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Strategy Habitat: Grasslands

Ecoregions:

Grasslands are a Strategy Habitat in the Blue Mountains, Columbia Plateau, Coast Range, Klamath Mountains, West Cascades, and Willamette Valley ecoregions. However, grasslands such as alkali grasslands, perennial bunchgrass and montane grasslands also can be found in the East Cascades and Northern Basin and Range ecoregions.

General Characteristics:

Grasslands include a variety of upland grass-dominated habitats such as upland prairies, coastal bluffs and montane grasslands. In general, grasslands occur on dry slopes or plateaus and have well-drained sandy or loamy soils. Although dominant species vary across Oregon, perennial bunchgrass and forbs dominate native grasslands. In some areas, grasslands are similar to wet prairies and wet meadows in structure and share some of the same prairie-associated plants and animals. In all but the most shallow rocky soils, grasslands are maintained through disturbances such as periodic fire, soil upheaval by rodents, frostheave, wind, or salt spray.

Ecoregional Characteristics:

Blue Mountains: Bunchgrass grasslands occur primarily in the northeastern portion of the ecoregion, although other grassy habitats occur throughout the ecoregion. At low elevations, semi-desert grasslands are dominated by drought-resistant perennial bunchgrasses such as needle-and-thread, dropseed, threeawn and muhly, and may have scattered shrubs. Mid-elevation plateau grasslands include extensive bunchgrass prairies of Idaho fescue, junegrass and bluebunch wheatgrass. At high elevations, ridgetop balds and alpine parks are dominated by green or mountain fescue, needlegrass and/or bluegrass species. High elevation grasslands often are on south-facing slopes surrounded by subalpine conifer woodlands.

Columbia Plateau: Grasslands include river terrace grasslands, prairies, canyon slopes and rocky ridges. At low and mid-elevations, semi-desert grasslands are dominated by drought-resistant perennial bunchgrasses

such as needle-and-thread, dropseed, threeawn and muhly, and may have scattered shrubs. Palouse grasslands occur in flat areas with deep soils and are dominated by bluebunch wheatgrass, Idaho fescue, other grasses and forbs. Canyon and foothill grasslands are found on the steeper, rocky slopes surrounding the major rivers in this region and are dominated by bluebunch wheatgrass, Idaho fescue, Sandberg's bluegrass, balsamroot, and other forbs.

Coast Range: Coastal bluffs and montane grasslands are dominated by low-growing vegetation, such as perennial bunchgrasses, forbs, mosses and/or dwarf shrubs. They occur within a matrix of conifer forests. Outer coastal bluffs and headlands are influenced by wind and salt spray, which limit the growth of woody vegetation. Montane grasslands include dry meadows and balds and occur on dry, south- or west-facing slopes with shallow sandy or gravelly soils. They are primarily influenced by periodic fire, soil upheaval by rodents and/or drought conditions.

Klamath Mountains: Grasslands are found in valley bottoms, often in a mosaic with chaparral and savanna, on open serpentine barrens, and high mountain meadows. Historically, grasslands in this ecoregion were maintained by frequent burning and included scattered deciduous and conifer trees. Oak savannas are grasslands with scattered trees. Oak trees in savannas are usually large with well-developed limbs and canopies.

West Cascades: Montane grasslands include open dry meadows, grasslands, and balds. Montane grassland habitats occur in a matrix of mixed conifer forests and woodlands. Mid- and high-elevation dry meadows tend to have deeper and better-drained soils than the surround forests and are dominated by grasses and wildflowers, such as green, Roemer, alpine or western fescue; California brome; timber oatgrass; broadleaf lupine; and beargrass. Balds and bluffs generally occur on south- to west-facing slopes on shallow, well-drained soils and are dominated by bunchgrasses, forbs, and mosses.

Willamette Valley: Grasslands, also called upland prairies, are dominated by grasses, forbs, and wildflowers. Grasslands have well-drained soils and often occur on dry slopes. They are similar to wet prairies in structure and share some of the same prairie-associated plants and animals. Oak savannas are grasslands with scattered Oregon white oak trees, generally only one or two trees per acre. Oak trees in savannas are usually large with well-developed limbs and canopies.

Conservation Overview:

As a whole, native grasslands are one of the most imperiled habitats in the western United States and are disappearing rapidly around the globe. In Oregon, the greatest loss of grasslands has been in valley bottoms and foothills where they have been impacted by conversion to agriculture, development, and invasive plant species. In some areas, past grazing has impacted grasslands, affecting plant composition and structure. Also, non-native species were historically seeded for livestock forage in some grasslands, decreasing the abundance and diversity of native plants. However, grazing practices become more sustainable over time, and carefully managed grazing can help maintain grassland structure where prescribed fire is not practical or desired. Disruption of historical fire regimes has allowed for shrubs or trees to encroach, replacing grasslands with forest. In addition, some foothill grasslands have been converted to forests through tree planting.

In the Blue Mountains ecoregion, less grassland habitat overall has been lost as compared to the other Strategy Habitats, but grasslands are

included because they have statewide and national significance, some have been impacted by past grazing practices and need restoration, and because they face threats from invasive species. There are several important grassland sites currently being managed for wildlife and habitat conservation and high-quality grasslands remain at higher elevations and the extensive canyons in the ecoregion. Native grasslands remain a particular concern at low elevations in this ecoregion.

In the Columbia Plateau, Palouse grasslands once dominated most uplands above 1,000 feet elevation in this ecoregion. Due to the moderate climate and the deep soils, these grassland habitats are valuable for agriculture. Approximately 77 percent of the historic Palouse grasslands have been converted to dryland farming, especially wheat and other grains. Many remaining grasslands have been degraded by invasive plants and poorly controlled livestock grazing.

In the Coast Range, open, grassy habitats once occurred on the marine terrace, headlands, bluffs, higher elevation ridges, and mountain peaks. In forested ecoregions such as the Coast Range and West Cascades, grasslands are particularly important for rare plants and invertebrates. In the Coast Range, mountaintops such as Saddle Mountain, Onion Peak, Sugarloaf Mountain, and Blue Lake Lookout host a number of endemic plant species, including Saddle Mountain bittercress, Chambers' paintbrush, frigid shootingstar, queen-of-the-forest, and Saddle Mountain saxifrage.

Sowing for Songbirds

Since much of the Willamette Valley is privately owned, the efforts of private landowners are key to the survival of grassland birds. The Sowing for Songbirds Project is an example of biologists and landowners working together to provide habitat on a voluntary basis. ODFW built partnerships with agricultural producers through groups such as the State Board of Agriculture, Ryegrass Growers Association, Eugene Farmer's Co-op, 4-H Leaders, and Master Gardeners. ODFW created a "how-to" booklet for landowners, which presented the biology and natural history of the five sensitive grassland bird species, habitat management strategies for different land uses, habitat restoration techniques, resources for implementation, and financial incentive programs. The booklet was widely distributed to interested landowners, agricultural and conservation groups, partners, and county, city, state, and federal agencies. "Hands-on" workshops for both agricultural and non-agricultural landowners in the Willamette Valley were the cornerstone of this program. The workshops gave landowners the opportunity to learn about grassland habitat and to ask questions about their own properties. The highlight of the workshops was a tour of successful

grassland bird habitat within a working landscape. Through cooperative efforts with the Natural Resource Conservation Service and county Farm

Service Agencies (FSA), biologists also made site-visits to provide site-specific recommendations for improving grassland bird nesting habitat while ensuring quality agricultural production. By working closely with the landowners, biologists developed management plans specific to each property and land manager's goals. In agricultural landscapes, long-term bird conservation efforts will require forming partnerships with landowners to forge "win-win" solutions. During the first nine months of the program, 13 habitat management plans were written, resulting in the management and restoration of more than 300 acres of grassland bird nesting habitat. The seed of conservation was planted, and, with the help of Oregon's farmers, grassland bird populations will hopefully grow.



Compared to historic grassland distributions, grassland loss has been extremely high in the Coast Range (99 percent estimated loss), West Cascades (99 percent estimated loss for montane grasslands and 93 percent for balds and bluffs), and Willamette Valley (99 percent estimated loss). Grasslands have been lost due to conversion to other uses, particularly development, vegetation changes following fire suppression, and invasive species. In these ecoregions, grasslands are particularly fragmented and isolated. In cooperation with landowners, remnant patches in these ecoregions should be maintained and, where feasible, restored.

Strategy Species associated with grasslands vary by ecoregion, but include burrowing owl, common nighthawk, grasshopper sparrow, long-billed curlew, ferruginous hawk, Oregon vesper sparrow, streaked horned lark, western bluebird, western meadowlark, common kingsnake, Fender's blue butterfly, hoary elfin (butterfly), Kincaid's lupine, Oregon silverspot butterfly, Siskiyou short-horned grasshopper, Taylor's checkerspot butterfly, bristly-stemmed sidalcea, Coast Range fawn-lily, Cascade Head catchfly, Nelson's sidalcea, Lawrence's milk-vetch, Spalding's campion and Tygh Valley milk vetch. A recovery plan is currently being developed by the U.S. Fish and Wildlife Service for grassland-dependent species that occur in western Oregon and southwestern Washington. It will provide conservation strategies for several Strategy Species in the Willamette Valley.

Limiting factors to grassland habitats

Factor: Altered fire regimes: At sites with deep soils, maintenance of grasslands is dependent in part on periodic fire. Fire suppression has led to encroachment by shrubs and conifer trees in some areas. In the Columbia Plateau, the introduction of cheatgrass can increase the frequency, intensity, and spread of fires. In the Coast Range, prescribed fire is difficult due to high precipitation and wet conditions. When conditions are dry enough to use prescribed fire, there are usually concerns with risk to surrounding forests. In the Klamath Mountains and Willamette Valley, prescribed fire poses challenges such as conflicts with surrounding land use, smoke management and air quality, and safety.

Approach: Maintain open grassland structure by using multiple site-appropriate tools such as prescribed burns, mowing, controlled grazing, hand-removal of encroaching shrubs and trees, or thinning. Re-introduce fire at locations and at times where conflicts such as smoke and safety concerns can be minimized. For all tools, minimize ground disturbance and impacts to native species.

Minimize the spread of cheatgrass. Carefully manage livestock grazing to maintain native plants and soil crust (cryptogammic crust) in low cheatgrass areas. Control fires in cheatgrass-dominated areas.

Thorn Prairie Restoration

Named for mountain whitethorn, a shrub with evergreen leaves and sharp thorns, Thorn Prairie is a mosaic of montane grassland and shrubland habitats. It is located east of Roseburg in the Cascade Mountains, near Diamond Lake. Historic photographs taken from fire lookouts show that Thorn Prairie was once 5,000 to 8,000 acres and was a major feature on the landscape. Due to fire suppression and other reasons, Thorn Prairie is now only 10% of its former size. In addition, whitethorn has expanded into grassy areas and declined in health and productivity in other areas. St. John's wort, an invasive plant, has invaded the eastern edge of the prairie. Although greatly reduced in size and quality from historic conditions, Thorn Prairie is still critical habitat for elk and black-tailed deer. The mosaic of grass and whitethorn provides spring forage, hiding cover for calves and fawns, and winter range. The prairie also provides nesting habitat for songbirds that prefer open brush or

grassy habitats. In fact, the diverse shrub community attracts calliope hummingbirds and green-tailed towhees, which are uncommon in the West Cascades ecoregion. In partnership with Rocky Mountain Elk Foundation, Oregon Hunters Association, Umpqua Valley Audubon Society, and ODFW, the Forest Service plans on restoring and expanding the prairie to 1000-2000 acres in size. Since the late 1990's, the Forest Service has treated about 250 acres by implementing prescribed burns; conducting mechanical treatment of shrubs (mowing); planting shrubs, forbs and grasses; and closing a low-use road. Future efforts will include a timber sale to remove encroaching small conifers, invasive plant control, more shrub mowing, and a volunteer-based effort to remove conifers by hand. These restoration efforts will benefit a variety of species, as well as the hunters and birders who enjoy wildlife and open spaces.

Factor: Invasive species: Invasive plants are degrading grassland habitats and displacing native plants and animals. Depending on the area, such invasives include cheatgrass, medusahead, ventenata, rush skeleton weed, spikeweed, Hungarian brome, yellow star-thistle, knapweeds (diffuse, spotted and purple), leafy spurge, Canada thistle, St. John's wort, tansy ragwort, Armenian (Himalayan) blackberry, evergreen blackberry, Scotch broom, false brome, Harding grass, and tall oatgrass. Most low elevation grasslands are almost entirely dominated by invasive grasses, forbs, and/or shrubs. At higher elevations, such as montane grasslands in the West Cascades, invasive plants are less common. However, these habitats need to be monitored to detect new invasives, as livestock (cows, pack horses, riding horses) can introduce invasive plants.

Approach: Identify the best remaining native grasslands and work with landowners to maintain quality and limit the spread on invasives. Emphasize prevention, risk assessment, early detection and quick control to prevent new invasives from becoming fully established. Prioritize control efforts and use site-appropriate methods to control newly-established invasive plant species for which management can be most effective. Re-seed with site appropriate native grasses and forbs after control efforts. Conduct research to determine methods to manage established species such as cheatgrass, medusahead rye, and false brome. Where appropriate, manage

livestock grazing and recreational use to minimize new introductions in montane grasslands. Support current prevention programs such as weed-free hay certification.

Factor: Land use conversion: Remnant low-elevation grasslands in valleys, foothills and coastal headlands are subject to conversion to agricultural, residential or urban uses.

Approach: Because many of these areas are privately-owned, voluntary cooperative approaches are the key to long-term conservation using tools such as financial incentives, technical assistance, regulatory assurance agreements, and conservation easements. Use and extend existing incentive programs such as the Conservation Reserve Program and Grassland Reserve Program to conserve, manage and restore grasslands and to encourage no-till and other compatible farming practices. Support and implement existing land use regulations to preserve forest land, open spaces, recreation areas, and natural habitats.

Factor: Land management conflicts: Resource conflicts can arise because high quality grasslands are often high quality grazing resources. Although grazing can be compatible with conservation goals, it needs to be managed carefully because Oregon's bunchgrass habitats are more sensitive to grazing than the sod-forming

Zumwalt Prairie: A Grassland System with Great Promise for Conservation

Nestled between the Willowa Mountains and the canyon lands of the Imnaha, Snake and Grande Ronde rivers, Zumwalt Prairie is the largest and healthiest fescue-dominated grassland in the western United States. Fescue-dominated, deep-soiled prairies such as Zumwalt once stretched across the intermountain region of the northwestern United States and southwestern Canada, the northern foothills of the Rockies, and the northern edge of the Great Plains. Globally, nationally and at the state level, this grassland habitat currently occupies a very small fraction of its historical range. In 2000, The Nature Conservancy (TNC) purchased a 28,000-acre property which makes up the Camp Creek drainage, part of the 161,000-acre Zumwalt Prairie. Zumwalt's native prairie supports a stunning diversity of plant and animal species, including one of the most significant concentrations of breeding birds of prey in North America. Large mammals such as mule deer, elk, black bear, bighorn sheep, cougar, and bobcat share the preserve's grass-

lands and wooded canyons with smaller creatures including Belding's ground squirrel, badger, coyote, porcupine and fox. Thriving populations of Spalding's catchfly, a federally-listed threatened plant species that occurs in small isolated populations in remnant grasslands of the Northwest, can also be found on the prairie. Zumwalt has benefited from the careful management of past landowners, and grazing on the prairie has had limited lasting effect on the bunchgrass ecosystem. In addition to collecting data on a variety of plant and wildlife subjects, TNC is currently collaborating with members of the local community to better understand the compatibility between ecological and restoration goals and various forms of land use, including grazing. TNC's approach is one example of community-based conservation, and their research will provide new insights into best management practices on grassland habitats.

grasses of the mid-western prairies. Overgrazing can lead to soil erosion, changes in plant species composition and structure, and degradation by invasive plants.

Approach: Use incentive programs and other voluntary approaches to manage and restore grasslands on private lands. Manage public land grazing to maintain grasslands in good condition. Conduct research and develop incentives to determine grazing regimes that are compatible with a variety of conservation goals. Restore native grassland habitat when possible, using active work that creates local jobs where passive restoration is impractical due to grassland condition, invasive species, or other issues. Promote use of native plants and seed sources in conservation and restoration programs.

Factor: Loss of habitat connectivity: In the Columbia Plateau and Willamette Valley, grassland habitats often occur in small patches such as roadsides and field edges. These patches are valuable habitat for some species, especially some plants. However, small size and poor connectivity of remnant patches limits dispersal for some species, and makes patches more vulnerable to potential impacts from adjacent lands (e.g., herbicide and pesticide drift).

Approach: Maintain high priority patches and improve connectivity when possible. When possible and practical, use a landscape approach in incentive programs to create buffers around key grassland patches.

Factor: Loss of habitat complexity in oak savannas: In the Klamath Mountains and Willamette Valley ecoregions, large-diameter oak trees with lateral limb structure and cavities continue to be lost.

Approach: Maintain large oaks, remove competing conifers or densely-stocked small oaks, create snags from competing conifers to provide cavity habitat. Also see discussion on oak woodlands.

Factor: Recreational impacts: In some grasslands in the Coast Range, Klamath Mountains, and West Cascades ecoregions, recreational use impacts grassland vegetation.

Approach: Work with land managers to direct recreational use away from highly sensitive areas. Provide recreational users with information on grassland issues and low-impact uses.



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