



## Streaked Horned Lark (*Eremophila alpestris strigata*)

**Conservation Status**— *Eremophila alpestris strigata* is listed as an ISSSSP Sensitive Species in Oregon and Washington, and has been designated as an Oregon Conservation Strategy (OCS) species and a federal candidate subspecies for listing under the Endangered Species Act (ODFW 2006, USFWS 2009). Factors causing declines are reported to include reduced prairie habitat quality and nest failure due to land management practices such as mowing and spraying (ODFW 2006). Drovetski et al. (2006) estimated the total population size of the streaked horned lark is <800 individuals across the subspecies' geographic range, although this estimate warrants revision because of the recently discovered activity centers in Oregon (Altman, pers. comm.; R. Moore unpublished survey data). Mitochondrial DNA studies indicate that *E. a. strigata* demonstrates remarkably little genetic diversity among populations along the Pacific Northwest coast and has long been isolated from interior subspecies (Drovetski et al. 2006). Given the distinctive genetics of the streaked horned lark and problems of small populations, Drovetski et al. (2006) recommend that actions to ensure the future of the subspecies be a priority.

**Distribution**— Of the 21 subspecies of *E. alpestris*, three or four are known to breed in Oregon (Altman 2003b). *E. a. strigata* is the only subspecies to regularly breed in the Willamette Valley, but other subspecies over-winter in the region (Moore 2008a). The streaked horned lark is considered an uncommon permanent resident of the central Willamette Valley that is distributed in scattered, localized populations (Altman 2003b). The subspecies was formerly considered common in western Oregon and particularly abundant in Yamhill, Polk, Linn and Benton Counties (Gabrielson and Jewett 1940). Other subspecies of *E. alpestris* remain common in shrub-steppe communities of eastern Oregon (Reinkensmeyer et al. 2007)

**Ecology**—Horned larks occur in open fields with large patches of bare ground and sparse vegetation, beaches, and foredunes; forests and tall vegetation are avoided (Beason 1995, R. Moore pers. comm.). In the Willamette Valley, Altman (2003b) found that streaked horned larks were absent in fields having grass layer heights >0.6 m (2 ft). However there is evidence that the species will use fields with taller grass if its cover is sparse (R. Moore, pers. comm.). Landcover types used in the Willamette Valley include: native prairie, Christmas tree farms, plowed fields, intensively grazed pastures, mudflats, gravel roads, and grass seed fields of suitable vegetation structure (Altman 1999, R. Moore pers. comm.). In the Columbia River Gorge, areas where dredging spoils have been deposited are occupied by streaked horned larks, however some nests have been destroyed when spoils have been dumped onto nests (Pearson et al. 2008).

A study on an agricultural landscape in Colorado found that that horned larks avoid field edges, but nesting success showed a surprising negative relationship with size of breeding habitat patches (Skagen et al. 2005). However this finding may have been caused by the unique

composition of local predator communities (Skagen et al. 2005) and has not been replicated elsewhere.

The diet of adult streaked horned larks is primarily composed of seeds, seedlings of crop plants (e.g., wheat, oaks, lettuce), and insects; adults feed insects to their young (Beason 1995). Moore (2008b) reported that streaked horned larks wintering in the Willamette Valley concentrate their feeding on seeds from only one or two non-native grass or forb species, although the food plants differ among horned lark flocks. The findings were ambiguous as to whether horned larks demonstrated a preference for the non-native seeds taken, or a lack of more preferable alternatives on intensively managed croplands.

The timing of nesting activities in the Willamette Valley is variable, probably in response to weather and environmental factors (Altman 2003b). Eggs have been discovered as early as March 15 (Altman 2003b), but nesting typically does not commence until May 1 (R. Moore, pers. comm.). Eggs have been observed in nests as late as mid-August (R. Moore pers. comm.). The nest is constructed on the ground, in a natural depression or one excavated by the female (Beason and Franks 1974). The nest is usually located on the north side of rock or patch of tall plants to protect nestlings from direct sun (Hartman and Oring 2003). Females show very strong fidelity to nest sites (Pearson et al. 2008).

Average territory size in the Willamette Valley is 0.77 ha (1.9 ac, n=3; Altman 1999). Across the geographic range of the species, territory size ranges between 0.3 - 5.1 ha (0.74 - 12.6 ac, Beason 1995). Territories are abandoned in fall and individuals aggregate into winter flocks (Altman 2003b).

**Habitat Management/Restoration—** Recommendations by Altman (2003), (Moore 2008a), personal communications with R. Moore provide the following guidance for managing streaked horned lark habitats:

- Delay mechanized activities in nesting habitats (including croplands) during nesting and fledging periods (after August 15) to avoid egg and juvenile mortality
- Create and/or maintain habitat patches characterized by bare ground or sparse, herbaceous vegetation that remains undisturbed during the breeding season. Herbicides applied prior to the nesting season have been used successfully to prevent the development of dense vegetation around nests (R. Moore pers. comm.)
- Pastures provide some opportunities for nesting; however the grass cover that is typically maintained for livestock forage is too dense for horned lark nesting. Horned larks will opportunistically use over-grazed areas.
- Horned larks can become habituated to aircraft and ground vehicle traffic, but are easily disturbed by foot traffic. Maintain a buffer around nesting areas to exclude human visitors, dogs (*Canis lupus familiaris*), and domestic cats (*Felis catus*) during the nesting season.

Pearson et al. (2006) state that the strong fidelity displayed by females to previously used nest sites decreases the likelihood that the species will colonize restored habitats. Post-fledging juveniles are more likely than breeding adults to discover and utilize new habitat patches, and habitat management areas created near existing populations have a greater chance of being encountered by juveniles.

**Non-Habitat Limiting Factors**— Predation is a major cause of mortality among adults and juveniles (Beason 1995); especially by mammals closely-associated with rural residential areas such as striped skunks (*Mephitis mephitis*), raccoons (*Procyon lotor*), feral and domestic cats (), dogs (Altman 2003b) and mice (*Peromyscus maniculatus*; R. Moore pers. comm.). Significant avian predators include the northern harrier (*Circus cyaneus*), American kestrel (*Falco sparverius*), and red-tailed hawk (*Buteo jamaicensis*),

Mechanized agricultural operations such as mowing, tilling, and spraying has been reported to cause direct mortality of eggs and juveniles (Beason 1995, Altman 2003b). The tendency of streaked horned larks to forage and nest on roadsides causes the species to be vulnerable to traffic-related mortality (Altman 2003b).

### Literature Cited—

- Altman, B. 1999. Status and conservation of grassland birds in the Willamette Valley. Unpublished report prepared for Oregon Department of Fish and Wildlife. Portland, OR.
- Altman, B. 2003. Horned lark (*Eremophila alpestris*). Pp 425-428 In, D. B.. Marshall, M.G. Hunter, and A.L. Contreras. 2003. Birds of Oregon: A General Reference. Oregon State University Press, Corvallis, OR.
- Beason, R. C. and E. C. Franks. 1974. Breeding behavior of the Horned Lark. Auk 91: 65–74.
- Beason, Robert C. 1995. Horned Lark (*Eremophila alpestris*), The Birds of North America Online (A. Poole, Ed.). Ithaca: Cornell Lab of Ornithology
- Gabrielson, I.N. and S.G. Jewett. 1940. Birds of Oregon. Oregon State College, Corvallis, OR. [Reprinted in 1970 under the title Birds of the Pacific Northwest by Dover Publications].
- Hartman, C.A. and L.W. Oring. 2003. Orientation and microclimate of horned lark nests: the importance of shade. The Condor 105:158-163.
- Moore, R. 2008. Winter diet of streaked horned larks in Oregon. Prepared for the U. S. Fish and Wildlife Service. Portland, OR.
- ODFW [Oregon Department of Fish and Wildlife]. 2006. Oregon conservation strategy. Oregon Department of Fish and Wildlife. Salem, OR.
- Pearson, S.F., A.F. Camfield, and K. Martin. 2008. Streaked horned lark (*Eremophila alpestris strigata*) fecundity, survival, population growth and site fidelity: Research progress report. Washington Department of Fish and Wildlife, Wildlife Science Division, Olympia, WA.

Reinkensmeyer, D.P., R. Miller, R.G. Anthony, and V.E. Marr. 2007. Avian community structure along a mountain big sagebrush successional gradient. *Journal of Wildlife Management* 71:1057-1066.

Skagen, S.K., A.A. Yackel Adams and R.D. Adams. 2005. Nest survival relative to patch size in a highly fragmented shortgrass prairie landscape. *Wilson Bulletin* 117:23-34.

USFWS [U.S. Fish and Wildlife Service]. 2009. Federally listed, proposed, candidate, delisted, and species of concern by taxonomic group. Web application. Accessed 03/01/09 at <http://www.fws.gov/oregonfwo/Species/Data/default.asp>. USFWS Oregon State Office, Portland, OR.



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