

Range, Abundance, and Habitat Associations of Streaked Horned Lark (*Eremophila alpestris strigata*) During Winter

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Introduction

Streaked Horned Lark (*Eremophila alpestris strigata*) was recently placed on the Federal Candidate Species List because of concerns that the subspecies had declined precipitously across its range. Formerly found throughout the lowland Pacific Northwest, including coastal Oregon and Washington and riverine Valleys in those states, the breeding range of the subspecies is now restricted primarily to coastal Washington, prairie remnants in western Washington, and the Columbia and Willamette River valleys in Oregon. Few data on habitat use, reproductive success, or population estimates have been generated from the breeding season. Available data suggested small numbers breed in Washington and about 200 pairs may breed in western Oregon (Altman 1999, Pearson 2003).

Most subspecies of horned lark migrate after breeding to more temperate climates. However, the wintering range of Streaked Horned Lark had not been clearly delineated. We conducted winter surveys throughout lowland habitats of western Oregon and Washington to determine if Streaked Horned Larks winter in their breeding range, to estimate total numbers of over-wintering birds, to determine if other subspecies also over-winter with Streaked Horned Larks, and to identify the habitats used by Streaked Horned Larks during winter. Here, we outline the primary findings from our surveys during the winter of 2003-2004.

Methods

I. Randomized Geographic Block Surveys

- a. Eighteen 5-minute (lat/long) square blocks were chosen at random from the Willamette Valley, coastal Oregon, and agricultural SW Washington. Blocks were concentrated in the Willamette Valley. This method was employed to identify habitat associations that may not match conventional notions of horned lark habitat.
- b. Roadside point counts were conducted in each block. Counts were 5 minutes in duration. Counts locations were on navigable roads, spaced at .5 miles intervals. Recorded at each stop were: location, habitat types, species detected, and number of individuals of each species. When horned larks (*Eremophila alpestris*) were

- detected, we recorded their subspecific identification, abundance, and habitat associations.
- c. After 15-20 point counts per geographic block, the remaining accessible roads in each block were driven, and agricultural habitats were evaluated for suitable horned lark habitat. When areas of lark habitat were found, they were surveyed for 5 minutes. If larks were detected, we recorded their subspecific identification, abundance, and habitat associations.
- II. Focused agricultural land surveys
- a. Large expanses of open agricultural land that were known or suspected by the principal investigators to host wintering grassland bird communities were surveyed using the technique described in bullet point “I. c.” above.
- III. Solicited horned lark sightings
- a. We requested information on horned lark sightings from members of the Oregon and Washington birdwatching communities via their e-mail listserves. We investigated each reported flock to assess location, subspecific identification, abundance, and habitat associations.

Results

We surveyed 18 lat/long blocks selected at random and 295 point counts within those blocks (Table 1). In addition, we surveyed all roads within each of those lat/long blocks.

We found that Streaked Horned Larks were present within the Columbia and Willamette valleys of western Oregon, even during the severe snow and ice storms of late December and early January. That observation indicates that most individuals probably spend the entire winter in Oregon and Washington.

Table 1- Survey results from wintering range surveys for *Eremophila alpestris strigata*, winter 2003-2004.

Survey Results	Oregon	Washington
Number of Surveyed Blocks ¹	17	2
Number of Surveyed Points	268	27
Number of Surveyed Points with Horned Larks ²	6	0
Total Number of Locations with Horned Larks Using All Survey Methods ³	13	3
Number of Horned Larks Detected Via Point Counts	19	0

Number of Horned larks Detected Using All Methods	661	119
Number of Confirmed <i>strigata</i>	382	39
Number of Probable <i>strigata</i> ⁴	429	39
Number of Possible <i>strigata</i> ⁵	591	39
Maximum Flock Size, Horned Larks	105	80
Maximum Flock Size, <i>strigata</i>	90	27
Minimum Flock Size, Horned Larks	1	1
Minimum Flock Size, <i>strigata</i>	9	1

¹ One block was split between Oregon and Washington, and was counted for both.

² “Horned Larks” refers to all subspecies of *E. alpestris*; “*strigata*” refers to streaked horned larks only.

³ This is the most conservative figure. It combines areas at which horned larks were found on different dates if the areas were within 3 miles of each other. For example, horned larks were recorded at three separate sites at Baskett Slough National Wildlife Refuge, but the refuge was counted as only one location because of uncertainty as to the independence of these observations.

⁴ Includes one Willamette Valley flock that was reported by a reliable observer. We were unable to confirm the subspecific makeup of this group, but its Polk/Benton County location strongly suggests *strigata*.

⁵ In a few instances, we were unable to confirm subspecific identification and total number of horned larks present in a large area because of this species’ propensity for moving long distances quickly, and for inhabiting very large agricultural fields that we did not have permission to walk. These numbers represent the total number of *strigata* if all detected but unidentified horned larks were *strigata*, and none (identified or unidentified) were counted more than once.

Distribution

In the winter of 2003-2004, the densest concentration of wintering *strigata* was found in the mid-Willamette Valley, mostly in the open agricultural lands of Linn, Benton, Polk, and Marion Counties. The only other substantial group of this subspecies in Oregon was located at the Port of Portland, Multnomah County, on a large expanse of weedy/sandy dredge spoil. There were two smaller wintering groups in coastal Gray’s Harbor and Pacific Counties, Washington, both of which are traditional breeding sites for *strigata*.

Contrary to the little information available when this study began, *strigata* is apparently endemic to Oregon and Washington. It is resident west of the Cascades, south to the southern Willamette Valley and north to the lower Puget Sound area. Speculation that this subspecies also winters in California may be incorrect, but further investigation is needed.

Habitat Associations

Point counts offered almost no information on abundance or habitat associations of *strigata*. No larks confirmed as *strigata* were detected through point counts. Most effective were the visual searches for suitable horned lark habitat (resulting in 305

strigata) and sightings reported by independent observers (resulting in 116 *strigata*, or 163 when including the unconfirmed Polk/Benton flock described in Table 1).

There were 32 distinct habitat types represented in the surveys, of which 8 hosted horned larks (Table 2). Of these 8 habitat types, all 8 hosted *strigata*.

It may be appropriate to combine the 6 distinct agricultural habitats into one habitat type. The presence of wintering *strigata* seems to be associated with a sufficiently large area of bare, weedy ground than of any particular agricultural use. When this is done, the number of habitat types associated with *strigata* declines to 3.

Table 2- Habitat associations of 903 Horned Lark detections in Oregon and Washington, broken down by subspecies.

	bare ag. soil	harvested ag. field	annual grass	perennial grass	clover	gravel ag. road	dredge spoil or riverine beach	ocean beach foredune or natural bayside sand flats
% of 903 Horned Larks in: ¹	9.9	9.7	6.7	30.4	18.1	1.0	19.9	4.4
% of 472 (519) <i>strigata</i> in: ²	18.2 (16.6)	1.1 (1.0)	12.7 (11.6)	35.0 (31.8)	6.8 (15.2)	1.7 (1.5)	16.3 (14.8)	8.3 (7.5)

¹ All detections, including those that were omitted in the total tally due to concerns over double counting.

² All detections, including those that were omitted in the total tally due to concerns over double counting. Parenthetical figures include the unconfirmed *strigata* in the Polk/Benton flock from Table 1.

All habitats in which *strigata* was detected shared two general characteristics: a high percentage of bare ground, and a large expanse of treeless/shrubless area. Sites that hosted 20+ *strigata* averaged an estimated 85% bare ground. This conforms to the conventional notion of horned lark winter habitat throughout its range, and was responsible for the success of habitat-oriented searches for *strigata*. There also appeared to be an association with low, sparse, weedy growth that may provide food resources for larks, but this needs to be verified quantitatively in future efforts.

In Oregon, this habitat association confines the subspecies to the expansive agricultural fields of the Willamette Valley and the riverine (historic) floodplain of the Columbia River. Future survey work should include several dredge spoil deposition islands in the lower reaches of the Columbia where *strigata* is known to breed occasionally, but which we were unable to visit. Although there are sporadic reports of small groups of horned larks wintering at a few sites on the Oregon coast, the coastal habitat type described above is so rare now that there is no consistent presence of horned larks on the coast. None were detected or reported during this study.

Implications for conservation

Our results indicate that a significant number of Streaked Horned Larks winter in Oregon and some winter in western Washington. Most of these birds utilize agricultural fields, particularly rye grass fields with sparse ground cover. In particular, we detected higher numbers of birds (larger flocks) in fields with many patches of weedy plants, probably because those plants offer seeds for food. The characteristics of the fields used by larks are consistent with those we have observed where damage by foraging geese was great. Although these observations need to be quantified during further study, they raise the possibility that National Wildlife Refuges, which aim to keep geese on their properties to minimize damage to nearby privately owned fields, may be able to manage refuge lands for both geese and horned lark preservation. We suggest that additional studies are needed to evaluate techniques for land management on refuges, which may lead to relatively easy habitat improvements for horned larks on federal lands.

References

- Altman, B. 1999. Status and conservation of state sensitive grassland bird species in the Willamette Valley. Report to the Oregon Department of Fish and Wildlife. Corvallis, Oregon.
- Pearson, S. F. 2003. Breeding phenology, nesting success, habitat selection, and census methods for the Streaked Horned Lark in the Puget Lowlands of Washington. Washington State Department of Natural Resources, Olympia, WA. 38 pages.