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NEW SPECIES OF INSECTIVORES FROM
BRITISH EAST AFRICA, UGANDA,
AND THE SUDAN

WITH ONE PLATE

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NEW SPECIES OF INSECTIVORES FROM BRITISH EAST
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This paper contains descriptions of eleven new species and one new genus of *Insectivora*. The material described is from the collection made in east Equatorial Africa by the Smithsonian African Expedition under the direction of Col. Theodore Roosevelt. The bulk of the species are from Rhino Camp, in the Lado Enclave, Egyptian Sudan. The precise geographical position of this spot is latitude $2^{\circ} 55'$ north, on the west bank of the Nile, some fifteen miles north of the station of Wadelai.

This paper is the twelfth dealing with the results of the expedition.

ERINACEUS SOTIKÆ, new species

Sotik Hedgehog

Type from the Guaso Nyiro River, Sotik District, British East Africa; adult male; number 162112, U. S. Nat. Mus.; collected by J. Alden Loring, June 28, 1909; original number, 6451.

Characters.—Nasal bones very long and attenuate posteriorly, reaching to middle of frontal bones; zygomatic arches slender; spines with the dark point so minute that there is no visible terminal speckling to the coloration.

Coloration.—General dorsal coloration white, the spinous portion with a speckling due to the dark subterminal rings of the spines showing through. Snout, chin, lips, and head posteriorly to behind eyes, hair brown; fore and hind feet lighter brown; the legs white like the sides. Under parts white, the hair white to the base. Tail white. Dorsal spines annulated with a broad band of seal brown subterminally, the tip broadly white with a minute dark point. Low down on the sides a few wholly white spines are interspersed with the annulated ones. Longest spines on head 20 mm.

Measurements.—Head and body, 170 mm.; tail, 26; hind foot,¹ 25. Skull: condylo-incisive length, 42; zygomatic breadth, 27; nasals, 15.5 x 2.3; interorbital constriction, 11.2; palatal length, 25; breadth of palate, including first molar, 17; length of upper tooth-row, 21.8;² condylo-incisive length of mandible, 34.5.

This species is closely allied to *hindei* of Kitui in coloration and general proportions. It differs decisively in the greater length and attenuation of the nasal bones, the lighter zygomatic arches, and smaller skull. The type skull shows some asymmetrical peculiarity. On the right side the premaxillary and frontal processes join and shut out the maxillary from the nasal, while on the left side these two bones are separated by the maxillary which borders the nasal for a length of 2 mm. There are four other specimens in the collection from the Sotik. These all agree with the type in the great length and attenuation of the nasals.

CROCIDURA SURURÆ, new species

Lado Giant Shrew

Type from Rhino Camp, Lado Enclave; adult male; number 164637, U. S. Nat. Mus.; collected by J. Alden Loring, January 18, 1910; original number, 8777.

Characters.—Smaller than *nyansæ*, but proportions the same; dorsal color lighter and grayer, without any brownish wash to the under parts.

Coloration.—Upper parts broccoli brown, merging gradually on sides to grayish, showing everywhere a grizzled effect, due to the grayish subterminal area of the hair showing through. Limbs whitish. Under parts grayish with a faint buffy wash. Lateral glands conspicuously marked by an oblong patch of short white hairs.

Measurements.—Head and body, 111 mm.; tail, 64; hind foot, 17. Skull: condylo-incisive length, 28.5; breadth of brain-case, 12; length of upper tooth-row, 13; condylo-incisive length of mandible, 18.

There are in the collection a series of nine specimens from the type locality. These are remarkably uniform in color and propor-

¹All measurements of the hind foot given in this paper exclude the claws and were taken from the dried skins, which afford better means of comparison than the collector's flesh measurements.

²Some departure from the usual alveolar measurements of the tooth row has been made, the measurement as given throughout the paper being taken from the posterior end of the tooth row to the outside border of the central incisor. In the smaller species this measurement can be taken with greater preciseness than the alveolar length.

tions, which is a very unusual condition in the forms of this variable species. A single specimen from Gondokoro is referable to this form. It is, however, lighter than the Rhino Camp series, with longer tail, and no doubt represents the extreme in size and light coloration.

CROCIDURA MUTESÆ, new species

Uganda Large-toothed Shrew

Type from Kampala, Uganda; adult female; number 174636, U. S. Nat. Mus.; collected by J. Alden Loring, December 22, 1909; original number, 8430.

Characters.—Somewhat larger than *zaodon*, with much more brownish coloration.

Coloration.—Upper parts mummy brown, feet and tail darker seal brown; under parts grayish, with a wash of broccoli brown. Lateral glands marked by a narrow streak of short light brownish hairs.

Measurements.—Head and body, 115 mm.; tail, 64; foot, 16. Skull: condylo-incisive length, 25.5; breadth of brain-case, 11.2; upper tooth-row, 11.3; condylo-incisive length of mandible, 16.

Two other specimens from Uganda are in the collection, which are referable to this form. These are much darker, being seal brown in color, and very little larger than *zaodon*.

CROCIDURA NILOTICA, new species

Nile Swamp Shrew

Type from Rhino Camp, Lado Enclave; adult female; number 164638, U. S. Nat. Mus.; collected by J. Alden Loring, January 17, 1910; original number, 8768.

Characters.—Differs from *provocax*, its nearest ally, in its much shorter tail and pelage.

Coloration.—Upper parts dark clove brown; under parts slaty, but very little lighter than upper, but with a sepia wash. Feet, ears, and tail colored like the upper parts, except the long hairs of the latter, which are somewhat lighter brownish. Hair everywhere slaty at base. Hairs covering lateral glands uniform in color with those of sides. Hair short; length on rump, 5 mm.

Measurements.—Head and body, 92 mm.; tail, 48; hind foot, 14.5. Skull: condylo-incisive length, 23; breadth brain-case, 10; length tooth-row, 9.5; condylo-incisive length of mandible, 14.5.

There is in the collection a series of seven specimens from the type locality. They are quite uniform in coloration with the excep-

tion of two old adults, which show a few white flecks on the dorsal surface and much white spotting on the chin and throat. Besides the type series, there are in the collection a few specimens from Butiaba, Hoima, and Kabula Muliro, in Uganda.

CROCIDURA MAANJÆ, new species

Nyanza Brown Shrew

Type from Kabula Muliro; adult male; number 164639, U. S. Nat. Mus.; collected by J. Alden Loring, December 27, 1909; original number, 8502.

Characters.—Darker sepia above and purer gray below than *hildegardæ*, the under parts lacking the brownish wash; teeth heavier.

Coloration.—Upper parts, including limbs and tail, seal brown, merging gradually on the sides into the grayer under parts, which lack the brownish wash of the sides. Lateral glands conspicuously marked by an oblong patch of silvery white hair.

Measurements.—Head and body, 82 mm.; tail, 52; foot, 12.5. Skull (occipital region broken): breadth of brain-case, 8.7; length of tooth-row, 8.5; condylo-incisive length of mandible, 12.

The skull shows somewhat heavier dentition than *hildegardæ* and the tooth-row is correspondingly greater.

Only a single specimen of this shrew is in the collection.

CROCIDURA LUTRELLA, new species

Enclave Veldt Shrew

Type from Rhino Camp, Lado Enclave; adult male; number 164640, U. S. Nat. Mus.; collected by J. Alden Loring, January 14, 1910; original number, 8729.

Characters.—Tail short and heavy; under parts light grayish buffy in marked contrast to the darker dorsal surface.

Coloration.—Upper surfaces of head, body, and tail light broccoli brown, this color descending on sides unchanged. Under parts and sides from level of mouth and under side of tail light grayish buff; sides of face nearly to level of eyes whitish. Hair everywhere light plumbeous at base. Feet whitish. Lateral glands large and conspicuously marked by a covering of silky white hair. Tail covered by scattered long white hairs throughout its whole length. Hair fairly dense, but short; length on back, 3 mm.

Measurements.—Head and body, 80 mm.; tail, 40; hind foot, 12. Skull: condylo-incisive length, 21; breadth of brain-case, 9.3; length of upper tooth-row, 9; condylo-incisive length of mandible, 12.3.

This species has the general appearance of *hindei*, but is much smaller, with the dorsal and neutral colors sharply marked and contrasted.

CROCIDURA PLANICEPS, new species

Flat-headed Shrew

Type from Rhino Camp, Lado Enclave; adult male; number 164641, U. S. Nat. Mus.; collected by J. Alden Loring, January 23, 1910; original number, 8837.

Characters.—Skull very different in shape from other *Crocidura*, the brain-case very flat, with a marked depression at its anterior termination in the interorbital region, the profile of the rostrum ascending slightly anterior to this depression; general body size of *hildegardæ*.

Coloration.—Above uniform seal brown, this color carried well down on sides, where it merges gradually into the lighter smoky gray of the under parts. Tail seal brown like the upper parts. Feet somewhat lighter brown than the back. Lateral glands distinctly marked by an oblong patch of whitish hair. Hair very short, only 2.5 mm. on rump, and uniform in color to the roots on upper parts. Hair of under surfaces, however, showing a narrow basal band of plumbeous.

Measurements.—Head and body, 71 mm.; tail, 53; hind foot, 12.3. Skull: condylo-incisive length, 18.3; breadth of brain-case, 8; length of upper tooth-row, 8; condylo-incisive length of mandible, 11.

This species in bodily size resembles *hildegardæ*, but it has decidedly smaller feet and skull, and darker coloration. From the *bicolor* group, of which *cunninghamei* is a form, it differs markedly in shape of skull, dark feet, and greater size. In skull characters it is quite distinct from any described species. The skull has somewhat the posterior elongation and narrowness of *Heliosorex*, but it is much less developed and not at all intermediate between this genus and *Crocidura*.

There are four other adult specimens from the type locality in the collection, and another from Hoima which possesses the skull characters of the species, but is somewhat smaller.

CROCIDURA LITTORALIS, new species

Butiaba Naked-tailed Shrew

Type from Butiaba, east shore of Albert Nyanza, Uganda; adult male; number 164642; U. S. Nat. Mus.; collected by J. Alden Loring, January 6, 1910; original number, 8598.

Characters.—Tail without longer hairs, as in *maurisca*, but much larger size than this species, with proportionately shorter tail.

Coloration.—Upper parts rich sepia, ears and feet somewhat lighter, tail darker blackish brown. Under parts vandyke brown, the chin and throat becoming suffused with grayish. Fur everywhere plumbeous at base; short, only 5 mm. on rump. Hair covering the lateral glands short, but not differentiated by color.

Measurements.—Head and body, 96 mm.; tail, 67; foot, 17. Skull: condylo-incisive length, 24; breadth of brain-case, 10; length of upper tooth-row, 10; condylo-incisive length of mandible, 14.3.

This species is one of the *maurisca* group, with a cylindrical, short-haired tail, the longer hairs being present only at the base.

HELIOSOREX, new genus

Type: *Heliosorex roosevelti* Heller

Characters.—Skull with the brain-case very much narrowed and marked by a prominent transverse constriction at its posterior third, well in advance of the lambdoidal crests; sides of interorbital region parallel; brain-case high and inflated, reaching its highest point midway between the constriction and its anterior end; dental formula as in *Crocidura*; first unicuspid about twice the size of second and third, which are of equal size; claws very small—about half the size of those of *Crocidura*.

The skull of this shrew differs more widely in shape from *Crocidura* than any other allied genus; in other words, it is the extreme in narrowness and posterior elongation. Some of the species of *Crocidura* show the constriction, but in all of these it is placed only slightly in advance of the lambdoidal crests, and the brain-case has, moreover, the triangular shape seen in typical *Crocidura*. The small claws are the only external character.

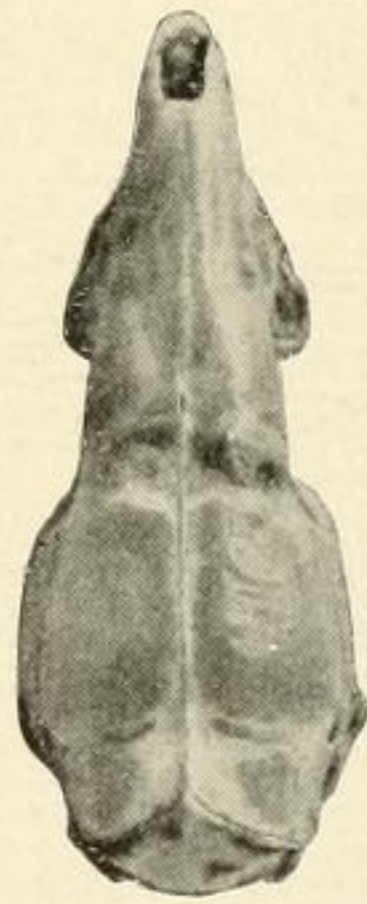
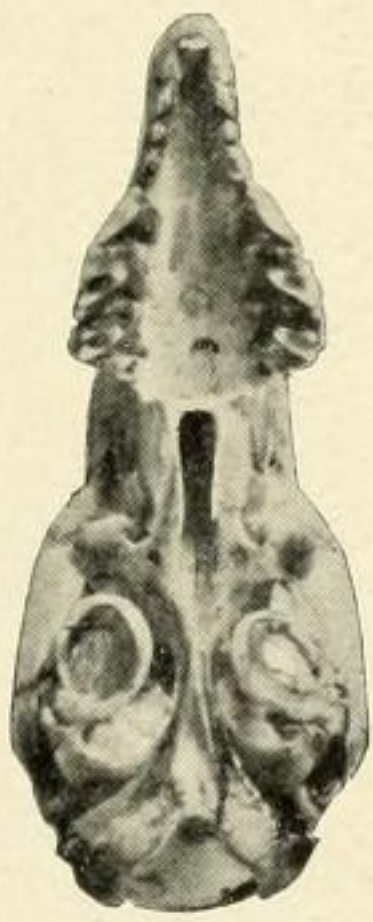
HELIOSOREX ROOSEVELTI, new species

Roosevelt Short-clawed Shrew

PLATE I.³ Skull. Twice natural size

Type from Rhino Camp, Lado Enclave; adult female; number 164643, U. S. Nat. Mus.; collected by J. Alden Loring, January 21, 1910; original number, 8812.

³ An unfortunate accident occurred to the skull after the two views shown on the plate had been taken. In adjusting the camera to take the side view the lens fell, striking the skull and damaging the occipital region to such an extent that further photographic work on the specimen had to be abandoned.



HELIOSOREX ROOSEVELTI HELLER

Type. Twice natural size



Characters.—Skull very much narrowed, the brain-case narrow and high, with a marked contraction far in front of lambdoidal crests; claws very small; tail long, nearly equaling head and body.

Coloration.—Upper parts broccoli brown, sides slightly grayer; the color sharply marked from the buffy lower parts; under parts and lower sides buffy gray; chin, and sides of face to level of eyes, and feet whitish. Tail seal brown above, whitish below. Lateral glands marked by an oblong patch of silky white hair. Fur plumbeous at base; short, 4 mm. in length on rump.

Measurements.—Head and body, 85 mm.; tail, 66; foot, 14. Skull: condylo-incisive length, 21.5; breadth of brain-case, 8.5; length of upper tooth-row, 8.7; condylo-incisive length of mandible, 12.5.

The type is the only specimen in the collection.

I take much pleasure in naming this distinct type of shrew for Colonel Roosevelt, who took a keen personal interest in the collection of small mammals.

SYLVISOREX GEMMEUS, new species

Long-tailed Forest Shrew

Type from Rhino Camp, Lado Enclave, Egyptian Sudan; adult male; number 164644, U. S. Nat. Mus.; collected by J. Alden Loring, January 14, 1910; original number, 8730.

Characters.—Tail very long—much longer than head and body; lower parts of body pearl gray.

Coloration.—Color of upper parts, including limbs, seal brown, lower sides becoming slaty, the color encroaching much posteriorly on the gray of the lower parts, where only the median line of belly is light. Chin, throat, chest, and median line of belly pearly gray. Tail seal brown above, basal one-half lighter below. Under fur everywhere plumbeous.

Body rather thinly haired. Ears, limbs, and tail clothed with minute hairs, the latter without any longer hairs near its base, as in *Crocidura*. Length of hair on rump, 7 mm. Tail long and cylindrical, tapering very gradually.

Measurements.—Head and body, 69 mm.; tail, 72; hind foot, 15. Skull: condylo-incisive length, 18; breadth of brain-case, 8; length of upper tooth-row, 7.5; condylo-incisive length of mandible, 10.5.

The skull is the same general size as that of *mundus*, but differs in its greater length and narrowness, and is also somewhat flatter. The upper unicuspid shows the same relative sizes.

There is one other specimen in the collection from Rhino Camp beside the type.

ELEPHANTULUS PHÆUS, new species

Masai Elephant Shrew

Type from Njoro O Solali, Sotik District, British East Africa; adult male; number 162074, U. S. Nat. Mus.; collected by J. Alden Loring, June 26, 1909; original number, 6441.

Characters.—Much darker dorsal coloration than in *pulcher* and with larger body size.

Coloration.—Above umber brown, lightly overlaid with black-tipped hairs; sides of body and head grayer and lacking the brownish; on the snout the gray color encroaching on the umber, which is confined to a median streak on the snout. Eye-ring white and continued posteriorly as a diagonal postocular stripe, bordered below by a dark-brown streak which breaks through the white eye-ring and reaches the eye. A fulvous patch behind each ear. Upper lip, under parts, and feet white, the white being sharply contrasted where it meets the tawny gray of the lower sides. Hair everywhere dark slate at base. Tail dark brown above, grayish below; the long hair of the rump lacking at the base of the tail, where a triangular naked area is exposed when the hair is disturbed.

Measurements.—Head and body, 133 mm.; tail, 133; hind foot, 33. Skull: condylo-incisive length, 36.5; zygomatic breadth, 20; nasals, 14; interorbital constriction, 6; length of palate, 18.8; length of upper tooth-row, 17.5; condylo-incisive length of mandible, 27; length of lower tooth-row, 15.5.

This form is closely allied to *pulcher*, from which it differs in the darker umber-brown color, being "gray-fawn" only on the sides. *Pulcher* is described as having the under fur of the under parts gray, and, if this is correct, *phæus* differs greatly in its dark slate under fur. The series of six topotypes in the collection is uniform in color with the type.