



Oregon Vesper Sparrow (*Pooecetes gramineus affinis*)

Conservation Status—The Oregon vesper sparrow is one of two *Pooecetes gramineus* subspecies occurring in Oregon. The Oregon vesper sparrow is an ISSSSP Sensitive Species in Oregon and Washington, and is designated as an Oregon Conservation Strategy (OCS) species in the Willamette Valley and designated as a subspecies of concern by the U.S. Fish and Wildlife Service (ODFW 2006, USFWS 2009). Limiting factors are reported to be: habitat degradation due to altered fire regimes and invasive species; nest failure due to agricultural practices during breeding season; and predation by domestic cats (*felis catus*; ODFW 2006). Except for one research study (Altman 1997, Altman 1999), all information on *Pooecetes gramineus affinis* from the Willamette Valley is based on anecdotal observations. Therefore many aspects of the subspecies autecology can only be approximated by relying on research conducted on other subspecies of *P. gramineus*

Distribution—*P. g. affinis* is a long distance migrant that breeds west of the Cascade crest in Oregon. A second subspecies, *P. g. confinis* is a summer resident occurring throughout the shrub-steppe east of the crest (Altman 2003). Northern populations of *P. g. affinis* (including Oregon) winter in southern U.S. to central Mexico (Jones and Cornely 2002). Oregon vesper sparrows were once abundant in the Willamette Valley (Gabrielson and Jewett 1940), but are now rare across most of the region (Altman 1999). The present Willamette Valley population is most common in the low foothills and buttes along the periphery of the Valley (Altman 1997).

Ecology— Across the geographic range of *P. gramineus*, the species occupies a wide variety of grassland and agricultural habitat types including: native prairies and savannas, shrub-steppe communities, hayfields, pastures, and croplands (Jones and Cornely 2002). There is no information describing habitat relationships of the Oregon vesper sparrow prior to European settlement of the Willamette Valley. However, the species' affinity for short stature grasslands across contemporary landscapes suggests that Oregon vesper sparrows were probably most closely associated with native upland prairies and savannas that once extended across the Willamette Valley foothills and dry sites on the valley floor. During the early Twentieth-Century, Oregon vesper sparrows apparently were well adapted to agricultural landscapes in the Willamette Valley. Gabrielson and Jewett (1940) found the species common in "open meadows and farmlands".

During an survey of grassland songbirds of the Willamette Valley conducted in 1996, 95% of Oregon vesper sparrows were detected in lightly grazed pastures and 2-5 year old Christmas tree plantations, although <15% of sampling occurred in those habitat types (Altman 1997). Vegetation structure in habitats occupied by the species is characterized by sparse shrubs (<25%

of total cover), grass cover height <30 cm (< 12 in; Altman 1997), and the presence of singing perches above the herbaceous canopy such as trees, tall shrubs, or fence posts (Jones and Cornely 2002).

The diet of Oregon vesper sparrows has not been investigated, but other subspecies of *P. gramineus* feed upon caterpillars and other invertebrates during the breeding season; seeds of grasses and forbs are consumed all year (Berger 1968).

Spring migrants begin appearing in the Willamette Valley during mid-March to mid-April (Altman 2003). Ground nests are constructed from mid- to late-May, usually at the base of a shrub, tree, or other object (Altman 2003). In northeast Oregon, grass cover height surrounding the nests of *P. gramineus. confinis* averaged 13 cm, SD =0.07 (5.1 in, SD = 0.28 ; Kennedy et al. 2009). Juveniles typically fledge by the end of June, but occasionally young may not fledge until late July. Average territory size in the Willamette Valley is 1.3 ha; range 0.45-5.3 ha (3.1 ac; range 1.1-13.0 ac; Altman 1999). Approximately 50% of breeders return to territories used previous years (Best and Rodenhouse 1984). We found no information describing natal dispersal for any subspecies of *P. gramineus*.

Habitat Management/Restoration— There has been no published research describing the response of Oregon vesper sparrows to restoration activities in the Willamette Valley. We have largely relied on restoration studies that have examined the effects of habitat changes upon other subspecies of *P. gramineus*.

In general, research across the range of *P. gramineus* has demonstrated that the species is more responsive to differences in vegetation structure than the composition of plant communities. Kennedy et al. (2009) did not find significant differences in nest survival, clutch size or other population parameters across plant communities composed of varying proportions of native/non-native species. In an oak savanna restoration study conducted in Minnesota, vesper sparrow abundance was positively correlated with a gradient of decreasing tree density and a subsequent increase in open grassland (Davis et al. 2000). The short-term abundance (Bock and Bock 1992) and nest density (Pylypec 1991) of vesper sparrows also increased in areas where prescribed burning or wildfire has reduced grass cover height and density; explanations by the authors for the observed effects were increased food availability (i.e., forb seeds) and changes to vegetation structure preferred by vesper sparrows. However in southeast Washington, vesper sparrow abundance had not significantly recovered 7-years after a severe wildfire that altered the habitat type from sagebrush-steppe to grassland dominated by cheatgrass (*Bromus tectorum*), a non-native, invasive species (Earnst et al. 2009).

Today, Oregon vesper sparrows are most likely to be found on the hilly margins of the Willamette Valley, as they probably were prior to European settlement. Dry, upland prairies and pastures are the best candidate sites for restoring Oregon vesper sparrow habitats. Given both the rarity and site fidelity of the species, habitat management areas located near existing breeding territories are more likely to be discovered and used than management areas that are distant from known populations.

Non-Habitat Limiting Factors— Across the geographic range of *P. gramineus*, predation is reported to be one of the primary causes of nesting failure (Best and Rodenhouse 1984, Altman 1999, Kennedy et al. 2009). Thirteen-lined ground squirrels (*Spermophilus tridecemlineatus*), striped skunks (*Mephitis mephitis*), raccoons (*Procyon lotor*), and feral and domestic cats (*felis catus*) are reported to be the most serious predators of vesper sparrows (Altman 1999, Grant et al. 2006).

Numerous studies have shown that tilling, hay cutting, and other agricultural practices destroy ground nests of grassland birds (Camp and Best 1994, McMaster et al. 2005). In the Willamette Valley, mechanical operations occurring from mid-May to July 1 are likely to have the most severe impact on nest success and juvenile survival. Agricultural pesticides may reduce the availability of invertebrate prey taken by Oregon vesper sparrows during the breeding season, thereby lowering productivity of the species (Altman 2003a). Different studies have demonstrated both negative and positive results to grazing; the differences are apparently explained by the grass cover density and height resulting from grazing pressure (Jones and Cornely 2002).

Rainfall and weather patterns affect food availability and have been shown to be an important determinant of vesper sparrow nesting success (George et al. 1992).

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