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SNAKES SECURED BY THE SNYDER EAST AFRICAN EXPEDITION IN KENYA COLONY AND TANGANYIKA TERRITORY

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During the year 1938 the Snyder East African Expedition, under the auspices of The American Museum of Natural History, spent the latter part of the rainy season (May to July) in Kenya Colony and Tanganyika Territory. The expedition¹ was organized primarily to secure the larger game mammals and to obtain motion pictures. However, through the interest of Mr. George G. Goodwin of the Department of Mammalogy of the American Museum, a small but extremely useful collection of reptiles was assembled.

Since a report covering extensive collections of African snakes acquired by the Museum since 1919 was already completed and in press when the Snyder Expedition returned, it seemed advisable to the writer to prepare a separate account of the collection. Whereas the herpetological fauna of Kenya Colony is moderately well known, many of the species from the region are endemic in the Ethiopian-Somaliland-Kenya region and accordingly are not well represented in collections. The reptiles taken by Mr. Goodwin consist of thirty-six lizards and thirty-one snakes. The lizards will be included in a larger report now in preparation. The snakes, comprising seventeen species, are described below, designated by American Museum catalogue numbers.

The majority of the specimens were taken near Voi (3°30' S., 38°30' E.) and a few at Kilibassi (also known as Kilibase or Kilabasi, 3°55' S., 38°50' E.) and Shaffa Dikka (1°30' N., 36°45' E.) in Kenya Colony. A few are from the Masai Reserve (3°15' S., 37°10' E.) in Tanganyika Territory. No novelties are present in the collection of snakes, but several rare forms,

such as *Typhlops unitaeniatus*, *Hemirhagerhis kelleri*, *Rhamphiophis rubropunctatus* and the "red" cobra, are included.

Typhlops schlegelii mucroso (Peters)

Onychocephalus mucroso PETERS (part), 1854, Monatsb. Ak. Wiss. Berlin, p. 621.

Typhlops schlegelii mucroso LOVERIDGE, 1933, Bull. Mus. Comp. Zool., LXXIV, p. 216.

One specimen, 61659, from Kilibassi. Scale rows 36 at midbody, total length 270 mm., diameter 10 mm., diameter included in length 27 times. Dark above, venter pale brownish yellow.

Typhlops unitaeniatus unitaeniatus Peters

Typhlops (Lethobia) unitaeniatus PETERS, 1878, Monatsb. Ak. Wiss. Berlin, p. 205, Pl. II, fig. 5.

Typhlops unitaeniatus unitaeniatus LOVERIDGE, 1936, Bull. Mus. Comp. Zool., LXXIX, p. 227.

A specimen, 61660, was taken at Kilibassi. Scale rows 24 at midbody, eye visible beneath nasal, total length 365 mm., tail 3 mm., diameter contained in length 61 times. Vertebral stripe three and two-half scales wide, not continued on the tail, tapering to one scale in width behind the rostral.

Eryx colubrinus loveridgei Stull

Eryx thebaicus loveridgei STULL, 1932, Occ. Papers Boston Soc. Nat. Hist., VIII, p. 29, Pl. II, fig. B.

Eryx colubrinus loveridgei LOVERIDGE, 1936, Bull. Mus. Comp. Zool., LXXIX, p. 233.

Four specimens, 61631-34, from Voi. Midbody scale rows 47-53, ventrals 172-181, anal single, subcaudals 21-26. All four are juveniles.

¹ For an account of the trip, see G. G. Goodwin, 1938, Natural History, XLII, pp. 272-283.

Boaedon lineatus lineatus Duméril and
Bibron

Boaedon lineatus DUMÉRIL AND BIBRON, 1854, *Erpét. Gén.*, VII, p. 363.

Two males, from Shaffa Dikka, 61645-46. Midbody scale rows 27-31, ventrals 191-215, anal single, caudals 59-69. Supralabials 8, infralabials 9, preoculars 1-2, postoculars 2, temporals 1 + 2. Total lengths 480 mm. and 770 mm., ratio of tail to total length .18 for each.

Lycophidion capense capense (Smith)

Lycodon capense A. SMITH, 1831, *So. Africa Quart. Journ.*, I, No. 5, p. 18.

Lycophidion capense capense LOVERIDGE, 1933, *Bull. Mus. Comp. Zool.*, LXXIV, p. 233.

A male, 61661, from Kilibassi and a female, 61644, from Shaffa Dikka. Dorsal scale rows 17-17-17, ventrals 164 (male) and 170 (female), anal single, caudals 35 and 30, supralabials 8, infralabials 8, oculars 1-2, temporals 1 + 2. The male is 320 mm. over all, with the tail comprising .13 of the total length; the female is 227 mm. over all, the tail .10 of the total. The male contained a skink, *Mabuya striata*.

Chlorophis hoplogaster (Günther)

Ahaetulla hoplogaster GÜNTHER, 1863, *Ann. Mag. Nat. Hist.*, (3) XI, p. 284.

Chlorophis hoplogaster BOULENGER, 1894, *Cat. Snakes Brit. Mus.*, II, p. 93, Pl. v, fig. 2.

A female, 61648, from Masai Reserve. Dorsal scale rows 15-15-11, ventrals 168, anal divided, tail incomplete, keels on ventrals indistinct. Supralabials 8, fourth and fifth entering orbit, oculars 1-2, temporals 1 + 1 (right) and 1 + 2 (left).

Philothamnus semivariegatus semivariegatus Smith

Philothamnus semivariegatus A. SMITH, 1849, *Illus. Zool. So. Africa*, III, Pls. LIX, LX, LXIV.

Philothamnus semivariegatus semivariegatus LOVERIDGE, 1933, *Bull. Mus. Comp. Zool.*, LXXIV, p. 237.

A male and three females, 61653-56, from Kilibassi. Dorsal scale rows 15-15-11, ventrals, male 170, females 169-199, anal divided, caudals, male 141, females 143-158, oculars 1-2, temporals, two specimens 2 + 2, one 1 + 2, and a

fourth specimen is asymmetrical, 2 + 2 right and 1 + 2 left. The largest specimen is a male 1070 mm. over all; largest female 1025 mm. over all.

Scaphiophis albopunctatus Peters

Scaphiophis albopunctatus PETERS, 1870, *Monatsb. Ak. Wiss. Berlin*, p. 645, Pl. I, fig. 4.

A juvenile female, 61635, from Voi. Dorsal scale rows 25-25-21, ventrals 212, anal divided, caudals 56, supralabials 5, infralabials 9, loreal divided, preoculars 2, suboculars 3, postoculars 2, temporals 5 to 6 in the first row. Total length 365 mm., tail 53 mm., ratio of tail to total length .15.

Thelotornis kirtlandii capensis Smith

Thelotornis capensis A. SMITH, 1849, *Illus. Zool. So. Africa*, III, app. p. 15.—BOGERT, 1940, *Bull. Amer. Mus. Nat. Hist.*, LXXVII, p. 70.

Thelotornis kirtlandii capensis MERTENS, 1937, *Abh. Senckenberg. naturf. Ges.*, No. 435, p. 14.

Three specimens, one of each sex from Voi, 61640-41, and a female from Kilibassi, 61657. Dorsal scale rows 19-17-11 and 19-19-13, ventrals, male 164, females 167-168, anal divided, caudals, females 153, male 157, supralabials 8, infralabials 10-12, loreal divided on two, single on one, oculars 1-3, temporals 1 + 2. The largest specimen is a male 1305 mm. over all.

Elsewhere (Bogert, *supra cit.*) it has been shown that several characters serve to distinguish *capensis* from *kirtlandii* of Hallowell, which has the nasals as well as the rostral recurved to the upper surface of the head and the lips immaculate. The present specimens agree with typical *capensis* in having the rostral and nasals *not* extended to the top of the head, and in having black dots on the lips. The top of the head on these three, however, is immaculate like that of *kirtlandii*, but differing in this respect from *capensis* to which these specimens are referred on the strength of morphological characters.

Mertens (*supra cit.*) already had revived *capensis* as a race of *kirtlandii* before I examined material in the American Museum and the Field Museum and concluded that the forms were distinct species. Unfortunately I had insufficient material from northeastern Africa when I drew this

conclusion. The arrival of the three specimens described above threw some doubt on my conclusion, and correspondence with Mr. Arthur Loveridge brought out the fact that material he was then studying showed fairly definitely that intergradation occurred in east Africa where typical *kirtlandii* probably exists in isolated forests. Thus my suspicions were verified, and I am indebted to Mr. Loveridge for permission to mention and to follow his unpublished decision to regard *capensis* as a race of *kirtlandii*.

Hemirhagerrhis kelleri Boettger

Hemirhagerrhis kelleri BOETTGER, 1893, Zool. Anz., XVI, p. 119.—LOVERIDGE, 1936, Bull. Mus. Comp. Zool., LXXIX, p. 260.

A single female, 61638, of this uncommon species was taken at Voi. Dorsal scale rows 17-17-13, ventrals 152, anal divided, caudals 66, supralabials 8, the fourth and fifth entering the orbit, infralabials 10, oculars 1-2, temporals 2 + 3. Total length 340 mm., tail 78 mm., ratio of tail to total length .24. Pattern typical.

REMARKS.—Elsewhere (1940, Bull. Amer. Mus. Nat. Hist., LXXVII, p. 75) I have shown that the species *nototaenia* placed in *Amplorhinus* Smith (type species *multimaculatus*) by Boulenger, in reality belongs in the genus *Hemirhagerrhis* Boettger. Teeth and penial characters are nearly identical in *nototaenia* and *kelleri* and the genus should be placed nearest to *Cerastes* (*Trimerhinus* auct.).

A survey of the literature discloses the fact that *H. kelleri* has been recorded from only twenty-five localities in Ethiopia, Italian Somaliland and Kenya Colony. No author has yet reported a male, doubtless owing to the difficulties involved in finding the exceedingly small copulatory organs characteristic of the genus. Data derived from the literature as well as from an examination of two specimens of *H. kelleri* (including a male, MCZ No. 40621) make it possible to present the following key to the three forms now included under *Hemirhagerrhis* (averages given in parentheses):

- 1.—Vertebral stripe sharply delineated; ventrals 141-173 (151.2), caudals 58-78 (69.4); ratio of tail to total length .22-.34 (.26).....*H. kelleri* Boettger.

- 2.—Vertebral stripe with coarsely serrated edges; ventrals 167-183 (172.4); caudals 68-98 (86.1); ratio of tail to total length .24-.34 (.26).....*H. n. nototaenia* (Günther).

- 3.—Vertebral region with a series of subtriangular dark spots on either side of a row of pale vertebral scales; ventrals 154-177 (166.7); caudals 52-75 (60.8); ratio of tail to total length .18-.20 (.19).....*H. n. viperinus* (Bocage).

The maximum number of ventrals reported for *kelleri* is 173, as noted in the key. This figure is given for a specimen listed by Boulenger in the "Catalogue." Inasmuch as the greatest number of ventrals reported elsewhere is 157, Boulenger's count should be verified.

Hemirhagerrhis nototaenia nototaenia (Günther)

Coronella nototaenia GÜNTHER, 1864, Proc. Zool. Soc. London, p. 309, Pl. XXVI, fig. 1.

Hemirhagerrhis nototaenia STEJNEGER, 1893, Proc. U. S. Nat. Mus., XVI, p. 730.

A comparatively large female, 61637, was taken at Voi. Dorsal scale formula 15-15-13, ventrals 175, anal divided, caudals 91. Supralabials 8, the fourth and fifth entering the orbit; infralabials 10. Loreal single, oculars 1-2, temporals 2 + 3. Total length 500 mm., tail (130 mm.) comprising .26 of the total.

Psammophis sibilans sibilans (Linnaeus)

Coluber sibilans LINNAEUS (part), 1758, Syst. Nat., 10th Ed., I, p. 222.

Psammophis sibilans sibilans LOVERIDGE, 1940, Bull. Mus. Comp. Zool., LXXXVII, p. 30.

A small female, 61636, from Voi. Dorsal scale formula 17-17-15, ventrals 157, anal single, caudals 110. Supralabials 8, infralabials 10. Loreal 1, oculars 1-2, temporals 2 + 2. Total length 570 mm., tail (190 mm.) comprising .34 of total. Maxillary dental formula 4 + 2 + 3 + 2, the posterior pair of teeth grooved. The pattern on the body consists of a narrow vertebral stripe, with a wider light stripe on either side; ground color plumbeous, venter immaculate. It is of interest to note the presence of an entire anal, of sporadic occurrence in specimens of the typical forms but stated by Loveridge (*op. cit.*, p. 14) to be characteristic of the west African race, *P. s. phillipsi*.

Psammophis biseriatus biseriatus Peters

Psammophis biseriatus PETERS, 1881, Sitz. Ges. Naturf. Freunde Berlin, p. 88.

A female from Kilibassi, 61651, has the dorsal scale formula 15-15-11, ventrals 146, anal divided, caudals 40+ (tail incomplete). Supralabials 9, fifth and sixth entering orbit, infralabials 10, loreal 1, oculars 1-2, temporals 2 + 2 + 3. Total length 600+ mm. Maxillary dental formula 4 + 2 + 6 + 2, the last two teeth grooved. It is perhaps worth pointing out that each species of *Psammophis* has a more or less constant dental formula, and it seems probable that dental characters will be useful in separating the genus into groups.

Psammophis biseriatus tanganicus
Loveridge

Psammophis biseriatus tanganicus LOVERIDGE, 1940, Bull. Mus. Comp. Zool., LXXXVII, p. 57.

Two specimens, a male from Masai Reserve, 61649, and a female from Voi, 61639. Dorsal scale rows 15-15-11, ventrals, respectively, 155 and 149, anal divided, caudals 84+ and 108. Supralabials 9, fourth, fifth and sixth entering the orbit, infralabials 10. Loreal 1, oculars 1-2, temporals 2 + 2. Total lengths: male 512 mm., tail 153+; female 430, tail 145. Tail/total ratio for the complete female is .34. The maxillary dental formula is 4 + 2 + 6 + 2, the posterior pair grooved. These specimens are referred to the race recently described by Loveridge on the basis of the three labials reaching the eye, although they were taken not far from the region of intergradation.

Rhamphiophis rostratus Peters

Rhamphiophis rostratus PETERS, 1854, Monatsber. Ak. Wiss. Berlin, p. 624.

A male, 61652, from Kilibassi, and a female, 61650, from Voi each have the scale row formula 19-17-13. Ventrals for respective sexes 182, 183, anal divided, caudals 117, 111. Supralabials 8, the fifth entering the orbit, infralabials 10-11. Loreal 1, preoculars 2-3, postoculars 2, temporals 2 + 3. Length of male 998 mm., tail (325 mm.) comprising .33 of the total; female 1130 mm. over all, tail (360 mm.) comprising .32 of the total. Mam-

malian hair was found in the lower part of the digestive tract of the male.

Rhamphiophis rubropunctatus (Fischer)

Dipsina rubropunctatus FISCHER, 1884, Jahr. Hamburg. Wiss., Anst. I, p. 7, Pl. I, fig. 3.

Rhamphiophis rubropunctatus LOVERIDGE, 1936, Bull. Mus. Comp. Zool., LXXIX, p. 261.

A male and female, 61629-30, from Voi, and a female, 61658, from Kilibassi. Ventrals, male 239, females 215-217, anal divided, caudals male, 153, females 142-149. Supralabials 8, fourth and fifth entering orbit, infralabials 11-12. Loreal 1, oculars 1-2, temporals 2 + 3 and 2 + 4. Measurements: male 1320 mm. over all, tail 430; Voi female 945, tail 315; Kilibassi female 450, tail 135. Ratios of tail to total length vary from .33 in the male, to .34 and .30 in the females. Maxillary teeth 8, increasing in size toward the posterior and followed after a wide diastema by two enlarged grooved fangs. The maxilla of *rostratus* has been compared with that of *rubropunctatus*, and whereas the two agree in having the same number of teeth, that of *rostratus* lacks the wide diastema separating the teeth from the fangs. Furthermore, the maxilla of *rostratus* is comparatively shorter, with smaller anterior teeth but with relatively larger fangs.

Naja nigricollis pallida Boulenger

Naja nigricollis var. *pallida* BOULENGER, 1896, Cat. Snakes Brit. Mus., III, p. 379; 1898, Ann. Mus. Civ. Stor. Nat. Genova, (2) XVII, p. 721.

Naja nigricollis nigricollis LOVERIDGE (*non* REINHARDT), 1936, Bull. Mus. Comp. Zool., LXXIX, p. 273.

A female, 61628, from Voi. Dorsal scale rows 29-25-19, anal entire, caudals 65. Supralabials 6, the third entering the orbit, infralabials 8. Oculars 2-3, temporals 2 + 5. Unicolored reddish brown above, paler below, except for a broad black ring on the neck from the eighth to the seventeenth ventrals, which extends onto the dorsum.

REMARKS.—Although this subspecies seems not to be currently recognized, it represents one of the more distinct races of *N. nigricollis*. The coloration alone serves to distinguish it, and although field notes

indicate that it is red in life, preserved specimens usually become light brown. Loveridge (*supra cit.*) speaks of a specimen from Kibwezi, Kenya Colony, as "the rare red variety," adding that the first mention of the form in the literature seems to be that of Patterson in "The Maneaters of Tsavo" (1907, p. 164). A specimen in the American Museum (51820) taken by Dr. James P. Chapin at Tsavo, Kenya Colony, was described in life as "dull red," but in preservative was pale brown.

Recently I (1940, Bull. Amer. Mus. Nat. Hist., LXXVII, p. 89) have noted that the midbody scale rows in a series of twelve *N. n. nigricollis* from Angola vary from 19 to 21 with 19 to 23 rows on the neck, whereas cobras from east Africa usually have from 21 to 25 scale rows at midbody. A survey of the literature discloses the fact that specimens referred to *pallida* have from 21 to 27 scale rows at midbody and from 25 to 31 on the neck. At least fifteen cobras referable to *pallida* have been recorded, if the specimen from Kibwezi mentioned by Loveridge is included, and ventral counts listed for six specimens indicate a variation of 196 to 230, averaging 214, whereas Angolan *nigricollis* average 186.7 for males and 196.3 for females, with an extreme variation for both sexes

of 176-197. Since scale counts for specimens from the east coast of Africa, south of Kenya Colony, fall closer to the Angolan specimens there is some reason to suspect the existence of a significant statistical difference in the ventral counts for *pallida* were adequate series available.

Boulenger (*loc. cit.*) provides a brief diagnosis and description, listing two specimens from "Inland of Berbera," British Somaliland, and from "Lake Rudolph" (the latter specimen may have come from either Ethiopia or Kenya Colony). It would seem preferable to designate the Somaliland specimen as the type and accordingly restrict the type locality. The race appears to be confined to extreme east Africa, including British and Italian Somalilands, eastern Ethiopia, northern Kenya Colony and possibly northern Uganda. Using scale count data supplied by Pitman (1938, "A Guide to the Snakes of Uganda," p. 216) it may be seen that Uganda specimens have a moderately high ventral count (average, 209.4 for fifteen specimens listed by Pitman), but only one out of six specimens has more than 23 scale rows on the neck. Unfortunately, Pitman gives no information concerning the coloration of Uganda specimens.

