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MAMMALS OF NORTHERN COLOMBIA

PRELIMINARY REPORT NO. 3: WATER RATS (GENUS *NECTOMYS*),
WITH SUPPLEMENTAL NOTES ON RELATED FORMS

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Water rats obtained in northern Colombia by the author during his 1941–1943 tenure of the Walter Rathbone Bacon Traveling Scholarship number 12 specimens of an undescribed race of *Nectomys squamipes* and 4 specimens of *Nectomys alfarì russulus*. Both series were taken in the same trap line in the Río Tarra region, upper Río Catatumbo, department of Norte de Santander. This is the first recorded occurrence of two species of *Nectomys* in the same locality and supplies further evidence that the Lake Maracaibo drainage basin is an area where interchange between trans- and cis-Andean mammalian faunas takes place. Extensive trapping for small rodents failed to yield water rats in other Colombian localities where collecting was done. However, several specimens of *Nectomys squamipes* from the Cauca and upper Meta regions, generously donated by Hermano Nicéforo María, of the Instituto de La Salle, Bogotá, furnish important additions.

Present material serves to dispose of some taxonomic problems left unclarified in the writer's review (1944) of the genus *Nectomys*. In addition, the types of the species described by Thomas as *Nectomys dimidiatus*, *Nectomys hammondi*, and *Nectomys saturatus*, which were referred to the "*incertae sedis* group" (1944, p. 80), have been examined recently in the British Museum. The first two prove to be unique members of the genus *Oryzomys*. The last is a subspecies of *N.*

squamipes. Other types examined in the British Museum reveal that *Nectomys fulvinus* Thomas and *N. grandis* Thomas were correctly referred by the writer to *N. squamipes*, the first as a synonym of *N. s. apicalis*, the second as a subspecies. It was discovered also that *O. barbacoas ochrinus* Thomas is practically identical with *Nectomys (Sigmodontomys) alfari esmeraldarum*. The original *Oryzomys barbacoas* Allen, in the American Museum of Natural History, also is referable to *N. a. esmeraldarum*.

The above-named forms and the additional Colombian material are discussed more fully below. Thanks are expressed to the authorities of the American Museum of Natural History for permission to describe as new a specimen of *Nectomys* not identified in the writer's earlier report on the genus. Capitalized color terms are from Ridgway ("Color Standards and Color Nomenclature," Washington, 1912). Northern Colombian localities mentioned in the text are shown on the map accompanying the first preliminary report of this series (Proc. U. S. Nat. Mus., vol. 97, fig. 1, 1947).

NECTOMYS SQUAMIPES APICALIS Peters

Nectomys apicalis PETERS, Abh. Akad. Wiss. Berlin, 1861, p. 152, pl. 1, fig. 1, pl. 2, figs. 3-3b (type locality, "Guayaquil"; redetermined as Tena, eastern Ecuador, by Hershkovitz, Mus. Zool. Univ. Michigan Misc. Publ. No. 58, p. 25, 1944).

Nectomys fulvinus THOMAS, Ann. Mag. Nat. Hist., ser. 6, vol. 19, p. 499, 1897 (type locality, "Quito"; redetermined as eastern Ecuador, probably near Tena, by Hershkovitz, *op. cit.*, p. 26).

Nectomys squamipes apicalis, HERSHKOVITZ, Mus. Zool. Univ. Michigan Misc. Publ. No. 58, pp. 25, 52, 1944 (characters, distribution, synonymy).

Nectomys squamipes subspecies I, HERSHKOVITZ, Mus. Zool. Univ. Michigan Misc. Publ. No. 58, p. 65, 1944 (Colombia: Villavicencio, Meta; Guaicaramo, north-east of Villavicencio; Medina, eastern Cundinamarca; Mambita, eastern Cundinamarca).

The specimens from the upper Río Meta, contributed by Hermano Nicéforo María, include three individuals from Medina (only one adult) and an adult from Guaicaramo. They do not reveal more than has been described (Hershkovitz, *op. cit.*, p. 65). They show no near relationship to the water rats collected by the author in the Lake Maracaibo Basin of northern Colombia. It seems best, therefore, to refer the eastern Colombian rats to *apicalis*, the form they resemble most.

The type specimen of *Nectomys fulvinus* Thomas, in the British Museum, is a "tawny phase" individual. This accounts for its having been originally distinguished "from all others by its deep fulvous color which more nearly resembles that of some of the *Couesi* group of *Oryzomys*." It agrees completely with eastern Ecuadorian *apicalis*

of which three "tawny phase" females were recorded by the writer (*op. cit.*, p. 36). A previously overlooked quotation by Tomes throws further light on the true origin of the type specimen of *fulvinus* which was purportedly collected in Quito by Jamieson. In recording "*Diphylla ecaudata*," Tomes (Proc. Zool. Soc. London, 1860, p. 212) inserted the following note by Fraser: "Rio Napo. *Murcielago*. The specimen was taken by the son of Professor Jamieson in the act of drawing blood from a man."

NECTOMYS SQUAMIPES GRANDIS Thomas

Nectomys grandis THOMAS, Ann. Mag. Nat. Hist., ser. 6, vol. 19, p. 498, 1897 (type locality, Concordia, lower Río Cauca Valley, Antioquia, Colombia).

Nectomys squamipes grandis, HERSHKOVITZ, Mus. Zool. Univ. Michigan Misc. Publ. No. 58, pp. 29, 62, 1944 (description).

A specimen from the Río Cauca, "south of Medellín," presented by Hermano Nicéforo María, may be regarded as typical. It had been mounted and displayed in the museum of the Instituto de La Salle. The skull, in imperfect condition, has the following dimensions: Zygomatic width, 24.4; width across parietal ridges, 13.7; alveolar length of molar row, 7.3; interparietal, 10.2 × 5.0 mm. The nasals (tips broken) are as in *N. squamipes magdalenae*, less tapered than in *apicalis*. In external characters, the specimen more nearly resembles Ecuadorian than eastern Colombian representatives of *apicalis*.

NECTOMYS SQUAMIPES SATURATUS Thomas

Nectomys saturatus THOMAS, Ann. Mag. Nat. Hist., ser. 6, vol. 20, p. 546, 1897 (type locality, Ibarra, Imbabura Province, Ecuador).—HERSHKOVITZ, Mus.

Zool. Univ. Michigan Misc. Publ. No. 58, pp. 21, 22, 81, 1944 (*incertae sedis*).

Examination of the type in the British Museum shows it to be a member of the typical species. The type is in old pelage; condylobasal length, approximately 44; interparietal, 6 × 12 mm.

NECTOMYS SQUAMIPES TARRENSIS, new subspecies

Holotype.—Adult male, skin and skull, U. S. N. M. No. 279741; collected August 6, 1943, by Philip Hershkovitz; original number 2319.

Type locality.—Río Tarra, upper Río Catatumbo, department of Norte de Santander, Colombia; altitude, 250 meters.

Distribution.—Known only from the type locality. It probably occurs at least throughout the eastern foothills of the Sierra de Perijá and the lowlands of the southwestern portion of the Lake Maracaibo Basin.

Characters.—Nearest *melanius* in size, color, and cranial characters; pelage thick and glossy, underparts paler, with more yellow, especially on forelegs and chin; tail brown with gray keel hairs in older individ-

uals; proportion of length to width of interparietal less than in *melanius*, average 25.9 percent (22–31 percent, nine adult specimens).

Coloration of holotype.—Dorsal surface Orange-Buff mixed with Prout's Brown; sides of body and face nearly uniformly Orange-Buff. Ventral surface of body irregularly washed with Antimony Yellow and Light Ochraceous-Buff, the pale gray subterminal bands of the hairs showing through. Outer sides of fore and hind feet like sides, inner sides, chin, pale gray lightly washed with Naples Yellow. Upper surface of fore and hind feet brown thinly covered with silvery hairs. Tail brown with gray keel hairs.

Measurements (in millimeters).—Those of the holotype followed by the means and extremes of the nine adult paratypes. Head and body, 223, 204.2 (186–223); tail, 194, 185.2 (167–198); hind foot, 48, 49.4 (47–54); ear, 24, 23.1 (22–25); condylobasal length, 41.3, 40.3 (37.2–41.5); zygomatic breadth, 24.1, 22.8 (22.2–24.1); nasals, length, 19.1, 17.7 (16.1–19.1); width across temporal ridges, 13.7, 14.3 (13.7–14.8); alveolar length of molar row, 6.8, 7.1 (6.8–7.2); interparietal, 3.7×12.7 , 3.2×12.4 ($2.7\text{--}3.7 \times 11.4\text{--}12.9$).

Specimens examined.—Twelve (8 males, 4 females), all from the type locality.

Remarks.—The discovery of this race of *Nectomys squamipes*, with the assignment of the upper Río Meta rats to *apicalis*, isolates the specimens previously recorded under the heading *Nectomys squamipes* subspecies II as a well-defined geographic race.

NECTOMYS SQUAMIPES TATEI, new subspecies

Nectomys squamipes subspecies II, HERSHKOVITZ, Mus. Zool. Univ. Michigan Misc. Publ. No. 58, p. 66, 1944.

Holotype.—Adult female, skin and skull, A. M. N. H. No. 69899; collected April 22, 1925, by G. H. H. Tate and Harold J. Clement; original number 3424.

Type locality.—San Antonio, about 15 km. east of Mount Turumiquire, Sucre, northern Venezuela; altitude 1,800 feet.

Distribution.—Known only from the type locality and from La Latal, northwest of Mount Turumiquire, in the semiarid coastal range of northern Venezuela.

Characters (of the type and only adult specimen).—Color similar to that of eastern Colombian representatives of *N. s. apicalis*; dorsal surface Ochraceous-Orange with a more or less even mixture of Prout's Brown; underparts gray, the belly and chest washed with ochraceous; tail uniformly brown, longer than combined length of head and body; interparietal as in *apicalis*; alveolar length of molar row shorter; nasals behind as in *N. s. melanius*.

Measurements (in millimeters).—Head and body, 180; tail, 200; hind foot (dry, with claw), 48.0; condylobasal length, 39.1; zygomatic breadth, 22.2; length of nasals, 17.5; width across parietal ridges, 13.6; alveolar length of molar row, 7.1; interparietal, 4.5×9.3 (48 percent).

Remarks.—The type is paler than *N. s. melanius* and *tarrensis*, most nearly related to eastern Colombian representative of *apicalis* and widely different from *palmipes* of the island of Trinidad, its nearest geographic ally. It represents a restricted race and, like *tarrensis*, appears to be well isolated from its wide-ranging neighbors, *melanius* and *apicalis*.

This water rat is named for Dr. G. H. H. Tate, of the American Museum of Natural History and one of the co-collectors of the type specimen.

Specimens examined.—Two. The type and a juvenal from La Latal, both in the collection of the American Museum of Natural History.

NECTOMYS (SIGMODONTOMYS) ALFARI RUSSULUS Thomas

Nectomys russulus THOMAS, Ann. Mag. Nat. Hist., ser. 6, vol. 20, p. 547, 1897 (type locality, Valdivia, lower Cauca Valley, Antioquia, Colombia).

Nectomys alfari russulus, HERSHKOVITZ, Mus. Zool. Univ. Michigan Misc. Publ. No. 58, p. 77, 1944 (subgenus *Sigmodontomys*).

Nectomys alfari near *russulus*, HERSHKOVITZ, Mus. Zool. Univ. Michigan Misc. Publ. No. 58, p. 77, pl. 4, figs. 1-2, 1944 (La Azulita, Venezuela).

Four specimens were secured from the Tarra, a tributary of the upper Río Caçatumbo in the Lake Maracaibo drainage basin. They agree with the individual from the southeastern edge of the lake previously recorded as "near *russulus*." All conform with the type of *russulus* in the more important cranial characters but may be shown to average darker in coloration when compared with more specimens from the typical locality. In the type specimen, the present series, and the Venezuelan specimen, the incisive foramina are comparatively widely open, wider behind than in front with the posterior borders rounded or nearly square, not pointed, the mesopterygoid fossa wider than length of first upper molar. The posterior border of the nasals is truncate in the type, obtusely to narrowly pointed in the others. Comparisons with the original series of *Nectomys alfari efficax* Goldman, from eastern Panama, confirm its subspecific distinction from *russulus*.

Measurements of the type specimen of *russulus*, taken in the British Museum, are as follows: Condylobasal length, 33.5; zygomatic breadth, 19.3; length of nasals, 13.9; width across parietal ridges, 12.7; alveolar length of molar row, 5.9; interparietal, 3.5×8.6 mm. The type is slightly tawnier in coloration than the type of *esmeraldarum*.

NECTOMYS ALFARI ESMERALDARUM Thomas

Nectomys esmeraldarum THOMAS, Ann. Mag. Nat. Hist., ser. 7, vol. 8, p. 250, 1901 (type locality, San Javier, Esmeraldas, northwestern Ecuador).

Nectomys alfari esmeraldarum, HERSHKOVITZ, Mus. Zool. Univ. Michigan Misc. Publ. No. 58, p. 78, 1944 (Ecuador: San Javier, Esmeraldas; Carolina, Río Mira, Imbabura).

Oryzomys barbacoas J. A. ALLEN, Bull. Amer. Mus. Nat. Hist., vol. 35, p. 85, 1916 (type locality, Barbacoas, Nariño, southwestern Colombia).

Oryzomys barbacoas ochrinus THOMAS, Ann. Mag. Nat. Hist., ser. 9, vol. 7, p. 449, 1921 (type locality, Ecuador, west of Quito).

The characters of the subgenus *Sigmodontomys* with its only species, *Nectomys alfari*, are such that its identification with *Oryzomys*¹ is not surprising. It will be recalled that Allen had previously described a member of his own *Sigmodontomys* as *Oryzomys ochraceus*. Thomas, after describing *russulus* and *esmeraldarum* and deliberating largely upon the characters and relationships of all known species of *Nectomys*, regarded *ochrinus* as "quite unlike anything in the British Museum collection." The type and topotype of *barbacoas* Allen are near enough, both geographically and in their characters, to be assigned to *esmeraldarum*. The type of *ochrinus* is more ochraceous than that of *esmeraldarum*, and quite like the specimens recorded by the writer (*op. cit.*) from Carolina, Río Mira, Ecuador. The original specimen of *ochrinus* "collected" by Söderström from "west of Quito" could very well have originated in the Río Mira region on the western slope of the Cordillera Occidental.

The type of *esmeraldarum* is a young adult. Its cranial measurements are given, followed by those of the type of *ochrinus*; condylo-basal length, 31.7, 31.9; zygomatic breadth, 17.9, -; length of nasals, 13.9, 13.7; width across parietal ridges, 12.0, 12.2; alveolar length of molar row, 5.2, 6.0; interparietal, 2.9×7.9, 3.8×8.7 mm.

THE STATUS OF "NECTOMYS" DIMIDIATUS AND OF "NECTOMYS" HAMMONDI

Of the three species previously listed in the "*incertae sedis*" group (Herskovitz, 1944, pp. 21, 80), one, *Nectomys saturatus*, is shown above to be a race of *squamipes*. The other two, *dimidiatus* and *hammondi*, are very different from each other and from *Nectomys*. Examination of the types, the only known specimens, reveals them to be specially marked members of the genus *Oryzomys* neither of which is assignable to any known superspecific group. Each represents a

¹ It may be better to regard *Sigmodontomys* as a subgenus of *Oryzomys*. Likewise, most of the oryzomyine rodents, including *Nectomys*, *Oecomys*, *Oligoryzomys*, *Microryzomys*, *Melanomys*, *Nesoryzomys*, and *Megalomys*, can be incorporated with *Oryzomys* as subgenera. Pending further revisionary work, however, it is convenient to follow the earlier classifications.

distinct diversification within the genus. Their relationship to each other and to the remaining species of oryzomyine rodents is best expressed by conferring subgeneric rank upon them.

The oryzomyine characters common to the two forms described below have been given, and the dental terminology used here has been defined (*op. cit.*, pp. 12-17).

MICRONECTOMYS, new subgenus (genus *Oryzomys*)

Type species.—*Nectomys dimidiatus* Thomas, Ann. Mag. Nat. Hist., ser. 7, vol. 2, p. 586, 1905 (type locality, Río Escondido, 7 miles below Rama, Nicaragua); Hershkovitz, Mus. Zool. Univ. Michigan Misc. Publ. No. 58, pp. 21, 22, 80, 1944.

Description of type species.—Externally similar to a young *N. squamipes*; smaller than *N. alfari*, with tail less than combined length of head and body; gray keel hairs well developed as in typical adult *Nectomys*; webs between toes of hind feet reduced, as in *N. alfari*; other external characters as originally described. Skull more lightly built than in *Nectomys*, rather as in typical *Oryzomys*; supraorbital ridges little developed, brain case broad, smooth and rounded; nasals behind not markedly narrowed, the ends obtusely pointed; incisive foramina well opened, wider behind than in front, the posterior border extending slightly behind anterior plane of M^1 ; mesopterygoid fossa broad, its palatal width greater than crown length of M^1 ; median border of alveolar branch of maxilla behind M^3 projecting as a ledge over posterolateral palatine fossa, the palatomaxillary suture at this place coursing on internal wall of fossa and hidden from the ventral aspect; sphenopalatine vacuities present; mastoid process of squamosal long and delicate, as in *Oryzomys*; zygomatic plate wide but less projecting than in typical *Nectomys*. Molars of type much worn and details of enamel pattern difficult to determine but clearly less simplified than in *Nectomys*. Shape and general proportions of molars as in *N. alfari*; first upper molar with an anterior median fold; in M^{1-3} first internal folds discreet (coalesced with first primary folds in *Nectomys*); second internal folds probably coalesced with second primary folds in unworn teeth; second secondary fold possibly present in M^3 ; anterior median fold of first lower molar well developed; internal folds 1 and 2 present in M_1 , possibly present in M_{2-3} .

Measurements of the type (in millimeters).—Head and body, 125; tail, 115; hind foot, 28; ear, 13; condylobasal length, 27.2; zygomatic breadth, 17.0; length of nasals, 11.5; alveolar length of molar row, 4.3; least interorbital width, 5.3; width of zygomatic plate, 3.5; interparietal, 2.8×7.5 ; crown length of M^1 , 1.9.

MACRURORYZOMYS, new subgenus (genus *Oryzomys*)

Type species.—*Nectomys hammondi* Thomas, Ann. Mag. Nat. Hist., ser. 8, vol. 12, p. 570, 1913 (type locality, Mindo, Pichincha Province, northwestern Ecuador); Hershkovitz, Mus. Zool. Univ. Michigan Misc. Publ. No. 58, pp. 21, 22, 81, 1944.

Description of type species.—A large, extremely long-tailed member of the genus resembling *Nectomys alfar* in color and character of pelage; fifth hind toe, without claw, extending to base of second phalanx of fourth toe; other external characters as originally described. Nasals broad in front, not markedly tapering behind, the posterior borders meeting obtusely; zygomatic plate wide but only slightly forward-projecting as seen from above; supraorbital region nearly parallel-sided, the edges slightly raised and overhanging; interparietal large; walls of sphenopalatine fossa not fenestrated; palate comparatively simple, the posterolateral fossae and pits but little developed. Molars large, cusps high, the folds between narrowly compressed but open at the crown margins; first internal folds present in upper and lower molars, the second internal folds in the lower molars only; no discreet anterior median fold evident; minor folds of M_{1-3} well developed.

Measurements of the type (in millimeters).—Head and body, 203; tail, 251; hind foot, 32; ear, 18; condylobasal length, 38.8; zygomatic breadth, 21.2; length of nasals, 16.0; alveolar length of molar row, 6.9; least interorbital breadth, 6.9; width of zygomatic plate, 5.0; interparietal, 5.4×10.9 ; width across parietal ridges, 14.0; incisive foramina, 3.3×6.3 ; crown dimensions of first upper molar, 2.3×3.1 .

Remarks.—The Costa Rican *Oryzomys aphaerastus* Harris (Mus. Zool. Univ. Michigan Occ. Pap. No. 248, p. 5, 1932) is probably most nearly related to *O. hammondi*.

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