

**ARIZONA GAME AND FISH DEPARTMENT
HERITAGE DATA MANAGEMENT SYSTEM**

Animal Abstract

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Data Sensitivity: No

CLASSIFICATION, NOMENCLATURE, DESCRIPTION, RANGE

NAME: *Ammodramus savannarum ammoregus*

COMMON NAME: Arizona Grasshopper Sparrow

SYNONYMS:

FAMILY: Emberizidae

AUTHOR, PLACE OF PUBLICATION: H.C. Oberholser. Description of a new Arizona race of the grasshopper sparrow. Proc. Biol. Soc. Washington, 55: 15-16. 1942.

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* is the only subspecies of grasshopper sparrow to breed in Arizona, particularly in the southeast portion; it is also known to winter there. *A. s. perpallidus* winters in western and southeastern Arizona.

DESCRIPTION: For the species: A small and chunky sparrow of open fields, with a short sharp tail and flat head. Dark brown above with buffy breast and sides (adults usually without obvious streaking), and variable amounts of rust; belly is 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. Lengths of 4.5-5.25 in (11-13 cm), mass 14.5-20 g, and a wingspread of 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. Juvenile's sides and pale buff breast are streaked with brown. (Peterson 1990; National Geographic Society 2006).

A. s. ammoregus is similar to *A. s. perpallidus*. Upper parts decidedly paler, with more chestnut or rufous, however 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 *ammolegus* 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; 2006: 417)

Color photo (<http://www.birdsofoklahoma.net/grasshopsparrow.htm>)

Color photo of species (Jim Burns, in Corman & Wise-Gervais 2005: 528)

Color photos of the species (Larry Master, in NatureServe 2006)

TOTAL RANGE: Disjunct breeding populations occur in southeastern Arizona, extreme southwest New Mexico, and adjacent northern Sonora and Chihuahua, Mexico (Vickery 1996, Williams 2007 in Ruth 2008). Winter range is poorly documented, but thought to extend from southeastern Arizona, southwestern New Mexico, south to Sinaloa and Morelos, Mexico, and Guatemala (Vickery 1996).

RANGE WITHIN ARIZONA: Southeastern (breeding) and southern (wintering) Arizona. In 1987, singing males were heard 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). According to Corman (in Corman and Wise-Gervais 2005), "Atlasers also discovered that they were much more widespread in grasslands of the Sulphur Springs Valley north to Willcox, and in the Buenos Aires National Wildlife Refuge in the Altar Valley than previous literature suggests."

SPECIES BIOLOGY AND POPULATION TRENDS

BIOLOGY: Unless singing, grasshopper sparrows usually are well concealed in their 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 is a short distance before dropping into cover; later in breeding season is a “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 two 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* sp.), ground squirrels (*Citellus* sp.), foxes (*Vulpes* sp.), cats, feral pigs, and snakes (*Coluber constrictor*, *Elaphe* sp., *Thamnophis* sp., *Lampropeltis* sp., and *Sistrurus* sp.). (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); Corman (in Corman and Wise-Gervais, 2005), reported males singing from July to early September.

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 4-5 eggs (range 3-6). 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 averages 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, covered with grayish-brown down, and generally precocious, with juvenile plumage generally complete by 10-12 days. Adults and non-parental female attendants perform brooding of nestlings. Nestlings remain in

the 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 post fledging 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).

Nests are placed on the ground, typically in a slight hollow tucked at the base of a tuft of grass, forb, or shrub. Nests built in 2-3 days by the female, consist of a cup nest domed in the back with overhanging grasses and a side entrance. The nest dome is constructed of grasses and sedges, usually woven into the overhanging grasses and shrub stems. Rim usually level or slightly above ground; inner lining with fine grasses, sedge, sometime hair. Nests not reused. (Vickery 1996; Corman and Wise-Gervais 2005).

FOOD HABITS: Omnivorous. Their diet consists of mostly insects in summer, and grass and weed seeds in winter, especially panic grass (*Panicum* sp.) 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: For the species, they prefer large expanses of intermediate height grass for nesting. Occupied grasslands in Arizona often include some low, woody shrub component such as scattered young mesquite and mimosa. They nest primarily in semiarid grasslands within the state. (Corman and Wise-Gervais 2005). In southeastern Arizona, their habitat is characterized as having nearly 75% ungrazed grass cover, 5% woody cover, and about 20% bare ground (Bock and Webb 1984, in Corman and Wise-Gervais 2005). Results from surveys conducted in 1986-1987 (Strong 1987) indicate, "They 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. Other areas avoided include 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 is open grasslands between 3,800 and 5,300 feet (1159-1616.5 m).

PLANT COMMUNITY: Desert grassland and Sonoran desert scrub -- Open to dense vegetation of shrubs, low trees, and succulents, dominated by paloverde (*Cercidium microphyllum*), prickly pear (*Opuntia* sp.), and giant saguaro (*Cereus giganteus*). Chihuahuan Desert Scrub -- Open stands of creosote bush and large succulents (*Ferocactus pringlei*, *Echinocactus platyacanthus*) in southern New Mexico. 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* sp.), ripgut brome (*Bromus rigidus*), soft chess (*Bromus mollis*), bur clover (*Medicago hispida*), and

filaree (*Erodium* sp.) with less than 5 percent woody cover. River, Riparian Woodland, (BISON 2000).

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* sp.) 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:

Bureau of Land Management Sensitive
(USDI, BLM AZ 2010)

Forest Service Sensitive (USDA, FS Region
3 2007)

MANAGEMENT FACTORS: Limiting factors for the Arizona grasshopper sparrow are the loss and degradation of native grassland habitat (USDA, FS 2007). Management needs include 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, they avoid recently burned sites ≥ 2 years post-burn; prefers shrub cover (Bock and Webb 1984, and Bock and Bock 1992, in Vickery 1996). Most of the Sonoita Plains and grasslands immediately west of the upper San Pedro River, are privately owned and are under pressures for rapid development.

PROTECTIVE MEASURES TAKEN: With The Nature Conservancy's acquisition of the Gray Ranch, protection of the key breeding habitat for Arizona grasshopper sparrows in New Mexico should be ensured (BISON 2000). The 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). Recently (2007) added to the Region 3, US Forest Service Sensitive Animals List.

SUGGESTED PROJECTS: Continued survey's of Arizona breeding and wintering populations, to answer Vickery's (1996) concern (next sentence), and to develop future conservation & management plans for this bird. "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: BLM – Tucson Field Office, DOD - Fort Huachuca Military Reservation, USFS – Coronado National Forest, USFWS – Buenos Aires National Wildlife Refuge, State Land Department, Private.

SOURCES OF FURTHER INFORMATION

REFERENCES:

- American Ornithologists' Union Committee. 1957. Check-List of North American Birds. Fifth Edition. American Ornithologists' Union. p. 592.
- Biota Information System of New Mexico. 2000. BISON Species Account 041846: Arizona Grasshopper Sparrow (*Ammodramus savannarum ammoregus*). New Mexico Game & Fish, http://www.fw.vt.edu/fishex/nmex_main/species/041846.htm. pp. 1-13.
- Corman, T.E. Grasshopper Sparrow, *Ammodramus savannarum*, in Corman, T.E. and C. Wise-Gervais, eds. 2005. Arizona Breeding Bird Atlas. University of New Mexico Press. Printed in China by Everbest Printing Co. Ltd. Through Four Colour Imports, Ltd. Pp. 528-529.
- Ehrlich, P. R., D. S. Dobkin, and D. Wheye. 1988. The Birder's Handbook: A field guide to the natural history of North American birds. Simon & Schuster Inc., New York. p. 566.
- Farrand, Jr., J. 1988. An Audubon Handbook: Western Birds. McGraw-Hill Book Company, New York. p. 456.
- <http://www.birdsofoklahoma.net/grasshopsparrow.htm>.
- Mills, G.S. 1982. Status Report: *Ammodramus savannarum ammoregus* (H.C. Oberholser). The Arizona Natural Heritage Program, Tucson. pp. 1-20.
- National Geographic Society. 1999. Field Guide to the Birds of North America. Third Edition. National Geographic, Washington, D.C. pp. 408-409.
- National Geographic Society. 2006. Field Guide to the Birds of North America. Fifth Edition. National Geographic, Washington, D.C. pp. 416-417.

- NatureServe. 2001. Comprehensive Report Species - *Ammodramus savannarum* (Grasshopper Sparrow). The Nature Conservancy, <http://www.tnc.org>.
- NatureServe. 2006. NatureServe Explorer: An online encyclopedia of life [web application]. Version 5.0. NatureServe, Arlington, Virginia. Available <http://www.natureserve.org/explorer>. (Accessed: September 13, 2006).
- Oberholser, H. C. 1942. Description of a new Arizona race of the Grasshopper Sparrow. *Proceedings of the Biological Society of Washington*, Vol. 55. pp. 15-16.
- Peterson, R. T., and V. M. Peterson. 1990. The Peterson field guide series: A Field Guide to Western Birds. Houghton Mifflin Company, Boston. pp. 322-323.
- Strong, T. R. 1987. Status Report: Arizona Grasshopper Sparrow (*Ammodramus savannarum ammolegus* Oberholser). Federal Aid Contract No. FC-67, Project E-3, to the Arizona Game and Fish Department. pp. 1-60.
- USDA, Forest Service Region 3. 2007. Regional Forester's List of Sensitive Animals.
- USDI, Bureau of Land Management. 2010. Arizona BLM Sensitive Species List.
- Vickery, P. D. 1996. Grasshopper Sparrow (*Ammodramus savannarum*). In *The Birds of North America*, No. 239 (A. Poole and F. Gill, eds.). The Academy of Natural Sciences, Philadelphia, PA, and the American Ornithologists' Union, Washington, D.C.

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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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