A REVIEW OF GEOGRAPHICAL VARIATION IN GERRHOSAURUS MAJOR DUMÉRIL (SAURIA : CORDYLIDAE)

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ABSTRACT

Examination of most of the available material of Gerrhosaurus major indicates that only two geographical races should be recognised, the typical form (with grandis Boulenger as a synonym) in eastern Africa and G.m. bottegoi Del Prato (with zechi Tornier as a synonym) ranging from northern Somalia west to Ghana.

In the last revision of the genus, Loveridge (1942) recognised four races, but did not realise that the name bottegoi was applicable to the dark form which he called zechi. The range of variation in the typical form includes all the material that Loveridge assigned to bottegoi and grandis.

INTRODUCTION

When the genus Gerrhosaurus was last reviewed by Loveridge (1942) most of the available material of G. major was from East Africa, and he assigned it to three races based on colour pattern, using the following key:

7. Head above, buff, each scale spotted with black... 8

8. A bove head, body and tail almost black, each scale with a small buff spot or streak arranged to form interrupted lines on back and sides; belly streaked with dusky; range Belgian Congo and Togo

9. Head above, uniform buff or fulvous brown... 

8. Above head, body and tail almost black, each scale with a small buff spot or streak arranged to form interrupted lines on back and sides; belly streaked with dusky; range Belgian Congo and Togo

Above, head and body buff, each scale (except those forming an ill-defined, buff, dorsolateral line) heavily streaked with black or dark brown in regular lines on back and sides with a tendency to
coalesce posteriorly and on tail where the buff survives only as spots; belly streaked with dusky; range: Central Tanganyika north through Kenya to Ethiopia and Eritrea............. m. bottegoi

9. Above, head only buff through back anteriorly largely so, while posteriorly, as also on sides and tail, many scales are streaked with black or dark brown among which large buff blotches or spots are prominent; belly usually streaked with dusky; range Zululand and Transvaal north to Morogoro, Tanganyika Territory........ m. grandis

Above, head and body uniform buff or fulvous brown; belly uniform yellowish; range Northern Rhodesia (?) and Mozambique north to Zanzibar along eastern Tanganyika Territory and eastern Kenya Colony...................... m. major

Later in 1942, H. W. Parker published his monograph on the lizards of British Somaliland and independently reviewed the geographical races of Gerrhosaurus major. He regarded zechi as a synonym of bottegoi and, after examining the 'rather scanty' material in the British Museum, recognised three races as follows:

I. Uniform brownish above, or with only irregular dark markings; tail with alternating darker and lighter annuli. This form is confined to Kenya Colony. Zanzibar and northeastern Tanganyika Territory and is the typical form. G. major Duméril

II. Black above, with longitudinal series of yellow spots between the dorsal scales; a more or less distinct yellow dorsolateral stripe; flanks brown with longitudinal light flecks forming regular series. Head black above with small yellow spots. This is a northern Sudanese subspecies, ranging from the Gold Coast to Eritrea and Somaliland. It enters the savannahs of the Congo around Garamba (Schmidt, 1919), Uganda (Kaywge and Kaiso) and probably northeastern Kenya (?) (USNM 42216 recorded by Loveridge, 1929, p.66). In British Somaliland it appears to be confined to the mountains from the Boroma district as far east as the Golis Range: G. major bottegoi del Prato.

III. Similar in colour posteriorly to the preceding, but anteriorly the light markings are more extensive, obliterating the darker colour and the whole of the upper surface of the head is pale brown, uniform or with small black or chocolate-brown spots. This race occurs in Zululand, Transvaal, Mozambique and Tanganyika Territory and should apparently be known as G. major grandis Boulé.

Loveridge (1942, 1953) regarded the uniform buff or tawny typical form (Fig. 1, above) as an 'East African coastal form' replaced by the black streaked grandis inland, but even one of the Zanzibar syntypes of major (MHN 6539) has black infuscations in the mid-dorsal region, increasing posteriorly. I have examined 27 of the Tanzanian specimens from Mangasini (= Kwa Mtoro) and Dodoma which Loveridge identified initially (1933) as zechi and subsequently (1942) as bottegoi, because of the black markings on head and body. These vary in extent from 5 to 50 per cent on the head, from 10 to 50 per cent on the body anteriorly and from 50 to 90 per cent posteriorly.

The lizards from Zimbabwe show almost the full range of colour patterns found in Tanzania. The most extensive dark markings are found in juveniles. UM 17904 from Tanganda Bridge, with a snout-vent length of 78mm, has symmetrical black head markings, most extensive on the frontal, frontoparietals and parietals. UM 18705, a 100mm SVL juvenile from Maheny, and UM 27553, a 128mm SVL subadult from Mutare, also show these markings in a reduced form. Most adult specimens have no dark head markings, but the body is more or less streaked with black, increasing posteriorly, there is much variation within a population. The only specimens with no dark markings on the body are two from Kapami in Hwange District (the most westerly locality), one from Triangle and one from Maheny, where most adults are heavily streaked with black. Most Mozambique

MATERIALS AND METHODS

The Natural History Museum of Zimbabwe has a series of 60 specimens of G. m. major from Zimbabwe, Mozambique and Zambia. During a three month tour of museums in the United States in 1985, I took the opportunity to examine additional material of G. major and I was also able to check the specimens in the British Museum (Nat. Hist.) during a brief stopover on my way back to Zimbabwe. Subsequently I was supplied with data for an additional 115 specimens of G. major by several other museums in Europe, the United States and South Africa.

As no geographical variation in morphological characters has been detected in G. major, this study was restricted to colour pattern.

The following acronyms were used to indicate the institutions holding G. major material for each listed locality: AMNH = American Museum of Natural History, New York; BM = British Museum (Natural History), London; CAS = California Academy of Sciences, San Francisco; CM = Carnegie Museum, Pittsburgh; FMNH = Field Museum of Natural History, Chicago; JPT = J.P. Tello Collection, Maputo, Mozambique; MCZ = Museum of Comparative Zoology, Harvard; MHN = Museo National d'Histoire Naturelle, Paris; MZUF = Museo Zoológico de 'La Specola', Florence; NMZB (+ UM) = Natural History Museum of Zimbabwe, Bulawayo; TM = Transvaal Museum, Pretoria.

RESULTS

Loveridge (1942, 1953) regarded the uniform buff or tawny typical form (Fig. 1, above) as an 'East African coastal form' replaced by the black streaked grandis inland, but even one of the Zanzibar syntypes of major (MHN 6539) has black infuscations in the mid-dorsal region, increasing posteriorly. I have examined 27 of the Tanzanian specimens from Mangasini (= Kwa Mtoro) and Dodoma which Loveridge identified initially (1933) as zechi and subsequently (1942) as bottegoi, because of the black markings on head and body. These vary in extent from 5 to 50 per cent on the head, from 10 to 50 per cent on the body anteriorly and from 50 to 90 per cent posteriorly.

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lizards have black streaks on the body at least posteriorly (including MCZ 50997 from Tete, identified as G. m. major by Loveridge, 1953), the only uniform buff specimen is UMMZ 61418 from Lumbo. Specimens from Zululand (Pooley, 1965, pl. 5) and the Transvaal (Pienaar, 1978, pl. 37, 37A) are usually heavily streaked with black on the body.

At the northern end of its range, specimens of G. m. major from southern Somalia vary from having the dorsum heavily streaked with black to completely devoid of dark markings (photos supplied by B. Lanza).

G. major bottegoi does not show appreciable geographical variation in colour pattern. The head is about 70 per cent and the dorsum 80 per cent dark brown or black with symmetrical yellow spots on the dorsal head shields, lines of yellow spots on the back and usually a continuous yellow dorsolateral stripe; the flanks and ventrum are usually light brown, sometimes with yellow streaks (Fig. 1, below), Dunger (1967) reports that males from Jos, Nigeria, have a distinctive slate-blue chin and throat.

GERRHOSAURUS MAJOR BOTTEGOI Del Prato

Gerrhosaurus major var. zechi Tornier, 1901, Arch. Naturgeskh., 67: 74, fig. 1. Type locality: Kete Kratje, Togo (= Ghana).

Gerrhosaurus zechi Schmidt, 1919: 509, fig. 21, pl. xx, fig. 2.

Gerrhosaurus major Loveridge, 1929: 66 (part, Kenya); Böhme, 1975: 36.

Gerrhosaurus major bottegoi Loveridge, 1942: 498 (part); Parker, 1942: 77; Wermuth 1968: 12 (part); Lanza, 1983: 214 (part).


Habitat. Rock outcrops (Dunger, 1967; Böhme, 1975) and open savanna, where they live in burrows (Schmidt, 1919).

Distribution. Northern Ethiopia, northwestern Somalia and western Kenya west to Ghana (Fig. 2).


GERRHOSAURUS MAJOR MAJOR Duméril


Gerrhosaurus major zechi (not Tornier) Loveridge, 1933: 311 and 1936: 64.

Habitat. Savannas, usually living in rock crevices or old termitaria.

Distribution. Southern Ethiopia and southern Somalia south to Zululand, reaching its western limits in the Hwange District of Zimbabwe (Fig. 2).

Recorded localities. ETHIOPIA: Bisan River (FMNH). SOMALIA: Afgoi (MZUF), Alessandra Island (MZUF), Baidoa (Lanza-photo); Belad (MZUF), Dinsor (MZUF); Gishar (= Villaggio Duca degli Abruzzi; Scortecci 1931); Mareri (CAS). KENYA: Ihanga Hills (MCZ); Ithumba (BM), Kilifi (BM), Laisamis (CAS), Lukenya Hills (USNM), Maji ya Chumvi (MCZ, USNM), Mariakani (NMZB), Mazeras (USNM), Merelle River (USNM), Mt. Mbololo (MCZ), Mt. Sagalla (MCZ, USNM), Murri (BM), Sokoke Forest (Loveridge, 1936b), Taita (Peters, 1878), Takaungu (BM), Tiwi (FMNH), Voi (MCZ, FMNH), Yatta Plain (BM). TANZANIA: Dodoma (MCZ), Kasanga (Witte, 1952), Kilosa (Loveridge, 1923), Kilwa (MCZ), Kwa Mtwor = Mangasini (MCZ, UMMZ), Liwale (MCZ), Luguo & Mkindo River (Loveridge, 1923), Morogoro (AMNH, BM, UMMZ), Mount Kirui (Loveridge, 1923), Mwanza (Loveridge, 1933), Tunduru (MCZ), Ulugu (Loveridge, 1923), Wembere (NMZB), Zanzibar (BM, MCZ). ZAMBIA: Feira District (Boulenger, 1907).
Gwembe Valley (NMZB), 30km West of Katete (NMZB). MALAWI: Lake Chilwa (TM), Libubula River (AMNH, MCZ). MOZAMBIQUE: Amatongas (BM), Caia (Cott, 1934), Jorge (NMZB), Lumbo (UMMZ), Mkurumbane, Morera and Muabsa (JPT), Muda-Lamego (NMZB), 10km SSE and 25km SE of Ressano Garcia (NMZB), Tete (MCZ, NMZB), Xiluvo (NMZB), Zinave (JPT). ZAMBIA: Bangala Ranch (NMZB), Birchenough Bridge (TM) and 30km West (NMZB), Chipoli Farm, Doddieburn Ranch, Hot Springs-Chimanimani District, Jemebbi Hill, Kapami, Lake Kariba, Mahenya, Malonga Bridge, Matowa, Mutare, Odzi, Ruenyia River Drift, Rupisi Hot Springs, Ruware, Sabi Experimental Station, Siyange, Tanganda Bridge, Triangle (NMZB). TRANSVAAL: Epsom Farm (TM), Griffin Mine and Hectorspruit (MCZ, TM), Kaapmuiden (TM), Komatipoort (CM), Klaserie (TM), Kruger National Park (Pienaar, 1966), Leydsdorp, Malelane (TM), Messina (FitzSimons, 1943), Middlex Farm (TM), Newtoning (FitzSimons, 1943), Schelm & Malwa Farms, Sekororo, Thulamila (TM), Waterpoort (FitzSimons, 1943). ZULULAND: Ndumu Game Reserve (TM), Ubombo (BM).

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REFERENCES

(Excluding most of those listed in the last revision of the genus — Loveridge, 1942.)


