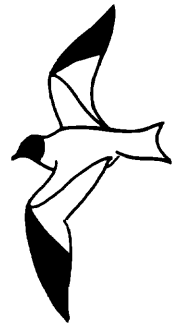


WESTERN BIRDS



Volume 24, Number 2, 1993

DISTRIBUTION, MIGRATION, ECOLOGY, AND RELATIONSHIPS OF THE FIVE-STRIPED SPARROW, *AIMOPHILA QUINQUESTRIATA*

ALLAN R. PHILLIPS, Dept. of Zoology, Denver Museum of Natural History, City Park, Denver, Colorado 80205 (present address: Reforma 825-A, Col. Chapultepec, San Nicolás de los Garza, 66450 Nuevo León, México)

ROBERTO PHILLIPS FARFAN, Casilla 17-17-617, Quito, Ecuador

The Five-striped Sparrow, *Aimophila quinquestriata* (Sclater and Salvin), consists of two subspecies locally distributed in two parts of western Mexico. Until recently the paler northern subspecies, *A. q. septentrionalis* van Rossem, was largely restricted (in summer) to Sonora, while the darker *A. q. quinquestriata* was known only from northern Jalisco and vicinity. Like all little-known tropical or semi-tropical birds, the Five-striped Sparrow has generally been assumed to be sedentary (Wolf 1977, A.O.U. 1983).

DISTRIBUTION AND MIGRATION

The first hint of possible migration was by van Rossem (1945:274), who wrote that the only Sonora record below 1400 feet (425 m) altitude, and thus the only record for the coastal plain—from Camoa in southern Sonora—"may be seasonal in nature." Then in June 1957, an apparently accidental specimen was taken by Binford (1958) in southern Arizona, where the first breeding birds were found in 1969. These were followed by others in other places in 1977 and 1978 (Peter Hubbell pers. comm., Mills "1977"). By 1980 the Five-striped Sparrow was a "summer resident of thick brush of rocky canyon slopes in Lower Sonoran Zone along Mexican border . . . north to the west side of the Santa Rita Mountains, where very local. Apparently winters in same areas but in small numbers" (Monson and Phillips 1981:195). No winter specimen was cited, and the species is certainly very rare between 29 October and 25 March (Mills et al. 1980, contra A.O.U. 1983).

In Sonora, the limits of regular wintering remain unclear. A. R. P. did not find the species during his winter explorations, 1948–1957, but found it breeding north to about 100 km south of the international border (Phillips

FIVE-STRIPED SPARROW DISTRIBUTION

et al. 1964). While he spent little time on brushy or grassy canyon slopes, his experience agreed with all others': all definite published winter records were from southernmost Sonora only. The Five-striped Sparrow probably winters regularly north to central Sonora, as indicated by a male (specimen in LSU; see acknowledgments for key to acronyms, which agree with Phillips 1991) taken by Joe T. Marshall, Jr., 24 November 1956, on a steep weedy rocky south-facing slope 25 km by road west of Batuc (i.e., about 90 km east of Hermosillo). A bit farther southeast, around El Novillo on the Río Yaqui, it certainly winters: David M. Niles (pers. comm.) took one on 27 January 1964 and saw two others together then in oak-grassland to the southeast. He saw no others in January, and none 1–2 April 1964, whereas in September the species had been "fairly conspicuous." But the Five-striped Sparrow may be very unobtrusive when not breeding, as noted by Mills et al. (1980).

Still, a remarkable concentration of about 40 (within about 200 m) was found by Stephen M. Russell (told to Gale Monson, pers. comm.) on the first (rocky) hills above the coastal plain in northwestern Sinaloa, north-northwest of San Blas, on 10 November 1965. Several specimens (ARIZ) were taken here on 10 and 14 November, at 200 feet (60 m) altitude, and another was taken on 28 December 1966 (R. S. Crossin, NMSU). This locality should be revisited in summer.

South of Sonora, *A. q. septentrionalis* is supposedly resident south to 25°N in western Durango and to "Quilá" (= Quila, Río San Lorenzo, south of Culiacán), central Sinaloa. All specimen records, however, are from winter only; thus none supports the claim that the species is resident. The Durango record is for 11 November (A. H. Miller, in Miller et al. 1957). The Quila dates, not given, are 6–7 January (15 miles = 25 km east at Arroyo Guayalito, RTM). And the southernmost Sinaloa record known to us, from south-central Sinaloa a bit north of 24°N on the road northeast and north to Cosalá, was for 10 January 1970 (C. A. Ely, LSU).

A much greater amount of study and collecting farther south, in southern Sinaloa and Nayarit, had never produced a record of this species. Then in 1978 we explored briefly two small islands just off (northwest of) Mazatlán, Sinaloa. Here, on a grassy east slope with sparse low bushes on Isla Pájaros, 29 March, A. R. P. flushed two sparrows, singly. They seemed unusually dark above for Lincoln's Sparrows (*Melospiza lincolnii*), the sparrow we might have expected, but promptly disappeared into the grass. We did not see their underparts. One was flushed, similarly, on 30 March. Finally, on 2 April, one lit inside a small *Agave* by a rather steep grass-edged rockslide on Isla Venados Norte, where R. P. F. succeeded in collecting it. What was our surprise to find it was *Aimophila quinquestriata*—unrecorded in the long ornithological history of Mazatlán!

Our specimen, an adult female with ovary not enlarged and little fat (weight about 18.9 grams), had traces of molt on the chin and lower back; it is deposited in CANA. Although a bit dark and reddish above (deeper, brighter colors are frequent in more recently collected birds), it is distinctly paler than a specimen from Zacatecas, and we refer it to *septentrionalis*. Additional comparisons with northern Mexican specimens at ARIZ (series) and RTM (series), including one female lent by SD, supported our identification.

FIVE-STRIPED SPARROW DISTRIBUTION



Figure 1. Seasonal distribution of the races of the Five-striped Sparrow. Solid circles, *Aimophila q. septentrionalis*, late April to September; open circles, *A. q. septentrionalis*, October to early April only; squares, *A. q. quinquestrata*.

FIVE-STRIPED SPARROW DISTRIBUTION

Our record doubtless represents migrant(s). The birds were silent, shy, and secretive, and none had been seen on previous visits to these islands by A. R. P. and others (31 May 1974; Isla Pájaros, 13–14 March 1977).

It seems unlikely that Five-striped Sparrows would reach these islets if none wintered in mainland Sinaloa south of 24°N. They probably weren't found sooner because, in the days of Andrew Jackson Grayson and other pioneer naturalists, the immediate vicinities of Mazatlán and Escuinapa were too densely wooded for these sparrows, and the woods, beaches, and marshes surely attracted more birds, and collectors, than did any difficult, unattractive slopes, which still await thorough exploration.

Besides the locality, the date of our specimen is noteworthy. It is only the second April specimen of *A. quinquestriata* for Sinaloa, where the latest was taken on 4 April at Los Leones, much higher and farther north. All others are from November to March, in striking contrast to the dates of those from Arizona and northern Sonora.

Breeding of the Five-striped Sparrow in northeastern Sinaloa would not be surprising, as shown by specimens from southeasternmost Sonora (Guircocoba), 21 May, and southwestern Chihuahua (Barranca del Cobre at "Uriqui River"), 18 May (both RTM). The species is common near Alamos, Sonora, in July and August (Short 1974), and has been taken at Guircocoba to 25 May (van Rossem 1945).

ECOLOGY

The Five-striped Sparrow's breeding habitat, in Arizona, is thick bushes, 1–2 meters high, and grasses on steep hillsides (Mills "1977"). But the A.O.U. (1983:704) modified this, adding "especially with acacia, mesquite, or riparian vegetation (Subtropical Zone)." Presumably they were influenced by Wolf's (1977) statements "often found in wetter sites along stream courses" or, in Arizona, "dense mesquite stands along Sonoita Creek" (1977:31).

But actually the Five-striped Sparrow, unlike so many birds, shows no real affinity for riparian vegetation. This "is not required except perhaps where hillsides are less densely vegetated," and "one could easily walk the riparian areas without being aware of Five-stripes on the neighboring slopes, especially if unfamiliar with the song" (Mills "1977":127–128); the true habitat is illustrated on page 126. And, contra A.O.U. (1983), steep hillsides do not have true riparian vegetation, which at times separates the populations of two slopes. These contain, in Arizona, shrubby mesquite (*Prosopis*), *Acacia*, chuparrosa (*Anisacanthus*), and kidneywood (*Eysenhardtia*), among other bushes. "Density of the shrubs is apparently more important than the species composition" (Mills "1977":128)—which would be expected to vary at different latitudes and altitudes.

Nor (contra A.O.U. 1983) are steep hillsides necessary for breeding of *Aimophila q. septentrionalis*. It was "quite common in an area with little relief" in northern Sonora in July, and was found "in areas of gently rolling hills," presumably in summer (Mills et al. 1980:97–98); "both areas are densely vegetated with shrubs and grasses." It is the concentration of low bushes that is favored for breeding in the north, at least. Breeding occurs in

FIVE-STRIPED SPARROW DISTRIBUTION

Arizona at about 1000 to 1300 meters altitude (Gale Monson pers. comm.) and in Sonora from 1370 down to 50 meters (on a hill with a microwave relay southeast of Navojoa in July 1981, according to observations of S. M. Russell). According to Wolf (1977:30), the species' elevational range, at all seasons, "extends from around 240 m to about 1850 m."

In winter some, perhaps most, Five-striped Sparrows inhabit more open grassy or weedy areas, as shown by our observations and those of J. T. Marshall and D. M. Niles. (The habitat of the northwestern Sinaloa concentration is mainly thorn scrub, *vide* Russell.) As shown by our specimen, they may descend almost to sea level. Neither insular site had dense brush or riparian vegetation.

Short's (1974:30) report on the "thorn forest and short tree forest" birds of southern Sonora does not refer specifically to the haunts of the Five-striped Sparrow. Apparently everyone else's experiences disagree with those of Wolf (1977:30), who wrote "in general, I found *A. quinquestriata* in dense deciduous woodland averaging about 6 m tall." This requires substantiation. According to A.O.U. (1983:592), the "Subtropical Zone" is defined only in South America but extends to North Dakota, Minnesota, and Wisconsin. The actual records indicate that most of *A. q. septentrionalis* winters in what has always been known as the Tropical Zone but breeds in the Lower and Upper Sonoran zones. They apparently eschew strictly riparian vegetation at all seasons.

RELATIONSHIPS

From the start, the relationships of the Five-striped Sparrow have puzzled ornithologists. Influenced, presumably, by its sharply contrasting head stripes, early writers placed the species in *Zonotrichia*. When Ridgway (1901:232) merged the Five-striped Sparrow, with *Peucaea* and "*Ammodramus petenicus*," into *Aimophila*, he still found it to stand apart from the other four "more or less well-defined groups," writing "this species I once placed in *Amphispiza*, but I now find it wholly out of place there unless that genus also be merged into *Aimophila*, which I feel sure would be going quite too far."

Amphispiza was separated because of its lengthened distal primaries, modifying the birds' shapes. But this lengthening is related to time spent flying, and doubtless reflects present or past migrations more than fundamental relationships, just as the evolution of feeding habits affects bill size and shape. The more rounded-winged species of *Aimophila* are the nonmigratory, mainly tropical species. Thus we declined (Phillips et al. 1964, Mayr and Short 1970) to separate *Amphispiza*. Those who did, from Ridgway on, placed the two genera together, with *quinquestriata* in *Aimophila*. (*Aimophila*, even without *Amphispiza*, was unusually diverse, but no one could devise a satisfactory generic subdivision; see Ridgway 1901:231-233, Storer 1955, Wolf 1977.) The suggestion (Pitelka 1951) that the Rufous-winged Sparrow (*Aimophila carpalis*) is nearest *Spizella* remains unsupported by significant evidence.

The discovery of the juvenal plumage of the Five-striped Sparrow (Phillips 1961) only made matters worse. Ridgway (1901:27) supposed that, in all

FIVE-STRIPED SPARROW DISTRIBUTION

the plain small-billed sparrows forming the major North American group, "the young always (?) streaked, even if the adults are plain colored." But a young male Five-striped, not yet full-grown but starting its first prebasic molt, was unstreaked below, lacking even the black central chest spot of the adult, and had a yellowish wash on the whitish breast and belly. Any close relationship to the Black-throated Sparrow (*Amphispiza bilineata*) became even more doubtful, and the Five-striped was thought probably "closer to a group of sparrows that includes *Melospiza*" (Wolf 1977:199). *Melospiza*, however, belongs to a group of stout-footed ground-scratching terrestrial genera, most of whose members have plain unstreaked olive to dull brown backs, wings, and tails. It has rectrices broader than in *Aimophila* or allied genera, and a more rounded wing; primaries 7 to 5 or 4 are longest, rather than 8 to 5.

Then the sixth edition of the A.O.U. Check-list (1983) introduced numerous undocumented changes in nomenclature and sequence. Not only was the Five-striped Sparrow returned to *Amphispiza*, but, still less accountably, five other genera were inserted between it and *Aimophila* (two of these, *Pooecetes* and *Chondestes*, had not even been included in Ridgway's Group *Zonotrichiae*). Widespread uncritical acceptance of this reclassification ensued; for example, Hoffman (1983), in a review, called the *American Birding Association Checklist* "not a good source of current taxonomic, nor nomenclatural, information," citing especially its rejection of the A.O.U.'s scrambling of the Five-striped Sparrow. Like the A.O.U. (1983) and the anonymous (1984) reviewer in *Condor*, he gave no references. We know of none, and found no hint in the *Zoological Record* or elsewhere.

This bit of A.O.U.'s (1983:xii) "adequately debated and widely accepted . . . published evidence" finally emerged to light at its 105th Stated Meeting. Here McKittrick and Fink (1987) wrote "several years ago McKittrick (unpubl. [MS thesis, University of Arizona]) revised the emberizine genus *Aimophila*. . . . Among the taxonomic conclusions of the paper was that *A. quinquestriata* should be transferred to *Amphispiza*, and this move was accepted by the A.O.U. Checklist Committee. The present paper attempts to apply a more rigorous methodology to a more comprehensive survey of the emberizine finches, and to clear up some faulty conclusions of the earlier effort."

We had best, then, follow Ridgway (1901), at least until "the imperfection of our knowledge concerning the internal structure" (p. VII) of the "very heterogeneous and probably unnatural genus *Aimophila*" (p. 36) is remedied.

SUMMARY

The northern race of the Five-striped Sparrow (*Aimophila quinquestriata septentrionalis*) is largely migratory. The known breeding range extends from southeastern Arizona (recently) south to southeasternmost Sonora (Guiracoba) and southwestern Chihuahua. The northern limit of the main winter (November–early April) range is probably in central Sonora, and at this season the species invades the coastal lowland, extending south at least to Isla Venados Norte, off Mazatlán, southern Sinaloa. The Five-

FIVE-STRIPED SPARROW DISTRIBUTION

striped Sparrow's breeding habitat is dense brush, normally dry. The species does not use true riparian habitat, and in winter it spreads to dry grassy hillsides, habitat more open than it uses for nesting. It apparently eschews arboreal vegetation at all times.

The Five-striped Sparrow differs from the sparrows of the genus *Amphispiza* in its more rounded wing and from all its presumed relatives in its unstreaked juvenal plumage. There is no published basis for its inclusion in *Amphispiza*; since Ridgway found it "wholly out of place there," it is better retained in its traditional place in *Aimophila*. The pointed wing shape on which *Amphispiza* is based, being an adaptation for migration, seems a poor basis for separating it from *Aimophila*. *Amphispiza* should be returned to a position adjacent to, or united with, *Aimophila*.

ACKNOWLEDGMENTS

For the privilege of examining specimens, A. R. P. thanks Joe T. Marshall, the late W. J. Sheffler, and the authorities of the University of Arizona (ARIZ), California Academy of Sciences (CAS), Museum of Vertebrate Zoology, University of California (MVZ), New Mexico State University, Las Cruces (NMSU), Moore Laboratory of Zoology, Occidental College (RTM), and the United States National Museum of Natural History, Smithsonian Institution (US). A few specimens examined are now in the Canadian Museum of Nature, Ottawa, Canada (CANA), Louisiana State University Museum of Natural Science (LSU), and San Diego Natural History Museum (SD). We also thank, for help in assembling data, R. S. Crossin, J. C. Hafner, G. Monson, D. M. Niles, S. M. Russell (through Monson), and J. D. Webster. The manuscript was improved by the comments of K. D. Groschupf and P. Unitt.

LITERATURE CITED

- American Ornithologists' Union. 1983. Check-list of North American Birds. 6th ed. Am. Ornithol. Union, Washington, D.C.
- Anonymous. 1984. Recent publications: Check-list of North American Birds, 6th edition. *Condor* 86:47.
- Binford, L. C. 1958. First record of the Five-striped Sparrow in the United States. *Auk* 75:103.
- Hoffman, W. 1983. [Review of] A.B.A. Checklist (Second ed.). *Auk* 100:767-768.
- Mayr, E., and Short, L. L. 1970. Species Taxa of North American Birds. Publ. Nuttall Ornithol. Club 9.
- McKittrick, M. C., and Fink, W. L. 1987. Phylogenetic puzzles in emberizine finches. No. 133, in Abstracts/Scientific Papers Presented at the One Hundred and Fifth Stated Meeting of the American Ornithologists' Union, 10-13 August 1987, San Francisco State University.
- Miller, A. H., Friedmann, H., Griscom, L., and Moore, R. T. 1957. Distributional check-list of the birds of Mexico. Part II. Pac. Coast Avifauna 33.
- Mills, G. S. "1977" (= 1978). New locations for the Five-striped Sparrow in the United States. *W. Birds* 8:121-130.
- Mills, G. S., Silliman, J. R., Groschupf, K. D., and Speich, S. M. 1980. Life history of the Five-striped Sparrow. *Living Bird* 18:95-110.
- Monson, G., and Phillips, A. R. 1981. Annotated Checklist of the Birds of Arizona. 2nd ed. Univ. of Ariz Press, Tucson.

FIVE-STRIPED SPARROW DISTRIBUTION

- Phillips, A. R. "1961" (= 1962). Notas sobre la chuparrosa *Thalurania* y ciertos plumajes de otras aves mexicanas. *Anales Inst. Biol. Méx.* 32:383-390.
- Phillips, A. R. 1991. *The Known Birds of North and Middle America. Part II.* A. R. Phillips, Denver.
- Phillips, A., Marshall, J., and Monson, G. 1964. *The Birds of Arizona.* Univ. of Ariz. Press, Tucson.
- Pitelka, F. A. 1951. Generic placement of the Rufous-winged Sparrow. *Wilson Bull.* 63:47-48.
- Ridgway, R. 1901. *The Birds of North and Middle America. Part I.* U.S. Natl. Mus. Bull. 50.
- Short, L. L. 1974. Nesting of southern Sonoran birds during the summer rainy season. *Condor* 76:21-32.
- Storer, R. W. 1955. A preliminary survey of the sparrows of the genus *Aimophila*. *Condor* 57:193-201.
- Van Rossem, A. J. 1945. A distributional survey of the birds of Sonora, Mexico. *Occ. Pap. Mus. Zool. La. State Univ.* 21:1-379.
- Webster, J. D. 1958. Further ornithological notes from Zacatecas, Mexico. *Wilson Bull.* 70:243-256.
- Wolf, L. L. 1977. Species relationships in the avian genus *Aimophila*. *Ornithol. Monogr.* 23.

Accepted 26 June 1992