

PART III

The Washington Natural Heritage Program

NATURAL HERITAGE NETWORK: NATURESERVE

The Washington Natural Heritage Program is part of a network of 80 natural heritage programs located in all 50 states, all Canadian provinces, as well as in several Latin American and Caribbean countries. This network is known as NatureServe (see map, next page). Information can be readily shared across the network, since similar methodologies and data management standards are used by all network members.

NATURAL HERITAGE METHODOLOGY

The Natural Heritage Program's approach to conservation addresses three questions:

- ▶ What are the components of biodiversity (classification)?
- ▶ Where do the various components occur (inventory)?
- ▶ What needs to be done to protect the individual components (conservation planning)?

These questions are addressed in an ongoing and iterative manner. Each step—classification, inventory, and conservation planning—is repeated as more information is gathered and as conservation actions take place.

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THE NATURAL HERITAGE NETWORK: NATURESERVE

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NATURESERVE NETWORK MEMBERSHIP

8 CANADIAN CONSERVATION DATA CENTERS

53 US NATURAL HERITAGE PROGRAMS

18 LATIN AMERICAN CDCS

CLASSIFICATION

IDENTIFYING AND ASSIGNING CONSERVATION PRIORITIES TO THE COMPONENTS OF BIODIVERSITY

Natural Heritage Programs make use of what has been called a “coarse filter / fine filter” approach to account for the different components of biodiversity. The coarse filter consists of all of the ecosystems (both terrestrial and aquatic) occurring within the state. The fine filter consists of rare species and rare ecosystems that may not be adequately protected by using only the coarse filter.

The basic assumption of this approach is that by ensuring the conservation of ecosystem types, the conservation of the common species that make up those types can be achieved in an efficient manner. Species and ecosystems that are rare or have very limited distributions warrant their own specific conservation efforts.

Establishing clear priorities for species and ecosystems is critical to successful conservation.

The success of this approach is dependent upon several factors, including having a well-developed classification of ecosystems, gaining protection for not only all ecosystem types, but for the full range of variability within each ecosystem type, and ensuring that the list of fine filter features includes all species and ecosystems that might not be ‘captured’ by applying the coarse filter. And of course, conservation efforts, if they are to be successful, must account for the various ecological processes that influence species and ecosystems.

Establishing clear priorities for species and ecosystems is critical to successful conservation. The Natural Heritage Program currently uses two systems to prioritize species and ecosystems: one for overall conservation action, and one specifically for including species and ecosystems within the statewide system of natural areas. The first system, described below, is shared by all members of the NatureServe network. It is used as the starting point for the second system, which is described in Appendix 1. Both systems make use of the objective methodology of the Natural Heritage Program, helping to achieve both effectiveness and efficiency in conservation efforts.



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By targeting ecosystem types for conservation, the common species that make up those ecosystem types are protected. Yellow bells (pictured above) occur in a number of different ecosystem types. They are presumably protected by conservation of the ecosystems of which they are a component.

Methodologies shared by Natural Heritage Programs:

- ▶ Species and ecosystems approach (coarse filter / fine filter)
- ▶ Global and state ranking system applied to species and ecosystems
- ▶ Ecosystems classification
 - ▶ National Vegetation Classification
 - ▶ Ecological Systems
- ▶ Data management standards
 - ▶ Population delineation
 - ▶ Mapping

The global and state ranking system facilitates a quick assessment of a species' rarity.



Global and state ranks for all species of conservation concern are available online. Visit <http://www.dnr.wa.gov> and search for the Natural Heritage Program web page.

HOW ARE SPECIES PRIORITIES DETERMINED?

The primary tool used to develop priorities for individual species is the global and state ranking system used by NatureServe and its member Natural Heritage programs. The ranking system facilitates a quick assessment of a species' rarity. Each species is assigned both a global (G) and state (S) rank on a scale of 1 to 5. The global ranks are assigned through a collaborative process involving both NatureServe and individual Natural Heritage Program scientists. State ranks are assigned by scientists within the Natural Heritage Program, who collaborate with other scientists and knowledgeable individuals.

A rank of G1 indicates critical imperilment on a global basis; the species is at great risk of extinction. S1 indicates critical imperilment within a particular state (in our case, Washington), regardless of its status elsewhere. A number of factors, such as the total population size, the number of occurrences, threats, etc., contribute to the assignment of global and state ranks. The information supporting these ranks is developed and maintained by the Natural Heritage Program and NatureServe.

The table below shows the matrix of possible combinations of global and state ranks. Note that some combinations are not possible: a feature cannot be more common in the state than it is for the entire planet. Various examples of species and their ranks are presented on the next page.

GLOBAL AND STATE RANKING MATRIX					
	S1	S2	S3	S4	S5
G1	G1S1				
G2	G2S1	G2S2			
G3	G3S1	G3S2	G3S3		
G4	G4S1	G4S2	G4S3	G4S4	
G5	G5S1	G5S2	G5S3	G5S4	G5S5

GLOBAL AND STATE RANK DEFINITIONS

- 1 critically imperiled
- 2 imperiled
- 3 vulnerable to extirpation or extinction
- 4 apparently secure
- 5 demonstrably widespread, abundant, and secure

GLOBAL AND STATE RANKING FACTORS FOR SPECIES

- ▶ Total number and condition of occurrences
- ▶ Total population size
- ▶ Range and extent of area occupied
- ▶ Short- and long-term trends in the factors above
- ▶ Threats
- ▶ Vulnerability

TOM KAYE



G1S1 The Golden Paintbrush

is considered critically imperiled in Washington (S1) as well as globally (G1). It has disappeared from much of its historic range, including southwestern Washington and the Willamette Valley in Oregon. There are now only about

a dozen known locations, all between Thurston County, Washington and the southern end of Vancouver Island, British Columbia. Most of the known populations are small and have direct threats, including development pressure, tree and shrub invasion, and invasive species challenges.

GLOBAL AND STATE RANKING MATRIX					
	S1	S2	S3	S4	S5
G1	G1S1				
G2	G2S1	G2S2			
G3	G3S1	G3S2	G3S3		
G4	G4S1	G4S2	G4S3	G4S4	
G5	G5S1	G5S2	G5S5	G5S2	G5S5

KELLY MCALLISTER



G3S3 The Olympic Torrent Salamander

is endemic to the Olympic Peninsula. Despite the relatively small global range, this species can be locally common to abundant. Many

other species that are ranked G3S3 exhibit a similar distribution and abundance pattern.

GLOBAL AND STATE RANKING MATRIX					
	S1	S2	S3	S4	S5
G1	G1S1				
G2	G2S1	G2S2			
G3	G3S1	G3S2	G3S3		
G4	G4S1	G4S2	G4S3	G4S4	
G5	G5S1	G5S2	G5S5	G5S2	G5S5

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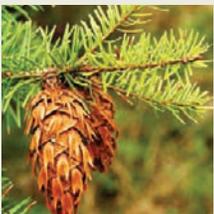
G5S1 Threeleaf goldthread

(a member of the buttercup family) and Woodland Caribou are examples of species that are secure globally, but are rare within Washington. Both species reach the southern limits of their

ranges in Washington, being more common to the north. Neither species is at risk from a global perspective, but both are of conservation concern here in Washington.

GLOBAL AND STATE RANKING MATRIX					
	S1	S2	S3	S4	S5
G1	G1S1				
G2	G2S1	G2S2			
G3	G3S1	G3S2	G3S3		
G4	G4S1	G4S2	G4S3	G4S4	
G5	G5S1	G5S2	G5S5	G5S2	G5S5

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G5S5 Douglas-fir and Black Bear

are examples of species that are “demonstrably widespread, abundant and secure,” both within Washington and globally. For conservation assessment and

planning purposes an assumption is made that these species are widespread enough that they will be adequately protected by providing ecosystem-level protection.

GLOBAL AND STATE RANKING MATRIX					
	S1	S2	S3	S4	S5
G1	G1S1				
G2	G2S1	G2S2			
G3	G3S1	G3S2	G3S3		
G4	G4S1	G4S2	G4S3	G4S4	
G5	G5S1	G5S2	G5S5	G5S2	G5S5

GLOBAL AND STATE RANK DEFINITIONS

- 1 critically imperiled
- 2 imperiled
- 3 vulnerable to extirpation or extinction
- 4 apparently secure
- 5 demonstrably widespread, abundant, and secure

GLOBAL AND STATE RANKING FACTORS FOR ECOSYSTEMS

- ▶ Number and condition of occurrences
- ▶ Total acreage occupied by the ecosystem type
Secondary Factors
- ▶ Geographic range
- ▶ Long-term trend across ecosystem type's range
- ▶ Short-term trend
- ▶ Degree of environmental specificity
- ▶ Threats

HOW ARE ECOSYSTEMS PRIORITIES DETERMINED?

In order to assign conservation priorities to ecosystems, we need to have a consistent list of all ecosystem types in the state. However, the term 'ecosystem' does not have a fixed scale in its general usage. It has been used to characterize areas that vary in size from an individual stand of trees to large landscapes. In part because of this, and in order to better understand the diversity of ecosystems, ecologists have developed various ecosystem classification systems. Classification results in a reasonably definitive list of ecosystem types, and a common language to refer to those types, which then allows the setting of priorities necessary for conservation planning.

The Natural Heritage Program uses several classification systems. Fortunately, the different classification systems largely correspond to different physical environments.

Marine and estuarine classification Developed by Dr. Megan Dethier in 1990,¹ this classification defines ecosystems based on depth, substrate, wave energy and the plant and animal species associated with the combination of habitat variables.

Wetland natural community classification Developed by Linda Kunze in the 1980s,² this classification defines ecosystems based on geomorphic province, hydrology, water chemistry, soils and vegetation. Plant associations are components of the wetland community types. Individual plant associations can appear in more than one wetland type.

National Vegetation Classification Developed by NatureServe and its partners,³ including Washington Natural Heritage Program ecologists, this classification is a hierarchical system with physiognomic classes in the higher (coarser) levels and species composition-based alliances and plant associations at the lowest (finest) levels.

Ecosystem classification results in a definitive list of ecosystem types, which allows the setting of priorities for conservation efforts.

As noted above, the ranking factors for ecosystems are similar, but somewhat different than those for species. Global and state ranks have been assigned to all terrestrial ecosystems and some of the wetland and aquatic ecosystems. Marine ecosystems have not as yet been assigned global or state ranks. The table on the next page provides examples of the global and state ranking for several plant associations.

DNR PHOTO



G1S1 Paper birch – red alder / swordfern (*Betula papyrifera* – *Alnus rubra* / *Polystichum munitum*) plant association

Considered critically imperiled in Washington (S1) as well as globally (G1), this community is limited to the Fraser Lowland and adjacent hills in

Whatcom County, possibly occurring in Skagit Co. and adjacent B.C. The few known stands are small and set in an agricultural landscape. This is an early to mid-seral community type.

GLOBAL AND STATE RANKING MATRIX					
	S1	S2	S3	S4	S5
G1	G1S1				
G2	G2S1	G2S2			
G3	G3S1	G3S2	G3S3		
G4	G4S1	G4S2	G4S3	G4S4	
G5	G5S1	G5S2	G5S5	G5S2	G5S5

DON KNOKE



G3S3 Thyme buckwheat / Sandberg's bluegrass (*Eriogonum thymoides* / *Poa secunda*) plant association

This regionally endemic plant association is known from southeastern Washington and west-central Idaho (within the Columbia Plateau

ecoregion). It forms a mosaic with other shallow soil shrub-steppe plant associations. Within appropriate habitat within its range, this association is relatively common, although it typically occurs in relatively small patches. The association is vulnerable to weed invasions and other changes in species composition brought about by intensive livestock grazing.

GLOBAL AND STATE RANKING MATRIX					
	S1	S2	S3	S4	S5
G1	G1S1				
G2	G2S1	G2S2			
G3	G3S1	G3S2	G3S3		
G4	G4S1	G4S2	G4S3	G4S4	
G5	G5S1	G5S2	G5S5	G5S2	G5S5

DNR PHOTO



G4S1 Ponderosa pine / bluebunch wheatgrass association (*Pinus ponderosa* / *Pseudoroegneria spicata*)

This woodland type is found in the northern Rocky Mountains, the Intermountain West, and extreme northwestern Great Plains of the U.S. and

Canada, extending from the Black Hills of South Dakota and Wyoming west to Oregon, Washington, and British Columbia. It is not of great conservation concern globally, but it is of concern in Washington due to the effects of fire suppression, invasive species, timber harvest and livestock grazing.

GLOBAL AND STATE RANKING MATRIX					
	S1	S2	S3	S4	S5
G1	G1S1				
G2	G2S1	G2S2			
G3	G3S1	G3S2	G3S3		
G4	G4S1	G4S2	G4S3	G4S4	
G5	G5S1	G5S2	G5S5	G5S2	G5S5

DNR PHOTO



G5S5 Douglas-fir / Pinegrass association (*Pseudotsuga menziesii* / *Calamagrostis rubescens*)

This lower to mid montane woodland association occurs in the central and northern Rocky Mountains from western Montana to eastern

Washington and British Columbia, and south to western Wyoming, Idaho and eastern Oregon. In Washington, it occurs in the Blue Mountains, Okanogan, Canadian Rockies, Columbia Plateau and East Cascades ecoregions. As a community type, it is "widespread and demonstrably secure."

GLOBAL AND STATE RANKING MATRIX					
	S1	S2	S3	S4	S5
G1	G1S1				
G2	G2S1	G2S2			
G3	G3S1	G3S2	G3S3		
G4	G4S1	G4S2	G4S3	G4S4	
G5	G5S1	G5S2	G5S5	G5S2	G5S5

Species and Ecosystem-Specific Information

The Natural Heritage Program also compiles information about the biology/ecology of individual priority species and ecosystems. NHP staff have gathered available information regarding the biology and ecology for each priority species and ecosystem. Some of this information is gleaned from the site-specific information, but much of it comes from published and unpublished literature.

NHP scientists also prepare reports on individual species, or groups of species, and ecosystems. For example, the NHP botanists have prepared status reports for many of the state's highest priority plant species. These reports include information from the published literature as well as observations based on detailed field work regarding reproductive biology, response to or role in natural disturbances, existing or potential threats, and other information that applies range-wide to the species. Similar reports have been prepared for some of the state's rare animals.

NHP ecologists have authored several reports on the state's ecosystems, primarily new ecosystems classifications efforts.

Information gathered and compiled by the NHP is also shared with NatureServe and its member NHPs. NatureServe's website (<http://www.natureserve.org/explorer/>) is an excellent source for species-specific and ecosystem-specific information.

WHERE DOES THE INFORMATION COME FROM?

As noted above, the Natural Heritage Program manages information on more than 7,100 occurrences of priority species and ecosystems. This information comes from a wide variety of sources. Federal and state agency biologists submit information on priority species. Members of the Washington Native Plant Society and other conservation organizations provide sighting information. Consultants submit data to the program. The Rare Care program at the UW also provides updated information on species occurring on public lands. And of course, NHP scientists conduct field inventories on high priority species and ecosystems. NHP staff also glean both site-specific and species and ecosystem-specific information from published literature.



RARE CARE PHOTO



NHP scientists prepare reports documenting the findings of their inventory, monitoring and research projects.

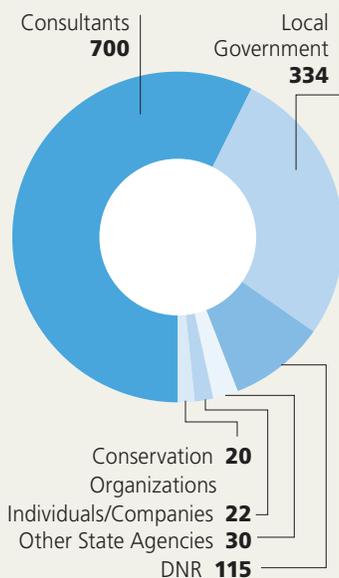
INFORMATION CONTRIBUTORS

- ▮ Agency biologists
 - ▮ **Federal**
 - ▮ US Forest Service
 - ▮ Bureau of Land Management
 - ▮ US Fish & Wildlife Service
 - ▮ National Park Service
 - ▮ **State**
 - ▮ Fish & Wildlife
 - ▮ Natural Resources
 - ▮ State Parks
 - ▮ Ecology
 - ▮ Transportation
- ▮ Consultants
- ▮ Academia
- ▮ Conservation organizations / members
- ▮ Private industry
- ▮ Volunteers / other individuals

CONSERVATION TOOLS

- ▶ Acquisition of land for conservation
- ▶ Public agency policies
- ▶ Laws and regulations
- ▶ Restoration
- ▶ Education
- ▶ Voluntary landowner actions

NATURAL HERITAGE INFORMATION REQUESTS 2005-2006



WHO USES NATURAL HERITAGE INFORMATION?

The Natural Heritage Program provides information to a number of agencies, organizations, companies, and individuals. The information is used during the environmental review process for various development projects, as well as by groups engaged directly in conservation planning. The program distributes CDs with species and ecosystems location information (in a GIS format). The program also regularly responds to requests for additional information. Many requests have to do with particular sites. Other requests have to do with the biology/ecology of individual species or ecosystems. The program also continues to make more information available via the Internet, including field guides to species and ecosystems.

WHAT IS THE CONSERVATION IMPACT OF THE NHP?

The information housed within the Natural Heritage Information System is being applied to the full range of conservation tools, by a variety of agencies, organizations and individuals.

ACQUISITION / DESIGNATION OF NATURAL AREAS

Application of the objective methodology used by the Natural Heritage Program ensures that potential acquisitions have high conservation value:

- ▶ The priorities established in the Natural Heritage Plan for the state's species and ecosystems guide the selection of potential additions to the statewide system of natural areas, which includes federal, state and private natural areas.
- ▶ Natural Heritage Plan priorities are also used in the Washington Wildlife and Recreation Program process of identifying key conservation acquisitions for the state.
- ▶ Information from the Natural Heritage database is also available to land trusts and conservation organizations for use in strategic planning and to help inform individual acquisition / easement decisions.

PUBLIC AGENCY POLICIES

The Natural Heritage Program database supports land-management policies of agencies and the private sector.

USFS and BLM sensitive species policies Both agencies make use of global and state ranking applied by NatureServe and the Natural Heritage Programs in their internal process of developing a list of Sensitive species. Because the same ranking system is used by NHPs in all 50 states, the USFS and BLM can create a policy that can be evenly applied across the country. In Washington and Oregon, the NHPs also provide the USFS and BLM with the documentation to support the global and state ranks assigned to each species.

Sustainable Forestry Initiative Certification Standards The global and state ranking system for species and ecosystems is also used by the forest products industry as part of their 'green certification.' Under the certification standard, species and ecosystems that are ranked G1 (globally critically imperiled) or G2 (globally imperiled) must be protected. The Natural Heritage Program provides the methodology (the global and state ranking system) and the database regarding the location of G1 and G2 species and ecosystems. The Department of Natural Resources and a number of Washington's private timber companies have been certified, thus making use of Natural Heritage methodology and the database.

LAWS AND REGULATIONS

The Natural Heritage Program has no direct regulatory authority. The conservation status assigned to species and ecosystems is advisory only. However, information and expertise provided by the Natural Heritage Program is used in limited circumstances in the application of laws and regulations.

Endangered Species Act The U.S. Fish and Wildlife Service uses information provided by the Natural Heritage Program in their Endangered Species Act listing and recovery decisions. Much of the information about locations and threats to species (particularly for plant species) originates with the Natural Heritage Program. Natural Heritage Program scientists also serve on recovery technical teams because of their individual areas of expertise.

Growth Management Act The Department of Ecology developed a model wetlands rating system for use by individual counties under the Growth Management Act. One factor that influences the assigned wetland category is whether or not there are priority species or ecosystems (as identified by the Natural Heritage Program and documented in the Program's database) present.

The information housed within the Natural Heritage Information System is being applied to the full range of conservation tools.

ECOSYSTEMS MANAGEMENT AND RESTORATION

Biological / ecological goals for land managers The statewide system of natural areas provides an excellent point of reference for what individual ecosystems should look like. The individual natural areas have each been selected in large part because they are in good to excellent ecological condition. As such, they can be used as templates for good land stewardship. The information and expertise contained within the Natural Heritage Program is also available to help guide ecologically based decision-making.

EDUCATION

The Natural Heritage Program has developed a number of products and the staff participates in various training and educational forums to help field biologists, planners, students, and others learn more about Washington's rare plants, rare animals, and plant communities. Examples include:

- ▶ Field guides to rare plants, amphibians and reptiles, and ecosystems in lowland western Washington are available on-line.
- ▶ The Natural Heritage Program botanist has provided instruction to the native plant stewards training in King, Pierce and Snohomish counties.
- ▶ Natural Heritage Program scientists and information managers give presentations at professional meetings and to conservation organizations.

¹ Dethier, M.N., A Marine and Estuarine Habitat Classification System for Washington State (1990). Washington Natural Heritage Program, Dept. Natural Resources. 56 pp. Olympia, Wash.

² Kunze, L. 1994. Preliminary Classification of Freshwater Wetland Vegetation in Western Washington

³ Grossman, D.H., D. Faber-Langendoen, A.S. Weakley, M. Anderson, P. Bourgeron, R. Crawford, K. Goodin, S. Landaal, K. Metzler, K.D. Patterson, M. Pyne, M. Reid, and L. Sneddon. 1998. International classification of ecological communities: terrestrial vegetation of the United States. Volume 1. The National Vegetation Classification System: development, status, and applications. The Nature Conservancy, Arlington, Virginia, USA.

Juniper Dunes Wilderness Area

