

THE
FLAMMULATED SCREECH OWLS

MEGASCOPS FLAMMEOLUS (KAUP)

AND

MEGASCOPS FLAMMEOLUS IDAHOENSIS MERRIAM.

PAR

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These two diminutive Owls are among the smallest of the genus *Megascops*. Difficult of capture, and consequently rare in collections, a really good series nowhere exists. We have been fortunate enough to bring together more than twice as many as have ever before been at one time available, — in all seventeen specimens, including the type of *idahoensis*. The greater part of this material is, however, from the United States, the Mexican territory being but poorly represented. While the conclusions here set forth must be considered in great measure tentative, indispensably pending the gathering of more material, yet enough has been learned to show that the *flammeolus* group either exhibits a surprising range of individual variation, or will at some future time be found separable into several more or less well segregated geographical races. The present material is, however, entirely inadequate to warrant such division.

Megascops flammeolus is closely allied to the Old World *Megascops scops* (= *giu*); and in several minor points of structure differs from the typical species of *Megascops*.

The smaller nostrils opening within the cere, the smaller, weaker bill, the more slender feet and claws, possibly entitle these two species and their allies to subgeneric distinction; from which to *Megascops* proper the American *Megascops barbarus* seems, by combination of characters, to furnish the transition.

Owing to the scattered nature of the biographical notes upon *Megascops flammeolus*, and the interest attaching to the species on account of its rarity, all the published information available has been collated in order that this paper may fairly represent our present knowledge.

MEGASCOPS FLAMMEOLUS (1) (Kaup).

Strix flammeola Lichtenstein, *Ms. in Mus. Berol.*

Ephialtes flammeola Lichtenstein, *Nomencl. Av.*, 1854, p. 7.

Scops flammeola Kaup, *Trans. Zool. Soc. Lond.*, 1859, IV, p. 226; Sclater, *P. Z. S.*, 1858, p. 96; Schlegel, *Mus. Pays-Bas, Oti*, 1862, p. 27; Sclater, *P. Z. S.*, 1864, p. 178; Sclater and Salvin, *P. Z. S.*, 1868, p. 57; *id.*, *Exot. Orn.*, July, 1868, t. VII, p. 99, pl. L; Elliot, *Illustr. Am. Birds*, 1869, t. I, pl. XXVIII; Gray, *Handlist Birds*, 1870, I, p. 47; Cooper, *Birds Calif.*, 1870, I, p. 422; Coues, *Key to N. Am. Birds*, 1872, p. 203; *id.*, *Check List. N. Am. Birds*, 1873, p. 63; Schlegel, *Rev. Accip.*, 1873, p. 14; Sclater and Salvin, *Nom Av. Neotrop.*, 1873, p. 117; Ridgway, in Baird, Brew. et Ridg. *Hist. N. Am. Land Birds*, 1874, III, p. 58, fig.; Coues, *Birds Northwest*, 1874, p. 304; Henshaw, *Rep. Ornith. Spec. Coll. in 1873*, 1874, p. 133; *id.*, *Rep. Geog. et Geol. Surv. W. 100 Mer.*, 1875, V, p. 406; Sumichrast, *La Nat.*, V, p. 237; Ridgway, *Field and Forest*, 1877, p. 210; *id.*, *Rep. Geol. Explor. 40 Par.*, 1877, IV, p. 335, in text.; Giebel, *Thesaur. Ornith.*, 1877, III, p. 469; Deane, *Bull. Nutt. Orn. Club*, 1879, IV, p. 188; Ingersoll, *Bull. Nutt. Orn. Club*, 1880, V, p. 221; Salvin and Godman, *Biol. Cent.-Amer., Aves*, 1897, III, p. 24.

Scops flammeolus Sharpe, *Cat. Birds Brit. Mus.*, 1875, I, p. 105; Boucard, *Cat. Av.*, 1876, p. 91; Ridgway, *Proc. U. S. Nat. Mus.*, 1878, I, p. 104; *id.* *Proc. U. S. Nat. Mus.*, 1880, III, p. 191; *id.* *Bull. U. S. Nat. Mus.*, n° 21, 1881, p. 36; Brewster, *Bull. Nutt. Orn. Club*, 1883, VIII, p. 123; Gurney, *Cat. Birds Prey*, 1894, p. 38.

Megascops flammeolus Stejneger, *Auk*, 1885, II, p. 184; A. O. U.

(1) We prefer to write *flammeolus* instead of *flammeola*, for this word is a perfectly good classical Latin adjective meaning flame-colored; and there seems to be no reason to suppose that either Lichtenstein or Kaup intended to use it as a noun.

Check-List, 1886, p. 202; Ridgway, *Man. N. Am. Birds*, 1887, p. 262; Davie, *Nests and Eggs N. Am. Birds*, 1889, p. 197; Belding, *Land Birds Pac. Dist.*, 1890, p. 52; Smith, *Ornith. et Oologist*, 1891, XVI, p. 27; Merriam, *Auk*, 1892, IX, p. 170; Bendire, *Life Hist. N. Am. Birds*, 1892, I, p. 374; Hasbrouck, *Auk*, 1893, X, p. 260; Fisher, *Hawks and Owls of U. S.*, 1893, p. 173.

Megascops flammeola A. O. U. *Check-List*, 1893, p. 147; Ingraham, *Auk*, 1897, XIV, p. 403; Cooke, *Bull. Colorado Exper. Sta.*, n° 37, 1897, p. 78; id., *Bull. Colo. Exper. Sta.*, n° 44, 1898, p. 161; Davie, *Nests and Eggs N. Am. Birds*, 1898, p. 241.

Chars. sp. — *Megascops statura parva, tarsi totis plumosis, pedis digitis nudis; supra ex brunneo canus, nigrescente marmoratus, vertice capitisque lateribus fulvo lavatis; infra albidus, nigro fulvoque strigatus et vermiculatus.*

Geographical distribution. — Guatemala, Mexico, and the United States north to California and Colorado.

Description. — (Specimen from Orizaba Mountains, Mexico.) General tone of upper parts brownish gray, closely vermiculated with blackish, most of the feathers having more or less of the latter color on their central portions. The upper surface thus presents a finely and rather confusedly mottled appearance, the visible dark markings being not conspicuous, though most evident on the crown, where the ground color is tinged with dull ochraceous. Forehead, superciliary stripe, a band on occiput and one on lower cervix grayish white, the two last separated by a zone of tawny, — all these mottled and vermiculated with dark brown and black; upper portion of interscapular region suffused with rufous; distal portions of exterior webs of most of scapulars white, then tawny ochraceous, margined along shafts and tipped with dark brown or black, longest scapulars banded with ochraceous buff and tawny whitish. Wings fuscous brown, the primaries broadly indented on outer webs with tawny white, this changing to ochraceous on the outer quill and towards the extremities of all, these markings being most conspicuous on the second and fourth feathers; outer webs of all the rest and of secondaries with broad bars of ochraceous; inner webs of primaries with indistinct, inner

webs of secondaries with distinct bars of ochraceous white; ends and external webs of all the wing-quills somewhat mottled with ochraceous white; innermost secondaries barred and vermiculated with buffy whitish; axillars yellowish white; inferior wing-coverts buffy white, mottled with dark brown and ochraceous buff; lesser wing-coverts mottled with deep tawny, inner median coverts with buffy white, exterior ones with tawny: some of the greater coverts broadly tipped on outer webs with white or buffy white, these on inner webs and the remainder at tips vermiculated with buffy white; primary coverts conspicuously indented on exterior webs with pale ochraceous; largest feather of alula indented with buff and buffy white, the distal half very broadly, forming a stripe on both webs; remaining feathers of alula indented on both webs with buffy ochraceous. Tail fuscous, with five bars of pale buff or buffy white, these much broader on exterior rectrices, the terminal portions of all the feathers vermiculated with dull buffy white. Nasal feathers dull white with a faint buffy tinge, tipped with vandyke brown; feathers immediately surrounding the eyes burnt umber brown, but shading to pale buffy ochraceous posteriorly; rest of suborbital region, with auriculars, grayish white vermiculated with dull brown, the longest feathers of latter tipped with tawny; most of the ruff feathers white or buffy white, shading distally into tawny, many of them vermiculated, and nearly all tipped very narrowly with dark vandyke brown; the feathers immediately behind ear-coverts, are, however, shorter, stiffer than the remainder of the ruff, and are nearly all without any white, being tawny ochraceous, very slightly tipped with dark vandyke brown; ear tufts inconspicuous, the longer feathers dull buffy white, the shorter ochraceous, all either barred, mottled or vermiculated with brown and brownish black; chin pale dull buff, unmarked, throat pale tawny ochraceous, most of the feathers barred with dull brown; remainder of lower parts white, rather grayish anteriorly, many of the feath-

ers with broad shaft streaks of dark brownish black, these dark streaks usually more or less bordered with tawny or ochraceous, nearly all the feathers vermiculated or barred with dark brown, least numerous on crissum, where also the shaft streaks are reduced to a minimum; tibiae pale ochraceous buff, with indistinct spots of brown; tarsi buffy white, sparsely marked with small spots of dull brown.

RUFOUS PHASE. — (Female adult, from near Apache, Arizona.) Similar in pattern of coloration to the gray phase just described, but dark markings above coarser and more conspicuous; the plumage, especially of anterior portions, strongly suffused above and below with deep rufous; the rufescent borders to the black longitudinal markings on under parts broader.

MALE IN FIRST PLUMAGE. — (Specimen from Fort Crook, California.) Above brownish gray, rather lighter, and except on head somewhat browner than the adult in gray phase; head and nucha more grayish than back, vermiculated with white; remainder of upper parts finely mottled with whitish and buffy, this coarsest on cervix; outer vanes of scapulars ochraceous, more or less marked with color of back; wings and tail nearly as in the adult; forehead, short superciliary stripe and narial vibrissae buffy white; auriculars and post auricular region burnt umber brown mixed with blackish gray and ochraceous; chin buff, almost immaculate; remainder of lower parts dull white, strongly tinged anteriorly with buffy, and across the breast with ochraceous, everywhere with somewhat irregular transverse markings of dull brown, these narrow and numerous anteriorly, but posteriorly much broader; legs buffy ochraceous, heavily marked with dark brown.

The absence of sufficient material renders it impossible to determine whether or not the immature specimen above described belongs to true *flammeolus* or to the subspecies *idahoensis*, but it is retained under the former until future observation shall settle the matter.

Four Colorado examples are evidently adult and, as compared with Mexican birds, have rather more dark markings upon the crown and occiput; also three of them are much more closely vermiculated below, particularly across the breast. Two have more black in the ruff, and all have somewhat less white on the wing-quills, alula and greater coverts. The color of the chin varies from soiled white to ochraceous. One of the birds from Estes Park, Colorado, is in much worn summer plumage, is very pale both above and below, and were it not for the much heavier longitudinal streaks on the lower parts, the darker shade of the rufous on ruff and face, and the greater amount of black on the crown, would differ in no essential respects from the type of *Megascops flammeolus idahoensis*.

The fifth and remaining Colorado specimen is from Colorado Springs, and is evidently a very young bird in a dress between the barred nestling plumage and that of the adult. It is about as light above as the bleached adult just mentioned, though rather darker below owing to the frequency of the vermiculations, especially on the breast; but is paler throughout than any other unabraded specimen of *flammeolus* examined. The plumage is characterized by almost complete absence of the brownish tinge so noticeable in all the other specimens. The only rufous markings are confined to ear-coverts, face, throat and scapulars, and, except on the latter, are of very limited extent. The wing-quills, lesser and median coverts and a few feathers of cervix are tinged to some extent with ochraceous. Aside from the rufous or ochraceous edging to a few of the feathers of the breast, all the remaining portions of the plumage are pure gray and white, the bird at first glance appearing to be wholly of a clear gray varied with black and white, — quite different in general appearance from any other of the specimens now at hand. The longitudinal black markings above are very narrow and inconspicuous, excepting on the scapulars; the black streaks below are quite as narrow as in the type

of *idahoensis*, and appreciably more so than in any of the present examples of *flammeolus*. The legs are white, marked thickly with dusky, but have scarcely a tinge of buffy. Although somewhat resembling the type of *M. flammeolus idahoensis*, this specimen is rather less deeply colored above, without the considerable rufous admixture; and is very much more closely vermiculated below, especially on the breast, lacking also here very much of the rufous.

A specimen from Presidio County, Texas, which, it may be noted, adds the species to the avifauna of the state, differs from the Mexican specimen described in having very much black in the ruff and very heavy streaks below, these latter being broader than in any other of the specimens at present available. Other slight differences exist in the heavy marking of the tarsi, the much less white on alula and greater coverts, the deeper buffy ochraceous of the chin and narial vibrissae as well as the faint indication of the rufous nuchal band. An example from the Grand Cañon of the Colorado River, Arizona, differs widely from all the other specimens in its very dark coloration throughout. This condition would seem not to be due to immaturity, if the Colorado bird above described be the plumage of the immature, which evidently seems to be the case. Except on the cervix, which is conspicuously mottled with black, white, and ochraceous, the upper parts are dark gray with a somewhat brownish tinge, very finely vermiculated with slate color and black, varied with grayish white and ochraceous. The whole pileum is suffused with ferruginous, and marked with small spots of black, the nuchal and occipital bands being thus obliterated. That portion of the ruff immediately behind the ear-coverts is very intense black, but this color does not much extend to other portions of the ruff. Below, with the exception of chin, throat, and extreme posterior portions, the vermiculations are very dark and numerous, giving the bird a sombre appearance, although the shaft markings are quite narrow. This example thus verges

towards *idahoensis* in the narrow streaking below, and in the slight black markings on crown and cervix; but its very dark color throughout, and the large amount of black on ear-coverts indicate its proper reference to the Colorado form. A specimen from Big Trees, California; is apparently somewhat intermediate, but still undoubtedly to be referred to *flammeolus* rather than *idahoensis*, for the streaks below are much heavier than in the latter, the rufous of head is decidedly darker, there is much black in the ruff, the upper surface is darker with increased black markings, particularly on head and neck. From Colorado specimens of *flammeolus* this example differs, however, in the much greater amount of rufous in the face, on crown, occiput, and cervix; in the somewhat more narrowly streaked, less closely vermiculated and consequently lighter under parts.

Sumichrast gives the color of the iris as golden yellow, the cere as olive yellow; but Mr. Ridgway records (1) the iris of the Colorado bird (*vide* Mrs. M. A. Maxwell) as umber brown. Recently also Mr. R. L. Jones remarks (2) that the eyes of birds obtained by him in Colorado were dark brown, thus substantiating Mrs. Maxwell's observation. Mr. Jones also mentions that the soles of the feet are pale yellowish green.

Although specimens of this species in the Berlin Museum, probably sent thither from Mexico by Deppe about the year 1829, had received the name *Strix flammeola* from Lichtenstein, no published account seems to have appeared until 1859, it being reserved for Kaup, in the *Transactions of the Zoological Society of London*, first to put into print a technical description, under the name *Scops flammeola*. During the several years that immediately succeeded, several specimens were taken at different localities in Mexico and Guatemala, due records of which appeared in various European publications. The first specimen for the United States was secured by Capt. John

(1) *Proc. U. S. Nat. Mus.*, 1878, I, 105.

(2) *Osprey*, Nov., 1898, III, 46.

Feilner, U. S. Army, on August 23, 1860, near Fort Crook, in northern California. This was a bird still in nestling plumage, and had undoubtedly been reared in that immediate vicinity. So far as the United States was concerned, this example remained unique for thirteen years, until on September 11, 1873, Dr. C. G. Newberry was so fortunate as to obtain a specimen some thirty miles in a southerly direction from Camp Apache, Arizona. Soon after this, — in 1877 — Mr. Ridgway reported *Megascops flammeolus* for the first time in Colorado; and since then the records have been gradually accumulating, coming largely, however, from the last mentioned state, where the species appears to be more common than anywhere else in its range.

Sumichrast reported it rare in the Orizaba Mountains, Mexico; and rarity is also the testimony of Messrs. Salvin and Godman, whose only specimens were secured through Indian hunters. But as Mr. Henshaw suggests, its scarcity may be less real than apparent, for small size and strictly nocturnal habits enable it easily to escape observation. Mr. Belding thinks it not uncommon in the heavy forests of the Sierra Nevada Mountains, California, as he has heard it there repeatedly. So far as known it ranges from about 4000 to 10000 feet in altitude; and its habitat seems to be in Mexico as well as in the United States, preferably the areas of evergreen forest growth.

The following list gives the localities at which true *Megascops flammeolus* has been ascertained to occur. The record for Nevada, given by Messrs. Salvin and Godman (1), is erroneous, being based upon a misquotation of the town of Nevada in California; and no specimen seems ever to have been taken in the state of Nevada.

California. — Fort Crook; Big Trees.

Arizona. — Thirty miles south of Camp Apache; Mouth of Little Colorado River (Grand Cañon of Colorado); Huachuca Mountains.

New Mexico. — Santa Fe.

(1) *Biol. Cent. — Amer., Aves*, 1897, III, p. 24.

Colorado. — Boulder; North end of Wet Mountains, Fremont County; Ponca Pass, Fremont County; Mosca Pass, San Luis Valley; Colorado Springs; Estes Park; Idaho Springs; Evergreen, Jefferson County; Twelve miles from Gold Hill; Beulah.

Texas. — Presidio County.

Mexico. — Northern Mexico; Western Mexico; Valley of Mexico; City of Mexico; Orizaba Mountains, Chimalpa, Jalapa, and San Antonio Coapa, Vera Cruz; Alpine region of Vera Cruz.

Guatemala. — Dueñas; Cerro de Paramos.

Meager enough are the items of information upon the general habits of the Flammulated Owl, but it seems quite safe to assume that in its life history the species does not essentially differ from its congener, the common Screech Owl. At night it prowls about the forests, sometimes alone, sometimes with a companion, but during the daylight remains in quiet concealment, which it leaves only when startled by some intruder. It does not seem to be particularly shy, permitting often a near approach, even at dusk, and one writer tells that at this hour he once caught with his hands an immature though full grown bird.

The notes of this Owl are said to be similar to those of the Screech Owl (*Megascops asio*), but shorter and weaker. There must indeed be a striking resemblance, for Mr. Henshaw relates his experience in calling one of these birds by imitating the voice of the Screech Owl.

The nest and eggs of *Megascops flammeolus* remained unknown until 1875, on June 15 of which year Mr. Charles E. Aiken, of Colorado Springs, Colorado, discovered a nest containing one egg. From that date up to 1890 no further information was forthcoming, but during the last mentioned year, Mr. William G. Smith, of Loveland, Colorado, succeeded in securing three sets of these rare eggs, perfect identification having been established by collecting the sitting females. Since that time several other nests have been brought to notice, but so far as known Colorado is the only place where the species has actually been found breeding.

Gloomy ravines appear to be the favorite nesting places, as many of the nests recorded have been so situated. An abandoned Woodpecker's excavation from 8 to 20 feet from the ground in a pine or an aspen is usually chosen as a nesting site. The eggs are deposited often about ten inches below the opening, and rest upon a few chips, feathers — either of the Owl or some other bird — or even fragments of oak leaves. One of the nests found by Mr. Smith had been previously occupied by Squirrels, upon whose remains of housekeeping the eggs of the Owl had been laid. Six feet above, in the same tree, a Flicker (*Colaptes cafer*) had its home; and Madame Flicker must have some time forgotten which was her own door; since a Flicker's egg was found in the Owl's nest. Three or four eggs of this Owl constitute a complement, a less number being probably an incomplete set. In color they are white, slightly glossy; in shape oval; and ten specimens average in size 29×25.2 mm.; the extremes being: length, 31 and 25.5 mm.; breadth, 26 and 24.5 mm. The breeding season, in Colorado at least, seems to be chiefly in May and June. The female frequently has to be removed from the nest by force, so faithful is she to her charge; and so closely does she cling that this operation, even with greatest care, sometimes results in damage to the eggs. On some occasions, however, she may easily be induced to leave, and may even remain hard by, an undemonstrative spectator of the spoliation of her treasures.

With regard to the food of the Flammulated Owl there are very few positive data. Mr. Smith notes that one of his Owls had eaten small rodents; Mr. Belding states that the specimen killed by him at Big Trees, California, had dined on beetles; while the specimen taken by Dr. Merriam in the Grand Cañon of the Colorado, Arizona, is recorded to have had in its stomach one scorpion, some beetles and a few other insects.

In the subjoined table of millimetres measurements, specimens here recorded for the first time are marked with an asterisk.

SEX.	LOCALITY.	WING.	TAIL.	CULMEN WITHOUT CERE.	CULMEN WITH CERE.	TARSUS.	MIDDLE TOE.	CLAW OF MIDDLE TOE.
—	Big Trees, California.....	134	63	9.5	15.0	17.5	18.0	9.0
—	Fort Crook, California.....	138	67	9.0	15.5	18.5	18.5	9.0
—	Idaho Springs, Colorado.....	129	63	—	—	18.5	18.5	8.5
—	Estes Park, Colorado.....	131	63	8.5	14.5	19.0	18.0	8.0
—	” ”	140	66	9.5	16.0	18.0	18.0	9.0
—	Evergreen, Colorado.....	136	61	9.0	15.5	18.0	18.0	8.5
—	Colorado Springs, Colorado....	129	57	8.5	14.0	19.0	17.0	7.0
—	Presidio County, Texas.....	141	68	9.0	15.0	18.5	19.0	8.5
—	Near Apache, Arizona.....	136	64	9.0	15.5	18.0	19.0	8.5
—	Grand Cañon, Arizona.....	130	61	8.0	14.5	18.0	18.0	9.0
—	Orizaba Mts., Mexico.....	137	64	8.5	14.5	18.0	18.0	8.0
	Average.....	134.6	63.4	8.9	15.0	18.3	18.2	8.5

MEGASCOPS FLAMMEOLUS IDAHOENSIS Merriam.

Megascops flammeolus idahoensis Merriam, *North. Am. Fauna*, n° 5, 1891, p. 96, pl. I; A. O. U. Comm., *Auk*, 1892, IX, p. 105; Merriam, *Auk*, 1892, IX, p. 169, pl. II; Bendire, *Life Hist. N. Am. Birds*, 1892, I, p. 376; Fisher, *Hawks and Owls of U.S.*, 1893, p. 173; Hasbrouck, *Auk*, 1893, X, p. 261.

Scope idahoensis Gurney, *Cat. Birds Prey*, 1894, p. 38.

Megascops flammeola Palmer, *Auk*, 1894, XI, p. 78.

Megascops flammeola idahoensis A. O. U. *Check-List*, 1895, p. 147; A. O. U. Comm., *Auk*, 1897, XIV, p. 134; Davie, *Nests and Eggs of N. Am. Birds*, 1898, p. 241.

Megascops idahoensis Wm. Palmer, *Nidologist*, 1896, III, p. 103.

Chars. subsp. — *Megascops M. flammeolo affinis*, sed *conspicue pallidior*; *facie vix nigro notata*; *corpore infra minus dense vermiculato*.

Geographical distribution. — Idaho, eastern Washington, and southern California, United States.

Description. — (Type, male adult, Ketchum, Idaho. Sept. 22, 1890.) Above brownish gray, the feathers everywhere mottled and vermiculated with dark brown, black, white and ochraceous, the black markings chiefly mesial and most conspicuous anteriorly. A grayish white band on occiput is separated from a similar one on cervix by

a well defined zone of rufous, the two first mottled and vermiculated with black and gray, the last with black and dark brown; forehead dull white vermiculated with black, the feathers with shaft streaks of same color; a broad terminal area on exterior webs of scapulars fawny ochraceous, this succeeded proximally by a white spot, bounded by the brown or black of the basal portion, which color also extends along the shafts to the extremities of the feathers. Tail fuscous, the central rectrices with 8, the lateral with 7 very evident, though somewhat interrupted bars of buffy ochraceous, one of which is terminal. Wing-quills fuscous, crossed by numerous though sometimes indistinct bars of buff, deepening to ochraceous on secondaries, these bars terminating on exterior webs of outer primaries in broad spots of white or buffy; the wing-coverts, innermost secondaries with exterior webs of the remainder, and ends of all the flight feathers, mottled with whitish or buffy, most conspicuously on the innermost secondaries and inner greater coverts; distal portions of exterior webs of outermost greater coverts white; axillars and under wing-coverts buff, mottled with dark brown and ochraceous. Narial vibrissae white, washed with buffy, tipped with dark brown; sides of neck grayish white, finely vermiculated with black; ear tufts inconspicuous, mingled white, black, rufous and ochraceous; central part of face, including base of auriculars, dull white, banded with dark brown and blackish; feathers immediately surrounding orbits, together with ends of auriculars and a ruff which meets across the throat, ochraceous, deepening in places to rufous, the portion on sides of throat with feathers narrowly black or brown tipped; chin plain buffy white; remainder of lower parts white, most of the feathers with shaft streaks of black, these broadest on the breast, many of them margined with ochraceous and closely vermiculated with dark brown and black, gradually decreasing posteriorly until on the crissum these cross markings are confined to the distal portions of the feathers. Tarsi buffy white, marked transversely with

dusky; tibiae dull buff, indistinctly barred with dusky.

Megascops flammeolus idahoensis differs from *M. flammeolus* in the narrow longitudinal streaking and less conspicuous vermiculation below, these producing a much lighter surface; in the paler tint of the ochraceous of face and ruff; in the very little black of ruff, crown and occiput. The upper surface also is rather paler, with smaller and less evident black markings. The difference in size, which has been considered so good a character in the separation of this form, was based largely upon a mistake in the original wing measurement of the type: and tested by the specimens now at hand proves to be of no consequence whatever. Considering the nature of the characters distinguishing these two forms, as well as the existence of examples more or less intermediate, subspecific rank seems the proper one for *idahoensis*.

A specimen, taken near the mouth of the Snake River in the state of Washington, is very similar to the type in every respect, though rather darker below, owing to the somewhat greater coarseness and frequency of the vermiculations. The plumage above is throughout slightly paler, and the rufous on the head a little duller, on nape rather lighter; but these differences are due undoubtedly to the wear incident to the breeding season. The chin is buffy ochraceous, not buffy white; the rufous of crown, face and ruff is darker, with more of blackish in the last.

A Flammulated Owl from the San Bernardino Mountains, California, differs markedly from *flammeolus* proper in the rather paler upper parts and much lighter under surface, the shaft streaks being decidedly narrower, the cross vermiculations much less conspicuous and less numerous. This bird is very like *idahoensis*, differing from the type of that form in the somewhat greater amount of black on the forehead and crown; the much brighter rufous of the nuchal band; increased amount of white on exterior webs of primaries, greater coverts, and alula; rather coarser vermiculations below; more rufous admixture in the plumage of the head; darker rufous and

more blackish facial disc, particularly that part behind ear-coverts; and in the slightly more rufescent or brownish tinge characterizing the entire plumage of the body. The light markings of the tail-feathers are, however, less deeply buffy, being on the exterior rectrices nearly white. Two other examples from the San Bernardino Mountains are essentially similar; but one of these is darker, particularly below, the vermiculations much more numerous across the breast; the rufous on crown and about the face is slightly less extensive, darker on the latter; the ground color of upper parts a very little deeper, the black markings on the head somewhat more conspicuous; tips of greater wing-coverts, outer webs of primaries and alula with narrower light markings; tarsi more heavily spotted with dark brown. These southern California specimens are certainly not true *flammeolus*, and although they differ somewhat from *idahoensis*, as above explained, they still are so much like it that for the present they must be referred to this form. Their geographical connection with *idahoensis* does not seem perfectly clear, unless the young bird from Fort Crook, California, above described under *flammeolus*, be also *idahoensis*.

Mr. Charles E. Aiken writes that he had once in his possession a Flammulated Owl which was taken during the fall of 1895 near Salt Lake City, Utah, and which he remarked at the time differed much from the Colorado specimens he had seen, belonging, as he now thinks, to *Megascops f. idahoensis*. The specimen unfortunately was stolen, so that verification of the subspecies is now impossible. Inclusive of the records just given, the localities from which *Megascops flammeolus idahoensis* is known are as follows :

Idaho. — Ketchum.

Washington. — Twenty miles above mouth of Snake River.

California. — San Bernardino Mountains; San Geronio Peak, San Bernardino Mts

Utah. — Salt Lake City?

The present form of *Megascops* was first brought to the notice of ornithologists in 1891, when Dr. Merriam described it from a single specimen shot in a low pine tree among the straggling timber on a mountain along the west side of Big Wood River, only a few miles north of Ketchum, Idaho, September 22, 1890. With the exception of the three birds from southern California, which may eventually prove subspecifically distinct, but a single additional specimen has been taken, that in 1896 by Prof. Hindshaw, on the Snake River, Washington.

Concerning the habits, nest and eggs of *Megascops f. idahoensis* nothing is known, but there is every reason to suppose that they do not differ from those of *M. flammeolus* proper. All we know of the food of *idahoensis* is that the stomach of the type contained grasshoppers, ants and other insects.

In the following list of measurements, an asterisk designates those examples which hitherto have never been recorded.

SEX.	LOCALITY.	WING.	TAIL.	CULMEN WITHOUT CERE.	CULMEN WITH CERE.	TARSUS.	MIDDLE TOE.	CLAW OF MIDDLE TOE.
♂	Ketchum, Idaho.....	130	62	9	15.5	18.5	18.5	9.0
♀	Twenty miles above mouth of Snake R., Wash.....	137	65	9	15.0	18.0	18.5	7.5
♂	* San Geronio Peak, Calif. (1).	129	64	10	15.5	21.5	18.0	7.0
♂	* San Bernardino Mts., Calif.....	138	63	10	16.5	20.0	20.0	8.0
♂	" " " (2).....	133	61	9	15.0	18.0	18.0	8.0
	Average.....	133.4	63	9.4	15.5	19.2	18.6	7.9

(1) Collected by Mr. M. French Gilman, of Banning Calif.
 (2) In Mr. Brewster's private collection.

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