

THE MEXICAN RACES OF THE LEAST PYGMY OWL

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The following review attempts to summarize taxonomic and distributional data pertaining to the Least Pygmy Owl (*Glaucidium minutissimum*) in México. The identification of new material from Tamaulipas and Sonora presented such difficulties that a review of all the Mexican races of this uncommon owl was necessary. Until recently, students of this species have been hampered by the unavailability of certain critical specimens, and one race has been described, of necessity, without benefit of such material. For the first time, apparently, representatives of all the described Mexican races of *minutissimum* have been compared, including the types or topotypes of four of the five described races, and near topotypes of the fifth. A clearer picture of relationships based on external morphological features has emerged, and the known range of *minutissimum* has been considerably extended in northeastern and northwestern México.

HISTORY

The first reference in the literature to the species now known as *Glaucidium minutissimum* was through the medium of an illustration (Temminck, 1821) labeled *Strix pumila*, depicting a specimen from either Brazil or Paraguay. The specimen illustrated was not *Strix pumila* of Lichtenstein (1818) but *Glaucidium minutissimum* (Peters, 1940:129). *Strix minutissima* Wied (1830) was based on material from the interior of the State of Bahia, Brazil. Forty-five years later, Sharpe (1875) reviewed the genus *Glaucidium*, named *griseiceps* on the basis of material from Panamá and Guatemala, and included colored illustrations of the then known forms of *Glaucidium*.

In 1897 E. W. Nelson and E. A. Goldman secured the first specimen of *minutissimum* from México. Nelson's (1901:46) description of *Glaucidium palmarum* was based on a single specimen from the Arroyo de Juan Sanchez, Territory of Tepic (just south of San Blas, Nayarit). For the next 36 years *palmarum* remained the only known Mexican form of *minutissimum* and was considered specifically distinct until Griscom (1931:41) recognized it as a race of *minutissimum*. Practically all that we know of the distribution of the species in México is based on material collected since 1936. During the late 1930's and 1940's, Mr. Chester C. Lamb, working under the auspices of the late Robert T. Moore, assembled an admirable series of Least Pygmy Owls from western México. Moore described *oberholseri* from Sinaloa in 1937 and *griscomi* from Guerrero and *occultum* from Oaxaca in 1947 (Moore, 1947a, 1947b). Lowery and Newman greatly extended the known range of the species in México by describing *sanchezi* from San Luis Potosí in 1949. In 1950, the Distributional Check-list of the Birds of Mexico (Pacific Coast Avifauna, 1950) summarized records for the species but did not include *sanchezi*. Blake (1953:216) included general distributional data on all races, including *sanchezi*. Zimmerman and Harry (1951:306) and Phillips and Schaldach (1960:295) extended the known range of the species to Jalisco and Morelos, respectively; these authors did not assign racial designations to their material. The late A. J. van Rossem was engaged in a study of Sonoran specimens of *minutissimum* at the time of his death.

MATERIALS AND METHODS

Specimens of *Glaucidium minutissimum* from a number of institutions were assembled at the Dickey Collection, University of California, Los Angeles. Linear measurements were made with standard dial calipers accurate to one-tenth of a millimeter. Color nomenclature follows Villalobos (1956). The number of tail bars includes all bars from the base of the tail distally, but not including the terminal bar. This method

differs from that of Moore (1937:106) who counted the most proximal bar at the base of the tail (often concealed by overlying feathers). The terminal bar, subject to much wear, is all but lacking in some specimens.

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I am especially grateful to Thomas R. Howell for initially encouraging this study, for many helpful comments during the course of the work, and for reading the manuscript.

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DIAGNOSES AND DISTRIBUTION

Glaucidium minutissimum oberholseri Moore

Glaucidium minutissimum oberholseri Moore (1937:105). Type locality, Vado Hondo, Sinaloa, México, 1000 feet.

Diagnosis.—Dorsal surface brownish olive, head only slightly paler than back; feathers of the dorsum immediately posterior to nuchal stripe occasionally dark buffy brown; nuchal stripe between white and pale gray, and immaculate; spots on pileum round, deltoid, or antero-posteriorly compressed ovals, varying from buffy yellow at base of culmen to a dirty white posteriorly, and spots extending unbroken from base of culmen to nuchal stripe, or nearly so; scapulars irregularly sprinkled with rectangular to ovoid-shaped spots, varying from cream over shoulders to white to pale gray near rump; tail sepia to olive dorsally, with 5 or 6 transverse bars, white to pale gray, sometimes tinged slightly with cream; superciliary stripe dirty white, the white evenly tapering posteriorly to a point about midway over orbit; throat patch white, occasionally with a light cream tinge, narrow, and extending under and occasionally posterior to auricular patch; auriculars buffy brown with dirty white to pale cream spots; upper breast patch white, deltoid shaped; lower breast and belly ground color white with heavy streaks of buffy brown in two large, laterally placed patches sprinkled with dirty white spots; streaks becoming uniform buffy brown on belly; ventral surface of tail light brownish olive with pale gray overcast.

Measurements.—Chord of the closed wing: 8 ad. ♂♂, 81.2 mm. (77.7–88.2); 1 ad. ♀, 86.0.

Range.—From north-central Nayarit north through Sinaloa to the Rancho Guirocoba region, southern Sonora, at elevations between 2900 and 5000 feet, infrequently as low as 1000 feet.

Remarks.—Specimens of *oberholseri*, when viewed in series, are remarkably uniform in coloration. No fall-taken specimens of *oberholseri* were available; indeed, all specimens examined were taken between April 3 and June 15. On the basis of material at hand, there are no color phases.

Specimens examined.—Sonora: Guirocoba and vicinity, 8 (LACM, WVZ); near Mirasol, 2900 ft., 2 (UCLA, WVZ). Sinaloa: Vado Hondo, 1000 ft., 1, the type (MLZ); Carrizo, 6 mi. W San

Miguel, 3200 ft., 2 (MLZ); Sierra Palos Dulces, 15 mi. W Cosala, 3500 ft., 3 (MLZ). Nayarit: 10 mi. NW Santa Teresa, 5000 ft., 1 (MLZ).

Glaucidium minutissimum palmarum Nelson

Glaucidium palmarum Nelson (1901:46). Type locality: Arroyo de Juan Sanchez, Territory of Tepic, México [= just S of San Blas, Nayarit] (near sea level).

Diagnosis.—Dorsal surface brownish olive on head, dark buffy brown on back; feathers of dorsum immediately posterior to nuchal stripe cinnamon (all specimens); back of 3 of 8 specimens approaching pure buffy brown; feathers of the nuchal stripe between white and pale gray, slightly suffused with cinnamon; nuchal stripe in 2 of 7 adults having no light-colored feathers, but being composed entirely of cinnamon; spots of pileum round or laterally compressed ovals, varying from buff brown near base of culmen to pale gray near nuchal stripe, occasionally with a few scattered white spots (3 of 7 ad.), spots invariably covering crown from culmen to nuchal stripe; scapulars irregularly spotted with rectangular to ovoid-shaped spots, almost invariably a pale cream color from over shoulders to rump, but occasionally with 1 or 2 larger white to pale gray spots; tail olive, with almost invariably (7 of 8 specimens) 6 transverse bars of white to pale gray (5 in 1 specimen); superciliary stripe dirty white, usually ending bluntly about one-third of the way posteriorly over orbit, white superciliary not always present over both eyes; throat patch dirty white, expanding broadly under auricular spot, usually ending about halfway under auriculars, occasionally extending to posterior border of auriculars; auriculars brownish olive with dirty white or pale cream spots; upper breast patch white, deltoid shaped; lower breast and belly ground color white, overlain by buffy brown consisting of two lateral patches, almost touching on the midline, with a few dirty white patches, and cascading over lower breast onto belly, where color is broken into uniform buffy brown streaks; ventral surface of tail light brownish olive with pale gray overcast.

Measurements.—Chord of the closed wing: 6 ad. ♂♂, 80.1 mm. (78.5–80.7); 2 ad. ♀♀, 82.5 (81.0, 84.1).

Range.—Coastal Nayarit, ranging inland at least to 400 feet elevation, and extreme southern Sinaloa, inland to 3000 feet.

Remarks.—Individuals of *palmarum* exhibit more variation in the spotting of the pileum and in color of the nuchal stripe and of the back than do individuals of *oberholseri*, but *palmarum* remains a very uniformly marked race when viewed in series.

Specimens from the State of Colima (18 kms. S Colima City; 15 kms. SE. Colima City; north slope La Medialuna) referred to the race *palmarum* were reported by Schaldach (1963:39–40) after the submission of the present manuscript for publication. The description of habitats in which these specimens were taken agrees with the upper-limit habitat for *palmarum* to the north; the southern range extension suggests that *palmarum* may be distributed more or less continuously along the Pacific slope from southern Sinaloa to Colima.

Specimens examined.—Nayarit: Rancho Moloti, 6 mi. E Los Varos (Naros?), 400 ft., 1 (MLZ); Chacola, near sea level, 2 near-topotypes (MLZ); Santa, 7 mi. S Santiago Itquintla, 150 ft., 2 (MLZ). Sinaloa: Rancho Santa Barbara, 20 mi. NE Rosario, 2500 ft., 1 (MLZ); Rancho Picacho, 15 mi. E Cacalotan, 3000 ft., 1 (MLZ).

Glaucidium minutissimum griscomi Moore

Glaucidium minutissimum griscomi Moore (1947a:33–35). Type locality: El Rancho Portrero [= Potrero?] de los Indios, 12 mi. S Zirandaro, Guerrero, México, 1200 feet.

Diagnosis.—Dorsal surface brownish olive on head and back; back with a slight overcast of pale gray (all specimens), feathers immediately posterior to nuchal stripe buffy brown (8 of 9 specimens), the nuchal stripe itself only occasionally broken with pale gray streaks; spots of the pileum very irregular in shape, varying from narrow, elongate dashes of light to very indefinitely defined patches, usually dirty cream at base of culmen to dirty white near nuchal stripe, and invariably extending from base of culmen to nuchal stripe; scapulars irregularly spotted with pale cream to dirty white spots of ovoid to rectangular outline; tail fuscous or olive, with 5 or 6 (6 in one-third of sample) transverse bars varying from cream to white; superciliary stripe dirty white to pale cream, ending abruptly about halfway posteriorly over orbit; throat patch white, expanding broadly in the immediate sub-orbital area, and tapering to the posterior border of auriculars; auriculars brownish

olive thickly sprinkled with dirty white spots; lower breast and belly ground color white, overlain by two large, laterally placed buffy brown patches on lower breast, containing numerous fine dirty white spots over breast and onto belly, breaking into uniform buffy brown streaks; ventral surface of tail very light brownish olive with pale gray overcast.

Measurements.—Chord of the closed wing: 5 ad. ♂♂, 84.9 mm. (82.0–88.6); 4 ad. ♀♀, 85.2 (84.6–85.6).

Range.—Inland central and northern Guerrero and Morelos, at elevations at least between 1200 and 1800 feet.

Remarks.—As in *oberholseri* and *palmarum*, remarkable uniformity of coloration exists in the series of *griscomi* at hand. Superficially, *griscomi* most closely resembles *oberholseri*, and without accounting for the slightly larger size, *griscomi* might easily be mistaken for *oberholseri*. The somewhat greater mean wing length, peculiar spotting of the pileum, and the brighter dorsal surface of the tail serve to distinguish *griscomi* from *oberholseri*. At best, the distinction is slight and cannot be readily discerned except in series.

Specimens examined.—Guerrero: El Rancho Portrero [= Potrero ?] de los Indios, 12 mi. S Zirandaro, 1200 ft., 3, type and topotypes (MLZ); 7 mi. S Mexcala, 1800 ft., 4 (MLZ). Morelos: Xicatlacotla, 2 (MLZ).

Glaucidium minutissimum occultum Moore

Glaucidium minutissimum occultum Moore (1947b:144–145). Type locality: Moctum (on Mount Zempoaltepec), Oaxaca, México.

Diagnosis.—Dorsal surface rich dark sepia, the head only slightly paler and less rich than the back; feathers immediately posterior to the nuchal stripe buffy brown, but only slightly demarked immediately adjacent to the nuchal stripe; nuchal stripe broad and between white and pale gray, occasionally interrupted with black; spots on pileum of almost uniform teardrop shape and buffy yellow; scapulars completely lacking in spots; tail very dark sepia with four transverse bars, the bars cream color proximally and buffy brown distally; superciliary stripe white, finely tapering back over almost entire supra-orbital region; throat patch white, thin, and extending well under auriculars to a point posterior and dorsal to auriculars; auriculars olive, with pale cream spots; lower breast and belly ground color pure white, overlain by two large, lateral, almost touching, fuscous patches on lower breast, with indistinct light buffy brown spots, cascading over breast on to belly, and becoming uniform fuscous to sepia-colored streaks; ventral surface of tail brownish olive.

Measurements.—Chord of the closed wing: 1 ad. ♀ (type), 88.3 mm.

Range.—Known definitely only from the type specimen and locality.

Remarks.—*G. m. occultum*, so far as can be determined on the basis of the one specimen available, would appear to be a well-defined race, having its closest affinities with the rich, dark races *griseiceps* and *rarum* of Middle America, and *sanchezi* of the Upper Humid forests of eastern México. *G. m. occultum* was described on the basis of the type specimen and one other (MLZ no. 44063), a male from Palenque, Chiapas. A careful examination of the specimen from Chiapas leads me to conclude that it is subspecifically unassignable: (1) the plumage is in very poor condition throughout, especially in the critical areas of the pileum and throat; (2) its color characteristics do not coincide conclusively with the type of *occultum*. The specimen from Chiapas is dark, however, and therefore would appear to have its affinities with the eastern and southern complex of races. The wing measures 84.6 mm.

Specimens examined.—Oaxaca: Moctum (on Mount Zempoaltepec), 1, the type (MLZ).

Glaucidium minutissimum sanchezi Lowery and Newman

Glaucidium minutissimum sanchezi Lowery and Newman (1949:1–4). Type locality: Llano de Garzas, near Cerro Coneja [= La Coneja?], San Luis Potosí, México, 6800 feet.

Diagnosis.—Dorsal surface varying from dark brownish olive (2 of 4 specimens) to fuscous, dull, occasionally with a pale gray overcast (1 of 4 specimens); feathers immediately posterior to nuchal stripe buffy yellow; nuchal stripe usually (3 of 4 specimens) a mixture of white to pale gray and black feathers, and broad, not always extending completely over the shoulders; spots of the pileum small, delicate dots between white and pale gray in dark brownish olive specimens and buffy

yellow in the single fuscous specimen, only occasionally extending from the base of the culmen to nuchal stripe (1 of 4 specimens), usually most numerous on the sides of head and extending about three-fourths of way posteriorly to nuchal stripe; scapulars completely lacking in spots; tail olive, with 5 transverse bars varying from cream to dirty white; superciliary stripe dirty white or pale gray, sometimes tinged with a pale cream, finely tapering posteriorly about two-thirds way over orbit; throat patch white, or white suffused with pale cream, finely tapering at least to posterior sub-auricular area, and occasionally to a point posterior and dorsal to auriculars; auriculars dark brownish olive with cream spots; lower breast and belly ground color pure white, overlain by two large, almost touching dark fuscous to sepia patches, very sparsely spotted with indistinct buffy yellow or cream spots over breast onto belly, streaks becoming uniform dark fuscous to sepia; ventral surface of tail brownish olive.

Measurements.—Chord of the closed wing: 2 ad. ♂♂, 85.2 mm. (85.1, 85.3); 2 ad. ♀♀, 87.3 (84.5, 90.0).

Range.—Known from only two localities in northeastern México: the Xilitla region, at least between 5600 and 7300 feet, San Luis Potosí, and from the Gomez Farias-Rancho del Cielo region, between 3000 and 3600 feet, in the Sierra de Guatemala, southern Tamaulipas.

Remarks.—*G. m. sanchezi* is an extremely well-marked race of the rich, dark, eastern-southern complex of the Mexican races of *minutissimum*. One specimen (LSU no. 11005), a female topotype, is lighter and more fuscous in general than the rest of the series, and is remarked upon in greater detail under "Discussion." The Tamaulipan series, represented by 3 ad. ♂♂, 3 ad. ♀♀, 1 ad. unsexed, and 1 imm. ♀, differs in certain salient characters from the topotypical series of *sanchezi*: The Tamaulipas skins are slightly more rich and "glossy"; the superciliary stripe ends posteriorly more nearly one-half way over the orbit, rather than two-thirds of the way as in the topotypes; the scapulars have an occasional large spot in the Tamaulipan skins; and the pileal spots extend fully to the nuchal stripe, whereas in the Xilitla material the spots only infrequently extend to the nuchal stripe. The wings of the Tamaulipan specimens average slightly longer: 3 ad. ♂♂, 86.8 mm. (85.9–87.1); 3 ad. ♀♀, 89.4 (84.4–93.1). There is no information at this time to suggest whether the Tamaulipas population is reproductively isolated from the San Luis Potosí population. A generation ago, such evidence would have been considered sufficient to justify description of a new race. In view of the extremely unstable taxonomic state of the entire *Glaucidium* group, it appears most judicious to refrain from such a description until more complete data are secured concerning the distribution and ecology of *minutissimum* in the Upper Humid forests of eastern México.

Specimens examined.—San Luis Potosí: Cerro La Coneja region, near Cerro La Luz, 1; Cerro Conejo, 1; Cerro San Antonio, 1; Xilitla region, beyond Puerto de Loso, 1, topotypes or near-topotypes (all LSU). Tamaulipas: Gomez Farias-Rancho del Cielo region, 3000 to 3600 ft., 8 (GMS, MMNH, UCLA).

DISCUSSION

Much confusion has surrounded the specific, as well as the subspecific, identity of *Glaucidium minutissimum* in México. This confusion has stemmed from a basic misunderstanding of the characters separating *minutissimum* from *gnoma* and *brasilianum*, from an apparently unfounded transfer of the dichromatic concept of plumage, so characteristic of *gnoma*, to *minutissimum*, and from unawareness of the existence of two geographic groupings of the species in México. These problems have remained unsolved in part because of the unavailability for so long a period of the necessary comparative material.

Griscom (1931) and later Moore (1937:106) apparently experienced difficulty in separating *minutissimum* from *gnoma*. The Mexican Check-list (Pacific Coast Avifauna, 1950:144) states that "collectors still confuse it [*G. minutissimum*] with the abundant *G. brasilianum*." At the Dickey Collection, 51 skins of *G. minutissimum*, distributed from Sonora and Tamaulipas, México, to Argentina, were compared with 81 skins of *G. gnoma*, distributed from British Columbia to México, and with 28 skins of *G. brasilianum*, distributed from Sonora, México, to Argentina. Based on the material at hand,

fully adult specimens of *brasilianum* exhibit crown stripes; fully adult specimens of *minutissimum* and of *gnoma* exhibit crown spots. In México, *G. minutissimum* may be distinguished from *G. gnoma* by: shorter wing—averaging 84 mm. in *minutissimum* and more than 90 mm. in *gnoma*; complete absence of any streaking on the back in *minutissimum*; and a proportionately shorter tail.

In addition, considerable confusion regarding the taxonomy and relationships of *minutissimum* in México has surrounded the use of the term "color phase." It is a well-known fact among taxonomists dealing with strigids that sometimes dramatic examples of dichromatism occur in members of the genus *Glaucidium*; this condition is particularly well exemplified in the specimens of *Glaucidium gnoma* from the highlands of central México. In the original descriptions of the Mexican races of *minutissimum*, *oberholseri* is described as being in the "typical gray phase of northern 'gnomas' [sic]" (Moore, 1937:106); *griscomi* as being "nearest in the gray phase to the same phase of *Glaucidium minutissimum oberholseri* Moore" (Moore, 1947a:33); *occultum* as being "nearest to the intermediate phase of *Glaucidium minutissimum rarum* Griscom" (Moore, 1947b:144); *sanchezi* as "representing what may be said to correspond to the 'intermediate' phase of other races" (Lowery and Newman, 1949:3). Lowery and Newman (1949:3) alone exercised the caution necessary under the circumstances prevalent then: "Since we have not had the privilege of directly comparing *sanchezi* with . . . *occultum* . . . or *oberholseri* . . . , we do not feel that a detailed evaluation of color differences is warranted at this time." Moore, in describing *griscomi*, *oberholseri*, and *occultum*, was not aware of the existence of *minutissimum* in the Upper Humid forests of eastern México and hence was compelled to make comparisons of the species with *palmarum*, a representative of the pale western complex, and with representatives of the rich, dark Middle and South American races. As a result, whereas Moore's racial diagnosis holds true (for he was working with a separate racial complex), the interpretation that he placed upon the color of the pale, western complex races was incorrect. To complicate the picture, Moore then proceeded to compare *minutissimum* with *gnoma*. In his last analysis of the relationships of the Mexican races of *minutissimum*, Moore (1947b:145) finally recognized a "southern group (*minutissimum*, *rarum*, *griseiceps* and *occultum*)" and a "northern group (*griscomi*, *palmarum* and *oberholseri*)." However, in respect to the "phases" representative of these "groups," Moore states that the "intermediate" and "rufescent" phases dominate in the southern forms, and that in the northern forms the "rufescent phase [is] lacking, while the gray phase predominates over the intermediate in the ratio of 5 to 1."

With representatives of all the Mexican races of *minutissimum* at hand, together with one specimen of *rarum* from Costa Rica, two specimens of *minutissimum* from Ecuador, and one specimen of *minutissimum* from Brazil, it is immediately apparent that, with reference to color, the species *minutissimum* is divisible into two natural groups, each of which is readily subdivisible, and all of which coincide with definite zoogeographic areas:

(1) Dark, richly colored birds—a complex in South America, Middle America, and southern and eastern México, composed of (a) brightly colored individuals—*rarum*, *minutissimum*, and, presumably, *griseiceps* (based on description) and (b) less brightly (or "glossily") colored individuals—*occultum* and *sanchezi*, races of the wet Upper Humid forests of the eastern cordillera facing the Gulf of México.

(2) Light, dull colored birds—a complex in western México composed of (a) two rather poorly defined races, *oberholseri* and *griscomi*, both very pale, which range generally through the dry, deciduous forests at medium elevations and very rarely into the pines above, and (b) *palmarum*, a well-marked race of the pale complex, darker in color than either *oberholseri* or *griscomi*, but still typical

of the western group; a bird of the thorn-scrub and palm-thicket lowlands, but frequently ranging up into the lower dry deciduous forests.

With the possible exception of one specimen of *sanchezi*, there is not the slightest suggestion of dichromatism present in any of the Mexican races of *minutissimum*. The one possible exception (LSU no. 11005), an adult female of *sanchezi* from beyond Puerto de Loso, the Xilitla region, San Luis Potosí, is a somewhat lighter color throughout than three other specimens from the same general area. This specimen was remarked upon by Lowery and Newman (1949:3) in the original description of *sanchezi*, and those authors considered this specimen to be within the limits of the same "phase" as the other specimens from the Xilitla region. Certainly the chromatic divergence of this specimen in no manner approaches the variations apparent in even the less striking examples of dichromatism exhibited in *Glaucidium gnoma*; it would be indiscreet to consider this specimen anything more than a slightly paler individual, and this assumption was taken into account in the preparation of the diagnosis of *sanchezi* here presented.

The logical answer, then, to the "dichromatic confusion" surrounding the Mexican examples of *Glaucidium minutissimum* lies in the striking difference in color between representatives of the eastern-southern complex and those of the western complex. While the possibility of dichromatism in *minutissimum* in México certainly still exists, it is remarkable indeed that none of the "dark" or "rufescent phases" has been taken in western México and none of the "light" or "intermediate phases" in the eastern and southern areas.

The distribution of the races of *minutissimum* in México, plotted by color complexes and collecting stations, is presented in figure 1.



Fig. 1. Distribution of races of the Least Pygmy Owl (*Glaucidium minutissimum*) in México, as indicated by collecting stations.

In plotting mean lengths of the chord of the closed wing, there would also appear to be a more or less indistinct break between the eastern-southern and the western complexes (fig. 2). Of course a much larger sample is to be desired than that available. It is felt, however, that the available samples (33 skins, representative of the western complex; 13 skins, representative of the eastern-southern complex) are sufficiently large

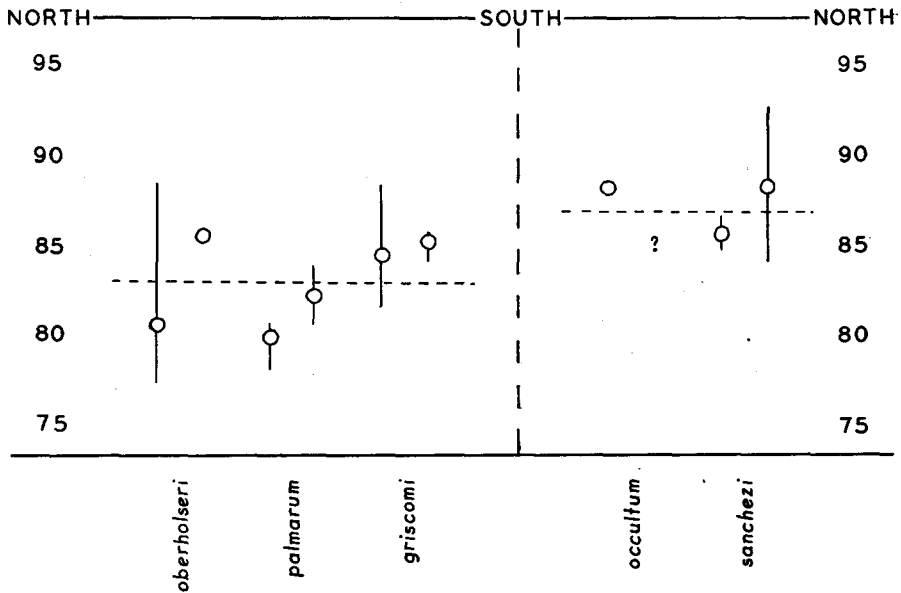


Fig. 2. Mean wing lengths of the Least Pygmy Owl from México, plotted by sex and geographically oriented by color complex. Vertical bars represent range of sample; open circles, the means; horizontal dashed lines, the mean of each color complex. Within each race the data for males are on the left.

to indicate a definite grouping tendency. The mean wing lengths coincide quite nicely with the color differences present in the different races within each complex: *palmarum* is readily shown to be the most distinct of the western complex, and the close relationship of *oberholseri* and *griscomi* is demonstrated; the indicated relationship of *occultum*, represented as it is by only one specimen, is not, of course, significant.

No less striking than the color differences, and the suggested wing length differences between the two complexes of *minutissimum* in México, are the contrasting ecological circumstances under which examples of the two complexes have been taken. The two eastern and southern-complex races, *occultum* and *sanchezi*, are all from Humid Upper Tropical forests, at elevations of 3000 feet and above. The typical habitat of this complex of races is the ever-damp cloud forests, and the humid pine-oak forests above. The western complex, composed of *griscomi*, *palmarum*, and *oberholseri*, are characteristically inhabitants of the lower elevations—usually less than 3500 feet—the Arid Lower Tropical thorn-scrub and palm-thicket areas adjacent to the Pacific Ocean, and the dry deciduous forests of the foothills immediately above. A few specimens of *griscomi*, from the Sierra de Autlan in Jalisco, appear to have been taken as high as the pines.

CONCLUSIONS

Within the geographic confines of the present study, *Glaucidium minutissimum* is a polytypic species, presenting two morphologically and geographically consistent complexes.

The basic systematic problem inherent to this "species" complex would appear to be (1) are we, in effect, dealing with two or more highly polymorphic races of a single species, or (2) do the eastern-southern and western complexes represent sibling species? In view of the strength of characters demonstrated by each geographic entity, within each complex, it would appear possible to accept the second alternative. The change in variation between populations of *minutissimum* in México in both size and color, from east and south to west, are not unidirectional but step-like. By recent definition (Simpson, 1961:179), these variations do not constitute evidence for the assumption of a cline. Further, there is no overlap of geographic range or "sympatry" of habitat between the two complexes.

I feel that these variants in *Glaucidium minutissimum* from México constitute evidence of separate taxa only at the subspecific level. The extent of variation indicates that the named subspecies are in fact distinguishable. However, the degree of variation between the races of the western complex, *oberholseri*, *griscomi*, and *palmarum*, and the degree of variation exhibited in the eastern-southern complex of *sanchezi* and *occultum* is highly disproportionate; particularly obscure are the distinctions between *oberholseri* and *griscomi* when considering the species variation as a whole throughout México.

In view of the apparent rarity of this species, the lack of specimens from certain critical areas, and a paucity of comparative behavioral data between the two complexes, a taxonomically conservative approach is followed. I suggest that *Glaucidium minutissimum griscomi* Moore be recognized on the basis of the currently available material as a dubiously distinct form possibly synonymous with *Glaucidium minutissimum oberholseri* Moore; that *Glaucidium minutissimum palmarum* Nelson be retained as a distinct representative of the western complex in México; and that *Glaucidium minutissimum occultum* Moore and *Glaucidium minutissimum sanchezi* Lowery and Newman be tentatively retained as distinct, pending the acquisition of further comparative material from the range of the eastern-southern complex. Should this complex prove to represent one highly polymorphic race, *Glaucidium minutissimum sanchezi* Lowery and Newman would by priority become a synonym of *Glaucidium minutissimum occultum* Moore.

SUMMARY

The Mexican races of the Least Pygmy Owl (*Glaucidium minutissimum*) are compared in hand for the first time.

Two distinct racial complexes are found, an eastern-southern group of dark races and a western group of pale races. The possible taxonomic relationships of these two complexes are discussed.

The range of the species in México is extended to include the southern portions of the States of Tamaulipas and Sonora.

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