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SPECIES:

Conservation Summaries for Strategy Species

Introduction and Overview

It is nearly impossible and certainly impractical to attempt to inventory and manage every species in Oregon. An alternative approach is to use a “coarse filter,” focused on conserving natural communities, with a “fine filter” that addresses needs for low and declining species. These approaches complement each other, with coarse filters proactively addressing the needs for broad suites of species and “fine filters” addressing the needs of individual species that might otherwise be overlooked.

In the Conservation Strategy, Strategy Species are the “fine filter”. They have small or declining populations or are otherwise at risk. In coordination with the Conservation Strategy’s Technical Advisory Committee and Oregon Department of Fish and Wildlife biologists, Strategy Species were identified using the methodology described in Appendix IV. Oregon’s Strategy Species include 17 amphibians, 62 birds, 65 fish, 59 invertebrates, 18 mammals, 60 plants, and 5 reptiles (total = 286).

This section focuses on the requirements of Strategy Species and the actions needed to conserve them. However, to take a broader view of fish and wildlife conservation, this section also includes information on conserving native plants and invertebrates; extirpated species; general data gaps that apply to a broad array of species; naturally-occurring fish and wildlife diseases; and animal concentrations, which are locations where animals gather for important activities such as breeding, migrating or wintering.

Why Conserve Plants and Invertebrates?

From sand dunes to deep fertile soil, lush temperate rainforests to rolling sagebrush plains, the Pacific Ocean to lofty mountain tops: Oregon has a remarkable range in geology, soils, climate and vegetation. This

variety of landscape features results in an amazing diversity of plant and animal species that live interdependently in combinations known as “natural communities.” These communities are a large part of what makes Oregon unique. This Conservation Strategy aims to conserve these communities and their species.

Although Oregon Department of Fish and Wildlife does not have management authority for plants or invertebrates, it is committed to an inclusive, comprehensive approach to conservation. When providing guidance to the states on developing their strategies, the U.S. Fish and Wildlife Service directed state agencies to address a broad array of species, including invertebrates, and encouraged them to evaluate plants. For these reasons, this Conservation Strategy attempts to address the most critical conservation needs for multiple taxa, rather than focusing solely on vertebrates. It ensures a common vision with broad conservation goals that can be applied by landowners, other agencies, and non-profit organizations to determine issues, priorities, and actions in their area of interest.

Supporters of more charismatic species such as salmon or songbirds also have reason to be concerned with the conservation of plants and invertebrates. Vertebrates are members of an interconnected web of life, and depend upon plants and invertebrates for food and shelter. Generally, the more plant and invertebrate species found in an area, the greater number and diversity of vertebrates that area supports. A habitat-based approach to conservation is the most efficient way to conserve a variety of species, their interactions, and the processes that maintain communities. For example, prairie restoration in the Willamette Valley has the potential to benefit a whole suite of rare birds, plants, and butterflies, as well as the more common species. In addition, there are countless economic, social, ecological and aesthetic reasons

why invertebrates and plants are worth conserving for their own sake. Lastly, one of the goals of the Conservation Strategy is to prevent additional species from becoming imperiled enough to warrant listing under the state or federal endangered species acts. There are many rare species that, although not yet formally listed, are facing declining numbers. Judicious management of these species now could save time and money in the future.

Plants

Oregon harbors a huge and diverse number of native wildflowers and other plants, many of which occur primarily or exclusively in the state. In fact, Oregon ranks fifth in the nation for the number of naturally-occurring plant species. These Oregon natives, especially adapted to the region's unique habitats and climate, are an important facet of the state's natural heritage. Nature enthusiasts from around the world visit Oregon to admire, study, and photograph its rich flora. Scientists have scarcely begun to investigate the potential economic uses of local native plants in agriculture, medicines, and horticulture. Although most of Oregon's plant species are still abundant and compatible with human activities, a few others are extremely rare and susceptible to such threats as invasive non-native species (introduced pests, diseases and weeds) and habitat degradation, and habitat loss.

Oregon Department of Fish and Wildlife developed the information on plant Strategy Species in cooperation with Oregon Department of

Agriculture's Native Plant Conservation Program, which has management authority for Oregon's native plants. The mission of the Native Plant Conservation Program is to conserve Oregon's native plant species on state-owned and state-managed land (OAR 603-073-0001 through 0110). "State lands" are defined by law to include any non-federal public lands in Oregon. The Program maintains a list of plant species qualifying for protection under state law (OAR 603-073-070), consistent with the requirements of the Oregon Endangered Species Act (ORS 496.171 to 192). Native plant conservation laws apply only to plants and habitat occurring on state-owned and state-managed land, and do not affect private or federal lands.

The Native Plant Conservation Program is dedicated to working with various local, state, and federal agencies to manage their lands in ways that are not detrimental to remaining populations of protected species. Also, since many of Oregon's native plants are the subject of horticultural and scientific interest, the program is responsible for regulating commercial trade and research involving listed species in order to protect them from potential harm or exploitation.

The Native Plant Conservation Program strives to generate novel, flexible, and non-controversial solutions for the conservation of protected plant species. Currently, less than 2% of Oregon's native plants are protected by state law (61 out of more than 3500 taxa). The Native Plant Conservation Program is involved in numerous conservation and protec-

What is the Difference between a Strategy Species and an Indicator Species?

To meet Congressional intent for state strategies, priority must be placed on two major categories: (1) species that are "low and declining" and (2) species that "are indicative of the diversity and health of wildlife of the state." In reality, some species are both "low and declining" and good "indicator" species, particularly those highly associated with declining habitats. Other species might fit into only one of these two categories. Understanding the differences between these categories helps to understand the goals and approach of this Conservation Strategy.

Strategy Species are identified because they are "low and declining" or are otherwise at-risk. The purpose is to prevent these species from declining further and, where possible, to restore their populations. In some cases, these Strategy Species also indicate the diversity and health of other wildlife associated with the same habitat, but they were not chosen for that reason. As an example, greater sage-grouse are indicative of healthy sagebrush habitats, and may indicate the status of other sagebrush-associated animals such as pygmy rabbits and northern sagebrush lizards.

Indicator Species are sometimes used to monitor the health of the habitat and a suite of associated species. For example, yellow warblers nest in riparian shrublands and woodlands. They indicate structural diversity and complexity, which is typical of healthy riparian systems. Structural diversity provides nesting areas for other songbirds, high invertebrate populations which are prey for birds and bats, shading for cool water temperatures favorable to fish, and cover and browse for deer and elk. Other potential indicator species or groups of species include western small-footed myotis (bat) for shrub-steppe, butterflies for grasslands, stoneflies for water quality, and lichens for air quality. As part of the Conservation Strategy's implementation, a Fish and Wildlife Monitoring Team will identify a framework to link indicators, including Indicator Species, to Strategy Species and/or Strategy Habitats. The framework will be done in a collaborative process, will evaluate the successes and failures of similar efforts in the past, and will build upon previous efforts to identify indicators, such as birds identified by the North American Landbird Plan and efforts by the Oregon Board of Forestry to identify indicators regarding forestlands. For more information, see the Monitoring Chapter.

tion efforts, including habitat improvements, population enhancements and reintroductions, population monitoring, preparation of Recovery and Conservation plans, and resolving conflicts between local groups and other agencies.

Many other Oregonians and agencies are involved in plant conservation efforts. Federal land management agencies consider plants when conducting land management activities, and both federal and private landowners are completing plant restoration projects on their lands. Private groups such as the Native Seed Network, Institute for Applied Ecology, and Native Plant Society of Oregon are also involved in native plant conservation. The following examples highlight some of the plant conservation efforts taking place in Oregon:

- Monitoring response of Cook's desert parsley and large-flowered woolly meadowfoam to prescribed fire and other management actions near Medford (The Nature Conservancy, Bureau of Land Management, Institute of Applied Ecology).
- Greenhouse propagation and reintroduction of rough allocarya (hairy popcorn) flower in Douglas County (Native Plant Conservation Program, Oregon Department of Transportation, The Nature Conservancy, Bureau of Land Management, U.S. Fish and Wildlife Service).
- Grazing management and seed banking to benefit Malheur wire lettuce in Lake County (Bureau of Land Management, Berry Botanical Garden).

- Field studies to determine appropriate methods of seed germination, plant propagation, and site preparation, and seeding/transplanting for several native plants species through the "Native Comeback Initiative" (Institute of Applied Ecology, Bureau of Land Management, U. S. Forest Service, local elementary and high schools).
- Working with growers to increase the availability of genetically-appropriate seed for upland prairie restoration (The Nature Conservancy, Heritage Seedlings, Inc.).

Invertebrates

High plant diversity translates directly into high invertebrate diversity. Whether measured by number of individuals, species, or total weight (called "biomass"), invertebrates outnumber Oregon's other forms of life. Insects make up a large percentage of invertebrates but this class of creatures also includes worms, spiders, centipedes, mites, snails, starfish, and sea urchins.

Native invertebrates benefit people in many ways, from providing food to supplying vital ecological services. Crabs, clams, and mussels, essential components of healthy marine and estuarine ecosystems, are valued as seafood and support a significant Oregon industry. Butterfly gardening, butterfly watching, and dragonfly watching are becoming increasingly popular. The interactions of invertebrates with other species form the biological foundation of all ecosystems. Worms and other soil

Culturally Important Species

Whenever people live in a location over long periods of time, they build strong ties to its natural resources because these resources touch so many aspects of their lives. Food, water, building materials, tools, transportation, and clothing all come from or are shaped by people's surroundings. These critical components of daily life then influence society, language, world view, spiritual beliefs and memories.

For at least ten thousand years, native people in Oregon have used fish, mammals, birds, berries, seeds, roots, and bark to nourish their bodies and shape their culture. For example, western interior valley people cultivated camas, tarweed, acorns, and black-tailed deer through strategic burning and judicious harvests. Coastal tribes feasted on fish, oysters, clams, and mussels, and shaped western redcedar into canoes, houses, clothing and even baby diapers. In eastern Oregon, family groups traveled to take advantage of seasonally available roots, fish, and huckleberries.

Throughout Oregon, deer, elk, lamprey, and trout were important foods for native people. Salmon were particularly important to many of

Oregon's tribes, serving as both food and the basis for a lucrative trade system. Salmon migration patterns set the rhythm of activities throughout the year including seasonal travels and the First Salmon ceremonies at Celilo and Willamette falls. To this day, salmon populations are pivotal to Oregon's economy and identity. Through the Oregon Plan for Salmon and Watersheds and other programs, Oregonians have undertaken great effort to conserve and restore salmon populations.

Over the past 150 years of settlement, European settlers and their descendents also have built strong cultural ties to the resources of their adopted landscape. Beavers first attracted fur-trappers and early explorers. Douglas-fir, ponderosa pine and other trees formed the basis of Oregon's logging industry. Today, families look forward to annual clamming and whale watching on the coast, elk hunting in the Blue Mountains, and bird watching in the Malheur Basin. Together, Oregonians can conserve their fish and wildlife legacy and the cultural, aesthetic, and ecologic values provided by animals, plants, and other species.

invertebrates cycle nutrients, maintain soil structure, and improve water filtration. Bees, butterflies, beetles, and other insects pollinate crops, wildflowers, and other plants. Ants disperse plant seeds. Lacewings, ladybird beetles, predatory wasps, and hoverflies control populations of other invertebrates that damage crops. Some invertebrates can serve as indicators of ecological health. For example, aquatic insect larvae can indicate water quality, and butterfly diversity can indicate grassland health. Invertebrates are the primary food source for a variety of fish and wildlife, including birds, bats, shrews, lizards, frogs, and trout. Invertebrates supply vital ecological services for people and ecosystems.

In comparison to vertebrates and plants, much less is known about the status, distribution, and conservation needs of Oregon's invertebrates. Invertebrates present a conservation challenge in Oregon because no state agency has responsibility for their conservation. As a result, there is no coordinated effort to conserve invertebrates at the state level. However, there are many agencies and groups involved with invertebrate management. The U.S. Fish and Wildlife Service crafts conservation plans for federally threatened and endangered invertebrates. Oregon Department of Agriculture has responsibility for those that cause economic damage. Some land management agencies, the Bureau of Land Management and U.S. Forest Service are partnering with the Xerces Society for Invertebrate Conservation and other conservation groups to manage for specific invertebrate species. The Oregon Natural Heritage Information Center tracks the status of rare invertebrates and coordinates some federally-funded research and monitoring projects. Many species groups are probably under-represented on the Heritage list due to lack of funding, research, and expertise to determine their status, rather than lack of a conservation need.

The sheer number of invertebrate species also presents a conservation challenge. Oregon has many "narrow endemics" (species that occur in a limited area), which makes them especially vulnerable to habitat changes. For example a snail species may be limited to a single spring; if that spring is lost or polluted, the snail could become extinct. Other species have declined across larger ranges due to habitat loss. Because of these challenges invertebrate conservation tends to be focused on threatened and endangered species, commercially valuable species, and species groups that provide ecological services such as pollination and pest control. The following examples highlight some of the invertebrate conservation efforts taking place in Oregon:

- Habitat restoration and captive rearing of Oregon silverspot butterfly along the Coast (The Oregon Zoo, The Nature Conservancy and the U.S. Fish and Wildlife Service).
- "Farmscaping for Beneficials," a farming community-based program that provides tools for conservation-based biological

control of crop pests, and restoration of habitat for pollinators (OSU's Integrated Plant Protection Center, Oregon Tilth, Oregon Master Gardner Program and Xerces Society for Invertebrate Conservation).

- Habitat restoration for Fender's blue butterfly and its host plant, Kincaid's lupine, in West Eugene (City of Eugene, Bureau of Land Management, The Nature Conservancy, Washington State University and other partners).
- Status assessment and conservation of the Mardon skipper butterfly. (Bureau of Land Management, U.S. Fish and Wildlife Service and Xerces Society for Invertebrate Conservation).
- Monitoring and habitat restoration for the Taylor's checkerspot butterfly (Xerces Society for Invertebrate Conservation, U.S. Fish and Wildlife Service and Benton County Parks).
- Water quality and watershed assessments using aquatic macroinvertebrates (Oregon Watershed Enhancement Program, Oregon Department of Environmental Quality, Xerces Society for Invertebrate Conservation, and multiple watershed groups).

Addressing the conservation needs for all species is beyond the scope of the Conservation Strategy. However, by working together to maintain and restore habitats, Oregonians can benefit a variety of species and help maintain Oregon's unique natural heritage.

What about Extirpated Species?

Some Oregon native species no longer occur throughout their historic range. These species are considered "extirpated." In contrast, "extinct" means that the species no longer occurs anywhere. "Extirpation" can be thought of as extinction at the local level.

Some species may never return to Oregon due to habitat loss or other factors. Others may return through natural dispersal or intervention by people such as "active reintroductions" of animals from other states or by restoring native plant communities.

With the exception of plants, species that no longer occur in Oregon were excluded as Strategy Species in order to focus efforts proactively on species that still occur in Oregon and need conservation attention. While there may be opportunities for reintroductions, they would need to be considered carefully case-by-case and are considered beyond the scope of this Conservation Strategy. Conservation actions implemented under the Conservation Strategy may benefit some extirpated species. Extirpated plants are included to be consistent with policies of the Oregon Department of Agriculture's Native Plant Conservation Program, which has management authority over plant conservation.

Natural Dispersal

Conservation action focused on existing populations provides the greatest benefit to the species, is preventative and the most cost efficient way to benefit multiple species. Addressing limiting factors at existing sites and providing for nearby habitat increases the chances that the populations will increase and that individuals will disperse into nearby areas. For example, Lewis' woodpecker, streaked horned lark, burrowing owl, and fisher have all been extirpated from one or more ecoregions, but still occur in Oregon. These species are all associated with Strategy Habitats, so maintaining and restoring these habitats can provide a potential home for these species, while benefiting a variety of other species.

Highly mobile species, such as birds and wolves, may disperse into Oregon and reestablish populations if enough suitable habitat is available. This can sometimes present challenging management issues. Gray wolf populations have been increasing in Idaho since their reintroduction there in 1994. In recent years, three individual wolves have dispersed

into Oregon. Because wolves may return to Oregon permanently, are protected by federal and state law, and are associated with complex social, economic, and biological issues: a proactive management approach was needed. In February 2005, the Oregon Fish and Wildlife Commission adopted the Oregon Gray Wolf Conservation and Management Plan after three years of public discussion and planning. The Oregon Fish and Wildlife Commission directed that wolves would not be actively re-introduced into Oregon. Rather, the Wolf Conservation and Management Plan focuses on conservation of wolves once they arrive (disperse) on their own into Oregon. The wolf plan outlines numerous management actions and recommendations including delisting criteria, a monitoring plan, criteria for lethal take, a state-operated compensation plan for livestock lost to wolf depredation, and the future legal status for management purposes. Although wolves may currently occur in Oregon, they are not thought to have an established breeding population. For this reason and because they are addressed through this separate planning effort, they are not included in this Conservation Strategy.

Coordinated Conservation Efforts, Including Active Reintroduction, Can Help Allow Species to Recover from Near Extinction.

American Peregrine Falcon: A Success Story

The peregrine falcon is considered the fastest animal in the world, with theoretical diving speeds reaching 240 miles per hour, although 120-150 mph is more typical while hunting. It was historically distributed throughout much of North America, but its populations started dropping dramatically after World War II and the advent of DDT and similar pesticides (called organochlorines). DDT was linked to eggshell thinning in many raptors, including falcons, bald eagles, and osprey. By 1979, only a single pair of breeding peregrines remained in Oregon. DDT was banned in 1972, but its persistence in the environment slowed recovery of peregrine falcon populations. In response, a cooperative captive rearing program was initiated. During 1981-1995, 179 captive-reared peregrine falcon chicks were released in Oregon. Other conservation efforts included nest site enhancements, habitat management and protection around known nest sites, and monitoring. The comprehensive efforts by non-profit organizations, birders, state and federal agencies, falconers, and rock climbers contributed to the remarkable recovery of peregrine falcon populations and its removal from the federal Endangered Species List in 1999.



Peregrine Falcon
Photo © Bob Sallinger, Portland Audubon Society

Sharp-Tailed Grouse: Writing a New Chapter

Biologists are hoping for a similar success story for the sharp-tailed grouse, which is now extirpated from the state and is being experimentally reintroduced in part of its historic range in northeastern Oregon. Like the greater sage grouse, the sharp-tailed grouse is a desert dancer. In late winter, male grouse gather on "dancing grounds", known as leks. They claim territories and attract females with inflating purplish neck sacs, stepping dances, rattling tails, and cackling calls. Called prairie chickens by early settlers, sharp-tailed grouse were abundant in the grassland and sagebrush steppe habitats of eastern Oregon prior to late 1800's. Exact reasons for sharp-tailed grouse decline are unknown, but possible factors include the loss of riparian and grassland habitats and uncontrolled shooting. The last confirmed Oregon sighting was in 1967. Other recent unconfirmed sightings in Baker County may be birds dispersing from Idaho. In the 1990's sharp-tailed grouse were reintroduced into grasslands in Wallowa County. The reintroduction effort was a partnership between private landowners, The Nature Conservancy, U. S. Fish and Wildlife Service, and Oregon Department of Fish and Wildlife. The reintroduced population appears to be successfully reproducing, but it has remained small and its long-term future is uncertain. Future efforts may include an evaluation of wintering habitat as a limiting factor, habitat restoration projects, and evaluation of other potential release sites. Cooperative efforts provide hope that Oregonians will continue to be able to enjoy the sharp-tailed grouse's dance.

Active reintroductions

Active reintroductions are logistically difficult, expensive, and tend to have low success rates. They are usually a last-resort effort reserved for species of particular management interest, such as endangered species or game species. Managers consider factors such as amount of suitable habitat available, disease transmission, genetics, and interactions with people, other species and the environment. Species are considered on a case-by-case basis to weigh benefits and risks.

Some species will disperse naturally into adjacent ecoregions, but others face barriers such as mountains, rivers, or inhospitable habitat. Some species do not move far, so don't have the capability to disperse. In these cases, it may be appropriate to move species from one ecoregion to another to ensure the long-term survival of the species. Recently, translocation experiments have been conducted for Oregon spotted frog, mountain quail and Columbia white-tailed deer in Oregon. These efforts are being carefully evaluated to ensure that translocation is appropriate and effective for these species.

Prioritizing conservation actions

Although there may be interest and opportunities to reintroduce species that no longer occur in Oregon, these approaches are not priority conservation actions in the Conservation Strategy. The Conservation Strategy's focuses on species that still have functioning populations

within Oregon. Some of these species no longer occur in parts of their range within Oregon. For example, the western burrowing owl no longer breeds in the Willamette Valley or Klamath Mountains ecoregions, but still occurs in eastern Oregon. The Oregon spotted frog no longer occurs in the Willamette Valley, but still remains along the crest of the Cascades Mountains. For species that have lost some of their range in Oregon, the Conservation Strategy's conservation priorities are as follows:

- *High priority:* Focus conservation actions on remaining populations within the state.
- *Medium priority:* Restore suitable habitat close to existing populations to allow for passive reintroductions.
- *Medium priority:* If reintroductions are identified as a priority conservation action for a species, conduct feasibility studies to address disease and genetic concerns.
- *Medium priority:* For some species, particularly plants, surveys may be needed to determine if they are truly extirpated or if they have remaining undetected populations.
- *Low priority:* If feasibility studies indicate that translocations would be warranted and would have few risks, then conduct translocations of species from one ecoregion to another. However, because plants have low dispersal ability, translocations may be a higher priority for some plant species.

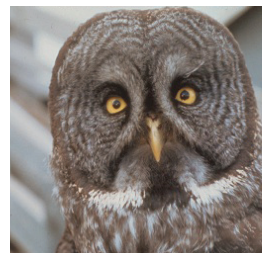


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