantain	Plantaginaceae	a
78	PLMA3	<i>Plantago maritima</i> L.	goose tongue	Plantaginaceae	
79	POPR	<i>Poa pratensis</i> L.	Kentucky bluegrass	Poaceae	a
80	POPU5	<i>Polygonum punctatum</i> Eil.	dotted smartweed	Polygonaceae	
81	POGL8	<i>Polypodium glycyrrhiza</i> D.C. Eat.	licorice fern	Polypodiaceae	
82	POMU	<i>Polystichum munitum</i> (Kaulfuss) K. Presl	swordfern	Polypodiaceae	
83	PRVU	<i>Prunella vulgaris</i> L.	common selfheal	Lamiaceae	
84	PRAV	<i>Prunus avium</i> (L.) L.	sweet cherry	Rosaceae	a
85	PSME	<i>Pseudotsuga menziesii</i> (Mirbel) Franco	Douglas-fir	Pinaceae	
86	PTAQ	<i>Pteridium aquilinum</i> (L.) Kuhn	bracken fern	Dennstaedtiaceae	
87	PYFU	<i>Pyrus fusca</i> Raf.	>>Malus fusca	Rosaceae	
88	RARE3	<i>Ranunculus repens</i> L.	creeping buttercup	Ranunculaceae	a

89	RHDI6	<i>Rhus diversiloba</i> Torr. & Gray	>>Toxicodendron diversilobum	Anacardiaceae	
90	RONA2	<i>Rorippa nasturtium-aquaticum</i> (L.) Hayek	>>Nasturtium officinale	Brassicaceae	a
91	ROGY	<i>Rosa gymnocarpa</i> Nutt.	dwarf rose	Rosaceae	
92	RONU	<i>Rosa nutkana</i> K. Presl	Nootka rose	Asteraceae	
93	RUDI2	<i>Rubus discolor</i> Weihe & Nees	>>Rubus armeniacus	Rosaceae	a
94	RUSP	<i>Rubus spectabilis</i> Pursh	salmonberry	Rosaceae	
95	RUUR	<i>Rubus ursinus</i> Cham. & Schlecht.	California blackberry	Rosaceae	
96	RUCR	<i>Rumex crispus</i> L.	curly dock	Polygonaceae	a
97	SAVI	<i>Salicornia virginica</i> L.	>>Salicornia depressa	Chenopodiaceae	
98	SASC	<i>Salix scouleriana</i> Barratt ex Hook.	Scouler's willow	Salicaceae	
99	SARA2	<i>Sambucus racemosa</i> L.	red elderberry	Caprifoliaceae	
100	SACR2	<i>Sanicula crassicaulis</i> Poepp. ex DC.	>>Sagina maxima ssp. crassicaulis	Apiaceae	
101	SADO5	<i>Satureja douglasii</i> (Benth.) Briq.	>>Clinopodium douglasii	Lamiaceae	
102	SEJA	<i>Senecio jacobaea</i> L.	stinking willie	Asteraceae	a
103	SPDO	<i>Spiraea douglasii</i> Hook.	rose spirea	Rosaceae	
104	STCR2	<i>Stellaria crispa</i> Cham. & Schlecht.	curled starwort	Caryophyllaceae	
105	SYAL	<i>Symphoricarpos albus</i> (L.) Blake	common snowberry	Caprifoliaceae	
106	TAOF	<i>Taraxacum officinale</i> G.H. Weber ex Wiggers	dandelion	Asteraceae	a
107	TABR2	<i>Taxus brevifolia</i> Nutt.	Pacific yew	Taxaceae	
108	THPL	<i>Thuja plicata</i> Donn ex D. Don	western red cedar	Cupressaceae	
109	TRLA6	<i>Trientalis latifolia</i> Hook.	>>Trientalis borealis ssp. latifolia	Primulaceae	
110	TRMA20	<i>Triglochin maritima</i> L.	seaside arrowgrass	Juncaginaceae	
111	TRCE2	<i>Trisetum cernuum</i> Trin.	>>Trisetum canescens	Poaceae	
112	TSHE	<i>Tsuga heterophylla</i> (Raf.) Sarg.	western hemlock	Pinaceae	
113	URDI	<i>Urtica dioica</i> L.	nettle	Urticaceae	
114	VAOV2	<i>Vaccinium ovatum</i> Pursh	California huckleberry	Ericaceae	
115	VAPA	<i>Vaccinium parvifolium</i> Sm.	red huckleberry	Ericaceae	
116	VIOR	<i>Viola orbiculata</i> Geyer ex Holz.	darkwoods violet	Violaceae	

Vascular Plant List for Jarrell Cove State Park

A total of 117 vascular plant species were identified during the 2006 surveys at Jarrell Cove State Park. Of these, 29 of the plant species are non-native, accounting for about 25% of the total.

#	Code	Scientific Name	Common Name/Accepted Synonym	Family	Alien
1	ACMA3	<i>Acer macrophyllum</i> Pursh	bigleaf maple	Aceraceae	
2	ACMI2	<i>Achillea millefolium</i> L.	yarrow	Asteraceae	
3	ACTR	<i>Achlys triphylla</i> (Sm.) DC.	sweet after death	Berberidaceae	
4	ADBI	<i>Adenocaulon bicolor</i> Hook.	pathfinder	Asteraceae	
5	ADPE	<i>Adiantum pedatum</i> L.	>>Adinatum aleuticum	Pteridaceae	
6	AGEX	<i>Agrostis exarata</i> Trin.	spike bentgrass	Poaceae	
7	AGSC5	<i>Agrostis scabra</i> Willd.	rough bentgrass	Poaceae	
8	AICA	<i>Aira caryophylla</i> L.	silver hairgrass	Poaceae	a
9	ALRU2	<i>Alnus rubra</i> Bong.	red alder	Betulaceae	
10	AMAL2	<i>Amelanchier alnifolia</i> (Nutt.) Nutt. ex M. Roemer	Saskatoon serviceberry	Rosaceae	
11	ANOD	<i>Anthoxanthum odoratum</i> L.	sweet vernalgrass	Poaceae	a
12	ARME	<i>Arbutus menziesii</i> Pursh	madrone	Ericaceae	
13	ARCO3	<i>Arctostaphylos columbiana</i> Piper	hairy manzanita	Ericaceae	
14	ARUV	<i>Arctostaphylos uva-ursi</i> (L.) Spreng.	kinnikinnick	Ericaceae	
15	ARUNC	<i>Aruncus</i> L.	aruncus	Rosaceae	
16	ATFI	<i>Athyrium filix-femina</i> (L.) Roth	common ladyfern	Dryopteridaceae	
17	ATPA4	<i>Atriplex patula</i> L.	spear saltbush	Chenopodiaceae	
18	BEPE2	<i>Bellis perennis</i> L.	lawn daisy	Asteraceae	a
19	BENE2	<i>Berberis nervosa</i> Pursh	>>Mahonia nervosa	Berberidaceae	
20	BLSP	<i>Blechnum spicant</i> (L.) Sm.	deer fern	Blechnaceae	
21	CAOLO	<i>Cardamine oligosperma</i> Nutt. var. oligosperma	little western bittercress	Brassicaceae	
22	CADE9	<i>Carex deweyana</i> Schwein.	Dewey sedge	Cyperaceae	
23	CAOB3	<i>Carex obnupta</i> Bailey	slough sedge	Cyperaceae	
24	CEVE	<i>Ceanothus velutinus</i> Dougl. ex Hook.	snowbrush ceanothus	Rhamnaceae	
25	CENU2	<i>Cerastium nutans</i> Raf.	nodding chickweed	Caryophyllaceae	
26	CHLE80	<i>Chrysanthemum leucanthemum</i> L.	>>Leucanthemum vulgare	Asteraceae	a
27	CIAL	<i>Circaea alpina</i> L.	small enchanter's nightshade	Onagraceae	
28	CIAR4	<i>Cirsium arvense</i> (L.) Scop.	Canada thistle	Asteraceae	a
29	COMA25	<i>Corallorhiza maculata</i> (Raf.) Raf.	summer coralroot	Orchidaceae	
30	CONU4	<i>Cornus nuttallii</i> Audubon ex Torr. & Gray	Pacific dogwood	Cornaceae	
31	COVA2	<i>Coronilla varia</i> L.	>>Securigera varia	Fabaceae	a
32	COCO6	<i>Corylus cornuta</i> Marsh.	California hazelnut	Betulaceae	
33	DAGL	<i>Dactylis glomerata</i> L.	orchardgrass	Poaceae	a
34	DACA6	<i>Daucus carota</i> L.	Queen Anne's lace	Apiaceae	a
35	DIPU	<i>Digitalis purpurea</i> L.	purple foxglove	Scrophulariaceae	a
36	DREX2	<i>Dryopteris expansa</i> (K. Presl) Fraser-Jenkins & Jermy	spreading woodfern	Dryopteridaceae	
37	EPAM	<i>Epilobium americanum</i> Hausskn.	>>Epilobium ciliatum ssp. ciliatum	Onagraceae	
38	EPCI	<i>Epilobium ciliatum</i> Raf.	fringed willowherb	Onagraceae	
39	EQAR	<i>Equisetum arvense</i> L.	field horsetail	Equisetaceae	
40	EQTE	<i>Equisetum telmateia</i> Ehrh.	giant horsetail	Equisetaceae	
41	ERRE5	<i>Erythronium revolutum</i> Sm.	mahogany fawnlily	Liliaceae	
42	FRVI	<i>Fragaria virginiana</i> Duchesne	Virginia strawberry	Rosaceae	

43	FRLA	<i>Fraxinus latifolia</i> Benth.	Oregon ash	Oleaceae	
44	GAAP2	<i>Galium aparine</i> L.	stickywilly	Rubiaceae	a
45	GASH	<i>Gaultheria shallon</i> Pursh	salal	Ericaceae	
46	GERO	<i>Geranium robertianum</i> L.	Robert geranium	Geraniaceae	a
47	GOOB2	<i>Goodyera oblongifolia</i> Raf.	western rattlesnake plantain	Orchidaceae	
48	HODI	<i>Holodiscus discolor</i> (Pursh) Maxim.	Indian plum	Rosaceae	
49	HYPE	<i>Hypericum perforatum</i> L.	common St. Johnswort	Clusiaceae	a
50	HYRA3	<i>Hypochaeris radicata</i> L.	hairy cat's ear	Asteraceae	a
51	ILAQ80	<i>Ilex aquifolium</i> L.	English ivy	Aquifoliaceae	a
52	JACA4	<i>Jaumea carnosa</i> (Less.) Gray	marsh jaumea	Asteraceae	
53	JUBA	<i>Juncus balticus</i> Willd.	Baltic rush	Juncaceae	
54	LAMU	<i>Lactuca muralis</i> (L.) Fresen.	>>Mycelis muralis	Asteraceae	a
55	LENU2	<i>Leontodon nudicaulis</i> (L.) Banks ex Schinz & R. Keller	>>Leontodon taraxacoides ssp. taraxacoides	Asteraceae	a
56	LICO	<i>Lilium columbianum</i> Leichtl. in Duchartre	Columbia lily	Liliaceae	
57	LIBO3	<i>Linnaea borealis</i> L.	twinline	Ericaceae	
58	LOCI3	<i>Lonicera ciliosa</i> (Pursh) Poir. ex DC.	orange honeysuckle	Caprifoliaceae	
59	LUPO2	<i>Lupinus polyphyllus</i> Lindl.	bigleaf lupine	Fabaceae	
60	LUPA4	<i>Luzula parviflora</i> (Ehrh.) Desv.	smallflowered woodrush	Juncaceae	
61	MADI	<i>Maianthemum dilatatum</i> (Wood) A. Nels. & J.F. Macbr.	false lily of the valley	Liliaceae	
62	MOPA5	<i>Montia parviflora</i> (Dougl. ex Hook.) T.J. Howell	>>Claytonia parviflora ssp. parviflora	Portulacaceae	
63	NEPA	<i>Nemophila parviflora</i> Dougl. ex Benth.	smallflower nemophila	Hydrophyllaceae	
64	OECE	<i>Oemleria cerasiformis</i> (Torr. & Gray ex Hook. & Arn.) Landon	Indian plum	Rosaceae	
65	OESA	<i>Oenanthe sarmentosa</i> K. Presl ex DC.	water parsely	Apiaceae	
66	OSCH	<i>Osmorhiza chilensis</i> Hook. & Arn.	>>Osmorhiza berteroi	Apiaceae	
67	PEFRP	<i>Petasites frigidus</i> (L.) Fries var. palmatus (Ait.) Cronq.	arctic sweet coltsfoot	Asteraceae	
68	PHAR3	<i>Phalaris arundinacea</i> L.	reed canarygrass	Poaceae	a
69	PICO	<i>Pinus contorta</i> Dougl. ex Loud.	lodgepole pine	Pinaceae	
70	PLLA	<i>Plantago lanceolata</i> L.	narrowleaf plantain	Plantaginaceae	a
71	PLMA2	<i>Plantago major</i> L.	common plantain	Plantaginaceae	
72	PLMA3	<i>Plantago maritima</i> L.	goose tongue	Plantaginaceae	
73	POGL8	<i>Polypodium glycyrrhiza</i> D.C. Eat.	licorice fern	Polypodiaceae	
74	POMU	<i>Polystichum munitum</i> (Kaulfuss) K. Presl	swordfern	Polypodiaceae	
75	PRVU	<i>Prunella vulgaris</i> L.	common selfheal	Lamiaceae	
76	PRAV	<i>Prunus avium</i> (L.) L.	sweet cherry	Rosaceae	a
77	PREM	<i>Prunus emarginata</i> (Dougl. ex Hook.) D. Dietr.	bitter cherry	Rosaceae	
78	PSME	<i>Pseudotsuga menziesii</i> (Mirbel) Franco	Douglas-fir	Pinaceae	
79	PTAQ	<i>Pteridium aquilinum</i> (L.) Kuhn	bracken fern	Dennstaedtiaceae	
80	PYFU	<i>Pyrus fusca</i> Raf.	>>Malus fusca	Rosaceae	
81	RAOC	<i>Ranunculus occidentalis</i> Nutt.	western buttercup	Ranunculaceae	a
82	RARE3	<i>Ranunculus repens</i> L.	creeping buttercup	Ranunculaceae	a
83	RHPU	<i>Rhamnus purshiana</i> DC.	>>Frangula purshiana	Rhamnaceae	
84	RHDI6	<i>Rhus diversiloba</i> Torr. & Gray	>>Toxicodendron diversilobum	Anacardiaceae	
85	ROGY	<i>Rosa gymnocarpa</i> Nutt.	dwarf rose	Rosaceae	
86	RUDI2	<i>Rubus discolor</i> Weihe & Nees	>>Rubus armeniacus	Rosaceae	a
87	RULA	<i>Rubus laciniatus</i> Willd.	cutleaf blackberry	Rosaceae	a
88	RUPA	<i>Rubus parviflorus</i> Nutt.	thimbleberry	Rosaceae	
89	RUSP	<i>Rubus spectabilis</i> Pursh	salmonberry	Rosaceae	
90	RUUR	<i>Rubus ursinus</i> Cham. & Schlecht.	California blackberry	Rosaceae	

91	RUOC3	<i>Rumex occidentalis</i> S. Wats.	>> <i>Rumex aquaticus</i> var. <i>fenestratus</i>	Polygonaceae	a
92	SAVI	<i>Salicornia virginica</i> L.	>> <i>Salicornia depressa</i>	Chenopodiaceae	
93	SASC	<i>Salix scouleriana</i> Barratt ex Hook.	Scouler's willow	Salicaceae	
94	SASI2	<i>Salix sitchensis</i> Sanson ex Bong.	Sitka willow	Salicaceae	
95	SARA2	<i>Sambucus racemosa</i> L.	red elderberry	Caprifoliaceae	
96	SACR2	<i>Sanicula crassicaulis</i> Poepp. ex DC.	>> <i>Sagina maxima</i> ssp. <i>crassicaulis</i>	Apiaceae	
97	SEJA	<i>Senecio jacobaea</i> L.	stinking willie	Asteraceae	a
98	STME	<i>Stachys mexicana</i> Benth.	Mexican hedgenettle	Lamiaceae	
99	STCR2	<i>Stellaria crispa</i> Cham. & Schlecht.	curled starwort	Caryophyllaceae	
100	SYAL	<i>Symphoricarpos albus</i> (L.) Blake	common snowberry	Caprifoliaceae	
101	TAOF	<i>Taraxacum officinale</i> G.H. Weber ex Wiggers	dandelion	Asteraceae	a
102	TABR2	<i>Taxus brevifolia</i> Nutt.	Pacific yew	Taxaceae	
103	THPL	<i>Thuja plicata</i> Donn ex D. Don	western red cedar	Cupressaceae	
104	TOME	<i>Tolmiea menziesii</i> (Pursh) Torr. & Gray	youth on age	Saxifragaceae	
105	TRLA6	<i>Trientalis latifolia</i> Hook.	>> <i>Trientalis borealis</i> ssp. <i>latifolia</i>	Primulaceae	
106	TRDU2	<i>Trifolium dubium</i> Sibthorp	suckling clover	Fabaceae	a
107	TROV2	<i>Trillium ovatum</i> Pursh	Pacific trillium	Liliaceae	
108	TSHE	<i>Tsuga heterophylla</i> (Raf.) Sarg.	western hemlock	Pinaceae	
109	URDI	<i>Urtica dioica</i> L.	nettle	Urticaceae	
110	VAOV2	<i>Vaccinium ovatum</i> Pursh	California huckleberry	Ericaceae	
111	VAPA	<i>Vaccinium parvifolium</i> Sm.	red huckleberry	Ericaceae	
112	VIGI	<i>Vicia gigantea</i> Hook.	>> <i>Vicia nigricans</i> ssp. <i>gigantea</i>	Fabaceae	
113	VIHI	<i>Vicia hirsuta</i> (L.) S.F. Gray	tiny vetch	Fabaceae	a
114	VISAA2	<i>Vicia sativa</i> L. var. <i>angustifolia</i> (L.) Ser.	>> <i>Vicia sativa</i> ssp. <i>nigra</i>	Fabaceae	a
115	VIGL	<i>Viola glabella</i> Nutt.	pioneer violet	Violaceae	
116	VIOR	<i>Viola orbiculata</i> Geyer ex Holz.	darkwoods violet	Violaceae	
117	WOFI	<i>Woodwardia fimbriata</i> Sm.	giant chainfern	Blechnaceae	

Vascular Plant List for McMicken Island State Park

A total of 99 vascular plant species were identified during the 2006 surveys at McMicken Island State Park. Of these, 25 of the plant species are non-native, accounting for about 25% of the total.

#	Code	Scientific Name	Common Name/Accepted Synonym	Family	Alien
1	ACMA3	<i>Acer macrophyllum</i> Pursh	bigleaf maple	Aceraceae	
2	ACMI2	<i>Achillea millefolium</i> L.	yarrow	Asteraceae	
3	ACTR	<i>Achlys triphylla</i> (Sm.) DC.	sweet after death	Berberidaceae	
4	ADPE	<i>Adiantum pedatum</i> L.	>>Adinatum aleuticum	Pteridaceae	
5	AGEX	<i>Agrostis exarata</i> Trin.	spike bentgrass	Poaceae	
6	AGSC5	<i>Agrostis scabra</i> Willd.	rough bentgrass	Poaceae	
7	ALRU2	<i>Alnus rubra</i> Bong.	red alder	Betulaceae	
8	AMCH4	<i>Ambrosia chamissonis</i> (Less.) Greene	silver burr ragweed	Asteraceae	
9	AMAL2	<i>Amelanchier alnifolia</i> (Nutt.) Nutt. ex M. Roemer	Saskatoon serviceberry	Rosaceae	
10	ANMA	<i>Anaphalis margaritacea</i> (L.) Benth.	western pearly everlasting	Asteraceae	
11	ANOD	<i>Anthoxanthum odoratum</i> L.	sweet vernalgrass	Poaceae	a
12	ARME	<i>Arbutus menziesii</i> Pursh	madrone	Ericaceae	
13	ARSU4	<i>Artemisia suksdorfii</i> Piper	coastal wormwood	Asteraceae	
14	ARUNC	<i>Aruncus</i> L.	aruncus	Rosaceae	
15	ATPA4	<i>Atriplex patula</i> L.	spear saltbush	Chenopodiaceae	
16	BEPE2	<i>Bellis perennis</i> L.	lawn daisy	Asteraceae	a
17	BENE2	<i>Berberis nervosa</i> Pursh	>>Mahonia nervosa	Berberidaceae	
18	CAED	<i>Cakile edentula</i> (Bigelow) Hook.	American searocket	Brassicaceae	a
19	CENU2	<i>Cerastium nutans</i> Raf.	nodding chickweed	Caryophyllaceae	
20	CHAL7	<i>Chenopodium album</i> L.	lambquarters	Chenopodiaceae	
21	CIAR4	<i>Cirsium arvense</i> (L.) Scop.	Canada thistle	Asteraceae	a
22	CIVU	<i>Cirsium vulgare</i> (Savi) Ten.	bull thistle	Asteraceae	a
23	COCO6	<i>Corylus cornuta</i> Marsh.	California hazelnut	Betulaceae	
24	CYSC4	<i>Cytisus scoparius</i> (L.) Link	scotchbroom	Fabaceae	a
25	DAGL	<i>Dactylis glomerata</i> L.	orchardgrass	Poaceae	a
26	DACA6	<i>Daucus carota</i> L.	Queen Anne's lace	Apiaceae	a
27	DECA18	<i>Deschampsia caespitosa</i> (L.) Beauv.	tufted hairgrass	Poaceae	
28	DISP	<i>Distichlis spicata</i> (L.) Greene	inland saltgrass	Poaceae	
29	ELGL	<i>Elymus glaucus</i> Buckl.	blue wildrye	Poaceae	
30	EPAN2	<i>Epilobium angustifolium</i> L.	>>Chamerion angustifolium ssp. angustifolium	Onagraceae	
31	EPCI	<i>Epilobium ciliatum</i> Raf.	fringed willowherb	Onagraceae	
32	FEAR3	<i>Festuca arundinacea</i> Schreb.	>>Schedonorus phoenix	Poaceae	a
33	FEBR*	<i>Festuca bromoides</i> L.	>>Vulpia bromoides	Poaceae	a
34	FRVI	<i>Fragaria virginiana</i> Duchesne	Virginia strawberry	Rosaceae	
35	FRLA	<i>Fraxinus latifolia</i> Benth.	Oregon ash	Oleaceae	
36	GAAP2	<i>Galium aparine</i> L.	stickywilly	Rubiaceae	a
37	GASH	<i>Gaultheria shallon</i> Pursh	salal	Ericaceae	
38	GEMA4	<i>Geum macrophyllum</i> Willd.	largeleaf avens	Rosaceae	
39	GRIN	<i>Grindelia integrifolia</i> DC.	Puget Sound gumweed	Asteraceae	
40	HEHE	<i>Hedera helix</i> L.	English ivy	Araliaceae	a
41	HODI	<i>Holodiscus discolor</i> (Pursh) Maxim.	Indian plum	Rosaceae	
42	HOPE	<i>Honkenya peploides</i> (L.) Ehrh.	seaside sandplant	Caryophyllaceae	
43	HYRA3	<i>Hypochaeris radicata</i> L.	hairy cat's ear	Asteraceae	a

44	ILAQ80	<i>Ilex aquifolium</i> L.	English ivy	Aquifoliaceae	a
45	JACA4	<i>Jaumea carnosa</i> (Less.) Gray	marsh jaumea	Asteraceae	
46	JUBA	<i>Juncus balticus</i> Willd.	Baltic rush	Juncaceae	
47	JUEF	<i>Juncus effusus</i> L.	common rush	Juncaceae	
48	JUEN	<i>Juncus ensifolius</i> Wikstr.	swordleaf rush	Juncaceae	
49	JUNCU	<i>Juncus</i> L.	rush	Juncaceae	
50	JUTE	<i>Juncus tenuis</i> Willd.	poverty rush	Juncaceae	
51	LAMU	<i>Lactuca muralis</i> (L.) Fresen.	>> <i>Mycelis muralis</i>	Asteraceae	a
52	LAPO3	<i>Lathyrus polyphyllus</i> Nutt.	leafy pea	Fabaceae	
53	LENU2	<i>Leontodon nudicaulis</i> (L.) Banks ex Schinz & R. Keller	>> <i>Leontodon taraxacoides</i> ssp. <i>taraxacoides</i>	Asteraceae	a
54	LOC13	<i>Lonicera ciliosa</i> (Pursh) Poir. ex DC.	orange honeysuckle	Caprifoliaceae	
55	LUAR	<i>Lupinus arboreus</i> Sims	yellow bush lupine	Fabaceae	
56	LUPO2	<i>Lupinus polyphyllus</i> Lindl.	bigleaf lupine	Fabaceae	
57	MESM	<i>Melica smithii</i> (Porter ex Gray) Vasey	Smith's melicgrass	Poaceae	
58	PEFRP	<i>Petasites frigidus</i> (L.) Fries var. <i>palmatus</i> (Ait.) Cronq.	arctic sweet coltsfoot	Asteraceae	
59	PHCA11	<i>Physocarpus capitatus</i> (Pursh) Kuntze	Pacific ninebark	Rosaceae	
60	PLLA	<i>Plantago lanceolata</i> L.	narrowleaf plantain	Plantaginaceae	a
61	PLMA3	<i>Plantago maritima</i> L.	goose tongue	Plantaginaceae	
62	POFO2	<i>Polygonum fowleri</i> B.L. Robins.	Fowler's knotweed	Polygonaceae	
63	POGL8	<i>Polypodium glycyrrhiza</i> D.C. Eat.	licorice fern	Polypodiaceae	
64	POMU	<i>Polystichum munitum</i> (Kaufuss) K. Presl	swordfern	Polypodiaceae	
65	PRVU	<i>Prunella vulgaris</i> L.	common selfheal	Lamiaceae	
66	PRAV	<i>Prunus avium</i> (L.) L.	sweet cherry	Rosaceae	a
67	PREM	<i>Prunus emarginata</i> (Dougl. ex Hook.) D. Dietr.	bitter cherry	Rosaceae	
68	PSME	<i>Pseudotsuga menziesii</i> (Mirbel) Franco	Douglas-fir	Pinaceae	
69	PTAQ	<i>Pteridium aquilinum</i> (L.) Kuhn	bracken fern	Dennstaedtiaceae	
70	PYAS	<i>Pyrola asarifolia</i> Michx.	liverleaf wintergreen	Pyrolaceae	
71	PYFU	<i>Pyrus fusca</i> Raf.	>> <i>Malus fusca</i>	Rosaceae	
72	QUGA4	<i>Quercus garryana</i> Dougl. ex Hook.	Oregon white oak	Fagaceae	
73	RHPU	<i>Rhamnus purshiana</i> DC.	>> <i>Frangula purshiana</i>	Rhamnaceae	
74	RHD16	<i>Rhus diversiloba</i> Torr. & Gray	>> <i>Toxicodendron diversilobum</i>	Anacardiaceae	
75	RISA	<i>Ribes sanguineum</i> Pursh	redflower currant	Grossulariaceae	
76	ROGY	<i>Rosa gymnocarpa</i> Nutt.	dwarf rose	Rosaceae	
77	RONU	<i>Rosa nutkana</i> K. Presl	Nootka rose	Asteraceae	
78	RUDI2	<i>Rubus discolor</i> Weihe & Nees	>> <i>Rubus armeniacus</i>	Rosaceae	a
79	RULA	<i>Rubus laciniatus</i> Willd.	cutleaf blackberry	Rosaceae	a
80	RUPA	<i>Rubus parviflorus</i> Nutt.	thimbleberry	Rosaceae	
81	RUSP	<i>Rubus spectabilis</i> Pursh	salmonberry	Rosaceae	
82	RUUR	<i>Rubus ursinus</i> Cham. & Schlecht.	California blackberry	Rosaceae	
83	RUCR	<i>Rumex crispus</i> L.	curly dock	Polygonaceae	a
84	SAVI	<i>Salicornia virginica</i> L.	>> <i>Salicornia depressa</i>	Chenopodiaceae	
85	SASC	<i>Salix scouleriana</i> Barratt ex Hook.	Scouler's willow	Salicaceae	
86	SARA2	<i>Sambucus racemosa</i> L.	red elderberry	Caprifoliaceae	
87	SACR2	<i>Sanicula crassicaulis</i> Poepp. ex DC.	>> <i>Sagina maxima</i> ssp. <i>crassicaulis</i>	Apiaceae	
88	SEJA	<i>Senecio jacobaea</i> L.	stinking willie	Asteraceae	a
89	SOCA6	<i>Solidago canadensis</i> L.	Canada goldenrod	Asteraceae	

90	SOAS	<i>Sonchus asper</i> (L.) Hill	spiny sowthistle	Asteraceae	a
91	SYAL	<i>Symphoricarpos albus</i> (L.) Blake	common snowberry	Caprifoliaceae	
92	TAOF	<i>Taraxacum officinale</i> G.H. Weber ex Wiggers	dandelion	Asteraceae	a
93	TABR2	<i>Taxus brevifolia</i> Nutt.	Pacific yew	Taxaceae	
94	THPL	<i>Thuja plicata</i> Donn ex D. Don	western red cedar	Cupressaceae	
95	TRLA6	<i>Trientalis latifolia</i> Hook.	>> <i>Trientalis borealis</i> ssp. <i>latifolia</i>	Primulaceae	
96	VAOV2	<i>Vaccinium ovatum</i> Pursh	California huckleberry	Ericaceae	
97	VAPA	<i>Vaccinium parvifolium</i> Sm.	red huckleberry	Ericaceae	
98	VIGI	<i>Vicia gigantea</i> Hook.	>> <i>Vicia nigricans</i> ssp. <i>gigantea</i>	Fabaceae	
99	VIHI	<i>Vicia hirsuta</i> (L.) S.F. Gray	tiny vetch	Fabaceae	a

Vascular Plant List for Squaxin Island State Park

A total of 103 vascular plant species were identified during the 2006 surveys at Squaxin Island State Park. Of these, 26 of the plant species are non-native, accounting for about 25% of the total.

#	Code	Scientific Name	Common Name/Accepted Synonym	Family	Alien
1	ABGR	<i>Abies grandis</i> (Dougl. ex D. Don) Lindl.	grand fir	Pinaceae	
2	ACMA3	<i>Acer macrophyllum</i> Pursh	bigleaf maple	Aceraceae	
3	ACMI2	<i>Achillea millefolium</i> L.	yarrow	Asteraceae	
4	ACTR	<i>Achlys triphylla</i> (Sm.) DC.	sweet after death	Berberidaceae	
5	ADBI	<i>Adenocaulon bicolor</i> Hook.	pathfinder	Asteraceae	
6	AGEX	<i>Agrostis exarata</i> Trin.	spike bentgrass	Poaceae	
7	AGSC5	<i>Agrostis scabra</i> Willd.	rough bentgrass	Poaceae	
8	ALRU2	<i>Alnus rubra</i> Bong.	red alder	Betulaceae	
9	AMCH4	<i>Ambrosia chamissonis</i> (Less.) Greene	silver burr ragweed	Asteraceae	
10	AMAL2	<i>Amelanchier alnifolia</i> (Nutt.) Nutt. ex M. Roemer	Saskatoon serviceberry	Rosaceae	
11	ANOD	<i>Anthoxanthum odoratum</i> L.	sweet vernalgrass	Poaceae	a
12	ARME	<i>Arbutus menziesii</i> Pursh	madrone	Ericaceae	
13	ASCA2	<i>Asarum caudatum</i> Lindl.	British Columbia wildginger	Aristolochiaceae	
14	ASSU4	<i>Aster subspicatus</i> Nees	>> <i>Symphotrichum subspicatum</i> var. <i>subspicatum</i>	Asteraceae	
15	ATFI	<i>Athyrium filix-femina</i> (L.) Roth	common ladyfern	Dryopteridaceae	
16	ATPA4	<i>Atriplex patula</i> L.	spear saltbush	Chenopodiaceae	
17	BEPE2	<i>Bellis perennis</i> L.	lawn daisy	Asteraceae	a
18	BENE2	<i>Berberis nervosa</i> Pursh	>> <i>Mahonia nervosa</i>	Berberidaceae	
19	CAOLO	<i>Cardamine oligosperma</i> Nutt. var. <i>oligosperma</i>	little western bittercress	Brassicaceae	
20	CADE9	<i>Carex deweyana</i> Schwein.	Dewey sedge	Cyperaceae	
21	CAHE7	<i>Carex hendersonii</i> Bailey	Henderson's sedge	Cyperaceae	
22	CALEL2	<i>Carex lenticularis</i> Michx. var. <i>limnophila</i> (Holm) Cronq.	lakeshore sedge	Cyperaceae	
23	CAOB3	<i>Carex obnupta</i> Bailey	slough sedge	Cyperaceae	
24	CAST5	<i>Carex stipata</i> Muhl. ex Willd.	owlfruit sedge	Cyperaceae	
25	CEVI3	<i>Cerastium viscosum</i> auct. non L. [misapplied]	>> <i>Cerastium glomeratum</i>	Caryophyllaceae	a
26	CHAL7	<i>Chenopodium album</i> L.	lambsquarters	Chenopodiaceae	
27	CIAL	<i>Circaea alpina</i> L.	small enchanter's nightshade	Onagraceae	
28	CIAR4	<i>Cirsium arvense</i> (L.) Scop.	Canada thistle	Asteraceae	a
29	CIRSI	<i>Cirsium</i> P. Mill.	thistle	Asteraceae	

30	COST4	<i>Cornus stolonifera</i> Michx.	>> <i>Cornus sericea</i> ssp. <i>sericea</i>	Cornaceae	
31	COCO6	<i>Corylus cornuta</i> Marsh.	California hazelnut	Betulaceae	
32	CYEC	<i>Cynosurus echinatus</i> L.	bristly dogstail grass	Poaceae	a
33	CYSC4	<i>Cytisus scoparius</i> (L.) Link	scotchbroom	Fabaceae	a
34	DAGL	<i>Dactylis glomerata</i> L.	orchardgrass	Poaceae	a
35	DACA6	<i>Daucus carota</i> L.	Queen Anne's lace	Apiaceae	a
36	DISP	<i>Distichlis spicata</i> (L.) Greene	inland saltgrass	Poaceae	
37	EPCI	<i>Epilobium ciliatum</i> Raf.	fringed willowherb	Onagraceae	
38	EQHY	<i>Equisetum hyemale</i> L.	scouringrush horsetail	Equisetaceae	
39	EQTE	<i>Equisetum telmateia</i> Ehrh.	giant horsetail	Equisetaceae	
40	ERMI6	<i>Erechtites minima</i> (Poir.) DC.	coastal burnweed	Asteraceae	a
41	FEAR3	<i>Festuca arundinacea</i> Schreb.	>> <i>Schedonorus phoenix</i>	Poaceae	a
42	FEBR*	<i>Festuca bromoides</i> L.	>> <i>Vulpia bromoides</i>	Poaceae	a
43	GAAP2	<i>Galium aparine</i> L.	stickywilly	Rubiaceae	a
44	GASH	<i>Gaultheria shallon</i> Pursh	salal	Ericaceae	
45	GEMA4	<i>Geum macrophyllum</i> Willd.	largeleaf avens	Rosaceae	
46	GRIN	<i>Grindelia integrifolia</i> DC.	Puget Sound gumweed	Asteraceae	
47	HODI	<i>Holodiscus discolor</i> (Pursh) Maxim.	Indian plum	Rosaceae	
48	HOBR2	<i>Hordeum brachyantherum</i> Nevski	meadow barley	Poaceae	a
49	HYRA3	<i>Hypochaeris radicata</i> L.	hairy cat's ear	Asteraceae	a
50	ILAQ80	<i>Ilex aquifolium</i> L.	English ivy	Aquifoliaceae	a
51	JACA4	<i>Jaumea carnosa</i> (Less.) Gray	marsh jaumea	Asteraceae	
52	JUTE	<i>Juncus tenuis</i> Willd.	poverty rush	Juncaceae	
53	LAMU	<i>Lactuca muralis</i> (L.) Fresen.	>> <i>Mycelis muralis</i>	Asteraceae	a
54	LAPU2	<i>Lamium purpureum</i> L.	purple deadnettle	Lamiaceae	a
55	LAPO3	<i>Lathyrus polyphyllus</i> Nutt.	leafy pea	Fabaceae	
56	LIBO3	<i>Linnaea borealis</i> L.	twinflor	Ericaceae	
57	LOCI3	<i>Lonicera ciliosa</i> (Pursh) Poir. ex DC.	orange honeysuckle	Caprifoliaceae	
58	MADI	<i>Maianthemum dilatatum</i> (Wood) A. Nels. & J.F. Macbr.	false lily of the valley	Liliaceae	
59	MESU	<i>Melica subulata</i> (Griseb.) Scribn.	Alaska oniongrass	Poaceae	
60	MOSI2	<i>Montia sibirica</i> (L.) T.J. Howell	>> <i>Claytonia sibirica</i> var. <i>sibirica</i>	Portulacaceae	
61	NEPA	<i>Nemophila parviflora</i> Dougl. ex Benth.	smallflower nemophila	Hydrophyllaceae	
62	OESA	<i>Oenanthe sarmentosa</i> K. Presl ex DC.	water parsely	Apiaceae	
63	PHCA11	<i>Physocarpus capitatus</i> (Pursh) Kuntze	Pacific ninebark	Rosaceae	
64	PLLA	<i>Plantago lanceolata</i> L.	narrowleaf plantain	Plantaginaceae	a
65	PLMA3	<i>Plantago maritima</i> L.	goose tongue	Plantaginaceae	
66	POGL8	<i>Polypodium glycyrrhiza</i> D.C. Eat.	licorice fern	Polypodiaceae	
67	POMU	<i>Polystichum munitum</i> (Kaulfuss) K. Presl	swordfern	Polypodiaceae	
68	PRVU	<i>Prunella vulgaris</i> L.	common selfheal	Lamiaceae	
69	PSME	<i>Pseudotsuga menziesii</i> (Mirbel) Franco	Douglas-fir	Pinaceae	
70	PTAQ	<i>Pteridium aquilinum</i> (L.) Kuhn	bracken fern	Dennstaedtiaceae	
71	PYFU	<i>Pyrus fusca</i> Raf.	>> <i>Malus fusca</i>	Rosaceae	
72	QUGA4	<i>Quercus garryana</i> Dougl. ex Hook.	Oregon white oak	Fagaceae	
73	RAUN	<i>Ranunculus uncinatus</i> D. Don ex G. Don	woodland buttercup	Ranunculaceae	a
74	RHDI6	<i>Rhus diversiloba</i> Torr. & Gray	>> <i>Toxicodendron diversilobum</i>	Anacardiaceae	
75	RISA	<i>Ribes sanguineum</i> Pursh	redflower currant	Grossulariaceae	
76	ROGY	<i>Rosa gymnocarpa</i> Nutt.	dwarf rose	Rosaceae	
77	RONU	<i>Rosa nutkana</i> K. Presl	Nootka rose	Asteraceae	
78	RUDI2	<i>Rubus discolor</i> Weihe & Nees	>> <i>Rubus armeniacus</i>	Rosaceae	a
79	RUSP	<i>Rubus spectabilis</i> Pursh	salmonberry	Rosaceae	

80	RUUR	<i>Rubus ursinus</i> Cham. & Schlecht.	California blackberry	Rosaceae	
81	RUCR	<i>Rumex crispus</i> L.	curly dock	Polygonaceae	a
82	SAVI	<i>Salicornia virginica</i> L.	>> <i>Salicornia depressa</i>	Chenopodiaceae	
83	SALA5	<i>Salix lasiandra</i> Benth.	>> <i>Salix lucida</i> ssp. <i>lasiandra</i>	Salicaceae	
84	SASC	<i>Salix scouleriana</i> Barratt ex Hook.	Scouler's willow	Salicaceae	
85	SARA2	<i>Sambucus racemosa</i> L.	red elderberry	Caprifoliaceae	
86	SACR2	<i>Sanicula crassicaulis</i> Poepp. ex DC.	>> <i>Sagina maxima</i> ssp. <i>crassicaulis</i>	Apiaceae	
87	SEJA	<i>Senecio jacobaea</i> L.	stinking willie	Asteraceae	a
88	SMRA*	<i>Smilacina racemosa</i> (L.) Desf.	>> <i>Maianthemum racemosum</i> ssp. <i>amplexicaule</i>	Liliaceae	
89	STME	<i>Stachys mexicana</i> Benth.	Mexican hedgenettle	Lamiaceae	
90	STCR2	<i>Stellaria crispa</i> Cham. & Schlecht.	curled starwort	Caryophyllaceae	
91	TAOF	<i>Taraxacum officinale</i> G.H. Weber ex Wiggers	dandelion	Asteraceae	a
92	THPL	<i>Thuja plicata</i> Donn ex D. Don	western red cedar	Cupressaceae	
93	TOME	<i>Tolmiea menziesii</i> (Pursh) Torr. & Gray	youth on age	Saxifragaceae	
94	TRLA6	<i>Trientalis latifolia</i> Hook.	>> <i>Trientalis borealis</i> ssp. <i>latifolia</i>	Primulaceae	
95	TRDU2	<i>Trifolium dubium</i> Sibthorp	suckling clover	Fabaceae	a
96	TRPR2	<i>Trifolium pratense</i> L.	red clover	Fabaceae	a
97	TRMA20	<i>Triglochin maritima</i> L.	seaside arrowgrass	Juncaginaceae	
98	TRCE2	<i>Trisetum cernuum</i> Trin.	>> <i>Trisetum canescens</i>	Poaceae	
99	URDI	<i>Urtica dioica</i> L.	nettle	Urticaceae	
100	VAOV2	<i>Vaccinium ovatum</i> Pursh	California huckleberry	Ericaceae	
101	VAPA	<i>Vaccinium parvifolium</i> Sm.	red huckleberry	Ericaceae	
102	VIAM	<i>Vicia americana</i> Muhl. ex Willd.	American vetch	Fabaceae	
103	VISAA2	<i>Vicia sativa</i> L. var. <i>angustifolia</i> (L.) Ser.	>> <i>Vicia sativa</i> ssp. <i>nigra</i>	Fabaceae	a

Ecological Condition of Eagle Island State Park

Eagle Island State Park is a very small island. It suffers from the effects of island biogeography (MacArthur and Wilson 1967) with a relatively low diversity of native plants and a relatively high percentage of non-native plants. Only 34 native plant species were recorded during our surveys of this island. Eleven non-native species were found. The effects of human disturbance on such a small island can be great. Fortunately, much of the island consists of relatively impenetrable, second-growth forest with a dense, shrubby understory. The presence of poison oak also helps dissuade the casual recreationist. The island's forests were logged, probably about 50-70 years ago and have regrown into younger, mature forests.

Most of Eagle Island is within a few meters of the current sea-level. The projected sea-level rises of 7 to 15 meters that will result from global warming could cause the island to be inundated with saltwater within the next century.

Ecological Condition of Harstine Island State Park

Harstine Island State Park is state park property on one of the large islands in the south Puget Sound. Much of the property has been clearcut in the last 20 years. What hasn't been cut recently, is second-growth forest that has regrown after logging in the last century. Some mature forests exist that will soon start developing old-growth forest condition. This state park property suffers much less from the extreme effects of island biogeography (MacArthur and Wilson 1967) exhibited at Eagle Island, but still has a relatively low diversity of native plants and a relatively high percentage of non-native plants compared to a pristine late-successional forest on the mainland. At Harstine we found 87 native plant species and 26 non-native species. The effects of past timber management activities have taken a toll on the biodiversity of this state park property. Much of the property is now in a dense, stem exclusion phase of second-growth forest development. This phase of succession has low species diversity. Fortunately, these dense second-growth stands usually also have a low occurrence of non-native plants as well. As the stands mature, more native plant diversity will follow.

Ecological Condition of Hope Island State Park

Hope Island State Park is located on a fairly small island, just across the water from some relatively heavily developed areas of the south Puget Sound. It gets extensive recreational use during much of the year. It also has a long history of human use and disturbance. Most of the island was part of a farm and ranch in the early to mid part of the last century. Some of the areas that are now forested were once plowed fields. Other currently forested areas had been cleared and used as pasture. On the relatively productive soils of Hope Island, forests have regrown quite rapidly. But the species diversity of these forests is quite low. Parts of the island are now in a very dense, stem exclusion phase of second-growth forest development. This phase of succession contributes (along with the effects of island biogeography) to a fairly low native species diversity.

There are nice mature forests stands, some containing residual old-growth trees that have considerably greater species diversity and ecological integrity on Hope Island. These stands represent the best ecological condition found on any of the state park islands that we visited in the Jarrell Cove management area. Despite the relatively small size of Hope Island, we found 90 native

plant species and only 26 non-native species. This is a higher number of non-natives than we found at Harstine, despite the larger size of both the Harstine parcel and Harstine Island. Much of Hope Island will develop into beautiful late-successional forest if it continues to be protected and carefully managed. Some stands are approaching old-growth condition today.

Ecological Condition of Jarrell Cove State Park

Jarrell Cove State Park is also located on Harstine Island and has similar vegetation and land use history to the Harstine Island State Park property described above. It is a small park and much of it is extensively developed. None of the forest at Jarrell Cove has been recently cut, but all of this forest is young to early mature forest, regenerated after clearcutting in the last 50 years. The effects of past timber management activities have taken a toll on the biodiversity of this state park property. Much of the property is now in a dense, stem exclusion phase of second-growth forest development. This phase of succession has low native species diversity. We found 88 native plant species and 29 non-native plant species during our surveys.

Portions of Jarrell Cove State Park are within a few meters of the current sea-level. The projected sea-level rises of 7 to 15 meters that will result from global warming could cause these areas to be inundated with saltwater within the next century. Unfortunately, the small population of the rare fern, *Woodwardia fimbriata*, that we found at the park will be inundated by saltwater with only a meter of sea-level rise.

Ecological Condition of McMicken Island State Park

Like Eagle Island, McMicken Island is a very small island. It suffers from the effects of island biogeography (MacArthur and Wilson 1967) with a relatively low diversity of native plants and a relatively high percentage of non-native plants. We found only 74 native plant species and 25 non-native species. This is more than double the number of both native and non-native plants that we found on the smaller Eagle Island. Compounding the island biogeography effects, is the past land use history of the island. It still has several homestead buildings on it and was inhabited and worked as farm during the past century. The effects of intensive human disturbance on such a small island can be great. The island's forests were logged during the last century and have regrown into young and mature forests. Despite the past human activity, McMicken Island is a charming place and has recovered remarkably from past disturbances. It still has a significant component of natural vegetation, which should increase over time, given a lack of further human disturbances and good management.

Most of McMicken Island is within a few meters of the current sea-level. The projected sea-level rises of 7 to 15 meters that will result from global warming could cause the island to be inundated with saltwater within the next century.

Ecological Condition of Squaxin Island State Park

Squaxin Island State Park is similar to the Harstine Island State Park property described above in that it is a small state park property on one of the larger islands in the south Puget Sound. This property has not been recently logged, but was clearcut in the last 50 years. Some decent, moderately diverse second-growth forests have regrown after logging, but the ecological condition is certainly degraded when compared to similar areas of old-growth forest. Some mature forests exist that will soon start developing old-growth forest condition. This state park property suffers much less from the extreme effects of island biogeography (MacArthur and Wilson 1967) exhibited at Eagle Island, but still has a relatively low diversity of native plants and a relatively high percentage of non-native plants compared to a pristine late-successional forest on the mainland. We found only 77 native plant species and 26 non-native species. This was quite similar to the diversity of vascular plants that we found at McMicken Island. The effects of past timber management activities have taken a toll on the biodiversity of this state park property. Much of the property is now in a dense, stem exclusion phase of second-growth forest development. This phase of succession has very low species diversity. Fortunately, these areas also have a low occurrence of non-native plants as well.

A significant portion of the Squaxin Island state park property is within a few meters of the current sea-level. The projected sea-level rises of 7 to 15 meters that will result from global warming could cause some of the property to be inundated with saltwater within the next century.

GIS Products Produced

Associated with this report are polygon layers created by PBI depicting the vegetation community types mapped in Eagle Island, Harstine Island, Hope Island, Jarrell Cove, McMicken Island, and Squaxin 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 11 - 16, 2006

Field Staff: Peter Morrison, Scott Heller and Phyllis Murra

August 28-30, 2006

Field Staff: Dana Visalli

Appendix B – 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 following 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 C – 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 (USESAs) 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 D – Washington Natural Heritage Program Rare Plant Sighting Forms

Washington Natural Heritage Program Rare Plant Sighting Form:

Taxon Name: *Woodwardia fimbriata*

Are you confident of the identification? Yes

Survey Site Name: Jarrell Cove State Park

Surveyor's Name/Phone/Email: Peter Morrison, (509) 996-2490 pm@pacificbio.org

Survey Date: May 16, 2006

County: Mason

Quad Name: Mason Lake

Township: 21N Range: 69W Section(s): 25 SW1/4 of NW1/4:

Directions to site: At Jarrell Cove State Park, go down to south dock. From the south dock, contour around cove in a southerly direction.

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) and Coordinates written below or attached.

Description of what coordinates represent: Waypoint 051, accuracy 2.5 m.

GPS accuracy: 2.5 meters (WAAS enabled, with waypoint averaging)

GPS datum: NAD 83 Zone 10

GPS coordinates: [REDACTED]

2. I used a topographic map to map the population:

No (complete #2)

I am confident I have accurately located and mapped the population at map scale:

Yes

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

Yes

Is a revisit needed? No

Ownership (if known): Washington State Parks

Population Size (# of individuals or ramets) or estimate: 2 individuals

Population (EO) Data (include population vigor, microhabitat, phenology, etc.): No reproduction.

Population vigor is very poor.

Plant Association (include author, citation, or classification, e.g. Daubermire): 1) *Pseudotsuga menziesii* - *Thuja plicata* / *Vaccinium ovatum* / *Polystichum munitum* (Chappell, 2005). 2) *Pseudotsuga menziesii* - *Arbutus menziesii* / *Vaccinium ovatum* (Chappell, 2005)

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

Lichen/moss layer: 1%

Herb layer: *Woodwardia fimbriata* (1%), *Polystichum munitum* (6%), *Epilobium angustifolium* (0.1%), *Festuca occidentalis* (0.1%)

Shrub layer: *Vaccinium ovatum* (30%), *Gaultheria shallon* (5%), *Salix scouleriana* (2%), *Lonicera ciliosa* (1%)

Tree layer: *Pseudotsuga menziesii* (25%), *Alnus rubra* (25%), *Thuja plicata* (15%), *Arbutus menziesii* (10%)

General Description (include description of landscape, surrounding plant communities, land forms, land use, etc.): *Woodwardia fimbriata* was found growing only about 1 meter above high tide line. It was growing in on a steep, wet bank with an open sky to the south and ample sunshine. WOFI was only growing in this one location and all similar locations were surveyed at this park, but no other WOFI was found.

Minimum elevation (ft.): 3 Maximum elevation (ft.): 5

Size (acres): 10 ft² Aspect: 135° Slope: 75°

Photo taken? Yes

Management Comments (exotics, roads, shape/size, position in landscape, hydrology, adjacent land use, cumulative effects, etc.): POMU is directly competing with the WOFI. Sea level rise as a result of global warming will wipe out the population.

Protection Comments (legal actions/steps/strategies needed to secure protection for the site): State Park management should be aware of the site and avoid any development activities in the vicinity. It would be very easy to wipe out this population by any habitat altering activity. Relocation of the population may be necessary as the sea-level rises.

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

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

Appendix E – 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 year's litter left)
- 4 = no current, heavy past grazing
- 5 = no current, light past grazing
- 6 = no obvious sign of grazing

Development

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

Wildlife

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

Recreation Use Severity

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

Recreation Use Primary Type

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

Hydrology

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

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

Condition Rank of PA in key or estimate

% of Polygon = your estimate

Pattern = how PA is distributed in polygon

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

Exotic = primary species observed; secondary species observed.

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

Notes = Comments about the polygon

Vegetation Polygon Data – Eagle Island State Park

Polygon Number 17
Survey Intensity 2
Observer SH
Date 5/12/2006
Specific Location Island is one polygon.

Total Vegetation 6
Trees Total 5
Dominant Trees PSME, ARME
emergent 1
maincanopy 5
subcanopy 2
Shrubs Total 6
Dominant Shrubs VAOV2, GASH, HODI
> 1.5' tall 6
< 1.5' tall 2
Graminoids Total 1
Dominant Graminoids
Graminoids Perennial 1
Graminoids Annual 0
Forbs Total 1
Dominant Forbs TROV2, POMU, PTAQ
Forbs Perennial 1
Forbs Annual 0
Ferns Total 3

Exotic Species

Ferns Evergreen 2
Ferns Deciduous 3
Exotics Total 4
Exotics Perennial 4
Exotics Annual 0
Water
Rock Outcrop 0
Gravel 2
Bare Ground 2
Moss Lichen 1
Litter 95
Logging 3
Stand Age 2
Agriculture 0
Livestock 0
Development 3
Wildlife 0
Recreation Severity 3
Recreation Type 5
Hydrology 1

Primary Exotic
 HEHE
Secondary Exotic
 RUDI2, ILAQ80, CYSC4
Noxious Exotic

Plant Associations

	Percent	Pattern	Rank
1. PSME-ARME/VAOV2 (Chappell 2005)	70	Large	
2. PSME-ARME/GASH (Chappell 2005)	30	Large	1
3.	0		0

Notes: Abundance of *Rhus diversiloba* around S shore. Nearly no sub-shrub layer below the VAOV2 and GASH. One THPL seen on island. Harbor seals on NE shore. Hikers can use this

Vegetation Polygon Data – Harstine Island State Park

Polygon Number	24
Survey Intensity	2
Observer	SH
Date	5/15/2006
Specific Location	SW
Total Vegetation	6
Trees Total	6
Dominant Trees	PSME, ALRU2, THPL, TSHE, ARME
emergent	1
maincanopy	6
subcanopy	1
Shrubs Total	5
Dominant Shrubs	VAOV2, GASH, SASC
> 1.5' tall	5
< 1.5' tall	1
Graminoids Total	1
Dominant Graminoids	
Graminoids Perennial	1
Graminoids Annual	0
Forbs Total	1
Dominant Forbs	POMU
Forbs Perennial	1
Forbs Annual	0
Ferns Total	3
Ferns Evergreen	3
Ferns Deciduous	0
Exotics Total	3
Exotics Perennial	3
Exotics Annual	0
Water	
Rock Outcrop	0
Gravel	0
Bare Ground	1
Moss Lichen	2
Litter	97
Logging	3
Stand Age	1,2
Agriculture	0
Livestock	0
Development	0
Wildlife	0
Recreation Severity	0
Recreation Type	0
Hydrology	1

Exotic Species

Primary Exotic
CYSC4, ILAQ80, Cirsium sp.

Secondary Exotic

Noxious Exotic

Plant Associations

	Percent	Pattern	Rank
1. PSME-TSHE/VAOV2 (Chappell 2005)	100	Matrix	1
2.	0		0
3	0		0

Notes: Very young PSME stand (dense) cutover area. Some small ALRU2 patches.

Polygon Number 25
Survey Intensity 2
Observer SH
Date 5/15/2006
Specific Location NW

Total Vegetation 6
Trees Total 6
Dominant Trees PSME, ALRU2, ARME, ACMA3, THPL
emergent 1
maincanopy 6
subcanopy 1
Shrubs Total 5
Dominant Shrubs VAOV2, GASH, RUUR, HODI, RHPU
> 1.5' tall 5
< 1.5' tall 1
Graminoids Total 1
Dominant Graminoids Juncus sp.
Graminoids Perennial 1
Graminoids Annual 0
Forbs Total 3
Dominant Forbs GAAP2, POMU
Forbs Perennial 3
Forbs Annual 0
Ferns Total 4
Ferns Evergreen 4
Ferns Deciduous 0
Exotics Total 3
Exotics Perennial 3
Exotics Annual 0
Water
Rock Outcrop 0
Gravel 0
Bare Ground 0
Moss Lichen 2
Litter 98
Logging 3
Stand Age 1,2
Agriculture 0
Livestock 0
Development 0
Wildlife 0
Recreation Severity 0
Recreation Type 0
Hydrology 1

Exotic Species

Primary Exotic
 Cirsium sp., CYSC4, GAAP2, ILAQ80
Secondary Exotic

Noxious Exotic

Plant Associations

	Percent	Pattern	Rank
1. PSME-TSHE/VAOV2 (Chappell 2005)	100	Matrix	1
2.	0		0
3	0		0

Notes: Dense PSME stands. Very young, cutover. Some ALRU2 patches (small)

Polygon Number 26
Survey Intensity 2
Observer SH
Date 5/15/2006
Specific Location NW

Total Vegetation 6
Trees Total 6
Dominant Trees PSME, ALRU2, TSHE, THPL
emergent 1
maincanopy 6
subcanopy 1
Shrubs Total 4
Dominant Shrubs VAOV2, GASH, RUUR, MANE2
> 1.5' tall 4
< 1.5' tall 1
Graminoids Total 2
Dominant Graminoids CADE9
Graminoids Perennial 2
Graminoids Annual 0
Forbs Total 2
Dominant Forbs GAAP2, Cirsium sp., PTAQ, POMU
Forbs Perennial 2
Forbs Annual 0
Ferns Total 4
Ferns Evergreen 4
Ferns Deciduous 2
Exotics Total 2
Exotics Perennial 2
Exotics Annual 0
Water
Rock Outcrop 0
Gravel 0
Bare Ground 1
Moss Lichen 2
Litter 97
Logging 3
Stand Age 1,2
Agriculture 0
Livestock 0
Development 0
Wildlife 0
Recreation Severity 0
Recreation Type 0
Hydrology 1

Exotic Species

Primary Exotic
 Cirsium sp., GAAP2, CYSC4, ILAQ80
Secondary Exotic

Noxious Exotic

Plant Associations

	Percent	Pattern	Rank
1. PSME-TSHE/VAOV2 (Chappell 2005)	60	Matrix	1
2. PSME-TSHE/VAOV2/POMU (Chappell)	30	Small	1
3 ALRU2/ACTR-CADE9 (PBI)	10	Small	1

Notes: Dense stand of very young PSME, cutover.

Polygon Number 27
Survey Intensity 1
Observer PM, SH
Date 5/15/2006
Specific Location Wetland at north central part of park, swamp.

Total Vegetation 5
Trees Total 0
Dominant Trees
 emergent 0
 maincanopy 0
 subcanopy 0
Shrubs Total 5
Dominant Shrubs SPDO
 > 1.5' tall 4
 < 1.5' tall 2
Graminoids Total 3
Dominant Graminoids CAOB3, Carex sp. COLLECTED
Graminoids Perennial 3
Graminoids Annual 0
Forbs Total 1
Dominant Forbs OESA
Forbs Perennial 1
Forbs Annual 0
Ferns Total 0
Ferns Evergreen 0
Ferns Deciduous 0
Exotics Total 0
Exotics Perennial 0
Exotics Annual 0
Water 5
Rock Outcrop 0
Gravel 0
Bare Ground 0
Moss Lichen 0
Litter 95
Logging 0
Stand Age 0
Agriculture 0
Livestock 0
Development 0
Wildlife 0
Recreation Severity 0
Recreation Type 0
Hydrology 1

Exotic Species

Primary Exotic

Secondary Exotic

Noxious Exotic

Plant Associations

	Percent	Pattern	Rank
1. SPDO community (Kunze 1994)	100	Matrix	3
2.	0		0
3	0		0

Notes: SUBSTATE NOTE: BARE GROUND IS WATER.

Polygon Number 28
Survey Intensity 1
Observer PM
Date 5/15/2006
Specific Location Regenerated clearcut at NE part of park.

Total Vegetation 6
Trees Total 5
Dominant Trees PSME, ACMA3
emergent 2
maincanopy 5
subcanopy 0
Shrubs Total 5
Dominant Shrubs VAOV2, GASH, MANE2
> 1.5' tall 5
< 1.5' tall 3
Graminoids Total 1
Dominant Graminoids LUPA4
Graminoids Perennial 1
Graminoids Annual 0
Forbs Total 2
Dominant Forbs POMU, PTAQ
Forbs Perennial 2
Forbs Annual 0
Ferns Total 2
Ferns Evergreen 2
Ferns Deciduous 1
Exotics Total 1
Exotics Perennial 1
Exotics Annual 0
Water
Rock Outcrop 0
Gravel 0
Bare Ground 1
Moss Lichen 4
Litter 95
Logging 3
Stand Age 1
Agriculture 0
Livestock 0
Development 3
Wildlife 0
Recreation Severity 3
Recreation Type 3
Hydrology 1

Exotic Species

Primary Exotic
 CYSC4
Secondary Exotic
 SEJA
Noxious Exotic

Plant Associations

	Percent	Pattern	Rank
1. PSME-TSHE/VAOV2/POMU (Chappell)	70	Matrix	1
2. TSHE-PSME/POMU-DREX2 (Chappell)	30	Small	1
3	0		0

Notes:

Polygon Number 29
Survey Intensity 1
Observer PM
Date 5/16/2006
Specific Location NE strip of coastal bluff forest, north of trail to beach.

Total Vegetation 6
Trees Total 5
Dominant Trees ALRU2, ACMA3, THPL, TSHE, PSME
emergent 4
maincanopy 4
subcanopy 3
Shrubs Total 3
Dominant Shrubs RUSP, RUPA, MANE2, VAOV2, GASH
> 1.5' tall 2
< 1.5' tall 2
Graminoids Total 2
Dominant Graminoids
Graminoids Perennial 2
Graminoids Annual 0
Forbs Total 3
Dominant Forbs TEGR2, MOSI2, MIGU, EQTE, ACTR, POMU, BLSP, ADPE
Forbs Perennial 3
Forbs Annual 0
Ferns Total 4
Ferns Evergreen 3
Ferns Deciduous 3
Exotics Total 1
Exotics Perennial 1
Exotics Annual 0
Water
Rock Outcrop 1
Gravel 1
Bare Ground 1
Moss Lichen 2
Litter 95
Logging 0
Stand Age 3
Agriculture 0
Livestock 0
Development 0
Wildlife 0
Recreation Severity 0
Recreation Type 0
Hydrology 1

Exotic Species

Primary Exotic
 BUDA2
Secondary Exotic
 SEJA
Noxious Exotic

Plant Associations

	Percent	Pattern	Rank
1. ACMA3-ALRU2/POMU-TEGR2 (Chappell)	97	Matrix	3
2. TSHE-PSME/POMU-DREX2 (Chappell)	3	Small	2
3	0		0

Notes:

Polygon Number 30
Survey Intensity 1
Observer SH
Date 5/15/2006
Specific Location S central

Total Vegetation 6
Trees Total 5
Dominant Trees TSHE, ALRU2, PSME
emergent 1
maincanopy 5
subcanopy 2
Shrubs Total 3
Dominant Shrubs VAOV2, GASH, VAPA, RUSP
> 1.5' tall 3
< 1.5' tall 1
Graminoids Total 2
Dominant Graminoids
Graminoids Perennial 2
Graminoids Annual 0
Forbs Total 3
Dominant Forbs MAD1, Equisetum, LYAM3, TRLA6, TROV2, ACTR
Forbs Perennial 3
Forbs Annual 0
Ferns Total 5
Ferns Evergreen 5
Ferns Deciduous 4
Exotics Total 1
Exotics Perennial 1
Exotics Annual 0
Water
Rock Outcrop 0
Gravel 0
Bare Ground 0
Moss Lichen 8
Litter 92
Logging 3
Stand Age 2
Agriculture 0
Livestock 0
Development 0
Wildlife 0
Recreation Severity 0
Recreation Type 0
Hydrology 1

Exotic Species

Primary Exotic
 ILAQ80 (1) LARGE SPECIMAN
Secondary Exotic

Noxious Exotic

Plant Associations

	Percent	Pattern	Rank
1. ALRU2/POMU (Chappell 2005)	80	Matrix	2
2. TSHE-PSME/POMU-DREX2 (Chappell)	20	Small	2
3	0		0

Notes: Polygon is slightly soggy, wetter than other areas of the island.
 No standing water though. Ferns: POMU, PTAQ

Polygon Number 31
Survey Intensity 1
Observer PM
Date 5/15/2006
Specific Location Coastal bluff south of trail to beach.

Total Vegetation 6
Trees Total 5
Dominant Trees ACMA3, ALRU2, THPL, TSHE, PSME
emergent 3
maincanopy 4
subcanopy 3
Shrubs Total 3
Dominant Shrubs GASH, RUPA, RUSP, MANE2
> 1.5' tall 3
< 1.5' tall 2
Graminoids Total 1
Dominant Graminoids Carex sp. COLLECTED
Graminoids Perennial 1
Graminoids Annual 0
Forbs Total 3
Dominant Forbs TEGR2, EQTE, MIGU, MOSI2, ARSU4, ACTR, POMU, BLSP
Forbs Perennial 3
Forbs Annual 0
Ferns Total 4
Ferns Evergreen 4
Ferns Deciduous 3
Exotics Total 1
Exotics Perennial 1
Exotics Annual 0
Water
Rock Outcrop 1
Gravel 1
Bare Ground 1
Moss Lichen 2
Litter 95
Logging 0
Stand Age 3
Agriculture 0
Livestock 0
Development 0
Wildlife 0
Recreation Severity 0
Recreation Type 0
Hydrology 1

Exotic Species

Primary Exotic
 BUDA2
Secondary Exotic
 SEJA
Noxious Exotic

Plant Associations

	Percent	Pattern	Rank
1. ACMA3-ALRU2/POMU-TEGR2 (Chappell)	100	Matrix	3
2.	0		0
3	0		0

Notes:

Polygon Number 32
Survey Intensity 1
Observer PM
Date 5/15/2006
Specific Location Mixed old growth and mature in from beach trailhead.

Total Vegetation 6
Trees Total 6
Dominant Trees PSME, TSHE, ACMA3, THPL
emergent 4
maincanopy 4
subcanopy 3
Shrubs Total 4
Dominant Shrubs VAOV2, MANE2, GASH, OPHO, RUSP, SARA2
> 1.5' tall 4
< 1.5' tall 3
Graminoids Total 2
Dominant Graminoids CAO3, LUPA4, OTHER Carex sp.
Graminoids Perennial 2
Graminoids Annual 0
Forbs Total 4
Dominant Forbs TEGR2, ACTR, TRLA6, LYAM3, MOSI2, CIAL, POMU, BLSP
Forbs Perennial 4
Forbs Annual 1
Ferns Total 4
Ferns Evergreen 3
Ferns Deciduous 3
Exotics Total 0
Exotics Perennial 0
Exotics Annual 0
Water
Rock Outcrop 0
Gravel 0
Bare Ground 1
Moss Lichen 5
Litter 94
Logging 2
Stand Age 6
Agriculture 0
Livestock 0
Development 3
Wildlife 0
Recreation Severity 3
Recreation Type 3
Hydrology 1

Exotic Species

Primary Exotic

Secondary Exotic

Noxious Exotic

Plant Associations

	Percent	Pattern	Rank
1. PSME-TSHE/VAOV2/POMU (Chappell)	80	Matrix	3
2. THPL-TSHE/OPHO/POMU (Chappell)	20	Large	3
3	0		0

Notes: GOOD MULTISTORIED STAND

Polygon Number 32B
Survey Intensity 2
Observer DV
Date 8/30/2006
Specific Location

Total Vegetation 5
Trees Total 4
Dominant Trees ALRU2, THPL
emergent 0
maincanopy 4
subcanopy 2
Shrubs Total 3
Dominant Shrubs RUSP, GASH
> 1.5' tall 3
< 1.5' tall 2
Graminoids Total 2
Dominant Graminoids CAOB3
Graminoids Perennial 2
Graminoids Annual 0
Forbs Total 2
Dominant Forbs LYAM3, MIDI
Forbs Perennial 2
Forbs Annual 0
Ferns Total 2
Ferns Evergreen 1
Ferns Deciduous 1
Exotics Total 0
Exotics Perennial 0
Exotics Annual 0
Water
Rock Outcrop 0
Gravel 0
Bare Ground 5
Moss Lichen 5
Litter 90
Logging 0
Stand Age 2
Agriculture 0
Livestock 0
Development 3
Wildlife 3
Recreation Severity 3
Recreation Type 3
Hydrology 1

Exotic Species

Primary Exotic

Secondary Exotic

Noxious Exotic

Plant Associations

	Percent	Pattern	Rank
1. ALRU2/LYAM3 (KUNZE 1994)	100	Matrix	3
2.	0		0
3	0		0
Notes:	Ferns: POMU, BLSP, ATFI		

Polygon Number 33
Survey Intensity 1
Observer PM
Date 5/15/2006
Specific Location

Total Vegetation 6
Trees Total 6
Dominant Trees PSME, TSHE, THPL
emergent 2
maincanopy 5
subcanopy 3
Shrubs Total 5
Dominant Shrubs VAOV2, GASH, MANE2
> 1.5' tall 5
< 1.5' tall 2
Graminoids Total 1
Dominant Graminoids
Graminoids Perennial 1
Graminoids Annual 0
Forbs Total 2
Dominant Forbs POMU, PTAQ
Forbs Perennial 2
Forbs Annual 0
Ferns Total 3
Ferns Evergreen 2
Ferns Deciduous 1
Exotics Total 1
Exotics Perennial 1
Exotics Annual 1
Water
Rock Outcrop 0
Gravel 1
Bare Ground 1
Moss Lichen 5
Litter 93
Logging 3
Stand Age 3
Agriculture 0
Livestock 0
Development 2
Wildlife 0
Recreation Severity 3
Recreation Type 3
Hydrology 1

Exotic Species

Primary Exotic

Secondary Exotic

Noxious Exotic

Plant Associations

	Percent	Pattern	Rank
1. PSME-TSHE/VAOV2 (Chappell 2005)	100	Matrix	2
2.	0		0
3	0		0

Notes:

Polygon Number 34
Survey Intensity 1
Observer PM
Date 5/15/2006
Specific Location Mature stand on south side of park.

Total Vegetation 6
Trees Total 6
Dominant Trees PSME, TSHE, ACMA3, THPL
emergent 2
maincanopy 5
subcanopy 3
Shrubs Total 5
Dominant Shrubs VAOV2, MANE2, GASH
> 1.5' tall 5
< 1.5' tall 3
Graminoids Total 1
Dominant Graminoids
Graminoids Perennial 1
Graminoids Annual 0
Forbs Total 2
Dominant Forbs POMU
Forbs Perennial 2
Forbs Annual 0
Ferns Total 3
Ferns Evergreen 3
Ferns Deciduous 1
Exotics Total 0
Exotics Perennial 0
Exotics Annual 0
Water
Rock Outcrop 0
Gravel 0
Bare Ground 0
Moss Lichen 5
Litter 95
Logging 3 (OLD)
Stand Age 3
Agriculture 0
Livestock 0
Development 3
Wildlife 0
Recreation Severity 3
Recreation Type 3
Hydrology 1

Exotic Species

Primary Exotic

Secondary Exotic

Noxious Exotic

Plant Associations

	Percent	Pattern	Rank
1. PSME-TSHE/VAOV2/POMU (Chappell	97	Matrix	2
2. ALRU2/POMU (Chappell 2005)	3	Small	2
3	0		0

Notes:

Polygon Number 35
Survey Intensity 1
Observer PM
Date 5/15/2006
Specific Location

Total Vegetation 6
Trees Total 6
Dominant Trees PSME, TSHE, THPL
emergent 3
maincanopy 5
subcanopy 3
Shrubs Total 5
Dominant Shrubs VAOV2, GASH
> 1.5' tall 5
< 1.5' tall 3
Graminoids Total 1
Dominant Graminoids CAOB3
Graminoids Perennial 1
Graminoids Annual 0
Forbs Total 2
Dominant Forbs ACTR, GAAP2, TRLA6, OESA, POMU, PTAQ
Forbs Perennial 2
Forbs Annual 0
Ferns Total 3
Ferns Evergreen 3
Ferns Deciduous 2
Exotics Total 1
Exotics Perennial 1
Exotics Annual 0
Water
Rock Outcrop 0
Gravel 0
Bare Ground 1
Moss Lichen 3
Litter 96
Logging 3
Stand Age 3
Agriculture 0
Livestock 0
Development 3
Wildlife 0
Recreation Severity 3
Recreation Type 3
Hydrology 1

Exotic Species

Primary Exotic

Secondary Exotic

Noxious Exotic

Plant Associations

	Percent	Pattern	Rank
1. PSME-TSHE/VAOV2/POMU (Chappell)	90	Matrix	2
2. PSME-TSHE/GASH/POMU (Chappell)	8	Small	2
3 CAOB3 community (KUNZE)	2	Small	2

Notes: DIVERSE SITE, NOT CAOB3 MONOCULTURE. LOTS OF OESA AND POMU.

Polygon Number 36
Survey Intensity 1
Observer SH
Date 5/15/2006
Specific Location S central

Total Vegetation 6
Trees Total 6
Dominant Trees PSME, THPL, TSHE, ALRU2
emergent 1
maincanopy 6
subcanopy 3
Shrubs Total 5
Dominant Shrubs VAOV2, GASH, VAPA, ROGY, MANE2
> 1.5' tall 5
< 1.5' tall 1
Graminoids Total 2
Dominant Graminoids
Graminoids Perennial 2
Graminoids Annual 0
Forbs Total 3
Dominant Forbs TRLA6, MOSI2
Forbs Perennial 3
Forbs Annual 0
Ferns Total 5
Ferns Evergreen 5
Ferns Deciduous 3
Exotics Total 0
Exotics Perennial 0
Exotics Annual 0
Water
Rock Outcrop 0
Gravel 0
Bare Ground 0
Moss Lichen 8
Litter 92
Logging 3
Stand Age 2
Agriculture 0
Livestock 0
Development 0
Wildlife 0
Recreation Severity 0
Recreation Type 0
Hydrology 1

Exotic Species

Primary Exotic

Secondary Exotic

Noxious Exotic

Plant Associations

	Percent	Pattern	Rank
1. TSHE-PSME/POMU-DREX2 (Chappell)	70	Matrix	2
2. PSME-TSHE/VAOV2/POMU (Chappell)	30	Small	2
3	0		0

Notes: POMU-thick! Young PSME stand in E portion of polygon.

Polygon Number 37
Survey Intensity 1
Observer SH
Date 5/15/2006
Specific Location N central

Total Vegetation 6
Trees Total 6
Dominant Trees PSME, THPL, TSHE, ALRU2
emergent 1
maincanopy 6
subcanopy 3
Shrubs Total 5
Dominant Shrubs VAOV2, GASH, MANE2
> 1.5' tall 5
< 1.5' tall 1
Graminoids Total 1
Dominant Graminoids
Graminoids Perennial 1
Graminoids Annual 0
Forbs Total 2
Dominant Forbs MADI, TRLA6, POMU, PTAQ
Forbs Perennial 2
Forbs Annual 0
Ferns Total 3
Ferns Evergreen 3
Ferns Deciduous 2
Exotics Total 1
Exotics Perennial 1
Exotics Annual 0
Water
Rock Outcrop 0
Gravel 0
Bare Ground 0
Moss Lichen 4
Litter 96
Logging 3
Stand Age 3
Agriculture 0
Livestock 0
Development 0
Wildlife 0
Recreation Severity 0
Recreation Type 0
Hydrology 1

Exotic Species

Primary Exotic
 CYSC4
Secondary Exotic

Noxious Exotic

Plant Associations

	Percent	Pattern	Rank
1. PSME-TSHE/VAOV2/POMU (Chappell	70	Matrix	2
2. PSME-TSHE/GASH/POMU (Chappell	30	Small	2
3	0		0

Notes:

Polygon Number 38
Survey Intensity 2
Observer SH
Date 5/15/2006
Specific Location center

Total Vegetation 6
Trees Total 6
Dominant Trees PSME, TSHE, THPL, ALRU2, ACMA3
emergent 1
maincanopy 5
subcanopy 3
Shrubs Total 5
Dominant Shrubs VAOV2, GASH, MANE2
> 1.5' tall 5
< 1.5' tall 1
Graminoids Total 1
Dominant Graminoids
Graminoids Perennial 1
Graminoids Annual 0
Forbs Total 2
Dominant Forbs VIVI, MOSI2, ACTR, TRLA6, POMU, PTAQ, BLSP, ATFI
Forbs Perennial 1
Forbs Annual 1

Ferns Total 3
Ferns Evergreen 3
Ferns Deciduous 2
Exotics Total 1
Exotics Perennial 1
Exotics Annual 0
Water
Rock Outcrop 0
Gravel 0
Bare Ground 0
Moss Lichen 8
Litter 92
Logging 5
Stand Age 2
Agriculture 0
Livestock 0
Development 3
Wildlife 3
Recreation Severity 3
Recreation Type 3
Hydrology 1

Exotic Species

Primary Exotic
 CYSC4
Secondary Exotic
 HEHE
Noxious Exotic
 ILAQ80

Plant Associations

	Percent	Pattern	Rank
1. PSME-TSHE/VAOV2/POMU (Chappell	50	Matrix	2
2. TSHE-PSME/POMU-DREX2 (Chappell	40	Small	2
3 ALRU2/POMU (Chappell 2005)	10	Small	2

Notes: Mature forest in polygon. Good THSE stand throughout.
 POMU tends to dominate the understory: Thick! In areas.

Vegetation Polygon Data – Hope Island State Park

Polygon Number 1
Survey Intensity
Observer
Date
Specific Location saltwater

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. saltwater	100	Matrix	2
2.	0		0
3	0		0

Notes:

Polygon Number 10
Survey Intensity 1
Observer SH
Date 5/13/2006
Specific Location E

Total Vegetation 6
Trees Total 6
Dominant Trees PSME, THPL, ACMA3, TSHE
emergent 2
maincanopy 6
subcanopy 3
Shrubs Total 4
Dominant Shrubs VAOV2, GASH, COCO6
> 1.5' tall 4
< 1.5' tall 2
Graminoids Total 1
Dominant Graminoids
Graminoids Perennial 1
Graminoids Annual 0
Forbs Total 4
Dominant Forbs ACTR, POMU, BLSP
Forbs Perennial 4
Forbs Annual 1
Ferns Total 4
Ferns Evergreen 4
Ferns Deciduous 2
Exotics Total 2
Exotics Perennial 2
Exotics Annual 0
Water
Rock Outcrop 0
Gravel 0
Bare Ground 2
Moss Lichen 8
Litter 90
Logging 3
Stand Age 3
Agriculture 0
Livestock 0
Development 3
Wildlife 0
Recreation Severity 3
Recreation Type 3
Hydrology 1

Exotic Species

Primary Exotic
 ILAQ80
Secondary Exotic

Noxious Exotic

Plant Associations

	Percent	Pattern	Rank
1. PSME-TSHE/VAOV2/POMU (Chappell)	97	Matrix	2
2. PSME-TSHE/GASH/POMU (Chappell)	3	Small	2
3	0		0

Notes: Major Achlys triphylla. THPL is fairly dominant in polygon.

Polygon Number 11
Survey Intensity 1
Observer SH
Date 5/13/2006
Specific Location SW

Total Vegetation 6
Trees Total 6
Dominant Trees PSME, THPL, ARME, TSHE, ACMA3
emergent 1
maincanopy 6
subcanopy 3
Shrubs Total 5
Dominant Shrubs VAOV2, GASH
> 1.5' tall 5
< 1.5' tall 2
Graminoids Total 1
Dominant Graminoids CADE9, Juncus sp.
Graminoids Perennial 1
Graminoids Annual 0
Forbs Total 3
Dominant Forbs ACTR, TRLA6, POMU
Forbs Perennial 3
Forbs Annual 1
Ferns Total 3
Ferns Evergreen 3
Ferns Deciduous 2
Exotics Total 2
Exotics Perennial 2
Exotics Annual 0
Water
Rock Outcrop 0
Gravel 0
Bare Ground 2
Moss Lichen 7
Litter 91
Logging 3
Stand Age 2
Agriculture 0
Livestock 0
Development 3
Wildlife 0
Recreation Severity 3
Recreation Type 3
Hydrology 1

Exotic Species

Primary Exotic
 ILAQ80
Secondary Exotic

Noxious Exotic

Plant Associations

	Percent	Pattern	Rank
1. PSME-TSHE/VAOV2/POMU (Chappell)	94	Matrix	2
2. PSME-TSHE/VAOV2 (Chappell 2005)	5	Small	2
3 ALRU2/ACTR-CADE9 (PBI)	1	Small	2

Notes: Young THPL in the sub-canopy.

Polygon Number 12
Survey Intensity 1
Observer DV
Date 8/30/06
Specific Location This polygon is a developed homestead/garden/orchard.

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
Exotics Total 0
 Exotics Perennial 0
 Exotics Annual 0
Water
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 12B
Survey Intensity 1
Observer DV
Date 8/30/06
Specific Location

Total Vegetation 6
Trees Total 2
Dominant Trees PSME, ALRU2
emergent 0
maincanopy 0
subcanopy 2
Shrubs Total 2
Dominant Shrubs SPDO
> 1.5' tall 2
< 1.5' tall 0
Graminoids Total 6
Dominant Graminoids JUEF
Graminoids Perennial 6
Graminoids Annual 0
Forbs Total 2
Dominant Forbs CIAR4
Forbs Perennial 2
Forbs Annual 0
Ferns Total 2
Ferns Evergreen 0
Ferns Deciduous 2
Exotics Total 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 0
Agriculture 0
Livestock 4
Development 5
Wildlife 2
Recreation Severity 0
Recreation Type 0
Hydrology 1

Exotic Species

Primary Exotic
 CIAR4
Secondary Exotic

Noxious Exotic

Plant Associations

	Percent	Pattern	Rank
1. JUEF disturbed wet meadow (PBI)	100	Matrix	2
2.	0		0
3	0		0
Notes:	Ferns: PTAQ.		

Polygon Number 13
Survey Intensity 1
Observer SH
Date 5/13/2006
Specific Location Eastern shore.

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 3
Dominant Graminoids DISP
Graminoids Perennial 3
Graminoids Annual 0
Forbs Total 4
Dominant Forbs SAVI, JACA4, PLMA3
Forbs Perennial 4
Forbs Annual 0
Ferns Total 0
Ferns Evergreen 0
Ferns Deciduous 0
Exotics Total 1
Exotics Perennial 1
Exotics Annual 0
Water
Rock Outcrop 0
Gravel 30
Bare Ground 0
Moss Lichen 0
Litter 70
Logging 0
Stand Age 0
Agriculture 0
Livestock 0
Development 3
Wildlife 0
Recreation Severity 3
Recreation Type 3
Hydrology 1

Exotic Species

Primary Exotic
 TAOF
Secondary Exotic

Noxious Exotic

Plant Associations

	Percent	Pattern	Rank
1. SAVI-JACA4-DISP-TRMA20 (Kunze and	100	Matrix	1
2.	0		0
3	0		0
Notes:	Salt marsh, biological beach.		

Polygon Number 14
Survey Intensity 1
Observer DV
Date 8/30/06
Specific Location This polygon is a gravel tidal beach w/ 5% DISP at upper end.

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 DISP
Graminoids Perennial 3
Graminoids Annual 0
Forbs Total 0
Dominant Forbs
Forbs Perennial 0
Forbs Annual 0
Ferns Total 0
Ferns Evergreen 0
Ferns Deciduous 0
Exotics Total 0
Exotics Perennial 0
Exotics Annual 0
Water
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	95	Matrix	2
2. DISP community (Kunze and Cornelius)	5	Small	2
3	0		0

Notes:

Polygon Number 15
Survey Intensity 1
Observer SH
Date 5/13/2006
Specific Location S/SE tip

Total Vegetation 5
Trees Total 5
Dominant Trees PSME, ARME, THPL
emergent 0
maincanopy 5
subcanopy 2
Shrubs Total 4
Dominant Shrubs VAOV2, GASH, RONU, SARA2
> 1.5' tall 4
< 1.5' tall 2
Graminoids Total 2
Dominant Graminoids CADE9, Juncus sp.
Graminoids Perennial 2
Graminoids Annual 1
Forbs Total 2
Dominant Forbs ACTR, GOOB2, POMU, PTAQ
Forbs Perennial 2
Forbs Annual 1

Ferns Total 2
Ferns Evergreen 2
Ferns Deciduous 2
Exotics Total 2
Exotics Perennial 2
Exotics Annual 0
Water
Rock Outcrop 0
Gravel 0
Bare Ground 2
Moss Lichen 5
Litter 93
Logging 3
Stand Age 1
Agriculture 0
Livestock 0
Development 6
Wildlife 0
Recreation Severity 3
Recreation Type 3
Hydrology 1

Exotic Species

Primary Exotic
 ILAQ80
Secondary Exotic

Noxious Exotic

Plant Associations

	Percent	Pattern	Rank
1. PSME-TSHE/VAOV2 (Chappell 2005)	70	Matrix	1
2. PSME-ARME/VAOV2 (Chappell 2005)	25	Small	1
3 ALRU2/ACTR-CADE9 (PBI)	5	Small	2

Notes: Very young PSME, even-age near campground. Only a few THPL. One young ABGR. Polygon contains campground, bathroom. Rhus diversiloba--some with 1" branches. Mostly

Polygon Number 16A
Survey Intensity 1
Observer PM, DV
Date 5/14/2006,
Specific Location Tidal area on south end of island.

Total Vegetation 5
Trees Total 3
Dominant Trees FRLA, ARME3, QUGA4, PSME
emergent 0
maincanopy 2
subcanopy 2
Shrubs Total 2
Dominant Shrubs MAAQ2, RONU
> 1.5' tall 2
< 1.5' tall 1
Graminoids Total 5
Dominant Graminoids JUTE, JUBA, AGEX, DECE18, DISP
Graminoids Perennial 5
Graminoids Annual 0
Forbs Total 3
Dominant Forbs SAVI, TRMA20, PLMA3, JACA4, CHAL7
Forbs Perennial 3
Forbs Annual 2
Ferns Total 0
Ferns Evergreen 0
Ferns Deciduous 0
Exotics Total 0
Exotics Perennial 0
Exotics Annual 0
Water
Rock Outcrop 0
Gravel 5
Bare Ground 1
Moss Lichen 0
Litter 94
Logging 0
Stand Age 0
Agriculture 0
Livestock 0
Development 3
Wildlife 0
Recreation Severity 2
Recreation Type 3
Hydrology 1

Exotic Species

Primary Exotic

Secondary Exotic

Noxious Exotic

Plant Associations

	Percent	Pattern	Rank
1. DECA18-DISP-SAVI (Kunze and	90	Matrix	2
2. SAVI community (Kunze and Cornelius	5	Small	2
3 SAVI-JACA4-DISP-TRMA20 (Kunze and	5	Small	2

Notes: This polygon is mostly JUTE, JACA4 mixed in, then goes to JUBA/AGEX.

Polygon Number 16B
Survey Intensity 1
Observer PM
Date 5/14/2006
Specific Location Beach at south end of island.

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
Exotics Total 0
 Exotics Perennial 0
 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 3
Recreation Type 3
Hydrology 1

Exotic Species

Primary Exotic
 Secondary Exotic
 Noxious Exotic

Plant Associations

	Percent	Pattern	Rank
1. beach	0		0
2.	0		0
3	0		0
Notes:	GRAVEL AND SHELL BEACH.		

Polygon Number 17
Survey Intensity
Observer
Date
Specific Location saltwater

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. saltwater	100	Matrix	2
2.	0		0
3	0		0

Notes:

Polygon Number 2
Survey Intensity 1
Observer SH
Date 5/14/2006
Specific Location N tip

Total Vegetation 6
Trees Total 6
Dominant Trees PSME, TSHE, THPL, ACMA3
emergent 1
maincanopy 6
subcanopy 3
Shrubs Total 3
Dominant Shrubs MANE2, VAOV2
> 1.5' tall 3
< 1.5' tall 1
Graminoids Total 1
Dominant Graminoids
Graminoids Perennial 1
Graminoids Annual 0
Forbs Total 5
Dominant Forbs ACTR, GAAP2, POMU
Forbs Perennial 5
Forbs Annual 1
Ferns Total 4
Ferns Evergreen 4
Ferns Deciduous 1
Exotics Total 2
Exotics Perennial 2
Exotics Annual 0
Water
Rock Outcrop 0
Gravel 0
Bare Ground 2
Moss Lichen 6
Litter 92
Logging 2
Stand Age 6
Agriculture 0
Livestock 0
Development 3
Wildlife 0
Recreation Severity 3
Recreation Type 3
Hydrology 1

Exotic Species

Primary Exotic
 ILAQ80
Secondary Exotic
 GAAP2, LAMU
Noxious Exotic

Plant Associations

	Percent	Pattern	Rank
1. PSME-TSHE/ACTR (PBI)	70	Matrix	3
2. PSME-TSHE/MANE2/POMU (Chappell)	30	Small	3
3	0		0

Notes:

Polygon Number 3
Survey Intensity 2
Observer DV
Date 8/30/06
Specific Location

Total Vegetation 6
Trees Total 6
Dominant Trees PSME, THPL
emergent 2
maincanopy 6
subcanopy 2
Shrubs Total 2
Dominant Shrubs VAOV2, MANE2
> 1.5' tall 2
< 1.5' tall 1
Graminoids Total 1
Dominant Graminoids MESM
Graminoids Perennial 1
Graminoids Annual 0
Forbs Total 3
Dominant Forbs ACTR
Forbs Perennial 3
Forbs Annual 0
Ferns Total 3
Ferns Evergreen 3
Ferns Deciduous 0
Exotics Total 0
Exotics Perennial 0
Exotics Annual 0
Water
Rock Outcrop 0
Gravel 0
Bare Ground 0
Moss Lichen 5
Litter 95
Logging 3
Stand Age 2
Agriculture 0
Livestock 0
Development 3
Wildlife 3
Recreation Severity 3
Recreation Type 3
Hydrology 1

Exotic Species

Primary Exotic

Secondary Exotic

Noxious Exotic

Plant Associations

	Percent	Pattern	Rank
1. PSME-TSHE/VAOV2 (Chappell 2005)	100	Matrix	2
2.	0		0
3	0		0

Notes: Ferns: POMU.

Polygon Number	4
Survey Intensity	1
Observer	SH
Date	5/14/2006
Specific Location	NE
Total Vegetation	6
Trees Total	6
Dominant Trees	PSME, THPL, TSHE, ACMA3
emergent	2
maincanopy	6
subcanopy	3
Shrubs Total	3
Dominant Shrubs	VAOV2, VAPA
> 1.5' tall	3
< 1.5' tall	2
Graminoids Total	1
Dominant Graminoids	
Graminoids Perennial	1
Graminoids Annual	0
Forbs Total	5
Dominant Forbs	ACTR, GAAP2, (POMU, PTAQ, POGL, ATFI, BLSP, ADPE)
Forbs Perennial	5
Forbs Annual	1
Ferns Total	5
Ferns Evergreen	5
Ferns Deciduous	3
Exotics Total	1
Exotics Perennial	1
Exotics Annual	0
Water	
Rock Outcrop	0
Gravel	0
Bare Ground	2
Moss Lichen	8
Litter	90
Logging	2
Stand Age	6
Agriculture	0
Livestock	0
Development	3
Wildlife	0
Recreation Severity	3
Recreation Type	3
Hydrology	1

Exotic Species

Primary Exotic

Secondary Exotic

Noxious Exotic

Plant Associations

	Percent	Pattern	Rank
1. PSME-TSHE/ACTR (PBI)	100	Matrix	3
2.	0		0
3	0		0

Notes: Abundant ACTR in understory, mixed with POMU. unique area: bluffs, Woodwardia fimbriata possibility. area also has spring and small wetland, approx 20 square meters with

Polygon Number 5
Survey Intensity 2
Observer DV
Date 8/30/06
Specific Location

Total Vegetation 6
Trees Total 5
Dominant Trees THPL, TSHE, ACMA3
emergent 2
maincanopy 5
subcanopy 2
Shrubs Total 2
Dominant Shrubs VAOV2, MANE2
> 1.5' tall 2
< 1.5' tall 1
Graminoids Total 1
Dominant Graminoids MESM
Graminoids Perennial 1
Graminoids Annual 0
Forbs Total 5
Dominant Forbs ACTR
Forbs Perennial 5
Forbs Annual 0
Ferns Total 2
Ferns Evergreen 2
Ferns Deciduous 0
Exotics Total 0
Exotics Perennial 0
Exotics Annual 0
Water
Rock Outcrop 0
Gravel 0
Bare Ground 0
Moss Lichen 5
Litter 95
Logging 3
Stand Age 2
Agriculture 0
Livestock 0
Development 3
Wildlife 2
Recreation Severity 3
Recreation Type 3
Hydrology 1

Exotic Species

Primary Exotic

Secondary Exotic

Noxious Exotic

Plant Associations

	Percent	Pattern	Rank
1. PSME-TSHE/VAOV2/POMU (Chappell	100	Matrix	2
2.	0		0
3	0		0
Notes:	Ferns: POMU.		

Polygon Number 6
Survey Intensity 1
Observer PM
Date 5/14/2006
Specific Location

Total Vegetation 6
Trees Total 5
Dominant Trees ALRU2, PSME
emergent 3
maincanopy 5
subcanopy 3
Shrubs Total 1
Dominant Shrubs VAOV2
> 1.5' tall 0
< 1.5' tall 1
Graminoids Total 3
Dominant Graminoids CADE9
Graminoids Perennial 3
Graminoids Annual 0
Forbs Total 5
Dominant Forbs ACTR, POMU
Forbs Perennial 5
Forbs Annual 1
Ferns Total 2
Ferns Evergreen 2
Ferns Deciduous 0
Exotics Total 1
Exotics Perennial 1
Exotics Annual 0
Water
Rock Outcrop 0
Gravel 0
Bare Ground 0
Moss Lichen 10
Litter 90
Logging 3
Stand Age 2
Agriculture 0
Livestock 0
Development 3
Wildlife 0
Recreation Severity 3
Recreation Type 3
Hydrology 1

Exotic Species

Primary Exotic
 ILAQ80
Secondary Exotic

Noxious Exotic

Plant Associations

	Percent	Pattern	Rank
1. ALRU2/ACTR-CADE9 (PBI)	90	Matrix	2
2. ALRU2/POMU (Chappell 2005)	10	Small	2
3	0		0

Notes:

Polygon Number 7
Survey Intensity 2
Observer DV
Date 8/30/06
Specific Location

Total Vegetation 6
Trees Total 5
Dominant Trees PSME
emergent 1
maincanopy 5
subcanopy 2
Shrubs Total 3
Dominant Shrubs VAOV2, MANE2
> 1.5' tall 3
< 1.5' tall 2
Graminoids Total 2
Dominant Graminoids
Graminoids Perennial 2
Graminoids Annual 0
Forbs Total 3
Dominant Forbs ACTR
Forbs Perennial 3
Forbs Annual 0
Ferns Total 2
Ferns Evergreen 2
Ferns Deciduous 0
Exotics Total 1
Exotics Perennial 1
Exotics Annual 0
Water
Rock Outcrop 0
Gravel 0
Bare Ground 0
Moss Lichen 15
Litter 85
Logging 3
Stand Age 2
Agriculture 0
Livestock 0
Development 3
Wildlife 3
Recreation Severity 3
Recreation Type 3
Hydrology 1

Exotic Species

Primary Exotic
 ILAQ80
Secondary Exotic

Noxious Exotic

Plant Associations

	Percent	Pattern	Rank
1. PSME-TSHE/VAOV2 (Chappell 2005)	100	Matrix	2
2.	0		0
3	0		0

Notes: Ferns: POMU. Apparently this area was once cleared for farming (150 y.a.?).

Polygon Number 7B
Survey Intensity 2
Observer DV
Date 8/30/06
Specific Location

Total Vegetation 6
Trees Total 6
Dominant Trees PSME, THPL, TSHE
emergent 2
maincanopy 6
subcanopy 2
Shrubs Total 2
Dominant Shrubs VAOV2
> 1.5' tall 2
< 1.5' tall 0
Graminoids Total 1
Dominant Graminoids MESM
Graminoids Perennial 1
Graminoids Annual 0
Forbs Total 1
Dominant Forbs ACTR
Forbs Perennial 1
Forbs Annual 0
Ferns Total 1
Ferns Evergreen 1
Ferns Deciduous 0
Exotics Total 0
Exotics Perennial 0
Exotics Annual 0
Water
Rock Outcrop 0
Gravel 0
Bare Ground 0
Moss Lichen 25
Litter 75
Logging 3
Stand Age 2
Agriculture 0
Livestock 0
Development 0
Wildlife 3
Recreation Severity 0
Recreation Type 0
Hydrology 1

Exotic Species

Primary Exotic

Secondary Exotic

Noxious Exotic

Plant Associations

	Percent	Pattern	Rank
1. PSME-TSHE/VAOV2/POMU (Chappell	100	Matrix	2
2.	0		0
3	0		0

Notes: Ferns: POMU.

Polygon Number 7C
Survey Intensity 1
Observer DV
Date 8/30/06
Specific Location

Total Vegetation 5
Trees Total 4
Dominant Trees ALRU2
emergent 0
maincanopy 4
subcanopy 2
Shrubs Total 0
Dominant Shrubs
> 1.5' tall 0
< 1.5' tall 0
Graminoids Total 5
Dominant Graminoids DAGL
Graminoids Perennial 5
Graminoids Annual 0
Forbs Total 2
Dominant Forbs OESA
Forbs Perennial 2
Forbs Annual 0
Ferns Total 3
Ferns Evergreen 3
Ferns Deciduous 0
Exotics Total 4
Exotics Perennial 4
Exotics Annual 0
Water
Rock Outcrop 0
Gravel 0
Bare Ground 5
Moss Lichen 5
Litter 90
Logging 3
Stand Age 2
Agriculture 0
Livestock 4
Development 0
Wildlife 3
Recreation Severity 0
Recreation Type 0
Hydrology 1

Exotic Species

Primary Exotic
 RARE3
Secondary Exotic
 DAGL
Noxious Exotic

Plant Associations

	Percent	Pattern	Rank
1. ALRU2/POMU (Chappell 2005)	100	Matrix	2
2.	0		0
3	0		0
Notes:	Ferns: POMU.		

Polygon Number 8
Survey Intensity 1
Observer PM
Date 5/14/2006
Specific Location

Total Vegetation 6
Trees Total 6
Dominant Trees ALRU2, PSME
emergent 4
maincanopy 5
subcanopy 3
Shrubs Total 2
Dominant Shrubs VAOV2
> 1.5' tall 2
< 1.5' tall 2
Graminoids Total 4
Dominant Graminoids CADE9
Graminoids Perennial 4
Graminoids Annual 0
Forbs Total 4
Dominant Forbs ACTR, POMU
Forbs Perennial 4
Forbs Annual 1
Ferns Total 2
Ferns Evergreen 2
Ferns Deciduous 0
Exotics Total 1
Exotics Perennial 1
Exotics Annual 0
Water
Rock Outcrop 0
Gravel 0
Bare Ground 0
Moss Lichen 25
Litter 75
Logging 3
Stand Age 2
Agriculture 0
Livestock 0
Development 3
Wildlife 0
Recreation Severity 3
Recreation Type 3
Hydrology 1

Exotic Species

Primary Exotic
 ILAQ80
Secondary Exotic

Noxious Exotic

Plant Associations

	Percent	Pattern	Rank
1. ALRU2/ACTR-CADE9 (PBI)	80	Matrix	2
2. ALRU2/POMU (Chappell 2005)	20	Small	2
3	0		0

Notes:

Polygon Number 9A
Survey Intensity 1
Observer PM
Date 5/13/2006
Specific Location

Total Vegetation 6
Trees Total 6
Dominant Trees PSME, TSHE, ACMA3
emergent 3
maincanopy 5
subcanopy 3
Shrubs Total 3
Dominant Shrubs VAOV2, GASH, MANE2
> 1.5' tall 3
< 1.5' tall 2
Graminoids Total 1
Dominant Graminoids
Graminoids Perennial 1
Graminoids Annual 0
Forbs Total 4
Dominant Forbs TRLA6, ACTR, NEPA, MOSI2, POMU
Forbs Perennial 4
Forbs Annual 0
Ferns Total 3
Ferns Evergreen 3
Ferns Deciduous 0
Exotics Total 1
Exotics Perennial 1
Exotics Annual 0
Water
Rock Outcrop 0
Gravel 0
Bare Ground 1
Moss Lichen 5
Litter 94
Logging 2
Stand Age 6
Agriculture 0
Livestock 0
Development 5
Wildlife 0
Recreation Severity 3
Recreation Type 3
Hydrology 1

Exotic Species

Primary Exotic
 ILAQ80
Secondary Exotic
 SEJA
Noxious Exotic

Plant Associations

	Percent	Pattern	Rank
1. PSME-TSHE/VAOV2/POMU (Chappell	80	Matrix	3
2. PSME-TSHE/MANE2/POMU (Chappell	20	Large	3
3	0		0

Notes:

Polygon Number 9B
Survey Intensity 1
Observer PM
Date 5/13/2006
Specific Location Slope near water with madrone

Total Vegetation 6
Trees Total 6
Dominant Trees PSME, ARME, ACMA3, ALRU2, THPL
emergent 3
maincanopy 5
subcanopy 3
Shrubs Total 3
Dominant Shrubs VAOV2, GASH, MANE2
> 1.5' tall 3
< 1.5' tall 3
Graminoids Total 1
Dominant Graminoids
Graminoids Perennial 1
Graminoids Annual 0
Forbs Total 3
Dominant Forbs ACTR, MOSI2, TRLA6, NEPA, POMU, PTAQ
Forbs Perennial 3
Forbs Annual 0
Ferns Total 3
Ferns Evergreen 3
Ferns Deciduous 1
Exotics Total 1
Exotics Perennial 1
Exotics Annual 0
Water
Rock Outcrop 0
Gravel 0
Bare Ground 0
Moss Lichen 30
Litter 70
Logging 2
Stand Age 6
Agriculture 0
Livestock 0
Development 0
Wildlife 0
Recreation Severity 3
Recreation Type 3
Hydrology 1

Exotic Species

Primary Exotic
 ILAQ80
Secondary Exotic
 SEJA
Noxious Exotic

Plant Associations

	Percent	Pattern	Rank
1. PSME-ARME/VAOV2 (Chappell 2005)	70	Matrix	3
2. PSME-ARME/GASH (Chappell 2005)	20	Small	3
3. PSME-TSHE/VAOV2/POMU (Chappell	10	Small	3

Notes:

Vegetation Polygon Data – Jarrell Cove State Park

Polygon Number 39
Survey Intensity 1
Observer DV
Date 8/28/06
Specific Location Tidal strand, mostly saltwater

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 0
Dominant Graminoids
 Graminoids Perennial 0
 Graminoids Annual 0
Forbs Total 2
Dominant Forbs SAVI, JACA4
 Forbs Perennial 2
 Forbs Annual 0
Ferns Total 0

Exotic Species

Ferns Evergreen	0		
Ferns Deciduous	0	Primary Exotic	
Exotics Total	0		
Exotics Perennial	0	Secondary Exotic	
Exotics Annual	0		
Water		Noxious Exotic	
Rock Outcrop	0		
Gravel	95		
Bare Ground	0		
Moss Lichen	0		
Litter	5		
Logging	0		
Stand Age	0		
Agriculture	0		
Livestock	0		
Development	3		
Wildlife	7		
Recreation Severity	3		
Recreation Type	3		
Hydrology	1		

Plant Associations

	Percent	Pattern	Rank
1. saltwater	99	Matrix	3
2. SAVI community (Kunze and Cornelius)	1	Small	3
3.	0		0

Notes:

Polygon Number 41
Survey Intensity
Observer
Date
Specific Location saltwater

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. saltwater	100	Matrix	0
2.	0		0
3.	0		0

Notes:

Polygon Number 42
Survey Intensity 2
Observer SH
Date 5/16/2006
Specific Location Center (campground)

Total Vegetation 5
Trees Total 3
Dominant Trees PSME, 6 Malus sp.
emergent 0
maincanopy 3
subcanopy 0
Shrubs Total 2
Dominant Shrubs VAOV2
> 1.5' tall 2
< 1.5' tall 0
Graminoids Total 5
Dominant Graminoids lawn grass
Graminoids Perennial 5
Graminoids Annual 0
Forbs Total 3
Dominant Forbs BEPE2, POMU
Forbs Perennial 3
Forbs Annual 0
Ferns Total 1

Exotic Species

Ferns Evergreen 1
Ferns Deciduous 0
Exotics Total 3
Exotics Perennial 3
Exotics Annual 0
Water
Rock Outcrop 0
Gravel 0
Bare Ground 20
Moss Lichen 2
Litter 78
Logging 2
Stand Age 1,2
Agriculture 0
Livestock 0
Development 6
Wildlife 0
Recreation Severity 3
Recreation Type 3
Hydrology 1

Primary Exotic
 BEPE2, ILAQ80
Secondary Exotic

Noxious Exotic

Plant Associations

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

Notes: Campground, lots of lawn grass (few young PSME).

Polygon Number 43
Survey Intensity 1
Observer SH
Date 5/16/2006
Specific Location NE

Total Vegetation 6
Trees Total 5
Dominant Trees PSME, ACMA3, ARME, TSHE (only 1 TSHE found)
emergent 1
maincanopy 5
subcanopy 1
Shrubs Total 6
Dominant Shrubs VAOV2, GASH, HODI, LOCI3, RUUR, RHPU, ARCO3
> 1.5' tall 6
< 1.5' tall 1
Graminoids Total 1
Dominant Graminoids
Graminoids Perennial 1
Graminoids Annual 0
Forbs Total 1
Dominant Forbs TRLA6, PTAQ, POMU
Forbs Perennial 1
Forbs Annual 0
Ferns Total 3

Exotic Species

Ferns Evergreen 3
Ferns Deciduous 3
Exotics Total 0
Exotics Perennial 0
Exotics Annual 0
Water
Rock Outcrop 0
Gravel 0
Bare Ground 0
Moss Lichen 2
Litter 98
Logging 3
Stand Age 2
Agriculture 0
Livestock 0
Development 0
Wildlife 0
Recreation Severity 3
Recreation Type 3
Hydrology 1

Primary Exotic
Secondary Exotic
Noxious Exotic

Plant Associations

	Percent	Pattern	Rank
1. PSME-TSHE/VAOV2 (Chappell 2005)	100	Matrix	1
2.	0		0
3.	0		0

Notes: Even-age PSME stand (young).

Polygon Number 44A
Survey Intensity 2
Observer Phyllis
Date 5/16/2006
Specific Location

Total Vegetation 6
Trees Total 5
Dominant Trees THPL
emergent 2
maincanopy 5
subcanopy 2
Shrubs Total 4
Dominant Shrubs GASH, VAOV2
> 1.5' tall 4
< 1.5' tall 1
Graminoids Total 1
Dominant Graminoids DECA18
Graminoids Perennial 1
Graminoids Annual 0
Forbs Total 3
Dominant Forbs COCA13, MADI, POMU, PTAQ
Forbs Perennial 3
Forbs Annual 1
Ferns Total 4

Exotic Species

Ferns Evergreen 4
Ferns Deciduous 2
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 3
Wildlife 3
Recreation Severity 2
Recreation Type 3
Hydrology 2

Primary Exotic
Secondary Exotic
Noxious Exotic

Plant Associations

	Percent	Pattern	Rank
1. THPL-ABGR/POMU (Chappell 2005)	100	Matrix	2
2.	0		0
3.	0		0

Notes: Some large 30" dbh cedar

Polygon Number 44B
Survey Intensity 1
Observer SH
Date 5/16/2006
Specific Location NE

Total Vegetation 6
Trees Total 5
Dominant Trees PSME, ALRU2, TSHE, THPL, ACMA3
emergent 1
maincanopy 5
subcanopy 2
Shrubs Total 6
Dominant Shrubs VAOV2, GASH, HODI, MANE2
> 1.5' tall 6
< 1.5' tall 1
Graminoids Total 2
Dominant Graminoids JUEF
Graminoids Perennial 2
Graminoids Annual 0
Forbs Total 2
Dominant Forbs TRLA6, GAAP2, ACTR, PTAQ, POMU
Forbs Perennial 2
Forbs Annual 0
Ferns Total 3

Exotic Species

Ferns Evergreen 3
Ferns Deciduous 3
Exotics Total 2
Exotics Perennial 2
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 1

Primary Exotic
 GAAP2, ILAQ80
Secondary Exotic

Noxious Exotic

Plant Associations

	Percent	Pattern	Rank
1. PSME-TSHE/VAOV2/POMU (Chappell)	100	Matrix	2
2.	0		0
3.	0		0

Notes: Even-aged PSME stand (young). One mature PSME in stand with two TSHE growing below.

Polygon Number 44C
Survey Intensity 2
Observer Phyllis
Date 5/16/2006
Specific Location

Total Vegetation 6
Trees Total 5
Dominant Trees THPL, PSME
emergent 3
maincanopy 5
subcanopy 2
Shrubs Total 5
Dominant Shrubs VAOV2, GASH
> 1.5' tall 5
< 1.5' tall 1
Graminoids Total 2
Dominant Graminoids
Graminoids Perennial 2
Graminoids Annual 0
Forbs Total 1
Dominant Forbs
Forbs Perennial 1
Forbs Annual 0
Ferns Total 3

Exotic Species

Ferns Evergreen 3
Ferns Deciduous 0
ExoticsTotal 1
Exotics Perennial 0
Exotics Annual 0
Water
Rock Outcrop 0
Gravel 0
Bare Ground 0
Moss Lichen 10
Litter 90
Logging 2
Stand Age 2
Agriculture 0
Livestock 0
Development 0
Wildlife 3
Recreation Severity 3
Recreation Type 3
Hydrology 1

Primary Exotic

Secondary Exotic

Noxious Exotic

Plant Associations

	Percent	Pattern	Rank
1. PSME-THPL/GASH-MANE2/POMU	100	Matrix	2
2.	0		0
3.	0		0

Notes: There are some large 20" dbh Cedar and Doug Fir.

Polygon Number 44D
Survey Intensity 1
Observer PM, Phyllis
Date 5/16/2006
Specific Location Coastal bluff part of 44.

Total Vegetation 6
Trees Total 6
Dominant Trees PSME, THPL, ARME, ACMA3
emergent 3
maincanopy 5
subcanopy 3
Shrubs Total 5
Dominant Shrubs VAOV2, GASH, MANE2, VAPA
> 1.5' tall 5
< 1.5' tall 3
Graminoids Total 1
Dominant Graminoids
Graminoids Perennial 1
Graminoids Annual 0
Forbs Total 2
Dominant Forbs POMU, PTAQ
Forbs Perennial 2
Forbs Annual 0
Ferns Total 2

Exotic Species

Ferns Evergreen 2
Ferns Deciduous 1
Exotics Total 0
Exotics Perennial 0
Exotics Annual 0
Water
Rock Outcrop 1
Gravel 1
Bare Ground 2
Moss Lichen 1
Litter 95
Logging 5
Stand Age 3
Agriculture 0
Livestock 0
Development 3, TRAIL AT TOP
Wildlife 3
Recreation Severity 3
Recreation Type 3
Hydrology 1

Primary Exotic
Secondary Exotic
Noxious Exotic

Plant Associations

	Percent	Pattern	Rank
1. PSME-TSHE/VAOV2/POMU (Chappell	50	Matrix	2
2. PSME-ARME/VAOV2 (Chappell 2005)	30	Small	2
3. PSME-ARME/GASH (Chappell 2005)	20	Small	2

Notes:

Polygon Number 45
Survey Intensity 1
Observer SH
Date 5/16/2006
Specific Location NW (near water)

Total Vegetation 6
Trees Total 6
Dominant Trees ACMA3, ALRU2, ARME, PSME
emergent 2
maincanopy 5
subcanopy 3
Shrubs Total 5
Dominant Shrubs VAOV2, GASH, MANE2
> 1.5' tall 4
< 1.5' tall 3
Graminoids Total 1
Dominant Graminoids
Graminoids Perennial 1
Graminoids Annual 0
Forbs Total 3
Dominant Forbs Equisetum sp., BEPE2, POMU, ADPE, ATFI
Forbs Perennial 3
Forbs Annual 1
Ferns Total 3

Exotic Species

Ferns Evergreen 2
Ferns Deciduous 1
Exotics Total 1
Exotics Perennial 1
Exotics Annual 0
Water
Rock Outcrop 0
Gravel 2
Bare Ground 2
Moss Lichen 2
Litter 94
Logging 5
Stand Age 3
Agriculture 0
Livestock 0
Development 3
Wildlife 3
Recreation Severity 3
Recreation Type 3
Hydrology 1

Primary Exotic

ILAQ80

Secondary Exotic

Noxious Exotic

Plant Associations

	Percent	Pattern	Rank
1. PSME-TSHE/VAOV2/POMU (Chappell)	90	Matrix	2
2. PSME-ARME/GASH (Chappell 2005)	10	Small	2
3.	0		0

Notes: WATER COMING DOWN SLOPE

Polygon Number 46
Survey Intensity 1
Observer PM
Date 5/16/2006
Specific Location Coastal bluff part of 46

Total Vegetation 6
Trees Total 6
Dominant Trees PSME, THPL, ARME, ACMA3
emergent 2
maincanopy 5
subcanopy 3
Shrubs Total 5
Dominant Shrubs VOAV2, MANE2, GASH
> 1.5' tall 5
< 1.5' tall 3
Graminoids Total 1
Dominant Graminoids
Graminoids Perennial 1
Graminoids Annual 0
Forbs Total 2
Dominant Forbs POMU, PTAQ
Forbs Perennial 2
Forbs Annual 0
Ferns Total 3

Exotic Species

Ferns Evergreen 2
Ferns Deciduous 1
ExoticsTotal 0
Exotics Perennial 0
Exotics Annual 0
Water
Rock Outcrop 1
Gravel 1
Bare Ground 2
Moss Lichen 1
Litter 95
Logging 0
Stand Age 3
Agriculture 0
Livestock 0
Development 3 Trail at top of
Wildlife 0
Recreation Severity 3
Recreation Type 3
Hydrology 1

Primary Exotic

Secondary Exotic

Noxious Exotic

Plant Associations

	Percent	Pattern	Rank
1. PSME-TSHE/VAOV2/POMU (Chappell	60	Matrix	2
2. PSME-ARME/VAOV2 (Chappell 2005)	30	Small	2
3. PSME-ARME/GASH (Chappell 2005)	10	Small	2

Notes:

Polygon Number 46
Survey Intensity 2
Observer Phyllis
Date 5/16/2006
Specific Location

Total Vegetation 5
Trees Total 5
Dominant Trees THPL, PSME
emergent 2
maincanopy 5
subcanopy 3
Shrubs Total 5
Dominant Shrubs VAOV2, MANE2, GASH
> 1.5' tall 5
< 1.5' tall 1
Graminoids Total 1
Dominant Graminoids
Graminoids Perennial 1
Graminoids Annual 0
Forbs Total 2
Dominant Forbs
Forbs Perennial 2
Forbs Annual 1
Ferns Total 3

Exotic Species

Ferns Evergreen 3
Ferns Deciduous 1
Exotics Total 1
Exotics Perennial 1
Exotics Annual 0
Water
Rock Outcrop 0
Gravel 5
Bare Ground 2
Moss Lichen 3
Litter 90
Logging 2
Stand Age 2
Agriculture 0
Livestock 0
Development 6
Wildlife 3
Recreation Severity 2
Recreation Type 3
Hydrology 2

Primary Exotic
 RUDI2
Secondary Exotic

Noxious Exotic

Plant Associations

	Percent	Pattern	Rank
1. PSME-THPL/GASH-MANE2/POMU	100	Matrix	2
2.	0		0
3.	0		0

Notes: Campsites and trails, dock, a drain pipe leads to the sound.

Polygon Number 47
 Survey Intensity
 Observer
 Date
 Specific Location saltwater

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. saltwater	100	Matrix	0
2.	0		0
3.	0		0

Notes:

Polygon Number 48
 Survey Intensity
 Observer
 Date
 Specific Location saltwater

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. saltwater	100	Matrix	0
2.	0		0
3.	0		0

Notes:

Vegetation Polygon Data – McMicken Island State Park

Polygon Number 19
Survey Intensity 1
Observer SH
Date 5/12/2006
Specific Location Forested portion of park is one polygon.

Total Vegetation 6
Trees Total 6
Dominant Trees PSME, THPL, ARME, TSHE, ALRU2
emergent 1
maincanopy 6
subcanopy 4
Shrubs Total 6
Dominant Shrubs VAOV2, GASH, SASC, LOCI3, VAPA, ROGY
> 1.5' tall 6
< 1.5' tall 2
Graminoids Total 1
Dominant Graminoids
Graminoids Perennial 1
Graminoids Annual 0
Forbs Total 1
Dominant Forbs POMU, PTAQ
Forbs Perennial 1
Forbs Annual 0
Ferns Total 3

Exotic Species

Ferns Evergreen 2
Ferns Deciduous 2
Exotics Total 0
Exotics Perennial 0
Exotics Annual 0
Water
Rock Outcrop 0
Gravel 0
Bare Ground 3
Moss Lichen 5
Litter 92
Logging 2
Stand Age 3
Agriculture 0
Livestock 0
Development 3
Wildlife 0
Recreation Severity 3
Recreation Type 3
Hydrology 1

Primary Exotic
Secondary Exotic
Noxious Exotic

Plant Associations

	Percent	Pattern	Rank
1. PSME-TSHE/VAOV2/POMU (Chappell)	100	Matrix	2
2.	0		0
3.	0		0

Notes: ALRU2 On NE tip of island; Patch on hillside overlooking water. Some large PSME. TSHE in center of island. Fair number of THPL in sub-canopy. ARME along edges of island,

Polygon Number 19B
Survey Intensity 1
Observer DV
Date 8/29/06
Specific Location NE tip of island.

Total Vegetation 6
Trees Total 5
Dominant Trees ALRU2, THPL
emergent 0
maincanopy 5
subcanopy 1
Shrubs Total 3
Dominant Shrubs RUDI2
> 1.5' tall 3
< 1.5' tall 2
Graminoids Total 1
Dominant Graminoids
Graminoids Perennial 1
Graminoids Annual 0
Forbs Total 0
Dominant Forbs
Forbs Perennial 0
Forbs Annual 0
Ferns Total 0

Exotic Species

Ferns Evergreen 0
Ferns Deciduous 0
Exotics Total 3
Exotics Perennial 3
Exotics Annual 0
Water
Rock Outcrop 0
Gravel 0
Bare Ground 15
Moss Lichen 10
Litter 75
Logging 0
Stand Age 1
Agriculture 0
Livestock 0
Development 0
Wildlife 0
Recreation Severity 3
Recreation Type 3
Hydrology 1

Primary Exotic

RUDI2

Secondary Exotic

Noxious Exotic

Plant Associations

	Percent	Pattern	Rank
1. ALRU2/POMU (Chappell 2005)	100	Matrix	2
2.	0		0
3.	0		0

Notes: Recent landslide into sea. Bare ground colonized by alder.

Polygon Number 19D
Survey Intensity 1
Observer SH
Date 5/12/2006
Specific Location homestead buildings and forested area

Total Vegetation 4
Trees Total 4
Dominant Trees PSME, ARME, ALRU2
emergent 1
maincanopy 4
subcanopy 1
Shrubs Total 2
Dominant Shrubs VAOV2, GASH, VAPA, ROGY
> 1.5' tall 2
< 1.5' tall 2
Graminoids Total 4
Dominant Graminoids
Graminoids Perennial 4
Graminoids Annual 0
Forbs Total 1
Dominant Forbs POMU, PTAQ
Forbs Perennial 1
Forbs Annual 0
Ferns Total 2

Exotic Species

Ferns Evergreen 2
Ferns Deciduous 2
ExoticsTotal 0
Exotics Perennial 0
Exotics Annual 0
Water
Rock Outcrop 0
Gravel 2
Bare Ground 5
Moss Lichen 5
Litter 88
Logging 2
Stand Age 3
Agriculture 0
Livestock 0
Development 3
Wildlife 0
Recreation Severity 3
Recreation Type 3
Hydrology 1

Primary Exotic
Secondary Exotic
Noxious Exotic

Plant Associations

	Percent	Pattern	Rank
1. PSME-TSHE/VAOV2/POMU (Chappell)	50	Matrix	1
2. developed	50	Large	1
3.	0		0

Notes: homestead area and buildings here

Polygon Number 23
Survey Intensity 1
Observer PM
Date 5/12/2006
Specific Location beach and water

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 80
Rock Outcrop 0
Gravel 20
Bare Ground 0
Moss Lichen 0
Litter 0
Logging
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. beach	80	Matrix	3
2. saltwater	20	Large	3
3.	0		0

Notes:

Polygon Number 23A
Survey Intensity 1
Observer PM
Date 5/12/2006
Specific Location Tidal area, vegetated on south end of island.

Total Vegetation 6
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 6
Dominant Graminoids
Graminoids Perennial 6
Graminoids Annual 0
Forbs Total 2
Dominant Forbs SAVI, TRMA20
Forbs Perennial 2
Forbs Annual 0
Ferns Total 0

Exotic Species

Ferns Evergreen 0
Ferns Deciduous 0
ExoticsTotal 0
Exotics Perennial 0
Exotics Annual 0
Water
Rock Outcrop 0
Gravel 3
Bare Ground 2
Moss Lichen 0
Litter 95
Logging 0
Stand Age 0
Agriculture 0
Livestock 0
Development 0
Wildlife 0
Recreation Severity 3
Recreation Type 3
Hydrology 1

Primary Exotic

Secondary Exotic

Noxious Exotic

Plant Associations

	Percent	Pattern	Rank
1. AGAL3-JUBA-POPA23 (Kunze and	90	Matrix	2
2. SAVI community (Kunze and Cornelius	10	Small	2
3.	0		0

Notes:

Polygon Number 23B
Survey Intensity 1
Observer PM
Date 5/12/2006
Specific Location Shrubby patch NW of saltmarsh area on SW part of island.

Total Vegetation 6
Trees Total 3
Dominant Trees QUGA4, FRLA
emergent 0
maincanopy 3
subcanopy 2
Shrubs Total 5
Dominant Shrubs RONU
> 1.5' tall 5
< 1.5' tall 3
Graminoids Total 3
Dominant Graminoids
Graminoids Perennial 3
Graminoids Annual 0
Forbs Total 2
Dominant Forbs
Forbs Perennial 2
Forbs Annual 1
Ferns Total 1

Exotic Species

Ferns Evergreen 0
Ferns Deciduous 1
ExoticsTotal 2
Exotics Perennial 1
Exotics Annual 1
Water
Rock Outcrop 0
Gravel 0
Bare Ground 0
Moss Lichen 1
Litter 99
Logging 0
Stand Age 2
Agriculture 6
Livestock 0
Development 0
Wildlife 0
Recreation Severity 3
Recreation Type 3
Hydrology 1

Primary Exotic

Secondary Exotic

Noxious Exotic

Plant Associations

	Percent	Pattern	Rank
1. RONU (PBI)	100	Matrix	1
2.	0		0
3.	0		0

Notes:

Polygon Number 23C
Survey Intensity 1
Observer PM
Date 5/12/2006
Specific Location Grassy field near homestead on SW side of island.

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

Exotic Species

Ferns Evergreen 0
Ferns Deciduous 0
Exotics Total 0
Exotics Perennial 0
Exotics Annual 0
Water
Rock Outcrop 0
Gravel 0
Bare Ground 1
Moss Lichen 2
Litter 97
Logging 3
Stand Age 0
Agriculture 6
Livestock 4
Development 6, trails,
Wildlife 0
Recreation Severity 3
Recreation Type 3
Hydrology 1

Primary Exotic

Secondary Exotic

Noxious Exotic

Plant Associations

	Percent	Pattern	Rank
1. disturbed wet meadow	70	Matrix	1
2. developed	30	Large	1
3.	0		0

Notes: Grassy field that has been mowed regularly-has a good number of both native and exotic plants.

Vegetation Polygon Data – Squaxin Island State Park

Polygon Number 10
Survey Intensity 1
Observer DV
Date 8/30/06
Specific Location TIDAL AREA - NOT IN PARK PROPERTY

Total Vegetation 6
Trees Total 2
Dominant Trees QUGA4, ARME, PSME
emergent 0
maincanopy 2
subcanopy 0
Shrubs Total 2
Dominant Shrubs GASH, VAOC
> 1.5' tall 2
< 1.5' tall 0
Graminoids Total 5
Dominant Graminoids JUTE, DISP
Graminoids Perennial 5
Graminoids Annual 0
Forbs Total 4
Dominant Forbs ATPA4, GRIN, JACA4, SAVI
Forbs Perennial 4
Forbs Annual 0
Ferns Total 0

Exotic Species

Ferns Evergreen	0		
Ferns Deciduous	0	Primary Exotic	
Exotics Total	0		
Exotics Perennial	0	Secondary Exotic	
Exotics Annual	0		
Water		Noxious Exotic	
Rock Outcrop	0		
Gravel	10		
Bare Ground	0		
Moss Lichen	0		
Litter	90		
Logging	0		
Stand Age	0		
Agriculture	0		
Livestock	0		
Development	0		
Wildlife	0		
Recreation Severity	0		
Recreation Type	0		
Hydrology	1		

Plant Associations

	Percent	Pattern	Rank
1. SAVI-JACA4-DISP-TRMA20 (Kunze and	100	Matrix	2
2.	0		0
3.	0		0

Notes: Long high mound at water's edge is deep shell midden.

Polygon Number 11
Survey Intensity 1
Observer DV
Date 8/30/06
Specific Location

Total Vegetation 6
Trees Total 1
Dominant Trees ALRU2
emergent 0
maincanopy 1
subcanopy 0
Shrubs Total 2
Dominant Shrubs ILAQ80, VAOV2, RUUR
> 1.5' tall 1
< 1.5' tall 2
Graminoids Total 6
Dominant Graminoids FEOV, HOLA
Graminoids Perennial 6
Graminoids Annual 0
Forbs Total 2
Dominant Forbs HYRA3
Forbs Perennial 2
Forbs Annual 0
Ferns Total 0

Exotic Species

Ferns Evergreen 0
Ferns Deciduous 0
Exotics Total 5
Exotics Perennial 5
Exotics Annual 0
Water
Rock Outcrop 0
Gravel 0
Bare Ground 0
Moss Lichen 0
Litter 100
Logging 3
Stand Age 0
Agriculture 0
Livestock 4
Development 5
Wildlife 3
Recreation Severity 3
Recreation Type 3
Hydrology 1

Primary Exotic
 FEAR3
Secondary Exotic
 HYRA3, HOLA
Noxious Exotic
 ILAQ80

Plant Associations

	Percent	Pattern	Rank
1. DISTURBED FIELD	100	Matrix	1
2.	0		0
3.	0		0

Notes:

Polygon Number 12
Survey Intensity 1
Observer DV
Date 8/30/06
Specific Location

Total Vegetation 6
Trees Total 2
Dominant Trees ALRU2, PSME
emergent 0
maincanopy 2
subcanopy 0
Shrubs Total 0
Dominant Shrubs
> 1.5' tall 0
< 1.5' tall 0
Graminoids Total 5
Dominant Graminoids FEAR3, HOLA
Graminoids Perennial 5
Graminoids Annual 0
Forbs Total 3
Dominant Forbs DACA6, HYRA3, PRVU, SEJA
Forbs Perennial 3
Forbs Annual 0
Ferns Total 2

Exotic Species

Ferns Evergreen	0	Primary Exotic
Ferns Deciduous	2	DACA6
Exotics Total	5	Secondary Exotic
Exotics Perennial	5	HOLA
Exotics Annual	0	Noxious Exotic
Water		FEAR3
Rock Outcrop	0	
Gravel	0	
Bare Ground	0	
Moss Lichen	0	
Litter	100	
Logging	3	
Stand Age	0	
Agriculture	0	
Livestock	4	
Development	4	
Wildlife	3	
Recreation Severity	3	
Recreation Type	3	
Hydrology	1	

Plant Associations

	Percent	Pattern	Rank
1. DISTURBED FIELD	100	Matrix	1
2.	0		0
3.	0		0

Notes: 60% FEAR3, HOLA, SEJA, DACA6. Ferns: PTAQ.

Polygon Number 13
Survey Intensity 1
Observer SH
Date 5/13/2006
Specific Location W

Total Vegetation 6
Trees Total 6
Dominant Trees THPL, ACMA3, ALRU2, PSME, TSHE, ABGR
emergent 1
maincanopy 6
subcanopy 2
Shrubs Total 4
Dominant Shrubs VAOV2, COCO6, VAPA, MANE2, GASH
> 1.5' tall 4
< 1.5' tall 2
Graminoids Total 2
Dominant Graminoids
Graminoids Perennial 2
Graminoids Annual 0
Forbs Total 4
Dominant Forbs ACTR, SMRA
Forbs Perennial 4
Forbs Annual 1
Ferns Total 5

Exotic Species

Ferns Evergreen 5
Ferns Deciduous 2
Exotics Total 1
Exotics Perennial 1
Exotics Annual 0
Water
Rock Outcrop 0
Gravel 2
Bare Ground 1
Moss Lichen 7
Litter 90
Logging 3
Stand Age 2
Agriculture 0
Livestock 0
Development 0
Wildlife 0
Recreation Severity 3
Recreation Type 0
Hydrology 1

Primary Exotic
 ILAQ80
Secondary Exotic

Noxious Exotic

Plant Associations

	Percent	Pattern	Rank
1. THPL-ABGR/POMU (Chappell 2005)	60	Small	2
2. ALRU2/POMU (Chappell 2005)	40	Small	2
3.	0		0

Notes: Some ABGR, few TSHE, many THPL. Island is off limits to rec users.

Polygon Number 14
Survey Intensity 1
Observer SH
Date 5/13/2006
Specific Location SE

Total Vegetation 6
Trees Total 5
Dominant Trees ALRU2, PSME
emergent 1
maincanopy 5
subcanopy 2
Shrubs Total 6
Dominant Shrubs VAOV2, GASH, RHPU, VAPA
> 1.5' tall 6
< 1.5' tall 2
Graminoids Total 1
Dominant Graminoids
Graminoids Perennial 1
Graminoids Annual 0
Forbs Total 3
Dominant Forbs ACTR, URDI
Forbs Perennial 3
Forbs Annual 1
Ferns Total 4

Exotic Species

Ferns Evergreen 4
Ferns Deciduous 2
Exotics Total 1
Exotics Perennial 1
Exotics Annual 0
Water
Rock Outcrop 0
Gravel 0
Bare Ground 0
Moss Lichen 7
Litter 93
Logging 3
Stand Age 2
Agriculture 0
Livestock 0
Development 0
Wildlife 0
Recreation Severity 3
Recreation Type 0
Hydrology 1

Primary Exotic
 ILAQ80
Secondary Exotic

Noxious Exotic

Plant Associations

	Percent	Pattern	Rank
1. ALRU2/POMU (Chappell 2005)	70	Matrix	2
2. PSME-TSHE/VAOV2/POMU (Chappell	30	Small	2
3.	0		0

Notes:

Polygon Number 15
Survey Intensity 1
Observer SH
Date 5/13/2006
Specific Location Center of property

Total Vegetation 6
Trees Total 5
Dominant Trees ALRU2, PSME, THPL, ACMA3, ABGR, TSHE
emergent 1
maincanopy 5
subcanopy 2
Shrubs Total 5
Dominant Shrubs VAOV2 GASH, HODI
> 1.5' tall 5
< 1.5' tall 2
Graminoids Total 2
Dominant Graminoids
Graminoids Perennial 2
Graminoids Annual 0
Forbs Total 3
Dominant Forbs ACTR, URDI
Forbs Perennial 3
Forbs Annual 1
Ferns Total 5

Exotic Species

Ferns Evergreen 5
Ferns Deciduous 2
Exotics Total 1
Exotics Perennial 1
Exotics Annual 0
Water
Rock Outcrop 0
Gravel 0
Bare Ground 0
Moss Lichen 7
Litter 93
Logging 3
Stand Age 2
Agriculture 0
Livestock 0
Development 0
Wildlife 0
Recreation Severity 3
Recreation Type 0
Hydrology 1

Primary Exotic
 ILAQ80
Secondary Exotic

Noxious Exotic

Plant Associations

	Percent	Pattern	Rank
1. ALRU2/POMU (Chappell 2005)	60	Matrix	2
2. PSME-TSHE/VAOV2/POMU (Chappell)	40	Small	2
3.	0		0

Notes: ACMA3, THPL not seen here. Small stream is running through polygon (N to S).