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FINAL

State of Washington

Natural Heritage Plan

1987

WASHINGTON STATE DEPARTMENT OF
Natural Resources
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'It is, therefore, the public policy of the State of Washington to secure for the people of present and future generations the benefit of an enduring resource of natural areas.'

RCW 79.70.010

Washington Natural Heritage Program

WASHINGTON STATE DEPARTMENT OF
Natural Resources

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Natural Resources

BRIAN BOYLE
Commissioner of Public Lands

OLYMPIA, WA 98504

Two centuries ago the 48 million acres that became the state of Washington were an undisturbed landscape of great beauty and natural diversity. Intensive settlement and development has caused some of this area's scientific, educational and natural historical resources to disappear.

Establishing natural areas is one way to preserve some of our state's pristine resources. Natural areas are living laboratories and havens for a multitude of species, both typical and rare. They are areas set aside for scientific and educational use and to act as baselines for comparison with similar, but intensively managed, areas.

The Department of Natural Resources is responsible for the development and maintenance of the Natural Area System. This system combines the cooperative efforts of public and private groups to preserve examples of all important terrestrial and aquatic ecosystems, rare species and unique geologic features, and to avoid costly duplication of effort.

In 1983 the department, with the assistance of various groups and individuals, produced the State of Washington Natural Heritage Plan to aid this effort. The plan was revised in 1985, and now again for 1987. The plan describes which natural heritage resources are needed in a system of natural areas in Washington, and outlines an array of protection methods.

Since the first plan, progress has been made in the effort to protect Washington's natural diversity. Several Natural Area Preserves have been established by the department, the Department of Game, State Parks and Recreation Commission, and The Nature Conservancy. Several more areas are in the process of dedication. To date, over 60 private, local and federal landowners have voluntarily agreed to protect the significant natural values identified on their lands under the Registry Program. This innovative program works to obtain voluntary protection of natural heritage resources by their owners.

This update reflects changes in knowledge since the 1985 printing. It is a working guide subject to revision as elements are protected or as new information becomes available. It should continue to guide the voluntary and cooperative efforts of all interested parties to recognize and preserve areas of great natural heritage value in Washington.

Brian Boyle
Commissioner of Public Lands

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Abstract

The Natural Area Preserves Act and subsequent amendments established the Natural Area System and Natural Heritage Program within the Department of Natural Resources. The Natural Heritage Plan, completed in 1983, provides the direction for development of the Natural Area System. This plan update reflects changes in our knowledge of natural heritage resources, their protection status and the current condition of the Natural Area System.

The purpose of natural areas and the "element" approach used in their selection are explained. Methods of protection are outlined. The role of the Department of Natural Resources, the Natural Heritage Program and the Natural Heritage Advisory Council are explained. Contributions of other state, federal and private groups are highlighted. Criteria for determining element priorities and for selection of sites as Natural Area Preserves are outlined. Lists of priorities are detailed for rare plants and animals, terrestrial ecosystems, aquatic ecosystems and unique geological elements and for elements protected in natural areas.

Appendixes are included for common plant names cross-referenced to scientific names; definitions of land management designations; the text of the Natural Area Preserves Act; and WACs for the Registry Program. A glossary and references are also provided.

Keywords: Natural Area Preserves, Natural Heritage Program, natural areas, natural ecosystems, endangered species, unique geologic features, Washington.❑

Introduction

Introduction

Many discoveries of practical value to humans have come from the study of seemingly insignificant species. Medicines, disease resistance for crops, control of pests; these are some of the benefits derived from the genetic diversity of the natural world.

Society has a continuing need to find active agents against diseases, pests and other harmful factors. Suitable agents may be more easily found in the complex machinery of species than created in the laboratory.

Unaltered ecosystems--the storehouses of natural diversity--are highly evolved, interactive associations of the land and its species. These associations cannot be duplicated in an artificial setting. Society cannot afford to lose these living parts of the natural environment before it understands them fully. Examples of these complex ecological systems may be invaluable to future generations in ways we cannot foresee.

Natural Area Preserve, Biological Study Area, Research Natural Area--all are names for lands set aside to protect this natural diversity. In 1972 the Washington State Legislature recognized the need to preserve such areas and passed the Natural Area Preserves Act (Ch. 79.70 RCW). The legislature declared:

"All areas within the state, except those which are expressly dedicated by law for preservation and protection in their natural condition, are subject to alteration by human activity. Natural lands, together with the plants and animals living thereon in natural ecological systems, are valuable for the purposes of scientific research, teaching, as habitats of rare and vanishing species, as places of natural historic and natural interest and scenic beauty, and as living museums of the original heritage of the state.

"It is, therefore, the public policy of the State of Washington 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."

The act authorizes the Department of Natural Resources (the department) to establish and manage the Natural Area System. Further, the department is to cooperate with other federal, state or local governmental agencies, private organizations or individuals in this effort (RCW 79.70.030).

In 1981 the legislature amended Ch. 79.70 RCW and established the Natural Heritage Program within the department. The Natural Heritage Program's mandate is to:

1. develop a classification of natural heritage resources

2. maintain an inventory of the locations of these resources

3. maintain a data base for such information

4. provide assistance in the selection and nomination of areas containing natural heritage resources for registration or dedication

The legislative act also required the department to prepare and update biennially a Natural Heritage Plan. The plan governs the Natural Heritage Program's activities in the creation and management of a system of natural areas. The first Natural Heritage Plan was completed in 1983.

Purpose of the Plan

As required by Ch. 79.70 RCW this plan presents the criteria for selection and approval of natural areas, and lists the natural heritage resources to be considered for protection. In addition, the plan identifies priorities for protection; outlines methods of protection; and identifies the roles of various agencies and groups in natural area protection.

This updated plan also reflects the increase in knowledge of Washington's natural heritage resources, their protection status and the current condition of the Natural Area System.❑

Preservation of Washington's Natural Diversity

Preservation of Washington's Natural Diversity

The Purpose of Natural Areas

Natural areas are important outdoor laboratories for the study of the environment. Natural areas preserve significant examples of typical and rare terrestrial, aquatic and marine ecosystems, special species and rare geologic features. These areas are used for research and education on ecological and environmental topics. Because they retain their natural character and processes, they also serve as baselines to compare with similar, but managed ecosystems. Finally, they serve as gene pools for rare plant and animal species, as well as the more common species.

Usually, the natural areas are in as near a natural condition as can be found. They are not always pristine; in many cases totally undisturbed examples of ecosystems no longer exist. Ideally, natural areas are large enough to protect the elements present from significant unnatural influences.

The Element Approach

Washington's natural diversity consists of thousands of plant and animal species interacting with each other and the physical environment. A systematic technique is needed to inventory and protect this diversity. One such technique, used by the Washington Natural Heritage Program, classifies Washington's natural diversity into "elements" (Figure 1).

At a broad level, an element is an entire system such as a plant community or an aquatic ecosystem (for example, alkali saltgrass community or a sphagnum bog) and the common plants and animals of that system. However, some species such as the golden Indian-paintbrush or the pygmy rabbit are rare or only occur in local areas. These species are less likely to be protected by solely using the broad approach. To ensure that these "special species" are identified for protection, they are classed as elements in their own right. Therefore, an element can be a rare plant or animal as well as a native plant community, aquatic ecosystem or rare geologic feature.

The elements are the focus of the inventory and preservation efforts of the Natural Heritage Program. Data are gathered on their rarity and threats. These data are then used to determine future field work and protection efforts. Elements in the most danger are the highest priorities. Elements in less danger, more common, or adequately protected, are given a lower priority or are dropped from consideration at this time.

In evaluating sites, the elements are the focus rather than such broad standards as size or scenic beauty. The Natural Heritage Program can easily compare areas containing the same element. This comparison, based on the quality and representation of the element, identifies the most important sites for protection. Thus, the element-based inventory assures that these biologically important, but little known or less scenic, sites are considered equally with more widely known areas.

Methods of Protection

Once sites are selected (see *Site Selection*), protection can proceed in one of three ways: registration, dedication or acquisition.

Registration

Registration recognizes *voluntary protection* of important elements by landowners. The Department of Natural Resources adopted regulations guiding this registration effort in 1983 (Ch. 332-60 WAC, see Appendix C).

Once the Natural Heritage Program identifies a possible site for registration, the owner of the land is notified. Landowners receive information on the elements present and about the Registry Program. Written permission to nominate the site for registration is requested. Upon receipt of the owner's written permission, the site is formally nominated to the Natural Heritage Advisory Council. If the council approves the site, the department invites the landowner to register the site. No area is registered without the voluntary consent of the landowner. Continued landowner participation in the Registry Program is voluntary.

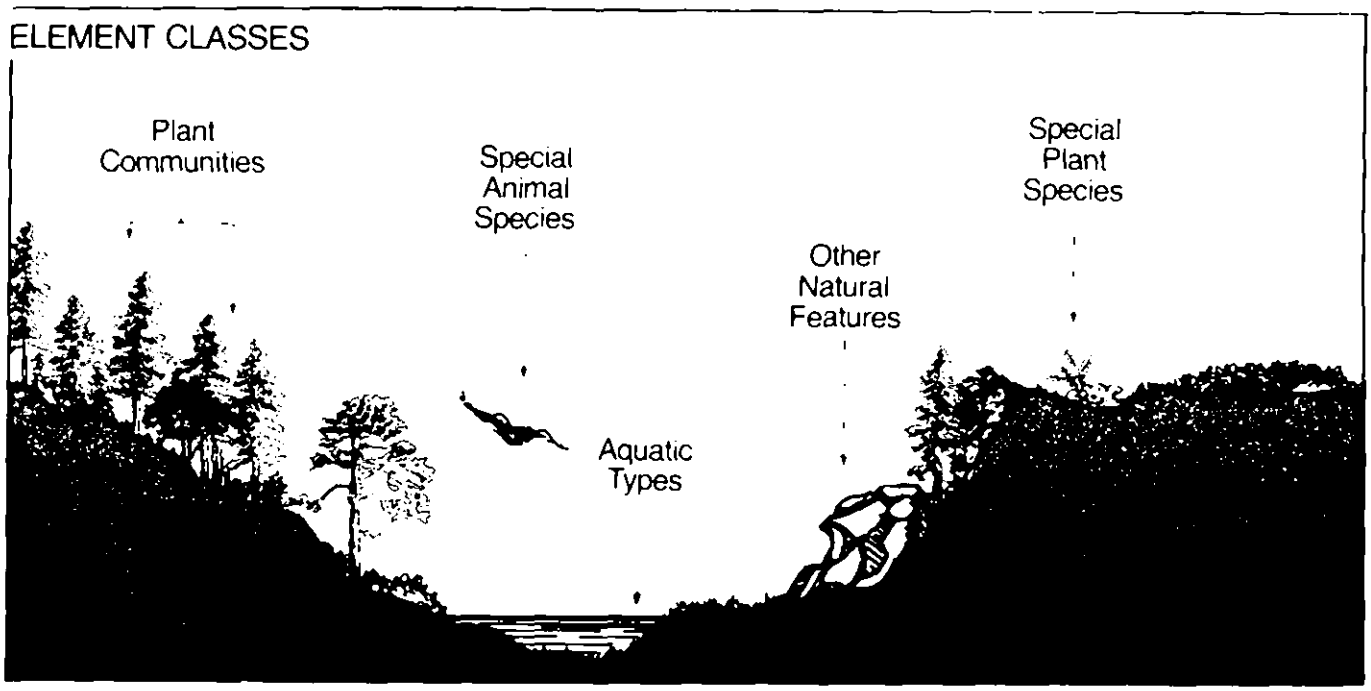

Figure 1. The Natural Heritage Program inventories occurrences of plant communities, aquatic types, and special plant and animal species; a fifth category, to include geologic features, will be added in the future.

Upon registration of an area, the landowner is awarded a certificate of registration. The landowner's cooperation may be publicized, but only if the landowner so desires. Registration provides no rights of public access and directions to a site are not published. Management of a registered site is the responsibility of the landowner, although the owner may voluntarily develop a management agreement with the department.

Certain public lands, especially those protected by legal or administrative designations (for example, Research Natural Areas, Areas of Critical Environmental Concern, Outstanding Natural Areas) are important potential components of the statewide Natural Area System and can be registered under the provisions of Ch. 79.70 RCW and Ch. 332-60 WAC.

Upon written request to the department, landowners may remove their land from the Register. The department may, with the approval of the council, remove a site from the Register if it is no longer managed for the elements present.

The Washington Register of Natural Areas Program is being managed through a cooperative effort of the department, Washington Department of Game, and The Nature Conservancy. Working with sites recommended by the Washington Natural Heritage Program and Department of Game's Nongame Program, The Nature Conservancy contacts landowners to provide information, establish communication, and seek voluntary protection through site registration.

By informing landowners of the statewide significance of their land, the Registry Program reduces the chance that elements on these lands might be inadvertently destroyed. This method of protection quickly reaches owners of important sites at a minimal cost to the state. Because the owner has no legal obligation to protect the outstanding natural element(s), protection through registration relies heavily on maintaining cooperative relationships and regular communication with landowners.

Dedication

Dedication is a method used to secure a much stronger degree of protection for natural heritage resources than can be obtained under registration. It consists of two forms, the one used depends on ownership of the land involved.

In one form, the state obtains legal interest in land for preservation purposes. This form of dedication, also voluntary, differs from registration in that it entails a legal encumbrance. The instrument of dedication specifies the less than fee real property interest transferred to the state, and additional dedication provisions, such as management, custody, use or rights and privileges retained by the owner (RCW 79.70.090; WAC 332-60-110). Upon evaluation by the Heritage Program staff and the council, any registered natural area may be voluntarily dedicated by its owner. The owner and the state execute an instrument of dedication under regulations adopted by the Department of Natural Resources (WAC 332-60-110). The Natural Heritage Advisory Council reviews the dedication documents prior to acceptance by the department.

In its other form, dedication includes lands dedicated by public agencies through a cooperative agreement with the department (WAC 332-60-140). The cooperative agreement must show a significant legal and/or administrative commitment by the managing agency to protect the element(s) identified on the site. The owner is not required to surrender any real property interests or management authority, and may place the property into an appropriate administrative category within its own statutory and regulatory authority.

Dedication by public agencies brings diverse public protection activities together under the auspices of the state Natural Area System.

Land Acquisition for Natural Area Preserves

Natural Area Preserves can provide optimal long-term protection for certain elements. Using the criteria in this plan, the department can purchase, lease, set aside, or exchange public land or state-owned trust lands which are deemed to be natural areas, provided that the appropriate state land trust receives fair market value for any interests that are disposed. All such transactions must be approved by the Board of Natural Resources (RCW 79.70.040, see Appendix C).

The department may, consistent with the plan, acquire parcels having natural area quality from willing owners by gift, devise, purchase, grant, dedication or means other than eminent domain (RCW 79.70.030, see Appendix C).

The department works with The Nature Conservancy, which acquires private land for Natural Area Preserves from willing sellers. The department may exchange surplus administrative sites to The Nature Conservancy for sites they have acquired (RCW 79.08.250, see Appendix C), or purchase them outright.

The process by which the department establishes a Natural Area Preserve is outlined in Figure 2.

The Role of the Department of Natural Resources

The department coordinates a voluntary preservation effort called the Washington Register of Natural Areas. This is a cooperative effort by state and federal agencies, private organizations and individuals.

Furthermore, the department is authorized to inventory public and private lands to evaluate potential natural areas in Washington for registration or preservation (RCW 79.70.030; see Appendix C). The department maintains the Washington Natural Heritage Program to conduct this ongoing inventory.

Washington Natural Heritage Program

The Washington Natural Heritage Program, part of the department's Division of Private Forestry and Natural Heritage, was developed to identify outstanding natural areas through a statewide inventory of natural communities, species, and features, and help preserve these areas in the Natural Area System. The Natural Heritage Program classifies the special species and natural communities in Washington, conducts an ongoing inventory (see Glossary) of their locations and ecological condition, and stores this information in a data base (Figure 3). The data base provides information on the existence, characteristics, numbers, condition, status, location and distribution of the elements of natural diversity. These data are then analyzed to update the lists of elements and to identify priorities for future field work or protection activities. Priority elements and sites on state and private lands are then selected and recommended to the Natural Heritage Advisory Council for inclusion into the Natural Area System. The Natural Heritage Program cooperates with the Department of Game's Nongame Program, which maintains data on special animals and helps select and nominate areas that relate to their critical habitat. The details of determining priorities and site selection are presented in *Criteria for Determining Protection Priorities* and *Site Selection*.

Currently, the Natural Heritage Program, in close cooperation with the department's area offices and the Natural Heritage Advisory Council, manages 22 department Natural Area Preserves. These preserves have been dedicated by the department for the protection of elements, and for research and education.

In addition, the Natural Heritage Program manages the state Natural Area System, which includes all registered, dedicated and acquired natural areas.

The Natural Heritage Advisory Council

The Natural Heritage Advisory Council was established by RCW 79.70.070 (see Appendix C). The council advises the Department of Natural Resources on the establishment and management of Natural Area Preserves. The council reviews, and approves or rejects natural area nominations for registration by the department or other agencies (see *Methods of Protection*, p. 5).

Also, it reviews and comments on legal documents for the voluntary dedication of such areas. The council may advise department and other state land managing agencies about lands that are appropriate for registration or dedication (RCW 79.70.080, see Appendix C).

The council advises the department of regulations that it considers necessary to carry out the Natural Area Preserves Act. The council also recommends policy for the Natural Heritage Program through review and approval of the Natural Heritage Plan. For a complete list of council duties, see Appendix C (RCW 79.70.080).

Council Membership

The council has 15 members including 6 state agency officers. Nine voting members are appointed by the Commissioner of Public Lands and serve four-year terms. Five of the nine members must be recognized experts in the ecology of natural areas. Of the remaining four, at least one must be or represent a private forest landowner and at least one must be or represent a private agricultural landowner.

The six nonvoting *ex-officio* members are the directors of the Departments of Game, Ecology, and Fisheries; the supervisor of the Department of Natural Resources; the directors of the State Parks and Recreation Commission and the Interagency Committee for Outdoor Recreation; or their authorized representatives.

Council Role

The council has an active role in analyzing recommendations on state and private lands. Eastside and Westside Preserve Committees (named for areas of activity, Eastern and Western Washington) visit recommended sites and conduct an independent analysis of the preserve recommendation. They evaluate the proposed boundaries and the manageability of the area. The respective committee then makes its recommendations to the full council.

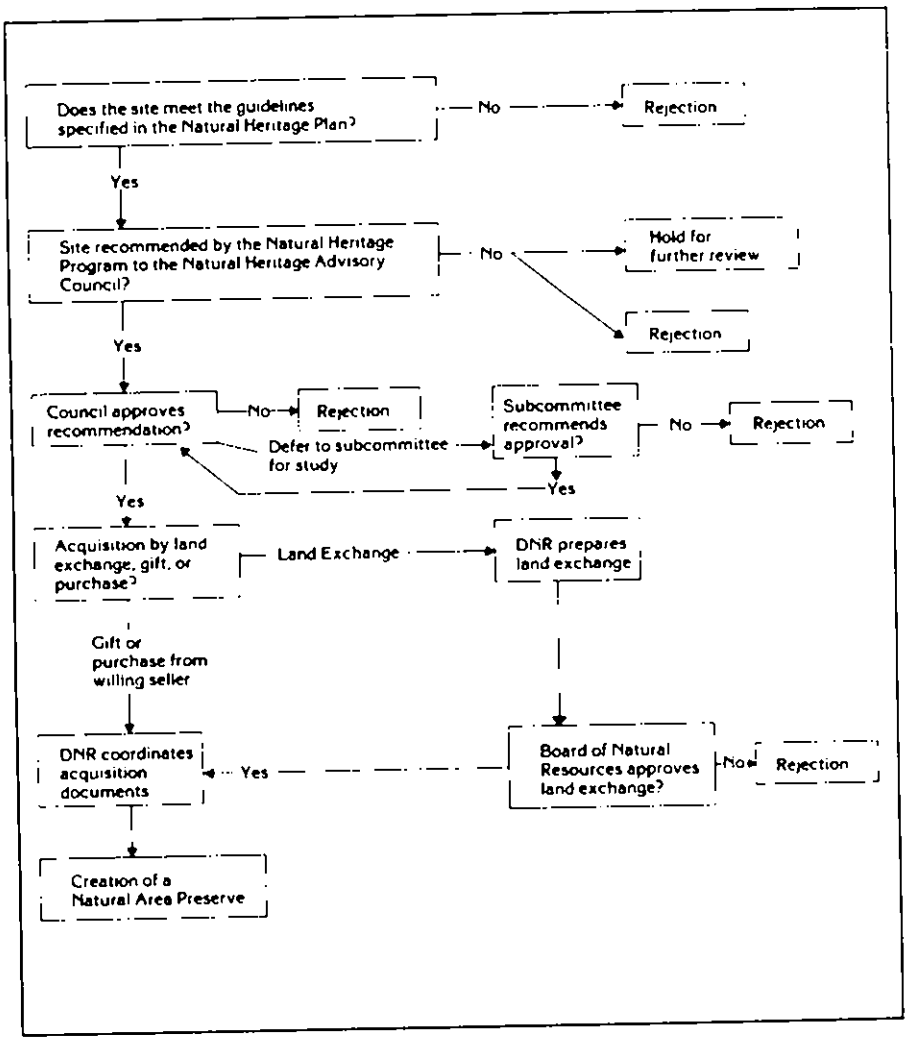

Figure 2. Process for the Acquisition of a Natural Area Preserve.

Name of File	Contents	Mode
Element File	Information on the elements — their characteristics, biology, and management; including abstracts, research reports, etc.	A manual file folder for each element
Element Occurrence File	Information on specific occurrence of the elements, including location, ownership, protected status, etc.	Computer file with separate record for each occurrence
Map File	An indexed and coded locality for each element occurrence, includes boundaries of managed areas.	All Washington USGS quad maps
Geographic Map File	Detailed information about each element occurrence; field surveys maps, reports, etc.	A manual file folder for each map in the map file
Managed Area File	Information about protected land, including Parks, Wilderness Areas, RNAs, etc. — including reports, field surveys, etc.	A manual file folder for each area

Figure 3. Washington Natural Heritage Program Data Storage System.

These same two committees monitor areas after they have been established as Natural Area Preserves. They work with the Natural Heritage Program and the appropriate department area office, or other state agency, to develop management plans for the preserves. They review proposals for research and educational activities on sites and make recommendations to the staff.

The Registered Natural Areas Committee works with the Natural Heritage Program staff in implementing and monitoring the Registry Program.

The Plan Review Committee makes suggestions to the department concerning revision and updating the Natural Heritage Plan. This is an important function since the plan directs not only the department preservation efforts but also those of many other agencies and groups.

Other committees deal with such topics as guidelines for research and educational activities on Natural Area Preserves and publicity about the Preserve System.

Through its committees, and as a complete body, the council ensures that high quality sites are preserved and that sound management practices are implemented to maintain them.

The Natural Area System

Various public agencies, private groups and individuals in Washington have set aside areas that provide either explicit or *de facto* protection for many elements. Many of these lands are candidates for inclusion on the Washington Register of Natural Areas. The designated areas and their protected elements and features are listed in *Elements Protected in Natural Areas*. Land managing agencies use various designations that offer varying degrees of protection to elements. Appendix B lists these management designations, their purposes and the degree of element protection provided. A brief summary is presented here.

State

In addition to the Department of Natural Resources, two other state agencies have a major role in the protection of elements.

The Department of Game manages large tracts of lands called Wildlife Areas. These areas were established primarily for managing game species, but are now recognized as nongame habitat as well. In some cases, elements listed in this plan are on a given Wildlife Area and may receive *de facto* protection. Currently, the Department of Game is developing a natural area policy that will give formal recognition and protection to elements found on Wildlife Areas.

The State Parks and Recreation Commission manages the park lands of the state. State parks are primarily used for recreation activities; a use often incompatible with element protection. Nonetheless, some less developed parks could provide protection for elements present in them. State Parks has several land designations which may provide adequate element protection (see Appendix B). The "Natural Areas" and "Natural Forest Areas" designations may provide adequate protection in some instances. The most restrictive designation, "Natural Area Preserve" (WAC 352-16-090(9)), provides the greatest protection for the elements and is only used when an area is dedicated into the Washington Natural Area System.

Federal

Several federal land-managing agencies participate in the Research Natural Area Program. This program is coordinated by the Pacific Northwest Federal Research Natural Area Committee. Research Natural Areas are established to protect various elements and are strictly managed for research and education. As such, they provide a high degree of protection and are similar to state Natural Area Preserves.

Many elements are protected to varying degrees in National Parks, Wilderness Areas, Forest Service Special Interest Areas, etc. (see Appendix B). However, certain uses in these areas, such as recreation or grazing, are incompatible with element protection unless special management designations or practices are implemented. In some areas this has been done by establishing Research Natural Areas.

Private

The Nature Conservancy purchases significant parcels of land. Many Nature Conservancy parcels are strictly managed for the preservation of the elements present, and for scientific research. These natural areas make an important contribution to the preservation of natural diversity and should be registered as part of the Natural Area System.

Private individuals voluntarily register or dedicate their lands onto the Washington Register of Natural Areas (see *Methods of Protection*, p. 5). Currently more than 60 landowners have agreed to register their land for the protection of the elements present. Elements that have been protected through voluntary registration are listed in *Elements Protected in Natural Areas*.

Management of Natural Areas

All agencies recognize the need to manage natural areas to protect the ecological processes and elements for which the natural area was created. Management of natural areas is also necessary to assure protection of their scientific and educational values. Management will often be passive, allowing natural processes to operate unimpeded. However, active management may be employed in a limited number of cases where it simulates natural ecological processes.

All management decisions are the responsibility of the managing agency, as determined by agency policies, guidelines, and regulations. The managing agency will resolve any potential management conflicts involving the different features and ecological processes in a given natural area.❑

Criteria for Determining Protection Priorities

Criteria for Determining Protection Priorities

This section lists the criteria used to assign priorities to special plants and animals, terrestrial and aquatic ecosystems, and unique geologic features.

Special Plant and Animal Species

Many species of plants and animals can be protected by preserving representatives of the major natural communities in the state. On the other hand, some species are so rare they might not be automatically included in an area of this type. These "special species" require identification and must be looked for individually to assure their protection. The following criteria were used to select these special species from the much larger group of species that comprise Washington's flora and fauna.

Plants

Only vascular plants (ferns, fern-allies, flowering plants) are included in the plan at this time. Moreover, a plant must be native to Washington; excluded are introduced species such as those that have escaped cultivation, ornamentals and other nonnative plants. Sterile hybrids and relatively minor floral and vegetative variations found in some taxa are also excluded.

Animals

The animals included in the plan are a subset of those defined by the Game Code (RCW 77.12.175) and are native to Washington.

Evaluation Criteria

Four major criteria were used to evaluate a special plant and animal species and assign it a priority:

1. ***Rarity***. The element's geographic distribution and the number of verified element occurrences within Washington were assessed.

2. ***Threats***. The actual amount of reduction of suitable habitat for the element, the actual or potential factors that are contributing directly to its decline, the rate of decline, the ecological fragility of the element, and the amount of the element's remaining habitat were assessed.

3. ***Protection potential***. This assesses the likelihood that populations or habitats, or both, can be protected by acquisition or registration of land, or by supportive management policies on public lands, (for example, populations of the endangered Wenatchee larkspur may be adequately protected in natural areas, while the wide-ranging wolverine cannot).

4. ***Taxonomy***. How close a taxon is related to its nearest relative was reviewed; the more distant (hence, the more genetically distinct), the higher the importance assigned.

If all other factors are equal, a "full" species ranks higher than a subspecies. Whether a taxon hybridizes in all or part of its range is also considered; taxa that do not hybridize are given greater priority.

Plant and animal taxa were evaluated using the above criteria and each were assigned one of the following priority rankings for protection:

Priority 1: These taxa are in danger of becoming extinct throughout their ranges. These taxa's populations are at critically low levels or their habitats are degraded or depleted to a significant degree. These taxa are the highest priorities for preservation.

Priority 2: These taxa will become endangered in Washington if factors contributing to their population decline or habitat degradation or loss continue. These taxa are high priorities for preservation efforts.

Priority 3: These taxa are vulnerable or declining, and could become endangered or threatened in the state without active management or removal of threats. These taxa should be important in the analysis of potential preserve sites.

Terrestrial and Aquatic Ecosystems

Assignment of a priority rank to a terrestrial or aquatic element is based on its rarity, degree of threat, and how adequately it is protected in managed areas.

1. ***Rarity*** is determined from analysis of the Natural Heritage data base. It is determined using the element's geographic distribution and the number of verified, high-quality occurrences in the state and in adjoining states.

2. ***Threat*** is defined as the known or anticipated activities that are degrading or destroying the element within Washington, the rate at which these are occurring, the element's ecological fragility, and the element's remaining undisturbed habitat.

3. ***Adequacy of protection*** provided by existing land management involves the following assessment:

a. Analysis of the degree of current protection which is provided to the element occurrence(s) (see *Methods of Protection*).

b. Whether or not a currently protected occurrence(s) is an adequate representative of the element. This evaluation is based on a variety of factors that vary in their relative importance depending on the element(s):

(1) Ecological quality: does the element occur in an essentially natural condition?

(2) Diversity: is the element's typical range of natural variation on the site?

(3) Ecological viability: does the size, shape, boundary conditions, location and biological properties of the element within the protected area ensure its persistence?

Note: In certain instances elements are considered partially represented when one or more of the above conditions are not satisfied.

Using the guidelines listed above, all terrestrial and aquatic ecosystem elements were assigned one of the following priority rankings:

Priority 1: These elements are assigned the highest rank because they are in the greatest jeopardy of being destroyed or degraded.

These elements typically have limited distribution in Washington and very few occurrences in natural condition are known. Priority 1 elements usually have little or no representation in existing natural areas or other protected areas. In certain instances, more than one occurrence (example) of a Priority 1 element will require protection before its rank is lowered or it is removed from the plan.

Priority 2: These elements are at an intermediate priority largely because they are not in as much danger of being destroyed or degraded in the near future as are Priority 1 elements. These elements typically have regional distribution in Washington and few occurrences exist in a natural condition. Priority 2 elements usually have little or no representation in existing natural areas or protected areas, but may receive some *de facto* protection in other managed areas (see Appendix B). In most instances, one adequate representative of a Priority 2 element will constitute adequate protection.

Priority 3: These elements are not in immediate jeopardy of destruction in Washington, but are significant components of the state's natural heritage and require formal protection within the Natural Area System. These elements typically have regional distribution within Washington, but the number of known occurrences varies greatly with the element. Priority 3 elements may be partially represented in existing natural areas; or, if not represented in existing natural areas, are in areas that provide *de facto* protection. Priority 3 elements generally do not serve as the primary basis for selection of potential natural areas, but serve to distinguish between sites that have otherwise similar features.

Unique Geologic Features

This plan has two classes of geologic elements:

1. Those that are unique in Washington, which can be destroyed easily and that could be effectively protected in a natural area. Examples include fragile fossil and mineral localities. These elements are assigned Priority 2 rank.

2. Prominent features of the landscape that have high scientific or educational value, but which are not easily destroyed by human activities. Examples include glaciers or lava flows.

Geologic elements that are relatively indestructible are not assigned a priority. When possible, they should be included in natural areas that protect other elements. Their inclusion will add more natural diversity and scientific interest to the site.

In the future, a refined set of criteria will be developed for the identification of unique geologic features and the determination of their status. Future Natural Heritage Plans will use these criteria and provide a more detailed list of geologic elements needing protection within the Natural Area System.

Marine Ecosystems

A list of marine ecosystem elements is not included in this Natural Heritage Plan. The Natural Heritage Progam is initiating a study of marine ecosystem needs. Elements will be identified through an extensive literature review and contacts with the scientific community. The resulting list of marine elements will be provided in a future revision of the Natural Heritage Plan.

Changes in Element Priority

The Natural Heritage Program staff will monitor element status and re-assign priority as deemed necessary during the two-year period between plan updates. If new conditions greatly increase threats to an element, its priority may be raised. On the other hand, when an element is protected in a natural area, its priority ranking will be lowered or it will cease to have a rank.

All changes in the plan will be reviewed every two years by the Department of Natural Resources, the Natural Heritage Advisory Council and the public.

Site Selection

Site Selection

State and Private Lands

Natural Area Preserves

A two-stage process is used to screen prospective sites on state and private lands which may be recommended for inclusion in the Natural Area System:

1. *Element Occurrence Analysis* - At this stage, the various occurrences of an element contained in the Natural Heritage data base are compared with one another. This assessment will vary with the biology/ecology of the element in question, but includes:

a. A determination of which occurrences provide *adequate representation* for the element(s); this includes a consideration of ecological quality, diversity, and ecological viability.

b. An evaluation of the health of the element occurrence(s) (for example, population or condition) with references to its ability to persist or perpetuate over time.

Note that these criteria are relative for each element. A somewhat disturbed Puget Trough lowland prairie may be the best available example and should be selected, while the same degree of disturbance for a subalpine meadow in the Western Cascades, where many less disturbed examples exist, would be unacceptable. Also special species element occurrences are evaluated somewhat differently than element occurrences for communities.

2. *Site Analysis* - This stage overlaps somewhat with the element occurrence stage but emphasis lies on ecological quality, diversity and ecological viability as characteristics of the *site as a whole* (that is, not confined solely to the primary element occurrences). Two additional site characteristics are also considered:

a. Defensibility: does the site adequately protect the element occurrences against unnatural encroachments?

b. Manageability: can the site be managed (actively or passively) to maintain the primary elements or processes?

An example of an element and site occurrence analysis for an area is given in Table 1.

A primary consideration in the selection of a Natural Area Preserve site is the presence of multiple elements. The one-element/one-site approach may be necessary in a limited number of cases (for example, endangered species habitats; only known example of a natural community), but it is clearly a more efficient use of public and private lands and conservation money to select sites with multiple elements.

Columbia Falls Natural Area Preserve in Skamania County is a good example of a multiple element site. It contains two terrestrial communities, two aquatic communities and eight special species:

Terrestrial Elements:
Douglas fir/vinemaple community
Douglas fir-western hemlock/salal community

Aquatic Elements:
mid-elevation streams
waterfalls and associated spray zones

Special Species:
one Threatened plant species
six Sensitive plant species
one Sensitive animal species

Once a site has been identified on state or private lands, the Natural Heritage Program staff prepares a site recommendation package. The package is presented to the Natural Heritage Advisory Council for review. The council evaluates the site for possible inclusion into the Natural Area System. Based on this evaluation, the council either approves or rejects the recommended site, and so advises the Department of Natural Resources. If the recommended area is approved, the department conducts the necessary steps for the dedication or acquisition of the site as a Natural Area Preserve. The acquisition process is outlined in Figure 2 (Pg. 9).

Each element in the plan must be protected to the extent necessary to assure that it will not be destroyed. Since the viability of any one element occurrence or natural

TABLE 1

OUTLINE OF NATURAL AREA EVALUATION CONSIDERATIONS FOR STATE AND PRIVATE LANDS

DAVIS CANYON

ELEMENT CONSIDERATIONS

Element Name	Element Priority	Is there Adequate Representation of the Element?	What is the Degree of Disturbance?	What is the Health of the Population?
*antelope bitterbrush/ Idaho fescue community	1	yes	low	high
antelope bitterbrush/ bluebunch wheatgrass community	1	no	mod	mod
big sagebrush/ needle-and-thread community	1	no	mod	mod
ponderosa pine/ bitterbrush community	2	no (small size)	low	low
threetip sagebrush/ Idaho fescue community	1	no (small size)	low	high

*Primary element of site

SITE CONSIDERATIONS

Natural Area As a Whole

Ecological Quality . . . . . high
Diversity . . . . . high
Ecological Viability . . . . . high
Defensibility . . . . . high
Manageability . . . . . high
Accessibility . . . . . mod
. . . . . high

area could be jeopardized by future human activities, there may need to be some replication.

Registered Natural Areas

Parcels being considered for registration as Natural Areas are subjected to the same element occurrence analysis and site analysis outlined for prospective Preserve sites. All registry sites contain at least one element listed in the plan. Registry site recommendations may differ from Natural Area Preserve recommendations in that:

- They have been recommended for Natural Area Preserve designation, but are not available for acquisition or dedication (for example, the landowner or agency wants to retain ownership, but agrees voluntarily to register the site).

- Although they contain high priority elements or clusters of elements, the sites do not meet the criteria for Natural Area Preserve, Research Natural Area, etc., because the site contains replicate elements present in existing natural areas or because it is too small.

- Registration can provide some protection until a time when, if appropriate, the level of protection can be increased (for example, by conservation easement or by acquisition).

Federal Lands

For many years, scientists and researchers affiliated with the various federal agencies have identified potential natural area (for example, Research Natural Area) sites on federal lands. Since 1973 site selection has been based on the occurrence of "cells" (equivalent to the elements of this plan) as listed in *Research Natural Area Needs in the Pacific Northwest: a contribution to land-use planning*.[1] Known as the "yellow book," it lists the major terrestrial and aquatic ecosystems and special interest species requiring representation in a natural area system within the Pacific Northwest. The goals of this approach are compatible with those described in this plan.

Federal scientists employ site identification methods and procedures similar to those used on state and private lands, although not every factor listed for site selection on state and private lands is explicitly considered.

The Federal Research Natural Area Program also emphasizes the importance of including as many elements as possible on a recommended site. This typically results in "capturing" the greatest amount of diversity in the smallest manageable ecosystem.

Close interaction between state, federal and private scientists in the selection of natural area sites will ensure the least possible duplication of effort between the various agencies and private organizations.

[1] Dyrness, *et al.* 1975.

Lists of Priorities

Lists of Priorities

Special Plants

The following list of special plants has been compiled by the Washington Natural Heritage Program staff of the Department of Natural Resources and is based on previous work by the Program.[2]

Based on an analysis of the Natural Heritage data base, each species has been assigned a priority ranking of 1, 2, or 3 (see Criteria for Determining Protection Priority for definitions). Changes from the 1985 plan are indicated by superscripts and explained on page 33.

Species are listed by scientific name; a common name is also provided. The land ownership category indicates known or probable ownership of lands likely to provide habitat for the species.

Further information on distributions, land ownership, threats, number of occurrences, etc., is maintained by the Natural Heritage Program.

Washington polemonium

[2] Washington Natural Heritage Program. 1984 (and 1985 update). *Endangered, threatened and sensitive vascular plants of Washington.* Washington Department of Natural Resources, Olympia, Wash. 29 pp.

Special Plants

Priority	Element Name		Ownership
	Scientific Name	Common Name	
1	*Astragalus sinuatus*	Whited's milkvetch	ST,FED,PVT
1	*Castilleja levisecta*	golden Indian-paintbrush	ST,FED,PVT
1	*Cypripedium calceolus* var. *parviflorum* [1]	yellow lady's-slipper	ST,FED,PVT
1	*Delphinium viridescens*	Wenatchee larkspur	FED,PVT
1	*Hackelia venusta*	showy stickseed	FED
1	*Howellia aquatilis*	howellia	ST,FED,PVT
1	*Liparis loeselii* [1]	twayblade	ST,FED,PVT
1	*Polemonium pectinatum*	Washington polemonium	ST,FED,PVT
1	*Rorippa columbiae*	persistentsepal yellowcress	FED,PVT
2	*Allium dictuon* [2]	Blue Mt. Onion	FED
2	*Artemisia campestris* ssp. *borealis* var. *wormskioldii*	northern wormwood	ST,FED,PVT
2	*Aster jessicae*	Jessica's aster	ST,PVT
2	*Astragalus columbianus*	Columbia milkvetch	FED,PVT
2	*Astragalus cottonii* [2]	Cotton's milkvetch	FED
2	*Astragalus pulsiferae* var. *suksdorfii*	Ames milkvetch	ST,FED,PVT
2	*Calamagrostis crassiglumis*	thickglume reedgrass	FED,PVT
2	*Calochortus longebarbatus* var. *longebarbatus*	long-bearded sego-lily	ST,FED,PVT
2	*Castilleja cryptantha*	obscure Indian-paintbrush	FED
2	*Corydalis aquae-gelidae*	Clackamas corydalis	ST,FED,PVT
2	*Cypripedium fasciculatum*	clustered lady's-slipper	ST,FED,PVT
2	*Delphinium leucophaeum* [3]	white rock larkspur	PVT
2	*Eatonella nivea*	eatonella	ST,PVT
2	*Erigeron basalticus*	basalt daisy	FED,PVT
2	*Erigeron howellii*	Howell's daisy	ST,PVT
2	*Eryngium petiolatum*	Oregon coyote-thistle	FED,PVT
2	*Haplopappus liatriformis*	Palouse goldenweed	ST,PVT
2	*Lomatium rollinsii*	Rollins' desert-parsley	ST,PVT
2	*Lomatium suksdorfii*	Suksdorf's desert-parsley	ST,FED,PVT
2	*Lomatium tuberosum*	Hoover's desert-parsley	ST,FED,PVT
2	*Lupinus sabinii*	Sabin's lupine	FED,PVT
2	*Lupinus sulphureus* var. *kincaidii* [3]	Kincaid's sulfur lupine	PVT
2	*Microseris bigelovii* [1]	coast microseris	ST,FED,PVT
2	*Navarretia tagetina*	marigold navarretia	ST,FED,PVT
2	*Ophioglossum vulgatum*	adder's tongue	ST,FED,PVT
2	*Penstemon barrettiae*	Barrett's beardtongue	ST,FED,PVT
2	*Petrophytum cinerascens*	Chelan rockmat	ST,FED,PVT
2	*Phacelia lenta*	sticky phacelia	FED,PVT
2	*Platanthera chorisiana*	Choriso bog-orchid	ST,FED,PVT
2	*Poa pachypholis*	seacliff bluegrass	ST,FED
2	*Ranunculus reconditus*	obscure buttercup	ST,PVT

ST = state
FED = federal
PVT = private

Special Plants

Priority	Element Name		Ownership
	Scientific Name	Common Name	
2	*Rubus nigerrimus*	northwest raspberry	ST,PVT
2	*Sidalcea hirtipes*	hairy-stemmed checker-mallow	ST,PVT
2	*Sidalcea oregana* var. *calva*	Oregon checker-mallow	ST,FED,PVT
2	*Silene seelyi*	Seely's silene	FED
2	*Silene spaldingii*	Spalding's silene	ST,PVT
2	*Sisyrinchium sarmentosum*	pale blue-eyed grass	ST,FED,PVT
2	*Sullivantia oregana*[1]	Oregon sullivantia	ST,PVT
2	*Tauschia hooveri*	Hoover's tauschia	ST,PVT
2	*Trifolium thompsonii*	Thompson's clover	ST,FED,PVT
3	*Agoseris elata*	tall agoseris	ST,FED,PVT
3	*Agrostis borealis*	northern bentgrass	ST,FED
3	*Allium douglasii* var. *constrictum*	constricted Douglas' onion	ST,FED,PVT
3	*Anemone nuttalliana*	pasqueflower	FED,PVT
3	*Antennaria corymbosa*	meadow pussy-toes	ST,FED
3	*Antennaria parvifolia*	Nuttall's pussy-toes	ST,FED,PVT
3	*Arabis crucisetosa*	cross-haired rockcress	ST,PVT
3	*Aster curtus*[2]	white-top aster	ST,FED,PVT
3	*Aster junciformis*	rush aster	ST,PVT
3	*Aster sibiricus* var. *meritus*	arctic aster	FED
3	*Astragalus arrectus*	Palouse milkvetch	ST,FED,PVT
3	*Astragalus arthuri*	Arthur's milkvetch	ST,PVT
3	*Astragalus cusickii* var. *cusickii*	Cusick's milkvetch	PVT
3	*Astragalus geyeri*[3]	Geyer's milkvetch	ST,FED,PVT
3	*Astragalus hoodianus*	Hood River milkvetch	ST,FED,PVT
3	*Astragalus microcystis*	least bladdery milkvetch	ST,FED,PVT
3	*Astragalus misellus* var. *pauper*[2]	pauper milkvetch	ST,FED,PVT
3	*Astragalus riparius*	Piper's milkvetch	PVT
3	*Astragalus tweedyi*	Tweedy's milkvetch	ST,FED,PVT
3	*Bolandra oregana*	Oregon bolandra	ST,FED,PVT
3	*Botrychium lanceolatum*	lance-leaved grape-fern	FED
3	*Botrychium lunaria*	moonwort	ST,FED
3	*Botrychium minganense*	Victorin's grape-fern	FED
3	*Botrychium montanum*	mountain moonwort	FED
3	*Botrychium pinnatum*	St. John's moonwort	FED
3	*Calamagrostis tweedyi*	Cascade reedgrass	FED,PVT
3	*Campanula lasiocarpa*	Alaska harebell	ST,FED
3	*Carex aenea*	bronze sedge	ST,FED
3	*Carex anthoxanthea*[3]	yellow-flowered sedge	FED
3	*Carex atrata* var. *atrosquama*	blackened sedge	ST,FED
3	*Carex atrata* var. *erecta*	erect blackened sedge	FED
3	*Carex buxbaumii*[3]	Buxbaum's sedge	FED,PVT
3	*Carex circinata*	coiled sedge	FED

ST = state
FED = federal
PVT = private

Priority	Element Name		Ownership
	Scientific Name	Common Name	
3	*Carex comosa*	bristly sedge	ST,PVT
3	*Carex densa*	dense sedge	ST,FED
3	*Carex flava*	yellow sedge	ST,FED,PVT
3	*Carex hystricina*	porcupine sedge	ST,FED,PVT
3	*Carex interrupta*	green-fruited sedge	ST,FED,PVT
3	*Carex macrochaeta*	large-awn sedge	ST,FED,PVT
3	*Carex norvegica*	Scandinavian sedge	ST,FED
3	*Carex obtusata*	blunt sedge	FED
3	*Carex pauciflora*	few-flowered sedge	ST,FED,PVT
3	*Carex paupercula*	poor sedge	FED
3	*Carex pluriflora*	several-flowered sedge	FED
3	*Carex proposita*	Smoky Mt. sedge	FED
3	*Carex saxatilis* var. *major*	russet sedge	FED
3	*Carex scirpoidea* var. scirpoidea	Canadian single-spike sedge	ST,FED
3	*Carex scopulorum* var. *prionophylla*	saw-leaved sedge	ST,FED,PVT
3	*Carex stenophylla*	narrow-leaved sedge	ST,PVT
3	*Carex stylosa*	long-styled sedge	ST,FED
3	*Carex sychnocephala*	many-headed sedge	ST,FED,PVT
3	*Cassiope lycopodiodes* ssp. *cristipilosa*[3]	clubmoss cassiope	ST
3	*Chaenactis douglasii* var. *glandulosa*	hoary chaenactis	ST,FED,PVT
3	*Chaenactis ramosa*	branching chaenactis	ST,FED,PVT
3	*Chaenactis thompsonii*	Thompson's chaenactis	FED,PVT
3	*Cheilanthes feei*	Fee's lip-fern	FED,PVT
3	*Chrysolepis chrysophylla*	golden chinquapin	ST,FED,PVT
3	*Chrysosplenium tetrandrum*	northern goldencarpet	FED
3	*Cicuta bulbifera*	bulb-bearing water-hemlock	ST,FED,PVT
3	*Cimicifuga elata*	tall bugbane	ST,FED,PVT
3	*Cirsium utahense*	Utah thistle	FED
3	*Claytonia lanceolata* var. *pacifica*[3]	lanceleaf springbeauty	FED
3	*Cochlearia officinalis*	scurvygrass	FED,PVT
3	*Collinsia sparsiflora* var. *bruciae*	few-flowered collinsia	ST,PVT
3	*Coptis asplenifolia*	spleenwort-leaved goldthread	ST,FED,PVT
3	*Cryptantha interrupta*	bristly cryptantha	ST,FED,PVT
3	*Cryptantha leucophaea*	gray cryptantha	ST,FED,PVT
3	*Cryptantha rostellata*	beaked cryptantha	ST,FED,PVT
3	*Cryptogramma stelleri*	Steller's rock-brake	FED
3	*Cyperus rivularis*	shining flatsedge	FED,PVT
3	*Dodecatheon pulchellum* var. *watsonii*	few-flowered shooting star	ST,FED
3	*Draba aurea*	golden draba	ST,FED
3	*Draba douglasii* var. *douglasii*	Douglas' draba	ST,PVT
3	*Draba lanceolata*	lance-leaved draba	FED
3	*Dryas drummondii*	yellow mountain-avens	FED

ST = state
FED = federal
PVT = private

Special Plants

Priority	Element Name		Ownership
	Scientific Name	Common Name	
3	*Dryopteris cristata*	crested shield-fern	ST,FED,PVT
3	*Eleocharis rostellata*	beaked spike-rush	ST,FED,PVT
3	*Epipactis gigantea*	giant helleborine	ST,FED,PVT
3	*Erigeron acris* var. *elatus*[3]	tall bitter fleabane	FED
3	*Erigeron aliceae*	Alice's fleabane	FED
3	*Erigeron humilis*[3]	arctic-alpine daisy	FED,PVT
3	*Erigeron oreganus*	gorge daisy	ST,PVT
3	*Erigeron peregrinus* ssp. *peregrinus* var. *thompsonii*	Thompson's wandering daisy	ST,FED,PVT
3	*Erigeron piperianus*	Piper's daisy	ST,FED,PVT
3	*Eriophorum viridicarinatum*	green-keeled cottongrass	FED
3	*Eritrichium nanum* var. *elongatum*	pale alpine forget-me-not	FED
3	*Erythronium revolutum*	pink fawn-lily	ST,FED,PVT
3	*Filipendula occidentalis*	queen-of-the-forest	ST,PVT
3	*Fritillaria camschatcensis*	black lily	ST,FED,PVT
3	*Galium kamtschaticum*	boreal bedstraw	FED
3	*Gaultheria hispidula*	creeping snowberry	ST,FED,PVT
3	*Gentiana douglasiana*	swamp gentian	ST,FED,PVT
3	*Gentiana glauca*	glaucous gentian	ST,FED
3	*Geum rivale*	water avens	ST,FED,PVT
3	*Geum rossii* var. *depressum*	Ross' avens	FED
3	*Githopsis specularioides*	common blue-cup	ST,FED,PVT
3	*Hackelia cinerea*	gray stickseed	ST,PVT
3	*Hackelia diffusa* var. *diffusa*	diffuse stickseed	ST,PVT
3	*Hackelia hispida* var. *disjuncta*	sagebrush stickseed	ST,PVT
3	*Heuchera grossularifolia* var. *tenuifolia*	gooseberry-leaved alumroot	ST,PVT
3	*Iliamna longisepala*	longsepal globemallow	ST,FED,PVT
3	*Isoetes nuttalli*[3]	Nuttall's quillwort	ST,FED,PVT
3	*Juncus hemiendytus* var. *hemiendytus*[3]	dwarf rush	PVT
3	*Juncus kelloggii*[3]	Kellogg's rush	PVT
3	*Lathyrus torreyi*[3]	Torrey's peavine	PVT
3	*Lepidium oxycarpum*[3]	sharpfruited peppergrass	ST
3	*Limosella acaulis*	southern mudwort	FED,PVT
3	*Linanthus bakeri*	Baker's linanthus	ST,PVT
3	*Lindernia anagallidea*	false-pimpernel	ST,PVT
3	*Listera borealis*	northern twayblade	FED
3	*Lobelia dortmanna*	water lobelia	ST,FED,PVT
3	*Loiseleuria procumbens*	alpine azalea	FED
3	*Lomatium laevigatum*	smooth desert-parsley	PVT
3	*Lomatium quintuplex*	Umtanum desert-parsley	ST,FED,PVT
3	*Lomatium serpentinum*	Snake Canyon desert-parsley	ST,PVT
3	*Lupinus cusickii*	prairie lupine	ST,FED,PVT

ST = state
FED = federal
PVT = private

Priority	Element Name		Ownership
	Scientific Name	Common Name	
3	*Luzula arcuata*	curved woodrush	FED
3	*Lycopodium dendroideum*	treelike clubmoss	FED
3	*Lycopodium inundatum*	bog clubmoss	ST,FED,PVT
3	*Machaerocarpus californicus*	fringed waterplantain	ST,PVT
3	*Meconella oregana*	white meconella	ST,PVT
3	*Microseris borealis*	northern microseris	ST,FED,PVT
3	*Mimulus pulsiferae*	Pulsifer's monkey-flower	ST,FED,PVT
3	*Mimulus suksdorfii*	Suksdorf's monkey-flower	ST,FED,PVT
3	*Mimulus washingtonensis*	Washington monkey-flower	ST,FED,PVT
3	*Montia diffusa*	branching montia	ST,FED,PVT
3	*Muhlenbergia glomerata*	marsh muhly	ST,FED,PVT
3	*Nicotiana attenuata*	coyote tobacco	ST,FED,PVT
3	*Oenothera pygmaea*	dwarf evening-primrose	ST,FED,PVT
3	*Orobanche pinorum*	pine broomrape	ST,FED,PVT
3	*Orthocarpus bracteosus* [3]	rosy owlclover	ST,FED,PVT
3	*Oryzopsis hendersonii*	Henderson's ricegrass	ST,FED,PVT
3	*Oxalis suksdorfii*	western yellow oxalis	ST,PVT
3	*Oxytropis viscida*	sticky crazyweed	FED
3	*Parnassia fimbriata* var. *hoodiana*	fringed grass-of-Parnassus	ST,PVT
3	*Parnassia kotzebuei*	Kotzebue's grass-of-Parnassus	FED
3	*Parnassia palustris* var. *neogaea*	northern grass-of-Parnassus	FED
3	*Pedicularis rainierensis*	Mt. Rainier lousewort	FED
3	*Pellaea brachyptera* [3]	Sierra cliff-brake	FED
3	*Pellaea breweri*	Brewer's cliff-brake	FED
3	*Penstemon deustus* var. *variabilis*	hot-rock penstemon	ST,PVT
3	*Phacelia franklinii*	Franklin's phacelia	ST,PVT
3	*Physaria didymocarpa* var. *didymocarpa*	common twinpod	ST,FED,PVT
3	*Plantago macrocarpa*	Alaska plantain	ST,FED,PVT
3	*Platanthera obtusata*	small northern bog-orchid	ST,FED,PVT
3	*Platanthera sparsiflora*	canyon bog-orchid	PVT
3	*Pleuricospora fimbriolata* [2]	fringed pinesap	FED,PVT
3	*Poa gracillima* var. *multnomae* [3]	Pacific bluegrass	PVT
3	*Poa grayana*	Gray's bluegrass	FED
3	*Poa laxiflora* [3]	loose-flowered bluegrass	FED,PVT
3	*Poa nervosa* var. *nervosa*	Wheeler's bluegrass	ST,FED,PVT
3	*Polemonium carneum*	great polemonium	ST,FED,PVT
3	*Polemonium viscosum*	skunk polemonium	FED
3	*Polygonum austiniae*	Austin's knotweed	ST,PVT
3	*Polystichum californicum*	California sword-fern	FED,PVT
3	*Potamogeton obtusifolius* [3]	blunt leaved pondweed	FED,PVT
3	*Potentilla breweri*	Brewer's cinquefoil	ST,FED,PVT
3	*Potentilla diversifolia* var. *perdissecta*	diverse-leaved cinquefoil	ST,FED

ST = state
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PVT = private

Special Plants

Priority	Element Name		Ownership
	Scientific Name	Common Name	
3	*Potentilla nivea*	snow cinquefoil	ST,FED
3	*Potentilla quinquefolia*	five-leaved cinquefoil	ST,FED
3	*Puccinellia nutkaensis*	Alaska alkaligrass	ST,FED,PVT
3	*Ranunculus cooleyae*	Cooley's buttercup	ST,FED
3	*Ranunculus longirostris*	long-beaked water-buttercup	ST,FED,PVT
3	*Ribes cereum* var. *colubrinum*	squaw currant	ST,FED,PVT
3	*Ribes cognatum*	Umatilla gooseberry	ST,FED,PVT
3	*Ribes irriguum*	Idaho gooseberry	ST,FED,PVT
3	*Ribes wolfii*	Wolf's currant	FED
3	*Rubus acaulis*	nagoonberry	ST,FED,PVT
3	*Salix candida*	hoary willow	FED
3	*Salix maccalliana*	McCall's willow	FED
3	*Salix tweedyi*	Tweedy's willow	ST,FED
3	*Samolus parviflorus*	water-pimpernel	PVT
3	*Sanguisorba menziesii*	Menzies' burnet	ST,FED,PVT
3	*Sanicula arctopoides*	bear's-foot sanicle	ST,FED,PVT
3	*Sanicula marilandica*	black snake-root	ST,FED,PVT
3	*Saxifraga cernua*	nodding saxifrage	FED
3	*Saxifraga debilis*	pygmy saxifrage	FED
3	*Saxifraga integrifolia* var. *apetala*	swamp saxifrage	ST,FED,PVT
3	*Sisyrinchium septentrionale*	blue-eyed grass	ST,FED,PVT
3	*Spiraea densiflora* var. *splendens*	subalpine spiraea	FED
3	*Spiranthes romanzoffiana* var. *porrifolia*	western ladies-tresses	ST,FED,PVT
3	*Synthyris pinnatifida* var. *lanuginosa*	cut-leaf synthyris	FED
3	*Teucrium canadense* ssp. *viscidum*	wood sage	ST,FED,PVT
3	*Thalictrum dasycarpum*	purple meadowrue	FED,PVT
3	*Tillaea aquatica*[3]	pygmy-weed	FED
3	*Tillaea erecta*	erect pygmy-weed	ST,PVT
3	*Trifolium plumosum* var. *plumosum*	plumed clover	ST,FED,PVT
3	*Trifolium thompsonii*[2]	Thompson's clover	ST,FED,PVT
3	*Trillium parviflorum*	small-flowered trillium	ST,FED,PVT
3	*Utricularia intermedia*	flat-leaved bladderwort	ST,FED,PVT
3	*Vaccinium myrtilloides*	velvet-leaved blueberry	FED
3	*Veratrum insolitum*	Siskiyou false hellebore	ST,PVT
3	*Woodwardia fimbriata*	chain-fern	ST,FED,PVT

[1] Priority raised over that in 1985 plan due to increased threats.

[2] Priority reduced since 1985 plan (e.g., new populations, threats to species reduced, etc.).

[3] New to the plan for 1987.

Species listed in 1985 plan, dropped from 1987 plan because they are more abundant/less threatened than previously assumed:

Viola sheltonii
Lupinus microcarpus var. *scopulorum*
Sedum lanceolatum ssp. *nesioticum*
Dodecatheon poeticum

ST = state
FED = federal
PVT = private

Element Name	
Scientific Name	**Common Name**

TAXA POSSIBLY EXTINCT OR EXTIRPATED IN WASHINGTON

Abronia umbellata ssp. *acutalata*	pink sandverbena
Arenaria paludicola	swamp sandwort
Astragalus diaphanus	transparent milkvetch
Astragalus kentrophyta var. *douglasii*	thistle milkvetch
Calochortus nitidus	broad-fruit mariposa
Eleocharis atropurpurea	purple spike-rush
Eriogonum maculatum	spotted buckwheat
Hackelia hispida var. *hispida*	rough stickseed
Lobelia kalmii	Kalm's lobelia
Lomatium cusickii	Cusick's desert-parsley
Mimulus jungermannioides	liverwort monkey-flower
Nymphaea tetragona	pygmy water-lily
Oenothera flava	long-tubed evening-primrose
Salix vestita var. *erecta*	rock willow
Sidalcea malviflora ssp. *virgata*	rose checker-mallow
Tauschia tenuissima	Leiberg's tauschia
Viola renifolia	kidney-leaved violet

Special Animals

The following list of special animals was compiled by biologists of the Nongame Program, Washington Department of Game. These species, in the judgment of the Nongame Program, are those in greatest jeopardy that can most likely receive some protection within the Natural Area Preserves System. As such, it represents a subset of a larger group of species that the Nongame Program continues to monitor.[3]

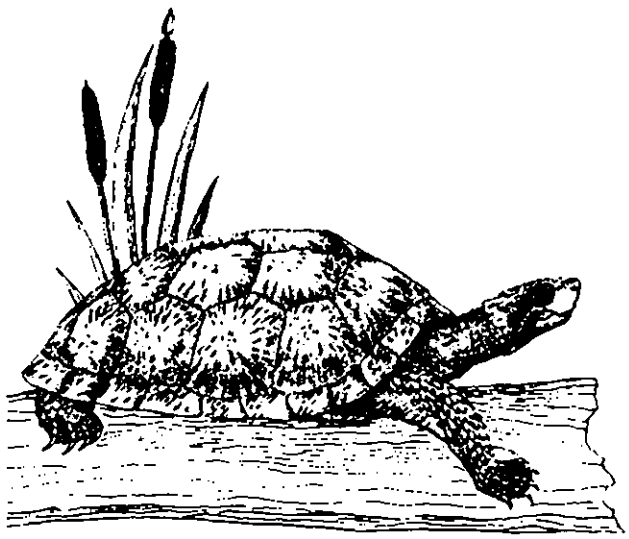
Based on an analysis of the Natural Heritage data base, each species has been assigned a priority ranking of 1, 2 or 3 (see Criteria for Determining Protection Priorities for definitions). Changes from the 1985 plan are indicated by superscripts and explained on page 37.

Species are listed by scientific name; a common name is also provided. The land ownership category indicates known or probable ownership of lands likely to provide habitat for the species.

Some species on the list, especially the birds, are wide ranging and will not be protected at all times in a Natural Area Preserve. The strategy of preserve selection for these species will be to concentrate on areas such as colonial nesting areas, feeding areas, colonial roosts, or, as the case of some butterflies, the necessary habitat for juvenile (larval) development. An example of such a preserve is the Skagit Bald Eagle Preserve, which protects a major winter roosting and feeding area. Eagles congregate there in large numbers to feed on spawned salmon.

The status of many of the taxa on this list is currently under review prior to listing action by the State Game Commission. Changes in the species statuses will be incorporated into future revisions of the plan. For further information on all nongame species contact:

Nongame Program
Washington Department of Game
600 N. Capitol Way, GJ-11
Olympia, Washington 98504-0091
(206) 753-5700



Western pond turtle

[3] Washington Department of Game—Nongame Program. Memorandum, March 12, 1986—Proposed species changes (Attachment B). Olympia, Wash.

Special Animals

Priority	Element Name		Ownership
	Scientific Name	Common Name	
1	*Odocoileus virginianus leucurus*[1]	Columbian white-tailed deer	ST,FED,PVT
1	*Falco peregrinus*	peregrine falcon	ST,FED,PVT
1	*Bartramia longicauda**[1]	upland sandpiper	PVT
1	*Charadrius alexandrinus**[1]	snowy plover	ST,FED,PVT
1	*Coccyzus americanus**[1]	yellow-billed cuckoo	PVT
1	*Grus canadensis**[1]	sandhill crane	ST,FED,PVT
1	*Pelecanus erythrorhynchos**[1]	white pelican	ST,FED
1	*Cicindela columbica*[1]	Columbia River tiger beetle	FED
2	*Plecotus townsendii*	Townsend's big-eared bat	ST,FED
2	*Sylvilagus idahoensis*	pygmy rabbit	ST,FED,PVT
2	*Buteo regalis**	ferruginous hawk	FED,PVT
2	*Gavia immer**[1]	common loon	FED
2	*Haliaeetus leucocephalus*	bald eagle	ST,FED,PVT
2	*Clemmys marmorata*	western pond turtle	ST,FED,PVT
2	*Lanx nuttalli*[2]	giant Columbia River limpet	FED
2	*Lithoglyphus columbiana*[2]	giant Columbia spire snail	FED
2	*Plethodon larselli*[2]	Larch Mountain salamander	ST,PVT
2	*Habrodais grunus*	golden hairstreak	FED
2	*Speyeria zerene hippolyta*	Oregon silver-spot fritillary	ST,PVT
3	*Sciurus griseus*	western gray squirrel	ST,FED,PVT
3	*Sorex hoyi*[2]	pygmy shrew	FED
3	*Thomomys mazama couchi*[2]	western pocket gopher	PVT
3	*Thomomys mazama glacialis*[2]	western pocket gopher	PVT
3	*Thomomys mazama louiei*[2]	western pocket gopher	PVT
3	*Thomomys mazama tumuli*[2]	western pocket gopher	PVT
3	*Thomomys talpoides douglasi*[2]	northern pocket gopher	PVT
3	*Sorex merriami*	Merriam's shrew	ST,FED,PVT
3	*Accipiter gentilis**	goshawk	ST,FED
3	*Amphispiza belli**	sage sparrow	ST,FED,PVT
3	*Aquila chrysaetos**	golden eagle	ST,FED,PVT
3	*Athene cunicularia**	burrowing owl	ST,FED,PVT
3	*Brachyramphys marmoratus**	marbled murrelet	ST,FED
3	*Buteo swainsoni**	Swainson's hawk	ST,FED,PVT
3	*Centrocercus urophasianus**[3]	sage grouse	ST,FED,PVT
3	*Chactura vauxi**[3]	Vaux's swift	ST,FED,PVT
3	*Dryocopus pileatus**	pileated woodpecker	ST,FED,PVT
3	*Lanius ludovicianus**	loggerhead shrike	ST,FED,PVT
3	*Melanerpes lewis**[3]	Lewis's woodpecker	ST,FED,PVT
3	*Oreoscoptes montanus**	sage thrasher	ST,FED,PVT
3	*Phalacrocorax penicillatus**	Brandt's cormorant	ST,FED
3	*Pipilo chlorurus**[3]	green-tailed towhee	ST,FED,PVT

ST = state
FED = federal
PVT = private

*breeding populations

Special Animals

Priority	Element Name		Ownership
	Scientific Name	Common Name	
3	*Picoides albolarvatus**	white-headed woodpecker	ST,FED,PVT
3	*Progne subis**[2]	purple martin	ST,FED,PVT
3	*Sialia mexicana**	western bluebird	ST,FED,PVT
3	*Tympanuchus phasianellus**[3]	sharp-tailed grouse	ST,FED,PVT
3	*Lampropeltis zonata*[1]	California mountain kingsnake	FED,PVT
3	*Masticophis taeniatus*[3]	striped whipsnake	ST,FED,PVT
3	*Rana pretiosa*[3]	spotted frog	ST,FED,PVT
3	*Plethodon dunni*	Dunn's salamander	ST,FED,PVT
3	*Novumbra hubbsi*[3]	Olympic mudminnow	ST,FED,PVT
3	*Agonum belleri*	Beller's ground beetle	ST,PVT
3	*Eanus hatchii*	Hatch's click beetle	ST,PVT

[1] Status raised from that listed in 1985 plan.
[2] Status reduced from that listed in 1985 plan.
[3] New to plan in 1987.

ST = state
FED = federal
PVT = private

*breeding populations

Terrestrial Ecosystems

The following list of terrestrial ecosystem elements was compiled from review of the 1985 Natural Heritage Plan, the "yellow book" [1], recent scientific literature and data, and discussions with various scientists, land managers and special interest organizations throughout Washington State.

Terrestrial ecosystem elements are typically defined as plant communities, and are described by the dominant species that occur in each respective layer or stratum of the vegetation. Where descriptive information is not available, only upper canopy species are listed. In a few cases, physiognomy, or general community appearance, most suitably defines the element. For each element, references and detailed descriptions of the floral composition, structure and distribution of the plant community are kept on file at the Natural Heritage Program office in Olympia. The Natural Heritage Data Base functions as a central repository of information and will provide continuity when classifications used by land managers and scientists are created or modified.

Terrestrial ecosystem elements are arranged by the seven physiographic provinces occurring in Washington (Figure 4). Within each province, elements are listed by vegetation (elevation) zones.

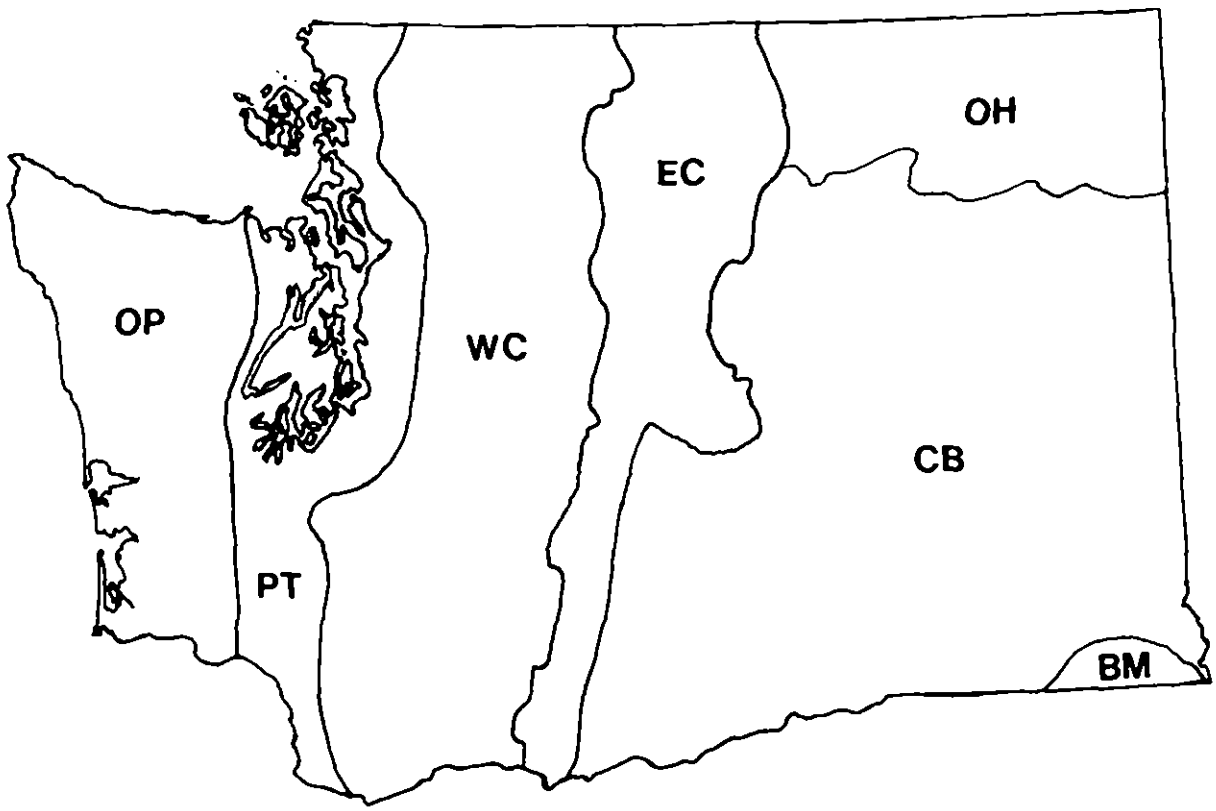


Figure 4. Physiographic Provinces of Washington: OP, Olympic Peninsula and S.W. Washington; PT, Puget Trough; WC, Western Cascades and Crest; EC, Eastern Cascades; OH, Okanogan Highlands; CB, Columbia Basin; BM, Blue Mountains.

[1] Dyrness, *et al.* 1975

Each element is assigned a priority ranking (see page 16.); an asterisk (*) indicates that the element is adequately represented within the Natural Area System. Also included are an ownership code that indicates which sector(s) (state, federal, or private) will most likely need to take protective action and a "Remarks" section where degree of representation within the Natural Area System, pertinent biological features, distribution and possible future protection of the element are discussed. All elements are listed using common names and are cross-referenced to scientific names in Appendix A. Technical terms are defined in the Glossary.

Terrestrial ecosystems overlap aquatic ecosystems in vegetated wetlands. In the lists presented, tree-dominated wetlands appear under Terrestrial Ecosystems, (pp. 41-62). while wetlands dominated by shrubs or herbs appear under the Aquatic Ecosystems (pp. 65-76). This somewhat artificial separation avoids duplication between the two lists.

Many of the upper-elevation elements listed occur within national parks or wilderness areas. When a significant part of the range of an element occurs in these areas, the assigned priority is usually a "3." This recognizes that while the elements may receive *de facto* protection, no areas have as yet been established that specifically manage the elements for scientific and educational purposes.

Olympic Peninsula & S.W. Washington Province

Priority		Element Name	Ownership	Remarks
		Sitka Spruce Zone:		
3	1.	Sitka spruce/Oregon oxalis community	ST,FED PVT	No rep., occurs in Olympic National Park
		Western Hemlock Zone:		
*	2.	Sitka spruce-western hemlock/swordfern community	ST,FED PVT	Diamond Point RNA, Twin Creek RNA
*	3.	Sitka spruce-western hemlock forest	ST,FED PVT	Diamond Point RNA, Twin Creek RNA
2	4.	black cottonwood-Oregon ash community	ST,FED PVT	No rep., would be adequately represented in White Island PNAP
2	5.	black cottonwood-red alder community	ST,FED PVT	No rep., occurs in Olympic National Park
*	6.	red alder forest	FED	Diamond Point RNA
*	7.	Douglas fir/swordfern community	FED	Jackson Creek RNA
3	8.	Douglas fir-western hemlock/Oregongrape community	ST,FED	No rep., would be partially represented in Wet Weather Creek PRNA; occurs in Olympic National Park
*	9.	Douglas fir-western hemlock forest	FED	Higley Creek RNA, Jackson Creek RNA
3	10.	western hemlock/devilsclub community	FED	No rep., may be partially represented in Higley Creek RNA; occurs in Olympic National Park
*	11.	western hemlock/Oregon oxalis community	FED	Hades Creek RNA, Higley Creek RNA, Quinault RNA
*	12.	western hemlock/swordfern community	FED	Higley Creek RNA, Quinault RNA
3	13.	western hemlock/Pacific rhododendron community	FED	No rep., would be adequately represented in Wet Weather Creek PRNA
*	14.	western hemlock/Alaska huckleberry community	FED	Higley Creek RNA, Quinault RNA

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Partial rep. - Partial representation
No rep. - No representation
* - Adequate representation

NAP - Natural Area Preserve
PNAP - Proposed Natural Area Preserve
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Olympic Peninsula & S.W. Washington Province

Priority		Element Name	Ownership	Remarks
*	15.	western hemlock/salal community	FED	Diamond Point RNA, Higley Creek RNA, Quinault RNA
1	16.	western redcedar-western hemlock/evergreen huckleberry-salal community	ST,FED PVT	Would be adequately represented in Cedar Grove PRNA
*	17.	western redcedar-western hemlock/swordfern community	FED	Quinault RNA
3	18.	western redcedar/skunkcabbage community	ST,FED	No rep., may be partially represented in Quinault and Higley Creek RNAs; occurs in Olympic National Park
		Pacific Silver Fir Zone:		
1	19.	noble fir forest	ST,PVT	No rep., occurs in Willapa Hills
3	20.	Pacific silver fir/salal community	FED	No rep., occurs in Olympic National Park
3	21.	Pacific silver fir/Alaska huckleberry community	FED	No rep., may occur in Higley Creek RNA; occurs in Olympic National Park
		Subalpine and Alpine Zones:		
3	22.	mountain hemlock/Alaska huckleberry community	FED	No rep., occurs in Olympic National Park
3	23.	mountain hemlock/big huckleberry community	FED	No rep., occurs in Olympic National Park
3	24.	mountain hemlock/red mountainheather-western cassiope community	FED	No rep., occurs in Olympic National Park
3	25.	subalpine fir/Cascades azalea community	FED	No rep., occurs in Olympic National Park
3	26.	subalpine fir/Sitka valerian community	FED	No rep., occurs in Olympic National Park

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Olympic Peninsula & S.W. Washington Province

Priority		Element Name	Ownership	Remarks
3	27.	subalpine fir/big huckleberry community	FED	No rep., may occur in Wet Weather Creek PRNA; occurs in Olympic National Park
3	28.	western cassiope-red mountainheather community	FED	No rep., occurs in Olympic National Park
3	29.	Sitka valerian-showy sedge community	FED	No rep., occurs in Olympic National Park
3	30.	black alpine sedge community	FED	No rep., occurs in Olympic National Park
3	31.	Idaho fescue-spreading phlox community	FED	No rep., would be adequately represented in Buckhorn Mountain PRNA
		Coastal Dunes:		
1	32.	foredune and secondary communities	ST,PVT	No rep.
1	33.	deflation plain communities	ST,PVT	No rep.
1	34.	stabilized forested dune communities	ST,PVT	No rep.

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Puget Trough Province

Priority		Element Name	Ownership	Remarks
		Western Hemlock Zone:		
2	1.	black cottonwood-willow community	ST,FED PVT	No rep., would be adequately represented in White Island PNAP
1	2.	Douglas fir-western white pine/salal community	ST,PVT	No rep., should occur on glacial till
1	3.	Douglas fir/salal-oceanspray community	ST,PVT	Partial rep. in Bald Hill NAP and Pt. Doughty NAP
1	4.	Douglas fir/snowberry-oceanspray community	ST,PVT	No rep., occurs in northern portions of province
1	5.	Douglas fir-western hemlock/Oregongrape community	ST,PVT	No rep., in Puget Trough lowland
2	6.	Douglas fir-western hemlock/salal community	ST,PVT	No rep., in Puget Trough lowland
2	7.	Douglas fir-western hemlock-swordfern community	ST,PVT	No rep., in Puget Trough lowland
1	8.	Douglas fir-Pacific madrone/American vetch community	ST,PVT	Partial rep. in Sentinel Island NAP
2	9.	western hemlock/skunkcabbage	ST,PVT	No rep., near bogs
1	10.	western redcedar-grand fir/swordfern community	ST,PVT	No rep., occurs in northern portions of province
3	11.	lodgepole pine/salal community	ST,PVT	No rep., should occur on glacial till
*	12.	red alder/swordfern community	ST,PVT	Skagit Bald Eagle NAP
1	13.	ponderosa pine forest	ST,FED PVT	No rep., should occur on glacial till
		Prairie and Savannah Types:		
3	14.	Oregon white oak woodland	ST,FED PVT	Partial rep. in Blackwater Islands RNA, Oak Patch NAP and Bald Hill Lake NAP
2	15.	Oregon white oak-conifer mosaic	ST,FED PVT	Partial rep. in Oak Patch NAP

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Puget Trough Province

Priority		Element Name	Ownership	Remarks
2	16.	Idaho fescue grassland	ST,FED PVT	Partial rep. in Mima Mounds NAP, Cypress Island NAP, Yellow Island NAP and Bald Hill NAP
1	17.	Idaho fescue-Puget balsam-root community	ST,FED PVT	Partial rep. in Rocky Prairie PNAP
1	18.	red fescue grassland	ST,PVT	Partial rep. in Sentinel Island NAP
		Special Type:		
2	19.	serpentine conifer forest	ST,PVT	No rep. in Puget Trough lowland

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Western Cascades & Crest Province

Priority		Element Name	Ownership	Remarks
		Western Hemlock Zone:		
*	1.	black cottonwood-Oregon ash community	ST,PVT	Pierce Island NAP
3	2.	Douglas fir/salal community	ST,PVT	Partial rep. at Cedar Flats RNA
*	3.	Douglas fir/vine maple community	ST,PVT	Columbia Falls NAP
*	4.	Douglas fir-western hemlock/Oregongrape community	ST,FED PVT	Stetattle Creek RNA, Long Creek, RNA, T.T. Munger RNA
*	5.	Douglas fir-western hemlock/Oregon boxwood community	FED	Pyramid Lake RNA
*	6.	Douglas fir-western hemlock/salal community	ST,FED PVT	Cedar Flats RNA, Columbia Falls NAP, Long Creek RNA, Stetattle Creek RNA
*	7.	Douglas fir-western hemlock/swordfern community	ST,FED PVT	Cedar Flats RNA, Newton Creek BSA, North Fork Nooksack RNA
*	8.	western hemlock/salal community	ST,FED	North Fork Nooksack RNA, Stetattle Creek RNA
*	9.	western hemlock/devilsclub community	ST,FED	Lake Twenty-two RNA, Long Creek RNA
*	10.	western hemlock/Alaska huckleberry community	ST,FED	Lake Twenty-two RNA, Long Creek RNA, North Fork Nooksack RNA
*	11.	western hemlock/swordfern community	ST,FED	Cedar Flats RNA
*	12.	western hemlock/Oregongrape community	ST,FED	Cedar Flats RNA
*	13.	western hemlock/western coolwort-oakfern community	ST,FED	Stetattle Creek RNA, T.T. Munger RNA
3	14.	western redcedar forest	FED	Partial rep. at Cedar Flats RNA, Stetattle Creek RNA, would be adequately represented by addition of Big Beaver Creek PRNA

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Western Cascades & Crest Province

Priority		Element Name	Ownership	Remarks
*	15.	western redcedar/vine maple community	FED	Cedar Flats RNA
*	16.	western redcedar/devilsclub community	FED	Stetattle Creek RNA, Pyramid Lake RNA, Lake Twenty-two RNA
*	17.	western redcedar/skunk cabbage community	FED	Cedar Flats RNA
*	18.	red alder forest	FED,PVT	Long Creek RNA, Skagit Bald Eagle NAP
		Pacific Silver Fir Zone:		
*	19.	Pacific silver fir/Alaska huckleberry community	FED	Present in numerous USFS and NPS RNAs
3	20.	Pacific silver fir/Oregongrape community	FED	May be adequately represented in North Fork Nooksack RNA; occurs in Glacier Peak Wilderness, North Cascades National Park and Mt. Rainier National Park
*	21.	Pacific silver fir/big huckleberry community	FED	Butter Creek RNA, Steamboat Mountain RNA, Pyramid Lake RNA, Stetattle Creek RNA
*	22.	Pacific silver fir/salal community	FED	T.T. Munger RNA
3	23.	Pacific silver fir/beargrass community	FED	No rep., occurs in Glacier Peak Wilderness, North Cascades National Park and Mt. Rainier National Park
*	24.	Pacific silver fir/western coolwort community	FED	Butter Creek RNA, Stetattle Creek RNA
*	25.	Pacific silver fir/devilsclub community	FED	Butter Creek RNA, Stetattle Creek RNA
*	26.	Pacific silver fir/fools huckleberry community	FED	Butter Creek RNA
*	27.	Pacific silver fir/Cascade azalea community	FED	Goat Marsh RNA, Steamboat Mountain RNA

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Western Cascades & Crest Province

Priority		Element Name	Ownership	Remarks
		Mountain Hemlock Zone:		
3	28.	mountain hemlock/beargrass community	FED	May be adequately represented in various RNAs in the Cascade Mountains
3	29.	mountain hemlock/Alaska huckleberry community	FED	No rep., would be adequately represented in Lily Lake PRNA
*	30.	mountain hemlock/big huckleberry community	FED	Butter Creek RNA
*	31.	mountain hemlock/Cascades azalea community	FED	Boston Glacier RNA, Stetattle Creek RNA
*	32.	mountain hemlock/red mountainheather-western cassiope community	FED	Stetattle Creek RNA
3	33.	subalpine fir/Sitka valerian community	FED	No rep., would be adequately represented in Green Mountain PRNA
*	34.	Alaska yellow cedar-mountain hemlock-Pacific silver fir forest	FED	Lake Twenty-two RNA, Boston Glacier RNA
		Subalpine and Alpine Meadows and Parkland:		
*	35.	green fescue community	FED	Butter Creek RNA
*	36.	red mountainheather-blueleaf huckleberry community	FED	Butter Creek RNA, North Fork Nooksack RNA
*	37.	red mountainheather/broadleaf lupine community	FED	Butter Creek RNA
*	38.	western cassiope-red mountainheather community	FED	Boston Glacier RNA, Silver Lake RNA
*	39.	western cassiope-broadleaf lupine community	FED	Butter Creek RNA
*	40.	Sitka valerian-American false hellebore community	FED	North Fork Nooksack RNA, Stetattle Creek RNA

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Western Cascades & Crest Province

Priority		Element Name	Ownership	Remarks
*	41.	thimbleberry/fireweed community	FED	Stetattle Creek RNA
3	42.	alpine mosaic	FED	Partial rep. in Boston Glacier and Silver Lake RNAs, would be adequately represented by addition of Chowder Ridge PRNA
		Special Types:		
*	43.	Sitka alder-vine maple community	FED	Present in numerous USFS and NPS RNAs
3	44.	ponderosa pine-Douglas fir forest	FED	No rep., occurs in North Cascades National park, should occur in vicinity of Ross Lake
3	45.	lodgepole pine forest	FED	Partial rep. in Goat Marsh RNA, would be adequately represented by addition of Big Beaver Creek PRNA
*	46.	serpentine conifer forest	ST,FED	Olivine Bridge NAP
*	47.	noble fir forest	FED	Goat Marsh RNA, Sister Rocks RNA

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Eastern Cascades Province

Priority		Element Name	Ownership	Remarks
		Ponderosa Pine Zone:		
1	1.	ponderosa pine/antelope bitterbrush community	ST,FED PVT	Partial rep. in Wolf Creek RNA, and Davis Canyon NAP
		Douglas Fir and Grand Fir Zones:		
3	2.	ponderosa pine-Douglas fir/antelope bitterbrush community	ST,FED PVT	No rep., partially represented by Barker Mtn. NAP; this community is called ponderosa pine-Douglas fir/bluebunch wheatgrass in Okanogan National Forest
3	3.	ponderosa pine-Douglas fir/pinegrass community	ST,FED PVT	Partial rep. in Meeks Table RNA and Wolf Creek RNA
3	4.	Douglas fir/snowberry community	ST,FED PVT	Partial rep. in Wolf Creek RNA
2	5.	Douglas fir/bearberry-antelope bitterbrush community	ST,FED	No rep., a major type in Methow River Valley
3	6.	Douglas fir/Oregon boxwood community	ST,FED	No rep., a major type in Twisp River and Methow River Valleys
3	7.	grand fir/pinegrass-elk sedge community	FED	Partial rep. in Meeks Table RNA
2	8.	grand fir/vine maple community	FED	No rep., would be adequately represented by Chiwaukum Creek and Fish Lake Bog PRNAs
2	9.	grand fir/twinflower community	FED	No rep., may be adequately represented in Chiwaukum Creek PRNA
2	10.	grand fir/Oregongrape community	FED	No rep., may be adequately represented in Chiwaukum Creek PRNA
		Western Hemlock Zone:		
3	11.	western redcedar-western hemlock forest	FED	No rep., would be adequately represented by Icicle/Frosty Creeks PRNA

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Eastern Cascades Province

Priority		Element Name	Ownership	Remarks
2	12.	western hemlock/vine maple community	FED	No rep., would be adequately represented by Cedar Creek PRNA
2	13.	western hemlock/ Oregongrape-twinflower community	FED	No rep., would be adequately represented by Cedar Creek PRNA
		Subalpine Forest Types:		
3	14.	Pacific silver fir/Cascades azalea community	FED	No rep., may be represented in Cedar Creek PRNA; occurs in Alpine Lakes and Glacier Peak Wilderness Areas
3	15.	Pacific silver fir/beargrass community	FED	No rep., may be represented in Cedar Creek PRNA; occurs in Alpine Lakes and Glacier Peak Wilderness Areas
3	16.	Pacific silver fir/queenscup beadlily community	FED	No rep., may be represented in Cedar Creek PRNA; occurs in Alpine Lakes and Glacier Peak Wilderness Areas
3	17.	Pacific silver fir/twinflower community	FED	No rep., may be represented in Cedar Creek PRNA; occurs in Alpine Lakes and Glacier Peak Wilderness Areas
3	18.	Pacific silver fir/big huckleberry community	FED	No rep., may be represented in Cedar Creek PRNA; occurs in Alpine Lakes and Glacier Peak Wilderness Areas
3	19.	Pacific silver fir/dwarf blackberry community	FED	No rep., may be represented in Cedar Creek PRNA; occurs in Alpine Lakes and Glacier Peak Wilderness Areas
3	20.	Pacific silver fir/vine maple community	FED	No rep., may be represented in Cedar Creek PRNA; occurs in Alpine Lakes and Glacier Peak Wilderness Areas

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Eastern Cascades Province

Priority		Element Name	Ownership	Remarks
2	21.	Engelmann spruce/common horsetail community	FED	No rep., occurs in Okanogan National Forest
3	22.	subalpine fir/Oregon boxwood community	FED	No rep., occurs in Pasayten Wilderness Area
3	23.	subalpine fir/grouse huckleberry community	FED	No rep., occurs in Pasayten Wilderness Area
3	24.	subalpine fir/Cascades azalea community	FED	No rep., occurs in Pasayten Wilderness Area
3	25.	subalpine fir/twinflower community	FED	No rep., occurs in Pasayten Wilderness Area
3	26.	subalpine larch forest	FED	No rep., occurs in Pasayten Wilderness Area
		Subalpine and Alpine Parkland Communities:		
3	27.	subalpine sagebrush parkland	ST,FED PVT	No rep., occurs in Pasayten Wilderness Area
3	28.	sedge-kobresia alpine turf mosaic	FED	No rep.
3	29.	timber danthonia community	FED	No rep., should include associated dry meadow types in northern and southern portions of Province; occurs in various Wilderness Areas and National Parks
		Shrub-Steppe Communities:		
1	30.	low sagebrush/Idaho fescue community	ST,PVT	No rep., would be adequately represented in Colockum Spur PNAP

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Eastern Cascades Province

Priority		Element Name	Ownership	Remarks
1	31.	low sagebrush/bluebunch community	ST,PVT	No rep., would be partially represented in Colockum Spur PNAP
*	32.	antelope bitterbrush/Idaho fescue community	ST,PVT	Cleveland Shrub Steppe NAP, Davis Canyon NAP, and Wolf Creek RNA
		Special Types:		
1	33.	tufted hairgrass community	ST,FED	No rep., should occur at mid-elevations in the mountains
3	34.	black cottonwood/Sitka willow community	FED	No rep., occurs in Alpine Lakes Wilderness Area and Chewuch River PRNA
2	35.	Oregon white oak-ponderosa pine forest mosaic	ST,PVT	Partial rep. in Badger Gulch NAP and Cleveland Shrub Steppe NAP; need savannah situation
3	36.	serpentine barrens	FED	No rep., would be adequately represented in Eldorado Creek PRNA
3	37.	lodgepole pine/huckleberry community	ST,FED	No rep.

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Okanogan Highlands Province

Priority		Element Name	Ownership	Remarks
		Ponderosa Pine Zone:		
1	1.	ponderosa pine/bluebunch wheatgrass community	ST,FED PVT	No rep., would be partially represented in Maple Mountain PRNA
2	2.	ponderosa pine/Idaho fescue community	ST,FED PVT	Partial rep. in Baird Basin RNA
1	3.	ponderosa pine/needle-and-thread community	ST,FED PVT	No rep.
3	4.	ponderosa pine/snowberry community	ST,FED PVT	No rep. in Okanogan Highlands Province
1	5.	ponderosa pine/ninebark community	ST,FED PVT	No rep. in Okanogan Highland Province
2	6.	ponderosa pine/antelope bitterbrush community	ST,FED PVT	No rep. in Okanogan Highlands Province
		Douglas Fir Zone:		
1	7.	ponderosa pine/pinegrass community	ST,FED PVT	No rep., may be adequately represented in Fire Mountain PRNA
3	8.	Douglas fir/pinegrass community	ST,FED PVT	Partial rep. in Maitlen Creek RNA, would be adequately represented in North Fork O'Brien Creek, Thirteen Mile Ponds, Fire Mountain, and Maple Mountain PRNAs
3	9.	Douglas fir/snowberry community	ST,FED	Partial rep. in Ragged Ridge NAP, would be adequately represented in Maple Mountain and Thirteen Mile Ponds PRNAs
*	10.	Douglas fir/ninebark community	ST,FED	Maitlen Creek RNA, Baird Basin RNA
3	11.	Douglas fir/bearberry community	FED	No rep., would be adequately represented in Maple Mountain PRNA
2	12.	Douglas fir/huckleberry community	FED	No rep., would be partially represented in Maple Mountain PRNA

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Okanogan Highlands Province

Priority		Element Name	Ownership	Remarks
3	13.	western larch forest	ST,FED	Partial rep. in Baird Basin and Varline Grove RNAs, would be adequately represented by addition of Maple Mountain, Fire Mountain, and North Fork O'Brien Creek PRNAs
		Grand Fir Zone:		
2	14.	grand fir/queenscup beadlily community	ST,FED PVT	Partial rep. in Maitlen Creek RNA and Ragged Ridge NAP
2	15.	grand fir/shrub community	ST,FED PVT	Partial rep. in Ragged Ridge NAP
		Western Redcedar-Western Hemlock Zone:		
2	16.	western redcedar/queenscup beadlily community	FED,PVT	Partial rep. in Maitlen Creek RNA
2	17.	western redcedar/wild sarsaparilla community	FED,PVT	No rep.
*	18.	western redcedar/devilsclub community	FED	Salmo RNA
*	19.	western hemlock/queenscup beadlily community	FED	Maitlen Creek RNA, Salmo RNA
2	20.	western hemlock/strawberry leaf blackberry community	FED	No rep.
		Subalpine Fir Zone:		
*	21.	subalpine fir/Cascade azalea community	FED	Salmo RNA
3	22.	subalpine fir/grouse huckleberry community	FED	Partial rep. in Salmo RNA, would be adequately represented in North Fork O'Brien Creek PRNA

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Okanogan Highlands Province

Priority		Element Name	Ownership	Remarks
3	23.	subalpine fir/beargrass community	FED	Partial rep. in Roundtop Mountain PRNA
3	24.	subalpine fir/huckleberry community	FED	No rep., would be partially represented in Fire Mountain PRNA
3	25.	subalpine fir/twinflower community	FED	Partial rep. in Maitlen Creek RNA
3	26.	whitebark pine-subalpine fir forest	FED	No rep.
		Special Types:		
3	27.	lodgepole pine/pinegrass community	FED	Partial rep. in Varline Grove RNA, would be adequately represented by addition of North Fork O'Brien Creek PRNA
3	28.	lodgepole pine/bearberry community	FED	Partial rep. in Varline Grove RNA
*	29.	western white pine forest	FED	Salmo RNA
3	30.	quaking aspen forest	FED	No rep., would be adequately represented in North Fork O'Brien Creek PRNA
2	31.	Idaho fescue-buckwheat community	FED	Partial rep. in Ragged Ridge NAP, would be adequately represented by addition of Maple Mountain PRNA
2	32.	green fescue community	FED	No rep., would be adequately represented in Roundtop Mountain PRNA
2	33.	rough fescue-Wyeth buckwheat community	PVT,FED	No rep.

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Columbia Basin Province

Priority		Element Name	Ownership	Remarks
		Ponderosa Pine Associations:		
2	1.	ponderosa pine/Idaho fescue community	ST,FED PVT	Partial rep. at Pine Creek RNA, Dishman Hills NAP
1	2.	ponderosa pine/bluebunch wheatgrass community	ST,FED PVT	No rep.
1	3.	ponderosa pine/needle-and-thread community	ST,FED PVT	No rep.
2	4.	ponderosa pine/ninebark community	ST,FED PVT	Partial rep. at Smoot Hill BSA; second growth stand
3	5.	ponderosa pine/snowberry community	ST,FED PVT	Partial rep. at Turnbull Pine RNA, Dishman Hills NAP
		Zonal Meadow Steppe Associations:		
1	6.	threetip sagebrush/Idaho fescue community	ST,FED PVT	Partial rep. in Barker Mtn. NAP and Castle Rock NAP
3	7.	Idaho fescue/Nootka rose community	ST,FED PVT	No rep., occurs in Hells Canyon National Recreation Area (Idaho and Oregon)
2	8.	Idaho fescue/snowberry community	ST,PVT	Partial rep. in Kramer Palouse BSA, Smoot Hill BSA, Campus Prairie BSA, Magnuson Butte NAP
*	9.	Idaho fescue/houndstongue hawkweed community	ST,PVT	Badger Gulch NAP, Rowena Dell NAP (Oregon)
*	10.	antelope bitterbrush/Idaho fescue community	ST,PVT	Davis Canyon NAP, Cleveland Shrub Steppe NAP, Wolf Creek RNA, Barker Mtn. NAP
2	11.	antelope bitterbrush/bluebunch wheatgrass community	ST,PVT	Partial rep. in Riverside Breaks NAP and Methow Rapids Bitterbrush Steppe NAP

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Columbia Basin Province

Priority		Element Name	Ownership	Remarks
		Zonal Steppe and Shrub-Steppe Associations:		
2	12.	big sagebrush/bluebunch wheatgrass community	ST,FED PVT	Partial rep. at Rattlesnake Hills RNA, Castle Rock NAP
3	13.	big sagebrush/Idaho fescue community	ST,PVT	Partial rep. at Marcellus Shrub Steppe NAP, Lind Shrub Steppe NAP
2	14.	bluebunch wheatgrass-Idaho fescue community	ST,FED PVT	Partial rep. at Kahlotus Ridgetop NAP, Boardman RNA (Oregon)
2	15.	bluebunch wheatgrass-Sandberg's bluegrass community	ST,FED PVT	Partial rep. in Rainbow Creek RNA, Kramer Palouse BSA; shallow soil phase not represented, climatic climax not represented
		Associations on Deep, Gravelly or Sandy Soils:		
1	16.	big sagebrush/needle-and-thread community	ST,FED PVT	Partial rep. at Castle Rock NAP
1	17.	threetip sagebrush/needle-and-thread community	ST,PVT	No rep.
1	18.	antelope bitterbrush/needle-and-thread community	ST,PVT	No rep.
1	19.	antelope bitterbrush/Indian rice grass community	ST,PVT	No rep.; in sand dunes
1	20.	needle-and-thread—Sandberg's bluegrass community	ST,PVT	No rep.
		Associations on Shallow Soils:		
*	21.	Douglas' buckwheat/Sandberg's bluegrass community	ST,FED PVT	Cleveland Shrub Steppe NAP
2	22.	snow buckwheat/Sandberg's bluegrass community	ST,FED PVT	No rep.

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Columbia Basin Province

Priority		Element Name	Ownership	Remarks
3	23.	northern buckwheat/Sandberg's bluegrass community	ST,FED PVT	Partial rep. at Spring Creek Canyon NAP
*	24.	rock buckwheat/Sandberg's bluegrass community	ST,FED PVT	Rattlesnake Hills RNA
2	25.	thyme buckwheat/Sandberg's bluegrass community	ST,FED PVT	Partial rep. in Rattlesnake Hills RNA, and Castle Rock NAP
1	26.	bushy buckwheat/Oregon double bladderpod community	ST,PVT	No rep., occurs over limited area within Snake River Canyon
3	27.	stiff sagebrush/Sandberg's bluegrass community	ST,FED	Partial rep. in Cleveland Shrub Steppe NAP
		Associations on Saline or Alkali Soils:		
1	28.	alkali saltgrass community	ST,FED PVT	Partial rep. in Lower Crab Creek NAP
1	28.	giant wildrye-alkali saltgrass community	ST,FED PVT	No rep.
1	30.	black greasewood/alkali saltgrass community	ST,FED PVT	Partial rep. in Lower Crab Creek NAP
		Hawthorn Associations & Related Riparian Types:		
1	31.	black hawthorn/snowberry community	ST,PVT	Partial rep. in Smoot Hill and Campus Prairie BSAs, need bottomland site
1	32.	black hawthorn/cow parsnip community	ST,PVT	Partial rep. in Rose Creek NAP, and Kramer Palouse BSA, need bottomland site
1	33.	black cottonwood/western waterhemlock community	ST,FED PVT	No rep.

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Columbia Basin Province

Priority		Element Name	Ownership	Remarks
2	34.	white alder forest	ST,FED PVT	No rep.
		Dry Site Associations:		
3	35.	spiny hopsage/Sandberg's bluegrass community	ST,FED PVT	Partial rep. in Rattlesnake Hills RNA
3	36.	winterfat/Sandberg's bluegrass community	ST,FED	Partial rep. in Rattlesnake Hills RNA
		Special Types:		
2	37.	threetip sagebrush/bluebunch wheatgrass community	ST,FED PVT	Partial rep. in Castle Rock NAP
1	38.	Idaho fescue-rough fescue community	ST,PVT	No rep.
2	39.	sand dropseed-Sandberg's bluegrass community	ST,FED PVT	No rep. would be partially represented in Bills Creek PRNA (Idaho)
1	40.	red threeawn-Sandberg's bluegrass community	ST,FED	No rep., would be partially represented in Bills Creek PRNA (Idaho)
1	41.	smooth sumac/bunchgrass community	ST,FED PVT	Partial rep. in Riverside Breaks NAP, and Methow Rapids Bitterbrush Steppe NAP
*	42.	quaking aspen forest	ST,FED	Turnbull Pine and Pine Creek RNAs, Cleveland Shrub Steppe NAP

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Blue Mountains Province

Priority		Element Name	Ownership	Remarks
		Ponderosa Pine Zone:		
2	1.	ponderosa pine/Idaho fescue community	ST,FED PVT	No rep. in Blue Mountains of Washington, occurs in two PRNAs *in northeastern Oregon*
1	2.	ponderosa pine/bluebunch wheatgrass community	ST,FED PVT	No rep.
		Douglas Fir and Grand Fir Zones:		
2	3.	Douglas fir-ponderosa pine/snowberry-oceanspray community	ST,FED PVT	No rep., would be adequately represented by Mill Creek Watershed PRNA
2	4.	Douglas fir-ponderosa pine/ninebark community	ST,FED PVT	No rep., would be adequately represented in Elk Flats-Wenaha Breaks PRNA and Mill Creek Watershed PRNA
*	5.	western larch forest	ST,FED PVT	Rainbow Creek RNA
*	6.	western white pine forest	FED	Rainbow Creek RNA
3	7.	grand fir/queenscup beadlily community	FED	No rep., occurs in Wenaha-Tucannon Wilderness Area
*	8.	grand fir/big huckleberry community	FED	Rainbow Creek RNA, Pataha Bunchgrass RNA
3	9.	grand fir-western yew forest	FED	No rep., would be adequately represented in Elk Flats - Wenaha Breaks PRNA
		Steppe Communities:		
3	10.	Sandberg's bluegrass-onespike oatgrass community	FED	No rep., would be adequately represented in Vance Knoll PRNA, Oregon
2	11.	bluebunch wheatgrass-Sandberg's bluegrass community	FED	Partial rep. in Rainbow Creek RNA
*	12.	bluebunch wheatgrass-Idaho fescue community	FED	Pataha Bunchgrass RNA

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Blue Mountains Province

Priority		Element Name	Ownership	Remarks
		Shrub-Steppe Communities:		
1	13.	low sagebrush/Idaho fescue community	FED	No rep. in northern Blue Mountains
1	14.	low sagebrush/bluebunch wheatgrass community	FED	No rep. in northern Blue Mountains
3	15.	rigid sagebrush/Sandberg's bluegrass community	FED	No. rep., but widespread and common in nonforested regions of eastern Washington; partial representation in two PRNAs in northeastern Oregon
		Special Types:		
3	16.	lodgepole pine/grouse huckleberry/pinegrass community	FED	No rep., should have minimal regeneration
3	17.	lodgepole pine/big huckleberry community	FED	No rep., would be adequately represented by Elk Flats—Wenaha Breaks PRNA
3	18.	lodgepole pine/grouse huckleberry community	FED	No rep., would be adequately represented by Indian Creek PRNA, Oregon
2	19.	tufted hairgrass-sedge community	FED	No rep., a typical wet meadow with ovalhead sedge, Nebraska sedge, and thinleaf bentgrass; would be adequately represented by Elk Flats Meadow PRNA

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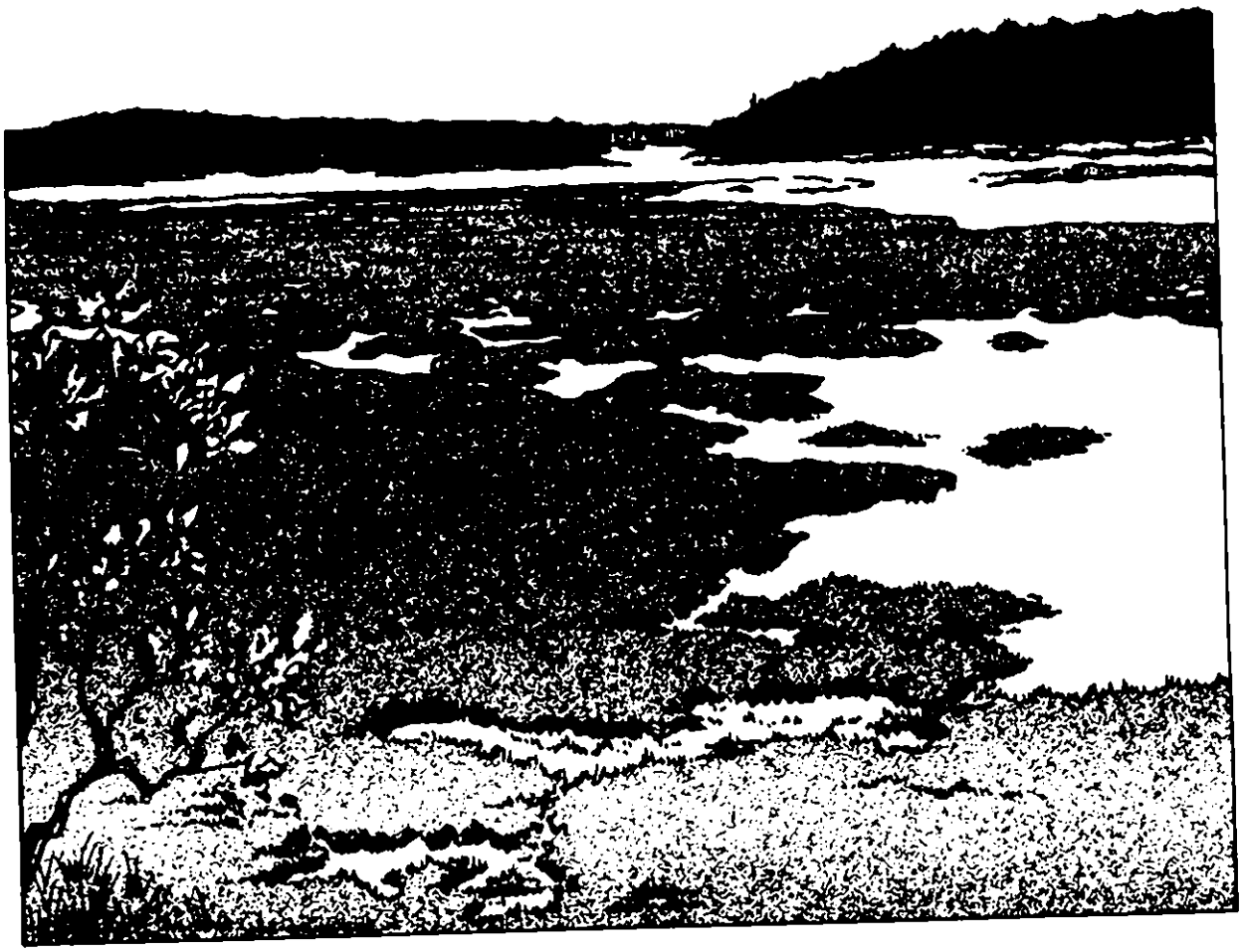
Aquatic Ecosystems

The following list of aquatic ecosystem elements was compiled from a review of the 1985 Natural Heritage Plan, the "yellow book," [5] recent scientific literature and data, recent field work by the Natural Heritage Program, and discussions with various scientists, land managers and special interest organizations throughout Washington.

Aquatic ecosystem elements are defined by their hydrologic link; they are entire hydrologic systems or significant portions thereof. This link makes it difficult to protect portions of a system against perturbations occurring in other parts of the system.

References, detailed descriptions of the floral composition, and structure and distribution of communities for each aquatic ecosystem element are kept on file at the Natural Heritage Program office in Olympia. The Natural Heritage Data Base functions as a central repository of information on high quality wetland ecosystems.

Elements are listed by physiographic province (Figure 4). Each element is assigned a priority ranking (see page 16); an asterisk (*) indicates that the element is adequately represented within the Natural Area System. Also included are an ownership code that indi-



[5] Dyrness, (*et al.*) 1975.

cates which sector(s) (state, federal, or private) will most likely need to take protective action and a "Remarks" section where degree of representation within the Natural Area System, pertinent biological features, distribution and possible future protection of the element are discussed. Technical terms are defined in the Glossary.

Aquatic ecosystems overlap terrestrial ecosystems in vegetated wetlands. In the lists presented, wetlands dominated by shrubs or herbs appear under Aquatic Ecosystems, while tree-dominated wetlands appear under Terrestrial Ecosystems (see pp. 41-62). This somewhat artificial separation avoids duplication between the two lists.

Many of the upper-elevation elements listed occur within national parks or wilderness areas. When a significant part of the range of an element occurs in these areas, the assigned priority is usually a "3." This recognizes that while the elements may receive *de facto* protection, no areas have as yet been specifically established that manage the elements for scientific and educational purposes.

Olympic Peninsula & S.W. Washington Province

Priority		Element Name	Ownership	Remarks
		Freshwater Wetlands:		
3	1.	alpine wetland	FED	No rep., occurs in Olympic National Park
3	2.	subalpine wetland	FED	No rep., occurs in Olympic National Park
3	3.	mid-elevation wetland	ST,FED PVT	No rep., occurs in Olympic National Park
2	4.	low elevation freshwater wetland	ST,FED PVT	Partial rep. in Carlisle Bog NAP
		Sphagnum Bogs:		
3	5.	mid-elevation bog	ST,FED PVT	No rep.
3	6.	low elevation bog	ST,FED PVT	Partial rep. in Carlisle Bog NAP and Clearwater Bogs NAP
		Saltwater Wetlands:		
3	7.	low intertidal, high salinity, sandy marsh	ST,FED PVT	No rep.
2	8.	low intertidal, high salinity, silty marsh	ST,FED PVT	No rep.
2	9.	low intertidal, low salinity, sandy marsh	ST,FED PVT	No rep.
2	10.	low intertidal, low salinity, silty marsh	ST,FED	No rep.
2	11.	high intertidal, high salinity marsh	ST,FED PVT	No rep.
2	12.	high intertidal, low salinity marsh	ST,FED PVT	No rep.
1	13.	transition zone wetland	ST,FED PVT	No rep.
		Ponds and Lakes:		
3	14.	alpine permanent pond and drainage basin	FED	No rep., occurs in Olympic National Park

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Olympic Peninsula & S.W. Washington Province

Priority		Element Name	Ownership	Remarks
3	15.	subalpine lake and drainage basin	FED	No rep., occurs in Olympic National Park
3	16.	subalpine permanent pond and drainage basin	FED	No rep., occurs in Olympic National Park
3	17.	mid-elevation lake and drainage basin	ST,FED PVT	No rep., occurs in Olympic National Park
3	18.	mid-elevation permanent pond and drainage basin	ST,FED PVT	No rep., occurs in Olympic National Park
2	19.	low elevation lake and drainage basin	ST,FED PVT	No rep., occurs in Olympic National Park
2	20.	low elevation permanent pond and drainage basin	ST,FED PVT	Partial rep. in Carlisle Bog NAP and Clearwater Bogs NAP
		Stream and Riparian Systems:		
3	21.	alpine seep	FED	No rep., occurs in Olympic National Park
3	22.	subalpine seep	FED	No rep., occurs in Olympic National Park
3	23.	subalpine stream and riparian system	FED	No rep., occurs in Olympic National Park
3	24.	mid-elevation stream and riparian system	ST,FED PVT	No rep., would be partially represented in Wet Weather Creek PRNA
*	25.	low elevation stream and riparian system on west side of Olympic Mountains	ST,FED	Hades Creek RNA, Higley Creek RNA, Jackson Creek RNA, Quinault RNA and Twin Creek RNA.
2	26.	low elevation stream and riparian system on east side of Olympic Mountains	ST,FED PVT	No rep.
2	27.	freshwater surge plain wetland	ST,FED PVT	No rep., would be partially represented in White Island PNAP
3	28.	cold spring	FED	No rep., occurs in Olympic National Park
3	29.	hot spring	FED	No rep., occurs in Olympic National Park

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Puget Trough Province

Priority		Element Name	Ownership	Remarks
		Freshwater Wetlands:		
1	1.	low elevation freshwater wetland	ST,FED PVT	Partial rep. in Bald Hill NAP
		Sphagnum Bogs:		
1	2.	low elevation bog	ST,FED PVT	No rep., would be partially represented in Killebrew Lake PNAP, and Kings Lake PNAP
		Saltwater Wetlands:		
1	3.	low intertidal, high salinity, sandy-gravel marsh	ST,FED PVT	No rep.
2	4.	low intertidal, high salinity, sandy marsh	ST,FED PVT	No rep., would be partially represented in Tarboo Bay PNAP
2	5.	low intertidal, high salinity, silty marsh	ST,FED PVT	Partial rep. in Skookum Inlet NAP
2	6.	low intertidal, low salinity, sandy marsh	ST,FED PVT	No rep.
2	7.	low intertidal, low salinity, silty marsh	ST,FED PVT	No rep.
1	8.	high intertidal, high salinity marsh	ST,FED PVT	Partial rep. in Skookum Inlet NAP and Tarboo Bay PNAP
1	10.	high intertidal, low salinity marsh	ST,FED PVT	Partial rep. in Skookum Inlet NAP
1	11.	transition zone wetland	ST,FED PVT	No rep.
2	12.	high salinity coastal lagoon	ST,FED PVT	No rep.
2	13.	low salinity coastal lagoon	ST,FED PVT	Partial rep. in Foulweather Bluff NAP
1	14.	coastal spit with native vegetation	ST,FED PVT	No rep., would be partially represented in Tarboo Bay PNAP

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Puget Trough Province

Priority		Element Name	Ownership	Remarks
		Ponds and Lakes:		
1	15.	low elevation lake and drainage basin	ST,FED PVT	No rep.
1	16.	low elevation permanent pond and drainage basin	ST,FED PVT	Partial rep. in Blackwater Island RNA
		Stream and Riparian Systems:		
2	17.	backwater area	ST,FED PVT	No rep.
1	18.	low elevation stream and riparian system	ST,FED PVT	No rep.
2	19.	freshwater surge plain wetland	ST,FED PVT	Partial rep. in Blackwater Island RNA
3	20.	cold spring	ST,FED PVT	No rep.

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Partial rep. - Partial representation
No rep. - No representation
* - Adequate representation

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PNAP - Proposed Natural Area Preserve
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Western Cascades & Crest Province

Priority		Element Name	Ownership	Remarks
		Freshwater Wetlands:		
3	1.	alpine wetland	FED	No rep., occurs in various national parks
*	2.	subalpine wetland	FED	Boston Glacier RNA, Butter Creek RNA, and Stetattle Creek RNA
3	3.	mid-elevation wetland	ST,FED PVT	Partial rep. in Goat Marsh RNA and Steamboat Mountain RNA
2	4.	low elevation freshwater wetland	ST,FED PVT	Partial rep. in Thornton T. Munger RNA
		Sphagnum Bogs:		
3	5.	mid-elevation bog	ST,FED PVT	Partial rep. in Steamboat Mountain RNA
2	6.	low elevation bog	ST,FED PVT	No rep. in Western Cascades and Crest Province
		Ponds and Lakes:		
*	7.	alpine lake and drainage basin	FED	Silver Lake RNA
3	8.	alpine permanent pond and drainage basin	FED	No rep., occurs in various national parks
3	9.	subalpine lake and drainage basin	FED	Partial rep. in Stetattle Creek RNA, needs example in southern Cascades
*	10.	subalpine permanent pond and drainage basin	FED	Boston Glacier RNA, Butter Creek RNA, and Stetattle Creek RNA
3	11.	mid-elevation lake and drainage basin	ST,FED PVT	Partial rep. in Lake Twenty-two RNA; would be adequately represented with addition of Lily Lake PRNA
*	12.	mid-elevation permanent pond and drainage basin	ST,FED PVT	Goat Marsh RNA, Pyramid Lake RNA, and Steamboat Mountain RNA
3	13.	low elevation permanent pond and drainage basin	ST,FED PVT	Partial rep. in Thornton T. Munger RNA

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Western Cascades & Crest Province

Priority		Element Name	Ownership	Remarks
		Stream and Riparian Systems:		
3	14.	alpine seep	FED	No rep., occurs in various national parks
3	15.	subalpine stream and riparian system	FED	Partial rep. in Boston Glacier RNA, Butter Creek RNA, Silver Lake RNA, and Stetattle Creek RNA; would be adequately represented with addition of Chowder Ridge PRNA
3	16.	mid-elevation stream and riparian system	ST,FED PVT	Partial rep. in Lake Twenty-two RNA, North Fork Nooksack RNA, and Pyramid Lake RNA; would be adequately represented with addition of Perry Creek PRNA and Lily Lake PRNA
3	17.	low elevation stream and riparian system	ST,FED PVT	Partial rep. in Cedar Flats RNA, Columbia Falls NAP, and Long Creek RNA; would be adequately represented with addition of Big Beaver Creek PRNA
2	18.	backwater area	ST,FED PVT	No rep.
2	19.	freshwater surge plain wetland	ST,FED PVT	Partial rep. in Pierce Island NAP
3	20.	waterfall and associated spray zone	ST,FED PVT	Partial rep. in Columbia Falls NAP
*	21.	cold spring	ST,FED PVT	North Fork Nooksack RNA, Silver Lake RNA, and Sister Rocks RNA
3	22.	hot spring	FED	No rep.

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Eastern Cascades Province

Priority		Element Name	Ownership	Remarks
		Freshwater Wetlands:		
2	1.	low elevation freshwater wetland	ST,FED PVT	No rep., would be partially represented in Fish Lake Bog PRNA
		Sphagnum Bogs:		
2	2.	low elevation bog	ST,FED PVT	No rep., would be partially represented in Fish Lake Bog PRNA
		Ponds and Lakes:		
3	3.	subalpine permanent pond and drainage basin	FED	No rep., would be partially represented in Cedar Creek PRNA
1	4.	mid-elevation lake and drainage basin	ST,FED PVT	No rep.
2	5.	mid-elevation permanent pond and drainage basin	ST,FED PVT	No rep., may be adequately represented in Cedar Creek PRNA
2	6.	mid-elevation vernal pond	ST,FED PVT	No rep.
1	7.	low elevation lake and drainage basin	ST,FED PVT	No rep.
1	8.	low elevation permanent pond and drainage basin	ST,FED PVT	No rep.
		Stream and Riparian Systems:		
2	9.	mid-elevation stream and riparian system	FED	No rep., would be adequately represented in Icicle/Frosty Creek PRNA, and Potatoe Creek PRNA
2	10.	mid-elevation serpentine stream and riparian system	FED	No rep., would be adequately represented in Eldorado Creek PRNA
2	11.	seep	ST,FED PVT	No rep.

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Eastern Cascades Province

Priority		Element Name	Ownership	Remarks
2	12.	cold spring	ST,FED PVT	No rep.
2	13.	hot spring	ST,FED PVT	No rep.

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Okanogan Highlands

Priority		Element Name	Ownership	Remarks
		Freshwater Wetlands:		
2	1.	mid-elevation wetland	ST,FED PVT	Partial rep. in Little Pend Oreille River NAP and Thirteen Mile Ponds PRNA
2	2.	low elevation freshwater wetland	ST,FED PVT	No rep.
1	3.	marl fen	ST,FED PVT	No rep., would be adequately represented in Halliday Fen PRNA
		Sphagnum Bogs:		
1	4.	mid-elevation bog	ST,FED PVT	No rep., would be partially represented in Bunchgrass Meadows PRNA
1	5.	low elevation bog	ST,FED PVT	No rep.
		Ponds and Lakes:		
2	6.	subalpine lake and drainage basin	FED	No rep.
2	7.	subalpine permanent pond and drainage basin	FED	No rep.
2	8.	subalpine vernal pond	FED	No rep.
3	9.	mid-elevation lake and drainage basin	FED	No rep.
3	10.	mid-elevation permanent pond and drainage basin	FED	No rep., would be partially represented in Bunchgrass Meadows PRNA
1	11.	low elevation lake and drainage basin	ST,FED PVT	No rep.
1	12.	low elevation permanent pond and drainage basin	ST,FED PVT	No rep.

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No rep. - No representation
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Okanogan Highlands

Priority		Element Name	Ownership	Remarks
		Stream and Riparian Systems:		
3	13.	mid-elevation stream and riparian system	ST,FED PVT	Partial rep. in Maitlen Creek RNA, Salmo RNA, Little Pend Oreille River NAP, and North Fork O'Brien Creek PRNA
2	14.	cold spring	ST,FED PVT	No rep.

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Columbia Basin Province

Priority		Element Name	Ownership	Remarks
		Freshwater Wetlands:		
2	1.	low elevation freshwater wetlands	ST,FED PVT	Partial rep. in Moxee Bog NAP
		Inland Saline Wetlands:		
1	2.	low elevation alkali wetland	ST,FED PVT	No rep.
1	3.	low elevation saline wetland	ST,FED PVT	No rep.
		Special Types:		
1	4.	low elevation alkali pond/lake and drainage basin	ST,FED PVT	No rep.
2	5.	low elevation saline pond/lake and drainage basin	ST,FED PVT	Partial rep. in Hot Lake RNA
2	6.	low elevation lake and drainage basin	ST,FED PVT	No rep.
1	7.	low elevation alkali vernal pond	ST,FED PVT	Partial rep. in Marcellus Shrub Steppe NAP and Castle Rock NAP
1	8.	low elevation saline vernal pond	ST,FED PVT	No rep.
*	9.	low elevation stream and riparian system	FED	Rattlesnake Hills RNA
3	10.	potholes	FED	Partial rep. in Turnbull Pine RNA and Pine Creek RNA
*	11.	cold spring	FED	Rattlesnake Hills RNA and Moxee Bog NAP
2	12.	hot spring	ST,FED PVT	No rep.

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No rep. - No representation
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Blue Mountains Province

Priority		Element Name	Ownership	Remarks
		Special Types:		
2	1.	mid-elevation permanent pond and drainage basin	FED	No rep., may occur in Elk Flats PRNA, Oregon
3	2.	mid-elevation stream and riparian system	FED	Partial rep. in Rainbow Creek RNA; would be adequately represented with addition of Mill Creek PRNA

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No rep. - No representation
• - Adequate representation

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Unique Geologic Features

This list was compiled by the staff of the Division of Geology and Earth Resources, Department of Natural Resources in coordination with the Natural Heritage Program staff. It is unchanged from the 1985 plan.

Criteria for determining element priority for unique geologic features are listed on page 16. Priorities are assigned only to those elements that may require active protection measures. Future revisions of the plan will incorporate a more complete and well-documented list of unique geologic features in Washington.

Geologic features currently receiving adequate protection in a natural area are listed in *Elements Protected in Natural Areas* under the areas in which they occur. Many signigicant geologic features in Washington (volcanoes, glaciers, etc.) already receive adequate protection in national parks and wilderness areas and will not be considered for this plan.

Unique Geological Features

Priority	Element Name	Ownership	Remarks
	Special Geologic Localities:		
2	fragile mineral localities	ST,FED PVT	
2	fragile fossil localities	ST,FED PVT	
2	fragile type localities of formations	ST,FED PVT	
2	fragile palynological localities	ST,FED PVT	Pollen record should be well preserved
	Works of Vulcanism:		
	lava tube	FED	
	ice cave	ST,FED	
	Works of Glaciation:		
	drumlin	ST,FED PVT	
	esker	ST,FED PVT	
	kettle lake	ST,FED PVT	
	patterned ground	ST,FED PVT	Partial rep. at Mima Mounds NAP
	glacial delta	ST,FED PVT	
	Tectonic Features:		
	active fault	FED	

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NAP - Natural Area Preserve

Partial rep. - Partial representation
No rep. - No representation

Elements Protected in Natural Areas

Elements Protected in Natural Areas

Lists of terrestrial ecosystem elements, aquatic ecosystem elements, special plant and animal species, geologic features and "other features" are included for all existing natural areas in Washington. A map and alphabetical listing of established natural areas in Washington follow the descriptions.

All elements present within a particular natural area are listed irrespective of the degree of representation they provide for a given element within the plan. Therefore, elements receiving adequate representation within a particular natural area are listed along with elements receiving only partial representation. Degree of representation of each element is indicated in the lists of priorities. All ecosystem features in a particular area that are not considered "elements" in the plan are listed under the heading "other features."

Olympic Peninsula and Southwestern Washington Province

Carlisle Bog NAP (ST)
Aquatic Elements:
low elevation freshwater wetland
low elevation sphagnum bog
low elevation permanent pond
Special Species:
two Sensitive plant species
one Sensitive animal species

Clearwater Bogs NAP (ST)
Aquatic Elements:
low elevation sphagnum bog
low elevation permanent pond and drainage basin
Special Species:
one Sensitive plant species

Diamond Point RNA (FED)
Terrestrial Elements:
red alder forest
Sitka spruce-western hemlock forest
Sitka spruce-western hemlock/swordfern community
western hemlock-Sitka spruce/salal community

Gunpowder Island NAP (ST)
Other Feature:
nesting seabird colonies

Hades Creek RNA (FED)
Terrestrial Elements:
Douglas fir-western hemlock forest
western hemlock/Oregon oxalis community
western hemlock/salal community
Aquatic Element:
low elevation stream and riparian system on west side of Olympic Peninsula

Higley Creek RNA (FED)
Terrestrial Elements:
western hemlock/Alaska huckleberry community
western hemlock/Oregon oxalis community
western hemlock/salal community
western hemlock/swordfern community
Aquatic Element:
low elevation stream and riparian system on west side of Olympic Peninsula
Other Features:
red alder swamp
Sitka spruce-western hemlock forest

Jackson Creek RNA (FED)
Terrestrial Elements:
Douglas fir-western hemlock forest
Douglas fir/Oregon oxalis community
Douglas fir/swordfern community
Sitka spruce/vine maple community
Aquatic Element:
low elevation stream and riparian system on west side of Olympic Peninsula

Quinault RNA (FED)
Terrestrial Elements:
Sitka spruce/Oregon oxalis community
western hemlock/Alaska huckleberry community
western hemlock/Oregon oxalis community
western hemlock/swordfern community
Aquatic Element
low elevation stream and riparian system on west side of Olympic Peninsula
Other Features:
Douglas fir forest
western hemlock/salal community
western redcedar-western hemlock/swordfern community

Sand and Goose Island NAP (ST)
Other Features:
nesting seabird colonies
marine mammal haulout

Twin Creek RNA (FED)
Terrestrial Elements:
Sitka spruce-western hemlock/swordfern community
Sitka spruce-western hemlock forest
Aquatic Element:
low elevation stream and riparian system on west side of Olympic Peninsula
Other Features:
Sitka spruce-western hemlock/Oregon oxalis community
Sitka spruce-western hemlock/vine maple community
freshwater wetland

Whitcomb Flats NAP (ST)
Other Feature:
nesting seabird colonies

Puget Trough Province

Bald Hill NAP (ST)
Terrestrial Elements:
Oregon white oak woodland
Douglas fir/salal-oceanspray community
Idaho fescue grassland

Aquatic Element:
low elevation freshwater wetland

Special Species:
one Threatened plant species
two Sensitive plant species

Other Feature:
low elevation stream and riparian system

Blackwater Island RNA (FED)
Terrestrial Elements:
Oregon ash woodland
Oregon white oak woodland

Aquatic Elements:
freshwater surge plain wetland
low elevation permanent pond and drainage basin

Chuckanut Island NAP (PVT)
Special Species:
one Threatened animal species

Cypress Island NAP (ST)
Terrestrial Element:
Idaho fescue grassland

Other Features:
lodgepole pine forest
Douglas fir-Pacific madrone forest
Rocky Mountain juniper

Foulweather Bluff NAP (PVT)
Terrestrial Element:
red alder community

Aquatic Elements:
low salinity coastal lagoon

Goose and Deadman Island NAP (PVT)
Other Features:
Oregon white oak-grassland mosaic
shrub thicket
intertidal and subtidal marine life

Mima Mounds NAP (ST)
Terrestrial Element:
Idaho fescue grassland

Special Species:
one Threatened plant species

Geologic Feature:
Mima Mounds

Oak Patch NAP (ST)
Terrestrial Elements:
Oregon white oak-conifer mosaic
Oregon white oak woodland

Point Doughty NAP (ST)
Terrestrial Element:
Douglas fir/salal-oceanspray community

Special Species:
one Threatened animal species

Other Features:
Idaho fescue grassland
Douglas fir-Pacific madrone/American vetch community

Sentinel Island NAP (PVT)
Terrestrial Elements:
Douglas fir/oceanspray community
Douglas fir-Pacific madrone/American vetch community
red fescue grassland

Special Species:
one Threatened animal species

Skagit Bald Eagle NAP (PVT/ST)
Terrestrial Element:
red alder/swordfern community

Special Species:
one Threatened animal species

Skookum Inlet (ST)
Aquatic Elements:
low intertidal, high salinity, silty marsh
high intertidal, high salinity marsh
high intertidal, low salinity marsh

Other Feature:
nonvegetated tideflats

Waldron Island NAP (PVT)
Other Feature:
low elevation freshwater wetland

Yellow Island NAP (PVT)
Terrestrial Element:
Idaho fescue grassland

Special Species:
one Sensitive plant species

Other Feature:
intertidal and subtidal marine life

Western Cascades and Crest Province

Boston Glacier RNA (FED)

Terrestrial Elements:
- black alpine sedge community
- bearberry-mountain juniper community
- Pacific silver fir-mountain hemlock/Cascades azalea community
- Pacific silver fir-subalpine fir-mountain hemlock-Alaska cedar forest
- red mountainheather-blueleaf huckleberry community
- Sitka alder-vine maple community
- subalpine larch forest
- western cassiope-red mountainheather community

Aquatic Elements:
- subalpine freshwater wetland
- subalpine permanent pond and drainage basin
- subalpine stream

Geologic Feature:
- large, active glacier

Butter Creek RNA (FED)

Terrestrial Elements:
- mountain hemlock/big huckleberry community
- Pacific silver fir/Alaska huckleberry community
- Pacific silver fir/Cascades azalea community
- Pacific silver fir/devilsclub community
- Pacific silver fir/fools huckleberry community
- Pacific silver fir/rosy twistedstalk community
- Pacific silver fir/western coolwort community
- red mountainheather-blueleaf huckleberry community
- red mountainheather/broadleaf lupine community
- Sitka alder-vine maple community

Aquatic Elements:
- subalpine freshwater wetland
- subalpine permanent pond and drainage basin
- subalpine stream and riparian system

Other Features:
- avalanche chutes
- noble fir forest

Cedar Flats RNA (FED)

Terrestrial Elements:
- Douglas fir/salal community
- Douglas fir-western hemlock/salal community
- Douglas fir-western hemlock/Oregongrape community
- western hemlock/swordfern community
- western hemlock/vine maple community
- western redcedar forest
- western redcedar/skunkcabbage community

Aquatic Element:
- low elevation stream and riparian system

Other Feature:
- low elevation freshwater wetland

Columbia Falls NAP (ST)

Terrestrial Elements:
- Douglas fir/vine maple community, 100-150 years old
- Douglas fir-western hemlock/salal community, 100-150 years old

Aquatic Elements:
- low elevation stream
- waterfall and associated spray zone

Special Species:
- one Threatened plant species
- six Sensitive plant species
- one Sensitive animal species

Other Features:
- basalt headwall and talus
- xeric meadow communities
- nine vascular plants disjunct or endemic to the Columbia River Gorge

Goat Marsh RNA (FED)

Terrestrial Elements:
- lodgepole pine/bearberry community
- noble fir forest
- Pacific silver fir/Alaska huckleberry community
- Pacific silver fir/Cascades azalea community
- Pacific silver fir/Oregon oxalis community
- Pacific silver fir/rosy twistedstalk community

Aquatic Elements:
- mid-elevation freshwater wetland
- mid-elevation permanent pond and drainage basin including beaver ponds

Special Species:
- one Sensitive plant species

Geologic Feature:
- pyroclastic flow

Lake Twenty-two RNA (FED)

Terrestrial Elements:
- red mountainheather community
- Sitka alder-vine maple community
- Pacific silver fir/Alaska huckleberry community
- western hemlock/devilsclub community

western hemlock/Alaska huckleberry community
western redcedar-western hemlock/devils-club/ladyfern community

Aquatic Elements:
mid-elevation lake and drainage basin
mid-elevation stream and riparian system

Special Species:
two Sensitive plant species

Long Creek RNA (FED)

Terrestrial Elements:
Douglas fir-western hemlock/Oregongrape community
Douglas fir-western hemlock/salal community
Pacific silver fir/Alaska huckleberry community
western hemlock/Alaska huckleberry community
western redcedar-western hemlock/devils-club/ladyfern community

Aquatic Element:
low elevation stream and riparian system

Geologic Feature:
unstable glacial varve

Newton Creek BSA (ST)

Terrestrial Elements:
Douglas fir-western hemlock/salal community
Douglas fir-western hemlock/swordfern community
Douglas fir-western hemlock/vine maple community

North Fork Nooksack RNA (FED)

Terrestrial Elements:
Douglas fir-western hemlock/swordfern community
Pacific silver fir/Alaska huckleberry community
western hemlock/Alaska huckleberry community
western hemlock/salal community

Aquatic Elements:
mid-elevation stream and riparian system
cold spring

Other Features:
avalanche chutes
big huckleberry-Cascades azalea community
black alpine sedge community
red mountainheather-blueleaf huckleberry community
Sitka valerian-American false hellebore community
western redcedar-western hemlock/twin-flower-strawberryleaved blackberry community

Olivine Bridge NAP (ST)

Terrestrial Element:
serpentine barrens

Pierce Island NAP (PVT)

Terrestrial Element:
black cottonwood-Oregon ash community

Aquatic Element:
freshwater surge plain wetland

Special Species:
one Endangered plant species

Pyramid Lake RNA (FED)

Terrestrial Elements:
Douglas fir-western hemlock/Oregon boxwood community
Pacific silver fir/big huckleberry community
Sitka alder-vine maple community
western hemlock/big huckleberry community
western redcedar-western hemlock/devils-club/ladyfern community

Aquatic Elements:
mid-elevation permanent pond and drainage basin
mid-elevation stream and riparian system

Special Species:
one Threatened plant species
one Sensitive plant species

Other Features:
lodgepole pine/big huckleberry-salal community
mid-elevation freshwater wetland

Silver Lake RNA (FED)

Terrestrial Elements:
alpine saxifrage-Piper's woodrush community
black alpine sedge community
Cascade willow/alpine fescue community
cream mountainheather community
bearberry-mountain juniper community
snow willow/alpine fescue community
western cassiope/red mountainheather community

Aquatic Elements:
alpine lake and drainage basin
subalpine stream
cold springs (seeps)

Special Species:
two Sensitive plant species

Other Features:
alpine krummholz with whitebark pine-Engelmann spruce-subalpine fir-mountain hemlock

Sister Rocks RNA (FED)

Terrestrial Elements:
- noble fir/beargrass community
- Pacific silver fir/Alaska huckleberry community

Aquatic Element:
- cold spring (seeps)

Other Feature:
- Pacific silver fir/rosy twistedstalk community

Steamboat Mountain RNA (FED)

Terrestrial Elements:
- Pacific silver fir/big huckleberry community
- Pacific silver fir/Cascades azalea community

Aquatic Elements:
- mid-elevation freshwater wetland
- mid-elevation sphagnum bog
- mid-elevation permanent pond and drainage basin

Other Features:
- Douglas fir-noble fir forest
- Pacific silver fir-mountain hemlock-Engelmann spruce forest
- Pacific silver fir/vanillaleaf community
- subalpine fir/big huckleberry community

Stetattle Creek RNA (FED)

Terrestrial Elements:
- cream mountainheather community
- crowberry community
- Douglas fir/salal community
- Douglas fir-western hemlock/Oregon boxwood community
- Douglas fir-western hemlock/Oregongrape community
- Douglas fir-western hemlock/salal community
- bearberry-mountain juniper community
- lodgepole pine-Douglas fir/bunchberry-slender wintergreen community
- mountain hemlock/Cascades azalea community
- mountain hemlock/red mountainheather-blueleaf huckleberry community
- Pacific silver fir/Alaska huckleberry community
- Pacific silver fir/devilsclub community
- Pacific silver fir/western coolwort community
- Sitka alder community
- Sitka valerian-American false hellebore community
- thimbleberry-fireweed community
- western hemlock/Oregongrape community
- western hemlock/salal community
- western hemlock/western coolwort community
- western redcedar-western hemlock/devilsclub/ladyfern community
- western redcedar/skunkcabbage community

Aquatic Elements:
- subalpine freshwater wetland
- subalpine lake and drainage basin
- subalpine permanent pond and drainage basin
- subalpine stream and riparian system

Special Species:
- three Sensitive plant species

Thornton T. Munger RNA (FED)

Terrestrial Elements:
- Douglas fir-western hemlock/Oregongrape community
- Pacific silver fir/salal community
- western hemlock/Oregongrape community

Aquatic Elements:
- low elevation freshwater wetland
- low elevation permanent pond and drainage basin

Special Species:
- one Threatened plant species
- one Sensitive plant species

Eastern Cascades Province

Meeks Table RNA (FED)

Terrestrial Elements:
- Douglas fir-grand fir/pinegrass community
- ponderosa pine-Douglas fir/pinegrass community
- low sagebrush/Sandberg's bluegrass community

Special Species:
- one Sensitive plant species

Other Feature:
- low sagebrush/western needlegrass community

Thompson Clover RNA (FED)

Special Species:
- one Threatened plant species

Other Features:
- ponderosa pine/antelope bitterbrush community
- threetip sagebrush/Idaho fescue community

Wolf Creek RNA (FED)

Terrestrial Elements:
- antelope bitterbrush/Idaho fescue community
- ponderosa pine/antelope bitterbrush community
- ponderosa pine-Douglas fir/snowberry/bluebunch wheatgrass community

Okanogan Highlands Province

Baird Basin RNA (FED)
Terrestrial Elements:
Douglas fir/ninebark community
lodgepole pine/pinegrass community
ponderosa pine/Idaho fescue community
western larch forest

Little Pend Oreille River NAP (ST)
Aquatic Elements:
mid-elevation wetland
mid-elevation stream and riparian system

Maitlen Creek RNA (FED)
Terrestrial Elements:
Douglas fir/ninebark community
Douglas fir/pinegrass community
grand fir/queenscup beadlily community
subalpine fir/fools huckleberry-Cascades azalea community
subalpine fir/twinflower community
western hemlock/queenscup beadlily community
western larch forest
western redcedar/queenscup beadlily community
Aquatic Element:
mid-elevation stream and riparian system
Other Feature:
red alder forest

Salmo RNA (FED)
Terrestrial Elements:
subalpine fir/fools huckleberry-Cascade azalea community
western hemlock/queenscup beadlily community
western larch forest
western redcedar/devilsclub community
western white pine forest
Aquatic Element:
mid-elevation stream and riparian system

Varline Grove RNA (FED)
Terrestrial Elements:
lodgepole pine/bearberry community
lodgepole pine/pinegrass community
western larch forest
Other Feature:
Engelmann spruce-subalpine fir forest

Columbia Basin Province

Badger Gulch NAP (ST)
Terrestrial Elements:
bluebunch wheatgrass-Sandberg's bluegrass community
Idaho fescue-houndstongue hawkweed community
Oregon white oak-ponderosa pine woodland
Special Species:
three Sensitive plant species
Other Feature:
intermittent stream and riparian system

Barker Mountain NAP (PVT)
Terrestrial Elements:
threetip sagebrush/Idaho fescue community
antelope bitterbrush/Idaho fescue community
ponderosa pine-Douglas fir/antelope bitterbrush community

Campus Prairie BSA (ST)
Terrestrial Elements:
black hawthorn/snowberry community
Idaho fescue/snowberry community
Special Species:
three Threatened plant species

Cleveland Shrub Steppe NAP (ST)
Terrestrial Elements:
antelope bitterbrush/Idaho fescue community
Douglas' buckwheat/Sandberg's bluegrass community
quaking aspen grove

Davis Canyon NAP (ST)
Terrestrial Elements:
antelope bitterbrush/Idaho fescue community
antelope bitterbrush/bluebunch wheatgrass community
big sagebrush/needle-and-thread community
ponderosa pine/Idaho fescue community
threetip sagebrush/Idaho fescue community

Dishman Hills NAP (PVT)
Other Feature:
ponderosa pine-Douglas fir forest

Hot Lake RNA (FED)
Aquatic Element:
low elevation saline lake

Kahlotus Ridgetop NAP (ST)
Terrestrial Element:
bluebunch wheatgrass-Idaho fescue community

Special Species:
one Sensitive plant species

Kramer Palouse BSA (ST)
Terrestrial Elements:
black hawthorn/cowparsnip community
bluebunch wheatgrass/Sandberg's bluegrass community
Idaho fescue/snowberry community

Special Species:
two Threatened plant species

Lind Shrub Steppe NAP (PVT)
Terrestrial Element:
big sagebrush/Idaho fescue community

Special Species:
one Sensitive plant species

Lower Crab Creek NAP (ST)
Terrestrial Elements:
alkali saltgrass community
black greasewood/alkali saltgrass community

Magnuson Butte NAP (PVT)
Terrestrial Element:
Idaho fescue/snowberry community

Marcellus Shrub Steppe NAP (PVT)
Terrestrial Elements:
big sagebrush/Idaho fescue community
threetip sagebrush/Idaho fescue community

Aquatic Element:
alkali vernal pond

Methow Rapids Bitterbrush Steppe NAP (ST)
Terrestrial Elements:
antelope bitterbrush/bluebunch wheatgrass community
smooth sumac/bluebunch wheatgrass community

Moxee Bog NAP (PVT)
Aquatic Elements:
low elevation freshwater wetland
cold springs

Special Species:
one Sensitive animal species

Pine Creek RNA (FED)
Terrestrial Elements:
ponderosa pine/Idaho fescue community
quaking aspen grove

Aquatic Element:
potholes

Other Feature:
ponderosa pine/snowberry community

Rattlesnake Hills RNA (FED)
Terrestrial Elements:
big sagebrush/bluebunch wheatgrass community
black cottonwood/willow community
rock buckwheat/Sandberg's bluegrass community
spiny hopsage/Idaho fescue community
thyme buckwheat/Sandberg's bluegrass community
winterfat/Sandberg's bluegrass community

Aquatic Elements:
low elevation stream and riparian system
cold spring

Special Species:
one Sensitive plant species

Riverside Breaks NAP (ST)
Terrestrial Elements:
antelope bitterbrush/bluebunch wheatgrass community
smooth sumac/red threeawn community

Special Species:
one Sensitive plant species

Rose Creek NAP (PVT)
Terrestrial Element:
black hawthorn/cowparsnip community (quaking aspen phase)

Smoot Hill BSA (ST)
Terrestrial Elements:
Idaho fescue/snowberry community
ponderosa pine/ninebark community

Special Species:
two Threatened plant species

Spring Creek Canyon NAP (ST)
Terrestrial Elements:
Douglas fir/ninebark community
northern buckwheat/Sandberg's bluegrass community
ponderosa pine/antelope bitterbrush community

Turnbull Pine RNA (FED)
Terrestrial Elements:
ponderosa pine/snowberry community
quaking aspen grove

Aquatic Element:
potholes

Blue Mountains Province

Pataha Bunchgrass RNA **(FED)**

Terrestrial Elements:

- bluebunch wheatgrass-Idaho fescue community
- Douglas fir-ponderosa pine/pinegrass community
- grand fir-Douglas fir/big huckleberry community

Rainbow Creek RNA **(FED)**

Terrestrial Elements:

- bluebunch wheatgrass-Sandberg's bluegrass community
- grand fir/big huckleberry community
- western larch-grand fir/big huckleberry community
- western white pine/queenscup beadlily community

Aquatic Element:

- mid-elevation stream and riparian system

Elements Protected by Voluntary Registration

The number of sites registered is indicated in parentheses.

Rare Plants

Ames milkvetch (1)
Arthur's milkvetch (3)
Barrett's beardtongue (2)
basalt daisy (1)
blue-eyed grass (1)
bog clubmoss (1)
Chelan rockmat (1)
clustered lady's-slipper (1)
common blue-cup (1)
Douglas draba (1)
few-flowered collinsia (1)
fringed waterplantain (1)
golden Indian-paintbrush (2)
hairy-stemmed checker-mallow (1)
hot-rock penstemon (3)
Howell's daisy (1)
Jessica's aster (2)
long-bearded sego-lily (2)
marigold navarretia (1)
marsh muhly (1)
narcissus shooting star (1)
northern wormwood (1)
northwest raspberry (2)
obscure buttercup (3)
Oregon checker-mallow (1)
Oregon coyote-thistle (1)
pale blue-eyed grass (1)
palouse goldenweed (4)
pauper milkvetch (1)
Rollins' desert parsley (1)
rush aster (1)
Sabin's lupine (1)
Spalding's silene (4)
sticky phacelia (1)
Thompson's clover (1)
Washington polemonium (3)
Wenatchee larkspur (3)
western ladies-tresses (1)
Whited's milkvetch (2)
white-top aster (1)
yellow sedge (1)

Rare Animals

peregrine falcon (1)
snowy plover (1)
western pond turtle (1)
Mardon skipper* (1)
Edith's checkerspot* (1)

Terrestrial Ecosystems

big sagebrush/bluebunch wheatgrass community (3)
big sagebrush/Idaho fescue community (1)
big sagebrush/needle and thread community (1)
bluebunch wheatgrass-Idaho fescue community (5)
bluebunch wheatgrass-Sandberg's bluegrass community (5)
deflation plain communities (1)
Douglas fir/ninebark community (1)
Douglas fir-western white pine/salal (1)
Douglas fir-western hemlock/sword fern (1)
Idaho fescue/Nootka rose community (1)
Idaho fescue-rough fescue community (1)
Idaho fescue/snowberry community (1)
northern buckwheat/Sandberg's bluegrass community (1)
ponderosa pine/bluebunch wheatgrass community (1)
ponderosa pine/ninebark community (3)
ponderosa pine/snowberry community (4)
red threeawn-Sandberg's bluegrass community (1)
snow buckwheat/Sandberg's bluegrass community (1)
stabilized forested dune communities (1)
three-tipped sagebrush-Idaho fescue community (1)

Aquatic Ecosystems

high intertidal marsh (1)
low intertidal, high salinity, sandy marsh (1)

* listed in 1985 plan

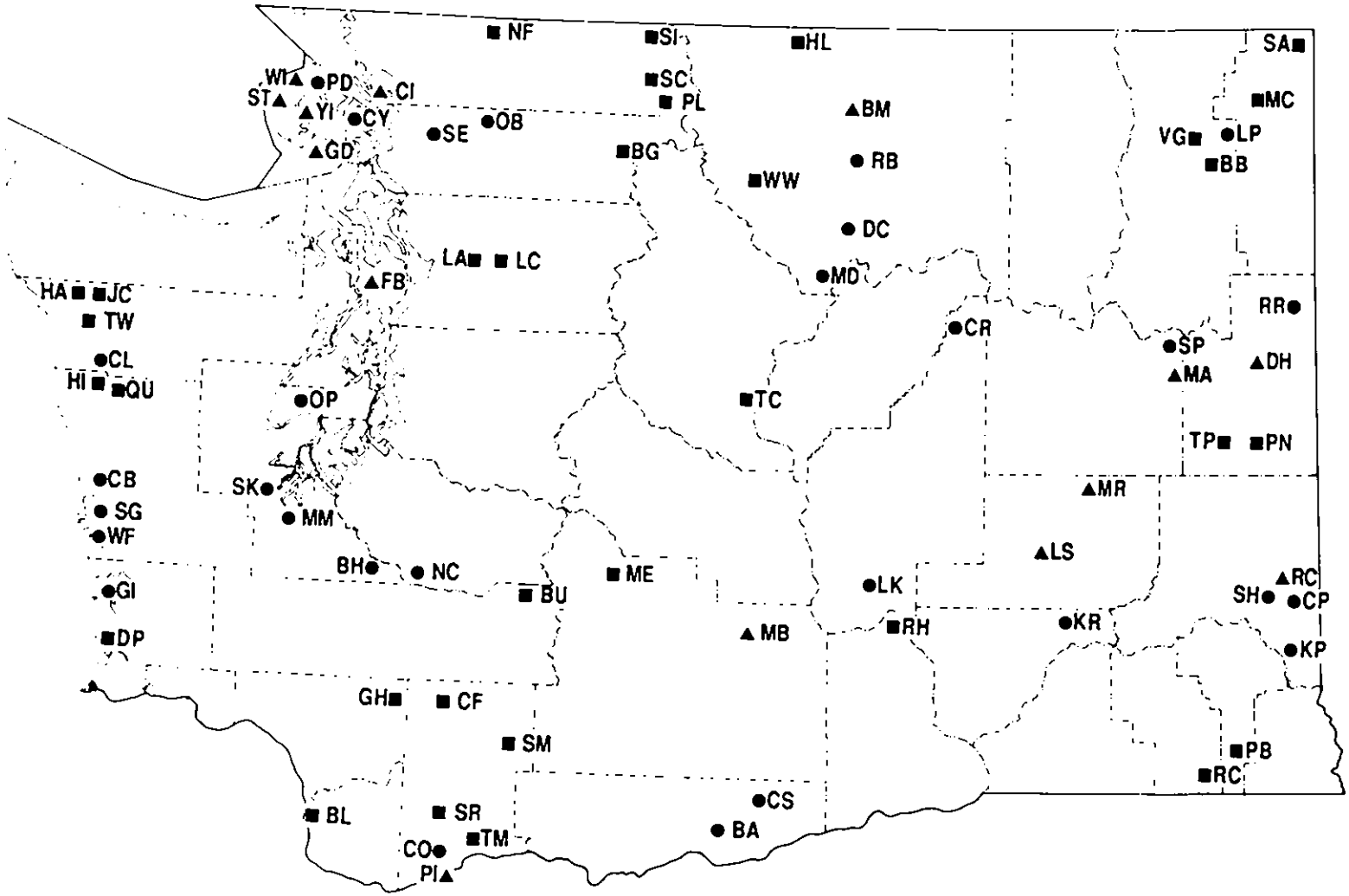

Figure 5. Established Natural Areas in Washington.

Table 2

Established Natural Areas in Washington

NAME OF AREA	OWNER-SHIP	SYMBOL ON MAP	NAME OF AREA	OWNER-SHIP	SYMBOL ON MAP
State					
Badger Gulch NAP	DNR	BA	Methow Rapids NAP	DNR	MD
Bald Hill NAP	DNR	BH	Mima Mounds NAP	DNR	MM
Campus Prairie BSA	WSU	CP	Newton Creek BSA	UW	NC
Carlisle Bog NAP	DNR	CB	Oak Patch NAP	DNR	OP
Castle Rock NAP	SPC/DNR	CR	Olivine Bridge NAP	DNR	OB
Clearwater Bogs NAP	DNR	CL	Point Doughty NAP	DNR	PD
Cleveland Shrub Steppe NAP	DNR	CS	Ragged Ridge NAP	SPC	RR
Columbia Falls NAP	DNR	CO	Riverside Breaks NAP	DNR	RB
Cypress Island NAP	DNR	CY	Sand and Goose Islands NAP	DNR	SG
Davis Canyon NAP	DNR	DC	Skagit Bald Eagle NAP	WDG*	SE
Gunpowder Island NAP	DNR	GI	Skookum Inlet NAP	DNR	SK
Kahlotus Ridgetop NAP	DNR	KR	Smoot Hill BSA	WSU	SH
Kramer Palouse BSA	WSU	KP	Spring Creek Canyon NAP	DNR	SP
Little Pend Oreille River NAP	DNR	LP	Whitcomb Flats NAP	DNR	WF
Lower Crab Creek NAP	WDG	LK			
Federal					
Baird Basin RNA	USFWS	BB	Pine Creek RNA	USFWS	PN
Blackwater Island RNA	USFWS	BL	Pyramid Lake RNA	NPS	PL
Boston Glacier RNA	NPS	BG	Quinault RNA	USFS	QU
Butter Creek RNA	NPS/USFS	BU	Rainbow Creek RNA	USFS	RC
Cedar Flats RNA	USFS	CF	Rattlesnake Hills RNA	DOE	RH
Diamond Point RNA	USFWS	DP	Salmo RNA	USFS	SA
Goat Marsh RNA	USFS	GH	Silver Lake RNA	NPS	SI
Hades Creek RNA	NPS	HA	Sister Rocks RNA	USFS	SR
Higley Creek RNA	NPS	HI	Steamboat Mt. RNA	USFS	SM
Hot Lake RNA	BLM	HL	Stetattle Creek RNA	NPS	SC
Jackson Creek RNA	NPS	JC	Thompson Clover RNA	USFS	TC
Lake Twenty-two RNA	USFS	LA	Thornton T. Munger RNA	USFS	TM
Long Creek RNA	USFS	LC	Turnbull Pine RNA	USFWS	TP
Maitlen Creek RNA	USFS	MC	Twin Creek RNA	NPS	TW
Meeks Table RNA	USFS	ME	Varline Grove RNA	USFWS	VG
North Fork Nooksack RNA	USFS	NF	Wolf Creek RNA	USFS	WW
Pataha Bunchgrass RNA	USFS	PB			
Private					
Barker Mountain NAP	TNC	BM	Moxee Bog NAP	TNC	MB
Chuckanut Island NAP	TNC	CI	Pierce Island NAP	TNC	PI
Dishman Hills NAP	TNC	DH	Rose Creek NAP	TNC	RO
Foulweather Bluff NAP	TNC	FB	Sentinel Island NAP	TNC	ST
Goose and Deadman Islands NAP	TNC	GD	Skagit Bald Eagle NAP	TNC*	SE
Lind Shrub Steppe NAP	TNC	LS	Waldon Island NAP	TNC	WI
Magnuson Butte NAP	TNC	MA	Yellow Island NAP	TNC	YI
Marcellus Shrub Steppe NAP	TNC	MR			

* Joint WDG-TNC Ownership

OWNERSHIP

USFS = USDA Forest Service
USFWS = USDI Fish & Wildlife Service
NPS = National Park Service
BLM = Bureau of Land Management
DOE = Department of Energy
DNR = Department of Natural Resources
WDG = Department of Game
SPC = State Parks and Recreation Comm.
WSU = Washington State University
UW = University of Washington
TNC = The Nature Conservancy

DESIGNATION

RNA = Research Natural Area
NAP = Natural Area Preserve
BSA = Biological Study Area

MAP SYMBOLS

● = state
■ = federal
▲ = private

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Glossary

Glossary

alkali - terrestrial, wetland or aquatic areas with a distinctive biota resulting from unusually high concentrations of sodium ions.

alpine - high elevation lands above the upper limits of tree growth.

aquatic types - relating to systems for which standing or flowing water is the primary feature, such as bodies of water (lakes, ponds, estuaries, etc.), channeled water (springs, streams, rivers, etc.), or wetlands (salt or freshwater marshes, bogs, swamps).

aquatic ecosystem element - any element listed under the "Aquatic Ecosystems" section of this plan.

association - a plant community that is approaching a climax condition; a plant community where the dominant species are self-replacing.

Board of Natural Resources - The board is the policy-making body of the department and exists to ensure that the acquisition, management, and disposition of all lands and resources within the DNR's jurisdiction are based on sound principles designed to achieve maximum effective development and use of such lands and resources consistent with applicable laws. The board is comprised of the Governor; Commissioner of Public Lands; Superintendent of Public Instruction; the dean of the College of Forestry, University of Washington; the dean of the College of Agriculture, Washington State University and a member representing county governments.

bog - wetlands with extensive living *Sphagnum* moss or *Sphagnum* peat and a distinctive flora that results from the acidic substrate.

certificate of registration - an official document issued by the Department of Natural Resources serving as written testimony on the importance of an area for the protection of one or more natural heritage resources, such area having been voluntarily registered with the DNR by the owner.

classification system - a systematic arrangement of natural heritage resources (i.e., elements) for data management purposes.

community - a group of species which co-occur in time and space; see plant community, association.

council - see Natural Heritage Advisory Council.

data base - the body of information relating to natural heritage resources stored in the data system of the Natural Heritage Program.

data system - the computer and manual files used by the Natural Heritage Program for storage and retrieval of information relating to natural heritage resources.

dedication - The voluntary placement of a natural area into the DNR's Natural Area Preserve System, either in full fee title or with specifically defined real property interests. For public agencies, the signing of a cooperative agreement with DNR on the management of an area for the perpetuation of elements present.

de facto protection - the protection afforded an element by virtue of its presence within an area managed for other, not necessarily conflicting objectives. In these cases, elements are not explicitly or manifestly managed for, but the probability of destruction of the element is low.

department - Department of Natural Resources.

element - the basic unit of Washington's biologic and geologic environment identified as a needed component of a system of natural areas and defined in the Natural Heritage Plan. Elements can be plant communities, special species or geologic features. The equivalent term "cells" is used by the Federal Research Natural Area Program.

element occurrence - the actual on-the-ground example of an element (information about each occurrence is stored in the data system of the Natural Heritage Program).

endangered, threatened and sensitive species - Rare plant and animal species are assigned to one of these three categories.

eutrophic - a body of water having high mineral and organic matter content and a low oxygen content.

extirpated - a species that has been destroyed or removed from its natural territory in Washington.

freshwater surge plain wetland - areas along stream and river reaches which are inundated by freshwater due to tidal influence.

high intertidal - intertidal lands between low high water and mean high water. The upper limit is also defined by typically freshwater marsh or upland plant species having a cover value of 5 percent or greater.

high salinity - a nontechnical term indicating concentrations of marine derived salts greater than or equal to 18 parts per thousand.

inland saline wetland - noncoastal wetlands with high concentrations of mineral salts. Salt concentrations give rise to a distinctive flora.

intertidal - lands over which tide ebbs and flows from the line of mean high water to the line of extreme low water.

inventory - an ongoing process by which staff of the Natural Heritage Program collect and compile information relating to natural heritage resources and their locations from herbarium and museum records, scientific literature, the scientific community and field work; the term occasionally is used to refer to the data thus collected.

low elevation - lands between sea level and 2,500 feet in elevation. This range is subject to regional or microclimatic variation.

low intertidal - intertidal lands between extreme low water and low high water.

low salinity - a nontechnical term indicating concentrations of marine derived salts greater than or equal to 0.5 parts per thousand and less than 18.0 parts per thousand. The term is analogous to "brackish."

marl fen - a high calcium wetland with a resultant distinctive flora.

marsh - a wetland dominated by nonwoody plant species.

mid-elevation - elevational range between low elevation (+2,500 ft.) and subalpine.

mosiac - a patchwork of vegetation composed of poorly differentiated, miscellaneous or seemingly incongruous parts.

native - indigenous to, or originating naturally in, Washington; remaining or growing in an unaltered natural condition.

natural - as used in this document, indicates something existing or found in nature without human intervention.

natural area - any tract of land or water which supports high quality examples of terrestrial or aquatic ecosystems, habitats and populations of rare or endangered plant or animal species, or unique geologic features, and is managed specifically to protect those examples.

Natural Area Preserve System - a network of preserves established by the department as directed by the Natural Area Preserve Act of 1972 (Ch. 79.70 RCW). A natural area may be defined as land or water predominantly in its natural state, largely undisturbed by human activity.

Natural Area System - an assemblage of areas of land or water recognized by the state through the Department of Natural Resources as being important for the preservation of natural heritage resources, and registered or dedicated as natural areas for the protection and perpetuation of these significant features.

natural diversity - all the native species, plant communities, aquatic types and geological features of a given area.

natural feature - a native species, plant community, aquatic type or geologic feature; a general term of which natural heritage resources constitute a specific subset.

natural heritage - all the native species, plant communities, aquatic types, and geologic features of Washington; all natural features of the state; the state's natural diversity.

Natural Heritage Advisory Council - a 15-member council established under RCW 79.70.070 to advise the Department of Natural Resources of regulations necessary to carry out the provisions of the Act; to recommend policy for the Natural Heritage Program; to help identify natural areas from the data base, review and reject or approve them for registration; and to advise state land managing agencies of such areas under their respective jurisdiction.

Natural Heritage Program - a program established under the Department of Natural Resources to assist in the selection, nomination, establishment and management of a system of natural areas.

natural heritage resources - plant community types, aquatic types, unique geologic features and special plant and animal species and their critical habitat.

oligotrophic- a water body that is deficient in plant nutrients, and usually has an abundance of dissolved oxygen and no marked biotic stratification.

palynological - pertaining to the scientific study of live or fossil spores or other microscopic plant structures.

plant community - generally, vegetation having a characteristic pattern of species composition and dominance; used here in the broadest sense to include both seral and climax vegetation. A group of species which tend to co-occur in time and space.

pothole - a cylindrical hole formed in rock by the grinding action of the detrital material in eddying water.

preserve system - see Natural Area Preserve System

program - see Natural Heritage Program.

registration - The execution of a nonbinding, voluntary agreement between the Department of Natural Resources and the owner of an area supporting one or more significant natural heritage resources to manage the property for the protection and perpetuation of the important features.

riparian - pertaining to stream and riverbanks and the sets of environmental characteristics and biotic components setting these areas apart from the surrounding ecosystems.

saltwater surge plain wetland - the areas along stream and river reaches which are inundated by freshwater and occasionally saltwater due to tidal fluctuation.

savannah - a pattern of vegetation consisting of widely scattered trees having multiple-branched canopies, and a ground cover dominated by grasses.

special species - native organisms which are endangered, threatened or sensitive in Washington and are listed in the Natural Heritage Plan.

sphagnum bog - wetland with well developed *Sphagnum* moss layer; substrates are generally acidic.

subalpine - the area above the upper limit of contiguous closed forest and below the upper limit of tree growth; typically comprised of a mosaic of tree patches and meadow communities.

taxon (pl. taxa) - a plant or animal member of the scientific classification system at the species, subspecies, or varietal level (plants) or species and subspecies level (animals).

terrestrial ecosystem element - any element listed under the "Terrestrial Ecosystems" section of this plan.

The Conservancy- The Nature Conservancy, a private nonprofit conservation organization.

transition zone marsh - intertidal lands between approximately mean high water and mean higher high water. The lower tidal limit is also defined by 5 percent cover of typically freshwater or upland species.

varve - glacial lake sediments laid down in bands or layers. Bands of coarser sediments are deposited during high melt periods (spring and summer) while finer particles are held in suspension. The finer particles are deposited in fall and winter. Each pair of bands is thought to represent one year of deposition.

vegetation type - a general term applied (in this document) to any plant community without reference to its successional status; often used interchangeably with plant community.

vernal ponds - small bodies of water that exist seasonally and have distinctive vegetational patterns.

Washington Register of Natural Areas - the official list of private, state and federal natural areas recognized by their owners and the state as containing significant natural heritage resources, and managed by their owners and/or the department for the protection of these natural features.

wetlands - "Lands transitional between terrestrial and aquatic systems where the water table is usually at or near the surface or the land is covered by shallow water. Wetlands must have one or more of the following three attributes: (1) at least periodically, the land supports predominantly hydrophytes; (2) the substrate is predominantly undrained hydric soil; and (3) the substrate is nonsoil and is saturated with water or covered by shallow water at some time during the growing season of each year." (Cowardin *et al.*, 1979).

yellow book - refers to the 1975 publication "Research Natural Area Needs in the Pacific Northwest", by C.T. Dyrness, *et al.* See References.

Appendix A

Plant Species Listed by Common Name with Cross-Reference to Scientific Name

Appendix A

Plant Species Listed by Common Name with Cross-Reference to Scientific Name

The species listed here are used in the element names listed under Terrestrial and Aquatic Ecosystem Priorities (see Lists of Priorities section). The common names used in those sections are paired here with their scientific name.

Common Name	Scientific Name
Alaska cedar	*Chamaecyparis nootkatensis*
Alaska huckleberry	*Vaccinium alaskaense*
alder	*Alnus* sp.
alpine fescue	*Festuca ovina* var. *brevifolia*
alpine saxifrage	*Saxifraga tolmiei*
American false hellebore	*Veratrum viride*
American vetch	*Vicia americana*
antelope bitterbrush	*Purshia tridentata*
bearberry	*Arctostaphylos uva-ursi*
beargrass	*Xerophyllum tenax*
big huckleberry	*Vaccinium membranaceum*
big sagebrush	*Artemisia tridentata*
black alpine sedge	*Carex nigricans*
black cottonwood	*Populus trichocarpa*
black greasewood	*Sarcobatus vermiculatus*
black hawthorn	*Crataegus douglasii*
bluebunch wheatgrass	*Agropyron spicatum*
blue-leaf huckleberry	*Vaccinium deliciosum*
broadleaf lupine	*Lupinus latifolius*
bushy buckwheat	*Eriogonum microthecum*
Cascades azalea	*Rhododendron albiflorum*
cow parsnip	*Heracleum lanatum*
cream mountainheather	*Phyllodoce glanduliflora*
crowberry	*Empetrum nigrum*
Cusick bluegrass	*Poa cusickii*
devilsclub	*Oplopanax horridum*
Douglas' buckwheat	*Eriogonum douglasii*
Douglas fir	*Pseudotsuga menziesii*
dwarf blackberry	*Rubus lasiococcus*
Engelmann spruce	*Picea engelmannii*
evergreen huckleberry	*Vaccinium ovatum*
fireweed	*Epilobium angustifolium*
fools huckleberry	*Menziesia ferruginea*
giant wildrye	*Elymus cinereus*
grand fir	*Abies grandis*
grouse huckleberry	*Vaccinium scoparium*
hornwort	*Ceratophyllum demersum*
houndstongue hawkweed	*Hieracium cynoglossoides*
Idaho fescue	*Festuca idahoensis*
ladyfern	*Athyrium filix-femina*
lodgepole pine	*Pinus contorta*
low sagebrush	*Artemisia arbuscula*
mountain hemlock	*Tsuga mertensiana*
mountain juniper	*Juniperus communis* var. *montana*
needle-and-thread	*Stipa comata*
Nevada bluegrass	*Poa nevadensis*
ninebark	*Physocarpus malvaceus*
noble fir	*Abies procera*
northern buckwheat	*Eriogonum compositum*
oakfern	*Gymnocarpium dryopteris*
oceanspray	*Holodiscus discolor*
onespike oatgrass	*Danthonia unispicata*
Oregongrape	*Berberis nervosa*
Oregon ash	*Fraxinus latifolia*
Oregon boxwood	*Pachistima myrsinites*
Oregon double bladderpod	*Physaria oregana*
Oregon oxalis	*Oxalis oregana*
Pacific madrone	*Arbutus menziesii*
Pacific rhododendron	*Rhododendron macrophyllum*
Pacific silver fir	*Abies amabilis*
Pacific yew	*Taxus brevifolia*
pickleweed	*Salicornia virginica*
ponderosa pine	*Pinus ponderosa*
prairie junegrass	*Koeleria nitida*
quaking aspen	*Populus tremuloides*
queencup beadlily	*Clintonia uniflora*
red alder	*Alnus rubra*
red fescue	*Festuca rubra*
red mountainheather	*Phyllodoce empetriformis*
red threeawn	*Aristida longiseta*
rock buckwheat	*Eriogonum spaerocephalum*
Rocky Mountain juniper	*Juniperous scopulorum*
rosy twistedstalk	*Streptopus roseus* var. *curvipes*
rough fescue	*Festuca scabrella*
salal	*Gaultheria shallon*
sand dropseed	*Sporobolus cryptandrus*
Sandberg's bluegrass	*Poa sandbergii*
Sitka spruce	*Picea sitchensis*
Sitka valerian	*Valeriana sitchensis*
Sitka willow	*Salix sitchensis*
skunkcabbage	*Lysichitum americanum*
slender wintergreen	*Gaultheria ovatifolia*
snowberry	*Symphoricarpos albus*

Common Name	Scientific Name
snow buckwheat	*Eriogonum niveum*
snow willow	*Salix nivalis*
spiny hopsage	*Grayia spinosa*
spreading phlox	*Phlox diffusa* var. *longistylis*
stiff sagebrush	*Artemisia rigida*
strawberry-leaf blackberry	*Rubus pedatus*
subalpine fir	*Abies lasiocarpa*
subalpine larch	*Larix lyallii*
swordfern	*Polystichum munitum*
thimbleberry	*Rubus parviflorus*
thin bentgrass	*Agrostis diegoensis*
threetip sagebrush	*Artemisia tripartita*
thyme buckwheat	*Eriogonum thymoides*
timber danthonia	*Danthonia intermedia*
tufted hairgrass	*Deschampsia caespitosa*
twinflower	*Linnaea borealis* var. *longiflora*
vine maple	*Acer circinatum*
western cassiope	*Cassiope mertensiana*
western coolwort	*Tiarella unifoliata*
western hemlock	*Tsuga heterophylla*
western larch	*Larix occidentalis*
western needlegrass	*Stipa occidentalis*
western redcedar	*Thuja plicata*
western waterhemlock	*Cicuta douglasii*
western white pine	*Pinus monticola*
white alder	*Alnus rhombifolia*
wild sarsaparilla	*Aralia nudicaulis*
willow	*Salix* sp.
winterfat	*Erotia lanata*

Appendix B

Land Management Designations

Appendix B

Land Management Designations: Their Role in Protecting Natural Diversity

The following list of management designations illustrates the role that many state, federal and private agencies have had to date in the protection of Washington's elements of natural diversity. For each management designation, the administering agency and purpose of the designation are included. To summarize the role that each designation plays in protection of elements, three criteria are considered:

1. Designation Security - refers to the relative degree of permanency associated with a particular designation. A "secure" ranking provides an assurance of long-term protection of the element(s) is high because the management designation cannot be readily changed or removed.
2. Protection Adequacy - refers to the ability of the designation to assure the survival of the various elements into the foreseeable future. It should be noted that protection may be adequate for some elements and not others under a particular designation. "Adequate" protection means that all elements will typically be assured survival into the foreseeable future.
3. Selection Criteria - refers to the degree to which the management designation is equivalent to or consistent with the criteria for natural area selection (see page 21).

State Agencies

Biological Study Area (BSA)

Purpose: (1) To protect examples of undisturbed terrestrial and aquatic ecosystems, rare plant and animal species, and unique geologic features; (2) to serve as gene pool reserves; (3) to serve as baselines against which the influences of human activities in similar, disturbed ecosystems may be compared; and (4) to provide outdoor laboratories for scientific research and education.

Administering Agencies: Washington State University, University of Washington

Designation: secure
Protection: inadequate
Selection Criteria: different

Heritage Area

Purpose: To preserve and interpret unique or unusual geological, paleontological, archaeological, historical, scientific, and cultural features of the state which transcend local interest and are of statewide or national significance (WAC 352-16-020(3)).

Administering Agency: Washington State Parks and Recreation Commission

Designation: potentially secure

Protection: potentially adequate, depending on use.
Selection Criteria: variable, but potentially consistent, especially for geological features

Marine Biological Preserve

Purpose: To preserve marine biological materials useful for scientific purposes. The preserve consists of the saltwaters and the beds and shores of the islands constituting San Juan County and of Cypress Island in Skagit County. (RCW 28B.20.320).

Administering Agency: University of Washington, director of the Friday Harbor Laboratories

Designation: secure
Protection: *not* adequate
Selection Criteria: different

Note: *Gathering* of marine biological materials, except when gathered for human food, and except, also, the plant nereocystis (kelp) is prohibited, except upon permission first granted by the director of the Friday Harbor Labs (RCW 28B.20.320 and RCW 28B.20.322). Violators shall be guilty of a misdemeanor (RCW 28B.20.324).

Natural Area

Purpose: To conserve a natural environment in a nearly undeveloped state for passive low density outdoor recreation activities. These areas may be found in all types of environments (WAC 352-16-020(2)).

Administering Agency: Washington State Parks and Recreation Commission

Designation: potentially secure
Protection: potentially adequate, depending on use
Selection Criteria: different

Natural Forest Area

Purpose: Designation of certain forest sites which are natural ecosystems for the preservation and interpretation of natural forest processes pursuant to RCW 43.51.045. These areas may contain old growth forest communities, mature forest communities, or unusual forest communities (WAC 352-16-020(8)).

Administering Agency: Washington State Parks and Recreation Commission

Designation: potentially secure
Protection: potentially adequate, depending on use
Selection Criteria: different

Natural Area Preserve (NAP)

Purpose: (1) To protect examples of undisturbed terrestrial and aquatic ecosystems, rare plant and animal species and unique geologic features; (2) to serve as gene pool reserves; (3) to serve as baselines against which the influences of human activities in similar, disturbed ecosystems may be compared; and (4) to provide outdoor laboratories for scientific research and education (RCW 79.70.010; W.D.N.R. 1983)

Administering Agencies: Washington Department of Natural Resources
Washington State Parks and Recreation Commission
Washington Department of Game

Designation: secure
Protection: adequate
Selection Criteria: equivalent

Note: NAPs administered by State Parks and the Dept. of Game are registered and committed through a cooperative agreement with the Department of Natural Resources pursuant to Chapter 79.70 RCW, Chapter 332-60 WAC, WAC 352-16-020(9) and the Washington Department of Game's Natural Area Preserve administrative land classification.

Registered Natural Area

Purpose: The protection, by voluntary commitment of a landowner, of specific element (as listed in the Natural Heritage Plan) located on the landowner's land (WAC 332-60-050).

Administering Agency: Washington Department of Natural Resources

Designation: not secure
Protection: variable, depending on landowner actions and commitment. Not long-term protection.
Selection Criteria: equivalent

Note: State, federal, municipal, county or private landowners may register lands upon approval of the Natural Heritage Advisory Council. See page 8 for further discussion.

Wildlife Area (WA)

Purpose: To protect and improve lands and water habitats to assure optimal numbers, diversity and distribution of wildlife for the welfare of the people of Washington State.

Administering Agency: Washington Department of Game

Designation: secure
Protection: not adequate
Selection Criteria: different

Federal Agencies

Area of Critical Environmental Concern (ACEC)

Purpose: An area within the public lands where special management attention is required (when such areas are developed or used, or where no development is required) to protect and to prevent irreparable damage to important historic, cultural or scenic values, fish and wildlife resources or other natural systems or processes, or to protect life and safety from natural hazards.

Administering Agency: USDI Bureau of Land Management

Designation: variable, potentially secure
Protection: variable, potentially secure
Selection Criteria: much broader, may be equivalent in specific cases

Note: Elements contained within ACECs are not considered adequately protected in this Plan, but may be considered in the future when site-specific management plans are sufficiently restrictive to warrant it. Each site must be evaluated separately under this designation.

National Estuarine Sanctuary (NES)

Purpose: To establish a network of sanctuaries that represent the diversity of estuarine ecosystems within the United States for education and scientific research.

Administering Agency: Washington Department of Ecology
U.S. National Oceanographic and Atmospheric Administration

Designation: secure
Protection: variable, potentially adequate
Selection Criteria: different

National Natural Landmarks

Purpose: To encourage the preservation of areas that illustrate the ecological and geological character of the United States, to enhance the educational and scientific values of the areas thus preserved, to strengthen cultural appreciation of natural history, and to foster a wider interest and concern in the conservation of the Natural Landmarks Program's natural heritage.

Administering Agency: USDI National Park Service

Designation: not secure
Protection: inadequate
Selection Criteria: consistent, but more general

Note: Designation of a National Landmark carries with it no restrictions on management or use of the site that are binding on the landowner. This program is roughly equivalent to the state Registry Program (see page 5).

National Parks and Monuments

Purpose: National Parks are managed to preserve the outstanding natural, historical and recreational resources of the United States.

Administering Agency: USDI National Park Service

Designation: secure
Protection: not adequate in all cases
Selection Criteria: similar, but more inclusive

Note: Elements within National Parks are considered adequately protected if they are included within a management plan compatible with natural area values. Research Natural Areas are one means employed within National Parks that assure adequate protection of natural heritage elements.

National Wildlife Refuge (NWR)

Purpose: To provide, preserve, restore, and manage a national network of lands and waters sufficient in size, diversity and location to meet society's needs for areas where the widest possible spectrum of benefits associated with wildlife and wildlands is enhanced and made available.

Administering Agency: USDI Fish and Wildlife Service

Designation: secure
Protection: not adequate
Selection Criteria: different

Note: Establishment of Research Natural Areas with specific management plans within Refuges is considered adequate protection for elements in this plan.

Outstanding Natural Areas (ONA)

Purpose: An area of unusual natural characteristics where management of recreation activities is necessary to preserve those characteristics.

Administering Agency: USDI Bureau of Land Management

Designation: potentially secure
Protection: potentially adequate
Selection Criteria: similar, but not equivalent

Research Natural Area (RNA)

Purpose: (1) To preserve examples of all significant natural ecosystems for comparison with those influenced by man; (2) to provide educational and research areas for ecological and environmental studies; and (3) to preserve gene pools of typical and endangered plants and animals.

Administering Agencies: USDA Forest Service, USDI National Park Service, USDI Bureau of Land Management, USDI Fish and Wildlife Service, U.S. Department of Energy

Designation: secure
Protection: adequate
Selection Criteria: equivalent (in most cases)

Special Interest Area

Purpose: To protect, and where appropriate, foster public use and enjoyment of areas with scenic, historical, geological, botanical, zoological, paleontological or other special characteristics.

To classify areas that possess unusual recreational and scientific values to that these special values are available for public study, use or enjoyment.

Administering Agency: USDA Forest Service

Designation: variable, potentially secure
Protection: potentially adequate
Selection Criteria: similar, but not equivalent

Note: These areas are managed for ". . . recreational use substantially in their natural condition," which may result in variable protection of natural heritage elements. Also, salvage logging may be allowed in certain instances.

Wild and Scenic River

Purpose: Primary emphasis is given to protecting the river's aesthetic, scenic, historic, archaeologic and scientific features.

Administering Agencies: several agencies, especially the U.S. Department of Interior

Designation: secure
Protection: inadequate
Selection Criteria: different

Note: Management plans result in varying degrees of protection of elements, based upon the special attributes of the area. Salvage logging and grazing are not necessarily excluded from this designation.

Wilderness Area

Purpose: "Wilderness Areas shall be devoted to the public purposes of recreational, scenic, scientific, educational, conservation, and historical use."

Administering Agencies: USDA Forest Service, USDI Bureau of Land Management

Designation: secure
Protection: variable
Selection Criteria: not equivalent

Note: Certain activities which are incompatible with natural area management, such as heavy recreation use, domestic livestock grazing, mining, and development of water resources are allowed in Wilderness Areas. For this reason, elements contained within Wilderness Areas are not considered adequately protected in this plan. They may be considered adequately protected in the future if site specific management plans for their protection are developed.

Private Organizations

Natural Area Preserve (NAP)

Purpose: (1) To protect examples of undisturbed terrestrial and aquatic ecosystems, rare plant and animal species, and unique geologic features; (2) to serve as gene pool reserves; (3) to serve as baselines against which the influences of human activities in similar, disturbed ecosystems may be compared; and (4) to provide outdoor laboratories for scientific research and education.

Administering Agency: The Nature Conservancy

Designation: secure
Protection: adequate
Selection Criteria: equivalent

Note: Purpose and management are equivalent to the Department of Natural Resources Natural Area Preserves.

International Organizations

Biosphere Reserve

Purpose: To conserve for present and future use the diversity and integrity of biotic communities of plants and animals within natural ecosystems, and to safeguard the genetic diversity of species on which their continuing evolution depends.

Administering Agency: UNESCO, United Nations

Designation: secure
Protection: potentially adequate
Selection Criteria: consistent, but more general

Appendix C

The Laws and Regulations

The Natural Area Preserves Act (79.70 RCW)

General Provisions: Exchange of Lands-Purposes (RCW 79.08.250)

Rules for The Washington Register of Natural Area Preserves (332-60 WAC)

Chapter 79.70
NATURAL AREA PRESERVES

Sections

79.70.010 Purpose. The purpose of this chapter is to establish a state system of natural area preserves and a means whereby the preservation of these aquatic and land areas can be accomplished.

All areas within the state, except those which are expressly dedicated by law for preservation and protection in their natural condition, are subject to alteration by human activity. Natural lands, together with the plants and animals living thereon in natural ecological systems, are valuable for the purposes of scientific research, teaching, as habitats of rare and vanishing species, as places of natural historic and natural interest and scenic beauty, and as living museums of the original heritage of the state.

It is, therefore, the public policy of the state of Washington 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. [1972 ex.s. c 119 § 1.]

79.70.020 Definitions. For the purposes of this chapter:

(1) "Department" shall mean the department of natural resources.

(2) "Natural areas" and "natural area preserves" shall mean such public or private areas of land or water which have retained their natural character, although not necessarily completely natural and undisturbed, or which are important in preserving rare or vanishing flora, fauna, geological, natural historical or similar features of scientific or educational value and which are acquired or voluntarily registered or dedicated by the owner under this chapter.

(3) "Public lands" and "state lands" shall have the meaning set out in RCW 79.01.004.

(4) "Council" means the natural heritage advisory council as established in RCW 79.70.070.

(5) "Commissioner" means the commissioner of public lands.

(6) "Instrument of dedication" means any written document intended to convey an interest in real property pursuant to chapter 64.04 RCW.

(7) "Natural heritage resources" means the plant community types, aquatic types, unique geologic types, and special plant and animal species and their critical habitat as defined in the natural heritage plan established under RCW 79.70.030.

(8) "Plan" means the natural heritage plan as established under RCW 79.70.030.

(9) "Program" means the natural heritage program as established under RCW 79.70.030.

(10) "Register" means the Washington register of natural area preserves as established under RCW 79.70-.030. [1981 c 189 § 1; 1972 ex.s. c 119 § 2.]

79.70.030 Powers of department. In order to set aside, preserve and protect natural areas within the state, the department is authorized, in addition to any other powers, to:

(1) Establish by rule and regulation the criteria for selection, acquisition, management, protection and use of such natural areas;

(2) Cooperate or contract with any federal, state, or local governmental agency, private organizations or individuals in carrying out the purpose of this chapter;

(3) Consistent with the plan, acquire by gift, devise, purchase, grant, dedication, or means other than eminent domain, the fee or any lesser right or interest in real property which shall be held and managed as a natural area;

(4) Acquire by gift, devise, grant or donation any personal property to be used in the acquisition and/or management of natural areas;

(5) Inventory existing public, state and private lands in cooperation with the council to assess possible natural areas to be preserved within the state;

(6) Maintain a natural heritage program to provide assistance in the selection and nomination of areas containing natural heritage resources for registration or dedication. The program shall maintain a classification of natural heritage resources, an inventory of their locations, and a data bank for such information. The department of natural resources shall cooperate with the department of game in the selection and nomination of areas from the data bank that relate to critical wildlife habitats. Information from the data bank shall be made available to public and private agencies and individuals for environmental assessment and proprietary land management purposes. Usage of the classification, inventory or data bank of natural heritage resources for any purpose inconsistent with the natural heritage program is not authorized;

(7) Prepare a natural heritage plan which shall govern the natural heritage program in the conduct of activities to create and manage a system of natural areas which may include areas designated under the research natural area program on federal lands in the state;

(a) The plan shall list the natural heritage resources to be considered for registration and shall provide criteria for the selection and approval of natural areas under this chapter;

(b) The department shall provide opportunities for input, comment, and review to the public, other public agencies, and private groups with special interests in natural heritage resources during preparation of the plan;

(c) Upon approval by the council and adoption by the department, the plan shall be updated and submitted biennially to the appropriate committees of the legislature for their information and review. The plan shall take effect ninety days after the adjournment of the legislative session in which it is submitted unless the reviewing committees suggest changes or reject the plan; and

(8) Maintain a state register of natural areas containing significant natural heritage resources to be called the Washington register of natural area preserves. Selection of natural areas for registration shall be in accordance with criteria listed in the natural heritage plan and accomplished through voluntary agreement between the owner of the natural area and the department. No privately owned lands may be proposed to the council for registration without prior notice to the owner or registered without voluntary consent of the owner. No state or local governmental agency may require such consent as a condition of any permit or approval of or settlement of any civil or criminal proceeding or to penalize any landowner in any way for failure to give, or for withdrawal of, such consent.

(a) The department shall adopt rules and regulations as authorized by RCW 43.30.310 and 79.70.030(1) and chapter 34.04 RCW relating to voluntary natural area registration.

(b) After approval by the council, the department may place sites onto the register or remove sites from the register.

(c) The responsibility for management of registered natural area preserves shall be with the preserve owner. A voluntary management agreement may be developed between the department and the owners of the sites on the register.

(d) Any public agency may register lands under provisions of this chapter. [1981 c 189 § 3; 1972 ex.s. c 119 § 3.]

79.70.040 Powers as to transactions involving public lands deemed natural areas——Alienation of lands designated natural area preserves. The department is further authorized to purchase, lease, set aside or exchange any public land or state-owned trust lands which are deemed to be natural areas: *Provided*, That the appropriate state land trust receives the fair market value for any interests that are disposed of: *Provided, further*, That such transactions are approved by the board of natural resources.

An area consisting of public land or state-owned trust lands designated as a natural area preserve shall be held in trust and shall not be alienated except to another public use upon a finding by the department of natural resources of imperative and unavoidable public necessity. [1972 ex.s. c 119 § 4.]

79.70.060 Legislative findings——Natural heritage resources. The legislature finds:

(1) That it is necessary to establish a process and means for public and private sector cooperation in the development of a system of natural areas. Private and public landowners should be encouraged to participate in a program of natural area establishment which will benefit all citizens of the state;

(2) That there is a need for a systematic and accessible means for providing information concerning the locations of the state's natural heritage resources; and

(3) That the natural heritage advisory council should utilize a specific framework for natural heritage resource conservation decision making through a classification, inventory, priority establishment, acquisition, and management process known as the natural heritage program. Future natural areas should avoid unnecessary duplication of already protected natural heritage resources including those which may already be protected in existing publicly owned or privately dedicated lands such as nature preserves, natural areas, parks, or wilderness. [1981 c 189 § 2.]

79.70.070 Natural heritage advisory council. (1) The natural heritage advisory council is hereby established. The council shall consist of fifteen members, nine of whom shall be chosen as follows and who shall elect from the council's membership a chairperson:

(a) Five individuals, appointed by the commissioner, who shall be recognized experts in the ecology of natural areas and represent the public, academic, and private sectors. Desirable fields of expertise are biological and geological sciences; and

(b) Four individuals, appointed by the commissioner, who shall be selected from the various regions of the state. At least one member shall be or represent a private forest landowner and at least one member shall be or represent a private agricultural landowner.

(2) Members appointed under subsection (1) of this section shall serve for terms of four years.

(3) In addition to the members appointed by the commissioner, the director of the department of game, the director of the department of ecology, the director of the department of fisheries, the supervisor of the department of natural resources, the director of the state parks and recreation commission, and the administrator of the interagency committee for outdoor recreation, or an authorized representative of each agency officer, shall serve as ex officio, nonvoting members of the council.

(4) Any vacancy on the council shall be filled by appointment for the unexpired term by the commissioner.

(5) In order to provide for staggered terms, of the initial members of the council:

(a) Three shall serve for a term of two years;

(b) Three shall serve for a term of three years; and

(c) Three shall serve for a term of four years.

(6) Members of the natural preserves advisory committee serving on July 26, 1981, shall serve as members of the council until the commissioner appoints a successor to each. The successor appointment shall be specifically designated to replace a member of the natural preserves advisory committee until all members of that committee have been replaced. A member of the natural preserves advisory committee is eligible for appointment to the council if otherwise qualified.

(7) Members of the council shall serve without compensation. Members shall be reimbursed for travel expenses as provided in RCW 43.03.050 and 43.03.060 as now or hereafter amended. [1981 c 189 § 4.]

79.70.080 Council duties. (1) The council shall:

(a) Meet at least annually and more frequently at the request of the chairperson;

(b) Recommend policy for the natural heritage program through the review and approval of the natural heritage plan;

(c) Advise the department, the department of game, the state parks and recreation commission, the department of fisheries, and other state agencies managing state-owned land or natural resources regarding areas under their respective jurisdictions which are appropriate for natural area registration or dedication;

(d) Advise the department of rules and regulations that the council considers necessary in carrying out this chapter; and

(e) Review and approve area nominations by the department or other agencies for registration and review and comment on legal documents for the voluntary dedication of such areas.

(2) From time to time, the council shall identify areas from the natural heritage data bank which qualify for registration. Priority shall be based on the natural heritage plan and shall generally be given to those resources which are rarest, most threatened, or under-represented in the heritage conservation system on a state-wide basis. After qualifying areas have been identified, the department shall advise the owners of such areas of the opportunities for acquisition or voluntary registration or dedication. [1981 c 189 § 5.]

79.70.090 Dedication of property as natural area. (1) The owner of a registered natural area, whether a private individual or an organization, may voluntarily agree to dedicate the area as a natural area by executing with the state an instrument of dedication in a form approved by the council. The instrument of dedication shall be effective upon its recording in the real property records of the appropriate county or counties in which the natural area is located. The county assessor in computing assessed valuation shall take into consideration any reductions in property values and/or highest and best use which result from natural area dedication.

(2) A public agency owning or managing a registered natural area preserve may dedicate lands under the provisions of this chapter.

(3) The department shall adopt rules and regulations as authorized by RCW 43.30.310 and 79.70.030(1) relating to voluntary natural area dedication and defining:

(a) The types of real property interests that may be transferred;

(b) Real property transfer methods and the types of consideration of payment possible;

(c) Additional dedication provisions, such as natural area management, custody, use, and rights and privileges retained by the owner; and

(d) Procedures for terminating dedication arrangements. [1981 c 189 § 6.]

79.70.900 Construction——1972 ex.s. c 119. Nothing in this chapter is intended to supersede or otherwise affect any existing legislation. [1972 ex.s. c 119 § 6.]

General Provisions: Exchange of Lands—Purposes. (RCW 79.08.250)

79.08.250 Exchange of lands——Purposes. The department of natural resources may exchange surplus real property previously acquired by the department as administrative sites. The property may be exchanged for any public or private real property of equal value, to preserve archeological sites on trust lands, to acquire land to be held in natural preserves, to maintain habitats for endangered species, or to acquire or enhance sites to be dedicated for recreational purposes. [1979 c 24 § 1.]

Rules for the Washington Register of Natural Area Preserves

332-60 Washington Administrative Code

WAC 332-60-010 AUTHORITY. This chapter is promulgated pursuant to the authority granted in RCW 79.70.030 and RCW 79.70.090

WAC 332-60-020 PURPOSE. The purpose of this chapter is to establish rules for implementing a statewide system of registration of natural areas and creation of natural area preserves.

WAC 332-60-030 INVALIDITY OF PART OF CHAPTER NOT AFFECT REMAINDER. If any provision of this chapter, or its application to any person or circumstance is held invalid, the remainder of the chapter, or the application of the provision to other persons or circumstances is not affected.

WAC 332-60-040 COOPERATION WITH GOVERNMENT AGENCIES OR PRIVATE ENTITIES. The Department may cooperate or contract with any federal, state or local government agency, private organization, or individual, in carrying out the purpose of this chapter.

WAC 332-60-050 DEFINITIONS. (1) "Department" means the Department of Natural Resources.

(2) "Council" means the Natural Heritage Advisory Council as established in RCW 79.70.070.

(3) "Plan" means the State of Washington Natural Heritage Plan as established under RCW 79.70.030.

(4) "Natural heritage resource" means the plant community types, aquatic types, unique geologic types, and special plant and animal species and their critical habitat as defined in the plan.

(5) "Natural area" means a unit of land or water or both which contains a natural heritage resource, and which has been registered by the landowner and may be considered for dedication or commitment as a natural area preserve.

(6) "Natural area preserve" means a natural area which has been:

(a) dedicated under the provisions of RCW 79.70.090; or

(b) formally committed to protection by a cooperative agreement between a government landholder and the Department.

(7) "Registration" means a voluntary commitment by the landowner for protection of a specific natural heritage resource located on the landowner's land. No real property interest is transferred. Registration is memorialized by a certificate of registration issued by the Department.

(8) "Dedication" means the formal recognition and protection of a natural area for natural heritage conservation purposes accomplished by the voluntary transfer by a landowner to the Department of an interest in real property less than fee simple.

(9) "Register" means the Washington Register of Natural Area Preserves which lists the sites which have been formally registered, dedicated or formally protected by cooperative agreement, for natural area purposes.

(10) "Instrument of dedication" means a written document intended to convey an interest in real property, pursuant to chapter 64.04.RCW.

(11) "Landowner" means any individual, partnership, private, public, non-profit, or municipal corporation, city, county, state agency, agency of the United States or any other governmental agency or entity, which exercises control over a natural heritage resource whether such control is based on legal or equitable title, or which manages or holds in trust land in Washington State.

(12) "Government landholder" means any city, municipal corporation, county, state agency, agency of the United States, or any other government agency which manages, owns, holds in trust or otherwise has jurisdiction over land in Washington State.

Natural Areas - Registration

WAC 332-60-060 SITE CRITERIA FOR REGISTRATION. The criteria for identification for registration are set forth in the Plan.

WAC 332-60-070 PROCEDURES FOR REGISTRATION OF NATURAL AREAS. (1) After a site has been identified, the Department or its designee shall notify the landowner, in writing, of the site's natural heritage resource and the site's eligibility for the Register.

(2) The Department or its designee must obtain from the landowner written permission to proceed with the site evaluation process.

(3) Once permission is granted by the landowner to proceed with the site evaluation process, the Department nominates the site to the Council.

(4) The Council shall review each site nomination and approve or reject registration of the site.

(5) The Department shall notify the landowner of the Council's determination and, for an approved site, offer the landowner the opportunity to voluntarily place the site on the Register.

(6) If the landowner agrees to register the site, the Department shall place the site on the Register and provide the landowner with a certificate of registration.

(7) The Department may offer voluntary management guidelines and may enter into a management agreement with the landowner of a registered natural area.

WAC 332-60-080 REMOVAL OF A NATURAL AREA FROM THE REGISTER. (1) The Department shall remove natural areas from the Register at any time:

(i) Upon written request by the landowner to the Department; or

(ii) If the Council determines that the site is no longer managed for the natural heritage resources present, or the site no longer meets the original criteria for selection.

(2) Landowners are to be notified in writing of removal of a natural area from the Register.

Natural Area Preserve - Dedication

WAC 332-60-090 NATURAL AREA PRESERVE BY INSTRUMENT OF DEDICATION. Upon such terms as the department and landowner agree, a registered natural area may be dedicated as a natural area preserve through the execution of an instrument of dedication in a form approved by the Council.

WAC 332-060-110 INSTRUMENT OF DEDICATION - FORM. The instrument of dedication shall be in accordance with the requirements of RCW 64.04.130. The instrument of dedication shall be substantially in the form required by law for the conveyance of any land or other real property.

WAC 332-60-110 INSTRUMENT OF DEDICATION - INTEREST CONVEYED. The instrument of dedication shall transfer a real property interest for the purpose of providing protection to a natural heritage resource. Interests which may be transferred include, but are not limited to: water, timber, grazing, development rights, rights to hunt, fish, drain or fill, access easements, or rights of way.

WAC 332-60-120 EFFECTIVE DATE OF DEDICATION. Dedication shall be effective upon the recording of the instrument of dedication in the real property records of the county or counties in which the natural area is located.

WAC 332-60-130 TERMINATION OF DEDICATION. A dedication shall not be terminable except as provided by the instrument of dedication.

Natural Area Preserve - Cooperative Agreement

WAC 332-60-140 NATURAL AREA PRESERVE BY COOPERATIVE AGREEMENT. A government landholder of a registered natural area may commit the area as a natural area preserve by executing with the Department a cooperative agreement in a form approved by the Council and upon such terms as the Department and government landholder agree.

WAC 332-60-150 COOPERATIVE AGREEMENT. The cooperative agreement must include a description of the legal or administrative commitment by the government landholder to manage the land for the protection of a natural heritage resource.

WAC 332-60-160 TERMINATION OF NATURAL AREA PRESERVE BY COOPERATIVE AGREEMENT. The site may be removed from a natural area preserve status as provided by the cooperative agreement.