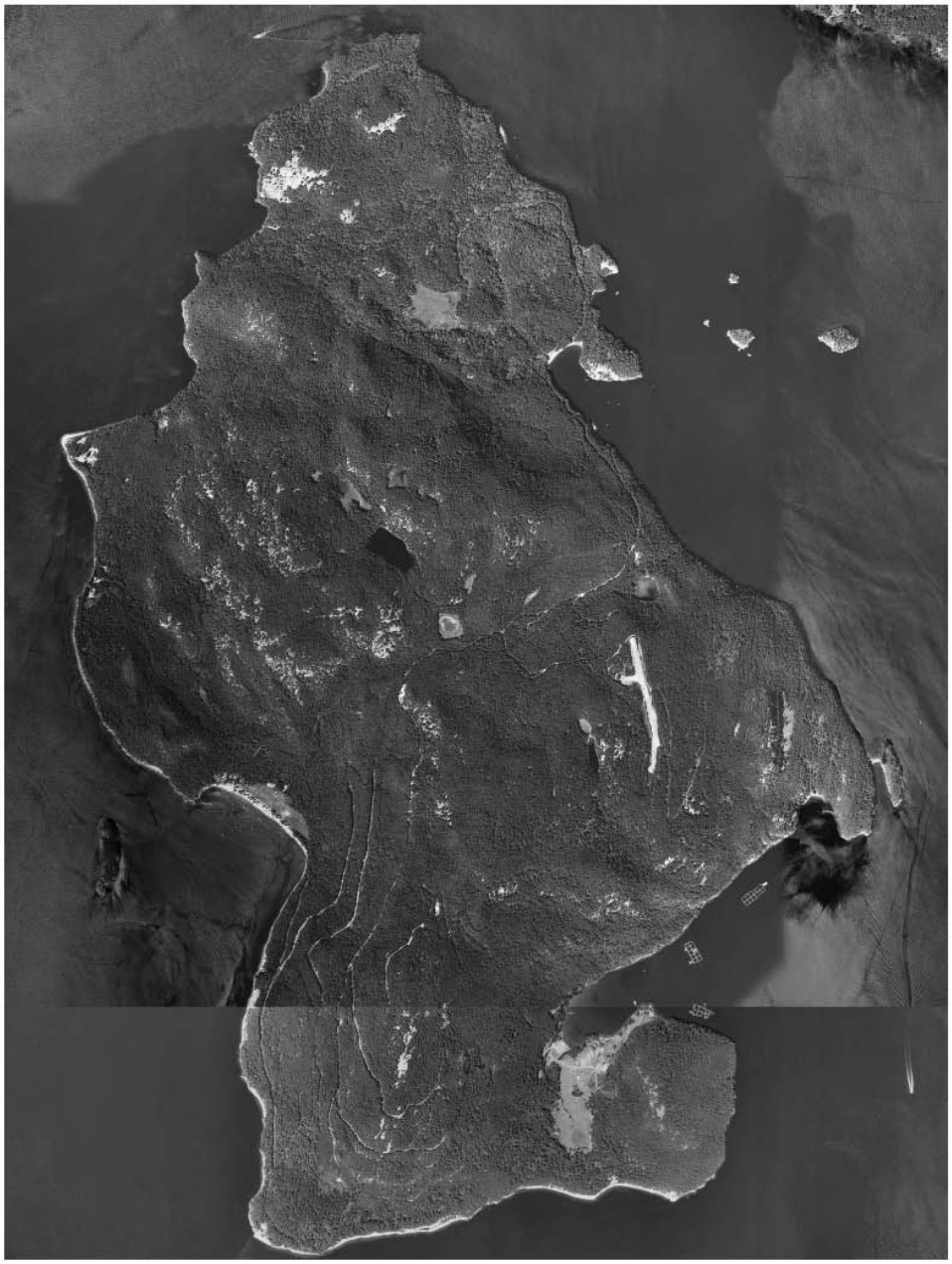
FINAL DRAFT
Cypress Island
Comprehensive Management Plan
November 2006



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NATURAL RESOURCES

FINAL DRAFT

Cypress Island
Comprehensive Management Plan

November 2006

Cypress Island Natural Resources Conservation Area

Cypress Island Aquatic Reserve

WASHINGTON STATE DEPARTMENT OF
Natural Resources
Doug Sutherland - Commissioner of Public Lands

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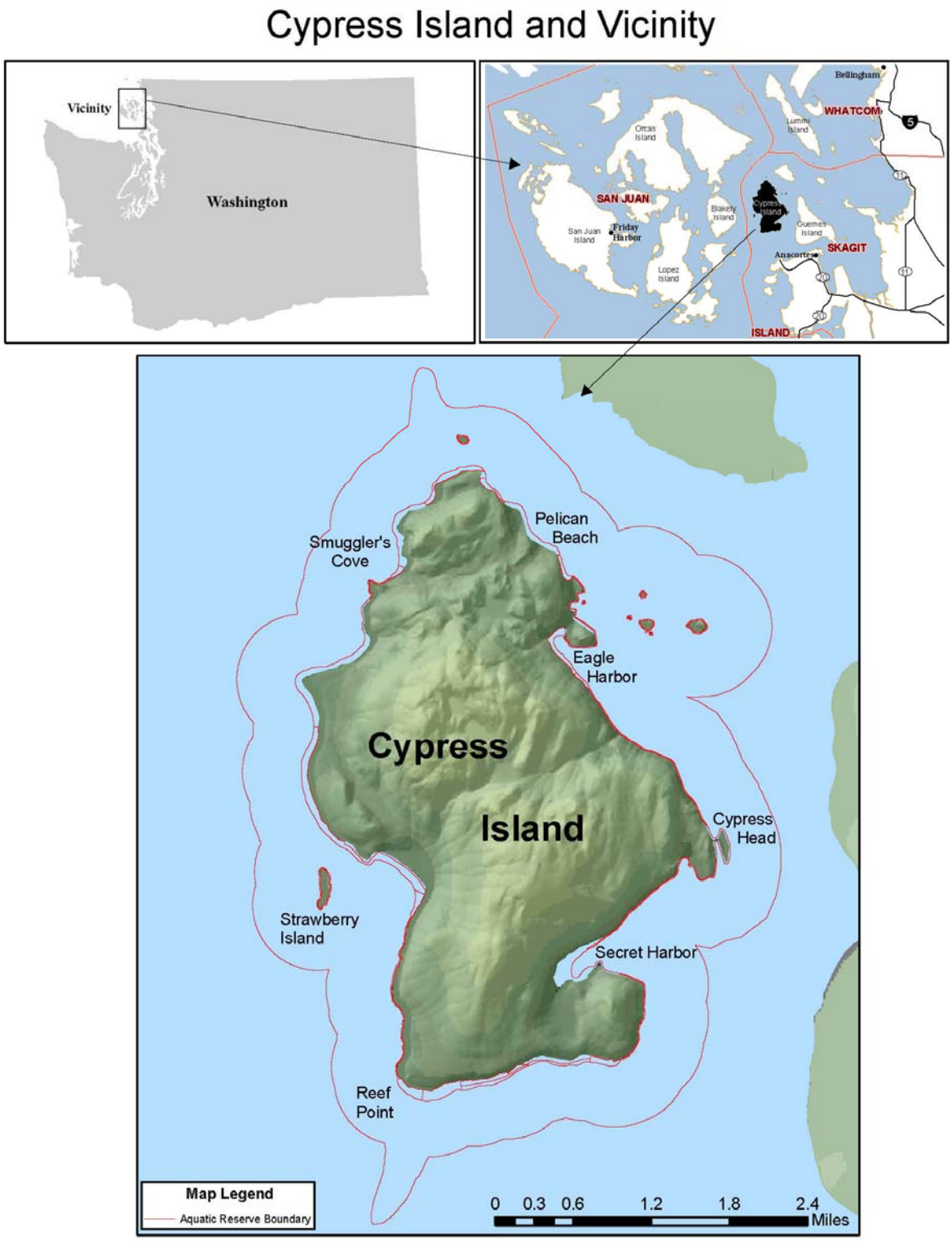
Acronyms

DAHP	Department of Archaeology and Historic Preservation
DNR	Washington State Department of Natural Resources
DOE	Washington State Department of Ecology
IAC	Interagency Committee for Outdoor Recreation
NAP	Natural Area Preserve
NHP	Natural Heritage Program
NRCA	Natural Resources Conservation Area
RCW	Revised Code of Washington
SEPA	State Environmental Policy Act
TES	Threatened, Endangered and Sensitive species
WAC	Washington Administrative Code
WDFW	Washington State Department of Fish and Wildlife

Figure 1: Cypress Island and Vicinity
For a color version of this figure see www.dnr.wa.gov/htdocs/aqr/reserves/home



1. Executive Summary

Cypress Island (Figure 1) is a unique mosaic of state-owned uplands, tidelands, and bedlands, now protected by the Washington State Department of Natural Resources for the primary purpose of conservation. The Cypress Island Natural Resources Conservation Area (NRCA), Natural Area Preserve (NAP), and Aquatic Reserve are to be managed for the recovery and preservation of natural ecological systems. Low-impact public use and environmental education opportunities are provided within the NRCA and the Aquatic Reserve, but only where such uses do not adversely affect the resource values the area is intended to protect.

In accordance with the Natural Area Preserves Act of 1972, upland parcels on Cypress Island were acquired by the state and designated as the Cypress Highlands Natural Area Preserve in 1975 and 1979. (Appendix B)

In 1987, the Washington State Legislature created the Natural Resources Conservation Act, and state-owned trust lands on Cypress Island were designated as one of the first Natural Resources Conservation Areas (NRCA). At this time, additional acreage was added to the existing NAP. This at last fulfilled the vision for the conservation of the island and surrounding waters that many people had shared—including the Commissioner of Public Lands, state legislators, island residents, conservationists and recreation visitors. The Department of Natural Resources was selected as the agency to manage these lands to protect ecological systems while providing low-impact use opportunities to the public in the NRCA.

The DNR adopted the “Final Environmental Impact Statement Aquatic Reserves Program Guidance” in 2002. The Cypress Island site was established as an Aquatic Reserve based on the process and criteria described in the Program Guidance.

The current management plan is the result of combined planning efforts to update the Cypress Island Natural Resources Conservation Area Management Plan (June 1996) and to develop a Cypress Island Aquatic Reserve Management Plan.

The Cypress Island NRCA and Aquatic Reserve will be managed for the protection of the island’s outstanding terrestrial and marine

ecological systems, scenic value, cultural resources and habitat for Threatened, Endangered, and Sensitive species.

The DNR operations at Cypress Island will emphasize restoration and maintenance of the island's forest, grassland, wetland, and adjacent marine communities.

Although included within the boundary outline of the Cypress Island Comprehensive Plan, private lands within the NRCA boundary are not restricted by the guidance in this management plan or by inclusion within the NRCA boundary.

2. Introduction

Washington State Department of Natural Resources

DNR is steward of about 2.8 million acres of state-owned uplands consisting of Federal Grant trust lands and State Forest trust (formerly known as Forest Board Lands, and DNR is steward of about 2.4 million acres of state-owned aquatic lands. These lands are managed by DNR for the benefit of current and future citizens of Washington State. The area covered under the Cypress Island Comprehensive Management Plan encompasses over 11,000 acres of state-owned uplands and aquatic lands (see Table 1).

Federal Grant trust lands

Through the Congressional Enabling Act of 1889, Washington became a state and acquired more than 3 million acres of land to be managed to provide revenue to build public schools, universities, and other state institutions. Early on, some trust lands were sold, but lawmakers realized that over time the lands could be managed sustainably to earn a continuous flow of revenue for the beneficiaries, and offer many other benefits for the people of Washington.

State Forest (Forest Board) trust lands

Under acts of the Washington State Legislature in 1923 and 1933, the State of Washington was enabled to acquire land by purchase or transfer from the counties. Westside counties acquired most of these State Forest trust lands after they were logged, abandoned, and tax delinquent. With no resources to manage the lands, they deeded them to the state to manage forever as commercial forests that earn revenue to help fund local library, hospital, fire and other taxing districts, county services within the county where the lands are located; and contribute to the state general fund earmarked for schools

Natural Area Preserves

Established by an act of the Washington State Legislature in 1972, high quality natural habitats are acquired by gift or purchase by the DNR. Natural Area Preserves (NAPs) are managed for the perpetual protection of rare species and outstanding ecosystems native to

Washington State (Figure 2). There are nearly 31,000 acres in 51 NAPS.

Natural Resources Conservation Area (NRCA)

Created by an act of the Washington State Legislature in 1987, the NRCA program's conservation objectives include protecting outstanding ecological, geologic, and archaeological resources and providing opportunities for low impact public use and environmental education (Figure 2). The 31 NRCAs total more than 88,000 acres statewide.

Aquatic Reserves

RCW 79.10.210 authorizes DNR to identify and protect public aquatic lands for their natural ecological systems. WAC 332-30-151 directs DNR to consider lands with special environmental values for state aquatic reserve status (Figure 3).

Figure 2: Washington's Natural Areas

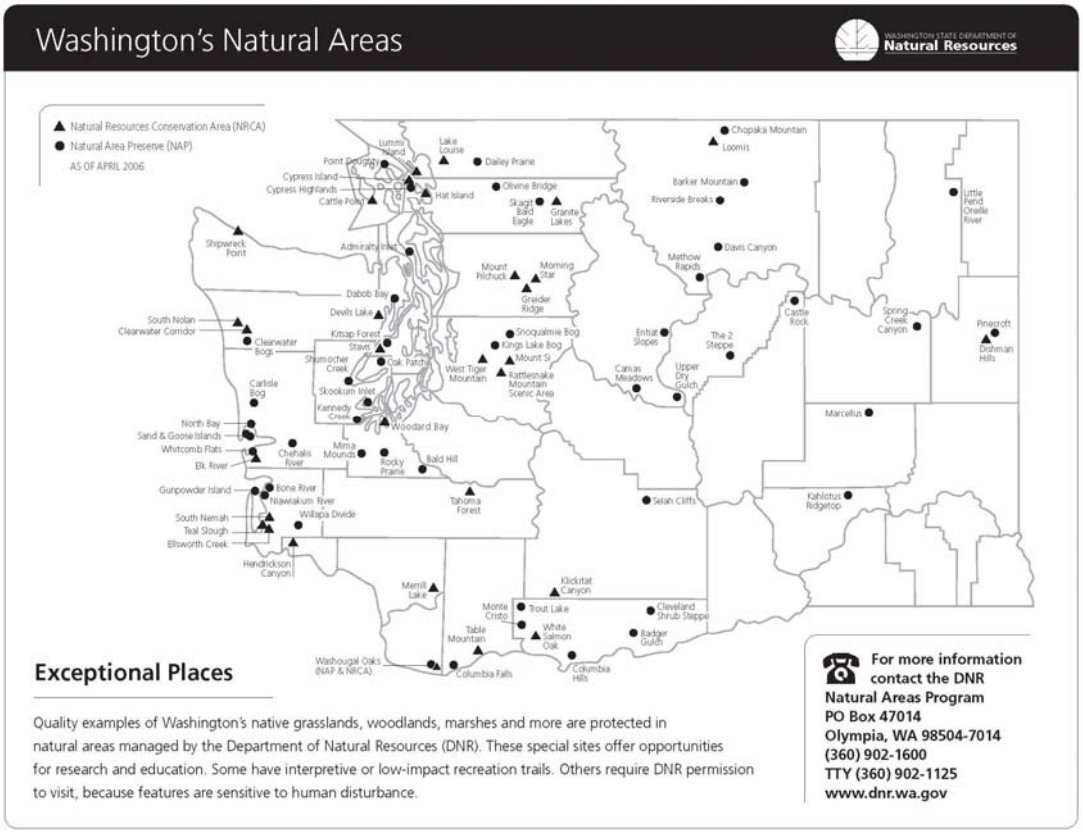
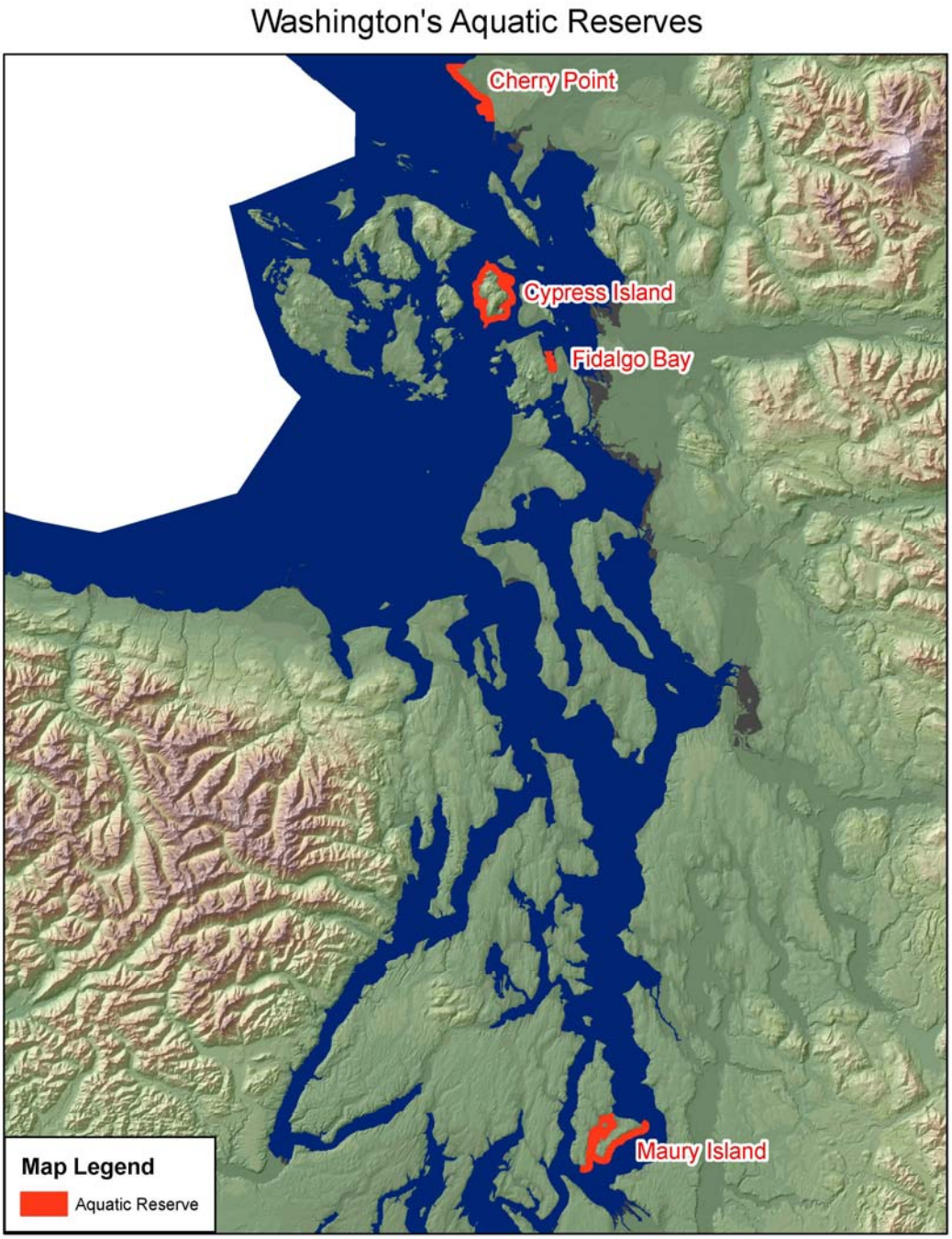


Figure 3: Washington State Aquatic Reserves



The Cypress Island NRCA

Cypress Island was selected to be a Natural Resources Conservation Area because:

- It is the largest relatively undeveloped island in the San Juan Islands, where extensive areas of undeveloped shoreline and uplands are becoming rare.
- The island contains unusual geological characteristics, outstanding examples of native biological communities, critical habitat for federally protected species, and significant marine and cultural resources.

The Cypress Island NRCA protects more than 5,100 acres of high quality forest, wetland and grassland communities and surrounding state-owned tidelands. The southern two-thirds of the island is the only protected low-elevation serpentine forest in Washington and may support unique plant communities. The island's grassy balds, talus slopes, high quality wetlands, streams, lakes and forests are home to rare and common plants and animals, including threatened, endangered and sensitive species.

Cypress Island provides a scenic reminder of conditions in Western Washington prior to Euro-American settlement. Steep island topography provides vistas of the San Juan Islands, mainland Washington and the Olympic and Cascade mountain ranges. Cypress Island is a popular destination for boaters, offering recreation opportunities, scenic viewpoints, lakes, and miles of trails.

Natural Resources Conservation Act

In the late 1980's, the Washington State Legislature responded to an increasing and continuing need by the people of Washington for certain areas of the state to be conserved for the benefit of present and future generations. The Washington State Natural Resources Conservation Act, Chapter 79.71 of the Revised Code of Washington (RCW), was thus enacted in 1987. To be considered for NRCA designation, land and/or water should have important ecological, geological, cultural or scenic characteristics and opportunities for low-impact public use and outdoor environmental education.

NRCA management goals include:

- Maintenance, enhancement, or restoration of ecological systems, including but not limited to aquatic, coastal, montane, and geological systems, when such systems are unique or typical to Washington State.
- Maintenance of exceptional scenic landscapes.
- Maintenance of habitat for threatened, endangered, and sensitive species.
- Provision of opportunities for low-impact public use, scientific research and outdoor environmental education.

NRCA Boundary

The NRCA boundary (Figure 4) contains all state-owned lands and tidelands plus other lands which meet the legal criteria for acquisition by the state for NRCA designation (see glossary, NRCA Boundary). The NRCA boundary is approved or changed through a review process, which includes a public hearing. DNR is authorized to acquire full or partial ownership of land within the NRCA boundary only from willing sellers or through voluntary land donation. **Private lands within the NRCA boundary are not restricted by this management plan or by inclusion within the NRCA boundary.**

Within the NRCA boundary, approximately 4,028 upland acres are managed under the current Cypress Island Comprehensive Management Plan as NRCA and 1,073 acres of NAP are managed under the Draft Cypress Highlands NAP Management Plan. The NRCA boundary also includes the tidelands adjacent to Cypress, Strawberry, and Cone islands. Approximately 520 acres of private tidelands and uplands are within the NRCA boundary, including approximately 115 private parcels ranging from less than one acre to thirty acres (see Table 1).

The Cypress Highlands Natural Area Preserve

The Cypress Highlands NAP was originally established to preserve an undisturbed example of grassland dominated by Roemer's fescue and associated forest communities underlain by basalt bedrock. This designation of 156 acres in 1975 and 54.75 acres in 1979 created what is currently the north unit of the NAP. The central and south units were established in 1989 when additional lands were added to the NAP through a common school trust land transfer of approximately 620 acres. These units preserve plant communities and wetlands underlain by serpentine bedrock, with associated wildlife, on the southern portion of the island. Subsequent acquisitions of smaller parcels from private landowners brought the total acreage of the three units to 1,073 acres.

Natural Area Preserves Act

The Natural Area Preserves Act was enacted in 1972 by the legislature to "secure for the people of present and future generations the benefit of an enduring resource of natural areas by establishing a system of natural area preserves, and to provide for the protection of these natural areas" (RCW 79.70). Preserves are identified through an organized scientific inventory process that is guided by the State of Washington Natural Heritage Plan. The purpose of establishing NAPs is:

- To protect outstanding examples of rare or vanishing terrestrial or aquatic ecosystems, rare plant and animal species, and unique geologic features.
- To serve as baselines against which the influences of human activities in similar, but differently managed, ecosystems can be compared.

- To provide areas which are important to preserving natural features of scientific or educational value.

  Site-specific management plans are developed for each NAP in order to give priority to protecting the natural feature that led to the designation of each site as an NAP, and to maintain natural processes.

The Cypress Highlands NAP is managed under the terms of the Draft Cypress Highlands NAP Management Plan (1993) and the Highly Sensitive Areas section of this plan. (Section 5.1.1).

Cypress Island Aquatic Reserve

Cypress Island was selected as an aquatic reserve because this site represents valued aquatic resources, excellent upland conditions and opportunities for coordinating upland, intertidal and subtidal management. The specific environmental attributes of the site include:

- The connectivity of the reserve area to the upland NAP and NRCA management units. The state ownership managed by DNR includes about 90 percent of the tidelands, 100 percent of the subtidal bedlands, and about 93 percent of the adjacent uplands at Cypress Island, with the emphasis of management on conservation. In addition, uplands of the Cone Islands are owned and managed by the Washington State Parks and Recreation Commission.
- The size of the reserve, which encompasses the complete geographic area of Cypress Island and associated satellite islands.
- The position between the San Juan Islands and the Strait of Georgia oceanographic regions.
- The excellent condition of local habitat, including aquatic vegetation, intertidal and subtidal rocky reef habitat, nearshore and intertidal areas, and marine riparian areas.

  Included within the reserve are the subtidal marine waters of Cypress, Cone, Strawberry, and Towhead islands. These islands comprise an important component of the reserve as they are surrounded by shallow rocky reef habitat. North Towhead Island and south Cypress Island also include shallow offshore areas. The shallow areas to the north and south of the reserve include valued rocky-reef habitat that supports declining bottom-fish resources in the area, including rockfish (*Sebastes spp.*), which are listed by the Washington Department of Fish and Wildlife as a species of state concern, and lingcod (*Ophiodon elongatus*).

Legal Authorities for Establishing Aquatic Reserves

The constitutional authority for the proprietary management of state-owned aquatic lands is derived from Articles XV and XVII of the Washington State Constitution. DNR is directed by the state legislature in RCW 79.100 through 79.145 to manage state-owned aquatic lands to provide a balance of public benefits that include encouraging public access, fostering water-dependent use,

ensuring environmental protection, and utilizing renewable resources. In addition, DNR is directed to generate revenue from state-owned aquatic lands when consistent with the other legislatively directed public benefits.

RCW 79.90.455 identifies environmental protection, the overarching goal of the Aquatic Reserves Program, as one of DNR's primary directives for the management of state-owned aquatic lands. RCW 79.10.210 further authorizes DNR to identify public lands that can be utilized for their natural ecological systems and withdraw these lands from all uses that conflict with this purpose. WAC 332-30-151 directs DNR to consider for Aquatic Reserve status those lands with educational, scientific, and environmental values; it also identifies management guidelines for aquatic reserves. WAC 332.30.106(16) defines environmental reserves as sites of environmental importance, which are established either for the continuance of environmental baseline monitoring, or as areas of historical, geological, or biological interest requiring special protective management.

Aquatic Reserve Boundary

The Cypress Island Aquatic Reserve (Figure 4) is part of the San Juan Archipelago. The site includes the state-owned bedlands surrounding Cypress Island, including those adjacent to Strawberry Island and Cone Islands from the mean high tide line to a water depth of 70 feet below mean lower low tide or one half mile from the extreme low tide, which -ever is further seaward. The site is bounded to the west by Rosario Strait, on the south and east by Bellingham Channel, and on the northeast by an unnamed channel (Figure 4).

Purpose of the Comprehensive Management Plan

This current management plan is intended to coordinate management of the three different designations of conservation lands on Cypress Island (NRCA, NAP, and Aquatic Reserve) over the next 50 to 100 years, and to serve as DNR's primary management guidance for these lands.

Desired Future Conditions

Desired Future Conditions describe the overall target conditions for a landscape and provide guidance for developing management goals and objectives. The following describes the future public use and resource conditions expected on Cypress Island when the management goals and objectives in this plan are achieved:

Public use facilities will be concentrated in a relatively small area of the island to protect the natural characteristics and habitat qualities of Cypress Island and provide public access to a sample of each of the outstanding natural characteristics of the island. Marine resources will be protected with appropriate installation of buoys and designation of public use areas and activities. Environmental interpretation will accompany development to enhance public

enjoyment and encourage public participation in protection of the NRCA. Public use will be closely monitored. Where use levels or activities are incompatible with resource protection, use will be controlled, sites may be closed, and new sites may be developed on the NRCA or elsewhere in the region. No new facilities will be developed within the NAP.

Natural processes (see Glossary) are the primary force in the restoration and maintenance of the island's outstanding natural characteristics. Cypress Island management emphasizes the promotion of region-wide biological diversity by protecting native species with particular attention to those reduced in numbers (rare) in the region. Natural processes will be maintained without interruption, creating a mosaic of habitat types and features that support native species. Active management will be dedicated to restoring excessively disturbed and degraded areas and enhancing habitat.

Action will be taken to encourage public involvement, community stewardship, and volunteer participation in the protection and maintenance of this land.

Cypress Island Ownership

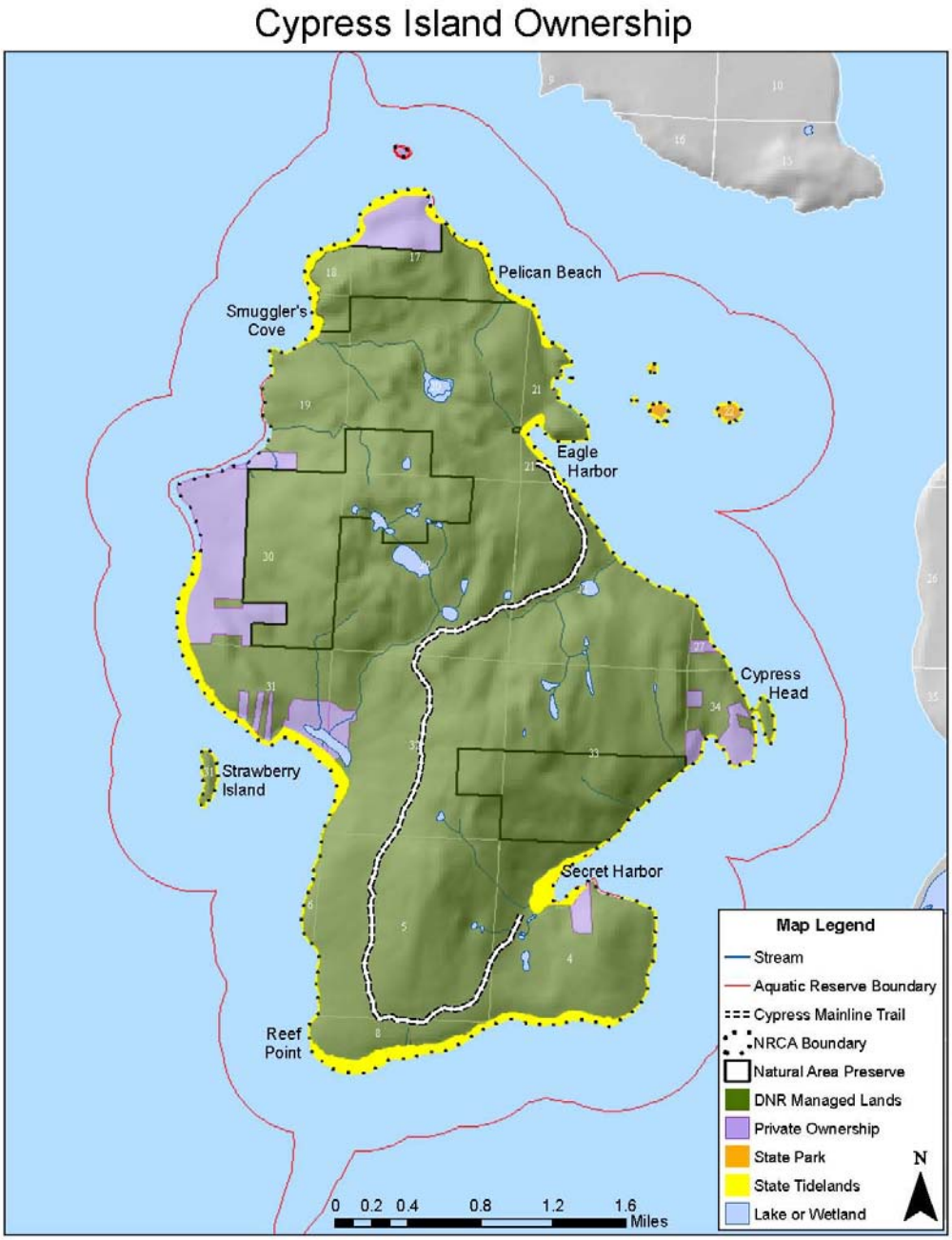
Table 1: Cypress Island Ownership

Designation	Approx. acreage
NRCA	4,028
NAP	1,073
Aquatic Reserve	5,910
Total DNR Management Area	11,011
Private Property	480

NOTE: The plan does not apply to private property on Cypress Island

Figure 4: Cypress Island Ownership

For a color version of this figure see www.dnr.wa.gov/htdocs/aqr/reserves/home



Relationship to other Federal, State, Local, and Tribal Management

The successful management of Cypress Island will require coordination and collaboration with public and private entities as well as local, state, federal, and tribal government.

Tribal Interests at Cypress Island

Cypress Island is located within the following tribal usual and accustomed areas:

- Jamestown S'Klallam Tribe
- Lower Elwha Kalallam Tribe
- Lummi Nation
- Nooksack Tribe
- Port Gamble S'Klallam Tribe
- Skokomish Tribe
- Suquamish Tribe
- Swinomish Tribe
- Tulalip Tribes

In addition, the Samish Indian Nation has identified significant historical and cultural ties to the land and water of Cypress Island.

Conservation goals and management activities identified in this management plan are not meant to conflict with Tribal treaty, natural resource, or cultural interests. The DNR will cooperatively work with the tribes to protect archaeological sites, and allow access to cultural sites; and allow for treaty-protected hunting and gathering of resources in a manner that fosters the sustainability of those resources.

Marine Biological Reserve

Much, if not all, of the marine area of the Cypress Island site was designated as a Marine Biological Reserve by the state legislature in 1923. The Marine Biological Reserve was established to create an area that protected and preserved marine biological materials useful for scientific purposes. Under the Marine Biological Preserve's statute (RCW 28B.20.320), the collection of any marine biological materials other than that taken for food, and also excepting kelp, is prohibited unless written permission is obtained from the Director of Friday Harbor Laboratories.

County Land Use Designations

The shoreline is zoned conservancy in the Skagit County Shoreline Master Program. Ninety percent of the uplands are zoned open space and the remaining 10% is zoned 1 residential unit per 10 acres or 2 residential units per 10 acres if clustered. Three commercial salmon aquaculture net pen facilities operating in Secret Harbor are permitted by Skagit County.

Cypress Island Residents

Approximately 115 private parcels exist on Cypress Island. The DNR will continue to work cooperatively with these property owners on the management of the NRCA, NAP, and Aquatic Reserve.

3. The Cypress Island Comprehensive Plan Adoption and Revisions

The original Cypress Island Management Plan has guided the management activities of the Cypress Island NRCA since its adoption in June, 1996. In compliance with the NRCA Statewide Management Plan, a review of the plan was initiated in 2005, enabling staff to address current NRCA management issues. The current Cypress Island Comprehensive Management Plan includes a revision of the NRCA plan conducted in conjunction with the development of the Cypress Island Aquatic Reserve Plan. The Aquatic Reserve portion of this plan was developed in compliance with the Non-Project Final Environmental Impact Statement Aquatic Reserve Program Guidance (September 6, 2002).

References to “Cypress Island” in this Plan refer to the Cypress Island NRCA, NAP, and Aquatic Reserve (Figure 4). The Comprehensive Plan was developed in accordance with the State Environmental Policy Act (SEPA). Future revisions of this Comprehensive Plan will incorporate the Cypress Highlands Natural Area Preserve Plan, currently in draft form.

The Planning Process

In 1991 the Commissioner of Public Lands appointed the Cypress Island NRCA Advisory Committee. (see Acknowledgements, Page x) The committee met for 18 months to assist the department in determining appropriate management direction for the Cypress Island NRCA. The committee and DNR staff considered issues and concerns raised by the public, detailed reconnaissance studies of the NRCA, the NRCA Statewide Management Plan, and the NRCA Act. Goals and objectives for protecting known resources and providing public use opportunities were developed. After an internal and public review process, in compliance with DNR policies and SEPA, the Cypress Island NRCA Management Plan was adopted in 1996.

In 2003, the Aquatic Reserve Technical Advisory Committee evaluated six sites, including Cypress Island, using information gathered from reserve proposals, public meetings, and on-site visits. The committee determined that Cypress Island met the criteria for aquatic reserve designation and forwarded this

recommendation to the Commissioner of Public Lands, who approved the recommendation.

In 2005 a review of the Cypress Island NRCA Management Plan was initiated by DNR in conjunction with the development of the Cypress Island Aquatic Reserve Plan.

Resource Inventory

The planning process for Cypress Island identified significant resources to be conserved. Preliminary reconnaissance studies and literature reviews were done on the archaeology, history since European settlement, soils, geology, water resources, aquatic flora and fauna, and ecology of Cypress Island (See Appendix D). Sensitive resources and potential public use opportunities that occur on the NRCA were also inventoried.

Public Review

In compliance with SEPA and the NRCA Statewide Management Plan, the Comprehensive Plan draft will be available and distributed for review and comment by the public and Tribal, federal, state, and local agencies. Prior to final approval by the Commissioner of Public Lands, a public meeting will be held during the public review period.

This comprehensive management plan will serve as DNR's management guidance for the NRCA, NAP, and Aquatic Reserve at Cypress Island. The Comprehensive Management Plan is flexible due to the changing nature of the environment, and will be reviewed periodically and updated as needed in order to incorporate current scientific, management, or site-specific information. Each subsequent update will include outreach to local, state, and federal governments, Tribes, interest groups, landowners, and citizens.

Limits of this Plan

The goals and strategies outlined in this plan apply only to the state-owned lands that comprise the Cypress Island NRCA, the Cypress Highlands NAP, and the Cypress Island Aquatic Reserve, and do not apply to private properties on Cypress Island. This plan provides general guidelines to assist DNR in making management decisions for state-owned uplands and aquatic lands at Cypress Island. Detailed development and restoration plans will be developed by DNR according to the guidelines of this plan.

Implementation of this plan is funding-dependent. The contents of this plan will be used to make budget requests for site planning, implementation, restoration, and monitoring.

4. Management Goals & Objectives

The primary aim in managing Cypress Island is to preserve, restore and enhance ecological systems, scenic landscapes and habitat for Threatened, Endangered and Sensitive (TES) species.

To achieve this aim, the following goals have been adopted. Goals one through five are taken from the NRCA Act (RCW 79.71) and goal six from the Archaeological Sites and Resources Act (RCW 27.53). Goals one through six and their associated objectives are consistent with the goals of the Aquatic Reserves Program and applicable to the aquatic reserve. Goal seven and eight meet the specific goals of the Aquatic Reserves Program and the management of the Cypress Island Aquatic Reserve. These two goals are formulated to emphasize the conservation of critical habitats and associated species identified in Appendix D.

Objectives are a product of the research, analysis, advisory committee meetings, and public input of the Cypress Island management planning process. These objectives are unique to the management of Cypress Island and are referenced in the management plan.

Goal One: Maintain, enhance, and restore ecological systems

Objectives

1.1 Protect natural processes that promote region-wide biological diversity in the island's marine and terrestrial environments.

1.2 Rely upon, and avoid interference with, those natural processes that result in the restoration and maintenance of natural conditions, native habitats, and native species diversity.

1.3 Restore or enhance those disturbed areas that are degraded.

1.4 Designate areas containing outstanding examples of native biological communities as Highly Sensitive areas under this plan.

1.5 Closely monitor public use and DNR activities for effects on natural, cultural, and scenic resources. Where impacts are inconsistent with program goals, change or restrict use/activity. Enhance or restore sites where necessary.

1.6 Place administrative and public use facilities in a manner that minimizes habitat fragmentation and interference with natural processes.

1.7 Continue to acquire private property for conservation purposes from willing sellers within and adjacent to the NRCA boundary.

Goal Two: Maintain exceptional scenic landscapes

Objectives

2.1 Design public use sites and facilities to retain the natural appearance of the site.

2.2 Plan management activities and site development to minimize visual impacts as viewed from surrounding islands, aerial and water locations, and the mainland.

Goal Three: Maintain habitat for Endangered, Threatened, and Sensitive (ET&S) species

Objectives

3.1 Give high priority to inventory, enhancement, and protection of ET&S habitat, as dictated by federal law, state legislative mandates, and DNR policy goals.

3.2 Designate known and potential habitat for Endangered, Threatened, and Sensitive species as Highly Sensitive areas under this plan

3.3 Routinely survey Cypress Island for ET&S and associated habitat and following any new listings.

3.4 Invite other agencies, tribes, and organizations with appropriate expertise to work cooperatively in the inventory, monitoring, and management of native species.

3.5 Use site restoration and enhancement to encourage re-establishment of plants and animals native to Cypress Island and surrounding tidelands and bedlands.

Goal Four: Provide opportunities for low-impact public use

Objectives

4.1 Provide the public with reasonable access to a sample of the outstanding vistas and natural areas within the NRCA.

4.2 Develop public use facilities to avoid degradation or impacts to identified sensitive resources, rare habitats, and contiguous forest. Concentrate public use (sites, trails, signs) in Minimally Sensitive Areas (see Section 5.2).

4.3 Develop and maintain public use sites and trails in a manner that protects neighboring private property, the NAP, and the natural and scenic values of the NRCA.

4.4 Establish and enforce public use at a level that does not detract from natural, scenic, and sensitive resource protection goals.

4.5 Discourage inappropriate public uses and use-levels at Cypress Island.

Goal Five: Provide opportunities for outdoor environmental education

Objectives

5.1 Place interpretive signing at main entry points and in high-use areas in the NRCA.

5.2 Use education facilities to inform the public of outstanding ecological, geologic, cultural, and historic components of the island. Consult with local Tribes in developing interpretive materials that address culturally sensitive resources/topics.

5.3 Use interpretive information to convey a conservation ethic and enhance respect for the island's resources and the purpose of protecting them.

5.4 Present use restrictions and regulations within the context of environmental education.

Goal Six: Identify and protect cultural resources in the NRCA

Objectives

6.1 Survey the NRCA for archeological deposits and cultural resources (completed, 1991). Consult with a professional archaeologist on any new discoveries.

6.2 Manage registered cultural sites in consultation with local Tribes to emphasize on-site protection using excavation as a last resort.

6.3 Work closely with local Tribes and the Washington State Department of Archaeology and Historic Preservation to identify and protect as yet unknown sites.

Goal Seven: Identify aquatic habitats and associated plant and wildlife species, with special emphasis on rocky reef habitat, pocket beaches, kelp, and eelgrass beds.

Objectives

7.1 Develop an initial baseline inventory through a "rapid shoreline inventory" of aquatic habitat and species that utilize the area of the reserve.

7.2 Develop ongoing monitoring plans to evaluate the condition of aquatic resources identified for conservation.

7.3 Survey sites that appear to have suitable habitat for surf smelt or sand lance spawning and verify if spawning activity occurs at these sites.

7.4 Develop appropriate management actions to protect identified spawning areas.

Goal Eight: Preserve, restore, and enhance the functions and natural processes of nearshore and subtidal ecosystems of the aquatic reserve.

Objectives

8.1 Maintain the existing low levels of alteration to Cypress Island's aquatic areas.

8.2 Maintain management actions that support the Cypress Island Marine Biological Reserve (RCW 28B.20.320; see section 2.8).

8.3 Inventory and remove derelict creosote piles, other derelict structures, and debris from Cypress Island's beaches, in consultation with Natural Areas Program westside ecologist and region natural areas and aquatics managers.

8.4 Establish a management plan for private and public mooring buoys on state-owned aquatic lands that minimizes impacts to aquatic habitat, particularly eelgrass.

5. Management Actions

The Cypress Island NRCA and Aquatic Reserve are to be managed for the recovery and preservation of natural environmental conditions, while providing low impact public use opportunities and environmental education where such uses do not adversely affect the resource values the area is intended to protect.

Resource Protection, Enhancement, and Restoration

The management actions for Cypress Island are designed to maintain sensitive upland (Figure 11) and aquatic resources, plan for existing and future uses of state-owned lands, direct public use, and facilitate stewardship, research, and monitoring. DNR will seek management cooperation and collaboration from other state agencies, tribes, and local property owners. It will also be DNR's policy to rely upon natural processes, except where management is necessary and feasible to enhance habitat and ecosystem quality or to reverse and mitigate degradation.

Sensitive Resource Classification and Mapping

Based on findings from preliminary studies, the island is divided into three categories. They are:

(1) Highly Sensitive Areas. Such areas contain highly sensitive resources, which require special management attention (Figure 5):

- Natural Area Preserve lands
- Wetlands and grassy balds, where soils and vegetation are fragile due to very dry or wet conditions
- Known and potential habitat for Endangered, Threatened, and Sensitive (ET&S) species
- Recorded archeological resources
- Registered water rights

(2) Minimally Sensitive Areas. These areas do not contain resources identified as "highly sensitive," and are thought to be more self- maintaining, resilient, and possibly suitable for low-impact public use (Figure 5).

(3) Aquatic Lands. These consist of state-owned tidelands within the NRCA boundary and subtidal areas included in the aquatic reserve (Figure 4).

Management strategies were developed for each area as follows:

Highly Sensitive Areas

Management Emphasis

Protection of known sensitive resources is the primary purpose of management in the Highly Sensitive Areas (Figure 5). Recreation and administrative uses will be limited or restricted where such uses conflict with sensitive resources protection.

Natural Area Preserve Lands

Management of the NAP is prescribed by the Draft Cypress Highlands NAP Plan, pending development and adoption of a final plan. The guiding principle in management of this preserve is to allow natural ecological and geological processes to predominate, while controlling activities that directly or indirectly modify these processes. Limited exceptions to this may occur when a primary feature within the preserve is jeopardized by absence of management activity.

Table 2: Primary features protected within the NAP

Natural Feature	Rank		State Status	Federal Status
Roemer's fescue - field chickweed - junegrass grassland	G1	S1	P2	n/a
Douglas fir / baldhip rose - oceanspray forest	G2G3	S2	P2	n/a
Douglas fir - western hemlock / salal forest	G3	S2	P2	n/a
Douglas fir / salal - oceanspray forest	G2G3	S2	P3	n/a
Douglas fir - lodgepole pine serpentine woodland	GU	S1S2	*	n/a
Peregrine falcon	G4	S1B	Sensitive	Concern
Bald eagle	G4	S3S4B	Threatened	Threatened

[1] G = global status, S = state status
1 = Critically imperiled, 2 = Vulnerable, 3 = Very Rare, 4 = Apparently secure, 5 = Widespread, abundant and secure
[2] P2 = these ecosystems a) are rare or highly threatened, with some existing, but not fully adequate, representation in the Natural Area Preserve (NAP) system; OR b) have an intermediate degree of threat and rarity and little or no representation in the NAP system.
[2] P3 = these ecosystems are not in immediate jeopardy of being eliminated or degraded in the state, but are not yet adequately represented in the NAP system.
[2] * = these ecosystems have varying levels of threat and rarity and are adequately represented within the NAP system.
[3] State Threatened = any wildlife species native to the state of Washington that is likely to become an endangered species within the foreseeable future throughout a significant portion of its range within the state without cooperative management or removal of threats.
[3] State Sensitive = any wildlife species native to the state of Washington that is vulnerable or declining and is likely to become endangered or threatened throughout a significant portion of its range within the state without cooperative management or removal of threats
[4] Federal Threatened = an animal or plant species likely to become endangered within the foreseeable future throughout all or a significant portion of its range
[4] Federal Concern = an informal term referring to a species that might be in need of conservation action. Such action may range from periodic monitoring of populations and threats, to the species and its habitat, to the necessity for listing as threatened and endangered.

The Cypress Highlands NAP is separated geographically into three portions:

The northern portion encompasses approximately 211 acres, which include high-quality Roemer's fescue grassland balds with associated forest buffer, underlain by basalt bedrock. Native grassland balds are fragile habitats, susceptible to trampling damage, exotic species introduction, and soil loss. The Pelican Beach Recreation Site, Pelican Beach trail and Eagle Cliff trail are pre-existing public use areas located in this portion of the NAP.

The central portion of approximately 560 acres features a serpentine conifer forest in excellent ecological condition. The steep rocky terrain also supports several wetland basins containing two ponds and six wetlands.

The southern portion of approximately 350 acres is on a broad southeast aspect, ranging from the island's high point of 1,525 feet to sea level. Plant communities influenced by underlying serpentine bedrock are present.

Management Actions

- Limit public use in the northern portion of the NAP to the Pelican Beach Recreation Site, Pelican Beach trail, and Eagle Cliff trail to protect highly sensitive grassland balds. Strictly enforce restrictions on off-trail travel. Meets Objectives 1.4, 4.2, 4.3, 4.4

- Enforce a seasonal closure of the Eagle Cliff trail from February 1-July 15, to protect sensitive habitats and habitat for threatened, endangered and sensitive species. Meets objectives 1.4, 4.2, 4.3, 4.4

- Restrict all public use outside of authorized trail corridors except for approved scientific research and educational visits. Consult with the Natural Areas Program westside ecologist for all activities and management actions in the NAP. Meets Objectives 1.4, 4.2, 4.3

- Allow successional and other natural processes to operate unimpeded. Meets Objectives 1.1, 1.2

- Monitor the NAP for the presence of non-native invasive plant species. Update the Cypress Island Weed Plan to reflect accurately the condition and restoration needs of the NAP. Meets Objectives 1.1, 1.3, 1.4, 3.4

- Prevent or control the establishment and spread of non-native grasses and shrubs in grasslands and balds. Update the Cypress Island Weed Plan to reflect accurately condition and restoration needs. Meets Objectives 1.3, 3.5

- Address the need for prescribed fire or other management techniques in maintaining grassland and dry forest communities. Meets Objectives 1.1, 1.2, 1.3, 3.5

Wetlands

Ponds and wetlands are focal points for wildlife and are critical to maintaining native plant and animal diversity and abundance on Cypress Island. The 14 ponds and wetlands on the NRCA have been impacted to varying degrees by past development of roads, culverts, dams, and weirs. Most have maintained or recovered high ecological quality, however, and are in unusually good condition in comparison to other wetlands in the San Juan Islands (Kunze, 1992).

NRCA management will emphasize the maintenance and protection of all fresh water resources. This includes protecting the quality, timing, and amount of water that flows to ponds and wetlands.

Management Actions

- Challenge new non-DNR water right applications on state property. Minimize sedimentation and establishment of non-native plants in and around wetlands. Meets Objectives 1.1, 1.2, 1.4
- Re-vegetate all adjacent road corridors and unnatural clearings, except those necessary for DNR administrative purposes. Meets Objectives 1.2, 1.3
- Develop public access in a manner that minimizes impact to wetlands and prevents trampling of wetland soil and vegetation. Avoid fragile/saturated soils. Meets Objectives 1.5, 4.2, 4.3, 4.4

Grassy Balds/Dry Forest

Grassland bald communities on the island (Figure 6) are the result of dry site conditions and shallow soils, combined with recurrent fires, which likely removed trees and shrubs. The relatively harsh growing conditions for plants and the shallow soils make grassy balds highly susceptible to non-native plant invasion, trampling, and erosion. The sparse vegetation of dry forest communities often reestablishes more slowly after disturbance than on moister sites with deeper soils. Surface runoff and erosion are more likely to occur on steep slopes.

DNR will make every effort to minimize or eliminate non-native plants, loss of native vegetation and soil compaction/erosion in grassy balds and dry forests. Fire management will be studied and, where appropriate, applied to maintain high-quality grassland and bald communities.

Management Actions

- Avoid developing public access near grassy balds. If access is necessary, effectively route foot traffic to minimize trampling of vegetation. Meets Objectives 1.5, 4.2, 4.3, 4.4
- Minimize new trail development in dry forest and avoid trail construction on steep slopes. Meets Objectives 1.5, 4.2, 4.3, 4.4

- Monitor areas for soil erosion and compaction, and establishment of non-native grasses and shrubs, in grasslands and grassy balds. Meets Objective 1.4
- Prevent or control the establishment and spread of non-native grasses and shrubs in grasslands and balds. Update the Cypress Island Weed Plan to reflect accurately condition and restoration needs. Meets Objectives 1.3, 3.5
- Address the need for prescribed fire or other management techniques in maintaining grassland and dry forest communities (see Fire Management in Section 5.10). Meets Objectives 1.1, 1.2, 1.3, 3.5

Critical Habitat

ET&S species have been identified at the Cypress Island NRCA. The rich and varied habitat (Figure 6, Animal Habitat) on the NRCA indicates that other protected species might reside or establish there. Loss of habitat is the major cause of plant and animal extinction, making the Cypress Island NRCA particularly important as one of the largest protected areas of contiguous forest, wetland, grassy balds, and rock outcrops in the San Juan Islands. Some wildlife species are easily disrupted by human presence, particularly during reproductive seasons.

Rare habitats, such as large standing dead trees (snags) and other components of the ecosystem found to be important in the life cycle of locally rare and ET&S species, will be protected and maintained, as follows:

Management Actions

- Update ET&S species information for the island as new ET&S species or locations are identified. Meets Objectives 3.1, 3.2, 3.3
- Develop a plan to encourage the reintroduction and protection of identified ET&S species, where appropriate. Meets Objective 3.5
- Work cooperatively with agencies that provide the expertise and enforcement powers necessary to successfully protect ET&S species. Meets Objective 3.4
- Limit the development of trails, facilities and buoys to minimize fragmentation and protect habitat on and surrounding the island. Maintain the old growth management unit recommended by the Natural Heritage Program. (See Section 5.2). Meets Objectives 1.5, 3.1, 3 .4, 4.2, 4.3
- Close or restrict public use in critical habitat as required to protect the habitat. Meets Objectives 1.5, 3.1, 4.2
- Effectively route public use away from unique and fragile habitats. Meets Objectives 1.5, 3.1, 4.2, 4.3

Cultural Resources

The Cypress Island NRCA is known to contain seven prehistoric sites, several of which are being eroded by natural processes. The remaining sites are vulnerable to damage by public use. These sites are nonrenewable, non-restorable resources and are protected under RCW Title 27 as promulgated by Department of Archaeological and Historic Preservation.

Monitoring systems have been established to identify the cause, extent, and trend of disturbance. The highest priority in cultural resources protection is maintaining archaeological and historic sites and artifacts in their existing condition.

Management Actions

- Consult with local tribes in the cultural resources management and environmental interpretation of cultural history and artifacts. Meets Objective 6.3
- Develop trail systems that help guide public use away from cultural sites that are vulnerable to human disturbance. Meets Objectives 4.2, 4.3, 4.4
- Stabilize any cultural sites that are suffering human disturbance or progressive natural disturbance. Adhere to the regulations promulgated by the Department of Archaeological and Historic Preservation and consult with local Tribes on the appropriate management of cultural resources. Where advised, salvage those disturbed sites that cannot be stabilized. Excavation may be necessary where irreversible degradation or loss is occurring. Meets Objective 6.2
- In a manner that does not identify the locations of deposits, provide interpretive opportunities that encourage visitors to appreciate and respect cultural history and artifacts. Invite local Tribal review of interpretive plans. Meets Objectives 5.2, 5.3

Registered Water Rights

The DNR owns the only Department of Ecology (DOE) registered water rights on state land, consisting of a spring in section 4 of the newly acquired Secret Harbor School properties and a diversion in section 28. Several water rights registered on private land divert water from streams that drain from NRCA property.

Freshwater aquatic systems and associated habitat on Cypress Island depend on unaltered timing, quantity, and quality of water.

The Department will use practices that protect the timing, quality, and quantity of surface waters on state property and waters that flow to private property downstream.

Management Actions

- Close Cypress Lake to swimming to minimize impacts on downstream water quality. Meets Objectives 1.4, 4.4
- Provide environmental education opportunities for visitors to Cypress Lake and Stella's Marsh to discourage uses that potentially degrade water quality. Meets Objectives 4.5, 5.1, 5.3, 5.4
- Require the removal of unauthorized water systems from state land, and monitor the perimeter to prevent the establishment of new trespasses. Meets Objectives 1.4, 4.4
- Challenge new non-DNR water right applications on state property. Meets Objectives 1.1, 4.4

Minimally Sensitive Areas

Management Emphasis

Emphasis in site development and management will be on protecting, restoring, and enhancing the ecological, scenic, and habitat values of Cypress Island. Public use should be allowed only in the minimally sensitive areas and where impacts to wildlife and vegetation can be mitigated, monitored and controlled.

Management Actions

- Close existing access routes on DNR managed lands that are unsuitable for public use or conflict with management guidelines. All remaining roads on Cypress Island have been or will be abandoned or converted to trails, except those road segments that are the subject of legally recorded easements and those necessary for the operation of existing facilities. Meets Objectives 1.3, 1.4, 4.3
- Locate public use facilities, trails and interpretive signing in disturbed and Minimally Sensitive areas to relieve use pressures in the Highly Sensitive Areas. Meets Objectives 1.5, 4.2, 4.3
- Reduce habitat fragmentation. Protect the old growth management unit recommended by the Natural Heritage Program (Figure 6). Meets Objectives 1.1, 1.2, 1.5
- Develop trails in abandoned road corridors where feasible and desirable. Route public use away from private property, NAPs, and protected resources in the Highly Sensitive Areas via the public trail system. Meets Objectives 1.1, 1.5, 4.1, 4.2, 4.3
- Require private landowners on the island to use designated public entry points, not private individual accesses into the NRCA. Meets Objectives 1.4, 4.1, 4.3, 4.4, 4.5

- Where feasible, use existing disturbed areas for fire control, public use facilities, and management operations. Meets Objectives 1.1, 1.2, 1.5, 4.1, 4.2, 4.3
- Identify and enforce areas in the Minimally Sensitive Area where the public can bring pets on leash only with minimal impact on island flora and fauna. Consult with Tribes to designate pet area locations. Meets Objectives 1.4, 4.3, 4.4, 4.5
- Encourage the re-establishment of native plants along trail corridors. Monitor and control the establishment and spread of non-native vegetation along operational trails and near facilities. Update the Cypress Island Weed Plan to reflect accurately both condition and restoration needs. Use the lowest impact techniques available to control invasive, non-native plants effectively. Prudent use of herbicides may be applied where necessary. Meets Objectives 1.2, 1.3, 3.5
- Research and implement techniques to promote more complex stand structure where appropriate and original site conditions in recovering forests. Meets Objectives 1.2, 1.3, 3.5
- Use only native plant stock from local sources in site restoration projects. Consult with the Natural Areas westside ecologist in restoration planning. Meets Objectives 1.1, 1.2, 3.5

Old Growth Management Unit

The Old Growth Management Unit on the NRCA (Figure 6) is dedicated to maintaining a contiguous forest canopy and developing old growth characteristics between the southern two units of the Cypress Highlands NAP. The critical habitat features to be established and retained in the old growth management unit are large woody debris and snags within a relatively continuous forest (Sheehan, et al. 1992).

Management Actions

- Avoid activities that create new gaps in the forest canopy, such as new campground development and high-intensity prescribed fire. Meets Objectives 1.1, 1.2, 1.5, 4.2
- Allow development of public use and environmental education facilities in the Old Growth Management Unit, provided they do not create new gaps in the forest canopy. Meets Objectives 1.1, 1.2, 1.5, 4.2
- Consider ecological management, where feasible and desirable, to assist with the development of old growth characteristics, which develop naturally over time. Meets Objectives 1.3, 3.5

Note: The Reed Lake compound and Mainline trail from Eagle Harbor to Reef Point do not interfere with protection of this unit, but expansion of these areas or new development that would create forest canopy gaps within the unit will be avoided.

Figure 5: Sensitive Areas
For a color version of this figure see www.dnr.wa.gov/htdocs/aqr/reserves/home

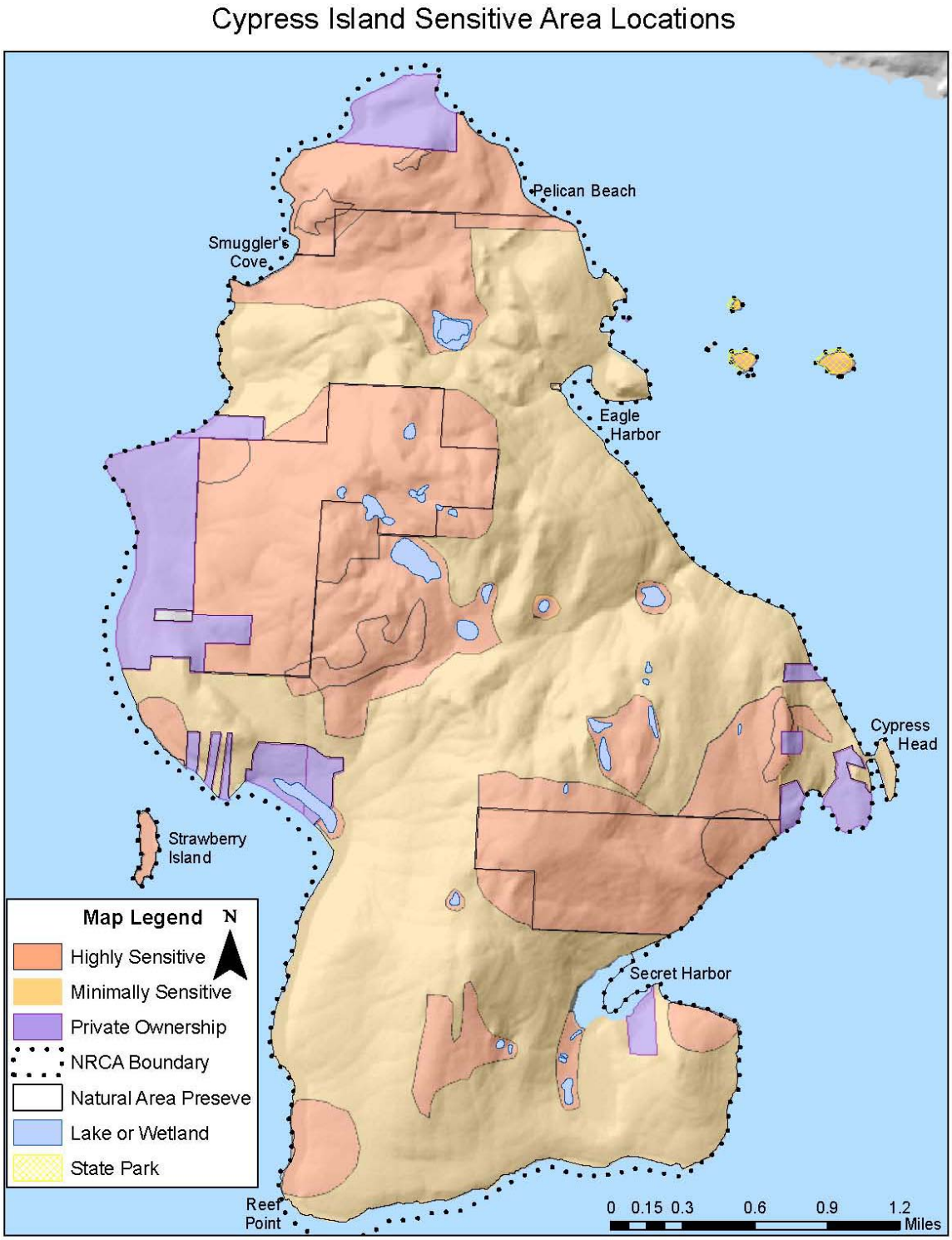
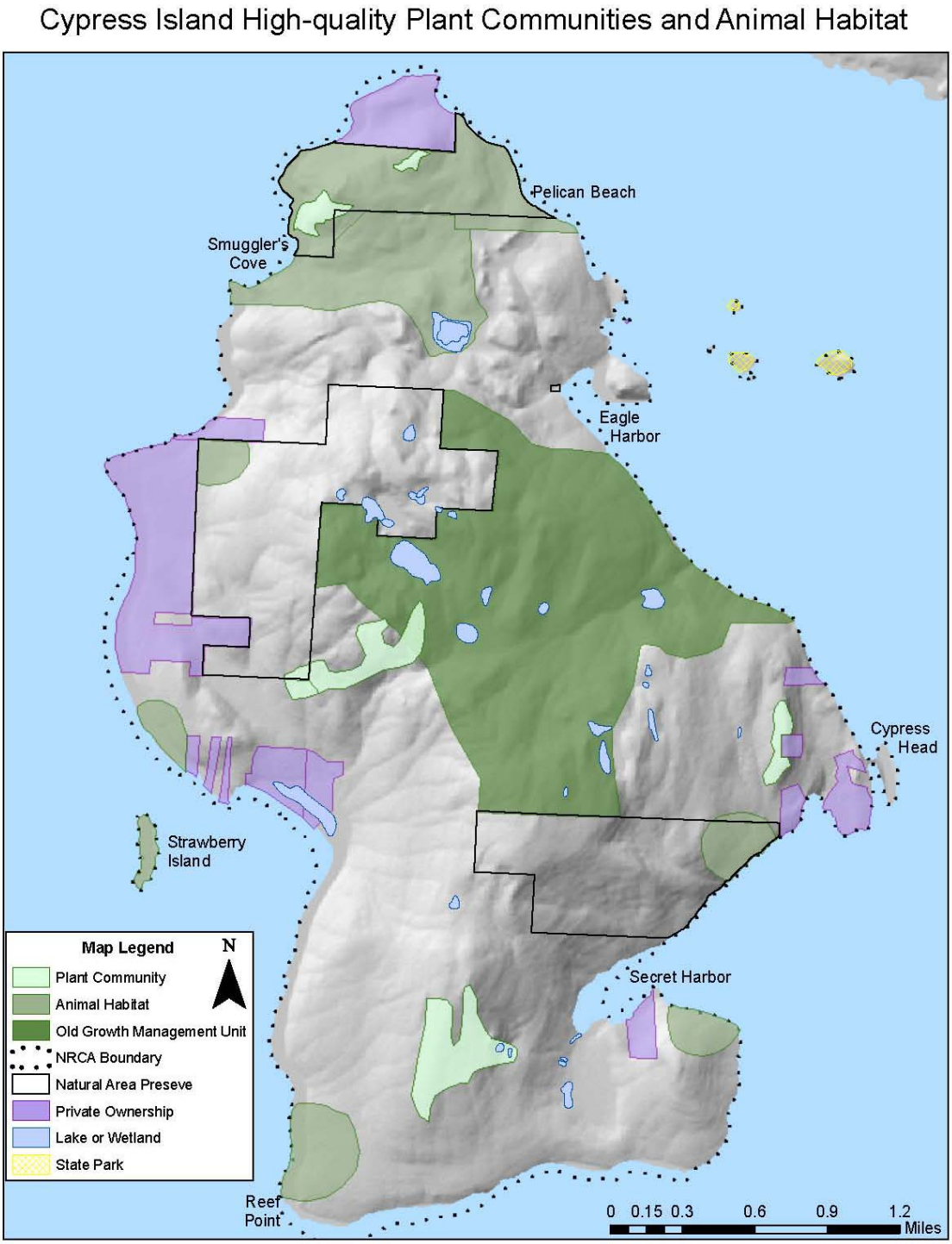


Figure 6: High Quality Plant Communities and Animal Habitat
For a color version of this figure see www.dnr.wa.gov/htdocs/aqr/reserves/home



Aquatic Lands

Management Emphasis

Approximately 90 percent of the tidelands and all the bedlands of Cypress Island are state-owned and will be managed by DNR for conservation purposes. Management of marine resources will be conducted in accordance with the goals and objectives identified in this plan, with particular emphasis on:

1. Protecting the island's marine ecosystem and providing important opportunities for research, education, passive recreation, and scenic appreciation.
2. Allowing current authorized uses on state-owned aquatic lands to continue when these uses are consistent with reserve management and serve the objective of the reserve (described below).

Use-Authorizations and the Objectives of the Reserve

In general, DNR issues use-authorizations throughout Washington State for water-dependent uses, non-water dependent uses, public use and access, natural resource extraction, revenue generation, and environmental protection. The only uses to be permitted by DNR within the aquatic reserve are identified in section 5.4.2. These activities must primarily serve the objective of the reserve, which is environmental protection. Likewise, all lease activities within the reserve must primarily serve to protect the environment (i.e., engage or support conservation activities).

The following criteria will be employed to determine whether a particular use primarily serves the objective of the reserve:

- The activity must not create additional reserve-wide or localized permanent spatial loss of reserve habitats, species, or ecological processes identified for conservation. DNR will only permit new, or expansion of existing, activities within the reserve that do not adversely affect the ability of site managers to achieve the goals detailed in Section 4.0. In general, no net loss—in time or space—of natural resources identified for conservation in Appendix D will be permitted. The primary emphasis will be placed on avoidance and minimization to eliminate the need for compensatory mitigation.
- All those who conduct activities within the reserve must also implement conservation actions in support of the management goals and objectives described in Section 4. These conservation actions must be proportionate to the type of activity and the area encumbered by a lease. Environmental conservation actions may include, but are not limited to, direct implementation of management activities identified within this plan, or funding for such implementation. For example, a conservation action might involve:
    - Monitoring and scientific research identified in Appendix C and Sections 5.3.2 and 5.10.

- Habitat improvement, land acquisition, long-term management and maintenance, or reduction of spatial impacts of existing uses consistent with the desired future conditions for the reserve identified in Section 2.6.
- Education and outreach identified in Section 5.6.
- Reduction of existing or potential threats to habitats and species identified in Appendix D.

Those who request authorization for activities within the reserve, in consultation with DNR staff, will be responsible for demonstrating the temporal and spatial scope of the environmental benefit that will result from the proposed activities. Factors for determining equitable environmental benefits for an activity will include, but not be limited to, the following:

- Size of the area encumbered by the project.
- Intensity and frequency of the activity's use of the area.
- Location of the activity in relation to specific habitat and species use.
- Exclusivity of the activity's use (the level at which other activities are precluded in the area).

Currently existing uses and structures may only be reconfigured within their lease area, or the lease boundaries may only be adjusted to accommodate management practices that result in a reduction of impacts to aquatic resources targeted for protection. With the exception of the existing leases within Deepwater Bay, the NRCA docks in Secret Harbor and public mooring buoys, all aquatic lands will be withdrawn from leasing.

Allowable Uses

The following are the only uses of state-owned aquatic lands that DNR will consider in the aquatic reserve:

Mooring buoys

Management Actions

- Develop a private moorage plan cooperatively with Cypress Island property owners. Concentrate on minimizing impacts to Strawberry Bay.
- Develop a public moorage plan that focuses on protecting eelgrass and other sensitive aquatic habitat identified in Appendix D. Concentrate on the high public use areas of Eagle Harbor, Pelican Beach and Cypress Head. The public moorage plan will be developed only for public aquatic lands that do not front private property.

Private Mooring buoys

- Private mooring buoys may be allowed by DNR if the conditions meet the following criteria (RCW 79.105.430):
  - The applicant owns the residential property on Cypress Island adjacent to the aquatic lands where the buoy is located.
  - The buoy is used for private recreational purposes.
  - The moored boat is not more than sixty feet in length.

- The area being used for the buoy is not subject to prior rights.
- The mooring buoy will not obstruct use of previously authorized mooring buoys.
- The mooring buoy is located on state-owned aquatic lands, but as near to the shore of the residence as practical.
- All applicable local, state, and federal rules and regulations have been met.

- Private property owners who have existing mooring buoys or who wish to install a new or replacement buoy must register their buoys with DNR. Buoys must be maintained in a way that does not result in damage to private property, damage to aquatic vegetation, obstruction to navigation, or concerns about safety.
- Mooring buoys should be installed using the preferred mid-line floating system (Figure 7) or the all-rope system.

DNR will work with property owners to develop a mooring buoy management plan.
Meets Objectives 1.1, 1.2, 8.1, 8.4

Public mooring buoys

- The DNR will maintain a limited number of mooring buoys on state-owned aquatic lands that do not front private property. The purpose for maintaining mooring buoys is to accommodate public access, emergency mooring, and intergovernmental moorage.
- Mooring buoys will be limited in number and established to minimize impacts from anchoring on eelgrass, kelp, and other sensitive aquatic habitat. DNR will only use a mid-line floating system for installing mooring buoys.

Meets Objectives 1.1, 1.2, 4.2, 4.3, 8.1, 8.4

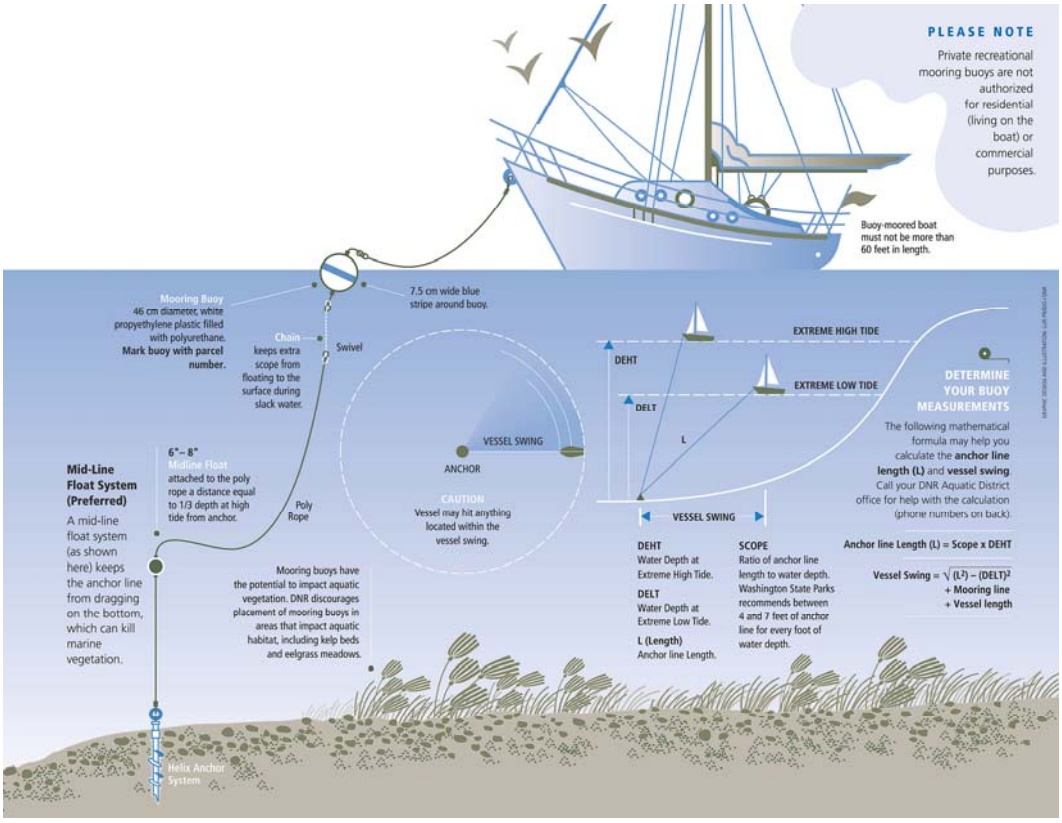


Figure7: Mid-Line Float System

Secret Harbor Docks

Management Actions

- The Secret Harbor docks will remain for use by DNR and other established easement holders. The docks may be reconfigured and extended into the aquatic reserve to accommodate the management needs of the NRCA.
- Any structural changes must improve on the environmental conditions created by the existing docks, such as reducing impacts to the intertidal area.

Meets Objective 4.2, 4.3, 8.1

Deepwater Bay Salmon Net Pen Facilities

The facilities include three net pens: Site one covers 9.01 acres, site two covers 11.53 acres, and site three covers 16.38 acres. These sites receive smolts from the nursery site at Similk Bay (Skagit County) for grow-out and harvest at various times throughout the year. Daily activities include feeding, size grading, mortality diving, net changing, density adjustments, size sampling, health maintenance, and harvesting. Other activities include maintenance of nets, steel cages, anchor lines, boats, and mechanical equipment.

Nets are pulled out of the water, left to dry, checked, repaired, cleaned of fouling organisms, and redeployed three-times per year.

Atlantic salmon (*Salmo salar*) are raised in all three net pens. Between 500,000 to 700,000 salmon smolts are received from the Similk Bay facility annually. Antibiotic use is permitted under Department of Ecology's National Pollutant Discharge Elimination System (NPDES) Wastewater Discharge Permit (permit WA 003152 (5), (6), and (7)). The only feed used is a dry pellet and is distributed twice daily mainly by automatic feeders, which are monitored by personnel while in operation. A copper based antifoulant is used on the predator netting as needed to minimize primary growth.

Waste discharges are limited to fish fecal material and residue (typically aquatic vegetation) cleaned from nets. Fish are harvested when they reach 8-12 pounds and live-hauled to a processing plant.

Hazardous materials used at the site include diesel, gasoline, outboard oils, and lubricants. These are contained in an approved leak proof and vented storage shed. Paints, solvents, and fiberglass materials are contained in a metal storage locker.

The facility is required to have a valid use authorization from DNR, a NPDES from Ecology, and a Finfish Aquaculture Permit from the Washington State Deparment of Fish and Wildlife (WDFW).

Fish rearing and holding pens cause shading and concentrate fish waste. They can result in disease outbreaks due to the confinement of a large number of fish in a relatively small area. Some fish pen rearing operations can distribute feed and antibiotics that are not all consumed by the fish and can potentially impact local habitat and aquatic species. There are also threats of negative interactions with native species, predation, and impacts to the local benthic community.

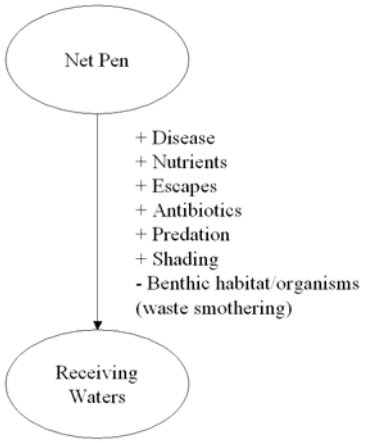


Figure 8: Conceptual diagram of relationship between net pens and impacts to the natural environment.

Management Actions

- The net pens will be allowed to continue to operate at Secret Harbor. No expansion of these facilities will be allowed, in accordance with RCW 79.90.455 and WAC 332-30-151. If they cease operations, other than to transfer ownership, the lease will be ended, the facilities will be removed, and no further aquaculture leases will be granted by DNR within or adjacent to the aquatic reserve. Any change in species that are raised at these facilities only will be approved by DNR if the operator can clearly demonstrate that there will be less impact than current operations.
- No significant increase in biomass of any species of fish raised at the existing facilities, including Atlantic salmon, will be allowed by DNR unless the operators can clearly demonstrate that there will be no additional impacts from the operations on the habitat and species of Cypress Island.
- Any proposed changes to the existing locations, replacement, or footprints of the three net pens must first demonstrate that they will result in improvements to the habitat and environmental conditions at the reserve site before they are approved by DNR.
- The facilities may not cause nutrient enrichment or anaerobic conditions of sediments.
- Every effort must be made by the operator of the facility to minimize and, if possible, eliminate the use of antibiotics as part of the operations.
- The facility must comply with the conditions contained in the following documents:
    a. Washington State Department of Natural Resources – Lease 20-A12517, Exhibit C, Plan of Development and Operation
    b. Ecology – NPDES permits: WA 003157-5, WA 003157-6, and WA 003157-7
    c. WDFW Finfish Aquaculture Permit, and all sections of Chapter 220-76 WAC, particularly sections 100 through 150
    d. Facilities Operational Guidance
    e. 2005 Fin Fish Aquaculture Compliance Procedures
    f. Employee Guidance for Routine Handling Procedures to Minimize the Potential for Escapement (updated May 2005)
    g. NPDES Pollution Prevention Plan (updated June 2005)
    h. Fish Escape Prevention Plan (updated May 2005)
    i. Fish Escape Reporting and Response Plan (updated May 2005)

The operator must provide DNR with copies of up-to-date monitoring reports required under the NPDES permit and annual inspection reports from WDFW. The above management actions meet objectives 1.4, 3.3, 7.2, 8.1, 8.2

Research and Monitoring

Management Actions

- Proposed research projects are specified in Appendix C.

- DNR Aquatic Resources Program staff and Natural Areas Program staff will work with anyone interested in proposing research in support of the reserve's goals and objectives.

Meets Objectives 7.1, 7.2, 7.3.

Marine Biological Reserve

Management Actions

- All of the area included in the Cypress Island site was designated as a Marine Biological Reserve by the state legislature in 1923. The Marine Biological Reserve was established to create an area that protected and preserved marine biological materials useful for scientific purposes.
- Under the Marine Biological Reserve's statute (RCW 28B.20.320), the collection of any marine biological materials other than that taken for food, and also excepting kelp, is prohibited unless written permission is obtained from the Director of Friday Harbor Laboratories. Meets Objective 8.2

Restoration

Management Actions

- DNR will develop a restoration plan for the marine waters of Cypress Island. DNR staff from both the Aquatic Reserve Program and the Natural Areas Program will also evaluate and approve new proposals for restoration projects. Only those proposals determined to be consistent with the management of the reserve will be considered. Meets Objective 8.3

Commercial and Recreational Fishing

Commercial and recreational fisheries will be managed by WDFW, responsible tribal governments, and DNR shellfish section staff in collaboration with Natural Areas Program and Aquatic Reserve Program staff (commercial and recreational shellfish only).

Prohibited Uses

Recreational or Private Docks on State Owned Aquatic Lands

Management Actions

- Other than the existing docks in Secret Harbor, Deepwater Bay and at Towhead Island, no other recreational or private docks will be allowed in the aquatic reserve (RCW 79.105.430). Meets Objective 8.1

Other uses

Management Actions

- No other uses, other than those identified above will be considered by DNR. Any uses proposed adjacent to the reserve will not be permitted if they are determined to have an impact on the habitat and species identified for conservation in the reserve.

Meets Objectives 1.4, 8.1, 8.2

Public Use of Cypress Island

The goals of the Cypress Island Comprehensive Plan include low-impact public use and environmental education. The Facilities Master Plan (Figure 9) shows the locations of designated access points, trails, campgrounds, toilets, interpretive signing, and regulatory information.

Public use of Cypress Island is encouraged in existing developed areas. Three recreation sites, totaling 15 acres, are managed by DNR for primitive camping and are located at Strawberry Island, Cypress Head, and Pelican Beach. More than 20 miles of hiking trails are open to the public, some with seasonal restrictions for protection of endangered, threatened, and sensitive (ET&S) species.

Use by organized groups and commercial outfitters will be monitored and evaluated to direct future management decisions. Public use levels and activities that do not detract from protection of natural and scenic qualities will be allowed in designated areas.

Allowable Public Uses

Management Actions

- Allow the following public uses in Minimally Sensitive Areas. DNR reserves the right to restrict or prohibit any use that adversely affects the resources protected on Cypress Island (with the exception of tribal activities, for which see "Tribal Use," below). Meets Objectives 4.1, 4.2, 4.3, 4.4
  - Use by groups, including commercial outfitters, with group size limited to no more than 12 individuals.
  - Hiking on trails designated by DNR.
  - Swimming in lakes designated by DNR.
  - Camping in sites developed by DNR. Stay is limited to ten days.
  - Incidental mineral collecting with no disturbance to vegetation, soil or water.
  - Hunting and fishing for the administrative purpose of maintaining wild native animal populations and as regulated by the Washington Department of Fish and Wildlife and local Tribes, in coordination with DNR. Impacts from approved location, timing, type and level of dispersed hunting will be monitored and adjustments will be made as needed.
  - Leashed pets in designated areas within the Minimally Sensitive Area, except for assistance dogs, which will be allowed on all open trails.
- Establish and implement appropriate levels of use for individuals and groups for specific areas as needed.

- Maintain and enhance existing shoreline access to Cypress Island in consultation with local Tribes and only where public use does not conflict with resource values or private ownership. Meets Objectives 1.4, 4.3, 4.4
- Work with WDFW and local Tribes to develop marine hunting and fishing that is consistent with the NRCA goals and objectives. Meets Objectives 1.4, 3.4
- Limit allowable public use in Highly Sensitive Areas to the following. These are subject to change if determined to affect adversely the resources on Cypress Island. Meets Objective 4.1, 4.2, 4.3, 4.4
  - Use by groups on Strawberry Island, including commercial outfitters, with group size limited to no more than six individuals.
  - Hiking with seasonal restrictions on trails designated by DNR.
  - Fishing for the administrative purpose of maintaining wild native animal populations and as regulated by WDFW and local Tribes.

Prohibited Public Uses

Some public uses are not compatible with the scope and character of the goals of protection on Cypress Island. When done frequently or by enough visitors, these activities introduce impacts (noise, velocity, nonnative plant seed dispersal, etc.) that would prevent DNR from successfully implementing the legislated conservation goals of the NRCA.

Management Actions

Prohibit the following public uses:

- Fires outside of DNR-provided fire rings
- Fires on Strawberry Island
- Off-trail travel
- Climbing with or without gear
- Recreation with vehicles (motorized or non-motorized), including bicycles
- Riding stock and pack animals
- Competitive events
- Organized festivals or events attracting large crowds
- Any activity that DNR determines to be unsafe, destructive, disruptive, or in conflict with the management goals of this plan.

Meets Objectives 1.4, 4.4

Prohibited uses are not limited to those listed in this plan. Any use not specifically allowed in this plan is disallowed, except by temporary permit granted by DNR according to the following criteria for “Conditional Uses.”

Conditional Uses

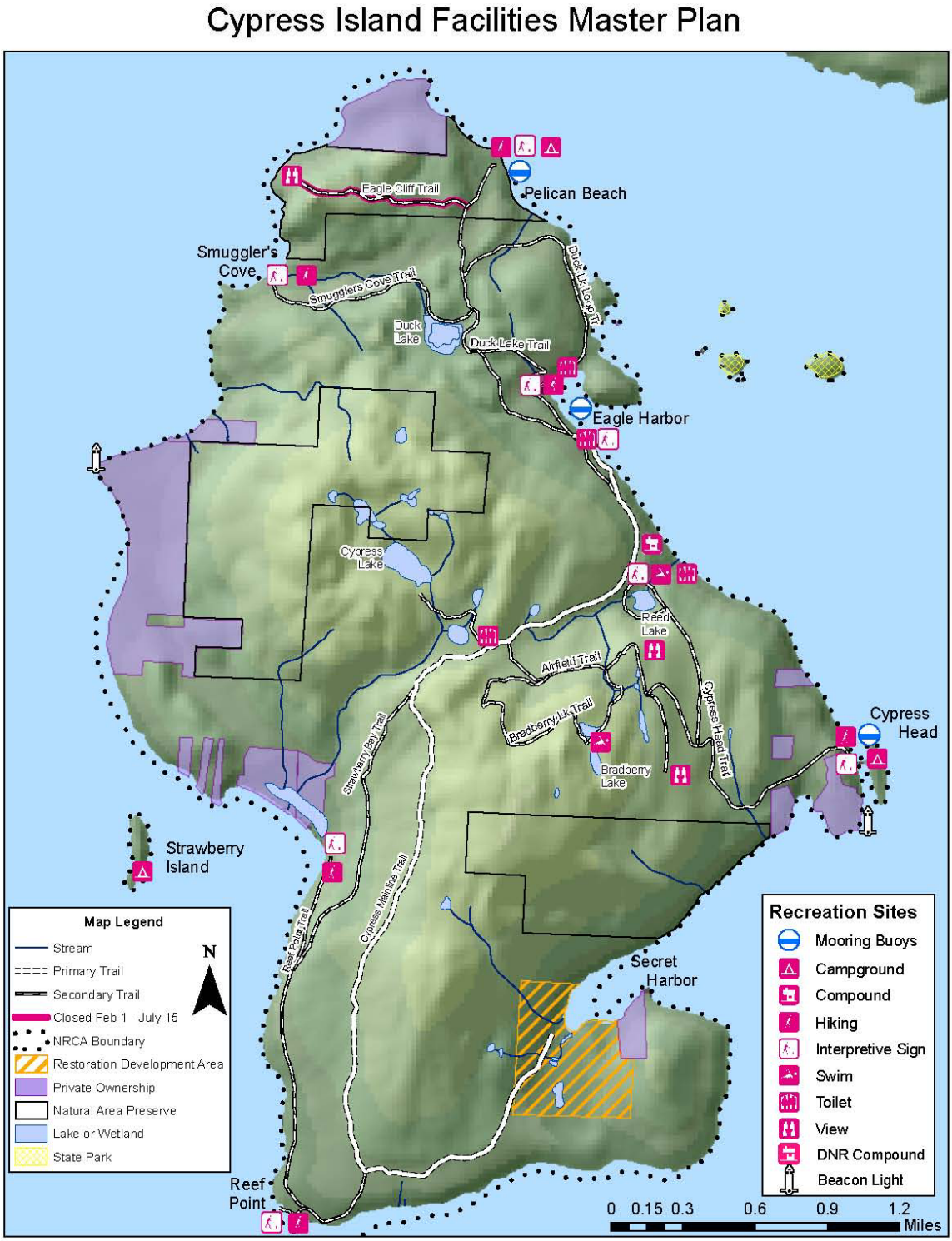
Management Actions

Grant exceptions by temporary permit when the proposed use is proven to meet all of the following criteria:

- Poses no threat to protected sensitive resources.
- Does not compromise or degrade ecosystems and resources on Cypress Island.
- Provides a net benefit to Cypress Island.
- Does not deprive the general public access to or enjoyment of Cypress Island.
- Does not detract from the general public interest.

Meets Objectives 1.1, 4.4

Figure 9: Cypress Island NRCA Facilities Master Plan
For a color version of this figure see www.dnr.wa.gov/htdocs/aqr/reserves/home



Tribal Use

In consultation with local Tribes, DNR will develop guidelines for upland Tribal uses. These include, but are not limited to, ceremonial and subsistence hunting and gathering.

Outdoor Environmental Education

Environmental education will be developed to enhance public awareness and care for the outstanding historic, cultural, geologic and ecological values of Cypress Island. Sensitive resources will be protected in the *highly sensitive areas.* Where circumstances permit, educational facilities and tours will be concentrated in the more resilient *minimally sensitive areas*. Interpretive materials that include Tribal culture and history will be developed in consultation with local Tribes. Environmental education will be a central theme in site development.

Management Actions

- Inform the public of the variety and sensitivity of natural features, native species, and ecological processes of Cypress Island and western Washington lowland/island and marine ecosystems. Meets Objectives 5.2, 5.3
- Sensitize the public to potential human impacts on fragile features. Present Cypress Island maps and regulations, conservation goals, and history of protection, along with DNR's role in resource conservation. Meets Objectives 5.3, 5.4
- Develop a public education program to encourage non-consumptive appreciation of the marine environment and discuss DNR's role in marine stewardship. Consult with local Tribes, agencies, and other experts, when appropriate. Meets Objectives 5.1, 5.2, 5.3, 5.4
- Place education facilities at authorized entry points and acceptable public use locations. Provide interpretive information at the Reed Lake compound, and ensure that this interpretative information is also available from DNR stewards and staff. Meets objectives 5.1,5.2
- Identify off-island opportunities to provide interpretive information about Cypress Island. Meets Objective 5.2
- Work cooperatively with local Tribes, other natural resource agencies and/or private institutions to develop appropriate interpretive materials and activities. Meets Objectives 3.4, 5.3
- Include local ecology, natural history, tribal culture and history, post-Euro-American settlement history, geology, and DNR conservation activities in environmental education subject matter. Meets Objectives 5.2, 5.3
- Inform the public of the primitive nature and lack of support facilities on Cypress Island. Meets Objective 5.4

Commodity-based Activities

Grazing, agriculture, aquaculture (other than that identified in Sections 5.4 and 5.4.1), mining, and oil and gas exploration are generally inconsistent with the management goals and emphasis of Cypress Island as presented in this plan.

Management Actions

- Review all applications for commodity-based activity using the criteria listed under Conditional Use (Section 5.5.3). Meets Objectives 1.1, 1.2, 4.4, 4.5

General Site Administration

Administrative activities will be conducted after careful evaluation in the context of program goals. These activities include:

- Development of a Public Use Management Plan.
- Development and maintenance of facilities.
- Development of an emergency response plan and law enforcement plan.
- Accommodation of Tribal cultural practices.
- Research and monitoring.
- Fire management and fuel modification.
- Vegetation removal to accomplish program goals.
- Live trapping and other wildlife management.

The primary goal of DNR administration is to restore and protect sensitive resources and attract public use to Minimally Sensitive Areas. Highest priority should be given to areas where degradation and sensitive resources occur in the same location.

Management Actions:

- Maintain existing facilities for operations and public use, with Eagle Harbor as the main entry point to Cypress Island. Meets Objectives 1.5, 4.2
- Develop new facilities for operations and public use at the recently acquired Secret Harbor property to alleviate impacts of concentrated public use in the northern sections of Cypress Island. Evaluate the acquired property for appropriate uses and future development in compliance with this plan. Prioritize restoration of the former building sites and the degraded wetland system (see Figure 10, Restoration Priorities). Develop a Restoration and Development Plan to guide future use of the site. Consult with the Natural Areas Program west side ecologist and local Tribes in the development of this plan. Meets Objectives 1.3, 1.4, 1.5, 4.1, 4.2, 4.3
- Close or convert to trails all roads not already closed or converted, except those subject to legally recorded easements, or those determined to be

necessary for site management. Prioritize restoration and maintenance of these trails (Figure 10) according to their designation as either primary or secondary trails, as follows:

- Primary Trail Class: Developed/improved trails designed to accommodate the use of a short-wheel-base all-terrain vehicle for administrative and authorized uses. Typical tread width is 42" to 60." Though this trail class accommodates motorized use, the primary management objective is for hiking and pedestrian use. Motorized use by the public is prohibited (Table 3).
- Secondary Trail Class: Simple to developed trails designed to accommodate use by hikers and pedestrians. Typical tread width is 12" to 24." Table 3 provides typical attributes of this trail class (Table 3).

Meets Objectives 1.3, 4.3

- Prevent or control the establishment and spread of non-native invasive plants along trail corridors and in other disturbed areas (Figure 10). Update the Cypress Island Weed Plan to reflect accurately conditions and restoration needs. Meets Objectives 1.1, 1.2, 1.3, 3.5
- Manage upland water and terrestrial resources to minimize deposit of sediment into the marine environment. Meets Objectives 1.2, 1.4, 4.3, 8.1
- Implement, where feasible, Americans with Disabilities Act (ADA) standards in future site development. This has been accomplished at Pelican Beach and Cypress Head campgrounds. Meets Objectives 4.1
- Evaluate new property added to the NRCA through donation or purchase for sensitive resources and manage according to the recommendations outlined in this plan. Meets Objectives 1.1, 3.1
- Provide an adequate custodial presence on Cypress Island to work on stewardship projects, environmental education, and law enforcement. Meets Objectives 1.4, 3.1, 4.4, 5.3
- Use unobtrusive colors, materials, and placement of facilities and signs to protect the scenic values of the site. Meets Objective 2.1, 2.2
- Limit vehicular traffic to DNR administrative vehicles only. Minimize use of administrative vehicles. Prohibit use of non-DNR vehicles on the trail system, except those authorized by DNR for emergency or conditional use. Meets Objectives 1.1, 1.4, 4.4, 4.5
- Define the carrying capacity of public use facilities in the NRCA. Consider, and implement as appropriate, the use of a reservation system to regulate and distribute overnight use for the season when use exceeds capacity. Meets Objectives 1.4, 4.4
- Limit group size to a maximum of six individuals on Strawberry Island and twelve individuals elsewhere (see also 5.5.1). Coordinate with user groups

and commercial outfitters to reduce impacts and conflicts arising from group use. Consider, and implement as appropriate, the use of a permit system or reservation system to regulate and distribute group impacts. Meets Objectives 1.4, 4.4, 4.5

- Permanently prohibit use of the airstrip (except as a helispot for DNR emergency use). Develop a comprehensive restoration plan and implement as funds allow (Figure 10). At a minimum, revegetate using native species. Consult with the Natural Areas Program westside ecologist to plan restoration activities. Meets Objectives 1.3, 3.5, 4.1, 4.3, 4.4
- Address monitoring needs for each recreation site development proposal, stewardship, or administrative action. Consult with local Tribes and other appropriate agencies and organizations. Meets Objectives 1.3, 1.4, 3.4, 4.3, 4.4

Table 3: **Cypress Island Trail Design Parameters**

Trail Design Parameters provide guidance for the assessment, survey and design, construction, repair and maintenance of trails, based on the Trail Class and Designed Use of the trail. Exceptions and variances to these parameters may occur in order to meet management goals.

Note: When designing accessible trails, use current ADA guidelines for recreation trail construction.

Trail Class		Primary Trail	Secondary Trail
Designed use		Hiker-Pedestrian with Administrative All Terrain Vehicle Use	Hiker-Pedestrian
Design Tread Width		42"-60" At switchbacks, >60" If sideslopes are >50%, increase width by 6"-16"	12"-24" May be 36"-48" at switchbacks, turnpikes, fords and steep side slopes
Design Surface	Type	Native w/ some onsite borrow or imported materials. Some loose or soft sections.	Native with some on-site borrow or imported materials. Some trails native with limited grading, continuous, rough.
	Obstacles	Generally smooth, with few protrusions exceeding 4". Drain dips and low water bars.	Generaly clear. Roots, rocks and log protrusions to 6" and steps to 14" may be present.
Design Grade	Target Range	<12%	<12%
	Short Pitch Max	25%	25%
	Max Pitch Density	<5% of trail	<5% of trail
Design Cross Slope	Target Range	3%-5%	5%-20%
	Maximum	10%	Up to natural side-slope
Design Clearing	Width	8"-12" outside of tread edge. [On steep sidehills, increase clearing on uphill side by 6"-12"]	12"-18" outside of trail edge with some encroachment into clearing area.
	Height	6'-7'	6'-7'
Design Turns	Radius	8'-10' [Use climbing turns vs switchbacks for ATVs whenever possible]	3'-6'

* Grade variances should be based upon soils, hydrological conditions, use levels, and other factors contributing to surface stability and erosion potential.

** Maximum pitch density refers to the percentage of the trail that is within 5% (+/-) of the Short Pitch Maximum Grade.

Fire Management

Ecological Management

The fire history of Cypress Island has not been studied in detail. Fire likely played an important role in creating and maintaining plant communities on the island, particularly the grassy balds.

Management Actions

- Study the ecology and history of fire on the island in consultation with local Tribes and appropriate agencies and organizations. Make recommendations for mimicking the effects of natural fire in the landscape. Meets Objectives 1.1, 1.2, 1.3, 3.4, 3.5
- Where feasible, use prescribed burning to implement fire study recommendations and to maintain and enhance native plant communities. Meets Objectives 1.1, 1.2, 1.3, 3.5

Fire Suppression and Prevention

Suppression of wildfire on Cypress Island is the responsibility of DNR acting through the Northwest Region office in Sedro-Woolley.

DNR is committed to the following priorities:

- Fire suppression efforts shall be directed toward protection of lives first, then property, then resources.
- Every reasonable effort will be exerted to prevent fire on state land from spreading to private property.

Management Actions

- Use the lowest-impact firefighting tactics that will successfully control the fire (see Appendix E).
- Provide NW Region fire personnel with a Wildfire Suppression Plan which addresses fire management objectives, resource specialist notification instructions, pre-suppression planning, training and orientation, control lines, mop-up procedures, post-fire rehabilitation and known safety hazards.
- Assign a resource advisor from the Natural Areas Program to advise the incident commander during fire suppression.
- Taking care to avoid balds and sensitive areas, identify a series of remote helispots at appropriate locations for use in fire suppression.
- Locate project fire camps on a hardened site to minimize impacts where possible.

- Promote practices that reduce the probability of human-caused fires. For example:
  - Require a burning permit from DNR or Skagit County to burn debris, and enforce compliance with provisions for burning.
  - Consider fuel modification to reduce the possibility of wildfire in areas developed for public use.
  - Restrict recreational fires to appropriate steel fireplaces within developed recreation sites, unless prohibited by seasonal or permanent fire bans. Prohibit fires on Strawberry Island. Allow portable stove use.
  - Require DNR-approved exhaust systems on permitted and administrative vehicles used on Cypress Island.

Meets Objectives1.2, 1.4, 1.5, 4.5

Monitoring

Monitoring is an examination of change over time and is used to track resource conditions and to help determine if management activities are producing the desired results. All monitoring projects must be reviewed and approved by the Department prior to commencement.

Funding requests by DNR for operations and stewardship at Cypress Island will include a provision for monitoring. Likewise, site development plans will include a strategy for monitoring public use impacts and detecting unacceptable change. Actions DNR will take in case unacceptable change occurs will be outlined.

Monitoring plans must be developed before stewardship and site development proceed.

DNR will address three types of monitoring:

- Cultural resources monitoring
- Ecological monitoring
- Public use monitoring

Cultural Resources Monitoring

Management Action

- Monitor the condition of cultural resources, particularly those in areas exposed to environmental elements or in the vicinity of public use areas. Meets Objectives 6.2

Ecological Monitoring

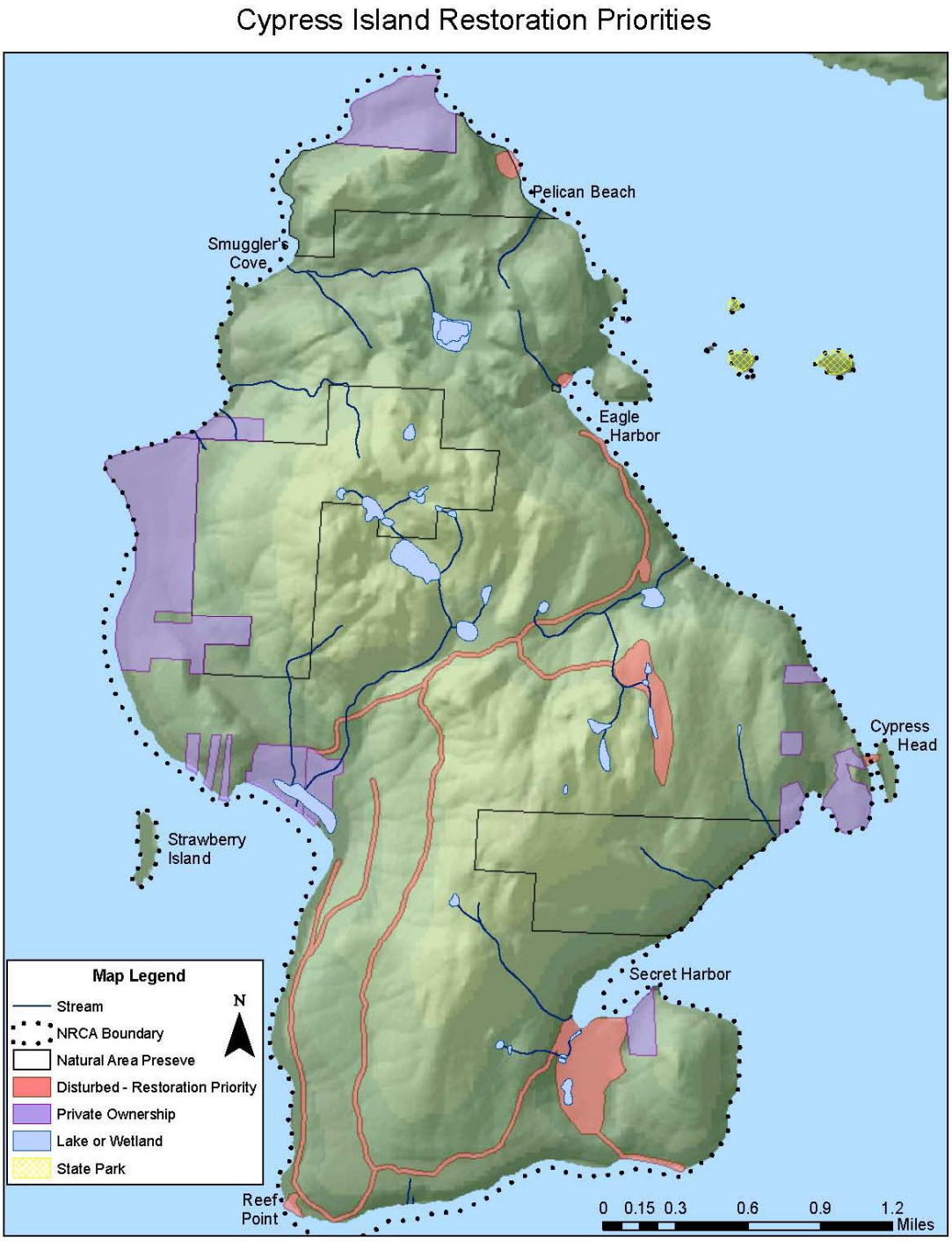
Ecological monitoring may include simple visual inspections of systems, species, or communities every year or every few years In the case of particularly rare or

sensitive species and communities, however, more detailed monitoring may be warranted. Currently, some detailed monitoring occurs within the Natural Area Preserve to track vegetation trends in grassy balds. In addition, non-native invasive plant species have been partially inventoried and mapped.

Management Actions

- Monitor the use of habitat and habitat needs for identified Threatened, Endangered or Sensitive (TES) species. Monitor the condition and occupation of potential habitat by TES species particularly in prime areas such as old growth forest patches and talus cliffs. Meets Objectives 3.1, 3.3
- Document occurrence and change in habitat and community types throughout Cypress Island, including degradation (soil compaction/erosion, non-native plant establishment/spread), recovery or regeneration, and use of habitat by native species. Meets Objectives 1.1, 1.4, 1.5
- Evaluate conditions of previously altered sites (degrading/recovering), success of restoration projects, and natural recovery. Monitor the NAP for presence of non-native invasive plant species, and update the Cypress Island Weed Plan to reflect accurately condition and restoration needs. Meets Objectives 1.1, 1.3, 3.4
- Determine the historical and current patterns and causes of fire, the effects of suppression on fire-dependent ecosystems, and the impacts of recreational campfires. Meets Objectives 1.1, 1.2, 1.4, 3.4

Figure 10: Restoration Priorities
For a color version of this figure see www.dnr.wa.gov/htdocs/aqr/reserves/home



Public Use Monitoring

Management Actions

- Monitor the impacts from the following activities:
  - Visitor use in Minimally and Highly Sensitive Areas.
  - Use by commercial outfitters and related impacts.
  - Gathering of firewood.
  - Use levels on public infrastructure.
  - Occurrence and effects of unauthorized use or trespass.
  - Public use on viewshed aesthetics.

Meets Objectives 1.4, 2.1, 2.2, 4.3, 4.4

- Evaluate the impacts of public use on intertidal and subtidal marine habitat (Appendix D), including the rate and potential impacts of shellfish harvest on public tidelands. Meets objectives 7.1, 7.2, 8.1

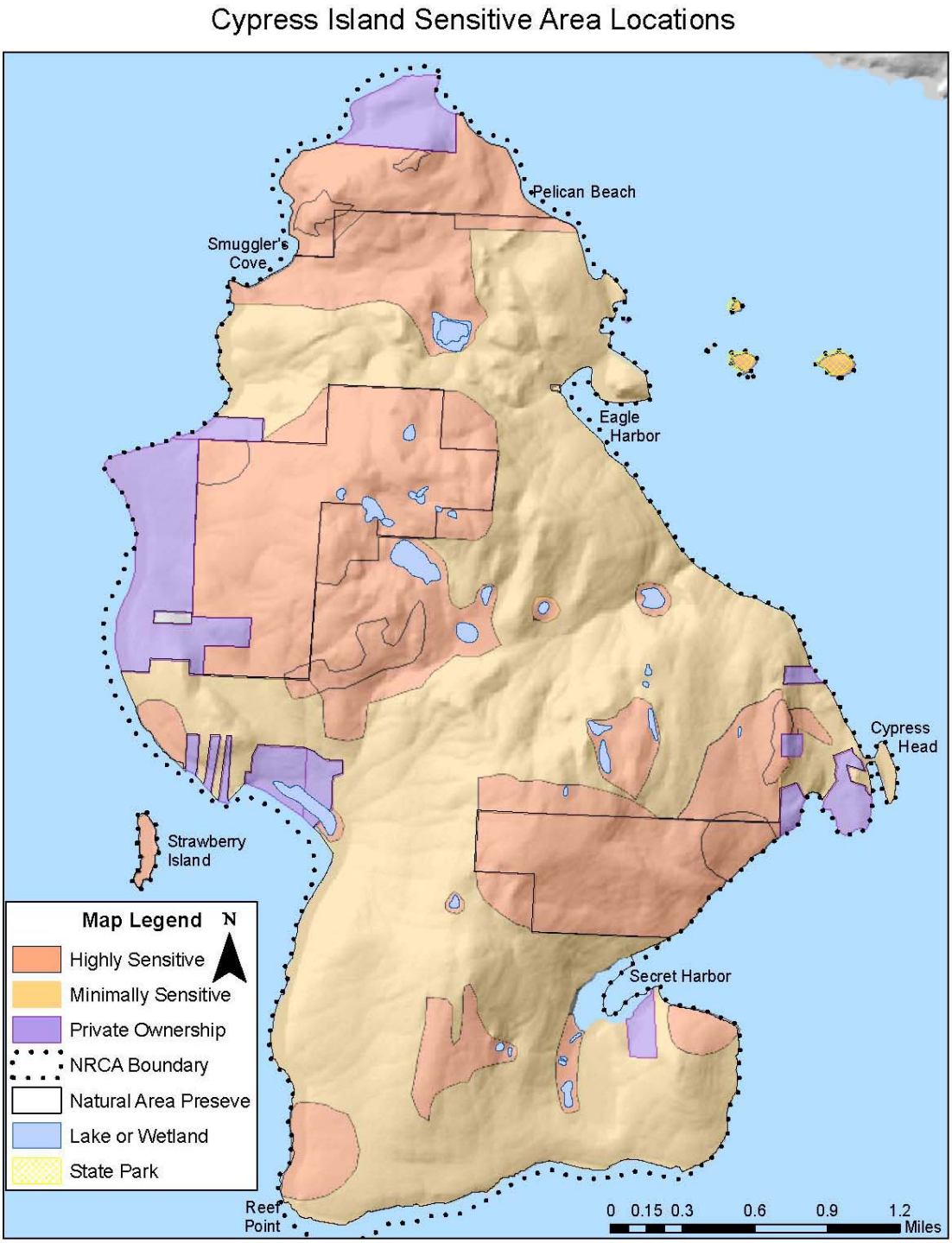
Law Enforcement

DNR staff will be responsible for enforcement of fire regulations, trespass, and public use regulations on Cypress Island state property.

Management Actions

- Emphasize education about legal requirements, and encourage voluntary compliance whenever possible during enforcement actions. In the event of violations of game laws or other serious crimes, seek cooperative assistance from the Department of Fish and Wildlife, Skagit County Sheriff, Tribal Fish and Wildlife officers, Washington State Patrol, or other available officers as appropriate. Meets Objectives 1.4, 3.1, 4.4, 4.5
- Maintain a year-round staff presence on the island. Train agency staff in basic law enforcement and grant limited police powers and forest warden's commission to enable this staff to enforce applicable RCWs and regulations. The enforcement duties of the staff are not, however, to include responding to violations of Treaty. Meets Objectives 1.4, 3.1, 4.4, 5.3, 5.4

Figure 11: Sensitive Area Locations
For a color version of this figure see www.dnr.wa.gov/htdocs/aqr/reserves/home



6. Glossary

Aquatic Lands: All state-owned tidelands and bedlands.

Aquatic Reserve Program: The Aquatic Reserves Program is part of Department Of Natural Resources (DNR) efforts to promote preservation, restoration, and enhancement of state-owned aquatic lands that provide benefits to the health of native aquatic habitat and species and other resources in the state of Washington. DNR is to establish Aquatic Reserves to protect important native aquatic ecosystems on selected state-owned aquatic lands throughout the state. These are to be aquatic lands of special educational or scientific interest, or lands of special environmental importance (WAC 332-30-151).

Bedlands: Those lands lying waterward of and below the line of extreme low tide.

Biological Diversity: The various plant and animal species representative of, and native to, a site. "Regional biological diversity" is protected when habitat is provided to species that are becoming locally rare due to loss of habitat.

Critical Habitat: Those areas necessary for the survival of Threatened, Endangered, Sensitive species, as designated under the Federal Endangered Species Act and Washington State Forest Practices Rules.

Cultural Resources: Archeological and historic sites and artifacts, whether previously recorded or still unrecognized, as administered by the Department of Archaeology and Historic Preservation (DAHP) and protected under Title 27 RCW.

Department of Archaeology and Historic Preservation (DAHP): The state agency established to document and protect cultural resources.

Ecosystem: An ecological community consisting of all the living and non-living components of the physical environment.

Enhance: Intentionally to re-create elements that existed on site before disturbance, or introduce new functions or characteristics to a site.

Grassy Balds: A landscape feature characterized by grass, forbs, moss and lichen, and relative absence of trees and shrubs, resulting from a combination of factors, including shallow soil, dry site conditions, steep topography, and fire.

Habitat: The components of the ecosystem upon which a plant or animal species relies for its life cycle.

Highly Sensitive Areas: Areas of land and/or water containing features such as fragile soils and vegetation (grassy balds, wetlands), cultural deposits, and habitat for TES species, as well as other areas where special management attention is needed to ensure that the legislative mandate to protect such resources is being met.

Interagency Committee for Outdoor Recreation (IAC): A state agency that serves the park, recreation, and conservation needs of the citizens of Washington State.

Low-impact Public Use: Those "public recreation uses and improvements that do not adversely affect the resource values, are appropriate to the maintenance of the site in a relatively unmodified natural setting, and do not detract from long-term (natural) processes." (RCW 79.71.030)

Maintain: To protect natural site characteristics and ecosystem processes, such as wildlife habitat, soil conservation, and succession of native plant communities.

Minimally Sensitive Areas: Land and/or water on the NRCA that does not contain the identified sensitive resources that are protected in the Highly Sensitive Areas. While the entire NRCA is protected under RCW 79.71 and subsequent policy guidelines, inventory of the NRCA showed that these areas contain resources that are thought to be more resilient and not as easily impacted by public uses allowed in this plan.

Mitigate: To minimize or compensate for potential adverse environmental impacts.

Monitor: To collect and analyze data for the purpose of answering management questions. A baseline is established and periodic measurements are taken to determine the extent and rate of change over time. Topics include beneficial and negative impacts of stewardship activities, natural events, and public use.

Natural Area Preserve (NAP): Designated under RCW 79.70, these lands are managed by DNR for the protection of outstanding examples of native ecosystems and threatened, endangered and sensitive species in Washington State.

Natural processes: Phenomena that shape the landscape's appearance and habitat potential. On Cypress Island, natural processes include forest succession; windthrow in forest stands; decomposition of large standing and fallen dead wood (by birds, invertebrates and fungi); slow accumulation of organic material in, and transformation of, wetlands; relatively free movement of wildlife among a dynamic mosaic of the island's terrestrial and marine habitats; and periodic fire.

Natural Heritage Program (NHP): The Natural Heritage Program is housed within the Department of Natural Resources. The program maintains a statewide database on the species and ecosystems of the state, using the objective information in the database to set conservation priorities. The information in the database, along with the established conservation

priorities, is used by the program's scientists to identify potential new natural areas. The information in the database and the expertise of the program's scientists are also shared with other agencies (federal, state, and county), organizations, and individuals to achieve conservation of the highest priority species and ecosystems.

Natural Resources Conservation Area (NRCA): Designated under RCW 79.71, lands with scenic, natural and low-impact public use values as described in RCW 79.71.020. NRCAs are managed by DNR for the conservation purposes of maintaining, restoring, and enhancing ecological systems, including habitat for state and federal listed threatened, endangered and sensitive species; protecting scenic values; and, where resource protection is not compromised, providing low-impact public use and environmental education opportunities (RCW 79.71.030). Management plans are to be developed for each NRCA identifying resources to be protected and opportunities for public use and environmental education (RCW 79.71.070).

NRCA Boundary: A mapped boundary established by public hearing encompassing significant resources that DNR has an interest in protecting, as described in RCW 79.71.020: "(1) Lands identified as having high priority for conservation, natural systems, wildlife and low impact public use values; (2) An area of land or water, or land and water, that has flora, fauna, geological, archaeological, scenic, or similar features of critical importance to the people of Washington and that has retained to some degree or has reestablished its natural character; (3) Examples of native ecological communities; and (4) Environmentally significant sites threatened with conversion to incompatible or ecologically irreversible uses." Where these resources are in private ownership, DNR may purchase properties from willing sellers. Private property and associated rights within the NRCA boundary are otherwise not affected by the NRCA boundary designation or by NRCA management.

Police powers: By policy (PO22-002), DNR employees vested with Police Powers may enforce provisions of Chapter 43.12 RCW and Title 79 RCW – Public Lands; Title 9 RCW, Title 9A RCW – Criminal Code (limited to misdemeanor and gross misdemeanor offenses); Chapter 10.31 RCW – Warrants and Arrests; Chapter 76.04 RCW – Forest Protection; Chapters 76.06, 76.09, and 76.48 RCW – Forest Products and Practices; Chapter 78.44 RCW – Surface Mining; Title 77 RCW – Fisheries and Wildlife (in cooperation with Fish and Wildlife Law Enforcement).

Rapid Shoreline Inventory: A survey of a defined section of shoreline detailing a set of physical and biological data that provides indicators of beach health and a better understanding of shoreline habitat and how it functions.

Registered Water Rights: Permitted by the Washington State Department of Ecology (DOE), water diverted for domestic use.

Restore: To recover natural site features and processes that existed on site prior to disturbance.

State Environmental Policy Act (SEPA): A state law that requires administrative action for nonexempt government actions.

Succession: The natural changes in vegetation and animal life that occur as a plant community recovers from disturbance and proceeds to climax. In forested sites, colonizing plants inhabit bare ground, longer-lived shrubs and trees replace colonizers, and shrub/tree dominance changes with the establishment of a stable and complex system.

Threatened, Endangered and Sensitive Species (TES): Plants and animals protected under the federal Endangered Species Act or state designation.

Tidelands: Lands between the lines of ordinary high tide and the line of extreme low tide.

Uplands: Lands, including lakes, wetlands and streams, above the line of ordinary high tide.

Warden Commission: Authority granted to DNR staff to enforce burning and debris regulations (RCW 76.04.205) and associated rules (WAC 332-24-201, 332-24-205 and 332-24-211).

Wetlands: Lands where saturation with water is the dominant factor determining soil development and the types of plant and animal communities living in the soil and on its surface.

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Appendix A – Natural Resources Conservation Areas Act

The Washington Natural Resources Conservation Areas (NRCA) Act of 1987, RCW 79.71, defines the characteristics of an NRCA as:

- Lands identified as a high priority for conservation, natural systems, wildlife, and low-impact public use.
- An area of land or water, or land and water, with flora, fauna, geological, archeological, scenic, or similar critically important features that retains to some degree or has re-established its natural character.
- Examples of native ecological communities.
- Environmentally significant sites threatened by incompatible or ecologically irreversible developments.

The Act requires a management plan for each site that identifies:

- The significant resources to be conserved.
- The areas with potential for low-impact public and environmental educational uses.
- The types of public uses that are permitted.
- The types of management activities that are permitted.

The act further defines the purposes of a conservation area as:

- Maintaining, enhancing, or restoring ecological systems, including but not limited to aquatic, coastal, riparian, mountain, and geological systems, whether such systems are unique or typical to Washington state.
- Maintaining exceptional scenic landscapes.
- Maintaining habitat for threatened, endangered, and sensitive species.
- Enhancing sites for primitive recreational purposes.
- Outdoor environmental education.

Appendix B – Natural Area Preserve Act

The Natural Area Preserves Act was enacted in 1972 by the legislature to "secure for the people of present and future generations the benefit of an enduring resource of natural areas by establishing a system of natural area preserves, and to provide for the protection of these natural areas" (RCW 79.70). Preserves are identified through an organized scientific inventory process that is guided by the State of Washington Natural Heritage Plan. The purpose of NAPs is:

- To protect outstanding examples of rare or vanishing terrestrial or aquatic ecosystems, rare plant and animal species and unique geologic features;
- To serve as baselines against which the influences of human activities in similar, but differently managed ecosystems can be compared; and
- To provide areas which are important to preserving natural features of scientific or educational value.

Site-specific management plans are developed for each NAP, giving priority to protecting the natural feature that led to the designation of each site as an NAP and to maintaining natural processes.

Appendix C – Research

Research Needs

Specific research questions have been identified as important to the management of Cypress Island. DNR will keep and update this list for reference when funding and requests for research opportunities arise.

Sources for research staff include but are not limited to DNR staff or contracts, Washington Department of Fish and Wildlife scientists, university faculty and students, recognized researchers requesting opportunities to conduct approved research, and volunteers.

Ecosystems

- Fire ecology and fire history of forest and bald communities on Cypress Island.
- Effect of parent material on water and sediment chemistry of wetlands, streams, ponds and lakes and associated aquatic flora and fauna.
- Population inventories of wildlife, to include bats, forest interior birds and neotropical migrants, cavity nesters, raptors, small mammals, reptiles, amphibians, larger mammals, aquatic and terrestrial invertebrates, butterflies and other insects.
- Nest predation in edge habitat along roads and trails.
- Snag density and snag use by wildlife.
- Habitat associations of target wildlife species.
- Condition of salt marshes and anthropogenic effects.
- Island vegetation to include overstory, understory woody and herbaceous species, mosses, lichen and ferns

Exotic Species

- Update of the Cypress Island Weed Plan with species list and mapped locations of all exotic plants; success of eradication techniques used in the Weed Plan.
- Introduced aquatic flora and fauna in lakes and ponds and effects of exotic fish on aquatic systems.
- Food habits, sex ratio, reproductive success and numbers of Red fox.

Aquatic Environment

- Community types and condition of aquatic lands surrounding island, including eelgrass and kelp beds, substrate, and species.
- Conduct a reconnaissance and survey for possible forage fish spawning beaches locations.
- Complete a “rapid nearshore inventory” of Cypress Island to identify significant aquatic habitat in the nearshore areas.
- Inventory structures including pilings, docks, etc. Determine status and develop plan for removal of derelict structures.

Appendix D – Natural and Cultural Resources Inventory

Archeology/History

Pre-European human influence on Cypress Island is attributed to the Coast Salish people. The Coast Salish led an ingeniously adaptive subsistence lifestyle based on the migration of Coho salmon. They lived in semi-permanent winter villages along salmon streams, but in summer they took a nomadic tour of a tribal territory. Cypress Island was one of the islands visited during the summer tour. Seasonal camps on the island were centers for hunting, fishing, gathering, and sequestering ceremonies. No indications of permanent villages on the island were found, and seasonal use subsided with the arrival of homesteaders. In the archeological survey conducted by DNR in 1990, three previously recorded sites were updated and four new sites were recorded with the Department of Archaeology and Historic Preservation (Wessen, 1991).

The post-contact history of the island was also investigated and recorded, beginning with the discovery of the island in 1791 by the Spanish expedition under Eliza. Early settlement and two episodes of homesteading followed.

Exploitation of the island's resources included intensive offshore fishing, extensive logging and sporadic mining of chromite and olivine. The longer term homesteaders participated in faltering attempts to provide community services on the island, including roads, schools, and postal services.

Difficult access, rugged topography, and poor soils eventually caused most homesteads to be abandoned. More recently, several proposals for extensive residential development of the island bloomed and withered (White, 1991).

In 1987, DNR negotiated acquisition of the largest private landholdings on the island for the NRCA program.

Geology/Soils

The geologic resources of Cypress Island NRCA are composed of three ancient and one modern formation. Surface geology of the southern four-fifths of the island is composed of dunite (predominantly olivine) which solidified from melted mantle 140 to 160 million years ago. Magnetic orientation of the crystal structure suggests that this formation originated at latitude 1500 miles south of the current location. Olivine found at the surface of Cypress Island is uncommon,

because lighter rocks usually override this dense mineral where tectonic plates collide at the continental margin.

As the dunite block approached the continental margin (140 to 100 million years ago) it was overridden by rocks derived from solidified silt, sand, and gravel. These rocks, known as the Lummi Group, now occur in the north end of the island. About 100 million years ago, a layer of pillow basalt arose between the dunite and the Lummi group, and the entire terrain was buried via plate tectonics to a depth of 12 miles for about 15 million years. The tremendous pressure and relatively low heat resulting from this brief burial metamorphosed much of the dunite into serpentine and produced pockets of chromite. The terrain was then subjected to at least two glacial episodes in the last 2 million years.

Soils that develop from the various geologic components display dramatic differences in soil chemistry, which are reflected in the biological community occupying the surface. The basalt, Lummi group, and glacial materials become fertile soils that support luxuriant plant growth. This tendency is exaggerated on Cypress Island, because these soils are located in the cooler moister aspect prevailing at the north end of the island. By contrast, soils derived from serpentine tend to be deficient in calcium and trace elements and contain enough nickel and magnesium to be toxic to some plants. This tendency is exaggerated because these soils prevail on the warmer, drier southerly aspects of the island. The sporadic occurrence of glacial deposits masks the influence of bedrock geology in development of soils on some locations on the island (NW Region, 1991).

Soils within the NRCA are loams of low productivity with significant erosion potential when disturbed (especially on slopes exceeding 30%) (NW Region, 1991).

Water Resources

Rain, snow and fog supply the lakes, wetlands and springs of Cypress Island. About 33 inches of rain falls per year during the region's dry summer and wet winter and spring. Lakes and ponds are found in closed depressions created in the last glaciations, which ended about 11,000 years ago. On Cypress Island there are eleven lakes and ponds (ranging in size from 1 acre to 15 acres), streams, wetlands and thirty-three springs. Two registered water rights draw water from DNR-managed property, and several others rely upon water that originates on the NRCA. The larger ponds and lakes on the NRCA have been altered in the past by human use. Installation of weirs, dams, roads and pipes has changed water level and habitat potential. Water quality and ecological condition of these aquatic systems, however, are generally good to excellent (Kunze, 1992; NW Region, 1991).

Island Ecology

Vegetation

Cypress Island is dominated by Douglas-fir *(Pseudotsuga menziesii),* a common forest species in the Puget lowlands. Yet the island's location in the rain shadow of the Olympic peninsula and its unusual serpentine-derived soils also make it home to dryland species commonly found in Eastern Washington and in more southerly latitudes: Rocky Mountain juniper *Uuniperus scopulorum),* Pacific madrone *(Arbutus menziesi.)* and Shore pine *(Pinus contorta)* inhabit more exposed south-facing slopes; Rocky Mountain maple *(Acer glabrum)* is found in mixed deciduous forests with Douglas-fir and other common natives, including western red cedar *(Thuja plicata),* western hemlock *(Tsuga heterophylla),* Grand Fir *(A bies grandis),* and Big Leaf Maple *(Acer macrophyllum).*

Douglas fir is the dominant and climax species found on most of the island. Where protected from fire and wind throw, it occurs in nearly pure stands with individual trees of up to 5 feet in diameter. Understory species include salal *(Gaultheria shallon),* ocean spray *(Holodiscus discolor),* baldhip rose *(Rosagymnocarpa),* western sword fern *(Polystichum munitum)* and mosses. On drier sites, perennial grasses, most notably, Idaho fescue *(Festuca idahoensis)* gain understory dominance.

The island also contains a number of relatively high quality wetlands and grassland communities. Fresh water sources and rock outcrops amidst the island's large, contiguous forest are unusual natural features in the San Juan islands and make Cypress Island important habitat for the region's native plants and animals.

Possibly due to the influence of serpentine-derived soils, at least two prominent wetlands on the island support plants that usually grow only in salt marshes: Seaside arrowgrass *(Triglochin maritimum),* slough sedge *(Carex obnupta)* and red fescue *(Festuca rubra)* are found with pond lily *(NuPhar polysepalum),* inflated sedge *(Carex vesicaria),* Baltic rush (*Uuncus balticus),* Labrador-tea *(Ledumgroenlandicum)* and sphagnum moss. Grassland plants inhabit the open rocky outcrops and shallow soils found throughout the island. Often with a fragile moss and lichen layer, these special environments support Idaho fescue with red fescue *(Festucarubra),* junegrass *(Koeleria cristata),* Pacific brome *(Bromus pacificus)* and California oatgrass *(Dan thon ia californica).* On disturbed sites a mix of exotic and native annual grasses gain dominance, notably hairgrass *(Aira caryoPhyllea* and *A. praecox)* and bromes *(Bromus tectorum* and *B. moll is).* Flowering herbs often found in this habitat are Indian paintbrush *(Castilleja sp.),* stonecrop *(Sedum spathulifolium* and *S. stenopetalum),* Death camas *(Zigadenus venenosus)* and nodding onion *(Allium cernuum).*

Non-native plant species of concern on the island include Scot's broom *(Cytisus scoparius)* at the south end; Reed canary grass *(Phalaris arundinacea)* near Duck Lake; Yellow flag iris (*Iris pseudocorus*) in wetlands along the northeast shore; Soft rush *(Juncus effusus)* and Oxeye daisy (*Chrysanthemum leucanthemum)*

most notably along the road from Duck Lake to Eagle Harbor; and Bull thistle (*Cirsium vulgare*), Canada thistle *(Cirsium arvense), Foxglove (Digitalis purpurea) and Tansy Ragwort (Senecio jacobea)* throughout the island, particularly along trails, in disturbed sites and in open meadows and balds (Kunze, 1992; Sheehan etal, 1992). A list of 264 native and non-native plant species documented on Cypress Island to date, titled Wild Plants of Cypress Island Natural Resources Conservation Area, is available from DNR's Northwest Region office (360-856-3500).

Animals

Mammals

Due to its geographic isolation as an island, Cypress supports fewer native mammals than the western Washington lowlands. The Black tailed deer *(Odocoileus hemionus)* is the largest and possibly most influential on island vegetation. River otter *(Lutra canadensis), beaver (Castor canadensis), mink (Mustela vison)* and raccoon *(Procyon lotor)* are seen, and several small rodent species have been noted, including Townsend vole, white-footed mouse, wandering shrew and deer mouse. Introduced in the 1930's, the Red fox *(Vulpes fulva)* has been "naturalized" and given protected status by the Washington Department of Fish and Wildlife.

Of the mammals that no longer inhabit Cypress Island, wolf *(Canis lupus),* elk *(Cervus elaphus),* moose *(Alces alces)* and black bear *(Ursus americanus)* have been extirpated from this portion of their ranges.

Reptiles, Amphibians And Invertebrates

Studies have identified several species of amphibians, invertebrates and snake in the island's protected habitat. The western toad *(Bufo boreas),* Pacific chorus frog *(Pseudacris regilla)* and roughskin newt *(Taricha granulosa)* inhabit fresh water sources on the island. Garter snakes *(Thamnophis sp.)* are common. Banana slugs and several species of helical land snails have been observed.

Two species of carabid beetle occur in abundance on the island. *Nebria virescens* has been found only on Cypress Island in a survey of the San Juan and Gulf Islands; *Bembidion sp.* is more common in the San Juan Island region but most abundant on Cypress Island. Butterflies, moths and dragonflies are abundant; the showier species include red admirals (*Vanessa atalanta rubia),* western tiger swallowtails *(Papilio rutulus rutulus),* pale tiger swallowtails *(Papilio eurymedon)* and the Polyphemus moth *(Antheraea polyphemus).*

Birds

The San Juan Islands support more than 200 species of shore, wetland and forest resident and migratory birds. Of the 120 species observed in the vicinity of Cypress Island, almost half are marine birds, such as great blue heron, pigeon guillemot, glaucous-winged and bonaparte gulls, grebes, loons, cormorants, scoters, mergansers and buffleheads. Waterfowl found wintering and nesting on

island include buffleheads, green-winged teal, mallards and wood duck. Warblers, winter wrens, finches, flickers, thrushes, kinglets, juncos, chickadees and swallows nest in the island's forest habitat. Raptors observed on the island include the turkey vulture, at the northern extent of its range, Vaux's swift, bald and golden eagles, red-tailed, Cooper's and sharp-shinned hawks, merlins and screech owls (Bill, 1991; Sheehan, et al, 1992). Barred owls have recently become permanent residents. A list of 142 bird species documented on Cypress Island and just offshore, titled Birds of Cypress Island Natural Resources Conservation Area, is available from DNR's Northwest Region office (360-856-3500).

Threatened, Endangered and Sensitive Species

The island is currently home to a number of animal species that are of conservation concern, including: bald eagles (federal & state threatened), peregrine falcons (state sensitive), band-tailed pigeon (state priority species) pileated woodpecker (state candidate), osprey (state priority species), wood duck (state priority species), and western toad (state candidate). The waters surrounding Cypress Island are also an important feeding habitat for threatened and endangered seabirds, mammals and fish.. DNR is working cooperatively with the Washington Department of Fish and Wildlife to develop and implement strategies to secure long-term protection of critical species habitat.

Aquatic Resources

Cypress Island straddles two biogeographic sub-regions with the western portion of the island more similar oceanographically to the San Juan Archipelago and the eastern portion more similar to the Strait of Georgia. The site includes intertidal and subtidal rocky reef habitats, unconsolidated subtidal habitats, pocket beaches, mixed coarse and mixed fine beaches and protected embayment. Nearshore and oceanographic ecosystem processes appear to be virtually uninterrupted by anthropogenic development. Only 2 percent (1,705 of 101,773 feet) of the shoreline has been "modified" (Berry, et al. 2001). Within the proposed site there are nearly 20 miles of undeveloped shoreline. Four permanent piers or docks, six small boat slips and two boat ramps were also observed around the shoreline.

The following habitat and species have been identified at Cypress Island:

Habitat	**Species**
Intertidal & subtidal rocky reef habitat	Salmon
Unconsolidated subtidal habitat	Demersal, pelagic, and reef dwelling
Pocket beaches	Groundfish
Mixed coarse & mixed fine beaches	Sea urchins
Kelp	
Eelgrass	

Habitat

The strong currents, steep subtidal slopes, and rocky outcroppings around Cypress Island provide for a diverse and rich habitat that is similar to those found in the western portions of the San Juan Archipelago. The nearshore subtidal habitat consists of bedrock and boulder fields, especially on the western, northern, southern, and northeastern sides of the island (Palsson, personal communication).

Eelgrass

Small eelgrass beds are found in Eagle Harbor, Secret Harbor and Strawberry Bay (see Figure 12) (Berry, et al. 2001, Sheehan, et al. 1992). Eelgrass meadows provide habitat and feeding grounds for several important species including juvenile salmon, Pacific herring, marbled murrelet, and great blue heron.

Kelp

Kelp beds are found growing in most of the subtidal zone of Cypress Island (11). Kelp beds provide a resting area for gulls, herons, shorebirds, and waterfowl. Kelp forests shelter snails, crabs, shrimp, starfish, sea anemones, sea cucumbers, brittle stars, sea squirts, and many other marine creatures. Bull kelp is the fastest growing seaweed in the world. It can grow from a tiny spore into a 200 foot long plant in one summer. By winter, the kelp are dying. Storms and waves leave dead kelp on the beach, where they decompose and provide food and beach shelter for scavenging amphipods and other animals. Large kelp beds form bay-like areas along their shoreward side, providing feeding areas for loons, scoters, grebes, goldeneyes, and Buffleheads (Department. of Ecology, Puget Sound Shorelines web page). Sea urchin populations, common along much of the west side of Cypress Island, typically feed on broken kelp blades and other kelp detritus. Also, a variety of animals common at Cypress Island prey on urchins, including otters, wolf eels, starfish, and fish.

Rafts of kelp also reduce beach erosion by diminishing the force of waves against the shoreline. (Department. of Ecology, Puget Sound Shorelines web page).

Sargassum, a non-native subtidal kelp, is common and found along 49.2 percent of the island's shorelines (Figure 13) (Berry, et al. 2001).

Forage Fish Habitat

Within the proposed site there are nearly 20 miles of undeveloped shoreline. Although they have not been surveyed, numerous sites appear to have suitable habitat for surf smelt or sand lance spawning (Pentilla, personal communication).

Nearshore Drift

The arrows show nearshore drift cells (Figure 14) which describe the movement of sediment along the beach. This ecosystem process is primarily in response to the oblique approach of wind-generated waves. The movement of sediment along the nearshore is vital to replenishing small sediment washed out to sea by wave energy, streams and rivers. Beaches with small sediment are often productive environments that are used by many species as spawning or nesting habitat.

Species

Birds

Table 4 provides a complete listing of marine and shore associated birds that are regularly observed at Cypress Island. Marbled murrelets are frequently observed feeding in the vicinity of Cypress Island and the Cone Islands, with regular concentrations found on the east side of the island (Nyeswander, personal communication). It is likely that this aggregation is associated with seasonal movements of forage fish, a primary prey item for marbled murrelets. The highest abundances of murrelets are observed in the fall with abundances in this area exceeding other parts of the San Juan Archipelago and Strait of Georgia (Ralph, et al. 1996). Data from 2000 suggest that approximately 6400 marbled murrelets are found in Washington with 90 percent of those birds found within the Puget Sound biogeographic region (Bentivoglio et al. 2002). Additionally, limited evidence suggests that some murrelets breeding in B.C. may winter in the San Juan Archipelago (Beauchamp et al. 1999). The area has been reported as important fall, winter and spring habitat for common murre (Uria aalge), Pacific loon (Gavia pacifica) and various surfbirds (DOE 1978).

Ground Fish

Habitats in the vicinities of Strawberry Island, north Cypress Island, Towhead Island and Cypress Reef have been identified as good to excellent rockfish habitat (Figure 15) (McConnell, et al. 2001). Bottom topography, substrate, and other physical features have been shown to influence the distribution and abundance of rockfish, lingcod, and kelp greenling on a large scale (Pacunski and Palsson 2001).

Washington Department of Fish and Wildlife (WDFW) diver and video surveys have found that much of the rocky outcroppings are covered by encrusting organisms and inhabited by fishes such as copper, brown, and Puget Sound rockfishes, kelp and painted greenlings, and red Irish lords and buffalo sculpins. The deeper subtidal habitats support fish and invertebrates (Figure 15 & 16) typical of pebble, cobble, and boulder habitats. A WDFW bottom trawl was conducted in the northeastern portion of the site. The fishes captured included great, buffalo, and ribbed sculpins, northern and southern rock soles, and Puget

Sound rockfish. Semi-demersal fishes were also captured including walleye Pollock, Pacific tomcod, spiny dogfish, and shiner and pile perches. Halibut and cod were fished in Secret Harbor until the 1950's when fish populations were too depleted (White, 1991). Large macro invertebrates were also captured including Dungeness crab, red rock crab, red sea urchins and cucumbers, and two species of seastars (Palsson, personal communication).

Table 4: Marine Birds of Cypress Island (Sheehan et al. 1992. updated 2006)

Scientific Name	Common Name	Status	Season			
			Spring	Summer	Fall	Winter
Actitis macularia	Spotted sandpiper	U	X	X	X	X
phorus occidentalis	Western grebe	C	X	X	X	X
Anas platyrhynchos	Mallard	U	X	X	X	X
Ardea herodias	Great blue heron	C	X	X	X	X
Aythya marila	Greater scaup	C	X		X	X
Brachyramphus marmoratus	Marbled murrelet	C	X	X	X	X
Branta canadensis	Canada Goose	C	X	X	X	X
Bucephala albeola	Bufflehead	C	X		X	X
Bucephala clangula	Common goldeneye	C	X		X	X
Calidris alba	Sanderling	U	X		X	X
Calidris mauri	Western sandpiper	U	X		X	
Cerorhinca monocerata	Rhinoceros Auklet	C	X	X	X	X
Cepphus columba	Pigeon guillemot	C	X	X	X	X
Charadrius vociferis	Killdeer	C	X	X	X	X
Clangula hyemalis	Long-tailed duck	U	X		X	X
Gavia pacifica	Pacific loon	U	X		X	X
Gavia immer	Common loon	C	X		X	X
Gavia stellata	Red-throated loon	U	X		X	X
Haematopus bachmani	Black oystercatcher	C	X	X	X	X
Haliaeetus leucocephalus	Bald eagle	C	X	X	X	X
Histrionicus histrionicus	Harlequin duck	U	X		X	X
Larus argentatus	Herring gull	U			X	
Larus californicus	California gull	U		X	X	
Larus canus	Mew gull	U		X	X	X
Larus glaucescens	Glaucous-winged gull	C	X	X	X	X
Larus heermanni	Heerman's gull	C		X	X	X
Larus philadelphius	Bonapartes gull	C	X		X	X
Melanitta fusca	White-winged scoter	C	X		X	X
Melanitta perspicillata	Surf scoter	C	X	X	X	X
Merganser serrator	Red-breasted merganser	C	X	X	X	X
Pandion haliaetus	Osprey	R		X		
Phalacrocorax auritus	Double-crested cormorant	C	X	X	X	X
Phalacrocorax pelagicus	Pelagic cormorant	C	X	X	X	X
Phalacrocorax penicillatus	Brandt's cormorant	C	X	X	X	X
Podiceps auritus	Horned grebe	C	X		X	X
Podiceps grisegena	Red-necked grebe	C	X	X	X	X
Tringa melanoleuca	Greater yellowlegs	R	X		X	X
Uria aalge	Common murre	C	X		X	X

Status Code: C – Common; U – Uncommon; R – Rare; X= Present

Salmon

A large commercial fish trap operation in Strawberry Harbor once captured large numbers of sockeye salmon, which travel along the west shore of Cypress Island (White, 1991). Continuing commercial and recreational harvest in this area suggest that fish populations still use the area (Figure 15). Waters off the western shore of Cypress Island have supported commercial and recreational harvest of salmon with intense recreational fishing for King salmon off the northwest shore.

In 1892, Menzies reported cutthroat trout in the wetland area in Strawberry Bay, suggesting that Cypress Creek may once have been a spawning area. It is reported that the last cutthroat trout was taken from Cypress Creek in 1953 (Sheehan, et al. 1992). Restoration of this run “seems infeasible now” (Sheehan, et al. 1992) however may be worth re-examining as conservation efforts advance on the island.

Marine Mammals

Rosario Strait on the west side of the island is a frequently used corridor for minke whales and harbor porpoises (Sheehan, et al. 1992). Cypress Island is adjacent to one, and includes two harbor seal haulout areas with average group sizes of less than 100 animals (Jeffries, et al. 2000).

Appendix E – Minimum Impact Fire Suppression Tactics for Cypress Island

General Guidelines

- The Incident Commander will consult with a Natural Areas Program representative or Resource Advisor when assigned to a fire on Cypress Island. Immediate notification will be made to one of the following resources:
    - NW Region Natural Areas Manager
      DNR NW Region Office, Sedro-Woolley
      360-856-3500
    - NW Region Natural Areas Steward
      DNR NW Region Office, Sedro-Woolley
      360-856-3500
    - Natural Areas Ecologist
      Asset Management and Protection Division
      360-902-1600
    - Natural Areas Program Manager
      Asset Management and Protection Division
      360-902-1600
- The Natural Areas Program representative will inform the Incident commander of the purpose of the NRCA/NAP, the management objectives for the primary features on Cypress Island and the need to employ Minimum Impact Suppression Tactics when possible.
- All fire activities should be conducted in a way that minimizes impact to the resources of Cypress Island.
- Fire suppression efforts should emphasize early detection and early suppression in order to minimize impact from containment/control efforts.
- Avoid firefighting in Highly Sensitive designated areas, if possible. Do not allow any operations on the grassland balds north of Eagle Harbor (Eagle Cliff and Mountain Vista Balds).
- Avoid use of salt water during suppression activities. If necessary, salt water may be used during initial attack with transition to fresh water during extended attack.

- Use existing fuel breaks and trail corridors as much as possible, rather than creating new firelines. When new firelines are necessary, hand lines are preferable to bulldozers.
- Use plain water, wet-water or foam. Avoid the use of retardants. If retardant must be used to protect a structure, do not use in or near open water sources (lakes, streams, estuaries, wetlands, shorelines or bays).
- Avoid any activity that would alter the flow of water into or out of wetlands or shore areas.
- Avoid any activity that would produce slumping, erosion or increased sedimentation.
- Restrict fire vehicles to primary trails of adequate width.
- Protect cultural resources. Restrict firefighting activities in areas of known archaeological resources.
- Allow fire to burn to the containment/confinement/control perimeter line.
- Inform all personnel of the NRCA and NAP management goals and give clear instruction in Leave No Trace principles.
- Respect private property. Inform neighboring landowners and seek permission for travel or operations on private property.
- Evaluate the need for notification and/or evacuation of the visiting public. Restrict public access in the vicinity of the fire.

Establishing and Setting Up Camp

- If fire camps are unavoidable, use existing campsites at Pelican Beach, Cypress Head or the Compound.
- If existing campsites are not available, consult the Resource Advisor or Natural Area Program representative to help identify the most resilient sites on impacted or hardened surfaces. Consider use of the Compound parking area, Secret Harbor, the Airfield and Reef Point.
- Consider impacts on both present and future visitors. An agency commitment to conservation values will promote those values to the public.
- Plan camp components carefully. Define cooking, sleeping, latrine and water supplies.
- Limit travel ways within, to and from camp.
- Minimize disturbance to land in preparing sites. Do not clear vegetation, trench or excavate flat spots to create bedding areas.
- Avoid introduction of noxious weed seeds by ensuring that crew gear, including tents, boots and clothing are free of weed seeds before arrival on the island.

- If outside of an existing campground, use portable backcountry latrines and fly out human waste as necessary. When away from camp, individuals must use the “cat-hole” method of disposing of human waste. Holes should be dug 6-8” deep and be located at least 200 feet from water sources. All toilet paper and feminine hygiene or paper products should be carried out. Education of all personnel in these Leave No Trace principles is mandatory.
- No campfires are allowed outside of the approved fireplaces located in the designated campgrounds at Pelican Beach, Cypress Head and the Compound. Use camp stoves for cooking.
- Designate a common area for personnel to wash up. Provide fresh water, biodegradable soap and a place for wastewater. Carry water and bathe away from lakes and streams. Do not introduce soap, shampoo, or other personal grooming chemicals into water sources.
- Filter food particles from kitchen wastewater before disposing.
- Store food properly so that it is not accessible to wildlife. Use sealed containers.
- Do not allow garbage and food particles to accumulate in camp. Remove garbage and food scraps on a regular basis.
- Do not use nails in trees.
- Constantly evaluate the impacts that will occur, both short and long term.

Helispot Construction

- Consult with the Natural Areas Program representative or Resource Advisor in helispot location.
- Whenever possible, locate helispots in weed free areas, to prevent the spread of noxious weeds on the island.
- When planning for helispot location, determine the primary function of each helispot, i.e.: crew shuttle, logistical support, or both.
- If a helispot is only needed for logistical support to deliver and retrieve supplies or gear, consider using a long line remote hook in lieu of constructing a helispot.
- If a helispot is needed for crew shuttle, consider the minimum size of the helicopter that could do the job, if you have an option, and still meet suppression objectives.
- Use existing, hardened openings at the Eagle Harbor landing, the Compound, the airfield, Secret Harbor or Reef Point. If these are not accessible, use natural openings in the minimally sensitive areas only. Do not remove trees to create new openings.
- Avoid high public use areas if possible and control public access in the vicinity of the chosen helispot area.

Initial Attack Phase

- Consult with Natural Areas Program representative or Resource Advisor before Initial Attack operations begin.
- Select procedures, tools and equipment that least impact the environment.
- Consider the use of water as a fireline tactic. Use a mist application rather than straight stream.
- Use fresh water if possible. Use Cypress Lake and Bradberry Lake as the water sources. Ensure that buckets are clean of non-native vegetation and seeds before use. Monitor lake level and impacts during incidents of any duration.
- All equipment brought to the island should be free of noxious weed seeds. Request that equipment is examined and cleaned before arrival.
- In light fuels consider:

  -Cold trail line. Constantly re-check.

  -Allowing fire to burn to natural barriers.

  -If constructed fireline is necessary, use minimum width and depth to check fire spread.
- In medium and heavy fuels consider:

  -Use of natural barriers and cold-trailing.

  -Cooling with dirt and water and cold-trailing.

  -If constructed fireline is necessary, use minimum width and depth to check fire spread.

  -Minimize bucking to establish fireline. Preferably move or roll material out of the intended constructed fireline area. If moving or rolling is not possible, or the down log is already on fire, build line around the log and let it be consumed.
- In aerial fuels, brush, trees and snags:

  -Minimize cutting of trees and snags.

  -Live trees should not be cut unless it is determined they will cause fire spread across the fireline or seriously endanger workers. If tree cutting occurs, cut the stumps flush with the ground and camouflage the cut surface with soil or brush.

  -Scrape around tree bases near fireline if hot and likely to cause fire spread.

  -Identify hazard trees with either an observer, flagging and/or glow-sticks.
- When using indirect attack:

  -Do not fall snags outside the constructed fireline, unless they are an obvious safety hazard to crews working in the vicinity.

-On the intended burn-out side of the line, fall only those snags that would reach the fireline should they burn and fall over. Consider alternative means to falling, i.e.: foam application or bucket drops.

-Review considerations listed above for aerial fuels, brush, trees and snags.

Mop-up Phase

- Location, type and extent of mop-up activity will be determined by the Incident Commander in consultation with the Natural Areas Program representative or Resource Advisor.
- Minimize mop-up activities in Highly Sensitive designated areas. Do not allow any operations on the grassland balds north of Eagle Harbor (Eagle Cliff and Mountain Vista Balds).
- Minimize impacts to streams and water sources. Use gravity socks and/or a combination of water blivits and fold-a-tanks. Avoid alteration of streambeds and lakeshores in the process of collecting water.
- Place absorbent cloth under the pumps and fuel cans to avoid fuel spills on the ground.
- Avoid using rehabilitated firelines as travel corridors whenever possible to minimize soil compaction.
- Consider using infrared detection devices along perimeter (aerial or hand-held).
- Align saw-cuts to minimize visual impacts from more heavily traveled corridors. Slope cut away from line of sight when possible.
- In light fuels:

  -Cold-trail areas adjacent to unburned fuels.

  -Do minimal spading; restrict spading to hot areas near fireline only.

  -Use extensive cold-trailing to detect hot areas.
- In medium to heavy fuels:

  -Cold-trail charred logs near fireline; do minimal scraping or tool scarring.

  -Minimize bucking of logs to check for hot spots or extinguish fire; preferably roll the logs and extinguish the fire.

  -Return logs to original position after checking or when ground is cool.

  -Refrain from making bonepiles; burned and partially burned fuels that were moved should be arranged in natural position as much as possible after they are cold.

-Consider allowing larger logs near the fireline to burn out, instead of bucking them into manageable lengths. Use a lever or pry bar to move large logs.

- Aerial fuels, brush, small trees and limbs:

  -Remove or limb only those fuels, which, if ignited, have the potential to spread fire outside the fireline.

- Burning trees and snags:

  -First consideration is to allow burning trees and snags to burn themselves out or down. Ensure adequate safety measures are communicated.

  -Identify hazard trees with either an observer, flagging and/or glow-sticks.

  -If burning trees/snags pose serious threat of spreading fire brands, consider attempting to extinguish with water or dirt.

Post Fire Rehabilitation

- Rehabilitation measures, other than the erosion control measures typically implemented by DNR Fire Control, must be approved by the Natural Areas Program.
- The Natural Areas Ecologist will determine whether revegetation is required to protect ecological features of the NRCA/NAP.
- Where damage to vegetation has occurred, natural recolonization is the preferred restoration strategy.
- Revegetation (planting or reseeding with species native to the site) will only occur if natural recolonization is unlikely to occur.
- If revegetation is necessary, the Natural Areas Ecologist will develop a restoration plan.

Figure 12: Submerged Aquatic Vegetation
For a color version of this figure see www.dnr.wa.gov/htdocs/aqr/reserves/home

Cypress Island Intertidal Submerged Vegetation

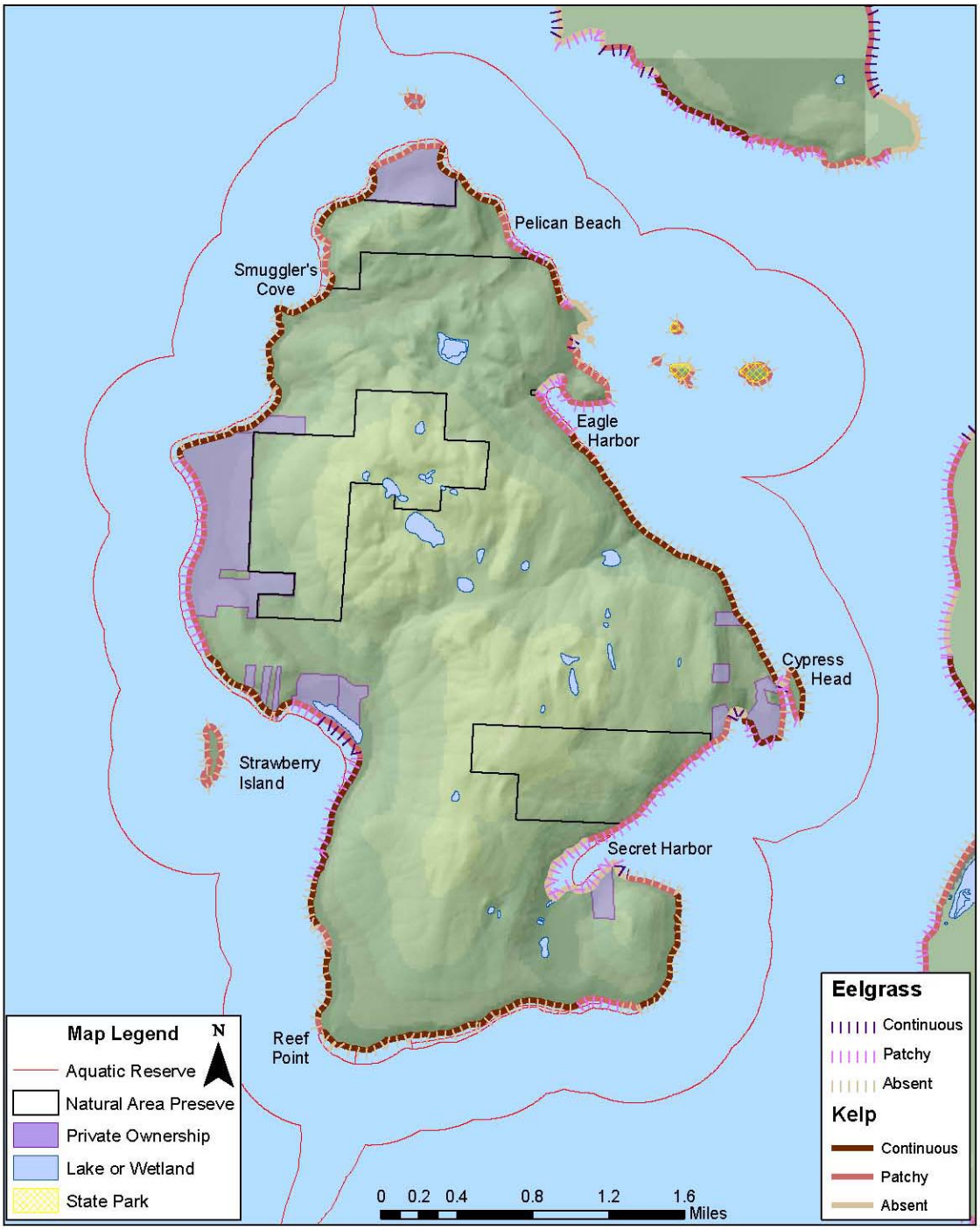

Figure 13: Invasive Aquatic Vegetation
For a color version of this figure see www.dnr.wa.gov/htdocs/aqr/reserves/home

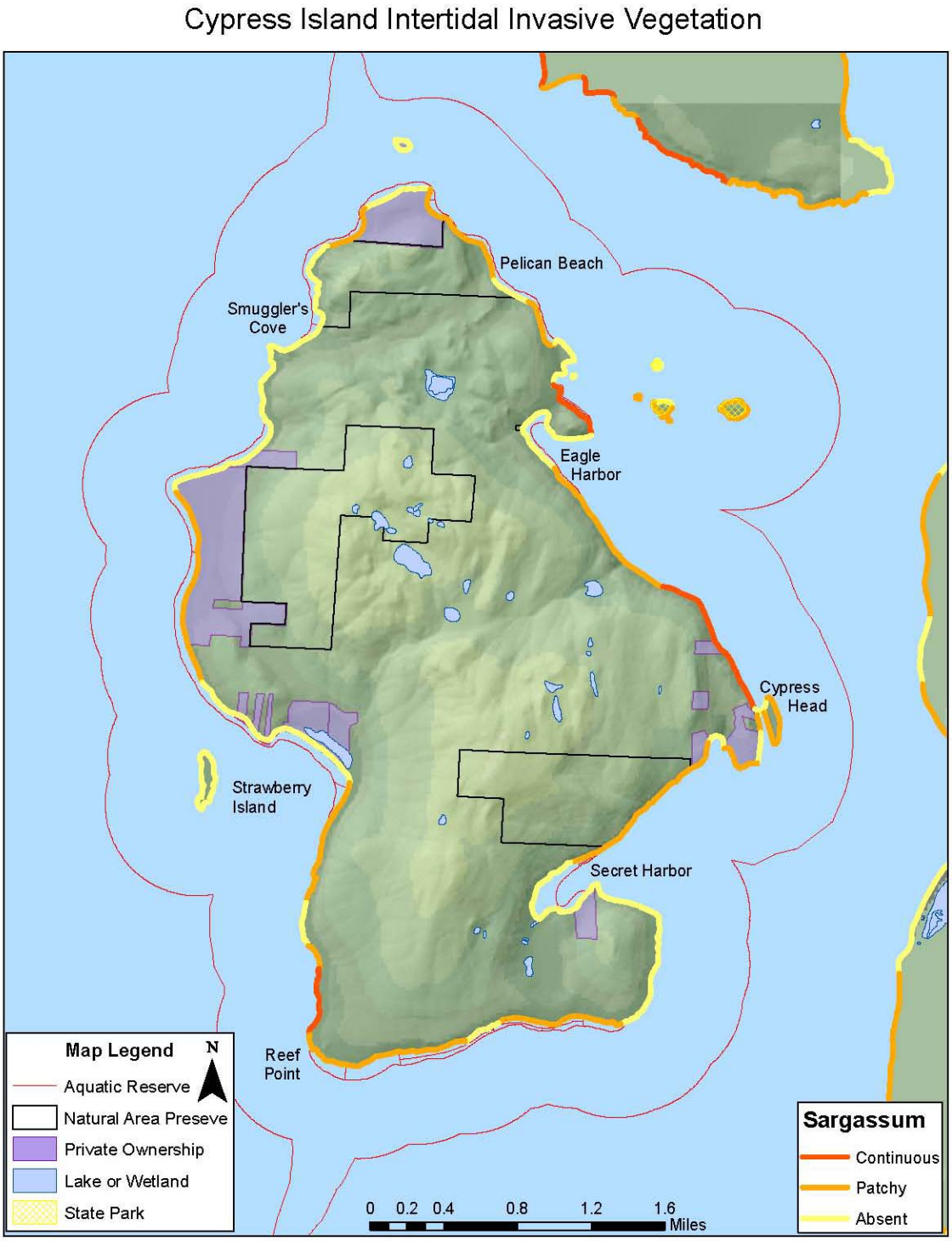

Figure 14: Nearshore Drift

For a color version of this figure see www.dnr.wa.gov/htdocs/aqr/reserves/home

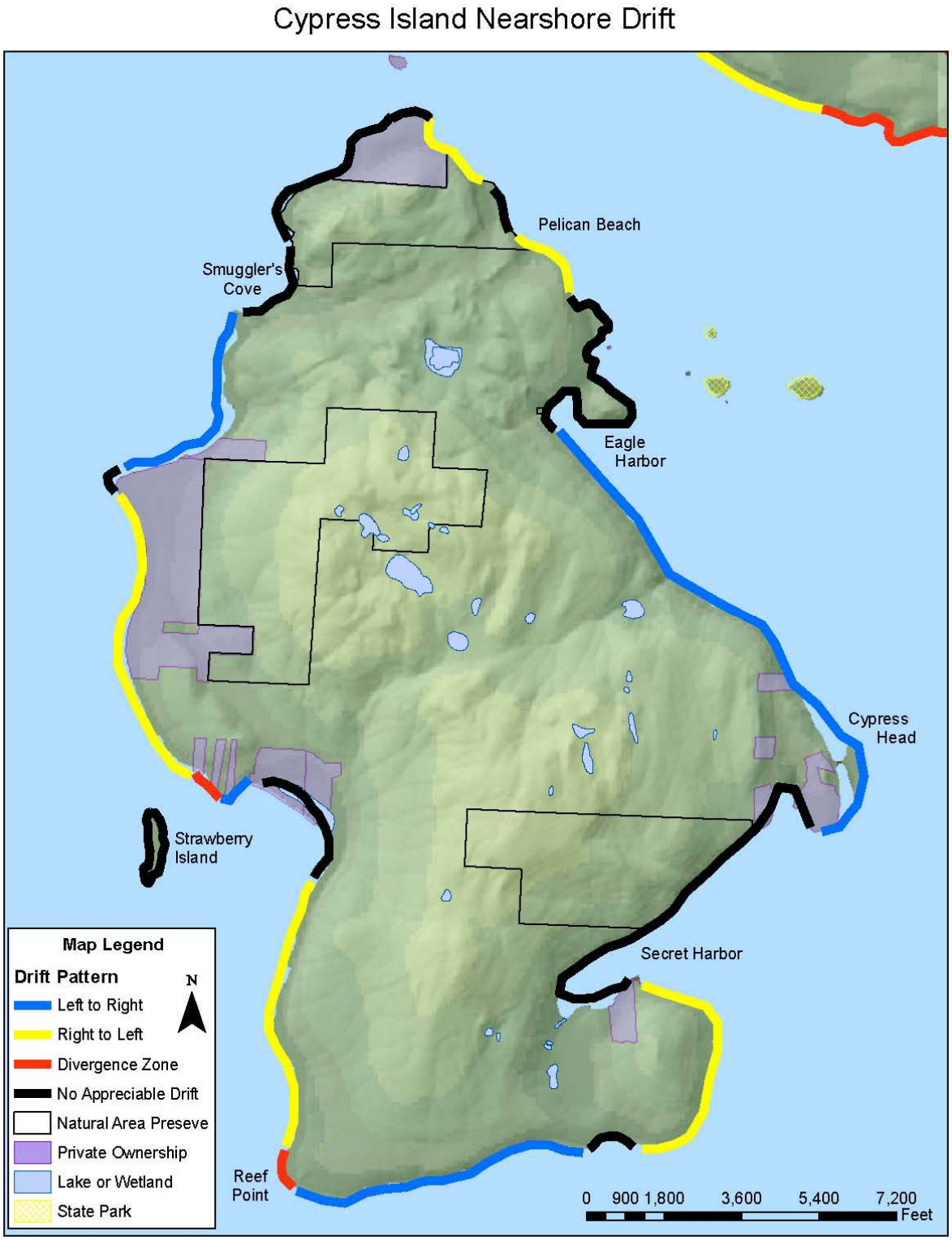

Figure 15: Salmon and Groundfish Resources
For a color version of this figure see www.dnr.wa.gov/htdocs/aqr/reserves/home

Cypress Island Salmon and Groundfish Resources

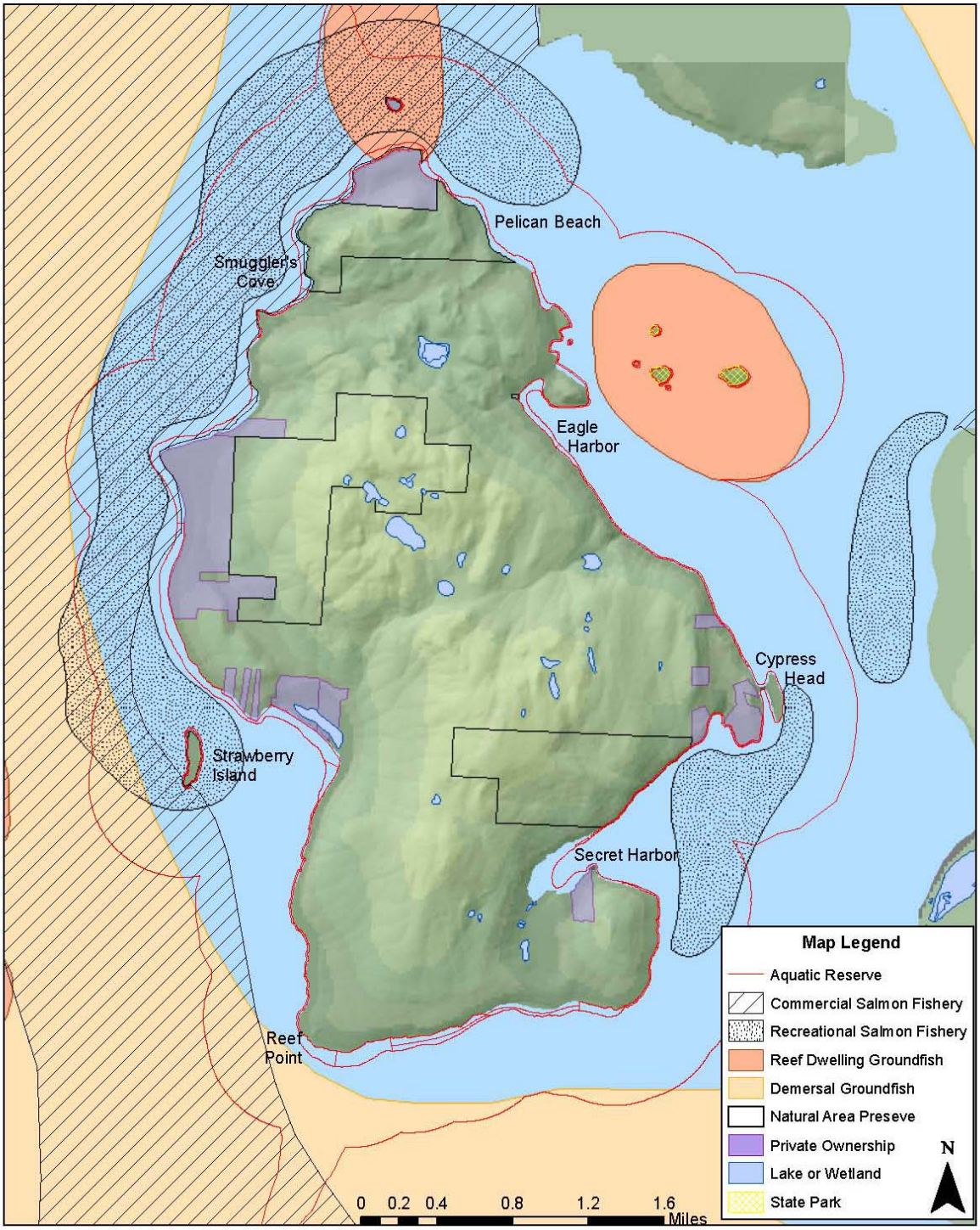
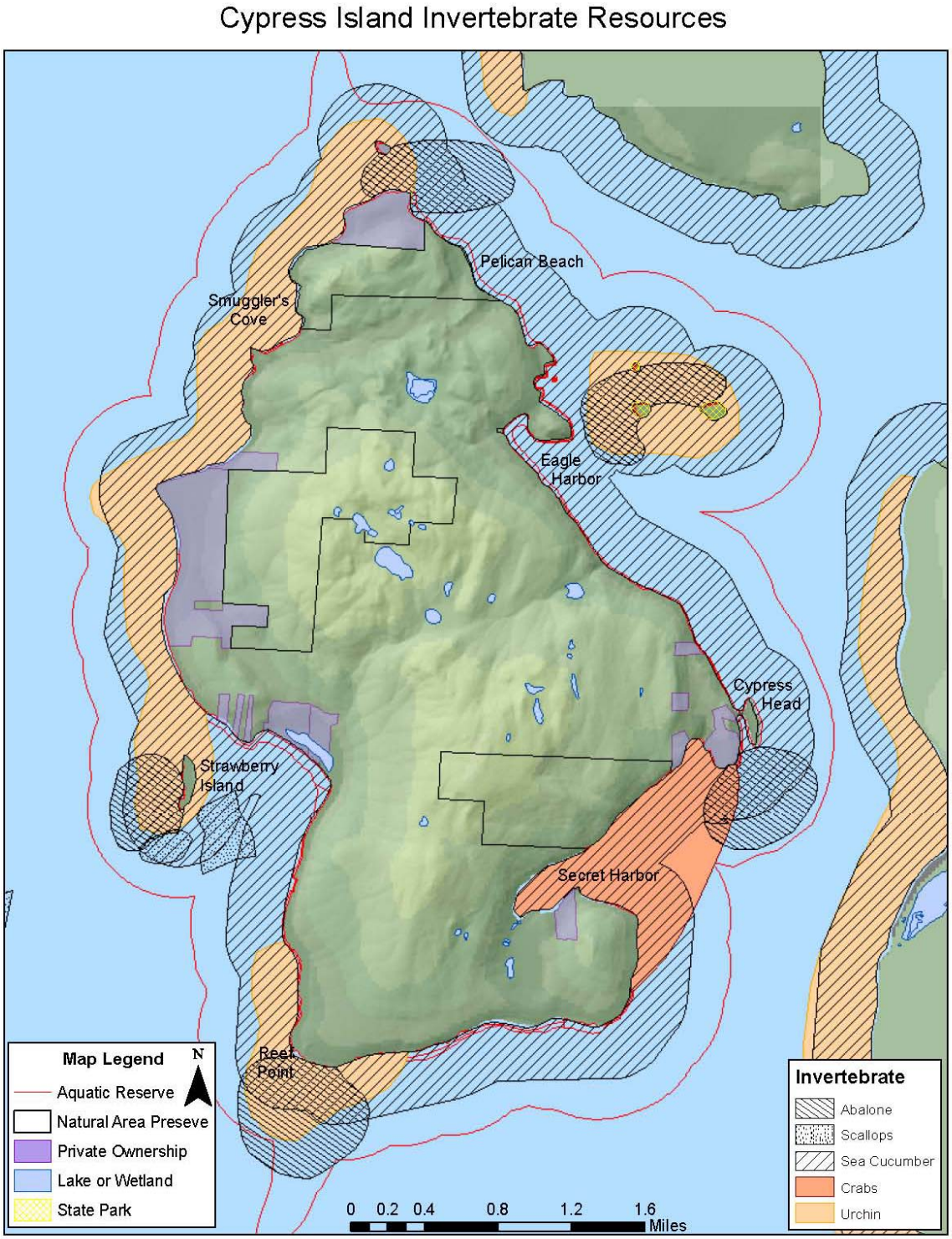
Figure 16: Marine Invertebrates
For a color version of this figure see www.dnr.wa.gov/htdocs/aqr/reserves/home