

ARIZONA GAME AND FISH DEPARTMENT
HERITAGE DATA MANAGEMENT SYSTEM

Animal Abstract

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CLASSIFICATION, NOMENCLATURE, DESCRIPTION, RANGE

NAME: *Ammodramus savannarum ammoregus*

COMMON NAME: Arizona Grasshopper Sparrow

SYNONYMS:

FAMILY: Emberizidae

AUTHOR, PLACE OF PUBLICATION: Oberholser, Proc. Biol. Soc. Washington, 55, May 12, 1942, p. 15.

TYPE LOCALITY: Huachuca Mountains at 5,000 feet altitude, 6 miles southeast of Fort Huachuca, Arizona.

TYPE SPECIMEN: Adult male, No. 39783, Cleveland Museum of Natural History, July 3, 1932, collected by Alex Walker, original number 8154.

TAXONOMIC UNIQUENESS: Twelve subspecies recognized (differentiation weak for several subspecies; further study warranted). Four subspecies breed in North America: *A. s. pratensis*, *A. s. perpallidus*, *A. s. ammoregus*, and *A. s. floridanus*. *A. s. ammoregus* only subspecies that breeds in Arizona (southeastern). *A. s. perpallidus* winters in western and southeastern Arizona; *A. s. ammoregus* thought to winter in southern Arizona.

DESCRIPTION: A small chunky sparrow of open fields, with a short sharp dark tail, and flat head. Dark brown above with buffy breast and sides (adults usually without obvious streaking), and variable amounts of rust; belly white. Crown dark with a pale central stripe, narrow white eye ring, and (in most adults) a yellow-orange spot in front of the eye. Juveniles have pale buff breast and sides, streaked with brown. Lengths of 4.5-5.25 in (11-13 cm), mass 14.5-20 g, wingspread 8-8.5 in (20-22 cm). Iris hazel in juveniles, and dark to light brown in adults. Legs and feet pale flesh in juveniles, and flesh colored, sometimes tinged pale yellow, in adults.

Subspecies *A. s. ammoregus*: Similar to *A. s. perpallidus*. Upper parts decidedly paler, with more chestnut or rufous, and also with much less, sometimes almost no black on the back; lower parts also lighter and not so dull. (Oberholser 1942).

AIDS TO IDENTIFICATION: Differs from many other sparrows in having both an unstreaked buffy breast (adults) and a short tail. Subspecies vary in overall color from dark Florida race, *Ammodramus savannarum floridanus*, to reddish *ammoregus* of southeastern

Arizona. Differs from Le Conte's sparrow (*A. leconteii*) in lacking a buffy-orange eyebrow and blue-gray ear patch. Adult differs from juvenile Henslow's sparrow (*A. henslowii*) in lacking a yellowish-olive central stripe on the crown. Nelson's Sharp-tailed Sparrow (*A. nelsoni*) has a broad gray central crown stripe, fine blackish streaks on flanks, white braces across the back, and either bright orange supercilium and breast, or dull gray cheek patch and dull yellow supercilium. Juvenile lacks the olive and russet tones of the otherwise similar adult Henslow's sparrow. Immature resembles Baird's Sparrow (*A. bairdii*) but lacks latter's double, dark mustache stripes (Farrand, Jr. 1988).

ILLUSTRATIONS: Color drawing (Peterson and Peterson, 1990: 323)
Color photos (Farrand, Jr., 1988: 456)
Color drawing (National Geographic, 1999: 409)
Color photo (<http://www.birdsofoklahoma.net/grasshopsparrow.htm>)

TOTAL RANGE: Breeds in southeastern Arizona, extreme southwest New Mexico, and adjacent Sonora, Mexico. Winter range poorly known, from southern Arizona south to Sinaloa, Morelos, and Guatemala.

RANGE WITHIN ARIZONA: Southeastern (breeding) and southern (wintering) Arizona. In 1987, singing males were found in the Altar Valley, the Sonoita Grasslands, the San Pedro Valley and the San Bernardino Valley. Historically they also occurred in the Santa Cruz and the Sulphur Springs valleys, but those populations have largely disappeared because of habitat loss or degradation (Strong 1987).

SPECIES BIOLOGY AND POPULATION TRENDS

BIOLOGY: Unless singing, usually well concealed in grassy habitat. Singing birds typically perch above ground, such as on grass stalks or low fences. Voice is a thin dry buzz, *pi-tup zeeeeeeeeee*. National Geographic (1999) reports, "Typical song is one or two high chip notes followed by a brief, grasshopper like *buzz*; also sings a series of varied squeaky and buzzy notes." Males sing two completely different, squeaky courtship songs, one short and the other sustained. Around nest, single and double *chip, chip-chip* calls by both male and female. Birds vocalize frequently in the early morning before and just after sunrise, but the songs decrease as the temperature rises. They may also sing in the late afternoon, particularly during or immediately after thunderstorms.

Locomotion: walking, hopping, and climbing. When foraging, runs and walks. Female flushed from nest runs in hunched posture giving injury distraction display. Flight differs depending on time of year, social situation, sex, or destination. During breeding season, male gives wing-flutter display. When flushed, flutter flight short distance before dropping into cover; later in breeding season with "dodging" zigzag movement. More sustained escape flight becomes direct. When flushed in winter, bird usually flies a short distance (<20 m), with habit of twisting tail as it drops down into grass (Vickery 1996).

Average territory size is small, less than 2 ha. Territory boundaries delineated in open habitat by conspicuous song-perches, flight displays, and agnostic interactions. Males sing 2 different songs and use conspicuous wing displays to maintain exclusive territories. Territorial male chases intruding male from territory, then sings vigorously, flicks wings. Territory defense declines after young fledge. (Vickery 1996).

The species is not known to flock at any time of year. At night, migrants probably use contact notes. In winter, generally solitary, but within a large (>300 ha) prairie, >100 individuals can be found during peak densities corresponding with migration. In Arizona, stealthy behavior, cryptic plumage, solitary habits, and short escape flights enabled Grasshopper Sparrows to forage far (usually >8 m) from shrub cover (Pulliam and Mills 1977 in Vickery 1996). Mean longevity of banded males in Florida was 2.9 years.

It appears that predation is a minimal threat to these species, however, adults may be taken by hawks, Loggerhead Shrikes (*Lanius ludovicianus*), and also probably mammals and snakes. Nest predators include striped skunks (*Mephitis mephitis*), raccoon (*Procyon lotor*), weasels (*Mustela* spp.), ground squirrels (*Citellus* spp.), foxes (*Vulpes* spp.), cats, feral pigs, and snakes (*Coluber constrictor*, *Elaphe* spp., *Thamnophis* spp., *Lampropeltis* spp., and *Sistrurus* spp.). (Vickery 1999).

REPRODUCTION: The species arrives on their breeding grounds in mid-April and depart for their wintering grounds in mid-September. Throughout most of their range, they are able to produce two broods, one in late May and a second in early July. Frequently re-nest after nest failure. (NatureServe 2001). In Arizona, the peak of *A. s. ammolegus* male singing activity is after the onset of the summer monsoon rains in late June or early July, although birds may occasionally be heard in April or May. Active nests have only been found in July, but it is likely that nesting continues into August and possibly September. (Mills 1982 in Strong 1987).

Courtship consists of low fluttering flight by male, silent or with song, the latter answered by female trill; male may chase female while singing (Ehrlich, Dobkin and Wheye 1988). Generally monogamous, with clutch sizes of 3-4. Eggs ovate, smooth, slightly glossy; generally cream white, sometimes with grayish markings; lightly speckled and spotted with reddish brown; spots generally sharp and well defined, either scattered over entire egg or concentrated toward the large end. Incubation 11-13 days for *A. s. pratensis*, *A. s. floridanus*, and *A. s. perpallidus*. Probably similar for *A. s. ammolegus*. Female incubates eggs alone. At hatching, young birds are blind and covered with grayish-brown down. Juvenile plumage is generally complete by 10-12 days. Adults and female nonparental attendants known to brood nestlings. Nestlings generally remain in nest 8-9 days. Young do not fly when departing the nest, but run through vegetation. Young of first brood have usually dispersed from natal territories when adults are feeding nestlings of second brood. Female ordinarily provides only 4-19 days postfledging parental care before she initiates nest construction of second clutch. Female probably gives limited care to first brood while incubating second clutch; level of care unknown. (Vickery 1996).

Nest built by female, and consists of a cup nest domed with overhanging grasses and side entrance. Slight hollow created by female; cup of grass stems and blades. Rim usually level or slightly above ground; inner lining with fine grasses, sedge, sometime hair. Dome constructed of grasses and sedges, usually woven into overhanging grasses and shrub stems. Nests not reused. (Vickery 1996).

FOOD HABITS: Omnivorous. Their diet consists of mostly insects in summer, and grass and weed seeds in winter, especially panic grass (*Panicum* spp.) and sedges (Cyperaceae). Foraging occurs on the ground, although birds may ascend seed stalks to bend them down or discharge their contents (Bison 2000).

HABITAT: In the breeding season this sparrow generally occupies thicker, brushier sites in shortgrass prairie and southwestern grasslands. Grasslands generally of intermediate height, often associated with clumped vegetation interspersed with patches of bare ground. Although the species also inhabits grasslands in migration and winter, it expands as well into nearby weed patches and even agricultural areas (e.g. alfalfa fields) during those periods (BISON 2000).

Results from surveys conducted in 1986-1987 (Strong 1987) indicate, "the preferred habitat of the Arizona grasshopper sparrow is open grassland between 3800 and 5300 feet. Within this range, the sparrow is limited to areas with moderate to high coverage of medium-height grass and with relatively low shrub coverage. The preferred habitat has grass cover of 42 to 60%, shrub canopy cover of 1 to 8%, and average grass height of 5 to 20 cm. Areas with trees appear to be avoided, as are areas with extremely short or tall grass, low grass cover, or high shrub densities. These habitat requirements are incompatible with extreme over-grazing by cattle, which can lead to grass denudation and mesquite invasion."

ELEVATION: The preferred habitat in Arizona are open grasslands between 3,800 and 5,300 feet (1159-1616.5 m).

PLANT COMMUNITY: Sonoran Desert Scrub -- Open to dense vegetation of shrubs, low trees, and succulents, dominated by paloverde (*Cercidium microphyllum*), prickly pear (*Opuntia* spp.), and giant saguaro (*Cereus giganteus*). Chihuahuan Desert Scrub -- Open stands of creosote bush and large succulents (*Ferocactus pringlei*, *Echinocactus platyacanthus*) in southern New Mexico and southwest Texas. Mojave Desert Scrub -- Located between the Great Basin desert scrub and the Sonoran desert scrub, it is intermediate between them, sharing plant species of both but containing the endemic arboreal leaf succulent, Joshua tree (*Yucca brevifolia*). Desert Riparian Deciduous Woodland, Marsh -- Woodlands, especially of cottonwoods, that occur where desert streams provide sufficient moisture for a narrow band of deciduous trees and shrubs along the margins. Annual Grasslands, Farms -- Grasslands dominated by wild oat (*Avena* spp.), ripgut brome (*Bromus rigidus*), soft chess (*Bromus mollis*), bur clover (*Medicago hispida*), and filaree (*Erodium* spp.) with less than 5 percent woody cover. River, Riparian Woodland, Subalpine Marsh -- Occurs at elevations where stream conditions provide sufficient permanent moisture for emergent plants, or for a narrow band of deciduous trees and shrubs; at low elevations

characterized by cottonwood and sycamore, at mid-elevation by white alder (*Alnus rhombifolia*) and bigleaf maple (*Acer macrophyllum*), and at high elevation by willow. (BISON 2000).

Stomach analysis for *A. s. perpallidus*, excluding California: bristle-grass, ragweed (*Ambrosia* sp.), panic grass, wood sorrel (*Oxalis* sp.), sunflower (*Helianthus* sp.), and sedge (*Carex* sp.) (Vickery 1996).

POPULATION TRENDS: Per Strong (1987), survey studies conducted in 1986-1987 indicated, "The Sonoita Grasslands and the San Rafael Valley contained the largest Arizona grasshopper sparrow populations in 1987, with densities of 0.66 and 0.85 singing males per hectare, respectively. A brief examination of the Animas Valley indicates that it may support comparable densities. The Altar, San Pedro and San Bernardino valleys support only low numbers of sparrows, which are restricted to local areas of marginal to favorable habitat. In 1986, the grasslands northeast of Cananea (Sonora, Mexico) supported a moderate population."

Given the dependence of the grasshopper sparrow on grasslands, the species has probably declined throughout its historic breeding-range in the western U.S. due to habitat degradation and destruction. A notable source of the latter is overgrazing, which can have an array of negative impacts on this habitat (natural phenomena such as drought can have similar effects). These impacts include the loss of grass-cover, reduction in production of grass-seed, increased erosion, and invasion by species such as mesquite (*Prosopis* spp.) and other woody plants. (BISON 2000).

For the species: North American Breeding Bird Survey (BBS) data indicate a significant population decline (4.4% per year) in North America between 1966 and 1989 (Droege and Sauer 1990); decline was 3.9% per year between 1966 and 1993, and 4.5 % in western U.S. (Peterjohn et al. 1994, in NatureServe 2001, and Vickery 1996).

SPECIES PROTECTION AND CONSERVATION

ENDANGERED SPECIES ACT STATUS: None

STATE STATUS: None

OTHER STATUS:

MANAGEMENT FACTORS: Management needs for this bird includes: reduce cattle grazing in native grasslands to maintain and enhance native grasses; reduce shrub invasion by maintaining natural fire regimes; consolidate housing and protect native grassland open space within housing developments; reduce agricultural (vineyard) development in native grassland. In southwestern Arizona, avoids recently burned sites \geq 2 years postburn; prefers shrub cover (Bock and Webb 1984, and Bock and Bock 1992, in Vickery 1996).

PROTECTIVE MEASURES TAKEN: With The Nature Conservancy's recent acquisition of the Gray Ranch, protection of the key breeding habitat for Arizona grasshopper sparrows in New Mexico should be ensured (BISON 2000). Species tends to respond quickly to effective habitat management and restoration. Incorporation of grassland bird habitat into regional conservation strategies such as U.S. Department of Agriculture Conservation Reserve Program, are likely to help Grasshopper Sparrow and grassland birds generally (J.R. Herkert pers. comm. In Vickery 1996).

SUGGESTED PROJECTS: Survey breeding populations in Arizona. "Because there are essentially no data on winter mortality and survivorship for this species, it is impossible to adequately determine whether reproductive failure or winter survival has a greater influence on the species' population regulation. Research on winter mortality and survivorship is urgently needed." (Vickery 1996).

LAND MANAGEMENT/OWNERSHIP: USFS, DOD Fort Huachuca Military Reservation, USFWS, State Land Department, Private.

SOURCES OF FURTHER INFORMATION

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ADDITIONAL INFORMATION:

“Unobtrusive little bird that did not come by its name because of its fondness for grasshoppers, though it is never averse to making a meal of them, but because of its grasshopper-like attempt at song, if song it can be called” (Vickery 1996).

Ammodramus is Greek for “sand runner,” and *savannarum* is Latin for “savanna,” its typical habitat, and *ammolegus* is Greek for “sand-chooser.”

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