

THE GENUS *OTUS* OF MEXICO AND CENTRAL AMERICABY ROBERT T. MOORE¹ AND JAMES L. PETERS

ALTHOUGH this study of the genus *Otus* is restricted to species occurring in Mexico and Central America, no clear picture of the situation can be drawn without references to extralimital races. Due to lack of material, Ridgway (Bull. U. S. Nat. Mus., no. 50, pt. 6, pp. 681-732, 1914) gave specific rank to many forms, such as *guatemalae*, *vermiculatus*, *vinaceus* and *hastatus*. In 1918, Cory (Cat. Birds Americas, pt. 2, no. 1, pp. 25-31) followed Ridgway, and accepted the new races described since Ridgway's time, making only one change, a recognition of *O. asio gilmani* Swarth, which Ridgway had synonymized with *cineraceus*. Griscom ('Distribution of Bird Life in Guatemala,' Bull. Amer. Mus. Nat. Hist., 64: 170, 1932) suggested the likelihood of the conspecific relationship of *guatemalae* and *cassini* and the "break down" in "the distinction of the feathering of the tarsus," whereby Ridgway had set up *vermiculatus* as a species. Following Ridgway and Cory, Kelso ('A Key to Species of American Owls,' pp. 45-52, 1934) recognized some new forms recently described, but did not carry out Griscom's suggestion. The senior author ('New Races of the Genus *Otus* in Northwestern Mexico,' Proc. Biol. Soc. Washington, 50: 63-68, 1937) described two new races, *O. asio sinaloensis* and *O. guatemalae tomlini*, mentioned two specimens in his collection from Vera Cruz, related to *cassini*, and three from Nicaragua, which he did not then describe (although he was confident they represented two new races) and suggested the conspecific relationship of *guatemalae*, *thompsoni*, *hastatus* and *tomlini*. The present authors accept the suggestions of Griscom and Moore and here describe a new race of *Otus trichopsis* from Honduras, as well as the two forms mentioned above. All the specimens of each species in the British Museum, including the types, were examined by the senior author during August 1938.

Our grateful acknowledgments are made to the Directors of many museums for their cooperation and generous loan of material including many valuable types: to Mr. N. B. Kinnear and the British Museum; to Dr. Herbert Friedmann and the Smithsonian Institution; Dr. Harry C. Oberholser and the U. S. Biological Survey; Mr. John T. Zimmer and the American Museum of Natural History; the late S. C. Simms and the Field Museum of Natural History. In addition Mr. Laurence Huey and the San Diego Society of Natural History loaned a topotypical series of *O. a. cardonensis*; Mrs. Donald R. Dickey and Mr. Adriaan van Rossem permitted the examina-

¹ Mr. Peters graciously insisted that the custom of the late Outram Bangs be followed in determining the position of the authors' names. Therefore the use of the terms 'senior' and 'junior author' throughout the paper refers solely to their relative ages.—R. T. M.

tion of the type of *O. trichopsis mesamericanus*; Dr. Louis B. Bishop loaned a large series of *cineraceus*, *gilmani* and *cardonensis*; and Dr. Loye H. Miller and the University of California at Los Angeles loaned many valuable specimens. The authors are fully aware that even the present assemblage of material, probably much larger than any hitherto gathered together, is not adequate in every case and the appearance of new data may necessitate a change of treatment.

OTUS ASIO

Specific characters.—Toes bristled; base of toes feathered; black blotches on breast conspicuously wider than black streaks of lower under parts; bristly tips to feathers of face as a rule only slightly developed; both webs of outer primaries barred; spotting on back, when present, indistinct.

The western forms of our field are not dichromatic, but apparently consist of a phase much grayer than the light phase of any of the other species of *Otus*, with the possible exception of *trichopsis*. Only *Otus asio mcallii* of our field seems to have a rufous phase.

Remarks.—The characters of the various species of *Otus* are subject to such individual variation, that not one can be set up, that will prove invariably true for every individual. In some ways the American forms of the genus *Otus* may be likened to the genus *Empidonax* in that there are several distinct species all resembling one another in external appearance, but readily recognizable by their notes and probably in life occupying distinct ecological niches. When assembled as museum specimens, they can be distinguished only with great difficulty, and none of the so-called specific characters can be relied upon with certainty. For example, the great development of bristly tips of the facial feathers is generally conceded to be the important character of *trichopsis*, by which it is distinguished from the *asio* group. Nevertheless, there are several races of *asio*, in which individuals are found with these 'bristly tips' as well developed as in any average specimen of *trichopsis*, for example in *floridanus*, *bendirei* and *mcallii*. The same is true of the 'spotting' on the hind neck. Furthermore, in the northern part of its range *trichopsis* can be distinguished with certainty from the race of *Otus asio* occupying the same general region by its relatively shorter tail and longer emarginated portion of the inner web of the outer primary, but in the southern part of its range the tail becomes relatively longer. Parallel conditions and variable characters are found in the relationship between other so-called 'species'; for example, the bare base of tarsus of *vermiculatus*, set up to distinguish it from *guatemalae* and the alleged feathered base of tarsus of *guatemalae*. We could cite other cases.

OTUS ASIO CARDONENSIS Huey

Otus asio cardonensis Huey, Auk, 43: 360-362, July, 1926. Canyon San Juan de Dios, about ten miles east of El Rosario, Lower California, Mexico; type in collection San Diego Society of Natural History.

Subspecific characters.—Darker than *Otus asio cineraceus* about head and neck, where the striping is more pronounced; smaller than *cineraceus* and larger than *xantusi*; herring-bone pattern on lower parts more pronounced; markings on legs and feet closer.

Specimens examined.—LOWER CALIFORNIA: El Rosario, 6 ♂, 6 ♀.

Range.—"The giant cactus (*Pachycereus*) association of the Pacific Slope of Lower California in the vicinity of the hills east of Santo Domingo and San Quintin to the region lying east of El Rosario."

OTUS ASIO GILMANI Swarth

Otus asio gilmani Swarth, Univ. California Publ. Zool., 7: no. 1, 1-3, May 26, 1910. Black Water, Pinal Co., Arizona; type in collection Univ. California Museum of Vertebrate Zoology.

Subspecific characters.—Paler and slightly smaller than *O. a. cineraceus*; streaking finer.

Specimens examined.—MEXICO: Sonora: Sierra Seri, 1 ♂. UNITED STATES: Arizona: Yavapai Co.: Mayer, 1 ♂; Dewey, 1 ♀; Ash Creek, 1 ♂, 1 ♀; Yuma Co.: Ehrenberg, 1 ♂; Maricopa Co.: near Sentinel, 1 ♀; Phoenix, 3 ♂, 1 ♀; Pinal Co.: Oracle, 1 ♂; Pima Co.: Fort Lowell, 10 ♂, 4 ♀, 1 (not sexed), 2 juv.; Tucson, 4 ♂, 5 ♀, 2 juv. California: Riverside Co.: Salton, 1 ♀; Imperial Co.: Potholes, 1 ♀; Bard, 1 ♀; San Bernardino Co.: Vidal, 1 ♂, 1 juv. ♂.

Range.—Lower Sonoran Zone of southern Arizona and the Colorado River valley of southeastern California, probably the same zone in extreme northern Sonora and northeastern Lower California.

OTUS ASIO CINERACEUS (Ridgway)

Megascops asio cineraceus Ridgway, Auk, 12: 390, October, 1895. Arizona and parts of northern and central Mexico = Fort Huachuca, Arizona; type in collection U. S. National Museum.

Subspecific characters.—Similar to *O. a. aikeni*, but more delicately penciled, both above and below, the pencilings on under parts averaging denser or more numerous.

Specimens examined.—ARIZONA: Yavapai Co.: Campo Verde, 1 juv. ♂; Montezuma Well, 1 juv. ♀; Cochise Co.: Fairbank, 1 ♂; Portal, 1 ♂, 1 ♀; Fort Huachuca, 2 ♂ (including type); Huachuca Mts., 1 ♂, 1 juv. ♀; Chiricahua Mts., 1 ♂, 1 ♀; Pima Co.: Fort Lowell, 1 ♂, and 1 ♂, 1 ♀, 5 nestlings and juv. in British Museum. NEW MEXICO: Socorro Co.: Reserve, 2 ♂, 2 ♀; Sierra Co.: Elephant Butte, 1 ♀. TEXAS: Brewster Co.: Terlingua, 1 juv. ♀; Valverde Co.: Juno, 1 ♀. (10 ♂ & ♀ in U. S. National Museum.)

Range.—Upper Sonoran Zone from central Arizona east to southern New Mexico and central-western Texas; also in Sonora, Mexico.

Remarks.—Three females from Rio Sestin and Santuario, Durango, were referred provisionally by Miller (Bull. Am. Mus. Nat. Hist., 20: art. 10, p. 164) to *O. asio aikeni*. Although they differ from typical *cineraceus* of Arizona, they resemble in their broader streaking on the upper parts a series in the Bishop Collection from Reserve, New Mexico. They are not at all like *vinaceus* of southwestern Chihuahua and northeastern Sinaloa.

OTUS ASIO MCCALLII (Cassin)

Scops Mccallii Cassin, Illus. Birds California, Texas, etc., pt. 6, p. 180, 1854. Texas and northern Mexico = Lower Rio Grande, Texas; one cotype in collection U. S. National Museum; the other has been lost.

Subspecific characters.—Gray phase much more coarsely mottled above than in any other form of this species; often conspicuously buffy above and below; differs from all other races of *asio* in our field in having a rufous phase which is paler than that of *O. a. asio* with rufous predominating on under parts.

Specimens examined.—UNITED STATES: Texas: Uvalde Co., 1 ♂, 1 ♀; Webb Co.: Laredo, 1 ♂, 1 ♀; Nueces Co., 1 ♂, 1 ♀, 1 not sexed; Hildago Co.: Lomita Ranch, 1 ♂; Webbers Ranch, 1 ♀; Hildago, 2 not sexed; Cameron Co.: (no exact locality), 6 ♂, 1 ♀; Brownsville, 15 ♂, 5 ♀, 1 not sexed; Grancano, 1 ♂, 1 ♀. MEXICO: Tamaulipas: Rio Martinez, 1 ♂, 1 ♀; Forlon, 1 juv.; Nuevo Leon: Rio Salado, 3 ♂; Topo Chico Monterey, 1 ♂ (rufous phase); "MEXICO," 1 without data.

Range.—Extreme southern Texas north to Bexar and Comal County, west to Kinney County and south to Tamaulipas and Nuevo Leon, Mexico.

OTUS ASIO VINACEUS (Brewster)

Megascops vinaceus Brewster, Auk, 5: 88, 1888. Durasno, Chihuahua, Mexico; type in collection of Museum of Comparative Zoology.

Subspecific characters.—Nearest to *cineraceus* and *gilmani*, but mesial streaks narrower above and below; vermiculation more minute; a much greater outcropping of so-called 'pinkish' or 'vinaceous' buff both above and below, but chiefly on throat and rest of under parts.

Specimens examined.—MEXICO: Chihuahua: Durasno, 1 ♀ (type); Sinaloa: El Orito, 2 ♀ (collection of Robert T. Moore).

Range.—True *vinaceus* is probably found in the Upper Sonoran and lower part of the Transition Zones of the tableland of western Chihuahua, south into the same zones of northeastern Sinaloa.

Remarks.—The type locality, Durasno, cannot be found on maps, but is known to have been located in the mining region of the mountains of central western Chihuahua. A place, spelled "Durazno," is shown on the American Geographical Society's 'millionth' map sheet of Chihuahua on the extreme western border at about the latitude of Chihuahua City and is doubtless the same place as "Durasno." The color of the map's topographical key indicates the altitude as between 4921 and 6562 feet. In any case "Durasno" can hardly be less than 5000 feet in altitude.

The El Orito specimens represent intergrades with *sinaloensis*, one of them being very close to the type of *vinaceus*. The three constitute the only recorded examples. This race is undoubtedly the rarest Screech Owl in southwestern Chihuahua, while the supposedly rare *Otus trichopsis aspersus* is more common. The senior author, during a two weeks' trip into this region in 1934, heard the characteristic monotone call of the latter frequently and secured three specimens, but only once detected a typical *asio* quaver, which might be assigned to *vinaceus*. This was in the Transition Zone at an altitude of 6300 feet, where pines were the predominating trees.

The buffy 'vinaceous' tone of the Mexican forms of *asio*, noticeable in *mecallii* and *sinaloensis*, as well as to some extent in *xantusi*, reaches its culmination in this race. In their more vinaceous tone, denser but finer vermiculations of abdomen, and darker legs, both *vinaceus* and *sinaloensis* differ far more from *cineraceus* and *gilmani*, than these two latter do from each other.

OTUS ASIO SINALOENSIS Moore

Otus asio sinaloensis Moore, Proc. Biol. Soc. Washington, 50: 64-65, 1937. Guamuchil, northwestern Sinaloa, Mexico, altitude 45 feet; type in collection of Robert T. Moore.

Subspecific characters.—Grayer above and below and distinctly less buffy on throat and upper back than *vinaceus*; light-colored marks on outer webs of exterior row of scapulars much lighter buff; size slightly smaller. Spotting on back much less prominent than in *xantusi*; vermiculations below denser; streaking on abdomen finer.

Specimens examined.—MEXICO: *Sinaloa*: Guamuchil, 1 ♂ (type); *Sonora*: Guirocoba, 1 ♂, 1 ♀.

Range.—Cacti associations of Arid Lower Tropical Zone of coastal northwestern Sinaloa, ranging up the foothills to an altitude of 1450 feet in northern Sinaloa and southeastern Sonora.

Remarks.—The male and female from the Guirocoba Ranch in southeastern Sonora at an altitude of 1450 feet, where the cypress-bordered streams cross the cultivated fields, are intergrades with *vinaceus*, but closer to *sinaloensis*.

OTUS ASIO XANTUSI (Brewster)

Megascops xantusi Brewster, Bull. Mus. Comp. Zool., 41: 93, 1902. Santa Anita, Lower California; type in collection of Museum of Comparative Zoology.

Subspecific characters.—Nearest to *sinaloensis*, and about same small size, but differs in having mesial streaks wider, legs lighter and spots on outer webs of exterior scapulars larger and purer white; *xantusi* is smaller, more finely streaked above and below and lighter in tone than either *gilmani* or *cardonensis*.

Specimens examined.—MEXICO: *Lower California*: Miraflores, 9 ♂, 9 ♀; Laguna Valley, 1 ♂; Santa Anita, 1 ♂ (type); El Sauz, 1 ♂, 2 ♀; Campo Los Angeles, 1 ♀; 4 specimens Coll. U. S. Biological Survey.

Range.—Arid Tropical Zone of Cape district of Lower California, ranging to the tops of the Victoria Mountains.

OTUS TRICHOPSIS

Specific characters.—Toes bristled as in some southern races of *asio*, but feathering at base never so heavy as in extreme examples of *asio*. Differs from *asio* in having bristly tips of feathers of face greatly developed; pale buffy spots on occiput and lower hind neck more distinct; black streaks on upper and under parts relatively much broader; dark spaces on outer webs of primaries seldom mottled with gray; inner web of outermost primary generally unbarred; other primaries only faintly barred, if at all; only one white spot, if any, on base of inner web of outer primary; feet generally smaller.

Remarks.—Although the above characters are well marked in the southern part of the range of *asio* in southwestern Chihuahua and northeastern Sinaloa, in the northern part of the range of *trichopsis* none of these characters invariably holds true for distinguishing individuals. In the mountains of Arizona they serve fairly well, but there are individuals of *asio* in extreme southern Texas, which closely approximate certain individuals of *trichopsis* from western Chihuahua.

Ridgway (Bull. U. S. Nat. Mus., no. 50, pt. 6, p. 704, 1914) gave eight characters for differentiating *Otus trichopsis* from the nearest members of the *asio* group, *O. asio mcallii* and *O. a. cineraceus*. Not one of these characters by itself will invariably distinguish *trichopsis* from what appear to be 'mutations' in the *asio* group. Even the character of the "bristly tips to feathers of the face" is not decisive. In fact, the supposedly minor character of the lack of "distinct whitish spots on the inner web of the outermost primary" is often more conclusive than any other.

OTUS TRICHOPSIS ASPERSUS (Brewster)

Megascops aspersus Brewster, Auk, 5: 87, Jan. 1888. El Carmen, Chihuahua; types in collection of Museum of Comparative Zoology.

Subspecific characters.—Averaging grayer above and below than *trichopsis trichopsis* of southern Mexico; more primaries conspicuously emarginated; generally more deeply incised (see table of measurements on page 48); size slightly smaller in females.

Specimens examined.—ARIZONA: Peña Blanca Spring, 3 ♂; Huachuca Mts., 10 ♂, 3 ♀; Tumacacori Mts., 1 ♂; Chiricahua Mts., 1 ♂, 2 ♀; Santa Catalina Mts., 1 ♂. CHIHUAHUA: San Luis Mts., 1 ♂, 1 ♂ juv., 1 ♀; Sierra Tarahumare, 1 ♂; El Carmen, 1 ♀ (adult cotype), 1 ♀ (juv. cotype); Guayachi (southwestern Chihuahua), 2 ♂, 1 ♀, 2 nestlings. DURANGO: Rio Sestin, 1 ♂. SAN LUIS POTOSI: Alvarez, 1 ♀. NAYARIT: Sierra Madre, 1 juv. not sexed.

Range.—Mountains of southeastern Arizona from at least as far west as Peña Blanca Springs in the Pajarito Mountains, through the Santa Catalina, Huachuca, Chiricahua and San Luis Mountains of the Mexican boundary line, southward through Chihuahua, Durango and San Luis Potosi.

Remarks.—All the adult specimens from Chihuahua, as well as those from Durango, are definitely browner and more ochraceous tawny on the throat than all except four out of twenty-one individuals from Arizona; these four are a female from the Chiricahua Mountains in the collection of Dr. Louis B. Bishop, the male from Peña Blanca Springs in the collection of Dr. Loye H. Miller and two in the British Museum. Without doubt the birds of Arizona average grayer and, as the species is found farther to the south, it gradually becomes browner above and more cinnamon on the throat until the extreme is reached in Honduras. On the other hand in the character of size, the birds in the center of the habitat are the largest, those at the south are smaller, while the Honduras birds are the smallest of all. Birds of Arizona and Chihuahua have as a rule four outer primaries plainly incised

and sometimes a fifth one, those of southern Mexico three plainly and sometimes a fourth, whereas those of Guatemala and Honduras have either two or three. The question of the validity of this race is a problem, but we do not believe it can be solved by sending only two specimens for comparison with those in the British Museum (see van Rossem, *Trans. San Diego Soc. Nat. Hist.*, 7: 184, 1932).

Considering phases, we have an anomalous situation in Arizona and Chihuahua. In the former a great majority of the birds are gray and the rest have the 'brownish' tone exaggerated, because they are July and August individuals, in which the gray edges to the feathers have been worn off. On the other hand in Chihuahua and Durango, all of the specimens, most of them April and May birds, are 'brownish,' the so-called 'intermediate' phase, and neither the gray nor the rufous phase has been recorded. In southern Mexico most specimens have this intermediate coloration, but three are unquestionably in the rufous phase. Van Rossem (*op. cit.* p. 185) seems to have overlooked two rufous specimens in the American Museum of Natural History from Jalisco and one in the British Museum from Chimalpa, Valley of Mexico (O. S. & F. D. G: 90.5.16.45). We are inclined, on the basis of only slightly incised primaries, to allocate the Jalisco birds to typical *trichopsis*, but these may be intergrades. The juvenile from Nayarit has been placed here provisionally.

The senior author found the nest of this race above a waterfall on a mountain at 6700 feet elevation near Guayachi in extreme southwestern Chihuahua. The nest was in a dwarfed oak, one of the very few remaining in the lower part of the pine belt. It contained both adults and two young nestlings in white downy plumage.

OTUS TRICHOPSIS TRICHOPSIS (Wagler)

Scops trichopsis Wagler, Oken's Isis, 1832, column 276. Mexico; type apparently lost.

Megascops ridgwayi Nelson and Palmer, Auk, 11: 40, Jan. 1894. Patzcuaro, Michoacan; young of rufous phase. Type in U. S. National Museum.

Subspecific characters.—Browner above and below than *O. t. aspersus*, and emarginated primaries fewer, less deeply incised. The material indicates true *trichopsis* as averaging larger in females, but only very slightly larger (wing 143.4 mm.) in males as compared with 142.9 mm. for *aspersus* and 135.8 mm. for Honduras birds; see table of measurements p. 48.

Specimens examined.—SOUTHERN MEXICO: 1 ♂ (cotype of *enano*); Valley of Mexico: Chimalpa, 1 ♂ and 1 ♀ (rufous phase); Ajusco, 1 ♀. Oaxaca: 2 not sexed. Jalisco: Los Masos, 1 ♂; La Pisagua, 2 (rufous phase without sex). Michoacan: Patzcuaro, 1 juv. (type of *Megascops ridgwayi*). Nayarit: Tepic, 1 juv. Guerrero: Omilteme, 2 ♂, 1 ♀. "Mexico," no data, 1 ad., 2 juv.

Range.—Southern Mexico, probably from Jalisco south to an undetermined latitude, at least to Oaxaca and from the Valley of Mexico to Guerrero.¹

¹ Since this was written, van Rossem has named *Otus trichopsis guerrerensis* (Condor, 40: 258, 1938, Omilteme, Guerrero, Mexico, 8000 feet). Type in British Museum.

Remarks.—According to Dr. Laubmann, as reported by van Rossem (op. cit. p. 184), the type is “missing.” Van Rossem, on the basis of the southern range of the other species described in the same collection, believes that the type locality was somewhere “near the southern end of the Mexican tableland” and this locality we now further restrict to the mountains of the southwestern part of the State of Puebla. If it should later be determined that the name ‘*trichopsis*’ applies to the northern race, we still have to consider *Scops asio*, var. *enano* Ridgway, also from an undetermined locality. The description of ‘*enano*’ has been credited to Ridgway alone, but examination of the original reference (Bull. Essex Inst., 5: 200, Dec. 1873) proves that it had the joint authorship of Baird and Ridgway and was based on two types, one no. 44811 of the American Museum of Natural History marked “*S. asio* var. *enano*, Lawrence. Type,” and the other from “Guatemala” formerly in the museum of the Boston Society of Natural History, but now no. 72899 in the Museum of Comparative Zoology. The senior author searched for the former in the American Museum of Natural History and discovered that it possessed no red type-label, but was marked as noted above. There is no doubt whatever that this is the Mexican cotype of *Scops asio* var. *enano* Ridgway.

The two cotypes represent two different subspecies and it is necessary to restrict the application of the name. Theoretically both specimens are of equal rank and the name may be restricted to either one. There are certain practical reasons for fastening the name on to the Mexican cotype. In the first place, it is *the* manuscript holotype of the bird that Lawrence intended to name; in the second place, the Guatemala cotype has been generally overlooked, so that *enano* has for many years been considered as a synonym of *trichopsis*; and thirdly, we cannot really consider ourselves as first revisers, even though we are the first to do so with the evidence of the truly composite nature of *enano* in our possession. The bird was described in 1873. How long before that it was taken, when or by whom, we have no means of knowing, because Lawrence, following the custom of his day, removed the original label, substituting one of his own on which he had indicated that it was a male, from Mexico; the figures ‘.50’ possibly mean that it was collected in 1850 but more probably that it cost fifty cents. We hereby restrict the name *Scops asio* var. *enano* Baird and Ridgway to the Mexican cotype *i.e.*, the larger of the two specimens referred to in the original description.

We have every reason to believe that Lawrence’s bird came from Oaxaca. In the first place there is a specimen in Dr. Bishop’s collection that matches ‘*enano*’ perfectly; the original label reads “*Scops trycopsis*, Mexico, Oaxaca” and in another hand is added: “Boucard.” This bird, after passing through Boucard’s hands became a part of the Tweeddale collection, then became the property of the British Museum and finally passed to Dr. Bishop.

There is still another specimen in the British Museum (no. 88.7.20.65) with the following history. The bird bears three labels, one reading "*Scops trycopsis*, Oaxaca, Bouchard"; the second "Ex. Mus. T[homas] C[ampbell] E[lyton], 3211, *Scops trycopsis*. Hab. Oaxaca. Date, 1872, author Bouchard [sic]"; the third: "E. Mus. 1881, O. S. and F. D. G.: *Scops trichopsis* Wagler, Oaxaca, Mexico, 1872." This last specimen is of the same make as the bird now owned by Dr. Bishop. The 'enano' cotype, while not of the same make as the two others, very probably came from the same source at about the same time, *i.e.*, 1872, a year prior to its description and in view of this evidence we restrict the type locality of the larger cotype of *enano* to the State of Oaxaca, Mexico.

OTUS TRICHOPSIS PINOSUS (Nelson and Palmer)

Megascops pinosus Nelson and Palmer, Auk, 11: 39-40, Jan. 1894. Las Vigas, Vera Cruz, eastern Mexico; type in collection of U. S. National Museum.

Specimens examined.—VERA CRUZ: Las Vigas, 1 ♂ juv. (type).

Range.—Unknown. The unique juvenile type came from Las Vigas "at the northeastern base of Cofre de Perote, 8000 feet altitude."

Remarks.—Careful comparison of this type with other juvenile birds of *trichopsis* indicates that it is almost identical in its general pattern and markings with a male juvenile from San Luis Mountains on the boundary line between Chihuahua and southwestern New Mexico, except that it is obviously darker brown both above and below. It has all the earmarks of a *trichopsis*, including small feet, bristled toes, typical juvenile indications of the white spots of collar on hind neck, the inner web of the outermost primary without any whitish spots, and the bristly tips to the feathers of the face greatly developed. Coming from the general area of heavy rainfall and humidity in the Humid Temperate Zone of Vera Cruz, it is logical to expect a differentiated race and to assign this bird tentatively to the *trichopsis* group, a treatment which was forecast by Ridgway (see 'Biologia Centrali-Americana,' Aves, 3: 17, 1897).

While there is not the slightest difficulty in distinguishing between the type of *pinosus* and the juveniles of *aspersus* and *mesamericanus* we are quite unable to say how it differs from the corresponding age and plumage of typical *trichopsis*, since only adults of the latter race are available. The recognition of *pinosus* is only tentative, and must remain so until adults can be secured and the actual differences demonstrated.

OTUS TRICHOPSIS MESAMERICANUS van Rossem

Otus trichopsis mesamericanus van Rossem, Trans. San Diego Soc. Nat. Hist., 7: 184, October 31, 1932. Los Esesmiles, 8000 feet, Chalatenango, El Salvador; type in collection of Donald R. Dickey.

Subspecific characters.—"Dark markings everywhere narrower,—white markings everywhere restricted and coloration very much redder" than in *trichopsis trichopsis* (description quoted from original).

Specimens examined.—GUATEMALA: no locality, 1 not sexed (the Guatemala co-type of *enano* probably from Alto Vera Paz); Chichicastenango, 1 ♂, 1 ♀; Joyabaz, Quiche, 1 ♂; Uspantan-Quiche, 1 juv.; Villa Nueva, 1 ♀; San Lucas, 1 ♀; Chichabac, 2 not sexed; Tecpan, 1 not sexed; "Guatemala," 1 not sexed; Volcan de Fuego above Calderas, 1 ♂; San Bernado, 1 ♂; Dueñas, 1 ♂; Coban, 1 juv. EL SALVADOR: Los Esesmiles, 1 ♂ (type), 1 ♀; Mt. Cacaguatique, 1 ♂; San José del Sacare, 1 ♂.

Range.—Arid Upper Tropical Zone, mountains of Guatemala and El Salvador.

Remarks.—The characters given in the original description regarding the restriction of the dark and light markings do not seem to us to be especially diagnostic, but the much richer coloration of the upper parts appears to be the best distinguishing character. We have not seen sufficient material of the extreme red phase of either *trichopsis* or *mesamericanus* to determine just how the two forms may be differentiated in that plumage. There are two rufous-phase specimens from Guatemala, one in the British Museum from Dueñas with an almost unstreaked uniform back and one in the U. S. National Museum from Villa Nueva with a back moderately streaked, but less markedly than in one from the Valley of Mexico and the two from Jalisco.

***Otus trichopsis pumilus* subsp. nov.**

Type.—Male adult, no. 15582, collection of Robert T. Moore; Cerro Cantoral, Honduras; September 2, 1934, collected by C. F. Underwood.

Subspecific characters.—Smallest of all the races of *trichopsis*, nearest to *Otus mesamericanus* but much smaller; more vermiculated below, especially on abdomen. Fewer primaries conspicuously emarginated and less deeply incised than in the northern races.

Specimens examined.—HONDURAS: El Derrumbo, 2 ♂; Cerro Cantoral, 1 ♂ (type), 1 ♀; Ilamapa, 1 ♂, 1 ♀; La Flor Archaga, 3 ♂, 2 ♀, 1 juv. ♂, 2 juv. ♀; Monte Redondo, 1 ♀; near Tegucigalpa, 1 ♂, 1 ♀, 1 juv. ♀; El Talangta, 1 ♂.

Range.—Honduras, but exact zone unknown.

Remarks.—In Honduras what appears to be the brown-rufous phase seems more common than the brown. Of seventeen specimens we have seen, twelve are in this so-called 'intermediate' phase and one adult female and three juveniles in the rufous. The seventeenth individual, a December bird in fresh plumage, has the feathers of the back and the wing coverts with vermiculated gray edges, and appears much grayer than it would in summer plumage. The specimens were taken in May, June, July, August, September, October and December and therefore well represent seasonal changes. Our December bird, a fully adult female in fresh plumage, has a wing measurement of 134.2 mm., compared with 142.5 mm. for a winter bird in the Dickey collection from El Salvador and 152.6 and 143.9 mm., respectively, for two winter birds from Guatemala. Obviously it is import-

ant to compare birds of the same color phase and season of the year. Small size alone is sufficiently marked in the new race to distinguish it.

In addition to characters mentioned above, the spotting on the nape averages smaller and browner, giving the backs a more uniform appearance than in *mesamericanus*. The mesial streaks on the lower under parts are narrower.

Average Measurements of Races of Otus trichopsis

	Males		Females		Depth of incision both sexes	Number of primaries plainly incised, both sexes
	Wing	Tail	Wing	Tail		
20 ads. (<i>aspersus</i>)	142.9	68.8	4 ads. 142.2	71.3	4.7	4-5
4 ads. (<i>trichopsis</i>)	143.4	69.9	4 ads. 148.8	76.7	3.0	3-4
6 ads. from Guatemala (<i>mesamericanus</i>)	142.2	70.8	6 ads. 145.1	74.6	3.2	3
3 ads. from El Salvador (<i>mesamericanus</i>)	139.8	71.6	1 ad. 141.1	74.8	?	?
9 ads. from Honduras (<i>pumilus</i>)	135.8	64.8	6 ads. 135.9	67.0	3.1	1-3

OTUS COOPERI (Ridgway)

Scops cooperi Ridgway, Proc. U. S. Nat. Mus., 1: sig. 8, p. 116, August 15, 1878. Santa Ana, Costa Rica; type in collection of U. S. National Museum.

Specific characters.—Base as well as rest of toes distinctly bristled, differing in this respect from both *O. asio* and *O. guatemalae*, and occupying in this character an intermediate position between the feathered-toed *asio* group and the naked-toed *guatemalae* group. Like *O. g. vermiculatus* it has a short tail, less than half the length of wing. *Cooperi* differs from the *trichopsis* group chiefly in having the bristly tips to feathers of face much less developed, both webs of primaries conspicuously barred, larger size and different color pattern. In this last it closely resembles *O. guatemalae thompsoni*, but differs from the whole *guatemalae* group in having the toes bristled; feet very stout.

Specimens examined.—COSTA RICA: Esparta, 1 ♂, 2 ♀, 1 im. ♀; Santa Ana, 2 ♀ (including type); Rates, 1 not sexed. NICARAGUA: Matagalpa, 5 ♂, 2 ♀; near Tipitapa, 1 ♀; Corinto, 1 ♂.

Range.—Arid Tropical Zone; Costa Rica, Nicaragua, El Salvador and possibly to southern Mexico.

Remarks.—Differing from other commentators, the authors of the 'Biologia Centrali-Americana' compared this species to *guatemalae*. The type specimen has almost the identical coloration of a U. S. Biological Survey individual of *guatemalae thompsoni*, no. 167728 from Chichen-Itza, Yucatan. All of the long series of *cooperi* we have examined, are similar in characters and in tone of coloration, with exception of one unusually gray male from Matagalpa, which is probably immature. The large size of the

feet seems to have been somewhat overstressed, as specimens of *guatemalae guatemalae* have feet just as large.

OTUS GUATEMALAE

Specific characters.—Similar in structure to other American members of the genus, but feathered tarsi contrasting with completely naked toes; markings finer and more blended; upper parts with hastate spots (rather than shaft lines), especially conspicuous on the crown.

OTUS GUATEMALAE HASTATUS (Ridgway)

Megascops hastatus Ridgway, Proc. U. S. Nat. Mus., 10: sig. 17, p. 268, August 1, 1887. La Paz, Lower California = Mazatlan, Sinaloa, Mexico; type in collection of U. S. National Museum.

Subspecific characters.—Uniform in coloration both above and below, like *guatemalae guatemalae*, but much lighter, more 'avellaneous' or 'wood brown'; darker markings of pileum set off more distinctly in the form of irregularly rhomboid or hastate spots. Resembles most closely *O. g. thompsoni* of Yucatan, but averages slightly less buffy brownish above and more densely barred or vermiculated below.

Specimens examined.—SINALOA: "Mazatlan," 2 not sexed (including type); Quelite, 1 (?) (wing feathers and legs only). JALISCO: Mineral San Sebastian, 1 ♂.

Range.—Arid Lower Tropical Zone of Sinaloa; probably the same zone in Nayarit and Jalisco.

Remarks.—Of the four specimens usually assigned to this rare species, only three are true *hastatus*. The individual from "Tepic," mentioned in the 'Biologia Centrali-Americana,' Aves, 3: 23, 1897, is not *hastatus*. The Mineral San Sebastian bird, although suffused with a yellowish-buffy tone, has the characters of *hastatus*. It is certainly markedly different from Chimalpa, Oaxaca, specimens of *guatemalae guatemalae*. The Quelite specimen in the Moore collection was caught in a mouse trap by Chester C. Lamb and all the parts except the legs and wing feathers were destroyed by some mammal; the parts that remain resemble *hastatus*.

We would expect the only two Arid Lower Tropical Zone races of *guatemalae*, i.e., *thompsoni* and *hastatus*, to resemble each other, but the fact they are separated by the whole of Mexico with many divergent climates and different zones intervening, renders their close resemblance extraordinary.

OTUS GUATEMALAE TOMLINI MOORE

Otus guatemalae tomlini Moore, Proc. Biol. Soc. Washington, 50: 65-68, April 21, 1937. La Guasimas, Sinaloa, Mexico; type in collection of Robert T. Moore.

Subspecific characters.—Differs markedly from *hastatus*, *thompsoni* and *g. guatemalae* in not having uniform coloration on under and upper parts, the throat and chest being strongly cinnamon buff, while the abdomen is white, distinctly marked by very fine herring-bone streaks; the light brown on lower back contrasting with an indistinct band of light buff across upper back; ground color of whole anterior aspect of face, including forehead, lores, superciliary region and chin very white.

Known only in the brown and duller-rufous phase, the bright rufous unknown.

Specimens examined.—SONORA: Guirocoba, 1 ♀. SINALOA: La Guasimas, 2 ♂ (including type); Los Leones, 1 ♂; Santa Barbara, 1 ♀. DURANGO: Chacala, 1 ♂, 1 ♀ (placed here tentatively). NAYARIT: Tepic, 1 ♀.

Range.—Upper Sonoran Zone of southeastern Sonora to Arid Upper Tropical Zone of mountains of eastern Sinaloa; probably to mountains of Nayarit.

Remarks.—The individual recorded from "Tepic" as "*hastatus*" in 'Biologia Centrali-Americana,' Aves, 3: 23, 1897, was examined in the British Museum, but without the topotypical specimens for comparison. It is markedly different from true *hastatus*, as was noted in the 'Biologia Centrali-Americana' and is certainly close to *tomlini*, but has the darker coloration of the Chacala, Durango, birds. These Chacala specimens are more uniform in coloration than *tomlini* and darker than it or *hastatus*.

OTUS GUATEMALAE GUATEMALAE (Sharpe)

[*Scops brasilianus*] subsp. β. *Scops guatemalae* Sharpe, Cat. Birds Brit. Mus., 2: 112, 1875. Guatemala; type in collection of British Museum.

Megascops marmoratus Nelson, Auk, 14: 49, Mar., 1897. Catemaco, Vera Cruz; type in U. S. National Museum.

Subspecific characters.—Uniform brown coloration above and below, but much darker than *hastatus* or *thompsoni*; much more vermiculated below. Usually both webs of outer primaries are barred, and the bristly tips to feathers of the face are only slightly developed.

Otus guatemalae appears in three phases, ranging on upper parts from 'Verona brown' through 'Rood's brown' to 'Mikado brown' and bright rufous, heavily marked with black hastate spots and streaks above; the rufous phase usually has streaks only.

Specimens examined.—GUATEMALA: Secanquin, 1 ♀. PETEN: Chuntunqui, 1 ♂; Laguna Perdida, 1 ♀; La Libertad, 1 ♂. ALTA VERA PAZ: Finca Tres Aguas, 1 ♀; Vera Paz, 3 not sexed; 13 without data (including type). MEXICO: Oaxaca: Chimalpa, Tehuantepec, 1 ♀, 1 not sexed. Vera Cruz: Catemaco, 1 ♀ (type of *marmoratus*). HONDURAS: Subirana, 1 ♀; Cerro Pucca, 1 ♀.

Range.—Southern Vera Cruz and southeastern Oaxaca to Subtropical Zone of Guatemala and Honduras.

Remarks.—The senior author in August 1938, examined the type of *Scops guatemalae* and the large series of this race in the British Museum. Plate 9, vol. 2, 'Catalogue of Birds in British Museum,' shows two Screech Owls, a brown and a rufous phase, the former obviously intended to represent the type of *guatemalae*, since the type specimen has on its label in Sharpe's handwriting the word "Figured," which also is written in the same handwriting on the label of the rufous-phase specimen (no. 75.6.14.37). The rufous-phase illustration represents excellently the rufous-phase specimen, but the brown-phase illustration is very different from the type. It portrays a distinct black facial rim, contrasting sharply with an ochraceous-buff facial disk, and a yellowish-ochraceous tone over the entire bird, neither of which is possessed by the type. Not a single one of the nineteen specimens in the British Museum bears any resemblance to this illustration! On the other

hand, Sharpe's unusually detailed description is a quite accurate portrayal of the type. There is no mention of the yellowish-ochraceous coloration of the illustration, and, although the ear coverts are stated to be "broadly tipped with black" (an inaccuracy), this clause is correctly conditioned by the phrase "*merging in the ruff*" (italics ours). It merges completely!

Contrary to the effect of this illustration, the *absence* of a conspicuous black facial rim is a distinguishing character of true *guatemalae*, and is entirely absent in most specimens or reduced to a vestige, as in this type. Furthermore, the upper parts of the type and a large portion of its under parts, although obscurely barred and vermiculated, give the general appearance of a uniform dark-brown color above, quite different from the illustration. There are some specimens in all phases which reveal the white ground color of the lower under parts more prominently than does the type.

The female from Subirana, Honduras, has all the characters of *guatemalae*, including prominent bars on both webs of all the primaries and the general dark, heavily vermiculated uniform coloration of *guatemalae*, but the bristled tips to the facial feathers are well developed.

The type of *Megascops marmoratus* Nelson from Vera Cruz, is true *guatemalae*.

OTUS GUATEMALAE CASSINI (Ridgway)

Scops brasilianus cassini Ridgway, Proc. U. S. Nat. Mus., 1: sig. 7, pp. 90 and 102, August 15, 1879. Mirador, Vera Cruz, eastern Mexico; type in the collection of the U. S. National Museum.

Subspecific characters.—Differs from *guatemalae guatemalae* in much darker brown (less rusty) coloration; the upper parts not uniform, having two transverse bands of dull-buff spots on hind neck and upper back; bristly tips to feathers of face longer; inner webs of primaries unbarred; facial rim more prominent; size much smaller. It occurs in both the brown and the rufous phase.

Specimens examined.—MEXICO: *Vera Cruz*: Mirador, 1 (cotype, not sexed, in brown phase), 1 ♀; Jalapa, 1 (cotype, not sexed, in rufous phase, M. C. Z. 12372), 1 (rufous phase in British Museum).

Range.—Known only from the humid northeastern slopes of Mt. Orizaba, Vera Cruz (Mirador, Jalapa).

Remarks.—Apparently only four or five specimens are known of this rare race. "Jalapa," the name given on a tag of the British Museum specimen, has, according to Chapman (Bull. Amer. Mus. Nat. Hist., 10: 18, 1898), an altitude of 4400 feet and is "in the heart of the Temperate Zone." Chapman calls attention to the fact that a two-hours' walk from Jalapa, either up or down the mountain, would bring the collector into an entirely different zone. All the specimens known were taken many years ago, when collectors were notoriously careless in marking specific localities. The brown-phase cotype (U. S. Nat. Mus., no. 27115) and a female (U. S. Nat. Mus., no. 33556) have marked on their tags "Mirador," which is located at a higher

altitude than Jalapa. Therefore, it seems probable that this species is a so-called 'Temperate' Zone representative, although it may extend its range into a lower zone.

Salvin and Godman (*Biologia Centrali-Americana*, Aves, 3: 22, 1897) believed specimen no. 33556, mentioned above, to be a cotype, when Ridgway forwarded it for examination.

The race *cassini* has many of the characters of the *trichopsis* group, namely, well-developed bristly tips of facial area; inner webs of outermost primary uniform in color, without bars or distinct whitish spots (except sometimes one near base); facial rim plainly outlined with dark color and throat buffy, but the toes are completely naked.

The rufous-phase specimen in the British Museum has only very faint indications of black streaking on the back and is paler than any of the rufous-phase individuals of *guatemalae guatemalae*.

***Otus guatemalae fuscus* subsp. nov.**

Type.—Male adult, no. 10,272, collection of Robert T. Moore; Motzorongo, Vera Cruz, Mexico; September 1932, collected by Mario del Toro Avilés.

Subspecific characters.—Nearest to *Otus guatemalae cassini*, but size much larger; darker above; more heavily vermiculated below; throat less buffy, grayer.

Measurements.—Male: wing, 160.8 mm.; tail, 81.6. Female: wing, 163.7; tail, 81.0. The wings and tail of the type are badly worn.

Specimens examined.—MEXICO: Vera Cruz: Motzorongo, 1 ♂ (type), 1 ♀.

Range.—The two known specimens come from the Humid Tropical Zone near the southern base of Mt. Orizaba.

Major E. A. Goldman, in a letter to the senior author, states that Motzorongo was one of his collecting localities and is an "hacienda about 25 miles southeast of Cordova, on the Mexican Railroad. It is situated in the humid tropical lowlands, at about 800 feet altitude, near the eastern base of the mountain."

Remarks.—This is the Humid Tropical Zone representative of the 'Temperate' Zone *cassini*. Its very dark coloration alone, nearly fuscous on pileum, would distinguish it from any member of the *guatemalae* group. On account of its dense vermiculation below, it bears a superficial resemblance to *guatemalae guatemalae*, but differs in the characters given above. It is a very different bird from the type of *Megascops marmoratus* Nelson of the sparsely wooded country about Lake Catemaco, Vera Cruz; this bird is a typical *guatemalae* with outer primaries conspicuously barred, much lighter snuff color throughout and of larger size. The toes of *fuscus* are completely naked as in all races of *guatemalae*. Only the brown phase is known.

OTUS GUATEMALAE THOMPSONI Cole

Otus choliba thompsoni Cole, Bull. Mus. Comp. Zool., 50: 123, November 1906. Chichen-Itza, Yucatan; type in collection of Museum of Comparative Zoology.

Subspecific characters.—Uniform in coloration like *hastatus*, but averaging slightly more buffy brownish above and less densely barred or vermiculated beneath; slightly larger. Much paler in coloration than *cassini* or *fuscus*.

Specimens examined.—YUCATAN: Chichen-Itza, 1 ♂, 1 ♀ (cotypes), 2 ♀; Tizimin, 1 ♂. CAMPECHE: Tuxpeña, Champoten, 1 ♂, 1 ♀ (intergrades).

Remarks.—This is an Arid Lower Tropical Zone form and is much closer to the tropical *hastatus* of Sinaloa than to the zonal forms geographically nearer, or to those of the region between, such as *tomlini*. The male specimen from Campeche differs from typical *thompsoni* in having wider dark streaks below and darker coloration above. Both of these Campeche birds are intergrades between *thompsoni* and *guatemalae*. *Thompsoni* has the dull whitish hoariness on the forehead like true *hastatus*, not so pure white as in *tomlini*.

***Otus guatemalae dacrysiactus*¹ subsp. nov.**

Type.—Male adult, no. 103,292, collection of American Museum of Natural History; Jalapa, northern Nicaragua, January 20, 1909; collected by W. B. Richardson.

Subspecific characters.—About as dark as *fuscus*, but much less vermiculated below and having much larger areas of ground color pure white, resembling in this respect *tomlini*. Spotting of upper back is more cinnamon than in *fuscus* and the two neck bands are less distinct. The type resembles the type of *cassini*, but is more cinnamon buffy above, and size is much larger. It has the posterior under parts much whiter than in any specimen of true *guatemalae*, and the bristly tips of face more prominent. Inner webs of outer primaries are unbarred in our specimens.

Specimens examined.—NICARAGUA: Jalapa, 1 ♂ (type), 1 ♂ (probably ♀), 1 ♀. HONDURAS: Catacombas, 1 ♂ (intergrade).

Range.—Known only from the Subtropical cloud forest of northern Nicaragua.

Measurements.—Male: wing, 153.3 mm.; tail, 78.2. Female: wing, 165.6; tail, 82.3.

Remarks.—The three Jalapa birds are in the gray phase. The male from Catacombas seems to be an intergrade in the intermediate phase, having the unbarred inner webs of outer primaries and long bristly tips to facial feathers of *dacrysiactus*, but in coloration is closer to true *guatemalae*.

OTUS GUATEMALAE VERMICULATUS (Ridgway)

Megascops vermiculatus Ridgway, Proc. U. S. Nat. Mus., 10: sig. 17, p. 267, August 1, 1887. Costa Rica; type in the collection of the U. S. National Museum.

Subspecific characters.—Differs from *guatemalae guatemalae* in usually having the lower third of the tarsus bare; tail proportionately shorter, less than one-half the length of the wing, whereas in *guatemalae* it is more. Although exhibiting considerable variation, specimens average more uniformly vermiculated below and the whitish superciliary streak tends to become more obscure.

Specimens examined.—COSTA RICA: 2 specimens without data (including type); La Candelaria, 1 ♂. PANAMA: Boquete, Chiriqui, 1 ♂; Cana, 2 ♀; 1, "Tayaba, Quiche, Guatemala" = Panama, according to Ridgway; Calovevora, Veragua, 2 ♂;

¹ From the Greek adjective *δακρυοστακτος* = 'dropping with tears,' referring to the tear-like spots on under parts.

Chitra, 1 ♂; "Panama," 1 not sexed; "Chiriqui," 1 not sexed; "Veragua," 5 not sexed.

Range.—Costa Rica to Panama and possibly farther south.

Remarks.—Both brown and rufous phases are common.

OTUS CHOLIBA

Specific characters.—Agreeing in size and proportions with *O. asio*, but toes completely bare; pattern of markings closely paralleling that of *O. asio*. Distinguishable from the northern forms of *guatemalae* by much less vermiculated appearance and from the southern forms of *guatemalae* by having the tarsi feathered to the base of the toes.

OTUS CHOLIBA LUCTISONUS Bangs and Penard

Otus choliba luctisonus Bangs and Penard, Proc. Biol. Soc. Washington, 34: 89, 1921. Escazu, Costa Rica.

Subspecific characters.—Similar to the South American races of *O. choliba*, but the dark markings of the centers of the feathers, especially on the under parts, much finer. Apparently known only in the brown and rufous-brown phases.

Specimens examined.—COSTA RICA: Escazu, 1 ♂ (type); San Juan, 1 ♂; San José, 1 juv.; no exact locality, 1 ♀, 2 adults not sexed. PANAMA: Divala, 1 ♂; Chitra, 1 ♂. PEARL ISLANDS: San Miguel Island, 5 ♂, 2 ♀.

Range.—Costa Rica, Pacific slope of western Panama to the Canal Zone, Pearl Islands, northwestern Colombia.

Remarks.—Since it is not the purpose of this paper to attempt a revision of the South American forms of the genus *Otus*, we will not diagnose the six additional currently recognized races of *O. choliba* found on that continent, but we do wish to take this opportunity to point out that all of the other forms exhibit a much greater range of color variation than does *luctisonus*. True *choliba* and *c. decussatus* occur in both the extreme rufous and the extreme gray phases as well as in various intermediate steps of brown; *crucigerus* shows a greater range of brown without quite reaching the rufous and gray extremes. We have not seen enough material of *margaritae*, *dividae* and *wetmorei* to make any more definite statement than that the first is found in both brown and extreme-rufous phases.

OTUS BARBARUS (Selater and Salvin)

Scops barbarus Selater and Salvin, Proc. Zool. Soc. London, 1868, p. 56. Santa Barbara, Vera Paz, Guatemala; type in the collection of Salvin and Godman, now in the British Museum.

Specific characters.—A distinct species having the highly developed bristly tips of *trichopsis*, the bare toes of *guatemalae*, and the bare lower tarsus of *vermiculatus*; but differentiated by extensive white spotting over all under parts and anterior portion of upper parts; size small.

Specimens examined.—GUATEMALA: between Coban and Chisec, 1 not sexed; Uspantan Quiche, 1 ♀; Vera Paz, 1 not sexed (type brown phase); Santa Barbara, 1 not sexed (marked "Type," rufous phase); "Guatemala," 1 no data.

Range.—Subtropical and Humid Zones in mountains of northern Guatemala.

Remarks.—Three specimens of this rare owl, one without data, were examined in the British Museum. Of the two other specimens, both from the Salvin-Godman collection, one is in the rufous, the other in the brown phase. Both bear several labels including one plain red one and one white, each bearing the word "Type." On reading the original description it is quite clear that Slater and Salvin distinctly referred to the brown specimen as *the* type, only alluding incidentally to the other example as "a rufous variety of the same species." The primaries are only faintly incised as in most specimens of *Otus trichopsis pumilus*. The pattern of the coloration on the primaries and especially the uniform inner web of the outer primary, as well as the spotting on the nape, are as in the *trichopsis* group. In fact, the immature of *trichopsis*, particularly *pinosus*, bears a striking resemblance to *barbarus*, except for its bristled toes. The adults are distinctly different. The red phase is heavily streaked with black on upper parts.

OTUS CLARKII Kelso and Kelso

? *Bubo nudipes* Vieillot, Ois. Amer. Sept., 1: 53, pl. 22, 1807. Greater Antilles.¹

Otus clarkii Leon and Estelle H. Kelso, Biological Leaflet, no. 5, Supplement to Key to Spec. Amer. Owls, November 8, 1935. Calobre, Panama.

Specific characters.—A very distinct species differentiated by bare toes and completely naked lower third of tarsus; bristly tips to feathers of the face greatly developed; inner webs of primaries unbarred; the seventh, sixth and fifth primaries longest; unusually large size and great predominance of black and cinnamon in general coloration.

Specimens examined.—COSTA RICA: Irazu, 1 not sexed; Volcan de Turrialba, 1 ♂; Zarcero, 1 ♀; Azahar de Cartago, 1 ♂; San Pedro Mojon, 1 ♂; no locality, 1 ♂, 5 (not sexed); Veragua, Calobre, 1 not sexed.

Range.—Temperate Zone, Costa Rica and Panama.

OTUS FLAMMEOLUS FLAMMEOLUS (Kaup)

Scops (Megascops) flammeola "Licht.," Kaup, Jardine's Contr. Orn. for 1852, p. 111, 1853. Mexico; type in the collection of Berlin Museum. Type locality designated by Griscom as "Valley of Mexico."

Specific characters.—Smallest American species of the genus, differentiated by having outermost primary longer than the secondaries; feet small; toes naked; ear-tufts short (almost rudimentary) and iris brown as compared with the yellow of the other bare-toed species.

Specimens examined.—CALIFORNIA: Sequoia National Park, 1 ♂; Mt. Pinos, 1 ♂; San Bernadino Mts., 1 ♂. ARIZONA: Crook National Forest, 1 ♂, 1 ♀, 2 nestlings; Huachuca Mts., 2 ♂. COLORADO: Beulah, 1 ♂, 1 ♀. MEXICO: Chimalpa, 1 ♂; Coapa, 1 ♀; Valley of Mexico, 2 not sexed; "Mexico," 1 not sexed; "W. Mexico," 1 not sexed.

¹ The bird which for many years had been known as *Otus nudipes* (Vieillot) was renamed by Mr. and Mrs. Kelso on the ground that neither the text nor the plate of the original description applied to the species for which it was used. We are quite in agreement with this.

Range.—Transition to Temperate and Hudsonian Zones, from southern British Columbia southward through the mountains of the western United States to the Temperate Zone of Mexico.

Remarks.—Ridgway has pointed out that this species is subject to a great amount of individual variation, having an extreme grayish phase without trace of cinnamon. Most of the specimens from the western United States are strongly cinnamoneous.

OTUS FLAMMEOLUS RARUS Griscom

Otus flammeolus guatemalae Griscom, Ibis, (13) 5: 549, 1935. Dueñas, Guatemala; type in collection of British Museum. Not *Otus guatemalae* (Sharpe), 1875.

Otus flammeolus rarus Griscom, Auk, 54: 391, 1937. New name for the foregoing.

Subspecific characters.—"Similar to typical *flammeolus* (Kaup) of Mexico, but in the intermediate phase more brownish, less purely gray in ground-color above; ochreous longitudinal wing-bars richer and deeper; broken collar across hind neck tawnier and brighter, less brownish; most of the occiput bright tawny ochraceous rather than rusty brown; chestnut areas on side of head and auricular region paler, brighter and more richly colored; brownish or rusty washing on underparts brighter and tawnier" (Griscom).

Specimens examined.—GUATEMALA: Dueñas, 1 not sexed (type), 1 not sexed.

Range.—Highlands of Guatemala.

Remarks.—The characters given by Griscom are shown in the two specimens in the British Museum. Both are almost identical in coloration. Four specimens from the Valley of Mexico, the type locality of *flammeolus flammeolus*, in the same museum vary considerably. The two gray-phase individuals, with some cinnamon markings, and the one rufous phase are very different from *rarus*. The fourth bird resembles *rarus* closely, but shows a greater extension of cinnamon markings above and below.

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