

Ecology and taxonomy of Savannah Sparrow *Passerculus sandwichensis* in Nuevo León, Mexico

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El 1 de julio de 1996, observamos una población de la cría del Gorrión Sabanero Común *Passerculus sandwichensis*, cerca el pueblo de Las Esperanzas, Nuevo León, México. Se lo discute la ecología y las systemáticas, y presentamos fotos y sonagramos.

Introduction

The Savannah Sparrow *Passerculus sandwichensis* is a remarkably widespread species, nesting from Alaska to Mexico¹⁵. It has been noted at a number of sites on the Mexican plateau, although its precise breeding distribution there is poorly understood. Savannah Sparrow nests in Durango and Chihuahua⁸, but there are few confirmed breeding records in north-east Mexico. In Coahuila and Nuevo León, the subspecies' *anthinus*, *brunnescens*, *nevadensis*, and *oblitus* are known to winter^{4,7,9,12,14}, but breeding appears to be undocumented. Statements that the species is resident in southern Coahuila^{2,6} may be based upon a 13 April specimen of *brunnescens* taken outside Saltillo by Burleigh & Lowery⁴. That bird was collected with two other wintering subspecies and breeding condition was not indicated. More tangible evidence of breeding in north-east Mexico comes from at least nine specimens at the Museum of Natural Science, Louisiana State University. All were collected in San Luis Potosí between 16 May and 13 August, some with a brood patch or enlarged testes (J. V. Remsen *in litt.* 1996).

On 1 July 1996, at c.13h00, we encountered singing male Savannah Sparrows in irrigated croplands 1.1 km south of the village of Las Esperanzas, Nuevo León, at an elevation of c.1,815 m (see previous article for mapped location). Most birds were in a large potato field, but we heard others in alfalfa and wheat fields. In all, we estimated a total of c.15–20 males. The number of birds, their spacing, and their reaction to recordings and each other's presence suggested a nesting population. Due to the lack of supporting records, we are unable to state whether these birds represent a range extension, a relict colony, or part of a large, thinly dispersed population; nor can we say with any certainty where the closest neighbouring population might be.

Ecology

Adjacent to Las Esperanzas no native grasslands or scrub remain; any that might have existed, and

portions of the surrounding desert, have been irrigated for crops and grazing. Prior to extensive habitat modification, Savannah Sparrows may have been patchily distributed in this area, nesting in native vegetation. Now, small remnant populations may be wholly dependent on irrigated cropland for their nesting habitat. By 6 October 1996, the potato fields had already been harvested and planted with carrots, and Savannah Sparrows were not in evidence (A. Garza and A. M. Sada *in litt.* 1996). Although Byers *et al.*⁶ state that Mexican races of the species are sedentary, habitat changes may provoke local movements within some populations. Other birds observed in the vicinity, including adjacent desert "hardpan" flats supporting a thin growth of alkali-tolerant plants (e.g. saltbushes *Atriplex* spp.), were: Prairie Falcon *Falco mexicanus*, Scaled Quail *Callipepla squamata*, Burrowing Owl *Speotyto cunicularia*, Horned Lark *Eremophila alpestris*, Chihuahuan Raven *Corvus cryptoleucas*, Blue Grosbeak *Passerina caerulea*, Botteri's Sparrow *Amphispiza bilineata*, Worthen's Sparrow *Spizella wortheni*, Western Meadowlark *Sturnella neglecta*, Great-tailed Grackle *Quiscalus mexicanus* and Lesser Goldfinch *Carduelis psaltria*.

Relationships

The breeding form of Savannah Sparrow on the Mexican plateau is *A. s. brunnescens*^{6,15}. Northern populations of *brunnescens* from central-east Arizona and northern New Mexico, and southern populations from Puebla, are pale, averaging more greyish brown above. Birds from Mexico's northern plateau are darkest and richest brown above with more contrasting streaking, especially on the crown; and below, with stronger streaks and, in breeding plumage, without buff. The name *A. s. rufofuscus*, sometimes also applied to *brunnescens* from the south-west USA, was first used for Chihuahuan specimens exhibiting a brighter dorsum and described by Camras as the Chihuahua Savannah Sparrow¹³. Birds from the southern portion of the plateau south to Guerrero and Oaxaca

are moderately dark to dark^{6,8}. Wintering forms are not thoroughly documented, but include *anthinus*, which breeds in north Alaska and Yukon to west North-West Territories and south to British Columbia; *nevadensis*, which breeds from central British Columbia and east California east to western Manitoba and North Dakota; *oblitus*, which breeds from east North-West Territories to west Ontario and south to Michigan and Wisconsin; questionably *brooksi*, which breeds from British Columbia to north-west California, and may represent an intermediate between *anthinus* and *nevadensis*, and *brunnescens*^{4,6,9,12,14}.

Without making extensive comparisons, Butler⁵ described the dark subspecies *brunnescens* from the Valley of Mexico (Distrito Federal), separating it from three farflung conspecifics (*alaudinus*, *bryanti* [= *alaudinus*] and nominate *sandwichensis*, a larger race breeding in much of Alaska) by its browner plumage and larger bill. Later, Peters & Griscom¹⁰ determined Butler's type-series contained a mix of several taxa including northern migrants, a conclusion also reached by Hubbard⁸ during his examination of *sandwichensis* from south-west USA, Mexico and Guatemala. Hubbard's sample from Mexico's Northern Plateau extended south as far as Nayarit and east to Durango and Chihuahua. Based on plumage characteristics and a lack of significant mensural features, he included in *brunnescens* the Northern Plateau specimens and those from the Distrito Federal, Mexico, Hidalgo, Michoacán, Guanajuato, Jalisco, and tentatively Puebla, Tlaxcala, and Veracruz.

We doubt that sufficient study material exists to document the distribution or plumage and morphometric variation of *brunnescens* at the perimeter of its range, or to clarify its relationship with forms of the south-west USA.

Plumage

RAB examined a large series of *sandwichensis*, including most of the described subspecies, at the Field Museum of Natural History. Specimens 13,073–13,075, collected 15 June 1902 by G. F. Breninger, at Babicora, Chihuahua, represent the subspecies *rufofuscus*, later merged by Hubbard and others in *brunnescens* (but see Hubbard⁸ for a discussion of "*rufofuscus*" in the south-west USA). These specimens, a female and two males, were examined alongside our series of slides, and bore a striking resemblance to the Las Esperanzas birds, more so than did any other forms present in the collection.

On the birds we photographed, we consider the

following plumage characteristics relevant: a long, broad pale supercilium rich yellow in the supraloral area, pale yellow above and just behind the eye, and whitish above the rear of the post-ocular stripe. The anterior part of the supercilium is bordered above with dark brown. The crown has a mixture of light and dark feathers forming streaks that do not appear to be as well developed as in some other subspecies. There is only a suggestion of a pale mid-crown streak. The feathers below the post-ocular stripe and between the dark moustachial and malar stripes are whitish. The rear portion of the post-ocular stripe spreads into a bold brown spot. The median and greater coverts and primaries have dark brown to black centres with buff margins. The rounded tips of the median coverts are strongly contrasting pale whitish. There are white streaks on the mantle but not the well developed "braces" of some subspecies. The rectrices are dark brown with pale edges and tips. The chin, breast and belly are very white, with thick, dark brown streaks on the breast and flanks, several of which coalesced into a central breast spot. Overall, the plumage is dark brown, not buffy or gray as in many other subspecies. Based on plumage, location, and the conclusions of Hubbard⁸ we tentatively assign these birds to the subspecies *brunnescens*, which has not previously been illustrated (Fig. 1).

Vocalisations

Despite its large range containing at least 17 recognised subspecies breeding in a variety of open country habitats from the Aleutian Islands to the tropics, comparatively little attention has been paid to the songs of *sandwichensis*¹⁵. Two descriptions illustrate this variability. The north-east Canada and USA *P. s. savanna* delivers several variations: generally, 1–7 (typically three) short, high-pitched notes are followed by two buzzes on different pitches, e.g. *tiptiptip seeeee saaaay* (Saunders²). Songs usually last c.2–3 seconds, depending to an extent on the number of introductory notes. Rising¹¹ describes typical *sandwichensis* song as *tzip-tzip-tzip ztreeeeeeee-ip*. At a distance, the introductory notes may be inaudible, and occasionally the lower-pitched terminal syllable is not uttered. Individuals in the same population may end their songs differently^{11,15}. The loud, characteristic central buzz or trill is the best-known part of the song and has been described as buzzy, insect-like, shrilly musical, or, in Baird's own words, "utilitarian"². The most comprehensive study of *sandwichensis* is Bradley's analysis of the songs of *beldingi* in southern California, USA, and Baja California, Mexico⁴. Within populations he studied, males sang songs



Figure 1. Savannah Sparrows *Passerculus sandwichensis* at Las Esperanzas, Nuevo León: 1 July 1996: duplicate voucher slides are deposited at VIREO, The Academy of Natural Sciences of Philadelphia (v06/26/001-005) (Robert A. Behrstock)



Figure 2. Las Esperanzas, Nuevo León: Savannah Sparrow breeding site (Ted L. Eubanks)

with several characteristic patterns, and a population's patterns differed from those typical of other populations.

Sonograms of individuals recorded on the west coast of Baja California, Mexico; northern Canada; and coastal central California are reproduced from Wheelwright & Rising¹⁵. They illustrate the range of variation in the number, frequency and form of the notes preceding the central buzz, the form of the final flourish, and whether it ends with a short, lower-pitched buzz.

Apparently, songs of *brunnescens* from the Mexican plateau have not been published. Songs of two presumed *brunnescens* recorded at Las Esperanzas are presented for comparison. They began with a series of 5–6 introductory notes of

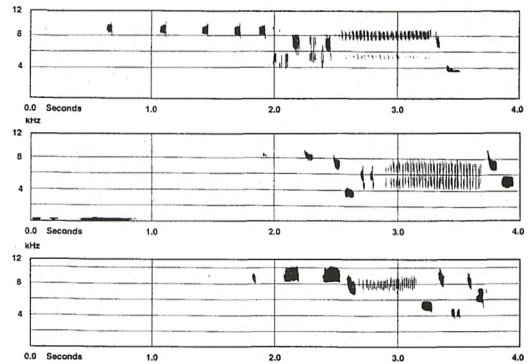


Figure 3. Songs of Savannah Sparrows *Passerculus sandwichensis* recorded by James D. Rising at Guerrero Negro, Baja California, Mexico, May 1973 (*P. s. anulus* top); Moosonee, Ontario, Canada, June 1971 (*P. s. oblitus*); and Morro Bay, San Luis Obispo County, California, May 1972 (*P. s. beldingi* bottom). (From Wheelwright & Rising 1993, reproduced with permission.)

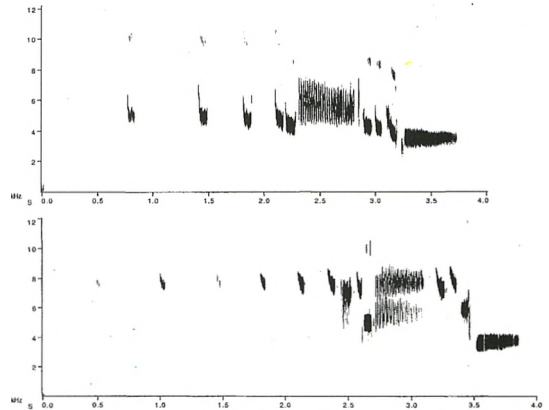


Figure 4. Songs of two male Savannah Sparrows *Passerculus sandwichensis* recorded by Behrstock at Las Esperanzas, Nuevo León, 1 July 1996. Recordings were made with a Mineroff modified Sony TCM5000 EV cassette recorder, a Mineroff SMEBA3 microphone amplifier (Mineroff Electronics, Inc., Elmont, NY), and a Sennheiser ME88 directional microphone. Sonograms were generated with a Macintosh computer using Canary software (Bioacoustics Research Program, Cornell Laboratory of Ornithology, Ithaca, NY). Pertinent settings included frame size 128 points, FFT size 256 points, 87.5% overlap, Hamming window function, sampling rate 44100, and filtering 012 kHz. Voucher recordings are at the Center for Bioacoustics, Texas A&M University, College Station, Texas.

approximately equal pitch; however, the pitch of the series differed between two individuals (Fig. 4). Two songs had durations of 2.60 and 2.96 seconds, and spanned a range of c.8.7 kHz. Songs with only two introductory notes were also recorded. On

one song, up to three transitional or modified introductory notes precedes the loud central buzz of c.0.5 seconds. Last are three variable notes, followed by a lower-pitched terminal buzz of c.0.3–0.5 seconds. When compared to songs of other populations¹⁵, these last notes and the terminal buzz are perhaps the most characteristic element of the delivery of the song of the Nuevo León population.

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