

TECHNICAL NOTES

U.S. DEPARTMENT OF AGRICULTURE

WYOMING

SOIL CONSERVATION SERVICE

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Subject: BAIRD'S SPARROW*

General

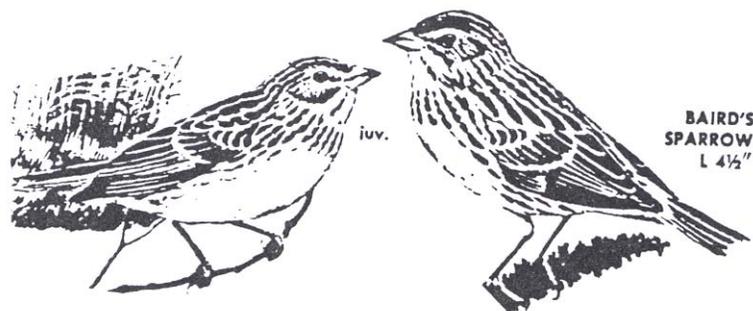
The Baird's sparrow (*Ammodramus bairdii*) is principally found in native prairie and other habitats of similar structure in Montana, North and South Dakota, and the Canadian provinces of Alberta, Manitoba, and Saskatchewan. The Baird's sparrow has a disjunct distribution in the U.S. Northern Great Plains with highest breeding densities in northwestern North Dakota, northeastern Montana, and the northwestern portions of the Great Plains. Winter range includes Arizona, New Mexico, western Texas, and northern Mexico.

Food

Small insects are the principal food of the Baird's sparrow during the breeding season, although the winter diet probably consists primarily of weed seeds. Nestlings are fed a variety of insects, with grasshoppers (Orthoptera) forming the bulk of the diet. Grasshoppers accounted for 64 percent of the nestling food items in Saskatchewan while spiders (Araneae) made up 16 percent of the food items.

Water

A population of Baird's sparrows in Manitoba was located greater than 1.6 km (1.0 mile) from a water source; dew provided the only water. The proximity of standing water is apparently not a critical factor in determining habitat selection by the Baird's sparrow, although well-drained sites appear to be preferred over wetter sites.



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.

Cover Requirements

Cover needs during the breeding season are described in the following section. No description of winter habitat requirements for the Baird's sparrow was located in the literature.

Reproduction

One study described optimum natural habitats for the Baird's sparrow as "extensive, idle, or lightly grazed tracts of mixed-grass prairie and local pockets of wet-meadow zone or tall-grass prairie along the periphery of prairie ponds and lakes or along intermittent streams." Midheight bunch grasses, with a short grass understory and dense litter, provide nesting habitat.

The Baird's sparrow has been described as inhabiting open grasslands with abundant residual vegetation (i.e., dead herbaceous vegetation from the previous growing season). Baird's sparrow territories in North Dakota grasslands were characterized by mean 100 percent visual obstruction of residual vegetation of 1.3 ± 0.06 dm (5.1 ± 0.24 inches). However, this was not significantly different from visual obstruction measurements in grasslands without Baird's sparrow territories nor significantly different from unused portions of the territories. The only difference in structural characteristics between used and unused portions of territories was a slightly greater coverage of litter on used portions. Optimum habitat has been described as mixed grass prairie with visual obstruction measurements from 2 to 4 dm (7.9 to 15.7 inches) during the nest construction period in May and a mean height range of 2.5 to 10 dm (9.8 to 39.4 inches) for the dominant migrates during the breeding season. Increasing vegetative height or density beyond these levels may impede movement and decrease the value of the habitat. The highest breeding densities observed by two researchers occurred on lightly grazed habitats with soils classified as typic borolls. The height of herbaceous vegetation on these sites averaged 30 cm (11 inches), and the average amount of bare soil on these sites was only 5 percent. The dominant vegetative canopy on undisturbed native fescue (*Festuca scabrella*) grasslands preferred by the Baird's sparrow in Alberta was greater than 20 cm (7.9 inches) in June and July, while disturbed habitats unused by Baird's sparrow had dominant vegetative heights of less than 20 cm (7.9 inches) in June and July. Baird's sparrows in Saskatchewan preferred grasslands that lacked shrubs. One study suggested that breeding Baird's sparrows are not associated with shrubs. Breeding Baird's sparrows were not found on idle native prairie in her North Dakota study area, but were found on grazed native prairie and areas planted with dense nesting cover. Idle native prairie averaged 18 percent shrub cover while grazed prairie and areas of dense nesting cover had a shrub cover of only 0.9 and 0.1 percent, respectively. A canopy cover of tall shrubs [greater than 1 m (3.3 ft)] that exceeds 25 percent has a strong negative influence on the habitat suitability for the Baird's sparrow, although males use scattered shrubs as song perches.

Territories of Baird's sparrow in undisturbed native fescue grasslands in Alberta ranged from 3 to 9 per 16.2 ha (40 acres). No territories were located on study plots classified as mowed, grazed, fallow, or seeded. In the same study area, results of roadside surveys through native grassland and cultivated routes indicated that approximately seven times as many Baird's sparrows occurred on the native grassland route. Significantly more Baird's sparrow territories occurred on undisturbed sites than on either grazed or cultivated sites, and more occurred on grazed sites than on cultivated sites. In cultivated or heavily grazed areas, Baird's sparrows were restricted to dense stands of tame hay or to the denser grass present in low-lying areas. The species is considered to be "...most susceptible to habitat change brought about by agriculture." Baird's sparrows in Manitoba were also considered to be extremely sensitive to cultivation, mowing, and burning, although grazed habitats were used.

Baird's sparrows on native grasslands in North Dakota were equally abundant in areas of light or moderate grazing, but were less abundant on heavily grazed sites. Baird's sparrows preferred lightly grazed or ungrazed mixed prairies in Alberta and ungrazed prairies in Saskatchewan. Breeding pairs of Baird's sparrows on uncultivated grasslands in the Northern Great Plains were twice as common on lightly grazed sites as on moderately grazed sites and three times as common on lightly grazed sites as on heavily grazed sites. One study stated that heavily grazed grasslands may be used by the Baird's sparrow, but only to a limited extent. The impact of grazing is reduced in areas containing patches or clumps of unpalatable grasses or short shrubs.

Grazing impacts may vary across the range of the Baird's sparrow. Idle grasslands may support highest concentrations in arid areas, while lightly or moderately grazed grasslands may attract highest densities in the moister, eastern parts of the range. Grazing or burning may increase the use of long-idled mixed grass prairie of the mesic type that has become heavily dominated by introduced cool season grasses or native shrubs.

Baird's sparrows are found in other agricultural areas, including fallow or currently unmowed hayfields, retired croplands, or fields of domestic grasses and legumes. Their order of decreasing value as habitat for the Baird's sparrow is as follows: areas seeded to native grasses, idle tame grasses or retired cropland, grazed tame grasses, mowed native or tame grasses, alfalfa, and croplands.

Moist sites may be used more extensively in dry years or in the more arid parts of the range, although one researcher concluded that the species prefers well-drained sites. An apparent southward expansion of the breeding range may have resulted from the increased height and density of vegetation during a wet period.

Two researchers describe optimum habitat for the Baird's sparrow as "...lightly grazed grassland on typic borolls." These boroll soils are the cool or cold soils of the organically rich, fertile Mollisol order, common to prairie vegetation. The highest densities of Baird's sparrows

were on typic borolls, followed by drier aridic borolls, with the warmer ustolls and the cold, dry borollic Aridisols having the lowest measurable sparrow population of the soils studied. Dominant plants that occurred in greater than average abundance on plots with the highest densities of Baird's sparrows included spikemoss selaginella (Selaginella densa), fringed sagebrush (Artemisia frigida), junegrass (Koeleria pyramidata), and needleandthread (Stipa comata). One study listed the following plants as characteristic of the mixed-grass prairie habitat used by the Baird's sparrow: blue grama (Bouteloua gracilis); needleandthread; green needlegrass (Stipa viridula); western wheatgrass (Agropyron smithii); little bluestem (Andropogon scoparius); prairie junegrass (Koeleria cristata); and needleleaf sedge (Carex stenophylla).

Interspersion

Male Baird's sparrows were reported defending territories of approximately 0.4 to 0.8 ha (1 to 2 acres).

Maximum reported breeding densities of Baird's sparrows are 11.5 pairs/40 ha (100 acres) on ungrazed grasslands in Saskatchewan, 13.8 pairs/40 ha in North Dakota, and 22.5 pairs/40 ha of undisturbed grasslands in Alberta. The average density on grazed grasslands in Saskatchewan was 2.1 pairs/40 ha (100 acres), while the statewide average density of Baird's sparrows in North Dakota was 0.8 pairs/40 ha. One study estimated 3.8 territorial males/40 ha (100 acres) on grazed native prairie in North Dakota and 2.1 males/40 ha on areas planted with dense nesting cover. However, territories on grazed plots were established prior to grazing on sites that had been ungrazed for 3 to 4 years prior to the study.