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STATUS, DISTRIBUTION, AND HABITAT SELECTION OF THE GRASSHOPPER SPARROW IN MORROW COUNTY, OREGON

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Prior to 1970 there were few records of the Grasshopper Sparrow (*Ammodramus savannarum*) from Oregon. Those consisted of a report from the Medford area (Bent 1968) and a single specimen collected in Baker County (Gabrielson and Jewett 1970). Since 1970 the number of observations has increased. A small population has been monitored in the Eugene area (McQueen 1979), and there are scattered reports from both the eastern and western portions of the state (H. B. Nehls, Portland Audubon Society, pers. comm.). However, the status and distribution of the Grasshopper Sparrow remain poorly known in Oregon, particularly in the foothill country around the Blue Mountains where Gabrielson and Jewett (1970) anticipated their occurrence. During the 1981 breeding season, Grasshopper Sparrows were discovered in several localities north of the Blue Mountains. This note is a report on the population density, distribution, and habitat selection of the Grasshopper Sparrow in Morrow County, Oregon.

METHODS

Plant species cover was estimated from plant densities and mean plant cover in the immediate vicinity of the initial observation of eight singing Grasshopper Sparrows. Plant species densities were assessed from a series of nested quadrats ranging from 0.5-50 m^2. Mean individual plant cover was estimated from a minimum of 10 plant diameters or the total number in 50 m^2 if less than 10 individuals were present at a site. I restricted plant species cover measurements to perennial grasses, shrubs, and shrub-like forbs because the variation in sampling dates prevents meaningful comparison of the more ephemeral forbs and annuals. In addition, aspect, slope, and elevation were recorded for each site. Slope was determined with a clinometer. Plant species cover was not estimated for the 4 remaining localities because access was not obtained from the landowners. At 3 localities, I censused avian populations by use of the Emlen Transect Method (Emlen 1971) along 1000 m transects.

RESULTS

Between 23 April and 30 June 1981, I encountered 12 singing male Grasshopper Sparrows at eight localities in Morrow County (Fig. 1) and monitored 5 of these males throughout this period. The sightings span an area from the floodplain of the Columbia River near Boardman south through the hills of the Heppner area. In addition, I observed a pair carrying food on 31 May and 1 June. The nest was not located. Grasshopper Sparrows were observed at the Boardman site again in May 1982. The Heppner area was not revisited.

TABLE 1. Habitat composition at the initial point of observation of 8 Grasshopper Sparrow territories in Morrow County, Oregon.

	Site[a]							
	1	2	3	4	5	6	7	8
Cover (%)								
Perennial grasses								
Agropyron spicatum	14	11	28	12	3	14	15	6
Festuca idahoensis	5	15	8	37	0	0	0	0
Poa sandbergii	1	2	20	16	Tr[b]	2	3	16
Shrubs								
Gutierrezia sarothrae	Tr	0	0	0	0	Tr	Tr	Tr
Chrysothamnus nauseosus	1	Tr	1	5	0	0	0	0
C. vicidiflorus	Tr	Tr	0	0	0	0	0	0
Shrub-like forbs								
Lupinus leucophilus	13	50	14	21	34	0	0	0
Lithospermum ruderale	0	0	0	8	0	0	0	0
Aspect (°)	310	300	310	320	50	280	—	10
Slope (%)	23	21	22	16	17	7	0	6
Elevation (m)	730	730	690	710	920	230	230	230

[a] Heppner area, sites 1–5; Boardman area, sites 6–8.
[b] Trace.

Grasshopper Sparrows existed at relatively low densities ranging from 2.8 to 5.5 individuals/km² at the Boardman sites to 20.3 individuals/km² at Heppner. In the 3 localities where more than a single pair was located, they still constituted a minor element of the avifauna, representing less than 8% of the avian population.

Grasshopper Sparrows were in association with native bunchgrass communities dominated by *Agropyron spicatum* and/or *Festuca idahoensis* (Table 1). In the Heppner area the Grasshopper Sparrow established territories only in north slope bunchgrass communities where the large (1 m tall) shrub-like velvet lupine (*Lupinus leucophilus*) was found. That habitat was present in small, scattered patches, and was largely restricted to an intermediate slope position on most hillsides where slopes were greatest. The males often used the lupines as singing perches. However, the sparrows foraged in bunchgrass habitats adjacent to those containing *L. leucophilus*. Almost every patch of bunchgrass habitat containing *L. leucophilus* was inhabited by singing Grasshopper Sparrows.

Discussion

The Grasshopper Sparrow is a widespread but low density summer resident of Morrow County which occupies relatively undisturbed bunchgrass communities, particularly those located on north-facing slopes containing *L. leucophilus*. The patchy and limited occurrence of that habitat presumably accounts, in part, for the low densities and the local occurrence of this sparrow in this county. Additional sightings by other observers suggest a distribution that extends east from Morrow County along the north side of the Blue Mountains through Umatilla County, with additional colonies scattered throughout the state. Other avian censuses that I have conducted on comparatively undisturbed bunchgrass communities in Wasco and Wheeler Counties have not produced additional sightings.

The habitat occupied by the Grasshopper Sparrow in the Boardman area agreed closely with the findings of Whitmore (1981) in terms of plant cover and the prevalence of bunchgrasses as opposed to sod-forming grasses. However, plant cover in the Heppner area was greater, due in large part to the lupine. Wiens (1969) described the habitat of the Grasshopper Sparrow as "richer" in terms of vegetation cover and height and litter accumulation relative to the habitats used by Western Meadowlarks (*Sturnella neglecta*) and Vesper Sparrows (*Pooecetes grammineus*). In the Heppner area, both the Western Meadowlark and Vesper Sparrow occupied the more sparsely vegetated south-facing slopes in addition to the areas occupied by the Grasshopper Sparrow.

The few sightings of Grasshopper Sparrows in Morrow and Umatilla Counties probably result from a lack of observers and not a shortage of birds. However, the Grasshopper Sparrow is noted

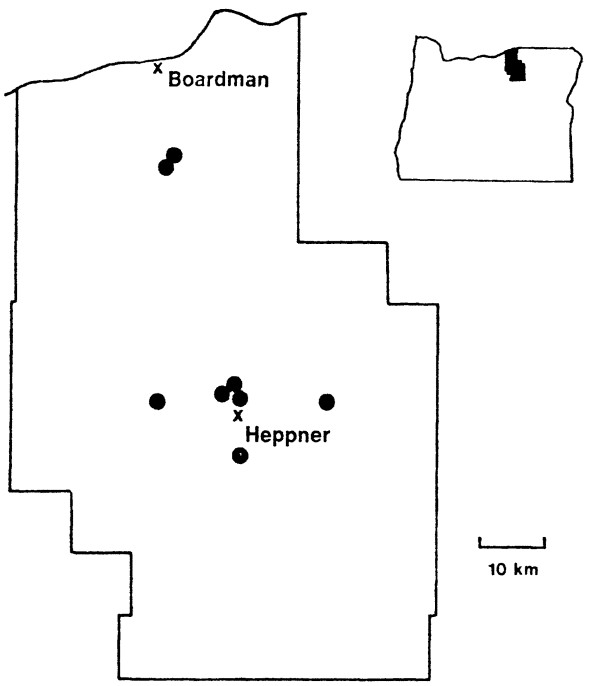

FIGURE 1. Location of singing male Grasshopper Sparrows in Morrow County, Oregon.

for its patchy distribution even in apparently suitable habitat and for its marked fluctuations in abundance (Smith 1963). Thus the possibility remains that those observations represent a recent range expansion possibly from eastern Washington where it is considered uncommon and irregular in occurrence (Larrison and Francq 1962). Nowhere west of the Rocky Mountains is the Grasshopper Sparrow considered common (Linsdale 1936, Munro and Cowan 1947, Bent 1968, Garrett and Dunn 1981) with the exception of southeastern Arizona (Monson and Phillips 1964).

Bent (1968) speculates that the fluctuations in abundance and patchy distribution of the Grasshopper Sparrow may result from competition by the Savannah Sparrow (*Passerculus sandwichensis*). The two species coexist widely over many portions of their range (Wiens 1973, Cody 1975, Wiens and Dyer 1975). Both species breed in Morrow County but occupy non-overlapping habitats. The Savannah Sparrow breeds in more mesic habitats, largely alfalfa fields and wet meadows on floodplains. The Savannah Sparrow does occur during migration in bunchgrass habitats including sites later occupied by territorial Grasshopper Sparrows, but only during migration. Savannah Sparrows have not been observed to establish territories incorporating either *Agropyron spicatum*- or *Festuca idahoensis*-dominated habitat in this area, much less the specific portion of the bunchgrass habitat occupied by the Grasshopper Sparrow. Thus the Savannah Sparrow is not likely responsible for the pattern of Grasshopper Sparrow distribution observed in this area.

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DIET OF THE HARLEQUIN DUCK IN THE STRAIT OF GEORGIA, BRITISH COLUMBIA

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The Harlequin Duck (*Histrionicus histrionicus*) has a disjunct, nearctic distribution with large numbers of birds concentrated in the northern Pacific and smaller populations occurring in Iceland, southern Greenland and northeast North America (Voous 1960, Bellrose 1976, Palmer 1976). The Harlequin Duck's diet in Icelandic rivers consists chiefly of insects (Bengtson and Ulfstrand 1971, Gudmundsson 1971). Cottam (1939) reported that crustaceans made up 57% and molluscs 25% of 63 Harlequin Duck stomach contents from Alaska, British Columbia, Quebec, Wyoming, Alberta, and California from January to September. However, Cottam provided little information on the diet of Harlequin Ducks on the British Columbia coast, recording only that the crab *Hemigrapsus* was the most important food item taken by those ducks at Comox, Vancouver Island. For the

TABLE 1. Percentage wet weight and occurrence of principal food categories found in esophagi and gizzards of 54 Harlequin Ducks from the Strait of Georgia, 1977-1978. (Unidentified and digested food and grit excluded.)

Food categories	Wet weight	Occurrence
Snails and limpets	29.3	90.0
Fish and fish eggs	21.9	18.5
Crabs	15.9	66.7
Chitons	13.2	44.4
Algae	9.2	14.8
Bivalves	8.5	11.1
Amphipods	0.9	1.9
Shrimp	0.4	7.4
Echinoderms	0.4	3.7
Barnacles	0.3	7.4