

TECHNICAL NOTES

U.S. DEPARTMENT OF AGRICULTURE

WYOMING

SOIL CONSERVATION SERVICE

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Subject: BREWER'S SPARROW*

General

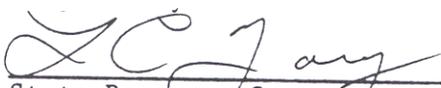
The Brewer's sparrow (*Spizella breweri*) nests within certain evergreen shrubland and evergreen shrub savannah habitats "from southwestern Yukon, northwestern and interior British Columbia, west-central and southern Alberta, southwestern Saskatchewan, and southwestern North Dakota south, generally east of the Cascades and the coast ranges, to eastern and southern California ..., southern Nevada, central Arizona, northwestern New Mexico, central Colorado, southwestern Kansas, northwestern Nebraska, and southwestern South Dakota." The bird winters "from southern interior ... California, southern Nevada, western and central Arizona, southern New Mexico, and western and central Texas south to southern Baja California and Sonora..., in the Mexican highlands to Jalisco and Guanajuato, and to southern Texas."

Food

Invertebrates comprise most of the diet of nestling Brewer's sparrows and the bulk of the diet of adults during late spring and early summer. Invertebrates are frequently gleaned from the surface of shrub canopies. Major invertebrate foods include spiders (Arachnida), beetles (Coleoptera), true bugs (Hemiptera), weevils (Coleoptera), plant lice (Homoptera), arid caterpillars (Lepidoptera). Stomach contents of Brewer's sparrows collected during May contained weevils, plant lice, caterpillars, spiders, and other invertebrates. Only 1 percent of the stomach contents during May and June consisted of plant materials. Weevils and caterpillars comprised nearly 80 percent of stomach contents during June. Plant materials comprised 20 percent of stomach contents during July, about 30 percent during autumn, and 90 percent during winter.



Prepared by: Richard Rintamaki, State Biologist


State Resource Conservationist

*Information taken from Ecoregion M3113 Handbook and Habitat Suitability Index Models, Wildlife Species Narratives (literature searches), U.S. Fish and Wildlife Service, various dates between 1978-1984.

The brewer's sparrow occupies a variety of steppe and desert cover types following the late spring-early summer breeding season. Grass and forb seeds were an important component of the diet in these cover types especially from late autumn to early spring. The Brewer's sparrow may form feeding flocks with other species while on winter range and gleans seeds from the ground and from seedheads. A small portion of the bird's diet at this time also consists of insects.

Activities that appreciably increase grass cover, e.g., sagebrush control to increase grass production, change the types of foods available to the sparrows. Animal foods represented larger portions and grass seeds smaller portions of the diet of Brewer's sparrows collected during June and July from an unsprayed sagebrush area than of the diet of sparrows collected from an area where sagebrush had been killed.

Water

The Brewer's sparrow may satisfy daily water requirements from consumed food. The small Brewer's sparrow, with a low daily water requirement coupled with an efficient renal system, has adjusted both behaviorally and physiologically to a xeric environment. The sparrow drank water nearly equivalent to one-third of its body weight when water was provided under experimental conditions. Other Brewer's sparrows fed in a controlled experiment survived a water deprivation period of 21 days when fed solely a diet of seeds. The bird drank free water and bathed when surface water is present. The lack of free water, however, is apparently not a limiting factor for the Brewer's sparrow in its habitat selection.

Cover

The Brewer's sparrow is dependent on a shrub-dominated plant community that provides protective cover, song perches, and nest sites. The Brewer's sparrow has been reported to use sagebrush (Artemisia spp.) in the sagebrush-wheatgrass (Artemisia-Agropyron) association, rabbitbrush (Chrysothamnus spp.) in certain wheatgrass-bluegrass (Agropyron-Poa) associations, and hawthorn (Crataegus spp.), and plum (Prunus spp.), and serviceberry (Amelanchier spp.) on a relict Idaho fescue (Festuca idahoensis) site in southeastern Washington. The abundance of the Brewer's sparrow in its breeding range has been shown to be positively correlated with the percent cover that is bare ground, the percent cover of forbs, the percent cover of shrubs and cacti, and negatively correlated with the percent cover of grasses and the percent cover of litter. The presence of the bird in its breeding habitat is also negatively correlated with shrub species diversity, the abundance of small shrubs, and the presence of a rocky or rolling surface. The Brewer's sparrow uses tall shrubs and small trees as roosting sites and cover at times other than the breeding season.

Reproduction

The Brewer's sparrow nests in sagebrush (A. tridentata) throughout the range of this common shrub and in a variety of other suitable shrubs when sagebrush is not available. Nests are placed low within the shrubs: mean nest height = 16 cm (6.5 inches) in sagebrush 27-63 cm (11-25 inches) in height; 25 cm (10 inches) in sagebrush averaging 65 cm (26 inches) in height; 20 cm (8 inches) in sagebrush 32-67 cm (13-27 inches) in height; 25 cm (10 inches) in saltbush (Atriplex canescens) in northeastern Colorado; and 28 cm (11 inches) in sagebrush 67 cm (27 inches) in height. The nest is placed in the outer branches of the shrub under the densest foliage. The few dead or partially dead sagebrush plants selected as nest sites in sagebrush control areas occurred in the larger and more heavily branched shrubs. Effective sagebrush control reduces habitat use by the Brewer's sparrow. The abundance of Brewer's sparrows did not change on plots where up to 50 percent of the sagebrush was killed, but a total herbicidal sagebrush kill caused a significant decrease in the number of nesting Brewer's sparrows. Bird use was reduced 67 percent one year after herbicidal spraying and 99 percent two years after herbicidal spraying that defoliated and killed sagebrush in Wyoming. Brewer's sparrows continued to nest in ceanothus (Ceanothus velutinus) and manzanita (Arctostaphylos patula) shrubs after herbicidal treatment. The herbicide killed the shrubs, but did not result in defoliation.

Interspersion Requirements

The Brewer's sparrow does not show any obvious dependence on combinations of layers of habitat as occur along the edge between two or more cover types. The sparrow is considered to nest within the terrestrial surface layer (up to 0.5 m into suitable shrubs) and to feed on insects and seeds in both the terrestrial surface and midstory layers of habitat on its breeding range. The sparrow breeds in shrubland habitats, preferably where sagebrush is dominant, and maintains a territory estimated to be about 0.5 ± 0.15 ha (about 1.2 acres) in area. The sparrow occurs during nonbreeding seasons in a variety of bunchgrass steppe, meadow steppe, open fields, and desert communities. Its life requisite requirements during the nonbreeding season include shrubs and small trees suitable for protective perches and an open terrestrial surface where the sparrow can forage for insects and grass, forb, and shrub seeds. I have assumed that the potential limiting factor for the species would be suitable nesting habitat which could be in short supply if extensive land use changes modified the structure of the shrubsteppe (especially big sagebrush) communities in western North America.