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## A Summary of Strategy Habitats and Species

### ***The “Filter” Approach to Conservation Planning***

All state strategies are required to identify priorities based on (i) “low and declining species” and (ii) “species that are indicative of the diversity and health of wildlife of the state.” To achieve this, the Conservation Strategy follows a “coarse filter” (habitat) – “fine filter” (species) approach to conservation planning. Coarse-filter conservation efforts capture a larger number of species by casting a wide net over the landscape. Conservation actions focused on the maintenance of natural habitats are likely to benefit a wider range of organisms than conservation actions developed for single species. It is the best way to maintain diverse and healthy wildlife communities. In addition, conserving larger areas of terrestrial or freshwater habitat preserves system-wide ecological processes critical to the viability of the ecosystems and the survival of wildlife species inhabiting them. These services benefit people as well. Strategy Habitats are the “coarse filters.”

However, not all species are best represented by coarse-filters. For example, species dependent on multiple habitats at different times during their life cycle, those that occur in a small geographic area, those with highly specialized needs, or those that travel across a large geographic area may require special attention. To ensure that the needs of “low and declining species” were addressed, Strategy Species include rare and/or at-risk fish, wildlife, invertebrates, and plants. Strategy Species are the “fine filters.”

In addition, the Conservation Strategy examines vulnerable animal concentrations and “Specialized and Local Habitats” that address particular landscape features. Used together, this “coarse filter/fine filter” approach is designed to best account for a wide variety of species and habitats in need of conservation attention.

For information on how Strategy Species and Habitats were selected, see the Appendix IV (Methods).

### ***A “Big-Picture” View of Strategy Habitats***

Strategy Habitats were determined in a two-step process. First, maps of current vegetation were compared to that which occurred during the year 1850 to determine vegetation types that had high degrees of loss since European settlement. Vegetation types with a high degree of historic loss were evaluated for historic importance at the ecoregional scale, ecological similarity, amount of remaining habitat managed for conservation values, known limiting factors, ecological similarity, and importance to Strategy Species. For more information on the methods used to develop the vegetation maps see Appendix IV.

Using the year 1850 as a baseline provides a reference point to determine changes in vegetation since European settlement. It is a single point in time, so does not show how vegetation varied in the past due to fire, long-term climate change or other factors. The 1850 maps represent a baseline for analysis and not a target to re-create. Returning to pre-settlement conditions is neither possible nor desirable. This is particularly true at large scales. Instead, the baseline vegetation maps can provide insight into why certain species may be declining and can help determine priorities for restoration projects.

The number of Strategy Habitats per ecoregion range from five in the Columbia Plateau ecoregion to seven in the Coast Range ecoregion. Aquatic, riparian and wetlands are Strategy Habitats for all eight ecoregions in Oregon. Other common Strategy Habitats occurring in more than one, but not all ecoregions, include grasslands, oak woodlands, ponderosa pine woodlands, and sagebrush steppe and shrublands.

### ***“Big Picture” Recommended Actions for Conserving Strategy Habitats***

Many of the Strategy Habitats have been reduced in size and connectivity or degraded in function by factors such as invasive species and altered disturbance regimes. As a result, addressing the six key conser-

vation issues through the actions identified previously on pages seven to 10 are the most important steps to benefit Strategy Habitats.

In addition, where Strategy Habitats are in degraded conditions, it may be appropriate to restore certain elements at the local level to benefit fish and wildlife. These elements may include native vegetation composition, vegetation structure, and/or functions. It is important to note that general ecology and conservation issues within these habitats vary across the state, so conservation actions must be tailored to local conditions, issues and goals. Many local communities, watershed councils and other partners have created watershed assessment and restoration plans. Implementation of watershed plans at the local level will greatly benefit Strategy Habitats and Species.

### ***A “Big-Picture” View of Strategy Species***

Each species has its own requirements for food, shelter, and reproduction. Habitat changes – such as alterations in vegetation composition or structure, in the distribution of habitat types across the landscape, and in the disturbance regimes that shape these elements – will result in changes in the fish and wildlife species associated with those habitats. Such changes can have negative consequences for species with specialized or complex habitat requirements. Identifying these vulnerable species allows conservation actions to be targeted at the most at-risk species.

The decline in some Strategy Species is linked to the loss of Strategy Habitats. For example, ponderosa pine forest—included as Strategy Habitats in the Blue Mountains, East Cascades, and Klamath Mountains ecoregions—support Strategy Species like the flammulated owl, Lewis’ woodpecker, and white-headed woodpecker. Strategy Species also include species that are not closely associated with Strategy Habitats, but are declining for a variety of reasons.

Information on special needs, limiting factors, data gaps, and recommended conservation actions for individual Strategy Species are included in the Species chapter (pages 313 to 375). Strategy Species include 17 amphibians, 62 birds, 65 fish, 59 invertebrates, 18 mammals, 60 plants, and 5 reptiles (total = 286).

### ***“Big Picture” Recommended Voluntary Actions for Conserving Strategy Species***

Because the six key conservation issues have broad effects on many of Oregon’s species, there are some common actions that can benefit fish and wildlife. Some general themes are presented below. These themes demonstrate “big picture” approaches and are not intended to serve as

guidelines or prescriptions. How these actions may be implemented at a particular site will depend on local conditions; federal, state and local planning requirements; management goals; and the requirements of individual species.

### **All Strategy Species**

- If habitat needs are not fully understood, determine habitat requirements and appropriate actions to maintain or restore habitat, as resources and funding allow.
- Maintain and restore Strategy Habitats and habitat characteristics identified for individual Strategy Species.
- Minimize fragmentation, remove fish passage barriers, and improve connectivity between habitat patches.
- Manage land use practices (e.g., building construction, road construction and maintenance, recreation, agriculture, forest management, grazing, mining, fuel treatment, prescribed fire) to be compatible with species conservation at priority sites. This may involve altering the timing of activities, providing exclosures or buffers, or using innovative practices.
- Manage off-highway vehicle use to minimize disturbance to wildlife during critical periods and direct off-highway vehicle use away from sensitive habitats such as wetlands and montane grasslands.
- Manage rock features such as cliffs and talus to avoid conflict with recreational use and rock removal, particularly where known bird nest sites, bat roost sites, or rare amphibian or invertebrate populations occur.
- Develop more specific management plans or strategies for species or habitats without such plans (e.g., bats, turtles, rocky shores, and estuaries).
- Monitor to determine population trends and their causes.
- Monitor for diseases, particularly non-native diseases of concern (e.g, West Nile Virus, Chronic Wasting Disease, Infectious Salmon Anemia).
- Continue efforts to provide accessible water to wildlife in arid areas and support use of animal escape devices in water developments.
- Provide outreach and education that help resolve or minimize wildlife/human conflicts in urban and rural areas.
- Manage key invasive species that compete with, prey upon, or otherwise impact Strategy Species at priority sites. In addition, promote prevention, early detection, inventory, and early eradication of species with a high potential to be invasive.

**Amphibians**

- Maintain water levels and vegetation buffers at major breeding sites.
- Install amphibian-friendly culverts or drift fences at problem road crossings near major breeding sites.
- Manage recreation to minimize impacts to sensitive shoreline sites and inform the recreating public about the importance of minimizing shoreline impacts.
- Manage vegetation where vegetation height and density interferes with breeding.
- Control bullfrogs and invasive fish at priority sites.
- Maintain downed wood, especially large logs.

**Birds**

- Minimize disturbance near nest sites during the breeding season.
- Where feasible, maintain large-diameter hollow trees and tall, newly dead snags. Where safety regulations prevent snag maintenance or where snag numbers are below desired levels, create snags from green trees and retain high-cut stumps.
- Minimize insect control near priority nest sites.
- For some species in some areas, use nest box programs as a stop-gap measure until suitable nest sites are available. Maintain and monitor nest boxes.
- Work cooperatively with landowners to delay mowing and other field management until after grassland birds have fledged. Similarly, plan prescribed fire to prevent impacts to bird nesting, reproduction and migration.
- Encourage wind turbine and communication tower designs that minimize or eliminate impacts to wildlife.
- Maintain suitable conditions for prey species in order to conserve avian predators. For example, a matrix of grasslands and low brush benefits jackrabbits, which are prey for ferruginous hawks.

**Fish and Aquatic Invertebrates**

- Maintain and restore high water quality and quantity.
- Maintain riparian cover and other factors that maintain water temperatures favorable to aquatic species.
- Minimize sedimentation.
- Maintain and restore channel complexity and aquatic habitat quality.

- Minimize contact with introduced fish that could lead to hybridization, competition, and disease issues.
- Improve fish passage at priority barriers and remove barriers where possible.
- Minimize impact of water draw-down on aquatic species.

**Mammals**

- Provide travel corridors between habitat blocks.
- Maintain downed wood, especially large logs. Increase levels of downed wood, if determined to be deficient.
- Where feasible, maintain large-diameter hollow trees and tall, newly dead snags. Where safety regulations prevent snag maintenance or where snag numbers are below desired levels, create snags from green trees and retain high-cut stumps.
- Manage rock features such as cliffs to avoid conflict with recreational use and rock removal.
- Complete bridge replacement and maintenance when bats are absent.
- Use site- and species-appropriate techniques to minimize human disturbance during critical periods and/or at critical areas (for example, use gates and seasonal closures at known bat maternity and winter roosts).
- Encourage wind turbine and communication tower designs that minimize or eliminate impacts to wildlife.
- Maintain and restore suitable conditions for prey species in order to conserve mammalian predators.

**Plants**

- Survey likely habitat for additional populations.
- For some grassland and sagebrush steppe plants, work cooperatively with landowners to time mowing, grazing and other activities around plant reproduction needs.
- Control key invasive plants.
- Collect and store seeds for long-term seed-banking.
- Develop and test propagation methods.

**Reptiles**

- Provide basking structures such as rocks and logs.
- Maintain and restore off-channel aquatic habitats and grasslands.
- Maintain and restore suitable nesting areas.

- Protect important nesting and hibernating sites from human disturbance during critical times.
- Prevent introduction of non-native turtles. Control invasive turtles and bullfrogs at priority sites.

#### Terrestrial Invertebrates

- Maintain and restore high native plant diversity, including host plants for at-risk butterflies.
- Maintain woody debris.
- Investigate species-specific habitat requirements and use these to guide management actions.

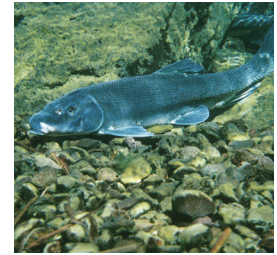
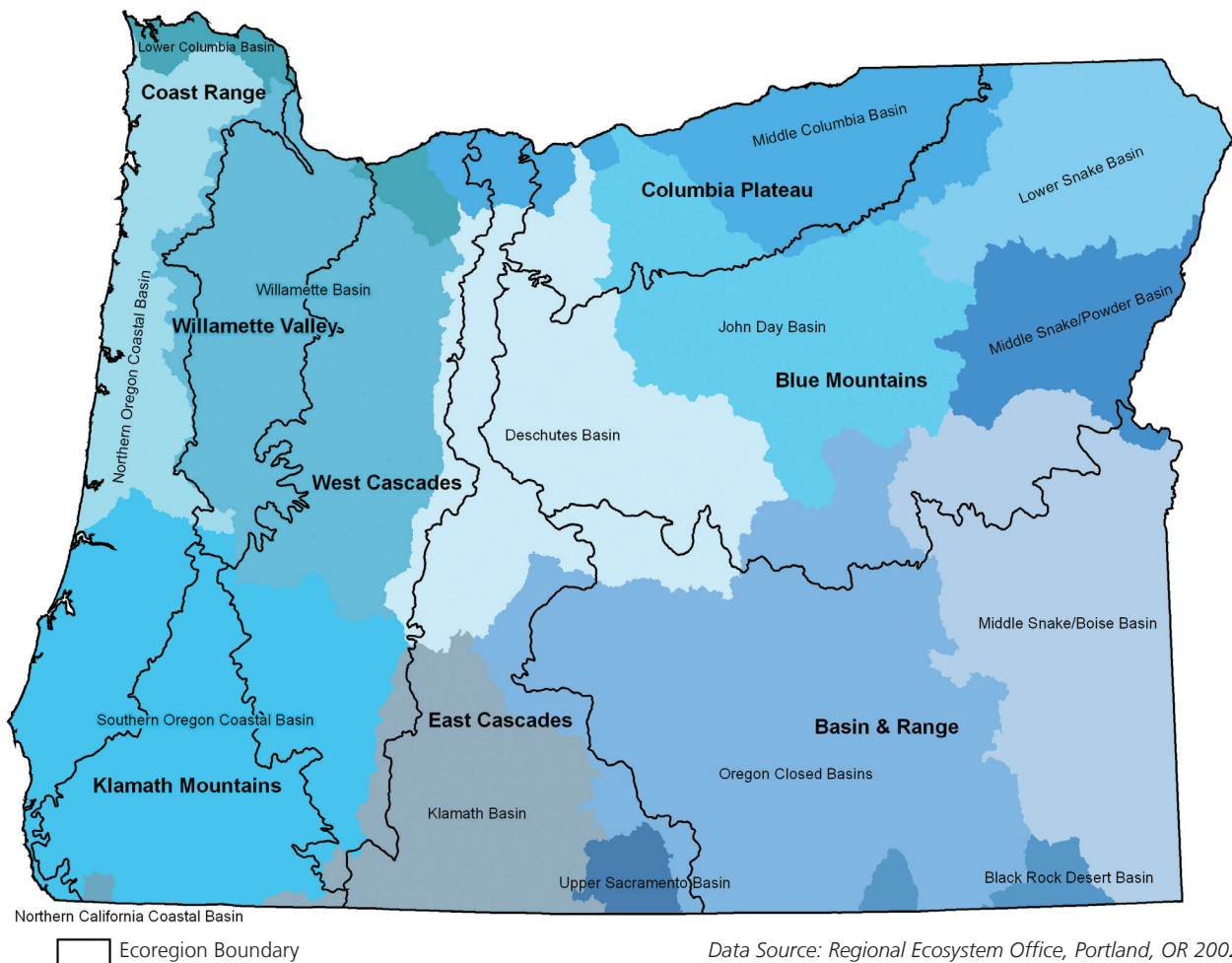


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### The Relationship of Ecoregions to Basins in Oregon



Data Source: Regional Ecosystem Office, Portland, OR 2002  
U.S. Environmental Protection Agency



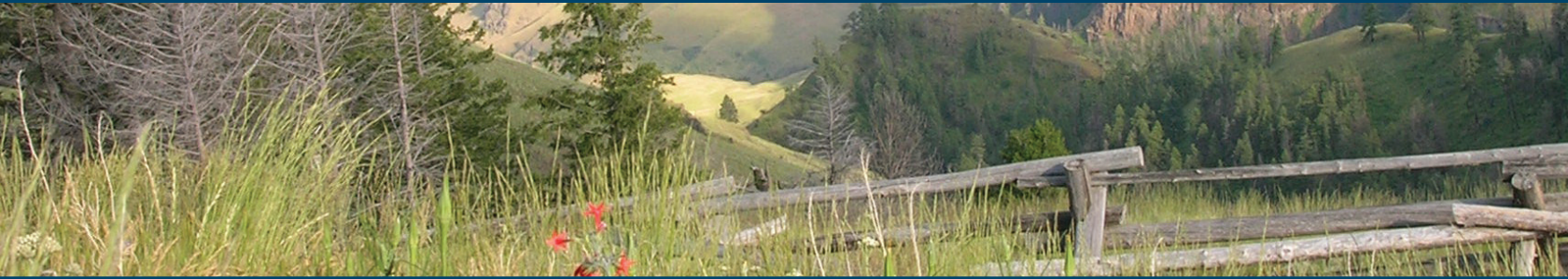


Photo © Martin Nugent

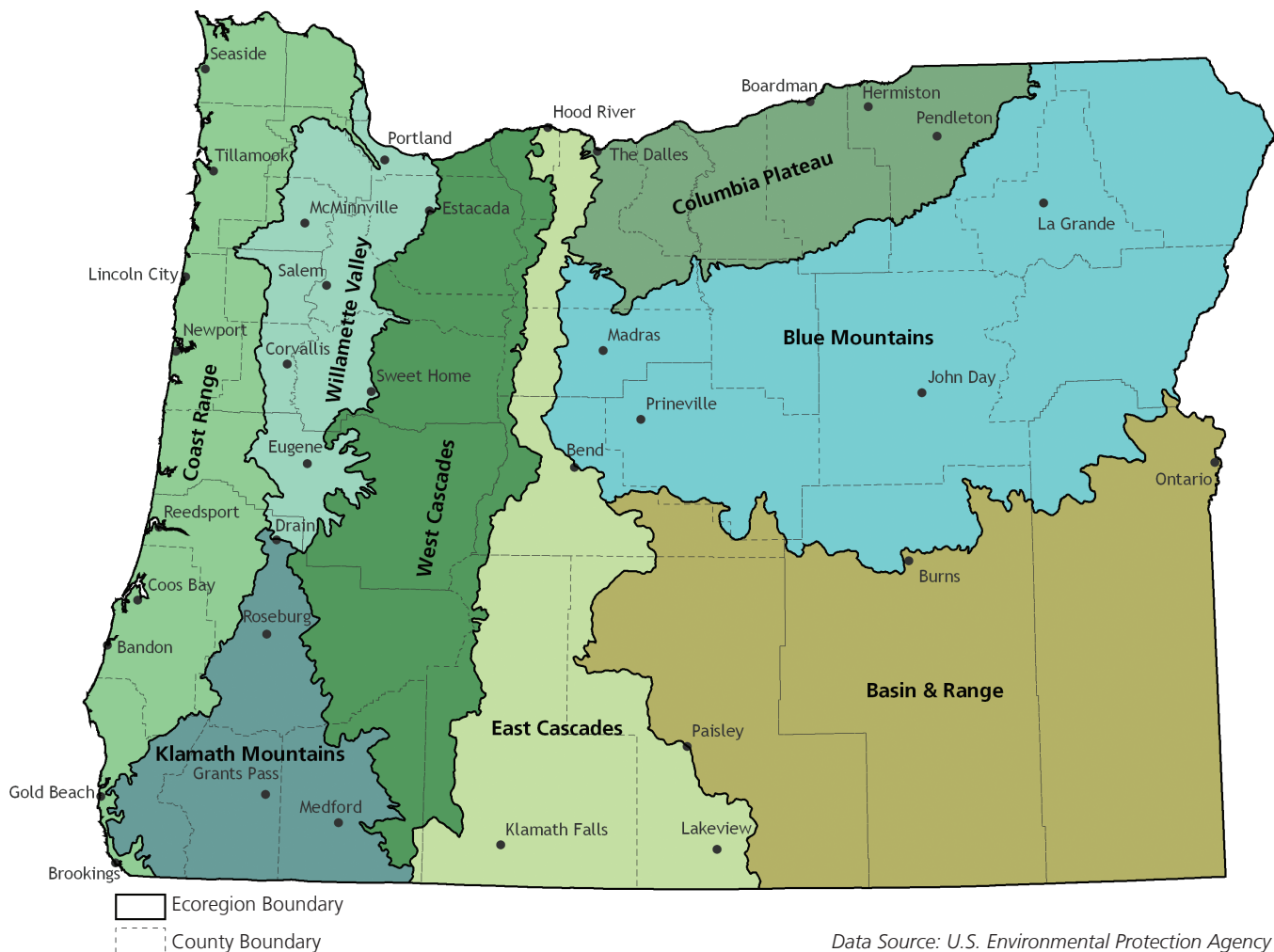
## An Ecoregional Approach to Conservation

Oregon's diverse landscape ranges from lush rainforests to deserts. Similarly, each community's residents perceive, value and manage their natural resources in ways unique to their respective regions. To capture this regional diversity and local knowledge, the Conservation Strategy examines Oregon's eight ecoregions. Ecoregions are portions of the state with similar climate and vegetation. The Conservation Strategy

uses the Environmental Protection Agency's Level III Ecoregion map ([http://www.epa.gov/wed/pages/ecoregions/or\\_eco.htm](http://www.epa.gov/wed/pages/ecoregions/or_eco.htm)), but combines the Snake River Plain with the Northern Basin and Range.

Ecoregions are discussed more fully in pages 111 to 255. Within each ecoregion description, the Conservation Strategy explores the environ-

### Ecoregions of Oregon



ment and issues, identifies limiting factors and opportunities, identifies Conservation Strategy Species and Habitats, and describes actions to consider.

Below are snapshots of Oregon's eight ecoregions. The six key conservation issues generally apply across the state to all ecoregions. Thus, the actions identified to address these issues are important throughout Oregon. However, ones particularly important within an ecoregion are highlighted, along with some ecoregion-specific issues.

### ***Blue Mountains Summary***

Although named for its largest mountain range, the Blue Mountains ecoregion is a diverse complex of mountain ranges, valleys, steep river canyons, and plateaus, with habitats ranging from dry sagebrush steppe to high alpine peaks. Much of the mountainous land is publicly-owned and managed for multiple resources. Broad alluvial-floored river valleys support ranches surrounded by irrigated hay meadows or wheat fields. Large towns include La Grande, Baker City, Pendleton, Redmond, and part of Bend.

Over the years, fire suppression, historic overgrazing, timber harvest, mining, agriculture, and, more recently, invasive species and development have altered fish and wildlife habitats. As a result, Strategy Habitats identified for the Blue Mountains ecoregion include ponderosa pine woodlands, grasslands, sagebrush steppe and shrublands, aspen woodlands, wetlands, riparian, and aquatic habitats.

Of the Conservation Strategy's six key conservation issues, invasive species, altered disturbance regimes and land use changes are of greatest concern in the Blue Mountains. Fire is the primary concern for altered disturbance regimes, although floodplain function is an issue in some valleys, particularly at lower elevations. Other actions for the Blue Mountains include working cooperatively with land managers and off-highway vehicle groups to direct use to maintained trails in low-impact areas and to improve enforcement of existing off-highway vehicle rules.

### ***Coast Range Summary***

Oregon's Coast Range is known for its dramatic scenery. Its habitats range from open sand dunes to lush forests and from tide pools to headwater streams. The Coast Range's mild, moist climate creates conditions for highly productive temperate rainforests, which are important for local ecosystems and economies. Forestry remains the primary industry in the interior portion of the ecoregion. Coastal towns are hubs for fishing, shellfish and transporting products. The largest urban area on the coast is Coos Bay/North Bend. Many coastal towns are growing, with growth driven by arriving retirees and increasing tourist visits.

Steep terrain and transportation needs have concentrated towns near estuaries, increasing the demands on these systems.

Strategy Habitats identified for the Coast Range ecoregion include coastal dunes, estuaries, grasslands, late successional conifer forests, oak woodlands, riparian, wetlands, and freshwater aquatic habitats.

Restoration of aquatic habitat complexity (i.e., woody debris), salmon rearing habitats, fish passage, and natural hydrological regimes through removal of artificial obstructions are concerns in the Coast Range ecoregion. Of the Conservation Strategy's six key conservation issues, land use changes and invasive species are of greatest concern in the Coast Range ecoregion. In addition to addressing these issues, actions proposed for the Coast Range include:

- Working with community leaders and agency partners to ensure rapid responses to and preparedness for oil and other hazardous spills.
- Increasing education and outreach for recreationalists and associated businesses. Where needed, direct activities to particular seasons or away from sensitive habitat.

### ***Columbia Plateau Summary***

The floods, silt and winds that drift across the Columbia Plateau have created ideal conditions for agriculture. Dryland wheat is an important commodity here, and this ecoregion produces most of Oregon's grain. Over 80% of the ecoregion's population is located in the portion of this ecoregion within Umatilla County, including Pendleton and Hermiston.

Conservation opportunities for native vegetation are limited because it is difficult to maintain connectivity between isolated high-quality habitat patches. Meeting water demands for agriculture, irrigation, domestic livestock, as well as fish and wildlife populations, is challenging. Water quantity influences water quality, particularly in summer months when flows are reduced. Eighty-four percent of the Columbia Plateau ecoregion is privately owned. Thus, voluntary cooperative approaches are key to long-term conservation.

Strategy Habitats identified for the Columbia Plateau ecoregion include: grasslands, sagebrush steppe, riparian, wetlands, and aquatic habitats.

Of the Conservation Strategy's six key conservation issues, water quality and quantity and invasive species are of greatest concern in this ecoregion. In addition to addressing these issues, actions for the Columbia Plateau include encouraging participation in and support for programs such as the Natural Resources Conservation Service Conservation

Reserve Program, which promote practices that can offset or minimize soil erosion and that can provide habitat for fish and wildlife.

### **East Cascades Summary**

The East Cascades ecoregion varies dramatically from its cool, moist border with the West Cascades ecoregion to its dry eastern border where it meets sagebrush country. Terrain ranges from forested uplands to marshes and agricultural fields at lower elevations. Tourism, recreation, forestry, and agriculture support a diverse economy.

Development and land management practices have affected habitats. For example, timber harvest practices, historic overgrazing and fire suppression have altered the distribution and structure of much of the ecoregion's historic habitats. Urban and rural residential development is another emerging conservation issue, with implications for the loss of big game winter range and development within riparian zones. Along with development, Highway 97 traffic volume continues to increase, creating a major barrier to wildlife movement.

Strategy Habitats in the East Cascades ecoregion include ponderosa pine woodlands, oak woodlands, riparian, wetlands, and aquatic habitats.

Of the Conservation Strategy's six key conservation issues, invasive species, altered disturbance regimes, water quality and quantity, and land use changes are of greatest concern in the East Cascades ecoregion. For altered disturbance regimes, fire is the primary concern, although floodplain function is an issue in some valleys, particularly at lower elevations. In addition to addressing these issues, some actions for the East Cascades include:

- Working with community leaders and agency partners to identify wildlife migration corridors and to fund and implement site-appropriate mitigation measures such as drift fences to overpasses or underpasses when planning transportation projects.
- Increasing education and outreach for recreationalists and associated businesses. Where needed, direct activities to particular seasons or away from sensitive habitat.

### **Klamath Mountains Summary**

The Klamath Mountains ecoregion contains wide ranges in elevation, topography and climate -- from the lush, rainy west to the dry, warmer interior valleys to cold, snowy mountains. The Klamath-Siskiyou region of southwest Oregon and northwest California is recognized internationally for its global biological significance and is considered a world "Centre of Plant Diversity" by the World Conservation Union.

The Klamath Mountains ecoregion has the second fastest-growing human population in Oregon behind the Willamette Valley. Much of the population growth is concentrated in valleys along the Interstate 5 corridor. Demands for choice building sites often coincide with good quality habitat.

Overall, forest habitats are challenged by decades of fire suppression, and by "checkerboard" ownership patterns that can make resource planning particularly challenging. Grasslands in the Klamath Mountains ecoregion are home to many endemic and at-risk plant communities, but are potentially impacted by invasive grasses and by conversion to development. Recent indicators suggest that water quality and riparian conditions in the ecoregion are improving, although these remain concerns in some areas. Many of the improvements can be attributed to local collaborative conservation efforts via watershed councils and other groups.

Strategy Habitats identified in the Klamath Mountains ecoregion include: ponderosa pine, oak, and pine-oak woodlands; late successional mixed conifer forests; grasslands; riparian; wetlands; and aquatic habitats.

Of the Conservation Strategy's six Key Statewide Conservation issues, land use changes, altered disturbance regimes, water quality and quantity, and invasive species are of greatest concern in the Klamath Mountains. For altered disturbance regimes, fire is the primary concern, although floodplain function is an issue in some valleys, particularly at lower elevations. In addition to addressing these issues, actions in the Klamath Mountains could include planning mineral extraction activities to minimize potential impact on species and habitat by focusing extraction efforts in areas with existing roads and minimizing disturbance to sites with rare plant concentrations.

### **Northern Basin and Range Summary**

Situated in the rain shadow of the Cascades Mountains, the Northern Basin and Range is Oregon's driest ecoregion. It is characterized by extreme ranges in daily and seasonal temperatures. Runoff from precipitation and mountain snowpack often flows into low, flat playas where seasonal shallow lakes and marshes provide important stopover sites for migrating birds due to the rich source of invertebrate prey. Sagebrush communities dominate the landscapes in this arid ecoregion.

The Northern Basin and Range is sparsely inhabited, but local communities have vibrant cultural traditions and a strong sense of place. The Bureau of Land Management manages most of the land in the ecoregion. Livestock and agriculture form the foundations of the

regional economy. Uncontrolled livestock grazing in the decades before enactment of the Taylor Grazing Act of 1934 caused serious long-term ecological damage throughout the ecoregion. Rangeland conditions have substantially improved since then in most areas. Although grazing is managed sustainably in many parts of the ecoregion, impacts remain in some areas and recovery has been slow in others. Water is a scarce resource in the Northern Basin and Range where it is often fully allocated to storage and other uses. Associated water quality is impacted by high temperatures and in some areas by bacteria, contaminants, and aquatic invasive plants.

Strategy Habitats identified for the Northern Basin and Range ecoregion include big sagebrush shrublands, aspen woodlands, riparian, wetlands, and aquatic habitats.

Of the Conservation Strategy's six key conservation issues, invasive species, water quality and quantity, and altered disturbance regimes, primarily fire, are of greatest concern. Invasive annual plants and wildfires interact, creating a fire cycle that results in domination by invasives. In addition to addressing these issues, some actions for the Northern Basin and Range include:

- Working cooperatively with land managers and off-highway vehicle groups to direct use to maintained trails in low-impact areas and improve enforcement of existing off-highway vehicle rules.
- Continuing to proactively manage livestock grazing and restore degraded habitats, including minimizing grazing during restoration of highly sensitive areas, such as wetlands and riparian areas.

### ***West Cascades Summary***

Of all of Oregon's ecoregions, the West Cascades is considered the healthiest by several indicators. For example, this ecoregion has the highest water quality in the state and the fewest problems with water allocation and quantity. Very few species have been extirpated from this ecoregion, and there has been considerable effort toward recovering threatened and endangered species. Much of the remnant late successional forests on public land are managed with an emphasis on biodiversity under the Northwest Forest Plan. The Northwest Forest Plan identifies conservation priorities for species affected by loss and fragmentation of large patches of late successional forests, assessing over 1,000 species. However, the adaptive management component of the Northwest Forest Plan has not been fully implemented. (See the Northwest Forest Plan description in Appendix II.

Strategy Habitats in the West Cascades include late successional conifer (Douglas-fir) forests, oak woodlands, grasslands, wetlands, riparian, and aquatic habitats.

Of the Conservation Strategy's six key conservation issues, altered disturbance regimes (primarily fire) and invasive species are of greatest concerns. In addition to addressing these issues, some actions for the West Cascades include:

- Maintaining current management for a diverse array of species and habitats.
- Continuing implementation of existing plans, and explore options for implementing the adaptive management component of the Northwest Forest Plan.

### ***Willamette Valley Summary***

The Willamette Valley ecoregion has the fastest-growing human population in Oregon and densest population. It supports the states' three largest urban centers (Portland, Salem, Eugene). The 2050 population is projected to be approximately 4 million—nearly double the 2000 population. The ecoregion houses Oregon's economic engines: Six of the top ten agricultural-producing counties and 16 of the top 17 private sector employers.

The majority of the Willamette Valley ecoregion has been altered by development. The Willamette River has been disconnected from its floodplain and much of the Valley's historic habitats have been fragmented. About 96 percent of the Willamette Valley ecoregion is privately owned, presenting challenges to conservation management. Thus, voluntary cooperative approaches are key to long-term conservation.

Strategy Habitats identified for the Willamette Valley ecoregion include: oak woodlands, grasslands, wetlands, riparian, and aquatic habitats.

Of the Conservation Strategy's six key conservation issues, land use changes, altered disturbance regimes (both fire and floodplain function) and invasive species are of greatest concerns. In addition to addressing these issues, some actions include:

- Maintaining and restoring fish and wildlife habitats in urban centers.
- Conserving, restoring and reconnecting high value habitats.