

## Revision of *Babycurus* with descriptions of three new species (Scorpiones: Buthidae)

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**Abstract.** The genus *Babycurus* Karsch, 1886 is revised, with diagnostic characters and geographic distributions given for all of its species. Neotype is designated for *B. buettneri*, the type species of the genus. Lectotypes are designated for *B. johnstonii* Pocock, 1896, *B. centrurimorphus* Karsch, 1886, *B. gigas* Kraepelin, 1896, *B. neglectus* Kraepelin, 1896, *B. ornatus* Werner, 1936, and *B. wituensis* Kraepelin, 1913. *B. crassicaudatus* Roewer, 1952 is synonymized with *B. ansorgei* Hirst, 1911; *B. johnstonii* Pocock, 1896 is synonymized with *B. buettneri* Karsch, 1886; *B. johnstoni ochraceus* Masi, 1912, *B. patrizii* Borelli, 1925, and *B. crassimanus* Caporiacco, 1936 are synonymized with *B. taramassoi* Borelli, 1919, which is hereby regarded as *Babycurus wituensis taramassoi* Borelli, 1919. *B. melanicus* sp. n., *B. multisubaculeatus* sp. n., and *B. ugartei* sp. n. are described and a key to the species of the genus *Babycurus* is provided. First records are established for *B. centrurimorphus* Karsch, 1886 in Mosambique and Rwanda, *B. kirki* (Pocock, 1890) in Guinea, *B. pictus* Pocock, 1896 in Angola, and *B. wituensis taramassoi* Borelli, 1919 in Ethiopia.

**Taxonomy, description, revision, new species, new combination, checklist, key, Scorpiones, Buthidae, *Babycurus*, Africa, Arabia**

### INTRODUCTION

The genus *Babycurus* includes 16 species inhabiting Africa and Arabia (Tab. 2). Type specimens are in a number of institutions, most of which kindly provided them as well as unidentified material. This has allowed me to include all of FKCP, HNHM, MBCZ, MZUF, NHMB, NMPC, SMFD, ZMHB, and ZMUH *Babycurus* specimens.

### MATERIAL AND METHODS

The institutional abbreviations listed below and used throughout are mostly after Arnett et al. (1993); only FKCP and MBCZ are my own.

BMNH – British Museum (Natural History), London, England;  
FKCP – František Kovařík Collection, Praha, Czech Republic;  
HNHM – Hungarian Natural History Museum, Budapest, Hungary;  
MBCZ – Matt E. Braunwalder Collection, Zürich, Switzerland;  
MCSN – Museo Civico di Storia Naturale “Giacomo Doria”, Genova, Italy;  
MIZT – Museo Regionale di Scienze Naturali, Torino, Italy;  
MRAC – Musée Royal de l’Afrique centrale, Tervuren, Belgium;  
MZUF – Museo Zoologico de “La Specola”, Firenze, Italy;  
NHMB – Naturhistorisches Museum, Basel, Switzerland;  
NMPC – National Museum (Natural History), Praha, Czech Republic;  
SMFD – Forschungsinstitut und Naturmuseum Senckenberg, Frankfurt am Main, Germany;  
ZMHB – Museum für Naturkunde der Humboldt-Universität zu Berlin, Germany;  
ZMUH – Zoologisches Institut und Zoologisches Museum, Universität Hamburg, Germany.

Other abbreviations are as follows: M – male; F – female; juv. – juvenile; A – specimens preserved in alcohol; E – specimens mounted dry; im: immature; TL – type locality; ht – holotype; at – allotype; pt – paratype; lt – lectotype; plt – paralectotype; nt – neotype.

Type localities are given exactly as in the original descriptions and abbreviations are supplemented by details from labels or by current political units/divisions.

Under material, the country is followed by all information given on the locality label.

Unfortunately, some labels are difficult to read, which may have caused a few inaccuracies in their transcription.

Certain label data have proven altogether undecipherable.

All specimen numbers are given for the sake of completeness.

The term “proximal flexure” or “flexed” in reference to the male pedipalp fingers is hereby used instead of the more usual terms “recess and hump”, “notch and lobe” or “scalloping”.

The number of rows of granules on movable and fixed fingers of pedipalps has not been counted in a standard manner. Some authors exclude the short basal row and others also the terminal row. I have counted all rows of granules, including the basal and terminal rows. For example, for *Babycurus gigas* I give 10 rows of granules (Fig. 5), whereas Kraepelin (1913: 180) gives only eight.

This study was conducted in 1996–1999. Each examined specimen bears a label in Ariel or Times New Roman font produced on a laser printer. Basic data are also penciled on the reverse of the label, as permanency of laser print in alcohol cannot be trusted. The labels contain the generic and species name; author and year of the original description; whether the specimen is the holotype, lectotype or paralectotype; whether I have designated (dsg.), determined (det.), or only revised (rev.) the specimen; and my name plus the year of the examination.

### ***Babycurus* Karsch, 1886**

(Figs 1–40, Tables 1–3)

*Babycurus* Karsch, 1886: 77; Kraepelin, 1895: 80; Kraepelin, 1895: 88 (in part); Pocock, 1899: 835; Kraepelin, 1899: 61; Kraepelin, 1905: 337; Kraepelin, 1913: 179; Werner, 1934: 272; Vachon, 1940b: 179; Moriggi, 1941: 82; Lamoral & Reynders, 1975: 496; Sissom, 1990: 101; El-Hennawy, 1992: 97, 111; Kovařík, 1998: 104.

*Buthus (Rhoptrurus)* Pocock, 1890: 122 (in part).

*Rhoptrurus* Kraepelin, 1891: 238 (in part); Kraepelin, 1895: 80 (in part); Kraepelin, 1898: 3 (in part) (syn. by Kraepelin, 1895: 88; Kraepelin, 1899: 61).

TYPE SPECIES. *Babycurus buettneri* Karsch, 1886.

DIAGNOSTIC CHARACTERS. A combination of characters differentiates this genus from all other genera of the family Buthidae. The basic trichobothrial pattern is beta (Sissom 1990: 70, fig. 3.3), the fourth legs have well developed tibial spurs, the third legs lack tibial spurs, the pedipalp femur has two external trichobothria, pectines bear fulcra (Sissom 1990: 92, fig. 3.17d), setae on tibiae and tarsi are not arranged into bristlecombs, movable fingers of pedipalps have seven to 10 cutting edges (rows of granules) (Figs 2–13), the cheliceral fixed finger has two ventral denticles, and the dorsal surface of the mesosoma is granulated and bears one more or less conspicuous median keel. Pectinal teeth number 15–28. The first segment of the metasoma has 10 keels, the second through fourth segments have eight keels, and the fifth segment has five keels. Some keels, mainly ventral, may be lacking, especially in males. The telson has a distinct subaculear tooth.

### ***Babycurus ansorgei* Hirst, 1911**

(Figs 1–3, 14–15, 36, Tables 1–3)

*Babycurus ansorgei* Hirst, 1911: 467; Vachon, 1940b: 179; Belfield, 1956: 44; Lamoral & Reynders, 1975: 496; Kovařík, 1998: 104.

*Babycurus crassicaudatus* Roewer, 1952: 28 (in part) (TL: Congo Belge, Parc Nat. Upemba, Mabwe (rive Est lac Upemba); MRAC); Lamoral & Reynders, 1975: 497; Kovařík, 1998: 104; **syn. n.**

TYPE LOCALITY AND REPOSITORY. Dondo, N. Angola; BMNH.

TYPE MATERIAL EXAMINED. **Angola:** N. Angola, Dondo, 12. VI. 1908, 1FA (holotype), purchased Dr. Ansorge, BMNH No. 1910.11.29.1. **CDR (Zaire):** Congo Belge, Parc Nat. Upemba, Kalungwe, affl. Senze et sous-affl. Lufira, alt. 800–1700 m, 20.VIII.1947, 3MA (paratypes Nos 1–3 of *B. crassicaudatus*), MRAC No. 114072; Kaswabilenga, riv. Lufira, 680 m, 7.–9.X.1947, 1MA (paratype No. 4 of *B. crassicaudatus*), MRAC No. 114068; Mabwe, river E. lac Upemba, 585 m, 6.XII.1948, 7MA (paratypes Nos 5–11 of *B. crassicaudatus*), MRAC No. 114066; Kanonga, affl. Fungwe, 675–695–860 m, 11.–21.III.1949, 1MIFA (paratypes Nos 12–13 of *B. crassicaudatus*). All paratypes of *B. crassicaudatus* leg. G. F. de Witte.

ADDITIONAL MATERIAL EXAMINED. **CDR (Zaire):** Bukama env., 16.IX.1980, 1MA1ME, leg. P. Dorsak, FKCP; 1FE, FKCP; Kiolo Manono, Upper Shaba, 7°18' S, 27°25' E, 1000 m, 25.V.1988, 1MA, leg. E. K. Kisimba, MBCZ.

**DIAGNOSTIC CHARACTERS.** Total length is 50–59 mm. In contrast to female, the male has a much wider manus of pedipalps (Figs 14–15, Tab. 1), fingers of pedipalps slightly flexed proximally, and the fifth metasomal segment much wider than the other segments (Fig. 36, Tab. 1). The carapace is nearly rectangular, slightly narrower anteriorly (see fig. 13 in Roewer 1952: 29). The movable fingers of pedipalps bear seven rows of granules (Figs 2–3), with the seventh row having one external and one (Fig. 3) or no (Fig. 2) internal granule. Only one male (MBCZ) has eight rows of granules, with the eighth row having one external and no internal granule. The fixed fingers of pedipalps bear six rows of granules, with the sixth having one external granule. For position and distribution of trichobothria on the tibia of pedipalps see Figs 14–15. Pectinal teeth number 17–20. The ventral surface of the seventh mesosomal segment is entirely smooth, without keels (male), or with up to four sometimes vague keels composed of widely spaced granules (female).

The metasomal keels are indistinct and rarely may be absent on the fifth segment. On the first two segments they are composed of very fine, widely spaced granules; on the remaining segments they are smooth. In males there are only smooth keels on the first two segments.

The entire animal is spotted with yellow to yellowish brown and blackish brown. The manus of pedipalps is yellow and the fingers are dark. The chelicerae are distally reticulated and proximally yellow without reticulation.

**COMMENTS.** This species was based on a female collected by Dr. W. J. Ansorge at Dondo. Hirst (1911: 467) distinguished it from *B. centrurimorphus* on different coloration.

*B. crassicaudatus* was based on 54 specimens from which Roewer selected the holotype. I examined 14 paratypes and numbered them 1–14. The fourteenth paratype, from Mabwe, was a female of *Hottentotta trilineata* (Peters, 1862). The chief character that Roewer used in describing of *B. crassicaudatus* was for *Babycurus* quite unusually widened fifth metasomal segment in the male (Fig. 36). However, *B. ansorgei* was based on a female, and it has therefore become necessary to compare females of the two species. The comparison causes me to conclude that *B. crassicaudatus* is a synonym of *B. ansorgei*.

**DISTRIBUTION.** Angola (Hirst 1911: 467), CDR (Zaire) (Roewer 1952: 31).

### *Babycurus buettneri* Karsch, 1886

(Figs 4, 16, Tables 1–3)

*Babycurus buettneri* Karsch, 1886: 78; Kraepelin, 1895: 89; Pocock, 1896: 430; Pocock, 1899: 835; Simon, 1903: 123; Borelli, 1911: 13; Kraepelin, 1913: 180; Strand, 1916: 140; Werner, 1916: 86; Lampe, 1918: 195; Werner, 1934: 272; Werner, 1936: 181; Vachon, 1940a: 254; Vachon, 1940b: 177; Roewer, 1943: 216; Belfield, 1956: 44; Probst, 1972: 74.

*Babycurus buettneri*: Lamoral & Reynders, 1975: 496 (in part); Vachon, 1979: 222; Lourenço, 1986: 200; Warburg & Polis, 1990: 229; Kovarik, 1998: 104.

*Buthus (Rhoptrurus) buettneri*: Pocock, 1890: 122; Kraepelin, 1901: 268.

*Rhoptrurus buettneri*: Pocock, 1890: 138; Lönnberg, 1897: 183; Kraepelin, 1898: 3.

*Babycurus buettneri*: Werner, 1902: 599; Moritz & Fischer, 1980: 311.

Table 1. Measurements (in millimeters) of *Babycirus* Karsch species. Line denoted "pectinal teeth" contains numbers of teeth on both sides separated by a colon. Explanatory notes: PT = numbers of teeth on both sides separated by a colon; T = total; I = first metasomal segment; tel. = telson; ma. = manus; fin. = movable finger; L = length; W = width; patella width does not include thorns on internal surface

	total carapace metasoma						pedipalp						PT			
	L	L	W	L	L	T	I	II	III	IV	V	tel.	patella	tibia	ma.	fin.
<i>B. ansorgei</i>																
M, PT No. 1	59.0	5.6	5.3	35.4	4.3	3.0	5.3	3.0	5.9	3.0	6.4	3.1	6.9	5.0	5.3	4.9
M, PT No. 1	59.0	5.6	5.3	35.4	4.3	3.0	5.3	3.0	5.9	3.0	6.4	3.1	6.9	5.0	5.3	4.9
F, HT, BMNH	56.0	5.9	5.9	29.5	3.6	3.2	4.2	3.1	4.5	3.1	5.2	3.4	6.5	3.3	5.5	5.0
F, PT No. 13	50.6	4.8	5.0	27.4	3.0	2.7	4.0	2.5	4.2	2.5	4.8	2.5	5.8	2.6	4.9	4.4
<i>B. buettneri</i>																
M, NT, ZMUH	63.0	6.3	6.3	36.6	4.1	3.7	5.2	3.7	5.8	3.7	6.4	3.7	7.9	3.7	6.5	6.0
F, LT <i>B. johnstonii</i> , BMNH	65.0	6.9	7.0	35.0	4.0	3.9	5.1	3.6	5.6	3.6	6.2	3.4	7.5	3.3	6.2	6.3
F, ZMHB (No. 8168)	64.4	6.8	6.9	33.3	3.7	3.7	4.9	3.4	5.4	3.4	5.7	3.3	7.2	3.1	6.4	6.2
<i>B. centrurimorphus</i>																
M, ZMHB (No. 7440)	58.3	6.0	6.0	34.1	4.1	3.3	4.9	3.2	5.1	3.3	5.6	3.4	7.6	3.1	6.0	7.4
F, LT, ZMHB	64.2	6.8	7.1	36.1	3.9	3.7	5.1	3.7	5.3	3.5	6.1	3.5	8.1	3.4	7.0	6.3
<i>B. exquiritus</i>																
M, HT, NHMB	33.5	3.7	3.6	20.2	2.5	2.0	3.0	1.8	3.1	1.7	3.7	1.7	4.2	1.7	3.7	3.7
F, PT No. 1, NHMB	39.0	4.4	4.2	21.5	2.7	2.2	3.2	2.0	3.4	1.8	3.9	1.8	4.6	1.7	3.7	4.2
<i>B. gigas</i>																
M, ZMHB (No. 8176)	110.0	10.2	10.1	63.0	7.3	5.5	8.8	5.2	9.9	5.3	10.7	5.3	12.9	5.5	11.0	9.9
M, FKCP	93.0	10.1	9.7	57.9	7.2	5.1	8.6	5.1	9.3	5.1	9.8	5.1	12.0	5.1	10.2	9.3
F, LT, ZMHB	89.3	9.9	10.8	52.8	6.8	5.2	7.8	4.8	7.9	4.5	8.3	4.5	11.1	4.2	10.2	9.0
<i>B. jacksoni</i>																
M, FKCP	68.9	7.5	8.3	41.5	4.8	4.7	6.0	5.1	6.5	5.2	7.2	5.2	8.5	4.6	7.2	7.1
F, HT, BMNH	74.0	7.9	8.5	39.0	4.7	5.0	5.5	5.2	6.1	5.2	7.0	5.0	8.1	4.5	7.0	6.5
F, FKCP	87.1	9.0	9.1	46.6	5.7	5.2	6.8	5.2	7.3	5.2	8.4	4.9	9.9	4.6	8.3	8.0
<i>B. kirki</i>																
M, HT, BMNH	65.0	7.1	7.0	38.0	4.7	4.1	5.6	4.2	6.0	4.2	7.0	4.4	8.0	4.6	6.7	6.6
M, FKCP	65.6	6.5	6.0	35.6	4.1	3.6	5.2	3.6	5.8	3.7	6.3	4.0	7.5	4.0	6.2	6.1
F, LT <i>B. neglectus</i> , ZMUH	60.6	6.5	6.3	33.6	3.5	3.9	4.7	3.7	5.0	3.8	5.9	3.9	7.5	3.9	5.9	5.6

<i>B. melanicus</i> sp. n. F, HT, FKCP	64.8	6.8	7.2	38.0	4.6	3.8	5.7	3.7	6.2	3.7	6.7	3.7	7.9	3.6	6.5	6.3	1.9	7.4	2.5	12.2	2.4	7.8	20:20
<i>B. multisubaculeatus</i> sp. n. M, PT, FKCP	47.4	5.4	5.4	26.2	3.1	3.8	3.8	4.2	4.2	4.4	4.5	4.7	5.7	4.0	3.5	4.0	1.5	5.3	1.8	—	2.7	—	20:20
F, HT, FKCP	41.1	4.9	4.9	24.3	3.1	3.2	3.5	3.5	4.0	3.5	4.4	3.7	5.0	3.3	4.0	3.9	1.2	5.4	1.6	8.4	1.9	5.5	19:19
<i>B. ornatus</i> F, LT, ZMUH	38.0	4.2	4.2	20.6	2.0	2.4	2.4	2.3	2.8	2.3	3.8	2.2	5.0	2.1	4.5	3.5	1.0	4.2	1.5	6.0	1.2	4.3	16:17
<i>B. pictus</i> M (from Angola), ZMUH	56.7	6.2	6.2	32.9	3.7	3.3	4.5	3.2	4.7	3.3	5.6	3.5	7.4	3.5	6.0	4.9	1.7	6.4	2.3	10.5	2.8	6.3	20:20
M, FKCP	45.2	5.3	5.3	28.4	3.2	2.9	4.0	2.8	4.4	2.8	5.0	3.1	6.2	2.8	5.0	4.8	1.5	5.7	1.9	9.9	2.8	5.4	19:19
F, HT, BMNH	51.0	5.5	5.5	28.0	3.2	2.9	3.9	2.7	4.2	2.8	4.6	2.9	6.0	2.7	4.9	4.6	1.6	5.5	2.2	9.0	2.3	5.0	19:19
<i>B. somalicus</i> F, HT, BMNH	48.2	5.2	4.8	26.2	3.2	2.7	3.8	2.6	4.0	2.5	4.6	2.5	5.6	2.4	5.0	4.5	1.5	5.4	1.9	8.8	1.9	5.9	19:20
<i>B. subpunctatus</i> F, HT, MCSN	32.1	3.4	3.2	18.4	2.2	1.8	2.6	1.6	2.9	1.6	3.2	1.5	4.0	1.5	3.2	3.0	1.0	3.9	1.3	6.1	1.3	3.9	16:16
<i>B. ugartei</i> sp. n. F, HT, FKCP	27.4	3.0	2.7	15.3	1.7	1.7	2.0	1.5	2.1	1.5	2.5	1.5	3.5	1.4	3.0	2.0	0.8	3.2	0.9	4.4	0.9	2.8	15:16
<i>B. wituensis wituensis</i> M, ZMHB	56.1	6.1	6.1	31.2	3.5	3.5	4.3	3.7	4.8	4.1	5.7	4.5	6.3	4.4	6.0	5.1	1.7	6.3	2.4	11.2	3.8	6.4	21:22
M, PLT No. 1, ZMUH	48.0	5.2	5.0	26.1	3.0	3.1	3.6	3.2	4.1	3.6	4.7	3.8	5.5	3.8	4.8	4.6	1.4	5.3	2.0	8.9	2.7	5.7	21:?
F, LT, ZMHB	45.1	4.7	4.7	23.7	2.7	2.7	3.2	2.8	3.5	2.8	4.1	2.7	4.9	2.5	4.7	3.9	1.3	4.6	1.7	8.0	1.7	5.4	21:?
<i>B. wituensis taramassoi</i> M, HT <i>B. crassimanus</i> , MCSN	—	7.5	6.8	—	4.1	4.4	5.4	4.7	6.1	5.3	6.6	6.0	—	—	—	6.1	1.9	7.7	2.9	12.7	4.5	7.4	25:26
M, FKCP	56.4	6.1	6.2	32.6	3.6	3.5	4.4	3.8	4.7	4.1	5.7	4.3	6.8	4.3	6.1	5.5	1.9	6.5	2.5	11.0	3.8	6.2	26:28
F(im.), HT <i>B. patrizii</i> , MCSN	57.5	6.1	6.2	30	3.5	3.5	4.3	3.5	4.7	3.5	5.3	3.6	6.4	3.5	5.8	4.9	1.6	5.9	2.2	9.5	2.2	5.7	24:25
F, FKCP	73.2	8.0	8.1	40.7	4.6	4.7	5.6	5.0	5.8	5.2	6.9	5.4	8.5	5.3	7.4	6.4	2.2	7.9	3.0	12.6	3.0	8.1	21:21
<i>B. zambonellii</i> M, HT, MIZT	51.2	5.7	5.2	29.2	3.4	3.0	4.4	2.9	4.6	2.8	5.2	2.8	6.0	2.7	5.1	4.9	1.5	5.7	2.6	9.2	2.1	—	18:19
F, MZUF	48.6	4.7	4.4	24.8	3.0	2.2	3.6	2.0	4.0	1.9	4.6	1.9	5.5	1.8	4.7	4.6	1.1	5.5	1.5	8.9	1.8	5.7	19:19

*Babycurus johnstonii* Pocock, 1896: 429; Kraepelin, 1899: 63; Lamoral & Reynders, 1975: 498; El-Hennawy, 1992: 97, 111; Kovařík, 1998: 104; **syn. n.**  
*Babycurus johnstoni*: Kraepelin, 1913: 181; Borelli, 1925: 323; Vachon, 1940b: 177; Belfield, 1956: 44; Strinati, 1960: 536.  
*Babycurus (Rhoptrurus) johnstoni*: Kraepelin, 1901: 268.  
*Babycurus neglectus*: Kovařík, 1992: 182.  
*Tityus bahiensis*: Kovařík, 1992: 184 (in part).

TYPE LOCALITY AND REPOSITORY. Gabon (West-Afrika); ZMUH.

TYPE MATERIAL EXAMINED. **Cameroon**: Rio del Rey, 1FA (lectotype of *Babycurus johnstonii*), leg. H. H. Johnston, BMNH No. 1890.3.18.1–2. **Gabon**: West-Afrika, 1884, 1MA (neotype), det. Kraepelin 1900 as *Babycurus büttneri*, ZMUH.

ADDITIONAL MATERIAL EXAMINED. **Cameroon**: Ripinali, 1F, leg. V. Zenker, No. 1851/07, ZMHB; 1MA, leg. Kartensen, ZMHB No. 7310; Kribi, 2MA, ZMHB No. 7439; Faktorci Samakito, Ogowe Afrika, 2FA, leg. Max Schmidt, ZMHB No. 7575; 27.V.1893, 1F1juv.A, leg. A. Dannenberg, ZMUH; Joh. Albrechtshohe, VIII.1897, 1F2juvsA, leg. Conradt, ZMHB No. 8167; Joh. Albrechtshohe, 1897/1898, 3MA, leg. Conradt, ZMHB No. 8169; Joh. Albrechtshohe, 10.V.–1.VIII.1898, 1juv.A, leg. Conradt, ZMHB No. 8170; Joh. Albrechtshohe, 3.–19.VIII.1898, 3F1juv.A, leg. Conradt, ZMHB No. 8166; Mundame a. Mungo, 2FA, leg. Konran, ZMHB No. 8168; Victoria, IX.1898, 1MA, leg. Preuss, ZMHB No. 8171; Pipindi, 28.VIII.1900, 1FA, leg. Zenker, ZMHB No. 8172; Pipindi, 2M1FA, leg. Zenker, ZMHB Nos 8174 and 10169; Jande, 1FA, leg. Zenker, ZMHB No. 8173; Zapona, 1MA, leg. Schäfer, ZMHB No. 10165; Duala Jossplatte, VI. 1903, 1FA, leg. Ziemann, ZMHB No. 10167; Mukonja Farm, Mungo Fl., 1.VII.1906, 3M5F4juvsA, ZMUH; Kribi, S. Kamerun, X. 1907, 1MA, leg. Thesing, ZMHB No. 10166; Edga, 4.XII.1907, 1FA, ZMHB No. 10168; Kribi, 11.VII.1914, 3FA, leg. E. Zenker, ZMUH; Douala, 1929, 1FE, leg. David, NMPC; Mukonje, 1931, leg. R. Heinrich, 2FA, det. Werner 1936 as *Babycurus büttneri*, ZMUH; Victoria Duala Edga, 2FA, leg. Guillemain, ZMHB No. 10170; Douala, 2F1ME, leg. David, det. 1992, FKCP; Ouest 1ME III.1994, FKCP. **Congo**: Mungo, 7.I.1893, 1FA, leg. L. Hacndl, ZMUH. **Gabun**: 1884, 1FA, mus. Paris, det. Kraepelin 1900 as *Babycurus büttneri*, ZMUH; 4juvsA, leg. Soyaux, det. Woermann 1900 as *Babycurus büttneri*, No. 4179 6516, ZMUH; 1FE, NMPC. ?, Ogowe, 20.II.1892, 1FA, leg. A. Schmidt, ZMUH; 15.VII.1915, 2MA, ZMUH; Ogowe, 1FA, SMFD No. 6695/102, det. 1932 as *Babycurus büttneri*.

DIAGNOSTIC CHARACTERS. Total length is 55–68 mm. In contrast to female, the male has a wider manus of pedipalps (Tab. 1). The movable fingers of pedipalps have nine rows of granules (Fig. 4), with the eighth and ninth rows merged into one uninterrupted row bearing two external granules (one female, ZMHB No. 10169, has on one pedipalp only one external granule) and one internal granule (Fig. 4). The fixed fingers of pedipalps have seven rows of granules, with the seventh row bearing two or one (lectotype of *B. johnstonii*) external granules and one or no internal granule. For position and distribution of trichobothria on the tibia of pedipalps see Fig. 16. Pectinal teeth number 17–21. The ventral surface of the seventh mesosomal segment bears four keels. Metasomal keels of both sexes are well defined and composed of distinct granules. For habitus see plate 3, fig. 1 of Karsch (1886).

The base color is reddish brown to dark brown. Fingers and patella of pedipalps, and usually the last two or three metasomal segments, are dark brown to black. The femur and manus of pedipalps are brownish red, and the legs are usually brownish red but may also be lighter and reach tones of yellow.

COMMENTS. The status of this species has been in doubt because the whereabouts of its holotype are unknown. It ought to be deposited at ZMHB, however in 1982 Vachon borrowed it and in turn apparently lent it to someone else. My attempts to locate the holotype have been unsuccessful.

*B. kirki* has been synonymized by Kraepelin (1899: 62), and *B. centrurimorphus* by Kraepelin (1891: 243) and Lamoral & Reynders (1975: 497), with this species. In German museums (SMFD, ZMHB and ZMUH) nearly all specimens labeled as *B. büttneri* agree with the lectotype of *B. johnstonii*, and several other specimens belong to *B. kirki*. Most specimens of *B. kirki* in German museums were identified as *B. neglectus*.

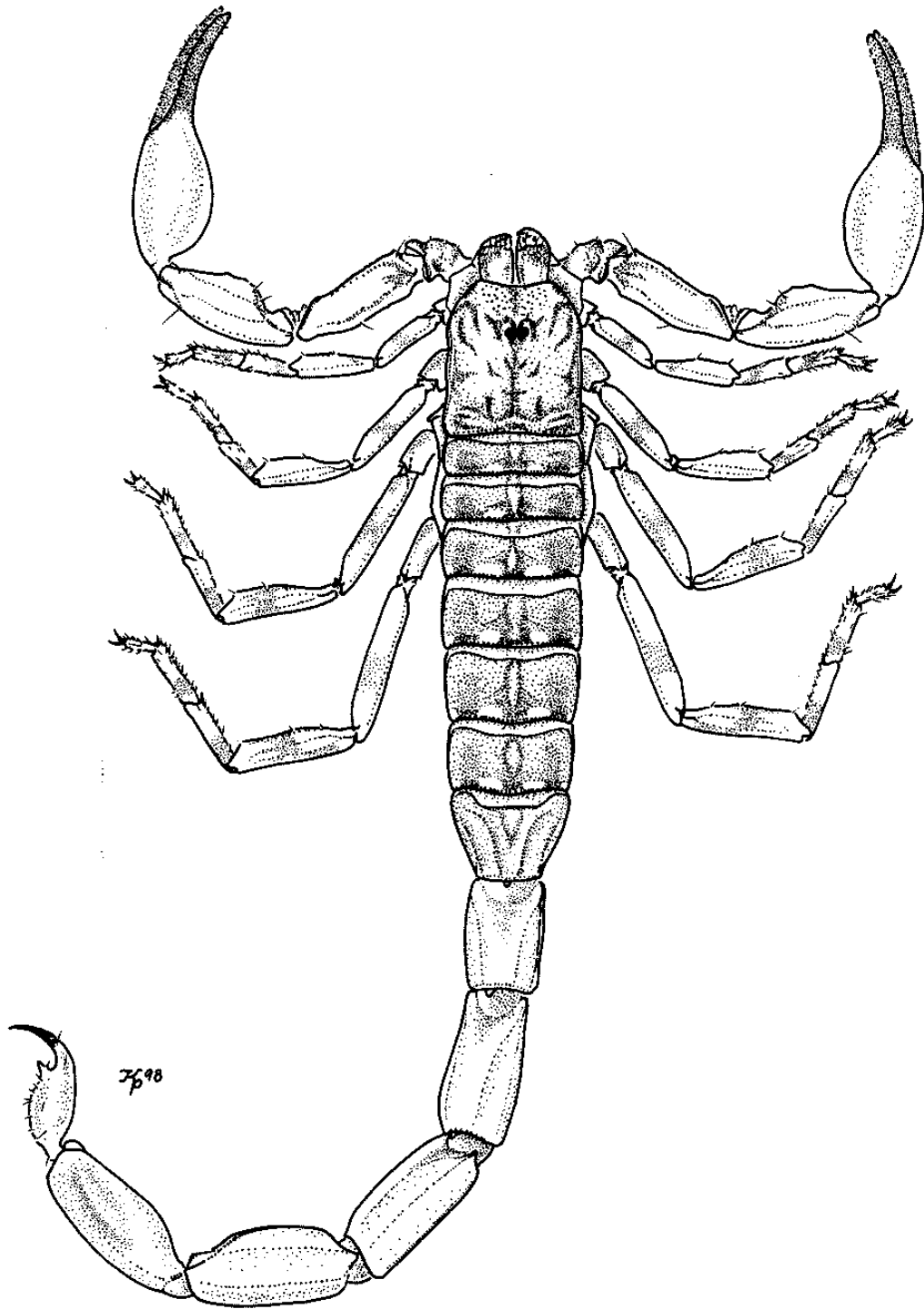


Fig. 1. *Babycurus ansorgei* Hirst, FKCP male, dorsal aspect.

Since *B. centrurimorphus*, *B. johnstonii*, and *B. kirki* (= *B. neglectus*) are different species whose types I have examined, and since I have not found in all the museum materials any specimen labeled as *B. buettneri*, which could not be placed in one of the above three species anyway, I am convinced that one of these species really is a synonym of *B. buettneri*. Existence of the type of *B. buettneri* thus becomes very important, especially since this is also the type species of the genus *Babycurus*. To resolve the mutual position and validity of the above species and to stabilize the generic name *Babycurus*, it is necessary to designate a neotype of *B. buettneri*. Since the holotype of *B. buettneri* was in ZMHB, it can be assumed that Kraepelin had examined it. Therefore, I decided to designate as the neotype of *B. buettneri* an adult male which Kraepelin identified as *B. büttneri* and which is from the same locality as the holotype. Specimens that agree with the lectotype of *B. johnstonii* were commonly identified as *B. buettneri* by other German arachnologists, such as Werner and Roewer (unfortunately, there are no specimens identified by Karsch, who described *B. buettneri*), which is evidenced by examined specimens, as well as by published keys. Since I decided to designate a neotype only after seeing all the specimens identified as *B. buettneri*, my identification labels bear the name *B. johnstonii*.

*Babycurus johnstonii* is based on two females collected by H. H. Johnston at Rio del Rey (Cameroon), one of which I have examined and designated as the lectotype.

DISTRIBUTION. Cameroon (Pocock 1896: 430), Congo (Kraepelin 1901: 268; Strinati 1960: 536), Gabon (Karsch 1886: 78), Guinea (Simon 1903: 123).

### ***Babycurus centrurimorphus* Karsch, 1886**

(Figs 17, 33–34, Tables 1–3)

*Babycurus centrurimorphus* Karsch, 1886: 78; Kraepelin, 1895: 89; Kraepelin, 1896: 124 in part; Kraepelin, 1899: 63 in part; Kraepelin, 1913: 182; Birula, 1915: 16; Birula, 1915: 119 in part; Birula, 1916: 51 in part; Fage, 1929: 72; Werner, 1936: 181; Vachon, 1940b: 177; Roewer, 1952: 28; Geeraerts, 1953: 1066; Probst, 1973: 325; Vachon, 1979: 222; Moritz & Fischer, 1980: 312; Warburg & Polis, 1990: 234; Kovařík, 1998: 104.

*Buthus (Rhoptrurus) centrurimorphus*: Pocock, 1890: 122.

*Babycurus (Rhoptrurus) centrurimorphus*: Kraepelin, 1901: 268.

? *Rhoptrurus büttneri*: Kraepelin, 1891: 243.

*Babycurus buttneri* (in part): Lamoral & Reynders, 1975: 496–7.

TYPE LOCALITY AND REPOSITORY. N W Madagascar; ZMHB.

TYPE MATERIAL EXAMINED. N. W. Madagascar, 5FA (lectotype and paralectotypes Nos 1–4), leg. J. M. Hildebrandt, ZMHB No. 4307, rev. M. Vachon, 1979 No. 2446.

ADDITIONAL MATERIAL EXAMINED. **Kenya**: Brit. O. Afr., Eldamo River, SW Baringo Sea, XI.1907, 7F1juv.A, leg. Grote, ZMHB No. 10183. **Mosambique**: Tete, IV.1980, 1juv.A1juv.E, FKCP. **Rwanda**: near Rusumo waterfalls in Akagera National Park, 1000 m, V.1994, 2FA, leg. H. Hinckel, MBCZ No. 750. **Tanzania**: Kawende, 1FA, leg. P. Reinhardt, ZMHB No. 7577; Tanganyika Sec, 1MA, leg. Böhm, ZMHB No. 7650; San Paolo de Loanda, 1FA, leg. Gleim, ZMHB No. 8180; D. O. Afrika, Neuwied–Ukerewe, 1FA, leg. P. Conradt, ZMHB No. 10184; Loanda, 1FA, leg. Karl May, ZMHB No. 10186; Punta das Palmerinkas sudl. Loanda Surucucu, 10.VII.1900, 1FA, leg. Consul Gleim, ZMHB No. 10182; D. O. Afrika, Usambara, IX.–X.1911, 1MA, leg. Hony & Meycr, ZMHB No. 10185; Tanganyika Terr., Uvinga, 1934, 1M4FA, leg. Prescott–Lehrmann, NHMB; Lake Tanganyika, V. 1980, 1M1FE, FKCP. ? 1FA, leg. Fischer, ZMHB No. 7508.

DIAGNOSTIC CHARACTERS. Total length is 55–65 mm. In contrast to female, the male has longer and narrower femur, patella, and manus of pedipalps (Tab. 1, Figs 33 and 34), and its fingers are not flexed. The movable fingers of pedipalps bear seven rows of granules (Fig. 3). The fixed fingers bear six rows of granules and the sixth row has one external granule. For position and distribution of trichobothria on the tibia of pedipalps see Fig. 17. Pectinal teeth number 17–21. The ventral surface of the seventh mesosomal segment may be smooth, without keels (lectotype), or bear two incon-



Table 2. Geographic distribution of *Babycurus* Karsch species. Abbreviations: AN – Angola, CA – Cameroon, CD – CDR (Zaire), CO – Congo, ER – Eritrea, ET – Ethiopia, GA – Gabon, GU – Guinea, IC – Ivory Coast, KE – Kenya, MO – Mosambique, NI – Nigeria, OM – Oman, RW – Rwanda, SE – Senegal, SO – Somalia, TA – Tanzania, TO – Togo, UG – Uganda, YE – Yemen

	AN	CA	CD	CO	ER	ET	GA	GU	IC	KE	MO	NI	OM	RW	SE	SO	TA	TO	UG	YE
<i>B. ansorgei</i>	x	-	x	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
<i>B. buettneri</i>	-	x	-	x	-	-	x	x	-	-	-	-	-	-	-	-	-	-	-	-
<i>B. centrurimorphus</i>	?	-	x	-	-	-	-	-	-	x	x	-	-	x	-	-	x	-	-	-
<i>B. exquisitus</i>	-	-	-	-	-	-	-	-	-	-	-	-	x	-	-	-	-	-	-	-
<i>B. gigas</i>	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	x	-	-	-
<i>B. jacksoni</i>	-	-	x	-	-	-	-	-	-	x	-	-	-	-	-	-	x	-	-	-
<i>B. kirki</i>	-	x	-	-	-	-	x	x	x	-	-	x	-	-	x	-	-	x	-	-
<i>B. melanicus</i> sp. n.	-	-	x	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
<i>B. multisubaculeatus</i> sp. n.	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	x	-	-	-	-
<i>B. ornatus</i>	-	-	-	-	-	-	-	-	-	-	x	-	-	-	-	-	-	-	-	-
<i>B. pictus</i>	x	-	-	-	-	-	-	-	-	x	-	-	-	-	-	-	x	-	-	-
<i>B. somalicus</i>	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	x	-	-	-	-
<i>B. subpunctatus</i>	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	x	-	-	-	-
<i>B. ugartei</i> sp. n.	-	-	-	-	-	-	-	-	-	-	-	x	-	-	-	-	-	-	-	-
<i>B. wituensis wituensis</i>	-	-	-	-	-	-	-	-	-	x	-	-	-	-	-	-	-	-	-	-
<i>B. wituensis taramassoi</i>	-	-	-	-	-	x	-	-	-	-	-	-	-	-	-	x	-	-	-	-
<i>B. zambonellii</i>	-	-	-	-	x	-	-	-	-	-	-	-	-	-	-	-	-	-	-	x

spicuous keels (paralectotypes). Metasomal keels consist of minute granules of equal size. In females the fifth metasomal segment has in addition to four lateral keels also a ventral keel marked by widely spaced granules. In males the first two metasomal segments bear both dorsal and lateral keels, the remaining segments only dorsal keels, and ventrally the entire metasoma is smooth, rounded, entirely without keels. For male habitus see plate 3, fig. 2 of Karsch (1886).

The color is yellow to yellowish green, with three black bands on the mesosoma. The metasoma is light yellow with dark spots on the ventral surface. Pedipalps are yellow with dark fingers. Immature specimens may be yellow with brown spots.

COMMENTS. *B. centrurimorphus* is based on an unspecified number of specimens collected by J. M. Hildebrandt in northwest Madagascar. I have examined five females marked as types and have designated them as the lectotype and paralectotypes Nos 1–4. The original color of the types has been lost due to the long preservation in alcohol, and it is now entirely yellowish brown. The correctness of the type locality (Madagascar – Karsch 1886: 79) was repeatedly doubted (Kraepelin 1913: 182), and Lourenço (1996) does not include *B. centrurimorphus* among Madagascar scorpions.

DISTRIBUTION. Some of the published localities appear to be incorrect, and presumably the species occurs only in CDR (Zaire) (Roewer 1952: 28), Kenya (Kraepelin 1901: 268), Mosambique (first report), Rwanda (first report), and Tanzania (Kraepelin 1899: 63).

The record from Angola (Kraepelin 1913: 182) ought to be regarded as erroneous. Probst (1973: 325) thought that it could be an introduction, but another possibility is a misidentified *B. ansorgei*.

### *Babycurus exquisitus* Lowe, 2000

(Fig 38, Tables 1–3)

*Babycurus exquisitus* Lowe, 2000: 185.

TYPE LOCALITY AND REPOSITORY. Oman, Jabal Shams, Jabal Akhdar, Al Hajar Al Gharbi, 23°14'29" N, 57°11'62" E; NHMB.

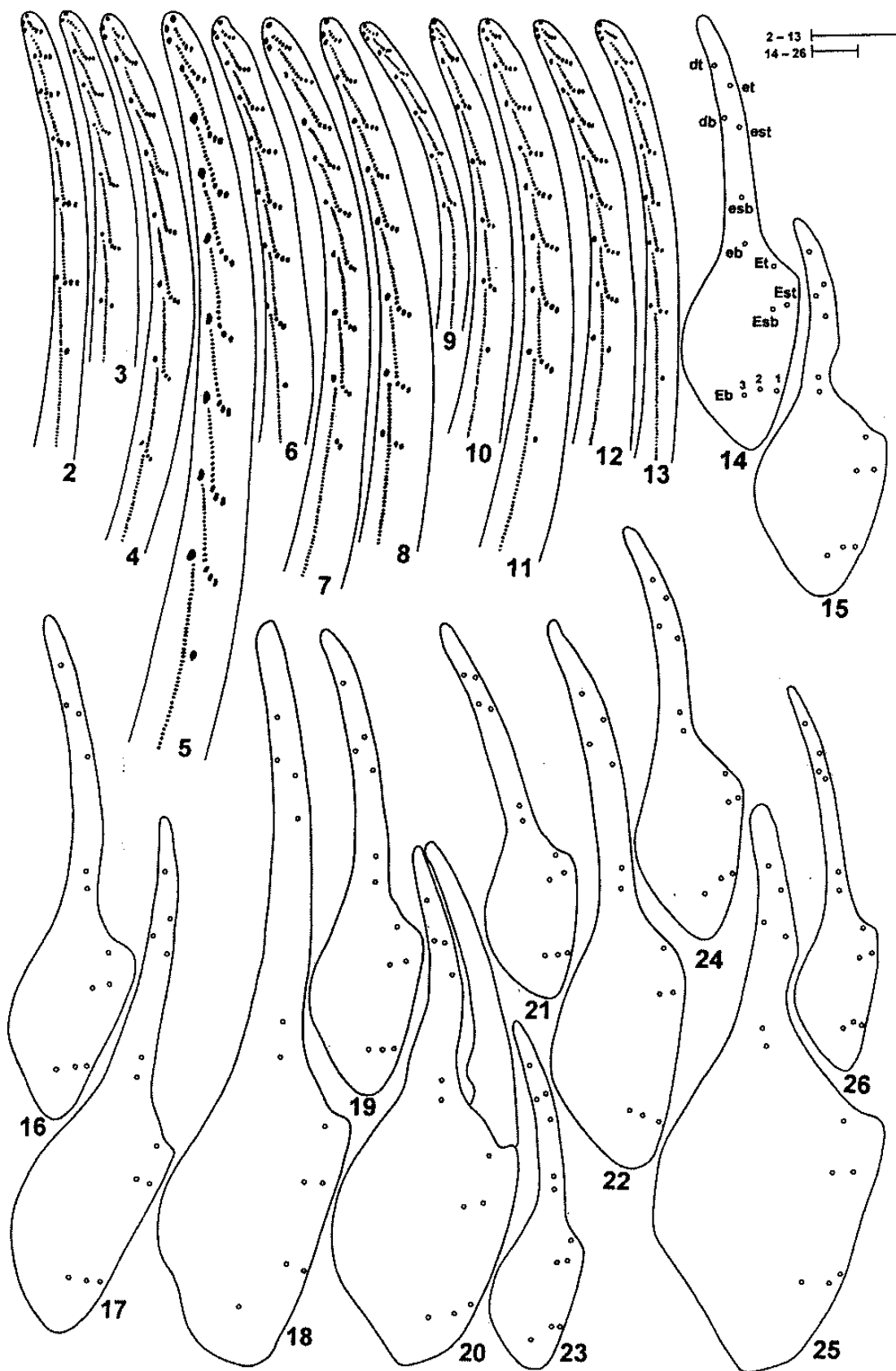
TYPE MATERIAL EXAMINED. **Oman:** Jabal Shams, 23°14'29" N, 57°11'62" E, 1855, 2.X.1994, 1MIF1juv.A (holotype, paratypes Nos 1–2), leg. G. Lowe & M. D. Gallagher; NHMB.

DIAGNOSTIC CHARACTERS. Total length is 33.5–39 mm. In contrast to female, the male has a broader manus of pedipalps (Tab. 1) and larger pectinal teeth. The movable fingers of pedipalps bear eight rows of granules (Fig. 13), and the eight row has one external and no internal granule (Fig. 13). The fixed fingers bear eight rows of granules, and the eight row lacks external and internal granules. For position and distribution of trichobothria on the pedipalps see figs in Lowe (2000). Pectinal teeth number 21–22.

The manus of pedipalps is smooth, without keels. The patella of pedipalps bears six well developed keels.

→

Figs 2–26. Figs 2–13. Movable finger of pedipalp. Figs 14–26. Tibia of pedipalp, ventral view. Figs 2–3, 14–15. *B. ansorgei* Hirst. Figs 2, 14. *B. ansorgei* Hirst, female holotype. Figs 3, 15. *B. crassicaudatus* Roewer, male paralectotype No. 4. Figs 4, 16. *B. buettneri* Karsch, FKCP female. Fig. 17. *B. centrurimorphus* Karsch, female lectotype. Figs 5, 18. *B. gigas* Kraepelin, female lectotype. Fig. 6. *B. jacksoni* (Pocock), female holotype. Figs 7–8, 19–20. *B. kirki* (Pocock). Figs 7, 19. *B. neglectus* Kraepelin, female lectotype. Figs 8, 20. *B. kirki* (Pocock), FKCP male. Fig. 9. *B. ornatus* Werner, female lectotype. Figs 10, 21. *B. somalicus* Hirst, female lectotype. Fig. 22. *B. subpunctatus* Borelli, female holotype. Fig. 23. *B. wituensis wituensis* Kraepelin, female lectotype. Figs 11–12, 24–25. *B. wituensis taramassoi* Borelli. Fig. 11. *B. wituensis taramassoi* Borelli, MCSN female. Figs 12, 24. *B. patrizii* Borelli, female holotype. Fig. 25. *B. crassimanus* Caporiacco, male holotype. Figs 13, 26. *B. zambonellii* Borelli, MZUF female.



The seventh mesosomal segment is ventrally smooth, with four incomplete keels. In the male the fourth and fifth metasomal segments are smooth, with very poorly developed and hard to discern keels. All other metasomal keels are composed of rounded, equally sized and spaced granules. The telson lacks keels and is densely covered by long hairs (Fig. 38).  
DISTRIBUTION. Oman (Lowe 1999: 185).

***Babycurus gigas* Kraepelin, 1896**  
(Figs 5, 18, Tables 1–3)

*Babycurus gigas* Kraepelin, 1896: 124; Kraepelin, 1899: 63; Kraepelin, 1913: 181; Birula, 1915: 30; Birula, 1916: 51; Strand, 1916: 70; Loveridge, 1925: 307; Fage & Simon, 1936: 303; Vachon, 1940b: 179; Probst, 1973: 324; Lamoral & Reynders, 1975: 497; Moritz & Fischer, 1980: 314; Kovářík, 1997: 179; Kovářík, 1998: 104.

TYPE LOCALITY AND REPOSITORY. Deutsch-Ostafrika, Usambara (new designation); ZMHB.

TYPE MATERIAL EXAMINED. **Tanzania:** Usambara, Darema, 8.X.–4.XI.1891, 1F1juv.A (lectotype and paralectotype No. 1), leg. Conradt, ZMHB No. 7360; D.O.Afrika, Tanga, X.1895, 1FA (paralectotype No. 2), IMA (paralectotype No. 3), leg. Reimer, Mus. Berlin, ZMUH.

ADDITIONAL MATERIAL EXAMINED. **Tanzania:** D. O. Afrika, Ijuv.E, NMPC; Usambara mts, Tanga, leg. Reimer, 9F1juv.A, ZMHB No. 7624, IMA, ZMHB No. 8178; Usambara, Darema, 29.VIII.–8.IX.1891, 1FA, leg. Conradt, ZMHB No. 8177; Bulog b. Tanga, 20.VII.1895, 1M1F(im)A, leg. P. Lückner, ZMHB No. 8187; D.O.Afrika, 1.VII.1899, 1juv.A, leg. Stuhlmann, ZMUH; D. O. Afrika, 3.X.1899, 1M1F2juvsA, leg. Küttner, ZMHB No. 8176; Usambara, Nguelo, 4FA, leg. Kummer, ZMHB No. 7859, 1FA, ZMHB No. 10175; Usambara, Nguelo, 2.I.1902, 1FA, leg. Sander, ZMHB No. 10177; Usambara, Rolle, Nguelo, 23.X.1903, 1M2FA, ZMUH; Nanebo, 1FA, leg. Kummer, ZMHB No. 7860; D. O. Afrika, Nguru ?, 1M2F1juv.A, leg. Rohrbach, ZMHB No. 10173, 2FA, ZMHB No. 10181; D. O. Afrika, 2FA, leg. Vosseler, ZMHB No. 10174; Tanga, Ijuv.A, leg. Vosseler, ZMHB No. 10179; D.O.Afrika, Amani, 21.X.1905, 1FA, leg. A. Borgert, ZMUH; Amani, 22.II.1906, 1F23juvs (after first ecdysis)A, leg. Vosseler, ZMHB No. 10180; Amani ?, 25.–30.XII.1906, 1FA, leg. Vosseler, ZMHB No. 10172; Amani, XI.1907, 1F(im)A, leg. Vosseler, ZMHB No. 10176; D.O.Afrika, Amani, 17.XII.1908, 1FA, Tropeninst., ZMUH; Dares-salam, 25.III.1911, 1juv.A, leg. Eichelbaum, ZMUH; D.O.Afrika, Amani, 25.III.1911, 1M3FA, leg. Eichelbaum, ZMUH; Usambara Mts, 1989, leg Mahunka & Zicsi, 1M1FA, FKCP, 1FA, HNHM; Nias, 1F1ME, det.1991, FKCP; E. Usambara Mts., dint di Amani, 17.–20.VI.1998, Ijuv. (20:20), leg. L. Bartolozzi & A. Sforzi, MZUF No. 2161. ?; W. Afrika/Cap, Exp. Falkenstein, 1FA, ZMHB No. 7259/8179.

DIAGNOSTIC CHARACTERS. Total length is 89–110 mm, the largest in the genus. In contrast to female, the male has a broader manus of pedipalps (Tab. 1). Furthermore, the female has well developed keels on the fifth metasomal segment, whereas in the male these keels are poorly developed or lacking. The movable finger of pedipalps bears 10 rows of granules (Fig. 5) and the fixed finger of pedipalps bears nine rows of granules. The 10th row has one or rarely two (in one ZMHB male only) external granules and no or rarely one internal granule. For position and distribution of trichobothria on the tibia of pedipalps see Fig. 18. Pectinal teeth number 19–24.

The ventral surface of the seventh mesosomal segment bears four keels. Metasomal keels are always present and consist of minute, equally sized and widely spaced granules.

The color is uniformly yellowish brown to yellowish red, with the end of the metasoma and fingers of pedipalps dark brown to black. In juveniles and young adults much of the patella of pedipalps is dark brown to black, and juveniles further have three dark longitudinal bands on the dorsal surface of the mesosoma.

COMMENTS. This species is based on an unspecified number of individuals deposited at ZMHB and ZMUH, which according to Kraepelin (1896: 125) are from Tanga and Usambara. I designated as lectotype a ZMHB female from Deutsch-Ostafrika, Usambara. Under "Additional material examined" are included other ZMHB specimens from Usambara and Tanga, some of them collected by Dr. Conradt who also collected the types. However, they do not carry labels which would ascertain that Kraepelin considered them types, and therefore cannot be included in the type series.

DISTRIBUTION. Tanzania (Kraepelin 1896: 125).

***Babycurus jacksoni* (Pocock, 1890)**

(Fig. 6, Tables 1–3)

*Rhoptrurus jacksoni* Pocock, 1890: 138.

*Babycurus jacksoni*: Kraepelin, 1896: 124.

*Babycurus jacksoni*: Kraepelin, 1895: 88; Pocock, 1896: 430; Kraepelin, 1899: 62; Tullgren, 1907: 4; Simon, 1909: 43; Kraepelin, 1913: 182; Birula, 1915: 18; Birula, 1916: 51; Strand, 1916: 70; Loveridge, 1925: 308; Vachon, 1940a: 248; Vachon, 1940b: 177; Geeraerts, 1953: 1066; Büchlerl, 1959: 258; Probst, 1973: 325; Lamoral & Reynders, 1975: 497; Kovarik, 1997: 179; Kovarik, 1998: 104.

*Babycurus* (*Rhoptrurus*) *jacksoni*: Kraepelin, 1901: 268.

TYPE LOCALITY AND REPOSITORY. Taveita, Kilima-njaro; BMNH.

TYPE MATERIAL EXAMINED. **Kenya**: Taveita, Kilima-njaro, E. Africa, 1FA (holotype), leg. F. J. Jackson, BMNH No. 87.147.

ADDITIONAL MATERIAL EXAMINED. **Kenya**: O. A. Afrika, Mombasa, 25.XII.1969, 1FA, leg. M. Grasshoff, SMFD; Watamu Beach, II.1981, 1MA, leg. Kaingulashe, SMFD; Mombasa, V.1986, 1FA, FKCP; Tsavo East National Park, Ngai, 3.VII.1992, 1FA, leg. Mahunka & Mahunka-Papp, HNHM; Ukunda, Diani Beach, 5.VII.1992, 1FA, leg. Mahunka & Mahunka-Papp, HNHM; Shimba Hills Nat. Park (S di Mombasa), 8.–24.VI.1998, 1F (20:22), leg. A. Sforzi & L. Bartolozzi, MZUF No. 2161. **Tanzania**: D. O. Afrika, 1FE, NMPC; Darassalam, XII.1893, 1MA, leg. Stuhlmann, ZMHB No. 7563; Darassalam, 3.VII.1895, 1FA, leg. Stuhlmann, ZMHB No. 7572; Lindi, 1MA, leg. Fülleborn, ZMHB No. 8175; D. O. Afrika, Nynebo, 1FA, leg. Kummer, ZMHB No. 7861/8070; D. O. Afrika, Darassalam. Pangani u. Hinterland, 2M14F11juvsA (juvs before first ecdysis), leg. R. Regner, ZMHB No. 10187; D.O.Afrika, Dar es Salam, 17.XI.1896, 3FA, leg. Speyer, ZMUH; Amani, X.1904, 1F(im)A, leg. Vosseler, ZMHB No. 10188; Molalo, 8.IX.1905, 1F(im)A, leg. pastor K. Röhl, ZMHB No. 1169/1905; D. O. Afrika, Morogoro, 2FA, I.–III.1909, leg. R. Schoenheit, ZMHB No. 10192; D. O. Afrika, Mkatta, I.–VI.1909, 1FA, leg. R. Schoenheit, ZMHB No. 10190; D. O. Afrika, Morogoro, 1M, 22.VIII.1909, leg. R. Schoenheit, No. 10178; D. O. Afrika, Darassalam u. Hinterland bis Puguberge und Kisserawz, 1M1FA, leg. P. Heinrich, ZMHB No. 10191; D. O. Afrika, Ostfluss des Gologolo Gebirges, 1MA, 8.–9.XI.1912, leg. Ratmethner, ZMHB No. 10189; D.O.Afrika, Dar es Salam, 9.I.1913, 2FA, leg. W. Vogel, ZMUH; 2FE, 1920–1940, FKCP; 45 km Tanga, 8.V.1933, 1M1FA, leg. W. Dethlefsen, ZMUH No. 95; Manyanga, 24.III.1989, 1MA, leg. S. Mahunka & A. Zicsi, HNHM; Morogoro prov., Uluguru Mts., 8.–9.XII.1996, 1ME, leg. Werner & R. Lizler, FKCP; E. Usambara Mts., dint di Amani, 1FE, 17.–20.VI.1998; 1989, 1juv.A, FKCP. ? **Tanzania**: D.O.Afrika, Plantage Lewa, 28.II.1888, 1F1juv.A, leg. Stuhlmann, ZMUH; D. O. Afrika, Ligiplus, 15.XII.1904, 1juv.A, No. 898/05, ZMHB; Zanguebar, Urugura, III.1900, 1FA, Mus. Paris, ZMUH; D.O.Afrika, Morogoro, V.1911, 1M3FA, Mus. Berlin, ZMUH. ? **Namibia**: Windhoek (locality in error ?), V.1912, 6M7FA, leg. F. Schmidt, SMFD Nos 5293 and 5314. ? O. Afrika, 2FA, leg. Knippes, SMFD; Haiti, Santiago de los Caballeros, XI.1936, 1MA, leg. P. Thumb (locality in error = ? Tanzania), ZMUH, No. 121; 1FA, ZMUH No. 126.

DIAGNOSTIC CHARACTERS. Total length is 60–87 mm. In contrast to female, the male has a broader manus of pedipalps (Tab. 1) and the fingers of pedipalps slightly flexed proximally (Fig. 20). The movable fingers of pedipalps bear eight rows of granules terminating in two external granules (Fig. 6). The eighth row always has one external granule (Fig. 6). Only two females (ZMHB No. 10187 and MZUF No. 2161) were found to have also one internal granule situated opposite the external one. All other examined specimens lacked internal granules. The fixed fingers of pedipalps bear seven rows of granules, and the seventh row has one external and no internal granule.

The position of trichobothrium db on the tibia of pedipalps is variable in relation to trichobothrium et. The pectinal teeth number 18–24. In females the seventh mesosomal segment bears four ventral keels composed of large, sometimes widely spaced granules; in males these keels may lack granules. Metasomal keels are always present and consist of large, conspicuous granules. In the male there are large granules also between these keels, especially on the third through fifth segments.

Adults are rusty to rusty brown, with only the fingers of pedipalps black. The carapace sometimes bears a pronounced dark triangle anteriorly, and dark spots are always present around the eyes. The anterior parts of mesosomal segments may rarely be black. The chelicerae may or may not be reticulated, and at least anteriorly are solid black.

COMMENTS. This species is based on a single female collected by F. J. Jackson at Taveita, Kilimanjaro. DISTRIBUTION. Kenya (Pocock 1890: 139), Tanzania (Kracpelin 1899: 63), Uganda (Simon 1909: 43), and CDR (Zaire) (Geeraerts 1953: 1066).

***Babycurus kirki* (Pocock, 1890)**  
(Figs 7–8, 19–20, 29–30, Tables 1–3)

*Rhoptrurus kirki* Pocock, 1890: 137; Pocock, 1896: 429.

*Babycurus kirki*: Kracpelin, 1895: 88; Pocock, 1899: 835; Kracpelin, 1913: 180; Werner, 1936: 181; Vachon, 1940b: 176; Belfield, 1956: 44; Lourenço, 1986: 200; Kovarik, 1998: 104.

*Rhoptrurus dentatus* (err., non Karsch, 1886) Kracpelin, 1891: 241 (see Kracpelin, 1899: 63).

*Babycurus neglectus* Kracpelin, 1896: 126 (TL: Klein-Popo; ZMUH); Kracpelin, 1899: 63; Werner, 1902: 599; Kracpelin, 1913: 180; Werner, 1916: 86; Lampe, 1918: 195; Werner, 1934: 272; Roewer, 1943: 216; Belfield, 1956: 44; Lamoral & Reynders, 1975: 498 (syn. by Vachon, 1940b: 179).

*Babycurus büttneri* (? in part): Kracpelin, 1899: 62.

*Babycurus büttneri* (in part): Lamoral & Reynders, 1975: 496.

TYPE LOCALITY AND REPOSITORY. West Africa; BMNH.

TYPE MATERIAL EXAMINED. **Togo**: Klein-Popo, XI.1892–20.I.1893, 1FA (lectotype of *B. neglectus*), leg. H. Brauns, ZMUH. ? : West Africa, IMA (holotype), Dr. Kirk, BMNH No. 65.60. ? : IMA (paralectotype No. 1 of *B. neglectus*), ZMUH No. 3917.

ADDITIONAL MATERIAL EXAMINED. **Cameroon**: Anccho, 3.IV.1906, 1FA, leg. Dr. Otto, ZMUH. **Congo**, IX.1911, 1F(im.)A, Mus. Stockholm, ZMUH. **Gabon**: Reserve Lopé, XII.1995, 1ME, FKCP. **Guinea**: Kankan, Savanne, 25.VIII.1977, 1FA, leg. T. Diokité, ZMHB. **Ivory Coast**: 1FA, NHMB. ? **Nigeria**: Volta, Akure, 1890, 1FA, ZMUH. **Senegal**: Niokolo Koba n.p., VII.1995, 1FE, FKCP. **Togo**: Bismarckburg, 1.–15.X.1891, 1FA, leg. Büttner, ZMHB No. 7630; Kraty, 4M6F3juvsA, leg. Zech, ZMHB No. 8183; Kete Kratschi, 1M1FA, leg. Zech, ZMHB No. 8184; Misahohe, 1FA, leg. Smeno, ZMHB No. 10171; Klein Popo, 1892, 1FA, ZMUH; Kete Kratschi, 2FA (det. 1943 as *B. neglectus*), SMFD No. 8873/215; VI.1908, 1M1FA, Mus. Bremen, ZMUH; Atakpame, 1FA (det. 1932 as *B. neglectus*), SMFD No. 6696/103; Lome, 11.V.1956, 1juv.A, leg. F. Zielinski, ZMUH No. 96. ? : 1FA, ZMHB No. 729/1910 and 10193; West-Afrika, 29.V.1917, 1MA, leg. Woermann, ZMUH; W. Afrika, Akim, 1882, 1FA, leg. Bender, Mus. Stuttgart, ZMUH.

DIAGNOSTIC CHARACTERS. Total length is 60–65.6 mm. In contrast to female, the male has a broader manus of pedipalps (Figs 19–20, Tab. 1), a more ampullar telson (Figs 29–30), and fingers of pedipalps slightly flexed proximally (Figs 19–20). The movable fingers of pedipalps bear eight to 10 rows of granules always terminating in two external granules (Figs 7–8). In case of eight or nine rows of granules, the last row has two external and no internal granules (Fig. 7), or sporadically (mainly in males) also one internal granule (Fig. 8). In case of 10 rows of granules (only one examined female), the tenth row lacks external granules. The fixed fingers of pedipalps bear eight rows of granules (one FKCP male has only seven rows), and the eighth row has two external and one or no internal granules.

For position and distribution of trichobothria on the tibia of pedipalps see Figs 19–20. The position of trichobothrium db is variable in relation to trichobothrium et (Figs 19–20). Pectinal teeth number 18–21. The seventh mesosomal segment is ventrally either smooth, without keels, or rarely bears four keels (the holotype). Females have all metasomal segments keeled, but the keels are smooth, without discernible granules, and with the exception of the first segment poorly visible. Males differ in having the fourth and fifth metasomal segments always entirely smooth, without keels.

Table 3. Numbers of pectinal teeth in *Babycurus* Karsch species. Explanatory notes: M – male, F – female, J – juvenile (includes only juves whose sex cannot be determined), x – number of pectinal teeth given by other authors, not from specimens examined in this study, NS – number of specimens. Each pecten is considered a unit. Where both pectens are complete, they are counted twice. In contrast, pectens which are obviously abnormal or incomplete are not included.

	scx	15	16	17	18	19	20	21	22	23	24	25	26	27	28	NS
<i>B. ansorgei</i>	M	–	–	3	11	13	3	–	–	–	–	–	–	–	–	15
	F	–	–	–	5	1	–	–	–	–	–	–	–	–	–	3
<i>B. buettneri</i>	M	–	–	–	4	18	10	2	–	–	–	–	–	–	–	19
	F	–	–	2	19	28	8	3	–	–	–	–	–	–	–	33
	J	–	–	2	8	12	4	2	–	–	–	–	–	–	–	14
<i>B. centrurimorphus</i>	M	–	–	–	–	4	1	1	–	–	–	–	–	–	–	3
	F	–	–	–	7	34	8	1	–	–	–	–	–	–	–	26
	J	–	–	1	4	1	–	–	–	–	–	–	–	–	–	3
<i>B. exquisitus</i>	M	–	–	–	–	–	–	1	1	–	–	–	–	–	–	1
	F	–	–	–	–	–	–	–	2	–	–	–	–	–	–	1
	J	–	–	–	–	–	–	2	–	–	–	–	–	–	–	1
<i>B. gigas</i>	M	–	–	–	–	–	–	4	10	3	1	–	–	–	–	9
	F	–	–	–	–	3	6	26	32	9	2	–	–	–	–	40
	J	–	–	–	–	–	4	6	3	3	–	–	–	–	–	8
<i>B. jacksoni</i>	M	–	–	–	–	3	4	11	9	1	1	–	–	–	–	15
	F	–	–	–	–	10	32	26	21	3	2	–	–	–	–	47
	J	–	–	–	1	1	–	–	–	–	–	–	–	–	–	1
<i>B. kirki</i>	M	–	–	–	–	9	10	1	–	–	–	–	–	–	–	10
	F	–	–	–	11	19	12	2	–	–	–	–	–	–	–	22
	J	–	–	–	2	2	2	–	–	–	–	–	–	–	–	3
<i>B. melanicus</i> sp. n.	F	–	–	–	–	–	2	–	–	–	–	–	–	–	–	1
<i>B. multisubaculeatus</i> sp. n.	M	–	–	–	–	–	2	–	–	–	–	–	–	–	–	1
	F	–	–	–	–	2	–	–	–	–	–	–	–	–	–	1
<i>B. ornatus</i>	F	1	9	3	–	–	–	–	–	–	–	–	–	–	–	7
	J	–	2	1	1	–	–	–	–	–	–	–	–	–	–	2
<i>B. pictus</i>	M	–	–	–	–	2	2	–	–	–	–	–	–	–	–	2
	F	–	–	–	1	8	1	–	–	–	–	–	–	–	–	5
<i>B. somalicus</i>	F	–	–	–	–	1	3	–	–	–	–	–	–	–	–	2
<i>B. subpunctatus</i>	F	–	2	–	–	–	–	–	–	–	–	–	–	–	–	1
<i>B. ugartei</i> sp. n.	F	1	1	–	–	–	–	–	–	–	–	–	–	–	–	1
<i>B. wituensis wituensis</i>	M	–	–	–	–	–	–	2	1	–	–	–	–	–	–	2
	F	–	–	–	–	–	–	1	–	–	–	–	–	–	–	1
<i>B. wituensis taramassoi</i>	M	–	–	–	–	–	–	–	–	–	4	1	3	1	1	5
	F	–	–	–	–	–	–	13	5	8	8	3	5	–	–	20
	J	–	–	–	–	–	–	8	20	16	11	8	–	–	–	33
<i>B. zambonellii</i>	M	–	–	–	1	1	–	–	–	–	–	–	–	–	–	1
	F	–	–	–	–	2	–	–	–	–	–	–	–	–	–	1

The color is yellow with black spots. The carapace has dark spots and a pronounced dark triangle anteriorly. The mesosoma dorsally bears a dark median band and numerous spots that form a symmetrical pattern. Chelicerae are reticulated. The femur and patella of pedipalps are dark with a few yellowish spots, the manus of tibia is yellow, and the fingers are dark brown. Legs are spotted. Metasomal segments of females are yellowish brown with small dark spots. In males the fourth and fifth metasomal segments are dorsally as well as ventrally reddish black. For male habitus see plate 14, fig. 1 of Pocock (1890).

COMMENTS. This species is based on a single male labeled "West Africa the collection of Dr. (now Sir John) Kirk" (Pocock, 1890: 138).

I examined two syntypes of *B. neglectus* and designated them the lectotype and paralectotype No. 1. Kraepelin (1891: 241 and labels) originally identified this species as *Rhoptrurus dentatus*, and in 1896 described it as *B. neglectus*.

DISTRIBUTION. Cameroon (Werner 1916: 86), Gabon (Kraepelin 1894: 88), Guinea (first report), Ivory Coast (Lourenço 1986: 200), Nigeria (Belfield 1956: 44), Senegal (first report), Togo (Pocock 1899: 835).

***Babycurus melanicus* sp. n.**  
(Figs 27, 39, Tables 1–3)

TYPE LOCALITY AND REPOSITORY. CDR (Zaire), west; FKCP.

TYPE MATERIAL. CDR (Zaire): west, IX.1976, 1FA (holotype), collector unknown, FKCP. No other material.

ETYMOLOGY. The name is based on characteristically dark coloration.

DESCRIPTION. Total length of the female holotype is 64.8 mm. Measurements of the carapace, telson, segments of the metasoma and segments of the pedipalps, and numbers of pectinal teeth are given in Table 1. Pectinal teeth number 20. Habitus is shown in Fig. 27.

The base color is uniformly black with brown spots. The telson and fingers of pedipalps are reddish brown, the manus of pedipalps is brown, the femur and patella of legs are brownish black, and the metatarsus and tarsus are yellowish brown.

The carapace lacks keels but bears large granules.

The movable fingers of pedipalps bear nine rows of granules, and the ninth row terminates in one external and no internal granule. The fixed fingers of pedipalps bear eight rows of granules, and the eighth row terminates in one external and no internal granule.

The seventh mesosomal segment bears four ventral keels. The first metasomal segment has a total of 10 keels, the second through fourth segments have eight keels, and the fifth segment has five keels.

AFFINITIES. The described features distinguish *B. melanicus* sp. n. from all other species of the genus. They are recounted in the key below.

*B. melanicus* sp. n. is closest to *B. buettneri*, from which it differs in coloration. *B. melanicus* sp. n. has the femur and patella of pedipalps black, whereas in *B. buettneri* the patella of pedipalps is black and the femur of pedipalps reddish brown to yellow. *B. melanicus* sp. n. has the fingers of pedipalps lighter than the manus, whereas *B. buettneri* has them darker than the manus.

The morphological similarity of these species makes it likely that they are similar also in sexual dimorphism, i. e. the male of *B. melanicus* sp. n. probably does not have metasomal segments broader than the female, but does have a broader manus of pedipalps.

***Babycurus multisubaculeatus* sp. n.**  
(Figs 28, 37, Tables 1–3)

TYPE LOCALITY AND REPOSITORY. Somalia, Afgooye env.; FKCP.

TYPE MATERIAL. Somalia: Afgooye env., X. 1980, 1FA (holotype) 1MA (paratype), collector unknown, FKCP. No other material.

ETYMOLOGY. Named for the presence of tubercles on the telson.

DESCRIPTION. Total length of the female holotype is 41.1 mm and that of the male paratype is 47.4. In contrast to female, the male has a broader manus of pedipalps and posteriorly more widening metasomal segments (Tab. 1). Measurements of the carapace, telson, segments of the metasoma and



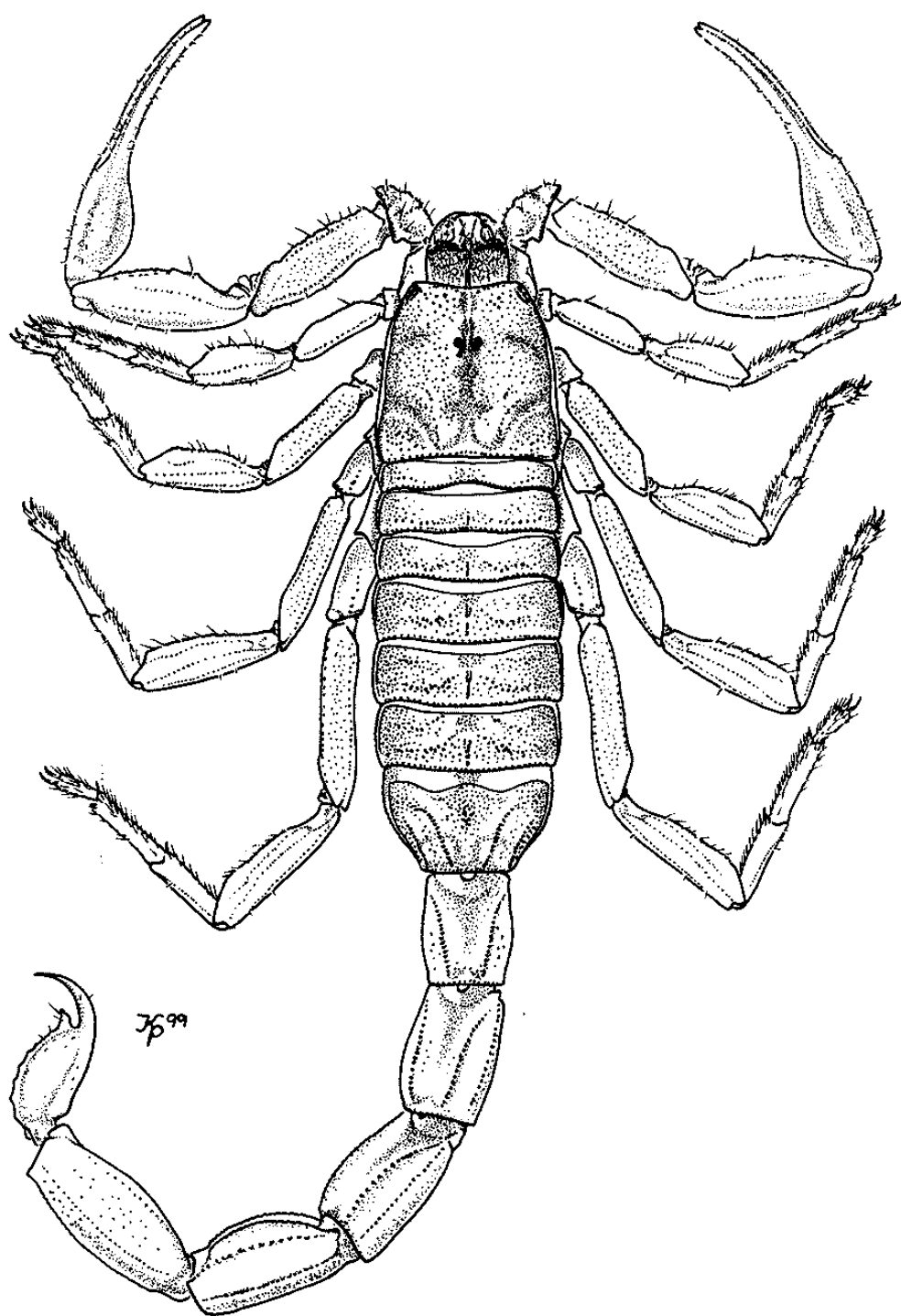


Fig. 27. *Babycurus melanicus* sp. n., female holotype, dorsal aspect.

segments of the pedipalps, and numbers of pectinal teeth are given in Table 1. Pectinal teeth number 19 (female) and 20 (male). Habitus of holotype is shown in Fig. 28. The fingers of pedipalps are not flexed.

The base color is uniformly reddish brown. The manus of pedipalps is yellowish brown, lighter than the fingers. The femur of the legs is reddish brown, turns from reddish brown to yellowish brown on the patella, and the metatarsus and tarsus are yellowish brown. The mesosoma and pedipalps are ventrally yellow to yellowish brown.

The carapace lacks keels but bears large granules.

The movable fingers of pedipalps bear 10 rows of granules, and the 10th row terminates in one external and no internal granule. The fixed fingers of pedipalps bear nine rows of granules, and the ninth row terminates in one external and no internal granule.

The seventh mesosomal segment bears four ventral keels. The first metasomal segment has a total of 10 keels, the second through fourth segments have eight keels, and the fifth segment has five keels. All metasomal segments are dorsally as well as ventrally granulated, with the largest and most closely spaced granules on the fifth segment. On the telson below the subaculear tooth is a somewhat smaller tooth-like tubercle, and two more symmetrical tubercles are situated anterolaterally, one on each side (Fig. 37). Both the subaculear tooth and the accessory tubercles are apically black.

**AFFINITIES.** The described features distinguish *B. multisubaculeatus* sp. n. from all other species of the genus. They are recounted in the key below.

*B. multisubaculeatus* sp. n. is closest to *B. wituensis*, from which it differs in having 10 rows of granules on the movable fingers of pedipalps (*B. wituensis* has only nine rows). Another difference is the presence of accessory tubercles on the telson of *B. multisubaculeatus* sp. n. This character is unique in the genus (Fig. 37).

**COMMENTS.** The reason why the female is designated the holotype is that the male has the tips of the fingers of pedipalps broken off and that in this paper the rows of granules on the fingers are regarded as a major character.

### ***Babycurus ornatus* Werner, 1936**

(Figs 9, 31, Tables 1–3)

*Babycurus ornatus* Werner, 1936: 181; Vachon, 1940b: 179; Lamoral & Reynders, 1975: 498; Kovařík, 1998: 104.

**TYPE LOCALITY AND REPOSITORY.** Portugiesisch-Ostafrika, Farm Nangororo bei Porto Amelia (new designation); ZMUH.

**TYPE MATERIAL EXAMINED.** **Mosambique:** Farm Nangororo bei Porto Amelia, 1927, 2F1juv.A (lectotype and paralectotypes Nos 1–2), ZMUH No. 30; Porto Amelia, 1927, 2F1juv.A (paralectotypes Nos 4–6), ZMUH No. 43; Porto Amelia, 1927, 2FA (paralectotypes Nos 7–8), ZMUH No. 19; ca 70 km westl der Küste, Landschaft Mecutine, 1.–31.VIII.1926, 1FA (paralectotype No. 3), ZMUH No. 22.

**DIAGNOSTIC CHARACTERS.** Total length of females is 30–38 mm. The movable fingers of pedipalps bear seven rows of granules (Fig. 9). The first six rows terminate in one external granule each, which is absent in the seventh row (Fig. 9). The fixed fingers of pedipalps bear six rows of granules, the short apical row is absent. Pectinal teeth number 15–18 (known only for females). The carapace and the dorsal surface of the mesosoma bear numerous granules, however on the mesosomal segments the granular pattern is interrupted by smooth, symmetrical facets. The seventh mesosomal segment lacks ventral keels. The first and second metasomal segments have 10 keels (the second segment sometimes has two keels merely indicated by a few granules), the third and fourth segments have

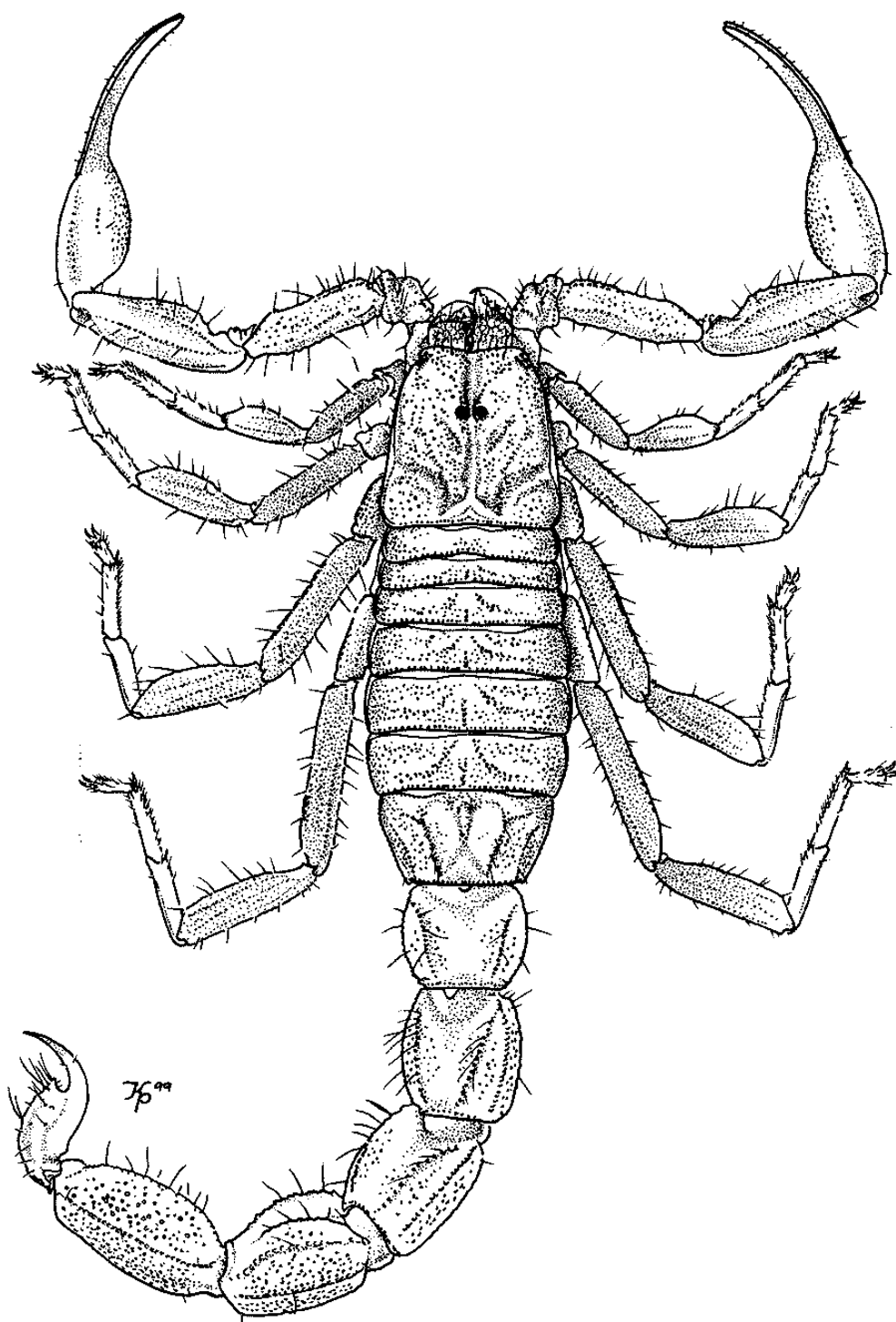


Fig. 28. *Babycurus multisubaculeatus* sp. n., female holotype, dorsal aspect.

eight keels, and the fifth segment has five conspicuous keels composed of equal-sized granules. The first metasomal segment is wider than long (Tab. 1). The dorsal keels on the third and sometimes also the second metasomal segments terminate in a pronounced tooth. The telson is very narrow (Fig. 31), with a ventral keel.

The color is yellowish brown, with black spots and bands. The carapace bears a conspicuous dark anterior triangle (similarly to the genus *Lychas*) and dark spots which posteriorly combine into four irregular bands and continue through all mesosomal segments. The chelicerae are reticulated. The femur of pedipalps has dark spots, the patella is entirely dark (sometimes with a few yellowish-brown spots), the manus of tibia is yellow, and the fingers are dark brown. The legs are spotted. The first through fourth metasomal segments are reddish brown with small black spots, the fifth segment is brownish black (anteriorly may be reddish brown with small black spots), and the telson is reddish brown.

COMMENTS. This species is based on nine specimens deposited at ZMUH. Since Werner (1936: 181) did not select a holotype, upon examination I have designated the series as the lectotype and paralectotypes Nos 1–8, which also fixes the type locality.

DISTRIBUTION. Mosambique (Werner 1936: 181).

### ***Babycurus pictus* Pocock, 1896**

(Fig. 32, Tables 1–3)

*Babycurus pictus* Pocock, 1896: 426; Pocock, 1898: 430; Fage & Simon, 1936: 303.

*Babycurus centrurimorphus* (in part): Kraepelin, 1896: 124; Kraepelin, 1899: 63; Birula, 1915: 16; Birula, 1915: 119; Probst, 1973: 325; Kovařík, 1998: 104.

*Buthus (Rhoptrurus) centrurimorphus*: Pocock, 1890: 122.

*Babycurus butneri* (in part): Lamoral & Reynders, 1975: 496–7.

TYPE LOCALITY AND REPOSITORY. Mount Kenia, East Afrika, Athi Plains; BMNH.

TYPE MATERIAL EXAMINED. **Kenya**: Athi Plains, IFA (holotype), leg. G. W. Gregory, BMNH No. 1893.11.9.3.

ADDITIONAL MATERIAL EXAMINED. **Angola**: Mucozo, 5.V.1959, 1MA, leg. H. Oboussier, ZMUH No. 68. **Kenya**: Mom-basa, 31.V.1901, 2FA, ZMUH, labeled as *Babycurus centrurimorphus*; Voi (Tsavo), 27.III.–4.IV.1997, 1ME, leg. M. Snížek, FKCP; Mwingi env., 4.XII.1997, 1FE, leg. M. Snížek, FKCP. **Tanzania**: D.O.Afrika, Hohenlohe Graben, 19.–22.V.1911, 1FA, leg. Dr. Obst, ZMUH.

DIAGNOSTIC CHARACTERS. Total length is 40–56.7 mm. In contrast to female, the male has a broader manus of pedipalps (Tab. 1). For habitus see fig. 1 in Pocock 1896. The movable fingers of pedipalps bear seven rows of granules (Fig. 3). The fixed fingers of pedipalps bear six rows of granules, and the sixth row has one external granule. Pectinal teeth number 19–20. The seventh mesosomal segment is ventrally smooth, without keels. The keels of the second and third metasomal segments are sometimes poorly developed or absent, even in females. All keels are composed of minute, equal-sized, and evenly spaced granules. Both sexes have the fourth and fifth metasomal segments smooth, without keels, or rarely with poorly indicated crests lacking granules.

The color is yellow to yellowish green, with three black bands on the mesosoma. The metasoma is light yellow with dark spots on the ventral surface. The pedipalps are yellow with dark fingers.

COMMENTS. *B. pictus* is based on a single female, which I have examined. Kraepelin (1896: 124) incorrectly synonymized this species with *B. centrurimorphus*, which is understandable because separation of these two species without adequate material is at best difficult. However, there can be no doubt that *B. pictus* is a valid species with sexual dimorphism and the shape of pedipalps (especially the tibia, Figs 32–34, Tab. 1) different from *B. centrurimorphus*. Moreover, *B. pictus* does not reach the size of *B. centrurimorphus*.

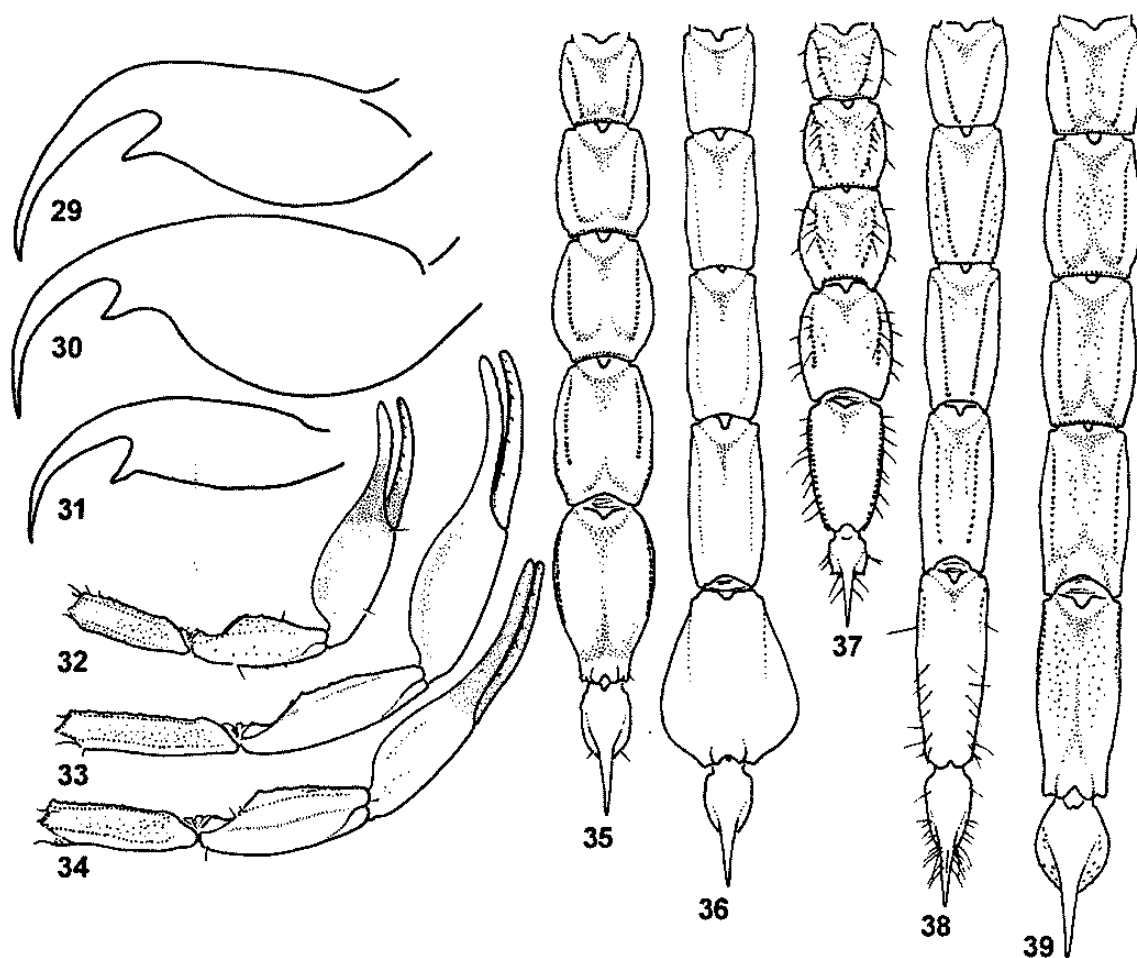
A male of *B. pictus* from Angola is larger than other examined specimens, and differs from the males collected in Kenya in having smooth keels on the manus of pedipalps. It is not a separate species, but a study of more specimens could reveal it to be a subspecies.

DISTRIBUTION. Angola (first report), Kenya (Pocock 1896: 426), Tanzania (Pocock 1898: 430).

***Babycurus somalicus* Hirst, 1907**

(Figs 10, 21, Tables 1–3)

*Babycurus somalicus* Hirst, 1907: 208; Vachon, 1940b: 180; Moriggi, 1941: 93; Lamoral & Reynders, 1975: 498; El-Hennawy, 1992: 97, 111; Kovářik, 1998: 104.



Figs 29–37. Figs 29–31. Telson. Figs 32–34. Pedipalp. Figs 35–39. Metasoma. Figs 29–30. *B. kirki* (Pocock). Fig. 29. *B. neglectus* Kraepelin, female lectotype. Fig. 30. *B. kirki* (Pocock), FKCP male. Fig. 31. *B. ornatus* Werner, female lectotype. Fig. 32. *B. pictus* Pocock, FKCP male. Figs 33–34. *B. centrurimorphus* Karsch. Fig. 33. *B. centrurimorphus* Karsch, FKCP male. Fig. 34. *B. centrurimorphus* Karsch, FKCP female. Fig. 35. *B. wituensis* Kraepelin, ZMHB male. Fig. 36. *B. ansorgei* Hirst, FKCP male. Fig. 37. *B. multisubaculeatus* sp. n., female holotype. Fig. 38. *B. exquisitus* Lowe, male holotype. Fig. 39. *B. melanicus* sp. n., female holotype.

TYPE LOCALITY AND REPOSITORY. Berbera and Durbar, Somaliland; BMNH.

TYPE MATERIAL EXAMINED. **Somalia:** Wagur Mts, behind Berbera, 2FA (holotype and paratype), purchased by W. Bury, BMNH No. 1906.3.25.126.

DIAGNOSTIC CHARACTERS. Total length of the female holotype is 48.2 mm. The male is not known. The movable fingers of pedipalps bear seven rows of granules (Fig. 10), and the seventh row has one external and no internal granule. The fixed fingers of pedipalps bear seven row of granules, and the seventh row lacks external and internal granules. For position and distribution of trichobothria on the tibia of pedipalps see Fig. 21. Pectinal teeth number 19–20.

The manus of pedipalps is smooth, with effaced keels. The patella of pedipalps is also smooth, with well developed keels some of which are covered by minute granules.

The seventh mesosomal segment bears four ventral keels. Metasomal keels are always present and are composed of minute, rounded, equal-sized, and evenly spaced granules. The telson is smooth, with only a weakly indicated ventral keel and several long hairs in proximity of the subaculear tooth.

After the long years in alcohol, the color is uniformly dark brown.

COMMENTS. This species is based on two females collected by Mr. G. W. Bury. Hirst (1907: 209) related *B. somalicus* to *B. zambonellii*, from which he distinguished it by, inter alia, the presence of granulated keels on the manus of pedipalps.

DISTRIBUTION. Somalia (Hirst 1907: 209).

### ***Babycurus subpunctatus* Borelli, 1925**

(Fig. 22, Tables 1–3)

*Babycurus subpunctatus* Borelli, 1925: 318; Vachon, 1940b: 179; Moriggi, 1941: 92; Lamoral & Reynders, 1975: 498; El-Hennawy, 1992: 97, 111; Kovařík, 1998: 104.

TYPE LOCALITY AND REPOSITORY. Cuban Cubu, Somalia italiana; MCSN.

TYPE MATERIAL EXAMINED. **Somalia:** Cuban Cubu, IX.1923, IFA (holotype), leg. S. Patrizi. No other material.

DIAGNOSTIC CHARACTERS. Total length of the female holotype is 32.1 mm. The male is not known. The movable fingers of pedipalps bear seven rows of granules (Fig. 10), and the seventh row has one external and no internal granule. The fixed fingers of pedipalps bear seven row of granules, and the seventh row lacks external or internal granule. For position and distribution of trichobothria on the tibia of pedipalps see Fig. 22. Pectinal teeth number 16.

The seventh mesosomal segment bears four poorly discernible granulated ventral keels. Metasomal keels are always present and are composed of minute, rounded, equal-sized, and evenly spaced granules. The ventral keels are discernible but not pronounced. The telson is smooth, with only a weakly indicated ventral keel and a dense cover of long hairs in proximity of the subaculear tooth.

COMMENTS. This species is based on a single female. It appears to be closely related to *B. somalicus*, *B. zambonellii*, and *B. exquisitus*.

DISTRIBUTION. Somalia (Borelli 1925: 320).

### ***Babycurus ugartei* sp. n.**

(Tables 1–3)

TYPE LOCALITY AND REPOSITORY. Nigeria, Plateau Lafia env.; FKCP.

TYPE MATERIAL EXAMINED. **Nigeria:** Plateau Lafia env., V.1988, 1FA (holotype), leg. B. Duran, FKCP. No other material.

ETYMOLOGY. Named after Alfredo Ugarte, a Chilean entomologist and my friend.

DESCRIPTION. Total length of the female holotype is 27.4 mm. Measurements of the carapace, telson, segments of the metasoma and segments of the pedipalps, and numbers of pectinal teeth are given in Table 1. Pectinal teeth number 15 and 16. The fingers of pedipalps are not flexed.

The base color is yellow with brown spots. The manus of pedipalps is yellow, lighter than the fingers. The patella of pedipalps is darkish black, as is the adjacent third of femur; the other two-thirds of femur are yellow. The carapace and legs are yellow with brown spots. The mesosoma is yellow with three black bands. The first fourth metasomal segments and telson are yellow with a few small dark spots, but the fifth segment is black. The chelicerae are reticulated.

The carapace lacks keels but bears large granules.

The movable fingers of pedipalps bear seven rows of granules (Fig. 9). The first six rows terminate in one external granule each, which is absent in the seventh row (Fig. 9). The fixed fingers of pedipalps bear six rows of granules, the short apical row is absent.

The seventh mesosomal segment bears four ventral keels. The first metasomal segment has a total of 10 keels, the second through fourth segments have eight keels, and the fifth segment has five conspicuous keels composed of equal-sized granules. All metasomal segments are dorsally as well as ventrally granulated. The telson is narrow, with a ventral keel and numerous long hairs.

AFFINITIES. The described features distinguish *B. ugartei* sp. n. from all other species of the genus. They are recounted in the key below.

*B. ugartei* sp. n. is closest to *B. ornatus*, from which it differs in having four ventral keels on the seventh mesosomal segment (*B. ornatus* has this segment devoid of keels) and in geographic distribution.

### ***Babycurus wituensis wituensis* Kraepelin, 1913**

(Figs 23, 35, Tables 1–3)

*Babycurus wituensis* Kraepelin, 1913: 181; Birula, 1915: 17; Borelli, 1925: 323; Vachon, 1940b: 180; Fage, 1946: 259; Probst, 1973: 324; Lamoral & Reynders, 1975: 499; Moritz & Fischer, 1980: 326; Kovařík, 1998: 104.

TYPE LOCALITY AND REPOSITORY. British-Ostafrika, Pokomonie (new designation); ZMHB.

TYPE MATERIAL EXAMINED. **Kenya:** Pokomonie, 1896, 1FA (lectotype), leg. G. Denhardt, ZMHB No. 8182; Wange bei Lamu, 1896, 1MA (paralectotype No. 1), leg. G. Denhardt, ZMUH.

ADDITIONAL MATERIAL EXAMINED. **Kenya:** Wange bei Lamu, VI.–IX.1896, 1MA, leg. Ticde, ZMHB No. 8185/10197.

DIAGNOSTIC CHARACTERS. Total length is 45–56.1 mm. In contrast to female, the male has a broader manus of pedipalps. Both the movable and fixed fingers of pedipalps bear nine rows of granules (Figs 11–12). For position and distribution of trichobothria on the tibia of pedipalps see Fig. 23. Pectinal teeth number 21–22. The seventh mesosomal segment bears four ventral keels. The dorsal surface of the mesosoma is very sparsely granulated and bears an incomplete median keel. Metasomal keels are always present, but in the male they are less pronounced on the fifth metasomal segment.

The color is muddy yellow, only the fingers of pedipalps are dark and the mesosoma has three faint dark bands (Kraepelin, 1913: 181; Probst, 1973: 324).

COMMENTS. This species is based on two specimens, which I have designated as the lectotype (ZMHB female) and paralectotype No. 1 (ZMUH male). This also fixes the type locality. Pokomonie

and Wanga, Kenya, were repeatedly listed as places in Tanzania, where this species is not known to occur.

When describing the species, Kraepelin was not aware of another ZMHB specimen collected the same year and at the same locality as the paralectotype No. 1. This specimen (see Additional material examined) is important, because its length of 56.1 mm (Tab. 1) shows a marked variation in size. So far the type material indicated that the species reaches only about 45 mm (Probst, 1973: 324).

The original color of the types has been lost due to long preservation in alcohol, and it is now yellowish brown.

DISTRIBUTION. Kenya (Kraepelin 1913: 182, Probst 1973: 325).

***Babycurus wituensis taramassoi* Borelli, 1919 stat. n.**

(Figs 11–12, 24–25, 40, Tables 1–3)

*Babycurus taramassoi* Borelli, 1919: 369; Borelli, 1925: 323; Caporiatto, 1936: 140; Vachon, 1940b: 180; Moriggi, 1941: 92; Lamoral & Reynders, 1975: 498; El-Hennawy, 1992: 97, 111; Kovařík, 1998: 104.

? *Babycurus johnstoni ochraceus* Masi, 1912: 105 (TL Benadir, Mogadiscio, Somalia; ?), Moriggi, 1941: 92; El-Hennawy, 1992: 97, 111; Kovařík, 1998: 104; **syn. n.**

*Babycurus patrizii* Borelli, 1925: 320 (TL: Gumbo, Somalia; MCSN); Caporiatto, 1936: 140; Vachon, 1940b: 180; Moriggi, 1941: 92; Lamoral & Reynders, 1975: 498; El-Hennawy, 1992: 97, 111; Kovařík, 1998: 104; **syn. n.**

*Babycurus crassimanus* Caporiatto, 1936: 140 (TL: Belet Amin, Somalia; MCSN); Vachon, 1940b: 180; Moriggi, 1941: 92; Lamoral & Reynders, 1975: 497; El-Hennawy, 1992: 97, 111; Kovařík, 1998: 104; **syn. n.**

TYPE LOCALITY AND REPOSITORY. Afgoi, Somalia; MCSN.

TYPE MATERIAL EXAMINED. **Somalia:** Gumbo, VII.1923, 1F(im.)A (holotype of *Babycurus patrizii*), leg. S. Patrizi, MCSN; Belet Amin, IMA (holotype of *Babycurus crassimanus*), VI. 1924, MCSN.

ADDITIONAL MATERIAL EXAMINED. **Ethiopia:** Gemu Gofa, Arba Minch, 2–3.V.1997, 2MIF(im.)E, leg. Werner, FKCP. **Somalia:** Belet Amin, 2F8juvsA, leg. Patrizi, det Caporiatto as *B. taramassoi*, MCSN; Ola Uager, VIII.1934, 3FA, leg. Patrizi, det Caporiatto as *B. taramassoi*, MCSN; Belet Amin, VII.1934, 1M1F2juvsA, leg. Steganini & Puccioni, MZUF; Afgoi, 13.VIII.1959, 1Fim.A, 2.IX.1959, 1FA, MZUF; Giohar foresta, 3.VIII.1968, 1FA; Giohar snai, 5.VIII.1968, 1juv.A, 11.IX.1968, 1juv.A, MZUF; Giohar, IX.1969, 1juv.A, 8.VIII.1970, 1FA, MZUF; Ola Uager (Campo), 11.–12.VII.1970, 1Fim.A, MZUF; Ola Uager (Oltra Gjuba), 15.VII.1970, 2F2im.19juvs before first ecdysisA, MZUF; Ola Uager, 12.VIII.1970, 1juv.A, 15.–19.VIII.1970, 17juvsA, MZUF; Gelib, 1970, 1FA, leg. Tarabini, MZUF; Afgoi, 14.IV.1976, 1Fim.A, leg. Fagetto, MZUF; Afgoye env., X.1980, 1M3FA 1FE, FKCP.

DIAGNOSTIC CHARACTERS. Total length is 55–74 mm. Habitus is shown in Fig. 27. In contrast to female, the male has a broader manus of pedipalps (Figs 24–25, Tab. 1) and proximally flexed fingers of pedipalps (Figs 24–25). The movable fingers of pedipalps bear nine rows of granules (Figs 11–12), and the ninth row has one external granule and no (Fig. 11) or one (Fig. 12) internal granule. The fixed fingers of pedipalps bear eight rows of granules (but only seven rows were found in one specimen), and the eighth row has one external granule and no or one internal granule. For position and distribution of trichobothria on the tibia of pedipalps see Figs 24–25. Pectinal teeth number 21–28.

The manus of pedipalps is smooth, with very sparse granules or devoid of them, and without keels; however, three inconspicuous keels may be present in some females.

The seventh mesosomal segment is ventrally smooth, with four usually well defined keels. On the fourth and fifth segments the keels are poorly defined, particularly in males. These two segments are ventrally more granulated, also particularly in males. The telson is granulated as well.

The mesosoma is dorsally covered by granules that may be minute or fairly large and closely or widely spaced, and the posterior margin of each segment bears a row of larger granules.



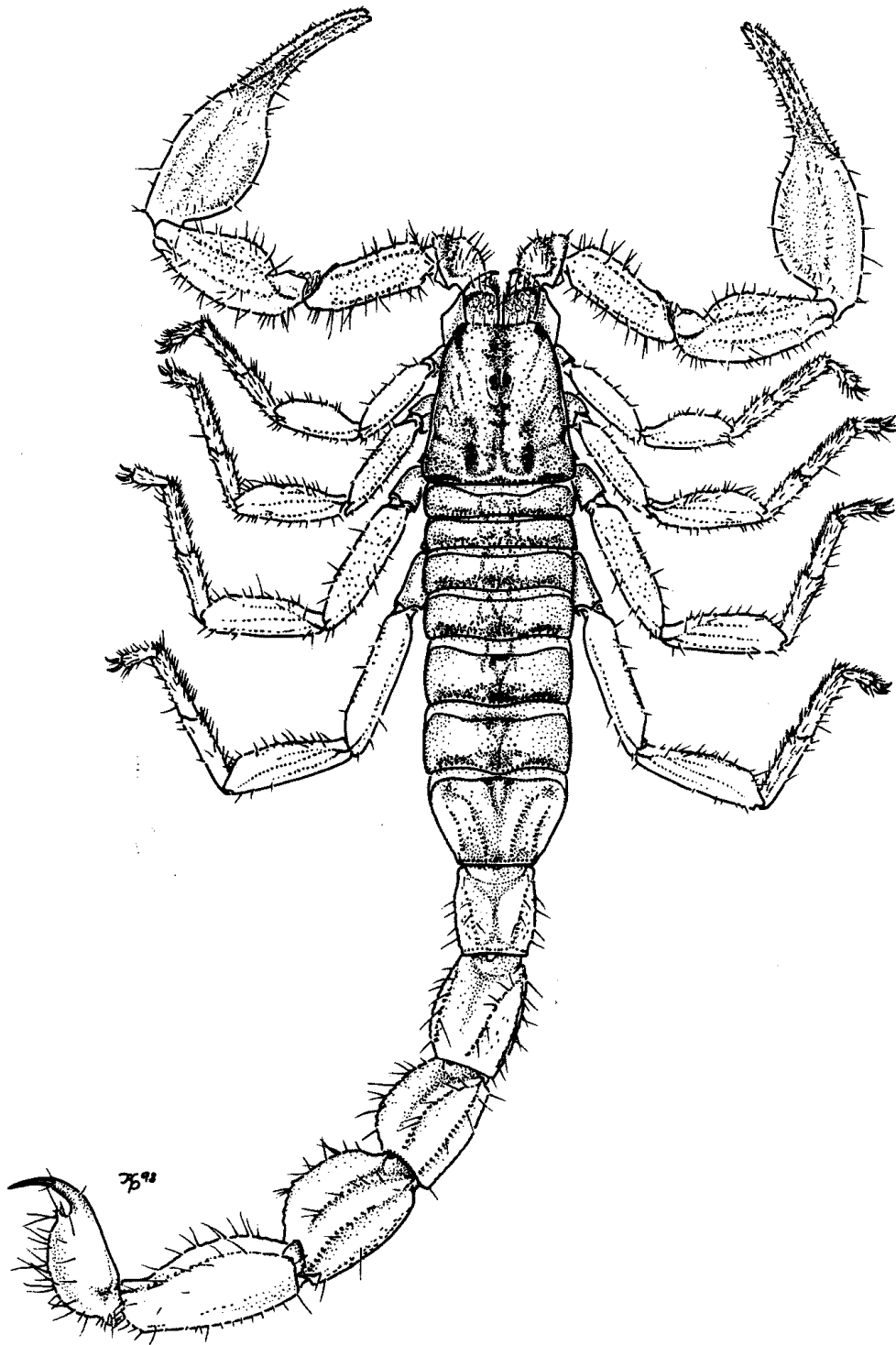


Fig. 40. *Babycurus wituensis taramassoi* Borelli, FKCP male from Ethiopia, dorsal aspect.

The color is light brown to yellow with black spots that are more pronounced in immature specimens, which are spotted also on the patella of pedipalps, metasomal segments, and telson. The fingers of pedipalps are always darker than the manus. The chelicerae are reticulated.

COMMENTS. This species is rather variable and notable differences can be found between immature females, mature females, and males. Mature individuals of both sexes have the first metasomal segment much narrower than the following segments (Tab. 1), whereas in immature specimens the first segment is as wide as the others (see the holotype of *B. patrizii*, an immature female which Borelli (1925: 320) mistook for a male). Adult males have the fourth and fifth metasomal segments wider than the preceding segments, and, furthermore, they have a broader manus of pedipalps and flexed fingers of pedipalps (see holotype of *B. crassimanus* Caporiacco (1936: 140), Table 1, and Fig. 25).

These differences confused Caporiacco (1936: 140–141), who out of 15 specimens from Belet Amin identified 14 as *B. taramassoi* without determining their sex (I examined these specimens and found them to be females and juveniles), and described the remaining specimen, an adult male, as a new species, *B. crassimanus*.

All specimens have nine rows of granules on the movable fingers of pedipalps, however the ninth row may lack or have one internal granule (Figs 11–12). The only specimen which has the internal granule on both movable fingers is the holotype of *B. patrizii*. However, this character is taxonomically worthless, because several other specimens have the internal granule present on one finger and absent on the other.

Masi (1912: 105) based *Babycurus johnstoni ochraceus* on specimens from Benadir, Mogadiscio, Somalia. According to the title of Masi's paper the types ought to be in the Museo Zoologico di Roma, but Dr. Vomero has informed me that they are not there and their whereabouts are unknown. The area of occurrence makes it very unlikely that *B. johnstoni ochraceus* could be a subspecies of *B. johnstoni* (now *B. buettneri*). I suspect *B. johnstoni ochraceus* to be a synonym of *Babycurus wituensis taramassoi*, because it is the only species of the genus with 24 teeth in the pecten (Tab. 3 and Masi 1912: 106), and it is known to occur in Somalia (Tab. 2 and Masi 1912: 105). Nothing more can be said without the type specimens at hand.

I have not been able to find a character that would allow me to separate this species from *B. wituensis* occurring in Kenya. Small differences in proportions of metasomal segments are not at all unusual in populations of *Babycurus*. Apart from geographic distribution, the only difference is the number of pectinal teeth in males, 21 or 22 in *B. wituensis* and 24–28 in *B. w. taramassoi*; however, the females of *B. w. taramassoi* have 21–26 pectinal teeth. I therefore conclude that *B. taramassoi* is a subspecies of *B. wituensis*.

DISTRIBUTION. Ethiopia (first record), Somalia (Borelli 1919: 371).

### ***Babycurus zambonellii* Borelli, 1902**

(Figs 13, 26, Tables 1–3)

*Babycurus zambonellii* Borelli, 1902: 1; Kraepelin, 1913: 181; Birula, 1917b: 215; Moriggi, 1941: 92; Caporiacco, 1947: 232; Probst, 1973: 329; Lamoral & Reynders, 1975: 499; El-Hennawy, 1992: 97, 111; Sissom, 1994: 5; Kovářik, 1998: 104.

*Babycurus zambonellii*: Vachon, 1940b: 180.

TYPE LOCALITY AND REPOSITORY. Chenafena, Eritrea; MIZT.

TYPE MATERIAL EXAMINED. Eritrea: Chenafena, IMA (holotype), leg. Zambonelli, MIZT No. Sc18(ex580).

ADDITIONAL MATERIAL EXAMINED. Yemen Arab Republic: Sana'a, VI–VII.1981, 1FA, leg. Giugno-Luglio, det. W. D. Sissom, MZUF.

DIAGNOSTIC CHARACTERS. Total length is 48.6–51.2 mm. In contrast to female, the male has a broader manus of pedipalps (Tab. 1), broader metasomal segments, and larger pectinal teeth. The fingers of pedipalps are not flexed in either sex. The movable fingers of pedipalps bear eight rows of granules (Fig. 13), and the eighth row has one external and no internal granule (Fig. 13). The fixed fingers of pedipalps bear eight rows of granules, and the eighth row lacks external or internal granule. For position and distribution of trichobothria on the pedipalps see Fig. 26 and figs 3–5 in Sissom (1994: 6). Pectinal teeth number 18–19.

The manus of pedipalps is smooth, without keels (male), or with three smooth, blunt keels devoid of granules (females).

The seventh mesosomal segment is ventrally smooth and bears four incomplete keels. Metasomal keels are always present and are composed of minute, equal-sized, rounded, and evenly spaced granules. Males have the fourth and fifth metasomal segments granulated. The telson bears long hairs; it is densely hirsute in females and probably less densely hirsute in males.

DISTRIBUTION. Eritrea (Borelli 1902: 3), Yemen (Sissom 1994: 5).

### Key to *Babycurus* species

1. Movable finger of pedipalps with 9–10 rows of granules (Figs 4–5). ..... 2
  - Movable finger of pedipalps with 7–8 rows of granules (Figs 8–10). ..... 5
2. Movable finger of pedipalps with 10 rows of granules (Fig. 5). ..... 3
  - Movable finger of pedipalps with 9 rows of granules (Fig. 4). ..... 17
3. Total length of adult between 89 and 110 mm. Tenth row of granules on movable finger with one or very rarely two external granules. .... *B. gigas* Kracpelin
  - Total length of adult less than 70 mm. .... 4
4. Tenth row of granules on movable finger without external granules. Ventral surface of fifth metasomal segment smooth, without discernible granules. .... *B. kirki* (Pocock)
  - Tenth row of granules on movable finger with one external granule. Ventral surface of fifth metasomal segment with numerous large granules. .... *B. multisubaculeatus* sp. n.
5. Movable finger of pedipalps with 7 rows of granules (Fig. 9). ..... 6
  - Movable finger of pedipalps with 8 rows of granules (Fig. 8). ..... 12
6. Seventh row of granules on movable finger without external granule (Fig. 9). ..... 7
  - Seventh row of granules on movable finger with one external granule (Fig. 10). ..... 8
7. Seventh mesosomal segment bears four ventral keels. .... *B. ugartei* sp. n.
  - Seventh mesosomal segment lacks ventral keels. .... *B. ornatus* Werner
8. Rows of granules on movable finger with two external granules (apart from terminal granule) (Figs 2–3). ... 10
  - Rows of granules on movable finger with one external granule (apart from terminal granule) (Fig. 10). .... 9
9. Pectinal teeth number 16. Metasoma very slender, fifth metasomal segment with length to width ratio higher than 2.6. .... *B. subpunctatus* Borelli
  - Pectinal teeth number 19–20. Metasoma not very slender, fifth metasomal segment with length to width ratio lower than 2.4. .... *B. somalicus* Hirst
10. Fifth metasomal segment of male markedly wider (Fig. 36, Tab. 1). .... *B. ansorgei* Hirst
  - Fifth metasomal segment of male as wide as, or only slightly wider than, preceding segment. .... 11
11. Segments of pedipalps notably long, especially in male. Tibia length to width ratio higher than 4.2. .... *B. centrurimorphus* Karsch
  - Segments of pedipalps not notably long. Tibia length to width ratio lower than 4.0. .... *B. pictus* Pocock
12. Eighth row of granules on movable finger with one external granule (Fig. 13). ..... 13
  - Eighth row of granule on movable fingers with two external granules (Fig. 8). ..... 16
13. Rows of granules on movable finger with one external granule (apart from terminal granule) (Fig. 13). .... 14
  - Rows of granules on movable finger with two external granules (apart from terminal granule) (Figs 2–3). ... 15
14. Ventral surface of fifth metasomal segment granulated in male. Total length more than 45 mm. Pectinal teeth number 18–19. .... *B. zambonelli* Borelli
  - Ventral surface of fifth metasomal segment smooth in male. Total length less than 40 mm. Pectinal teeth number 21–22. .... *B. exquisitus* Lowe
15. Fifth metasomal segment of male markedly wider (Fig. 36, Tab. 1). .... *B. ansorgei* Hirst

- Fifth metasomal segment of both sexes as wide as, or only slightly wider than, the preceding segment. .... *B. jacksoni* (Pocock)
- 16. Fifth metasomal segment entirely smooth, without keels (keels rarely indicated in males). .... *B. kirki* (Pocock)
- Fifth metasomal segment with five keels in both sexes. .... *B. buettneri* Karsch
- 17. Ninth row of granules on movable finger of pedipalps with external granules (Fig. 7). .... 18
- Ninth row of granules on movable finger of pedipalps without external granules (Fig. 4). ... *B. buettneri* Karsch
- 18. Ninth row of granules on movable finger of pedipalps with one external granule (Fig. 11). .... 19
- Ninth row of granules on movable finger of pedipalps with two external granules (Figs 7–8). .... *B. kirki* (Pocock)
- 19. Fifth metasomal segment length to width ratio higher than 2.2. .... *B. melanicus* sp. n.
- Fifth metasomal segment length to width ratio lower than 2. .... 20
- 20. Pectinal teeth of male number 21–22. Total length of adult between 45 and 57 mm. .... *B. wituensis wituensis* Kraepelin
- Pectinal teeth of male number 24–28. Total length of adult between 55 and 74 mm. .... *B. wituensis taramassoi* Borelli

### Checklist of the genus *Babycurus* Karsch, 1886

- Babycurus ansorgei* Hirst, 1911  
 = *Babycurus crassicaudatus* Roewer, 1952: 28 syn. n.
- Babycurus buettneri* Karsch, 1886  
 = *Babycurus johnstonii* Pocock, 1896: 429 syn. n.
- Babycurus centrurimorphus* Karsch, 1886
- Babycurus exquisitus* Lowe, 2000
- Babycurus gigas* Kraepelin, 1896
- Babycurus jacksoni* (Pocock, 1890)
- Babycurus kirki* (Pocock, 1890)  
 = *Babycurus neglectus* Kraepelin, 1896
- Babycurus melanicus* sp. n.
- Babycurus multisubaculeatus* sp. n.
- Babycurus ornatus* Werner, 1936
- Babycurus pictus* Pocock, 1896
- Babycurus somalicus* Hirst, 1907
- Babycurus subpunctatus* Borelli, 1925
- Babycurus ugartei* sp. n.
- Babycurus wituensis wituensis* Kraepelin, 1913
- Babycurus wituensis taramassoi* Borelli, 1919 stat. n.  
 = ? *Babycurus johnstoni ochraceus* Masi, 1912 syn. n.  
 = *Babycurus patrizii* Borelli, 1925 syn. n.  
 = *Babycurus crassimanus* Caporiacco, 1936 syn. n.
- Babycurus zambonellii* Borelli, 1902

### DISCUSSION

Examination of specimens has revealed a relatively high level of intraspecific variation in overall length and in the shape of metasomal and pedipalp segments. A good example of this is *B. wituensis* (see above).

The revision has revealed sexual dimorphism that in a great majority of species is manifested by a broader manus of pedipalps and a slight proximal flexure of the fingers of pedipalps in males. A broader manus is not present only in the male of *B. centrurimorphus*, which in contrast to the female has the individual segments of pedipalps longer (Figs 33–34). Another difference between the sexes of some species (*B. ansorgei*, *B. wituensis*) can be seen in the widening of posterior metasomal segments, which characterizes males. Because of these features, species identification is usually easy for adult males and difficult for adult females, and it is sometimes impossible to unequivocally identify immature specimens. The availability of a male is therefore more important in

this genus than in many other genera of scorpions, which is well apparent from the above synonymization of *B. crassicaudatus* Roewer, 1952 that is easily recognized on the shape of the fifth metasomal segment (Fig. 36), but was originally described as *B. ansorgei* Hirst, 1911 based on the female which lacks this feature.

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