

Willamette Valley Oak Savanna Habitat

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Definitions

- An oak savanna is grassland characterized by a scattered distribution of open-growth oak trees and small groves of oaks (Johannessen et al., 1971).
- Upland prairie is the type of grasslands most commonly associated with oaks. Oaks are more commonly found in dryer sites and often have thinner soils.
- A habitat is the living space for plants and animals that contains enough acreage to support sustainable populations of the species that rely on the particular habitat type

Historic and Current Vegetation

- Land surveys conducted by the General Land Office of the US Government in the 1850's documented about 1 million acres of the Willamette Valley were prairie lands [both upland and wetland] (Alverson 2006) and over 400,000 acres contained oak (ODFW 2006).
- Evidence suggests that the valley prairies may have become established during a time when the climate was warmer and drier than today (Hansen 1942). At present, the climate of the Willamette Valley is sufficiently cool and moist to support woody vegetation on most sites (Alverson 2006). Palynological studies indicate that the Willamette Valley has been dominated by oak savanna for more than 6,000 years. Since lightning fires are infrequent, this suggests that human-caused fires have maintained this sub-climax condition (Boyd, 1999).
- The Kalapuya Indians, the Willamette Valley's native inhabitants, had substantial motivation to use fire in the landscape. The falls on the Willamette River at Oregon City made most of the river inaccessible to salmon. The Kalapuya relied on the native plants of the prairie and game to provide their economy. In order to eliminate woody vegetation and maintain the open structure that facilitated this diverse resource base, frequent, low-intensity fires were set (Boyd 1999).
- These fires maintained oak savanna habitat and the numerous grass and forb species that evolved with that fire regime. In addition, the oaks could establish large crowns that produce copious amounts of acorns and develop varied microhabitats that many wildlife species especially migratory songbirds and western grey squirrels depend upon.
- Post-Euro-American settlement (1850's), cessation of fire, conversion of land to agricultural uses, and urbanization has almost eliminated this habitat.
- Current estimates of remaining grassland and savanna habitat are approximately 10,000 acres which is less than 1% of the historic extent (Altman, 2000) making them one of the rarest of North American ecosystems

(ONHP 1983, Noss et al. 1995). Oak woodlands have been reduced to less than 7% (ODFW 2006).

- Currently, the largest threat to oak habitat is the encroachment and overtopping of oaks by conifers (mostly Douglas fir). Suppression of fire and promotion of conifer forests has facilitated the loss of oak and the prairie understory.
- Oaks do not grow very tall (60-80 ft) and are not shade tolerant. In undisturbed woodland, they compete with each other as well as conifers. Most of the remaining oak stands have tall, scraggly oaks with few branches that do not provide adequate habitat for savanna wildlife.

Oaks: Value as Wildlife Habitat

- Large (100-200 acre), relatively undisturbed, oak savanna support many migratory songbirds that rely on the grasslands for nesting, or large open-growth oaks for food, nesting, and cover.
- Large oaks provide nest cavities for bird such as kestrels that hunt the grasslands; as well as produce abundant acorns utilized by both birds and mammals such nuthatches, acorn woodpeckers and western gray squirrels. They are usually draped with copious amounts of lichen which is an important protein source for deer and elk when they fall to the ground during storms. The mistletoe that parasitizes these large Oregon white oaks provides abundant food resources for birds such as western bluebirds (Zack 2002).

Prairie: Value as Wildlife Habitat

- Native Willamette Valley grasslands with their abundant wildflower composition provide essential habitat for numerous insects, birds, and mammals.
- The compact growth form of our native bunchgrasses provides intervals that remain open and provide ample room for seedling establishment and room for forb [wildflower] species to thrive (Wilson 1998). The space between the grasses also provides crucial nesting areas and cover for wildlife species such as western pond turtle and Oregon's state bird, the western meadowlark.
- The loss of prairie plant species and large-tracts of prairie habitat has caused a cascading loss of wildlife from invertebrates to birds to mammals.
 - The loss of specialized pollinators further exacerbates the loss of plant species that may rely on seedling recruitment to persist on a site.
 - 97% of land bird species rear their young on insects. The greater distance birds must go to find food for their young, the less likelihood of a successful nesting outcome. Non-native plants, such as those found in agricultural fields, do not host the abundance of invertebrate species that native plants do (Tallamy 2004). Thus, the decline in native prairie plants has reduced the abundance of many invertebrate species and played a key role in reducing native song bird populations in the valley.

- Loss of large-tracts of open, undisturbed prairie has caused startling declines in ground-nesting species such as western meadowlarks and grasshopper sparrows that need large territories of 20+ acres/family as well as undisturbed grasslands free of nearby trees and predators (Oregon Department of Fish and Wildlife).

Impact of Fragmentation on Wildlife

- Conversion of the last remaining large parcels of oak savanna and grasslands to other uses interrupts the natural processes that maintain them.
- Fragmentation is increasing as development spreads further into the foothills of the Willamette Valley.
- Current breeding bird surveys (Hagar and Stern, 1997) of oak woodland and savanna species showed declining trends in small patches of habitat. Only sites with 80-100 acres or more of oak habitat were able to sustain the diversity of bird species that have been documented in the 1960's.
- Fragmentation negatively impacts several high-priority oak-associated bird species such as the white-breasted nuthatch, Lewis' woodpecker, and American kestrel that have large home ranges (Altman, 2000).
- Fragmentation negatively impacts other high-priority species such as western bluebird, acorn woodpecker, and western wood-pewee by increasing the level of parasitism, predation, and/or competition for nest sites.
- Current conservation strategies are focused on maintaining or providing tracts of native and/or agricultural grasslands in tracts of greater than 200 acres (Altman, 2000) as well as educating private landowner on how they can promote oak and grassland habitats that support oak savanna dependent species (Oregon Department of Fish and Wildlife, Campbell 2004, Vesely et al. 2004)

Conservation Focus: Western Oregon and Washington White Oak Habitat

This ecosystem contains some of the most endangered species along the Pacific Coast. Consequently, there is a significant regional effort underway for oak habitat conservation that includes virtually every natural resource agency and organization in the Willamette Valley along with numerous private landowners (Altman, pers. comm.). As of 2002, over 6 million dollars had been devoted in Washington and Oregon to preserve and restore oak habitat. These projects seek to *maximize contiguous areas* of grassland and oaks and thus *minimize habitat fragmentation* (Altman, 2000).

Agencies Ranking Oak Savannah/Woodland Habitat as High Priority

- Bonneville Power Administration
 - BPA's fish and wildlife mitigation program has increasingly focused on funding projects to protect and enhance oak and prairie habitats.
- Oregon Department of Forestry

- They are administering the Federal Program “Forest Legacy” and have chosen oak woodlands and savanna habitat as a critical forest type for protection. They also actively partner with other groups to support the education of private landowners regarding the significance of oak habitat.
- The Nature Conservancy of Oregon and Washington
 - In a report to the EPA, they wrote “For upland communities, greatest losses [of rare plants and animals] have occurred in savanna and dry prairie.... We recommend local citizen involvement, land purchases, habitat restoration and invasive species control as a means of protection and restoring remnant ecosystems and biodiversity in the Willamette Valley (Titus et al., 1996).
- Bureau of Land Management
 - The Eugene District BLM has adopted a policy to “Maintain, enhance, and acquire oak, oak-conifer woodland, and pine stands for associated wildlife species” (BLM, 1995).
- Oregon Department of Fish and Wildlife
 - In 2006, they published the Oregon Conservation Strategy which identifies Conservation Opportunity Areas throughout Oregon. The key focus for the Willamette Valley is oak and prairie habitat conservation and restoration.
- US Fish and Wildlife
 - Establishment of the Partners for Fish and Wildlife Program. This program helps private landowners restore habitat for wildlife value. Since 2002, they have undertaken a concerted effort in the Willamette Valley to target oak savanna and woodlands for restoration dollars.
- Natural Resource Conservation Service
 - They have expanded the Conservation Reserve Program (CRP) to include the creation of oak and prairie habitat in marginal farmland.
 - WHIP and EQUIP programs include conservation practices and cost share for both oak and prairie restoration including critical pollinator habitat enhancement.
- The Natural Heritage Advisory Council
 - The Council advises the State Land Board under the authority of ORS chapter 273 on plant communities that are rare and threatened and which need to be secured through public acquisition.

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