

Revision of family Scorpiopidae (Scorpiones), with descriptions of six new species

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Abstract. The family Scorpiopidae is revised, with diagnostic characters and geographic distributions given for all of its genera and species. Lectotypes are designated for *Scorpiops affinis* Kraepelin, 1898, *S. austerus* Hirst, 1911, *S. insculptus* Pocock, 1900, *S. solidus* Karsch, 1879, *Neoscorpiops satarensis* (Pocock, 1900), and *N. tenuicauda* (Pocock, 1894). The subgenus *Euscorpiops* Vachon, 1980, regarded in recent papers as a genus, is synonymized with the genus *Scorpiops* Peters, 1862. *Scorpiops affinis* Kraepelin, 1898, *S. crassimanus* Pocock, 1899, and *S. insculptus* Pocock, 1900 are synonymized with *Scorpiops hardwickii* (Gervais, 1843); *Scorpiops petersii vonwicksi* Birula, 1913 is synonymized with the nominotypical *Scorpiops petersii* Pocock, 1893; and *Scorpiops kraepelini* Lourenço, 1998 is synonymized with *Scorpiops lindbergi* Vachon, 1980. The subspecies *Scorpiops hardwickii jendeki* Kovařík, 1994 is elevated to species. *Scorpiops braunwalderi* sp. n. (India, Uttar Pradesh), *S. dastychi* sp. n. (India, Uttar Pradesh), *S. feli* sp. n. (India, Sikkim and West Bengal), *S. magerisonae* sp. n. (China, Tibet), *S. problematicus* sp. n. (Thailand), and *S. sejnai* sp. n. (Vietnam) are described and a key to the genera and species of the family Scorpiopidae is provided. First records are established for *S. hardwickii* (Gervais, 1843) in China and Pakistan, and *S. asthenurus* in Bhutan.

Taxonomy, description, revision, new species, new combination, checklist, key, Scorpiones, Scorpiopidae, Oriental region

INTRODUCTION

The family Scorpiopidae includes 30 species in five genera inhabiting the Oriental region (Table 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 Scorpiopidae. Unfortunately, I have not been able to examine either the types or any other specimens of six species (*Alloscorpiops lindstroemii*, *Dasyscorpiops grandjeani*, *Scorpiops bhutanensis*, *Scorpiops oligotrichus*, *Scorpiops pachmarhicus*, *Scorpiops rohtangensis*).

MATERIAL AND METHODS

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

- BMNH – The Natural History Museum, London, U. K.;
- 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;

MCZC – Museum of Comparative Zoology, Harvard University, Cambridge, Massachusetts, USA;
 MNHN – Muséum national d'Histoire naturelle, Paris, France;
 MZUF – Museo Zoologico de "La Specola", Firenze, Italy;
 NHMB – Naturhistorisches Museum, Basel, Switzerland;
 NMPC – National Museum (Natural History), Praha, Czech Republic;
 NZSI – National Zoological Survey of India, Calcutta, India;
 ROCC – Lic. Rolando Teruel Ochoa Collection, Museo de Historia Natural "Tomás Romay", Santiago de Cuba, Cuba;
 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; A: specimens preserved in alcohol; E: specimens mounted dry; im: immature; TL: type locality; TS: type species; ht: holotype; at: allotype; pt: paratype; lt: lectotype; plt: paralectotype.

Type localities are given exactly as in the original descriptions and abbreviations are supplemented by details from labels or by current political units/divisions (e. g. Malaysia, Sarawak instead of just "Sarawak").

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

Unfortunately, some locality 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, including those of Prof. Vachon (e. g. VA 2399), are given for the sake of completeness, although I have been informed that no notations pertaining to Vachon's numbers can be found.

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.

Scorpiopidae Kraepelin, 1905 (Figs 1–72, Tables 1–3)

Pandinoidea: Thorell, 1876: 11 (in part); Ausserer, 1880: 465 (in part).

Vejovini (in part): Kraepelin, 1894: 181.

Vejovidae: Kraepelin, 1899: 176 (in part); Pocock, 1900: 64; Kraepelin, 1913: 153; Birula, 1917: 57 (in part).

Luridae (in part): Pocock, 1893: 323; Pocock, 1894: 77.

Vaejovidae: Pocock, 1899: 266 (in part).

Scorpiopsinae Kraepelin, 1905: 341; Francke, 1976: 75; Sissom, 1990: 114.

Scorpiopsidae: Stockwell, 1989: 119; Stockwell, 1992: 407; Kovařík, 1998: 141; Lourenço, 1998: 246.

TYPE GENUS. *Scorpiops* Peters, 1862.

DIAGNOSTIC CHARACTERS. Patella of pedipalp with 6–19 ventral trichobothria positioned in a row along the external margin, femur of pedipalp with 3 trichobothria, retrolateral pedal spurs present (Sissom 1990: 74, fig. 3.8B), sternum distinctly subpentagonal, cheliceral movable finger without a large darkened basal tooth on the internal margin, fingers of pedipalp with a double row of granules, median eyes always present, metasomal segments I–IV with paired ventral submedian keels. This combination of characters differentiates family Scorpiopidae from all other scorpion families.

COMMENTS. Kraepelin (1905) erected Scorpiopsinae as a subfamily of Vaejovidae. The fact that this family is inadequately defined was first pointed out by Stockwell (1989: 119), who also elevated all the subgenera of *Scorpiops* to genera. Since Stockwell's work (1989) is an unpublished dissertation, its taxonomic conclusions are not formal and binding. However, Stockwell's conclusions were later published in Journal of Medicinal Entomology (1992), where he concentrated on North American taxa but also mentioned the elevation of Scorpiopsinae to family status. His conclusions were confirmed by Kovařík (1998: 141–2) and Lourenço (1998: 245), who formalized the change from subfamily to family status. The grammatically incorrect name Scorpiopsidae is hereby modified to Scorpiopidae.

***Alloscorpiops* Vachon, 1980**
(Figs 8, 24, 26, Tables 1–3)

Scorpiops (*Alloscorpiops*) Vachon, 1980: 151; Bastawade, 1997: 104.

Alloscorpiops: Stockwell, 1989: 120; Sissom, 1990: 114; Kovářik, 1998: 141; Lourenço, 1998: 246.

TYPE SPECIES. *Scorpiops anthracinus* Simon, 1887.

DIAGNOSTIC CHARACTERS. This genus is defined by the presence of three pairs of lateral eyes and 10–12 ventral trichobothria on the manus of pedipalps. External trichobothria on the patella of pedipalps number 23–24, and the ventral surface of the patella bears 15–19 trichobothria. Trichobothrium Eb3 on the external surface of the tibia is always situated between trichobothria Dt and Est (Fig. 31).

COMMENTS. The genus *Alloscorpiops* was described by Vachon (1980) as a subgenus and with the change from subfamily to family status was elevated to genus.

***Alloscorpiops anthracinus* (Simon, 1887)**
(Figs 8, 24, 26, Tables 1–3)

Scorpiops anthracinus Simon, 1887: 112; Pocock, 1893: 328; Kraepelin, 1899: 180; Pocock, 1900: 74; Kraepelin, 1913: 161 (in part); Takashima, 1945: 98.

Scorpiops (*Alloscorpiops*) *anthracinus*: Vachon, 1980: 151.

Alloscorpiops anthracinus: Kovářik, 1998: 141.

Scorpiops montanus (in part ?): Kraepelin, 1894: 192.

TYPE LOCALITY AND TYPE DEPOSITION. Tavoy; MNHN.

MATERIAL EXAMINED. Myanmar: Tavoy (Tenasserim), 1M1juv.A, Mus. Calcutta, X.1912, ZMUH.

DIAGNOSTIC CHARACTERS. Total length is 48–60.6 mm (holotype and one examined specimen). For the position and distribution of trichobothria on the tibia and patella of pedipalps see Figs 8, 24, and 26. Measurements of the carapace, telson, segments of the metasoma and segments of the pedipalps, and numbers of pectinal teeth are given in Table 1. There are 23–24 external trichobothria (5 eb, 2 esb, 2 em, 8–9 est, 6 et) (Fig. 8) and 16–17 ventral trichobothria (Fig. 26) on the patella [Pocock (1900) and Kraepelin (1913) counted 19 ventral trichobothria]. The ventral surface of the tibia bears 11 trichobothria (Fig. 24) [Pocock (1900) counted 10]. Pectinal teeth number 10–11. The carapace is sparsely and finely granulated, and anteriorly bears four longitudinal keels composed of large granules.

The manus of pedipalps is dorsally covered with fine, sparse granules and bears a central longitudinal keel composed of larger granules. Altogether, the manus bears eight keels.

The mesosoma is granulated and bears three median keels. The ventral surface of the seventh mesosomal segment is smooth, without keels.

The first through third metasomal segments have 10 keels, the fourth segment has eight keels, and the fifth segment has seven keels. All the keels are distinctly elevated and composed of granules of nearly equal size. The dorsolateral keels of the first four segments are serrated and each keel posteriorly terminates in a pronounced tooth.

COMMENTS. *Alloscorpiops anthracinus* is based on one specimen for which Simon did not determine the sex. I have not been able to examine the type.

DISTRIBUTION. Myanmar (Simon 1887: 112).

***Alloscorpiops lindstroemii* (Thorell, 1889)**
(Tables 2, 3)

Scorpiops lindstroemii Thorell, 1889: 573; Pocock, 1893: 328; Pocock, 1900: 74; Takashima, 1945: 99.
Scorpiops (Alloscorpiops) lindstroemi: Vachon, 1980: 151.
Alloscorpiops lindstroemi: Kovařík, 1998: 141.
Scorpiops montanus (in part): Kraepelin, 1894: 192; Kraepelin, 1899: 180; Minnocci, 1974: 42.
Scorpiops anthracinus (in part): Kraepelin, 1913: 161.
Scorpiops lugubris Thorell, 1889: 579 (TL: Plapoo in monte Mooleyit; MCSN); Pocock, 1893: 328 (syn. by Pocock, 1900: 74).

TYPE LOCALITY AND TYPE DEPOSITION. Plapoo in monte Mooleyit; MCSN.

DIAGNOSTIC CHARACTERS. Total length is 68 mm (Thorell 1889: 578). The position and distribution of trichobothria on the tibia and patella of pedipalps have not been published. Ventral trichobothria on the patella number 15 (Pocock 1900: 66), and pectinal teeth number 8 (Thorell 1889: 578).

COMMENTS. *A. lindstroemii* is based on one specimen collected by Mr. Fea in Myanmar. *Scorpiops lugubris*, based on a 24 mm long juvenile from the same locality (Thorell 1889: 583), was regarded by Pocock (1900: 74) as a junior synonym of *A. lindstroemii*.

Kraepelin (1913: 161–162) doubted the validity of *A. lindstroemii* and thought that it could be a synonym of *A. anthracinus*. He believed the type of *A. lindstroemii* to be a female of *A. anthracinus* and their different numbers of pectinal teeth to be only due to sexual dimorphism. Unfortunately, I have not been able to examine the type or any other specimens of this species, and the diagnostic characters are therefore based solely on the authors cited. The above synonymy thus remains tentative and can be definitely resolved only upon examination of the *A. lindstroemii* type.
DISTRIBUTION. Myanmar (Thorell 1889: 579).

***Dasyscorpiops* Vachon, 1974**
(Tables 2, 3)

Dasyscorpiops Vachon, 1974: 952; Francke, 1976: 82; Stockwell, 1989: 120; Sissom, 1990: 114; Kovařík, 1998: 141; Lourenço, 1998: 246.

TYPE SPECIES. *Dasyscorpiops grandjeani* Vachon, 1974.

DIAGNOSTIC CHARACTERS. This monotypic genus is defined by the presence of three pairs of lateral eyes and 85 trichobothria on the patella of pedipalps, which is a number far greater than in other genera of the family. Of these trichobothria, 59 or 60 are situated on the external surface of the patella. Other characters are given in the diagnosis of *D. grandjeani* below.

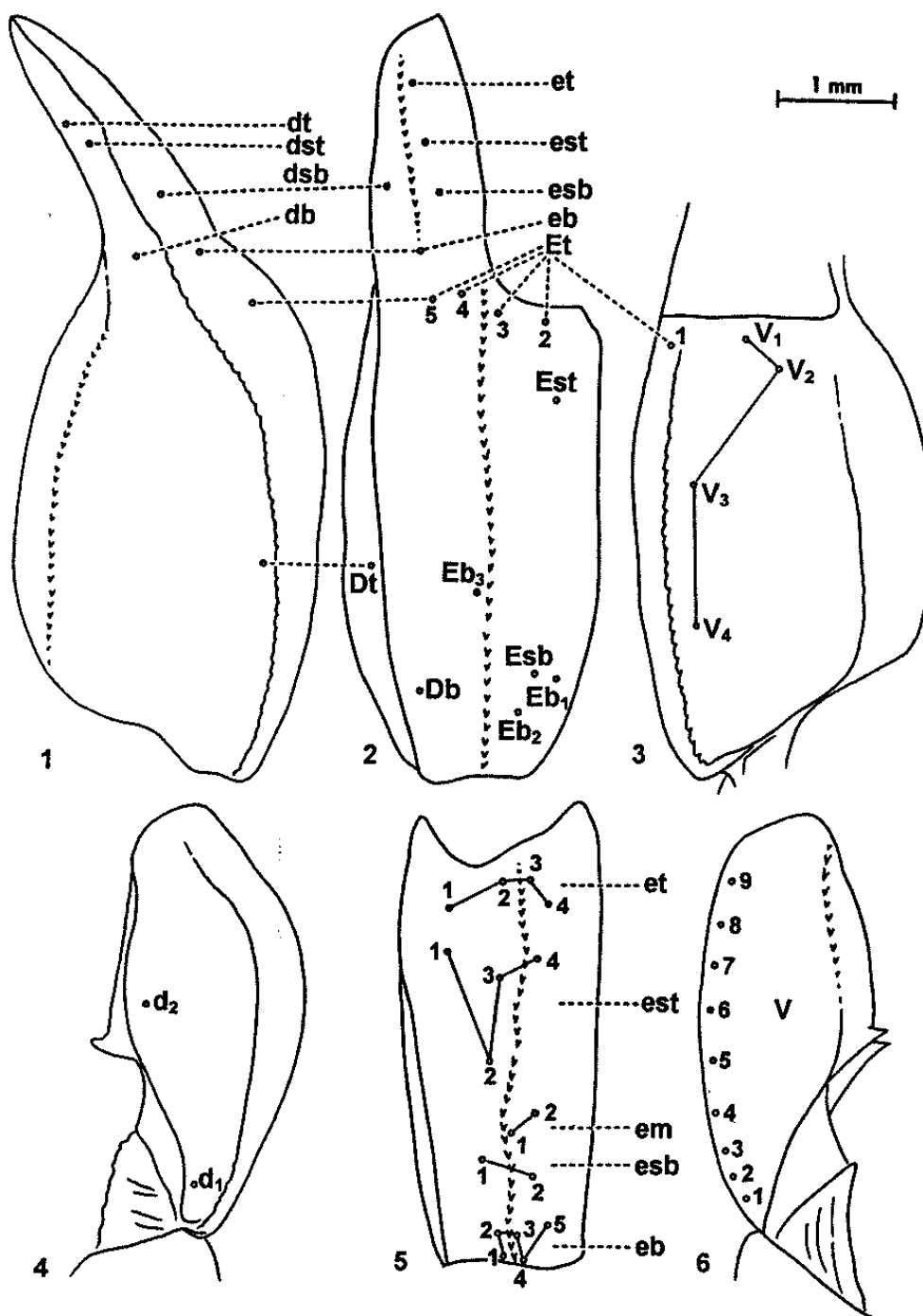
***Dasyscorpiops grandjeani* Vachon, 1974**
(Tables 2, 3)

Dasyscorpiops grandjeani Vachon, 1974: 953; Kovařík, 1998: 141; Lourenço, 1998: 251.

TYPE LOCALITY AND TYPE DEPOSITION. Malacca; MNHN.

DIAGNOSTIC CHARACTERS. Total length of the holotype is 38 mm (Vachon 1974: 953). Habitus is shown in Lourenço, 1998: 251, fig. 12. There are 59–60 external trichobothria and 23 ventral trichobothria on the patella (Vachon 1974: 926, figs 142, 147). The chela of pedipalps bears 26 trichobothria, of which four are on the ventral surface. Pectinal teeth number 8 and 9.

COMMENTS. The species is based on one female, No. 0731 at MNHN.



Figs 1–6. *Scorpiops farkaci* Kovařík, female paratype No. 5. In Figs 1–3 the first capital letters denote trichobothria situated on the manus, and the first lower-case letters denote those situated on the fixed finger of pedipalp. Figs 4–6 show the distribution of trichobothria on the patella of pedipalp. Explanations: First letters: V, ventral, D, dorsal, E, external. Second or second plus third letters: b, basal, sb, suprabasal, m, medial, st, subterminal, t, terminal. Numerals distinguish individual trichobothria of the same classification. Designation and description of trichobothria according to Vachon (1974, 1980). Morphological terminology according to Stahnke (1970).

Unfortunately, I have not been able to examine the type or any other specimens of this species, and the diagnostic characters are therefore based solely on the authors cited.
DISTRIBUTION. Malaysia (Vachon 1974: 953).

***Neoscorpiops* Vachon, 1980**
(Figs 9–12, 27, 30, Tables 1–3)

Scorpiops (*Neoscorpiops*) Vachon, 1980: 151; Tikader & Bastawade, 1983: 383; Bastawade, 1997: 104.
Neoscorpiops: Stockwell, 1989: 120; Sissom, 1990: 114; Kovařík, 1998: 141; Lourenço, 1998: 246.

TYPE SPECIES. *Scorpiops montanus satarensis* Pocock, 1900.

DIAGNOSTIC CHARACTERS. This genus is defined by the presence of three pairs of lateral eyes and 22–27 external trichobothria on the patella of pedipalps (Figs 9–12). The ventral surface of the patella bears 12–18 trichobothria (Fig. 27), and the ventral surface of the manus has four (Fig. 3). Trichobothrium Eb3 on the external surface of the tibia is always situated between trichobothria Dt and Db (Fig. 30).

COMMENTS. The genus *Neoscorpiops* was described by Vachon (1980) as a subgenus and with the change from subfamily to family status was elevated to genus.

***Neoscorpiops deccanensis* (Tikader et Bastawade, 1977)**
(Figs 9, 27, 30, Tables 1–3)

Scorpiops deccanensis Tikader et Bastawade, 1977: 141.
Scorpiops (*Neoscorpiops*) *deccanensis*: Vachon, 1980: 155; Tikader & Bastawade, 1983: 383; Tikader, 1987: 34; Bastawade, 1997: 104.
Neoscorpiops deccanensis: Kovařík, 1998: 141.

TYPE LOCALITY AND TYPE DEPOSITION. India, Maharashtra, Sinhgarh, 16 km SW of Poona City; NZSI.

MATERIAL EXAMINED. **India**: Singahad, Poona, 29.X.1979, 1FA, leg. K. Matthews, det. D. B. Bastawade, MBCZ.

DIAGNOSTIC CHARACTERS. Total length is 51.6–55 mm. For position and distribution of trichobothria on tibia and patella of pedipalps see Figs 9, 27, and 30. Measurements of the carapace, telson, segments of the metasoma and segments of the pedipalps, and numbers of pectinal teeth are given in Table 1. There are 26–27 external trichobothria (5 eb, 2 esb, 2 em, 10 est, 7–8 et) (Fig. 9) and 15–18 ventral trichobothria on the patella (Fig. 27). Pectinal teeth number 6–7.

COMMENTS. *N. deccanensis* is based on six specimens of both sexes, of which five were collected at the type locality on 25.V. and 19.VI.1976, and one was found in the Kala Caves, north of Poona, Maharashtra, on 18.IX.1976.

DISTRIBUTION. India (Maharashtra) (Tikader & Bastawade 1977: 143).

***Neoscorpiops satarensis* (Pocock, 1900)**
(Figs 10, 11, Tables 1–3)

Scorpiops montanus satarensis Pocock, 1900: 71; Takashima, 1945: 98.
Scorpiops (*Neoscorpiops*) *satarensis*: Vachon, 1980: 155; Tikader & Bastawade, 1983: 388; Bastawade, 1997: 104.
Neoscorpiops satarensis: Kovařík, 1998: 142.

TYPE LOCALITY AND TYPE DEPOSITION. India, Mahabaleshwar, Satára district; BMNH.

TYPE MATERIAL EXAMINED. **India:** Mahableshwar, Satára district, IFA (lectotype), leg. Wroughton, BMNH No. 1896.6.13.8.15.

FURTHER MATERIAL EXAMINED. **India:** Satara dist., Mahableshwar, IMA, Mus. Calcutta, VIII.1913, ZMUH; Panrel, 6.X.1955, IFA, FKCP.

DIAGNOSTIC CHARACTERS. Total length is 51–60 mm. For position and distribution of trichobothria on the patella of pedipalps see Figs 10–11. Measurements of the carapace, telson, segments of the metasoma and segments of the pedipalps, and numbers of pectinal teeth are given in Table 1. Trichobothria on the external surface of the patella number 22–23 (5 eb, 2 esb, 2 em, 7–8 est, 5–6 et). The positions of trichobothria em, est, and et are variable (Figs 10–11). Ventral trichobothria on the patella number 13–14. Pectinal teeth number 6–7. The carapace is granulated and its posterior and lateral portions are punctate.

The manus of pedipalps dorsally bears equal-sized granules that form a wide longitudinal strip medially and a lattice with smooth facets more laterally.

The mesosoma is sparsely granulated, with one median keel and two symmetrical, smooth surfaces on each mesosomal segment. The ventral surface of the seventh mesosomal segment either bears four poorly developed oblique keels, or is altogether devoid of keels. The first metasomal segment bears 10 or eight keels, and the second through fourth segments bear eight keels. On the second metasomal segment there may also be two lateral keels consisting of several granules. The dorsolateral keels, chiefly of the third and fourth segments, posteriorly terminate in a pronounced tooth.

COMMENTS. *N. satarensis* is based on one male and one female. I examined the female and designated it as the lectotype. This female was examined in 1978 also by Vachon, who assigned it No. VA 2392-1. However, he incorrectly regarded this specimen as the holotype.

DISTRIBUTION. India (Maharashtra) (Pocock 1900: 73).

***Neoscorpiops tenuicauda* (Pocock, 1894)**
(Fig. 12, Tables 1–3)

Scorpiops tenuicauda Pocock, 1894: 77; Kraepelin, 1899: 181.

Scorpiops montanus tenuicauda: Pocock, 1900: 72; Fage, 1933: 30; Takashima, 1945: 98.

Scorpiops (*Neoscorpiops*) *tenuicauda*: Vachon, 1980: 155; Tikader & Bastawade, 1983: 396; Bastawade, 1997: 104.

Neoscorpiops tenuicauda: Kovařík, 1998: 142.

TYPE LOCALITY AND TYPE DEPOSITION. India, Deccan; BMNH.

TYPE MATERIAL EXAMINED. **India:** Deccan, IMA (lectotype), BMNH No. 1897.9.17.42.43, rev. M. Vachon (No. VA 2393-1).

DIAGNOSTIC CHARACTERS. Total length is 36–48 mm. For position and distribution of trichobothria on the patella of pedipalps see Fig. 12. Measurements of the carapace, telson, segments of the metasoma and segments of the pedipalps, and numbers of pectinal teeth are given in Table 1. There are 25 trichobothria on the external surface of the patella (5 eb, 2 esb, 2 em, 9 est, 7 et) (Fig. 12). Ventral trichobothria on the patella of the examined specimen number 15, however Pocock (1894, 1900) counted 12–13. Pectinal teeth number 6–7. The carapace is densely and very finely granulated, with larger smooth areas only behind the lateral eyes.

The manus of pedipalps is dorsally covered by granules that form a wide longitudinal strip in the center and a lattice with relatively large smooth facets in the remaining area.

The mesosoma is sparsely granulated and bears one median keel. The ventral surface of the seventh mesosomal segment is smooth, without keels. The first metasomal segment bears 10 keels, the second through fourth segments bear eight keels, and the fifth segment bears seven keels. The

Tab. 1. Measurements (in millimetres) of scorpions species. 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						P T					
	L	L	W	L	L	T	I	II	III	IV	V	tel.	femur	patella	tibia	ma.	fin.	
<i>Alloscorpions anthracinus</i>																		
M, ZMUH	60.6	9.2	8.4	29.3	2.7	3.3	2.9	2.9	3.2	2.7	3.9	2.5	7.7	2.4	8.8	8.0	3.1	7.1 3.0 16.8 4.3 9.5 11:11
<i>Neoscorpions deccanensis</i>																		
F, MBCZ	51.6	7.3	8.0	21.6	2.5	2.4	2.5	2.0	2.7	1.9	3.2	1.7	5.0	1.7	5.6	8.0	3.0	7.1 2.9 14.7 4.5 7.3 6:6
<i>N. satorensis</i>																		
M (im), ZMUH	42.5	6.7	6.8	20.3	2.0	2.2	2.2	1.9	2.5	1.9	2.9	1.8	4.9	1.7	5.5	6.5	2.9	6.4 2.9 13.2 4.3 6.8 7:7
F, LT, BMNH	59.8	8.0	8.9	22.1	2.1	2.7	2.5	2.3	2.8	2.1	3.3	1.9	5.5	1.9	5.9	8.2	3.5	8.0 3.7 16.0 5.7 8.1 7:7
<i>N. tenuicauda</i>																		
M, LT, BMNH	47.9	7.6	7.6	23.6	2.3	2.4	2.6	2.2	3.0	2.1	3.5	2.0	5.4	1.9	6.5	8.4	3.1	7.3 3.1 15.5 4.7 7.5 7:7
<i>Parascorpions montanus</i>																		
F, FKCP	40.3	5.9	5.6	20.7	2.1	1.9	2.4	1.6	2.8	1.5	3.2	1.5	4.8	1.5	5.2	5.4	2.3	5.4 2.6 11.8 4.2 6.0 6:6
<i>Scorpions asthenurus</i>																		
M, HT, BMNH	35.8	5.5	5.6	16.8	1.7	1.9	1.8	1.8	2.0	1.7	2.4	1.5	4.0	1.5	4.6	5.8	2.0	5.5 2.4 10.9 3.4 5.7 6:6
F, ZMUH	45.0	7.3	7.6	21.4	2.2	2.4	2.3	2.1	2.5	2.0	2.9	1.8	5.4	1.8	6.0	8.0	2.5	6.8 2.7 15.4 3.9 7.4 6:6
<i>S. binghamii</i>																		
M, HT, BMNH	52.8	7.8	7.5	25.8	2.5	3.1	2.7	2.9	2.8	2.7	3.6	2.5	6.5	2.5	7.4	8.0	3.0	7.5 3.1 15.8 4.4 7.7 9:9
F, ZMUH	50.0	7.1	7.0	21.7	2.1	2.6	2.2	2.3	2.5	2.1	3.0	2.1	5.2	2.0	6.3	6.6	2.4	6.3 2.6 13.1 3.9 7.1 7:6
<i>S. braunwalderi</i> sp. n.																		
M, HT, FKCP	40.5	5.4	5.7	20.9	2.2	2.9	2.6	2.5	2.9	2.4	3.2	2.2	4.7	1.9	4.7	5.0	2.1	5.5 2.3 9.2 3.9 4.7 6:6
<i>S. dasychi</i> sp. n.																		
M, HT, ZMUH	38.8	5.2	5.2	21.0	2.0	2.7	2.5	2.5	2.8	2.4	3.2	2.3	4.9	2.0	5.0	5.3	2.1	6.0 2.2 10.4 3.4 5.0 6:6
F, AT, ZMUH	35.5	5.0	5.1	19.0	2.0	2.8	2.4	2.4	2.5	2.3	2.9	2.2	4.6	1.9	4.4	4.1	1.9	4.8 2.1 8.7 3.6 4.0 6:6
<i>S. farkaci</i>																		
M, HT, FKCP	24.8	4.3	4.5	13.8	1.4	2.0	1.8	1.9	2.0	1.8	2.1	1.7	3.7	1.6	3.8	4.2	1.8	4.7 1.9 8.0 2.7 3.9 7:7
M, PT No. 2, FKCP	32.5	4.6	4.7	15.3	1.5	2.1	1.8	2.0	2.1	1.9	2.4	1.8	4.0	1.7	4.2	4.5	1.9	4.8 2.0 8.0 2.9 3.9 7:7
F, PT No. 7, FKCP	36.6	4.6	4.8	16.0	1.5	2.1	1.8	2.0	2.0	1.9	2.3	1.9	3.8	1.7	4.0	4.0	1.7	4.3 2.0 7.9 3.2 4.0 6:6
<i>S. fetti</i> sp. n.																		
M, HT, ZMUH	54.2	7.3	7.2	30.7	2.8	3.5	3.5	3.0	4.0	2.8	4.5	2.7	7.3	2.6	8.0	7.0	2.6	7.0 2.9 14.3 4.8 7.2 8:8
F, AT, ZMUH	51.7	7.2	7.1	26.5	2.7	3.3	3.1	2.9	3.4	2.8	3.6	2.6	6.3	2.4	6.5	6.1	2.4	6.0 2.8 13.0 4.4 7.0 7:7

dorsolateral keels, mainly those of the third and fourth segments, posteriorly terminate in a pronounced tooth.

COMMENTS. Pocock (1894) did not select a holotype, and I therefore designate the examined male from the type series as the lectotype. This male was examined also by Vachon, who assigned it No. VA 2393-1.

DISTRIBUTION. India (Maharashtra) (Pocock 1894: 77).

***Parascorpiops* Banks, 1928**

(Figs 13, 23, Tables 1–3)

Parascorpiops Banks, 1928: 505; Werner, 1934: 283; Stahnke, 1974: 124; Stockwell, 1989: 120; Sissom, 1990: 114; Kovařík, 1998: 142; Lourenço, 1998: 246.

TYPE SPECIES. *Parascorpiops montana* Banks, 1928.

DIAGNOSTIC CHARACTERS. This monotypic genus is unequivocally defined by only two pairs of lateral eyes, as all other scorpionid genera have three pairs of lateral eyes. Other characters are given in the diagnosis of *P. montanus* below.

***Parascorpiops montanus* Banks, 1928**

(Figs 13, 23, Tables 1–3)

Parascorpiops montana Banks, 1928: 506; Takashima, 1945: 97; Stahnke, 1974: 124; Francke, 1976: 75; Goyfon, 1993: 246; Kovařík, 1994: 198; Kovařík, 1998: 142.

Parascorpiops montanus: Werner, 1934: 283.

TYPE LOCALITY AND TYPE DEPOSITION. Sarawak, Mt. Poi; MCZC.

MATERIAL EXAMINED. **Malaysia:** Borneo, Sarawak, Matang, cca 20 km W of Kuching, 1FA, 1870, FKCP.

DIAGNOSTIC CHARACTERS. Total length is 40.3–55.1 mm. The male has fingers of pedipalps flexed (Francke 1976: 81, fig. 11), whereas in the examined female they are straight. For position and distribution of trichobothria on the tibia and patella of pedipalps see Figs 13, 23, and Francke (1976: 81, figs 7–12). Measurements of the carapace, telson, segments of the metasoma and segments of the pedipalps, and numbers of pectinal teeth are given in Table 1. There are 17 external trichobothria (5 eb, 2 esb, 2 em, 4 est, 4 et) (Fig. 13) and 10–11 ventral trichobothria on the patella. Pectinal teeth number 6.

The carapace is sparsely and finely granulated, with somewhat larger granules only anteriorly. The mesosoma bears one median keel. The ventral surface of the seventh mesosomal segment bears four keels.

COMMENTS. This species is based on 11 specimens of both sexes, all of which were examined by Francke (1976) who designated one adult male as the lectotype. The FKCP female has 11 ventral trichobothria on the patella of pedipalps, whereas all the types have 10 ventral trichobothria (Francke 1976: 80, fig. 9); Banks (1928) regarded this character as diagnostic of the genus *Parascorpiops*.

DISTRIBUTION. Malaysia (Sarawak) (Banks 1928: 506).

***Scorpiops* Peters, 1862**

(Figs 1–7, 14–22, 25, 28, 29, 31–72, Tables 1–3)

Scorpiops Peters, 1862: 510; Kracpelin, 1899: 179 (in part); Stahnke, 1974: 124; Vachon, 1980: 143; Stockwell, 1989: 120; Sissom, 1990: 114; Kovařík, 1998: 142; Lourenço, 1998: 246.

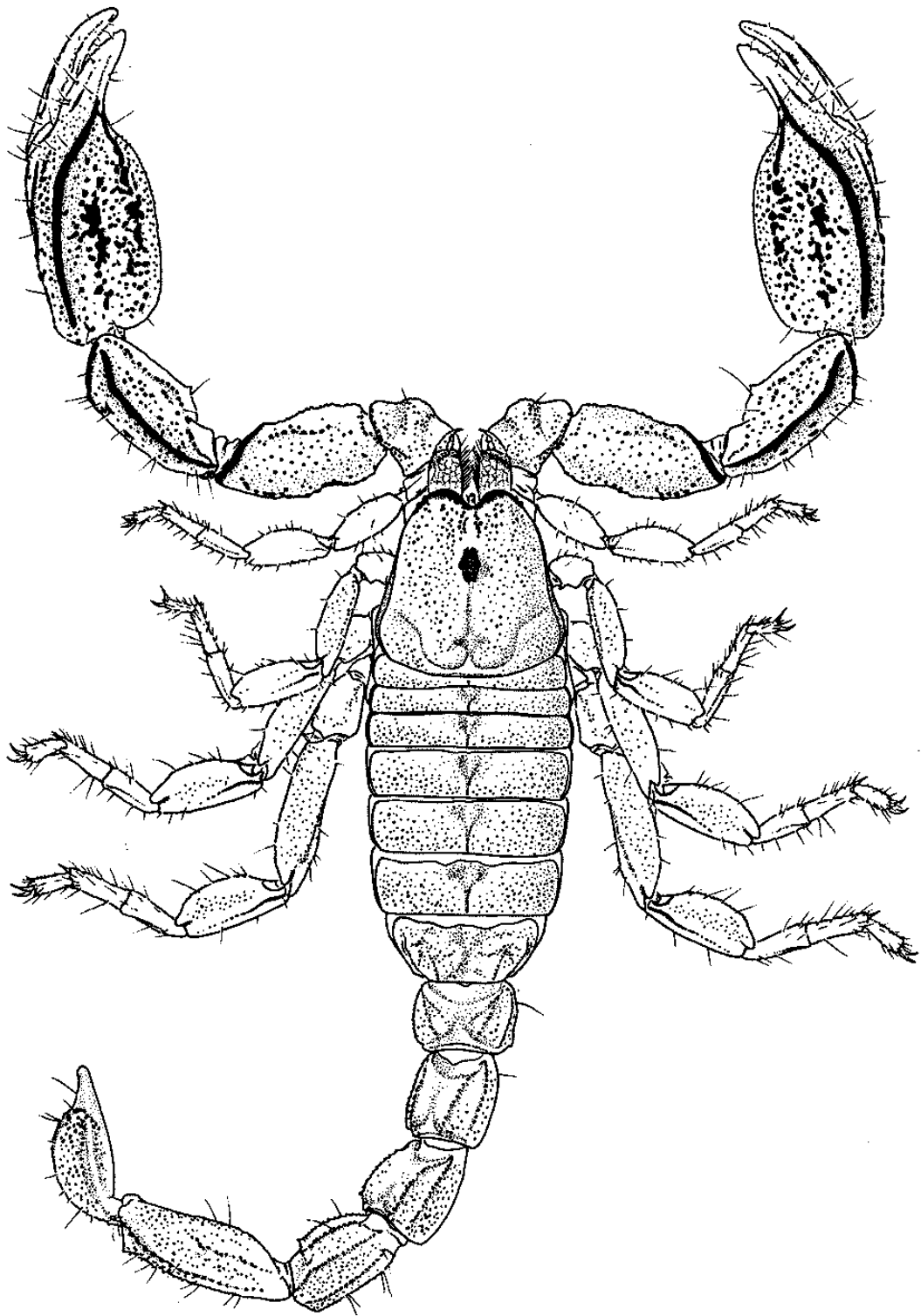


Fig. 7. *Scorpiops braunwalderi* sp. n., male holotype, dorsal aspect.

Scorpiops (*Euscorpiops*) Vachon, 1980: 155 (TS: *Scorpiops asthenurus* Pocock, 1900); Tikader & Bastawade, 1983: 452; Bastawade, 1997: 104; **syn. n.**
Euscorpiops: Stockwell, 1989: 120; Sissom, 1990: 114; Kovařík, 1998: 141; Lourenço, 1998: 246.

TYPE SPECIES. *Scorpio hardwickii* Gervais, 1843.

DIAGNOSTIC CHARACTERS. This genus is defined by the presence of three pairs of lateral eyes and 17–21 external trichobothria on patella of pedipalps (Figs 5, 14–22). The ventral surface of the patella bears 6–18 trichobothria (Figs 6, 28–29). The number of trichobothria on the ventral surface of the manus is 3 or 4 (Figs 3, 25). Trichobothrium Eb3 on the external surface of the tibia is situated between trichobothria Db and Dt (Figs 2, 45) or between Dt and Est (Fig. 31).

The first metasomal segment bears 10 keels, the second through fourth segments bear eight keels, and the fifth segment bears seven keels and only one keel on the ventral surface. A dorsolateral keel on the fifth metasomal segment is always present.

All species are colored from dark red through brown to black, only *S. lindbergi* is uniformly yellow.

COMMENTS. The genus *Scorpiops* formerly included also all the species now placed in the genera *Alloscorpiops*, *Euscorpiops*, and *Neoscorpiops*. These genera were described by Vachon (1980) as subgenera, and with elevation of the Scorpiopsinae to family status became genera. The subgenus-to-genus change was done as a formality, without thorough studies of the species.

The great similarity of the species of *Scorpiops* and *Euscorpiops* caused arbitrary decisions about their affiliation (Tikader & Bastawade 1983: 453, Lourenço 1998: 246), and has led me to synonymize the genus *Euscorpiops* for reasons further explained below.

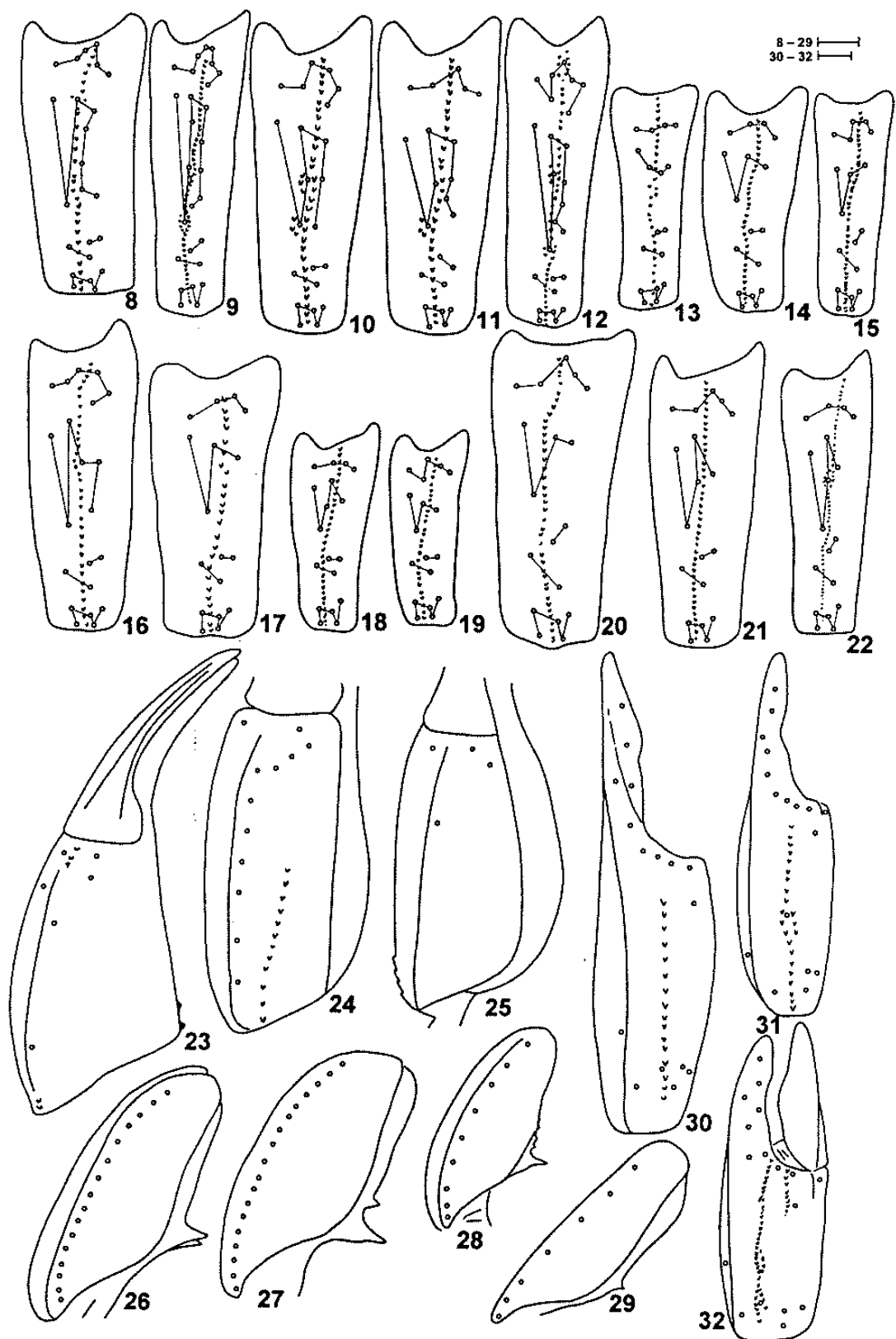
DISCUSSION. Examination of a majority of *Scorpiops* and *Euscorpiops* species has convinced me that they should not be split into two genera defined merely on the difference of one external trichobothrium on the patella. Species with 17 trichobothria were placed in *Scorpiops* and those with 18–21 trichobothria in *Euscorpiops*, although the holotype of *S. kraepelini* has 17 trichobothria on one patella of pedipalps and 18 on the other (see below).

In the genus *Scorpiops* there are three interrelated groups: *S. bhutanensis* (described as *Euscorpiops*), *S. braunwalderi* sp. n., *S. dastychi* sp. n., *S. farkaci*, *S. feti* stat. n., *S. leptochirus*, and *S. oligotrichus* (*S. leptochirus* species group); *S. hardwickii*, *S. jendeki* comb. n., *S. margerisonae* sp. n., *S. rohtangensis*, and *S. tibetanus* (*S. hardwickii* species group); and *S. irenae* and *S. petersii* (*S. petersii* species group). *S. montanus* differs substantially from these groups, e. g. in the presence of up to 18 ventral trichobothria on the patella of pedipalps (6–10 in other species) and in the position of trichobothrium Eb3 on the external surface of the tibia between trichobothria Dt and Est. Also *S. pachmarhicus* appears to defy assignment to one of the above species groups.

The genus *Euscorpiops* was composed of species very similar to each other, but included also *E. lindbergi* that substantially differs from them in e. g. the shape of the manus of pedipalps and the

→

Figs 8–32. 8–22. Patella of pedipalp, external view. 23–25. Tibia of pedipalp, ventral view. 26–28. Patella of pedipalp, ventral view. 30–32. Tibia of pedipalp, external view. 8, 24, 26. *Alloscorpiops anthracinus* (Simon), ZMUH male. 9, 27, 30. *Neoscorpiops deccanensis* (Tikader et Bastawade), MBCZ female. 10. *N. satorensis* (Pocock), female lectotype. 11. *N. satorensis* (Pocock), ZMUH female. 12. *N. tenuicauda* (Pocock), female lectotype. 13, 23. *Parascorpiops montanus* Banks, FKCP female. 14. *Scorpiops hardwickii* (Gervais), BMNH male. 15, 28, 31. *S. asthenurus* Pocock, male holotype. 16. *S. binghamii* Pocock, male holotype. 17. *S. feti* sp. n., male holotype. 18, 19. *S. lindbergi* Vachon. 18. FKCP female. 19. *S. kraepelini* Lourenço, female allotype. 20. *S. longimanus* Pocock, ZMUH female. 21. *S. problematicus* sp. n., female allotype. 22. *S. sejnai* sp. n., male holotype. 25. *S. irenae* Kovařík, female holotype. 29. *S. dastychi* sp. n., male holotype. 32. *S. braunwalderi* sp. n., male holotype.



Tab. 2. Geographical distribution of scorpionid genera and species. Abbreviations: AF – Afghanistan, BA – Bangladesh, BH – Bhutan, CH – China, IN – India, LA – Laos, MA – Malaysia, MY – Myanmar, NE – Nepal, PA – Pakistan, TH – Thailand, VI – Vietnam

	AF	BA	BH	CH	IN	LA	MA	MY	NE	PA	TH	VI
<i>Alloscorpions</i>	–	–	–	–	–	–	–	x	–	–	–	–
<i>A. anthracinus</i>	–	–	–	–	–	–	–	x	–	–	–	–
<i>A. lindstroemii</i>	–	–	–	–	–	–	–	x	–	–	–	–
<i>Dasyscorpions grandjeani</i>	–	–	–	–	–	–	x	–	–	–	–	–
<i>Neoscorpions</i>	–	–	–	–	x	–	–	–	–	–	–	–
<i>N. deccanensis</i>	–	–	–	–	x	–	–	–	–	–	–	–
<i>N. satarensis</i>	–	–	–	–	x	–	–	–	–	–	–	–
<i>N. tenuicauda</i>	–	–	–	–	x	–	–	–	–	–	–	–
<i>Parascorpions montanus</i>	–	–	–	–	–	–	x	–	–	–	–	–
<i>Scorpions</i>	x	x	x	x	x	x	–	x	x	x	x	x
<i>S. asthenurus</i>	–	–	x	–	x	–	–	–	–	–	–	–
<i>S. bhutanensis</i>	–	–	x	–	–	–	–	–	–	–	–	–
<i>S. binghamii</i>	–	–	–	–	–	–	–	x	–	–	x	–
<i>S. braunwalderi</i> sp. n.	–	–	–	–	x	–	–	–	–	–	–	–
<i>S. dustychi</i> sp. n.	–	–	–	–	x	–	–	–	–	–	–	–
<i>S. furkaci</i>	–	–	–	–	–	–	–	–	–	–	x	–
<i>S. feli</i> sp. n.	–	–	–	–	x	–	–	–	–	–	–	–
<i>S. hardwickii</i>	–	–	–	x	x	–	–	–	x	x	–	–
<i>S. irenae</i>	–	–	–	–	–	–	–	–	x	–	–	–
<i>S. jendeki</i> stat. n.	–	–	–	x	–	–	–	–	–	–	–	–
<i>S. kaftani</i>	–	–	–	–	–	–	–	–	–	–	–	x
<i>S. leptochirus</i>	–	x	–	–	x	–	–	–	–	–	–	–
<i>S. lindbergi</i>	x	–	–	–	–	–	–	–	–	x	–	–
<i>S. longimanus</i>	–	x	–	–	x	–	–	x	–	–	–	–
<i>S. magerisonae</i> sp. n.	–	–	–	x	–	–	–	–	–	–	–	–
<i>S. montanus</i>	–	–	–	–	x	–	–	–	–	x	–	–
<i>S. oligotrichus</i>	–	–	–	–	–	x	–	–	–	–	–	x
<i>S. pachmarhicus</i>	–	–	–	–	x	–	–	–	–	–	–	–
<i>S. petersii</i>	–	–	x	–	x	–	–	–	–	x	–	–
<i>S. problematicus</i> sp. n.	–	–	–	–	–	–	–	–	–	–	x	–
<i>S. rohtangensis</i>	–	–	–	–	x	–	–	–	–	–	–	–
<i>S. sejnal</i> sp. n.	–	–	–	–	–	–	–	–	–	–	–	x
<i>S. tibetanus</i>	–	–	–	x	–	–	–	–	–	–	–	–

position of trichobothrium Eb3 on the external surface of the tibia, situated between trichobothria Dt and Db. It is even possible to say that the *Scorpions leptochirus* species group, and namely *S. montanus*, is more closely related to the species of *Euscorpions* than is *E. lindbergi*, which in contrast appears to be closer to the *S. hardwickii* species group. This is also evidenced by *Scorpions kraepelini* Lourenço, 1998, which I believe to be a synonym of *Euscorpions lindbergi*. The close relationship of most species of *Euscorpions* and the *Scorpions leptochirus* species group is obscured only by different sexual dimorphism, which in much of the *Scorpions leptochirus* species group concerns the shape of the manus of pedipalps.

Since the number of trichobothria on the patella of pedipalps frequently varies within a species, the fact that one less trichobothrium can cause *montanus* to be placed in *Scorpions* and one more trichobothrium can cause *lindbergi* to be placed in *Euscorpions* convinces me that the genus *Euscorpions* as defined by Vachon (1980: 155) is invalid.

***Scorpiops asthenurus* Pocock, 1900**
(Figs 15, 28, 31, Tables 1–3)

Scorpiops asthenurus Pocock, 1900: 73; Kraepelin, 1913: 160; Takashima, 1945: 99; Minnocci, 1974: 42.
Scorpiops (Euscorpiops) asthenurus: Vachon, 1980: 155; Tikader & Bastawade, 1983: 458; Bastawade, 1985: 261.
Euscorpiops asthenurus: Kovařík, 1998: 141.

TYPE LOCALITY AND TYPE DEPOSITION. Kalimpong near Darjiling; BMNH.

TYPE MATERIAL EXAMINED. **India**: Kalimpong, Darjiling, IMA (holotype), leg. S. Stebbing, BMNH No. 1896.9.26.83.
FURTHER MATERIAL EXAMINED. **Bhutan**: 5.VIII.1901, IMA, ZMUH No. 568. **India**: Darjeeling, IFA, Mus. Calcutta, VIII.1913, ZMUH.

DIAGNOSTIC CHARACTERS. Total length is 35.9–45 mm. The male has fingers of pedipalps strongly flexed, whereas in the female they are flexed only slightly. For position and distribution of trichobothria on the tibia and patella of pedipalps see Figs 15, 28, and 31, and Vachon (1980, figs 26–32). Measurements of the carapace, telson, segments of the metasoma and segments of the pedipalps, and numbers of pectinal teeth are given in Table 1. There are 18 external trichobothria (5 eb, 2 esb, 2 em, 4 est, 5 et) (Fig. 15) and 8–9 ventral trichobothria on the patella (Fig. 28). Pectinal teeth number 5–6 in the examined specimens. Kraepelin (1913) gave 7 pectinal teeth for the male and 5–6 for the female. The carapace bears large, sparse granules. Still larger granules form a keel behind the lateral eyes.

The manus of pedipalps dorsally bears fine, sparse granules, whose size slightly increases only in the central part.

The mesosoma is sparsely granulated, chiefly in the posterior half of each segment, and bears one inconspicuous median keel. The seventh mesosomal segment is ventrally smooth, with two inconspicuous smooth keels. All keels on the metasomal segments are composed of equidimensional granules of nearly equal size. The dorsolateral keels of the first four segments posteriorly terminate in a pronounced tooth.

COMMENTS. *Scorpiops asthenurus* was based on one male collected by Stebbing. In 1978 Vachon examined the type and assigned it No. VA 2399.

DISTRIBUTION. Bhutan (new record), India (Assam, Arunachal Pradesh, Sikkim, West Bengal) (Pocock 1900: 73, Tikader & Bastawade 1983: 458, Vachon 1980: 155).

***Scorpiops bhutanensis* Tikader et Bastawade, 1983**
(Tables 2, 3).

Scorpiops (Euscorpiops) bhutanensis Tikader & Bastawade, 1983: 453; Kovařík, 1993: 113.
Euscorpiops bhutanensis: Kovařík, 1998: 141.

TYPE LOCALITY AND TYPE DEPOSITION. Eastern Bhutan, Gomchu; NZSI.

DIAGNOSTIC CHARACTERS. Total length of the male holotype is 49.5 mm (Tikader & Bastawade 1983: 453). Tikader & Bastawade (1983) show the position and distribution of trichobothria on the tibia and patella of pedipalps in figs 1255–1260, habitus in fig. 1247, seven or eight ventral trichobothria on the patella in fig. 1256 and on p. 452, 17 external trichobothria on the patella (5eb, 2esb, 2em, 4est, 4et) in fig. 1255, and seven pectinal teeth on p. 457. The species is best characterized by a very long and narrow manus of pedipalps (Tikader & Bastawade 1983: 454, fig. 1247).

COMMENTS. This species is based on a single male obtained by B. Biswas on 9.IV.1966 (Tikader & Bastawade 1983: 458) and deposited at NZSI. Tikader & Bastawade (1983: 453) named it *S. (Euscor-*

piops) *bhutanensis*, because they considered the trichobothrium est3 on the external surface of the patella to be one of the et trichobothria. This led them to conclude that the species has five et trichobothria, and, notwithstanding the fact that the total number of trichobothria is 17, they placed the species in the subgenus *Euscorpiops*, which is distinguished from *Scorpiops* by having 18–20 trichobothria on the external surface of the patella. They differentiated *S. bhutanensis* from other species of *Euscorpiops* by having only three est trichobothria (Tikader & Bastawade 1983: 452).

Unfortunately, I have not been able to examine the type or any other specimens of this species, and the diagnostic characters are therefore based solely on Tikader & Bastawade (1983).

DISTRIBUTION. Bhutan (Tikader & Bastawade 1983: 458).

***Scorpiops binghamii* Pocock, 1893**

(Fig. 16, Tables 1–3)

Scorpiops binghamii Pocock, 1893: 327; Pocock, 1900: 74; Henderson, 1913: 133; Takashima, 1945: 99.

Scorpiops (Euscorpiops) binghamii: Tikader & Bastawade, 1983: 470; Kovařík, 1993: 113; Kovařík, 1995: 199.

Euscorpiops binghamii: Kovařík, 1998: 142.

Scorpiops longimanus binghami: Kraepelin, 1913: 161.

? *Scorpiops (Euscorpiops) longimanus binghami*: Vachon, 1980: 155.

? *Scorpiops montanus* (in part): Kraepelin, 1894: 192; Kraepelin, 1899: 180; Minnocci, 1974: 42.

TYPE LOCALITY AND TYPE DEPOSITION. Central Tenasserim; BMNH.

TYPE MATERIAL EXAMINED. **Myanmar**: Burma, Central Tenasserim, IMA (holotype), leg. Oates & Bingham, BMNH No. 1893.I.II.63–64.

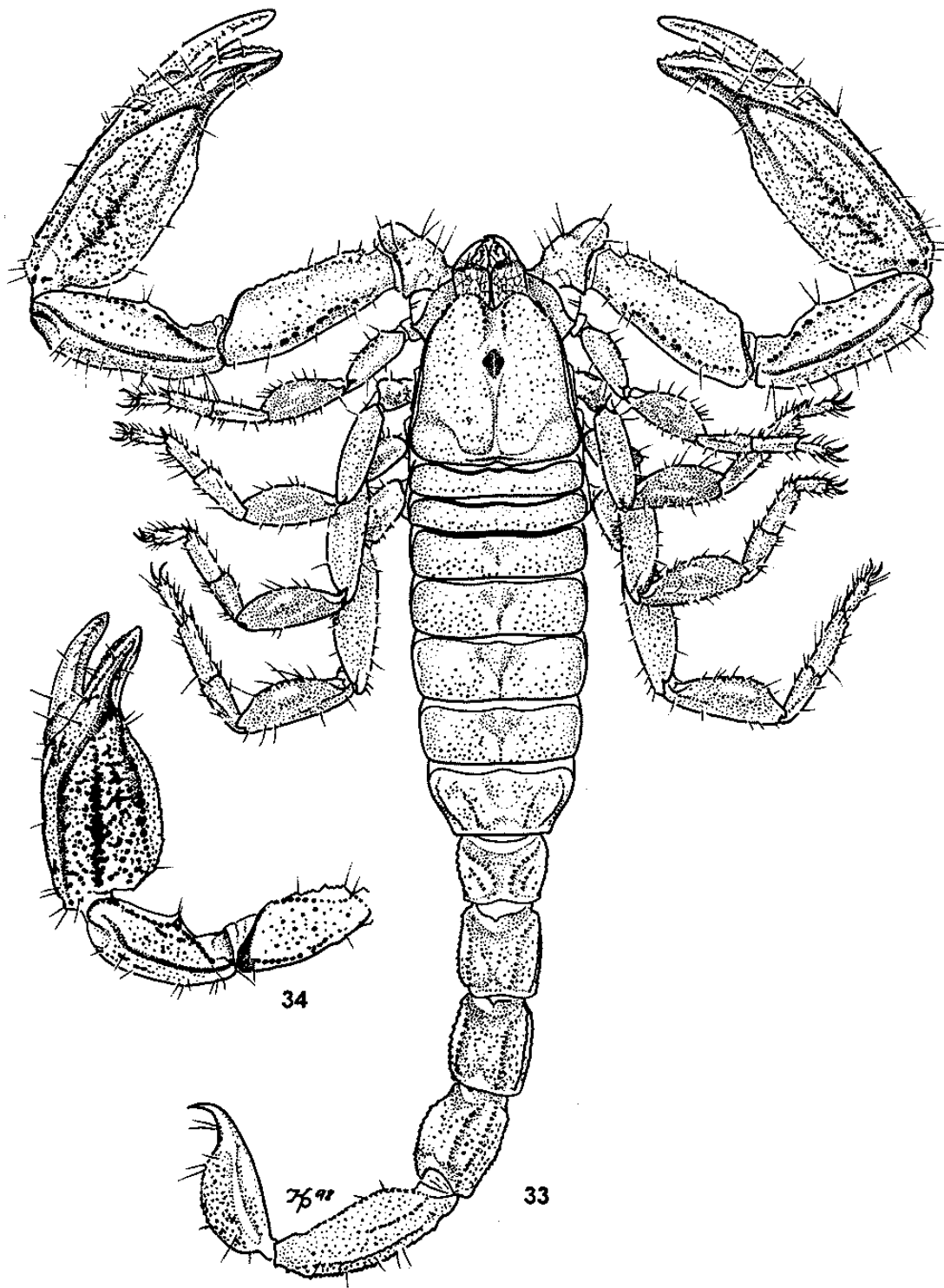
FURTHER MATERIAL EXAMINED. **Myanmar**: Carin Hills, 900–1000 m, viaggio in Birmania, 20.X.1896, IMFA, leg. L. Fca, ZMUH No. 1565. **Thailand**: NW, Mac Hong Son distr., Nupa-ah, 1FE, 7.–9.VI.1992, leg. J. Strnad, FKCP.

DIAGNOSTIC CHARACTERS. Total length is 50–65 mm. In contrast to the female, the male has fingers of pedipalps flexed and has a larger pecten. For the position and distribution of trichobothria on the patella of pedipalps see Fig. 16. Measurements of the carapace, telson, segments of the metasoma and segments of the pedipalps, and numbers of pectinal teeth are given in Table 1. Trichobothria on the external surface of the patella number 20–21 (5 eb, 2 esb, 2 em, 6 est, 5–6 et) (Fig. 16). Ventral trichobothria on the patella number 12–13, however Pocock (1900) counted 14–15 and Kraepelin (1913) 11–15. Pectinal teeth number 6–9. The carapace is finely granulated. There is a keel composed of larger granules behind the lateral eyes.

The manus of pedipalps dorsally bears fine granules of equal size, which are more closely spaced in the center and elsewhere form a lattice with smooth facets.

The mesosoma is sparsely granulated, especially in the posterior half of each segment, and bears one inconspicuous median keel. The ventral surface of the seventh mesosomal segment bears four conspicuous keels. The first metasomal segment bears 10 keels. The second through fourth segments bear eight keels and two more may be weakly indicated. All metasomal keels are composed of equidimensional and nearly equal-sized granules. The dorsolateral keels of the first four segments posteriorly terminate in a pronounced tooth.

COMMENTS. *Scorpiops binghamii* is based on one male collected by Bingham and in 1980 examined by Vachon, who assigned it No. VA 2492. Kraepelin (1913) and Vachon (1974, 1980) regarded this species as a subspecies of *S. longimanus*. Although *S. binghamii* and *S. longimanus* are very similar, they can nevertheless be differentiated on the number and distribution of trichobothria on the external surface of the patella. Moreover, from fig. 226 in Vachon (1974: 942 – see below under *S. longimanus*) it appears that he based his conclusion on misidentified specimens and saw the holotype of *S. binghamii* only in 1980.



Figs 33–34. *Scorpiops dastychi* sp. n. 33. Male holotype, dorsal aspect. 34. Female allotype, dorsal view of pedipalp.

Because of occasional confusion with *S. longimanus*, and formerly also with *Scorpiops montanus*, it is necessary to view with suspicion some of the above cited counts of ventral trichobothria on the patella and of pectinal teeth.

DISTRIBUTION. Myanmar (Pocock 1893: 328), Thailand (Kovařík 1993: 113).

***Scorpiops braunwalderi* sp. n.**

(Figs 7, 32, Tables 1–3)

TYPE LOCALITY AND TYPE DEPOSITION. India, Uttar Pradesh, Chakrata; FKCP.

TYPE MATERIAL EXAMINED. India: Uttar Pradesh, Chakrata, 1MA (holotype), 1980, FKCP.

ETYMOLOGY. Named after the Swiss arachnologist Matt E. Braunwalder, in appreciation of his kind help.

DIAGNOSTIC CHARACTERS. Total length of the male holotype is 40.5 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. Habitus is shown in Fig. 7. For the position and distribution of trichobothria on the tibia of pedipalps see Fig. 32. There are 17 external trichobothria (5 eb, 2 esb, 2 em, 4 est, 4 et) (Fig. 5) and 7 ventral trichobothria on the patella (Fig. 29), and 6 pectinal teeth. The carapace is sparsely and finely granulated, with two rows of larger granules in front of the median eyes.

Color is uniform dark brown to black.

The femur, patella, and tibia of pedipalps bear smooth keels and are granulated. The manus dorsally bears large, irregularly spaced granules. The fingers of pedipalps are only slightly flexed (Fig. 32).

The mesosoma is granulated more in the posterior half of each segment and bears one conspicuous median keel. The granules are fine and very widely spaced, however. The seventh mesosomal segment ventrally bears four rows of granules.

All keels on metasomal segments are composed of large granules of irregular shape. The spaces between keels are only sparsely granulated. The dorsolateral keels of the first through fourth metasomal segments are composed of posteriorly inclined teeth. The telson is densely granulated and bears two symmetrical lateral furrows with smooth walls. These furrows are more pronounced than in *S. hardwickii*.

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

The new species is best characterized by the shape of the manus of pedipalps (see Figs 7, 56–57, and Table 2), which in the male of *S. braunwalderi* sp. n. is markedly narrower and longer (Fig. 7) than in the male of *S. hardwickii* (Fig. 56). The fingers of pedipalps are only slightly flexed in the male of *S. braunwalderi* sp. n. (Fig. 32), whereas in the male of *S. hardwickii* the flexure is very strong (Figs 56 and 47).

***Scorpiops dastychi* sp. n.**

(Figs 29, 33, 34, 45, 50–51, Tables 1–3)

TYPE LOCALITY AND TYPE DEPOSITION. India, Himalaya, Uttar Pradesh, Molta; ZMUH.

TYPE MATERIAL EXAMINED. India (Uttar Pradesh): Himalaya, Molta, 3,000 m, Deutsche Indien-Expedition 1955–57, leg. G. A. von Maydall, 6.V.1956, 9MA (holotype, paratypes Nos 1–8) 5FA (allotype, paratypes Nos 27–31) 3im.A (paratypes Nos 74–76), ZMUH No. 386, 9.V.1956, 1MA (paratype No. 9) 4FA (paratypes Nos 32–35) 3im.A (paratypes Nos 77–79), ZMUH No. 389, 16.V.1956, 7MA (paratypes Nos 10–16) 12FA (paratypes Nos 36–47) 4im.A (paratypes Nos 80–83), ZMUH No. 402–3, 17.V.1956, 2MA (paratypes Nos 17–18) 12F(3im.)A

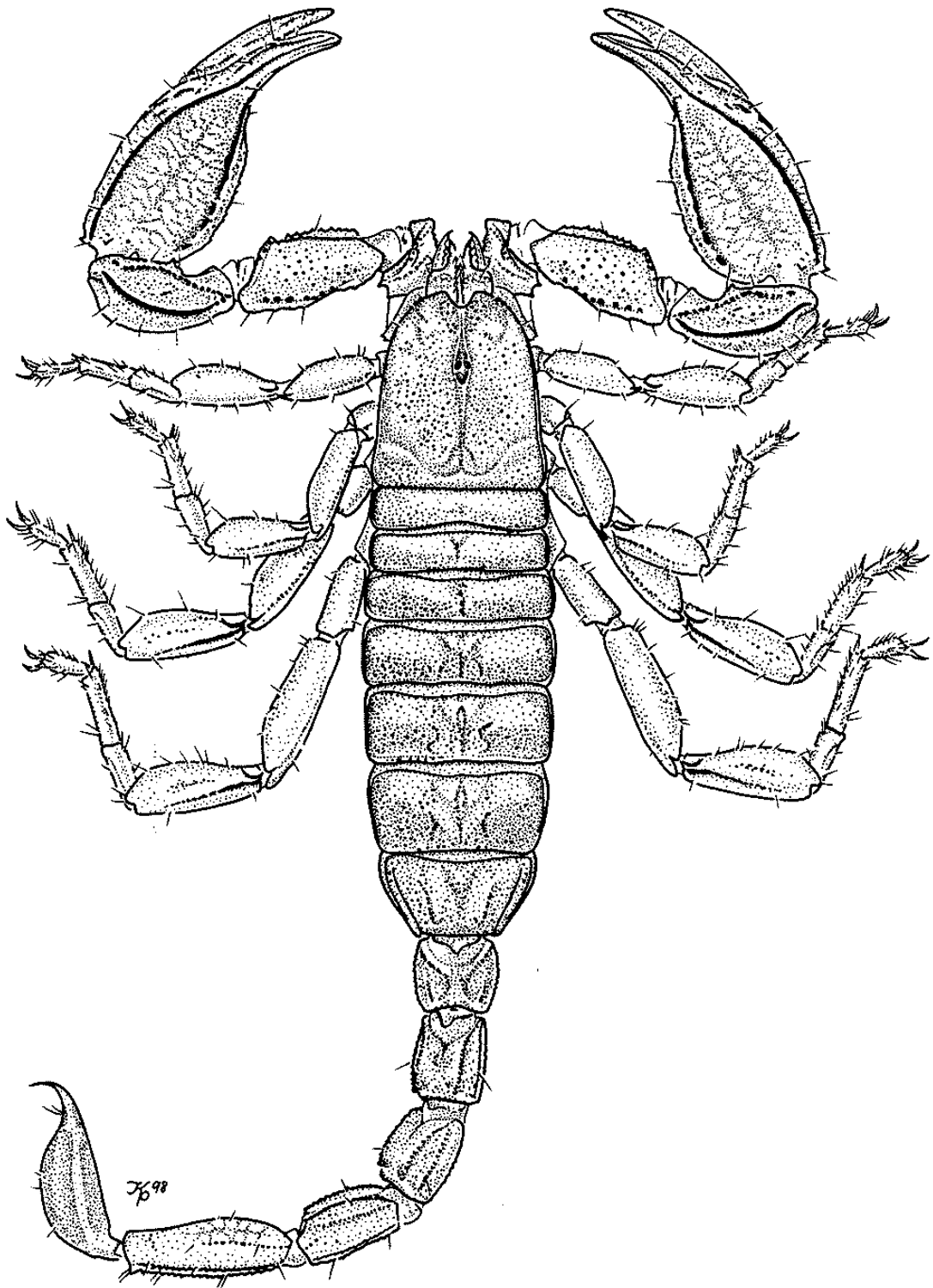


Fig. 35. *Scorpiops petersii* Pocock, FKCP female, dorsal aspect.

(paratypes Nos 48–59), ZMUH No. 405, 26.V.1956, 5MA (paratypes Nos 19–23) 3FA (paratypes Nos 60–62), ZMUH No. 416, 11.VI.1956, 2MA (paratypes Nos 24–25) 5FA (paratypes Nos 63–67) 3juvsA (paratypes Nos 84–86), ZMUH No. 430, 13.VI.1956, 1FA (paratype No. 68), ZMUH No. 432, 19.VI.1956, 4FA (paratypes Nos 69–72) 1juv.A (paratype No. 87), ZMUH No. 449, 20.VI.1956, 1juv.A (paratype No. 88), ZMUH No. 444; Chakrata, 19.VI.1956, 1FA (paratype No. 73), ZMUH No. 448; Timli Siwalik, 19.VII.1956, 1MA (paratype No. 26), ZMUH No. 513. Holotype, allotype, and paratypes Nos 11–26, 32–35, 38–88 are deposited in ZMUH, paratype No. 5 in BMNH, paratype No. 6 in SMFD, paratypes Nos 7 and 37 in ZMHB, paratype No. 8 in ROCC, paratype No. 9 in MZUF, paratypes Nos 10, 36 in NMPC, paratype No. 30 in MBCZ, paratype No. 31 in MCSN, and paratypes Nos 1–4, 27–29 in FKCP.

ETYMOLOGY. Named after Dr Hieronymus Dastych, curator at the Zoologisches Institut und Zoologisches Museum, Universität Hamburg, Germany, in appreciation of his kind help.

DIAGNOSTIC CHARACTERS. Total length is 35–41 mm. In contrast to female, the male has a longer and narrower manus of pedipalps (Figs 33–34, 50–51, Tab. 1). Habitus is shown in Fig. 33. Mesosomal segments of the female bear large, closely spaced granules. In males the granules are small and sparse, or may be altogether absent. Measurements of the carapace, telson, segments of the mesosoma and segments of the pedipalps, and numbers of pectinal teeth are given in Table 1. For position and distribution of trichobothria on the tibia of pedipalps see Figs 29, 33–34, 45, and 50–51. The large number of examined specimens (27 M, 48 F, 15 juvs) allows to discern variation in the position of trichobothria on the external surface of patella and tibia of pedipalps. The number of trichobothria on the patella is 17 on the external surface (5 eb, 2 esb, 2 em, 4 est, 4 et) (Fig. 5) and 7 on the ventral surface (Fig. 29), but one male (paratype No. 2) has 8 ventral trichobothria on one patella and 7 on the other. Pectinal teeth number 4–7.

The carapace and mesosoma are similarly granulated. The mesosoma bears one median keel, which is less developed in the males. The seventh mesosomal segment ventrally bears four conspicuous keels.

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

S. dastychi sp. n. is closest to *S. leptochirus* and *S. feti* sp. n., with which it shares the number of trichobothria on the tibia and patella of pedipalps and similar body proportions. However, smaller size (only up to 40.6 mm) distinguishes it from the other two species, which reach up to 58 mm (*S. leptochirus*). From *S. feti* sp. n. is also differs in sexual dimorphism, as in *S. feti* sp. n. the manus of pedipalps is rather similar in males and females, whereas in the male of *S. dastychi* sp. n. the manus is distinctly narrower and longer than in the female (Figs 33–34, 50–51, Tab. 1).

Scorpiops farkaci Kovařík, 1993

(Figs 1–6, 52, 53, Tables 1–3)

Scorpiops (Scorpiops) farkaci Kovařík, 1993: 109; Kovařík, 1994: 65; Kovařík, 1995: 199.

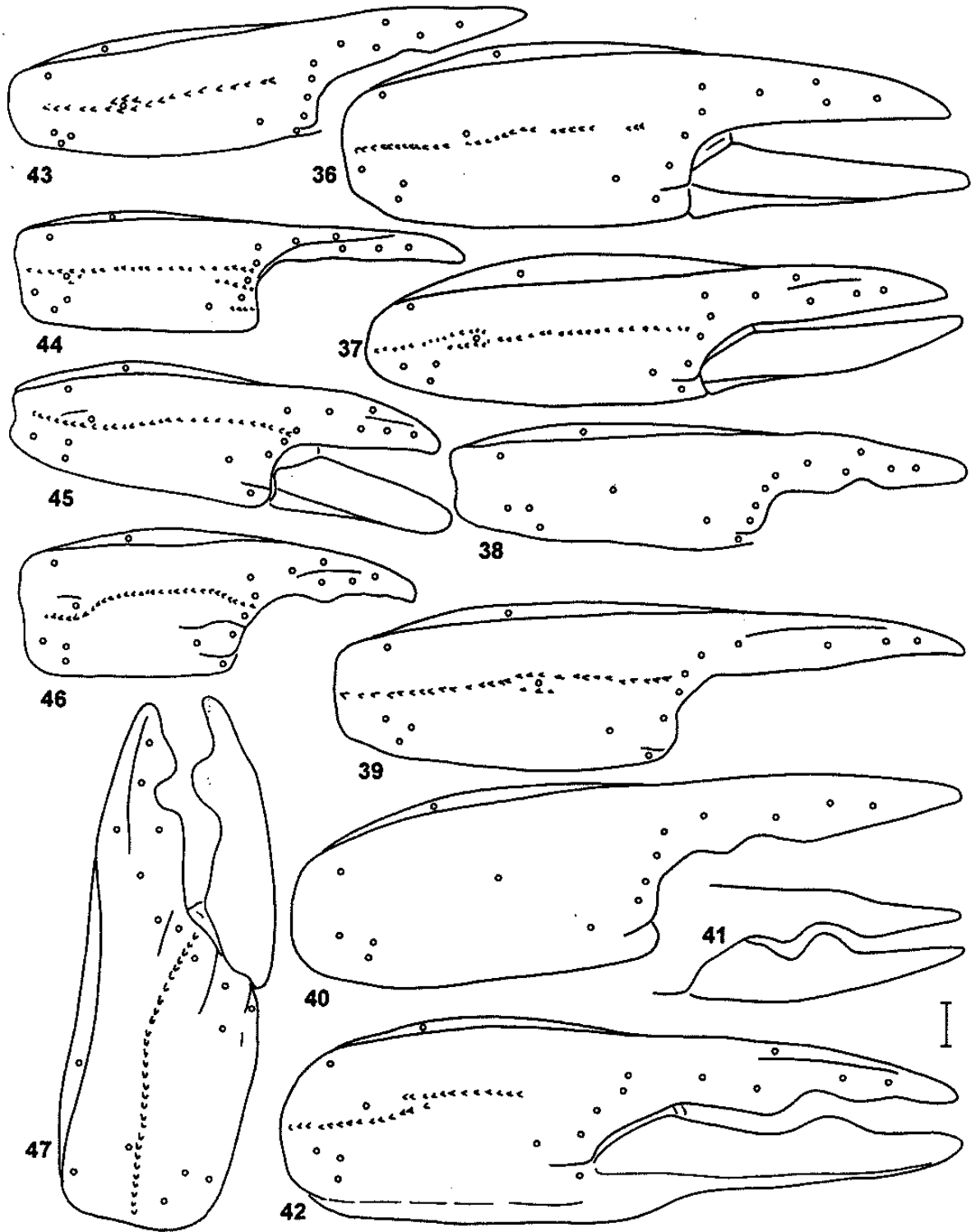
Scorpiops farkaci: Kovařík, 1998: 142.

TYPE LOCALITY AND TYPE DEPOSITION. Thailand, bor., prov. Mae Hong Son, Ban Huai Po; FKCP.

TYPE MATERIAL EXAMINED. **Thailand:** bor., prov. Mae Hong Son, Ban Huai Po, 10.V.1991, leg. J. Farkač, 1ME2MA (holotype, paratypes Nos 1–2), 2FE4FA (paratypes Nos 3–8), 4F(im.)A (paratypes Nos 9–12), and also young that

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Figs 36–47. Tibia (chela) of pedipalp, external view. 36. *Scorpiops feti* sp. n., male holotype. 37. *S. leptochirus* Pocock, male holotype. 38. *S. montanus* Karsch, juv. holotype. 39. *S. longimanus* Pocock, ZMUH male. 40. *S. problematicus* sp. n., female allotype. 41. *S. montanus* Karsch, ZMUH male, fingers of pedipalp. 42. *S. petersii* Pocock, male lectotype. 43. *S. sejnai* sp. n., male holotype. 44. *S. lindbergi* Vachon, FKCP female. 45. *S. dastychi* sp. n., male holotype. 46. *S. hardwickii* (Gervais), male lectotype of *S. solidus* Karsch. 47. *S. tibetanus* Hirst, male holotype.



were successfully reared from imported females. They include 4juvsE before the first ecdysis (Paratypes Nos 13–16), 2juvsE after the first ecdysis (paratypes Nos 17–18), 2juvsE7juvsA after the second ecdysis (paratypes Nos 19–27), 2juvsA after the third ecdysis (paratypes Nos 28–29); breeding by F. Kovařík (3 x first ecdysis, 3 x second ecdysis, 2 x third ecdysis, 2 x sixth ecdysis). Paratype No. 3 in the collection of Jan Farkač, Praguc, paratype No. 4 in NMPC, other types in FKCP.

DIAGNOSTIC CHARACTERS. Total length is 24.8–32.5 mm for males and 27.3–36.6 mm for females. Habitus is shown in Kovařík (1993: 114 fig. 13). Color photos of the still-alive male holotype and female paratype No. 5 carrying young is in Kovařík (1998: 96). In contrast to the female, the adult male has a considerably narrower manus (see Table 1 and Figs 52–53). Both males and females have the fingers straight, without any flexure. Measurements of the carapace, telson, segments of the metasoma and segments of the pedipalps, and numbers of pectinal teeth are given in Table 1. For position and distribution of trichobothria on the tibia and patella of pedipalps see Figs 1–6. The number of trichobothria on the patella is 17 on the external surface (5 eb, 2 esb, 2 em, 4 est, 4 et) (Fig. 5) and 9 on the ventral surface (Fig. 6). Pectinal teeth number 5–7.

The carapace is finely but sparsely granulated, with the granules becoming larger only between the anterior edge of the carapace and the median eyes. This space is laterally bordered by two smooth, symmetrical facets situated behind the lateral eyes which are altogether devoid of granules.

The manus of pedipalps dorsally bears irregular lines of fine granules that form a lattice with smooth facets in between. In the center of the manus is a conspicuous longitudinal strip composed of larger granules.

The mesosoma bears one median keel and is granulated mainly in its posterior part. The seventh mesosomal segment ventrally bears four conspicuous granulated keels.

All keels on metasomal segments are composed of tooth-like tubercles which are especially pronounced on the dorsolateral keels of the first four segments, where the teeth increase in size posteriorly. The spaces between keels bear sparse granules.

COMMENTS. This species is known only from the type material collected in a xeric clearing of a virgin mountain forest at elevations 1600–1700 m; all specimens were found beneath dry buffalo dung. Specimens were brought live and two females gave birth; the offspring were kept alive until the third ecdysis. For a while I also kept live two immature individuals (see sixth ecdysis under type material).

DISTRIBUTION. Thailand (Kovařík 1993: 111).

Scorpiops feti sp. n.

(Figs 17, 36, 49, 54–55, Tables 1–3)

Scorpiops leptochirus: Kraepelin, 1913: 158 (in part).

TYPE LOCALITY AND TYPE DEPOSITION. India, Sikkim; ZMUH.

TYPE MATERIAL EXAMINED. **India:** Sikkim, 2M3F4im.3juvsA (holotype, allotype, and paratypes Nos 1–10), Mus. Calcutta, VII.1913; West Bengal, Darjeeling, 1M2F1M(im.)A (paratypes Nos 11–14), Mus. Calcutta, VIII.1913; Darrang, 1FA (paratype No. 15), Mus. Calcutta, X.1912; Libsagar, 1MA (paratype No. 16), Mus. Calcutta, X.1912. All types labeled as *Scorpiops leptochirus*. Paratypes Nos. 1 and 3 (1M1F) are deposited in FKCP, other types in ZMUH.

ETYMOLOGY. Named after Dr Victor Fet, an arachnologist at Marshall University, West Virginia, USA.

DIAGNOSTIC CHARACTERS. Total length is 45–55 mm. The male has a larger telson and much larger pectines than the female. Fingers are nearly straight in both sexes. Measurements of the carapace,

telson, segments of the metasoma and segments of the pedipalps, and numbers of pectinal teeth are given in Table 1. Habitus is shown in Fig. 49. For position and distribution of trichobothria on the tibia and patella of pedipalps see Figs 17, 36, 54–55. There are 17 trichobothria on the external surface of the patella (5 eb, 2 esb, 2 em, 4 est, 4 et) (Fig. 5), and the position of some of them (for example em2) is variable. Ventral trichobothria on the patella number 7 (Fig. 29). Pectinal teeth number 6–8.

The carapace and mesosoma are so sparsely granulated that they appear to be nearly smooth. The mesosoma bears but a few fine granules and one median keel. Granulation is more discernible on posterior segments, namely in females. The seventh mesosomal segment ventrally bears four conspicuous keels.

The ventral keel on the fifth metasomal segment consists of sharp, posteriorly inclined teeth. AFFINITIES. The described features distinguish *S. feti* sp. n. from all other species of the genus *Scorpiops*. They are recounted in the key below.

S. feti sp. n. is closest to *S. leptochirus* and *S. dastychi* sp. n., with which it shares the number of trichobothria on the tibia and patella of pedipalps and similar body proportions. However, it is larger (up to 55 mm) than *S. dastychi* sp. n., which is known to reach only 40.6 mm, and it differs from both in sexual dimorphism. Whereas in *S. feti* sp. n. the shape of the male and female manus of pedipalps is nearly identical, the males of *S. leptochirus* and *S. dastychi* sp. n. have the manus narrower and longer than females. This is most pronounced in *S. leptochirus*, whose tibia length to manus width ratio in adult male is up to 3.9 (holotype). In *S. feti* sp. n. this ratio is 2.9–3.1.

***Scorpiops hardwickii* (Gervais, 1843)**

(Figs 14, 46, 56, 57, Tables 1–3)

Scorpio hardwickii Gervais, 1843: 131; Karsch, 1879: 19.

Scorpio (Scorpius) hardwickii: Gervais, 1844a: 234 (redescription); Gervais, 1844b: 66.

Scorpiops hardwickii: Simon, 1887: 113; Stahnke, 1974: 124; Vachon, 1974: 897.

Scorpiops hardwickii: Thorell, 1876: 14; Ausserer, 1880: 465; Kraepelin, 1894: 188; Laurie, 1896: 123; Pocock, 1900: 66; Werner, 1934: 283; Takashima, 1945: 98; Mani, 1959: 14; Minnocci, 1974: 42.

Scorpiops hardwickii: Kraepelin, 1899: 181; Pocock, 1899: 268; Kraepelin, 1913: 157; Birula, 1913: 418; Fage, 1944: 73; Polis, 1990: 252; Goyfon, 1993: 246; Kovarik, 1998: 142.

Scorpiops hardwickii typicus: Kraepelin, 1913: 155.

Scorpiops (Scorpiops) hardwickii hardwickii: Kovarik, 1994: 66.

Scorpiops (Scorpiops) hardwickii: Vachon, 1980: 150; Tikader & Bastawade, 1983: 406; Bastawade, 1994: 436.

Scorpiops solidus Karsch, 1879: 106 (TL: Himalaya; ZMHB); Ausserer, 1880: 466; Moritz & Fischer, 1980: 324 (syn. by Kraepelin, 1894: 188).

Scorpiops affinis Kraepelin, 1898: 44 (TL: Himalaya; ZMUH); Kraepelin, 1899: 182; Pocock, 1900: 75; Takashima, 1945: 99; Minnocci, 1974: 42; **syn. n.**

Scorpiops hardwickii affinis: Kraepelin, 1913: 154; Kovarik, 1998: 142.

Scorpiops (Scorpiops) hardwickii affinis: Vachon, 1980: 150; Kovarik, 1994: 66.

Scorpiops (Scorpiops) affinis: Tikader & Bastawade, 1983: 418.

Scorpiops crassimanus Pocock, 1899: 267 (TL: unknown; BMNH); Pocock, 1900: 68; Hirst, 1911: 472; Kraepelin, 1913: 158; Fage, 1944: 73; Takashima, 1945: 99; Minnocci, 1974: 42; Kovarik, 1994: 61; Kovarik, 1998: 142; **syn. n.**

Scorpiops (Scorpiops) crassimanus: Vachon, 1980: 150; Tikader & Bastawade, 1983: 424.

Scorpiops insculptus Pocock, 1900: 68 (TL: Western Himalayas, Jaunsar; BMNH); Takashima, 1945: 98; Minnocci, 1974: 42; **syn. n.**

Scorpiops hardwickii insculptus: Kraepelin, 1913: 155; Kovarik, 1998: 142.

Scorpiops (Scorpiops) hardwickii insculptus: Vachon, 1980: 150; Kovarik, 1994: 66.

Scorpiops (Scorpiops) insculptus: Tikader & Bastawade, 1983: 412.

Scorpiops austerus Hirst, 1911: 471 (TL: Kulu District, Himalaya; BMNH); Takashima, 1945: 99; Minnocci, 1974: 42 (syn. by Tikader & Bastawade, 1983: 418).

Scorpiops (Scorpiops) austerus: Vachon, 1980: 151.

Chaerilus pirpanjalus Mani, 1959: 13 (TL: Upper Beas Valley, Pir Panjal range, India; NZSI); Minnocci, 1974: 31 (syn. by Tikader & Bastawade, 1983: 407).
Chaerilus pirpunjabus [sic]: Tikader & Bastawade, 1983: 407.

TYPE LOCALITY AND TYPE DEPOSITION. Himalaya; BMNH.

TYPE MATERIAL EXAMINED. **India:** Himalaya, 1M2F1juv.A (lectotype and paralectotypes Nos 1–3 of *Scorpiops solidus*), leg. Trochnow, ZMHB No. 3054; 1FA no location (holotype of *Scorpiops crassimanus*), BMNH; Himalaya, VI.1893, 1im.A (lectotype of *Scorpiops affinis*), ZMUH; Western Himalayas, Jaunsár, 6000–9000 ft, 1MA (lectotype of *Scorpiops insculptus*), leg. R. C. Wroughton, BMNH No. 1896.8.15; Punjab, Kulu District, 1M1FA (lectotype and paralectotype No. 1 of *Scorpiops austerus*), leg. Rosenberg, BMNH No. 1905.3.31.1–10, rev. M. Vachon (No. VA 2510-1 and 3).

FURTHER MATERIAL EXAMINED. **China (Tibet):** South Tibet, Nyainqentangha Mts., Lhasa nord, 3800 m, 30.V.1996, 1M1FE 2F3juvsA, leg. V. Major, FKCP. **India:** Dehra Dun, 1M2FA, leg. H. Phipson, BMNH No. 1896.2.2.12.20; Dehra Dun, 14.II.1898, 2F(im.)A, ZMUH No. 1583; Nyull Tal, 1M1FA, Mus. Calcutta, X.1912, ZMUH; 2M3F4juvsA, Mus. Calcutta, X.1912, ZMUH; Simla Hills, 1M1F, Mus. Calcutta, VII.1913, ZMUH; Sikkim, 1M(im.)E, NMPC; Hindustan, 1FE, leg. Schlaginxwei, NMPC; Timli Siwalik, 18.VII.1956, 2F1juv.A, Deutsche Indien-Expedition 1955–57, ZMUH No 22 and 505; Uttar Pradesh, Kumaon Hills, Bhimtal near Sattal, 27.XII.1972, 1juv.A, 28.XII.1972, 1juv.A, 27.III.1972, 1juv.A, 28.III.1973, 1FA, 29.III.1973, 2FA, 30.III.1973, 1F1juv.A, 31.III.1973, 1F2juvsA, 20.V.1973, 1juv.A, 1.VI.1973, 1MA, 4.VI.1973, 1juv.A, 31.VIII.1973, 1FA, 12.XII.1976, 1MA, leg. F. Smetacek, ZMUH; Kashmir, Gulmarg-Tangmarg, 2300–2650 m, 3.VII.1976, 2FA, leg. W. Wittmer, NHMB; Kashmir, Yusmarg, 2300–2400 m, 5.VII.1976, 5F1juv.A, leg. W. Wittmer, NHMB; Kashmir, Pahalgam, 2200–3100 m, 7–8.VII.1976, 1M1juv.A, leg. W. Wittmer, NHMB; Himachal Pradesh, Simla-Naldera, 2250 m, 3.V.1977, 2FA, leg. W. Wittmer & Brancucci, NHMB; Himachal Pradesh, Chopal, 2400–2750 m, 7.V.1977, 2juvsA, leg. W. Wittmer & Brancucci, NHMB; Kashmir, Dachigam, 2200 m, 18.VI.1980, 3M4F2juvsA, MZUF; Kashmir, avanti KUD, 1600 m, 25.VI.1980, 1FA, leg. F. Bernini, MZUF; Doranal, Garsa Valley, 1800 m, 29.VI.1980, 1M1FA, leg. F. Bernini, MZUF; Himachal Pradesh, Kuthi Forest, Kulu Valley, 2550 m, 20–24.VII.1983, 1F1juv.A, leg. M. L. Azzaroli & Simonetta, MZUF; Himachal Pradesh, Kulu distr., tra Jarie Manikaran, Valle del Parbati, 13–15.VI.1983, 1M2F5juvsA, leg. M. L. Azzaroli & Simonetta, MZUF; Nord India, 10 km E Musoorote, 2300 m, 17.VIII.1985, 1FA, leg. F. Hlebe, ZMHB No. 27013; bor., Uttar Pradesh, Badarinath, 4000 m, 7.VII.1994, 3F1juv.E, FKCP, leg. M. Snížek; Badarinath, 4000 m, 7–8.VII.1994, 1M2FE, leg. M. Valenta, FKCP; between Badarinath and Govind Ghat, 9–11.VII.1994, 1M1F2juvsE, leg. M. Valenta, FKCP; 15 km S Badarinath, 30 km N Joshinath, 10.VII.1994, 3FE, leg. M. Snížek, FKCP; Joshinath, Auli, 2800 m, 13–16.VII.1994, 5FE, leg. M. Valenta, FKCP; Joshinath, Auli, 2800 m, 13–17.VII.1994, 1FE, leg. M. Snížek, FKCP; Uttar Pradesh N, Nanital env., Bhimtal vill., 1400–1600 m, 6–10.VIII.1997, 1ME, leg. J. Schneider, FKCP. **Pakistan:** Himalaya mts, Kaghan valley, Thathabaya, 2200 m, 73°26'E, 34°36'N, 19.V.1998, 2FA, leg. M. Lázsló & G. Ronkay, HHNM; Bar seen, 15.V.1998, 1FA, HHNM.

DIAGNOSTIC CHARACTERS. Total length is 36–58.6 mm. In contrast to females, males have fingers of pedipalps strongly flexed. Measurements of the carapace, telson, segments of the metasoma and segments of the pedipalps, and numbers of pectinal teeth are given in Table 1. For position and distribution of trichobothria on the tibia and patella of pedipalps see Figs 14, 46, 56–57. There are 17 external trichobothria (5 eb, 2 esb, 2 em, 4 est, 4 et) (Fig. 14) and 6–8 (mostly 6–7) ventral trichobothria on the patella. Pectinal teeth number 4–7.

The carapace is sparsely and finely granulated, and the granules sometimes form keels in its anteromedial part, in front of the median eyes. The anterior part also bears two smooth, symmetrical facets situated behind the lateral eyes; they are devoid of granules, but their surface is often uneven and shape irregular.

The mesosoma is granulated mainly in the posterior half of each segment and bears one median keel. The seventh mesosomal segment ventrally bears four conspicuous keels.

All keels of the metasoma are composed of large, irregularly shaped granules. Spaces between the keels are finely granulated.

COMMENTS. *Scorpiops hardwickii* is highly variable in granulation of the carapace (especially its anterior portion) and of the manus of pedipalps, which on the dorsal surface of the manus may attain the appearance of keels. Variation is considerable also in the position of trichobothria on the

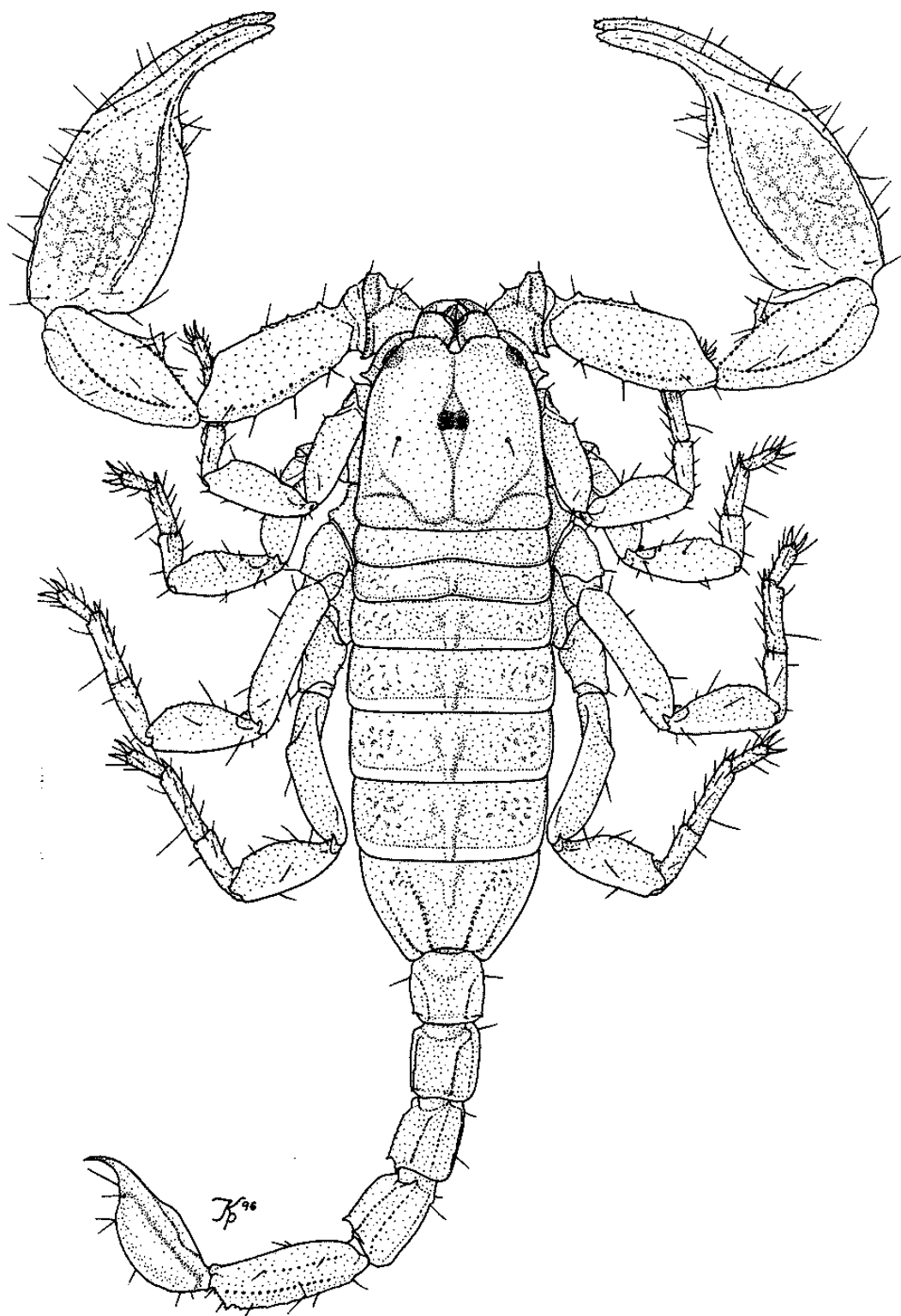


Fig. 48. *Scorpiops lindbergi* Vachon, MBCZ female, dorsal aspect.

Tab. 3. Numbers of pectinal teeth in scorpoid 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

		number teeth in pecten											NS
	sex	4	5	6	7	8	9	10	11	12	13		
<i>Alloscorpiops anthracinus</i>	M	—	—	—	—	—	—	x	2	—	—	1	
	J	—	—	—	—	—	—	—	2	—	—	1	
<i>A. lindstroemii</i>		—	—	—	—	x	—	—	—	—	—	—	
<i>Dasyscorpiops grandjeani</i>	F	—	—	—	—	x	x	—	—	—	—	—	
<i>Neoscorpiops deccanensis</i>	F	—	—	2	x	—	—	—	—	—	—	1	
<i>N. satarensis</i>	M	—	—	—	2	—	—	—	—	—	—	1	
	F	—	—	2	2	—	—	—	—	—	—	2	
<i>N. tenuicauda</i>	M	—	—	x	2	—	—	—	—	—	—	1	
<i>Paruscorpiops montanus</i>	F	—	—	2	—	—	—	—	—	—	—	1	
<i>Scorpiops asthenurus</i>	M	—	1	1	x	—	—	—	—	—	—	1	
	F	—	—	2	—	—	—	—	—	—	—	1	
<i>S. bhutanensis</i>		—	—	—	x	—	—	—	—	—	—	—	
<i>S. binghamii</i>	M	—	—	—	2	x	2	—	—	—	—	2	
	F	—	—	1	1	x	1	—	—	—	—	2	
<i>S. braunwalderi</i> sp. n.	M	—	—	2	—	—	—	—	—	—	—	1	
<i>S. dastychi</i> sp. n.	M	—	3	45	6	—	—	—	—	—	—	27	
	F	1	47	40	6	—	—	—	—	—	—	48	
	J	—	11	18	1	—	—	—	—	—	—	15	
<i>S. farkaci</i>	M	—	—	—	6	—	—	—	—	—	—	3	
	F	—	2	18	—	—	—	—	—	—	—	10	
	J	—	7	9	7	—	—	—	—	—	—	13	
<i>S. feti</i> sp. n.	M	—	—	—	—	10	—	—	—	—	—	5	
	F	—	—	—	11	1	—	—	—	—	—	6	
	J	—	—	1	7	6	—	—	—	—	—	7	
<i>S. hardwickii</i>	M	—	2	20	20	—	—	—	—	—	—	21	
	F	5	51	65	8	—	—	—	—	—	—	66	
	J	—	17	23	14	—	—	—	—	—	—	28	
<i>S. irenae</i>	F	—	1	1	—	—	—	—	—	—	—	1	
<i>S. jendeki</i> stat. n.	M	—	2	—	—	—	—	—	—	—	—	1	
	F	11	5	—	—	—	—	—	—	—	—	8	
<i>S. kaftani</i>	F	—	—	2	—	—	—	—	—	—	—	1	
<i>S. leptochirus</i>	M	—	—	—	3	x	x	—	—	—	—	2	
	F	—	—	—	2	—	—	—	—	—	—	1	
<i>S. lindbergi</i>	M	—	—	—	—	—	1	—	—	—	—	1	
	F	—	—	2	4	2	—	—	—	—	—	4	
<i>S. longimanus</i>	M	—	—	—	—	4	6	—	—	—	—	5	
	F	—	—	x	11	1	—	—	—	—	—	6	
	J	—	—	—	3	3	2	—	—	—	—	4	
<i>S. margerisonae</i> sp. n.	M	—	—	—	—	—	—	—	—	1	1	1	
<i>S. montanus</i>	M	—	—	1	4	12	1	—	—	—	—	9	
	F	—	—	5	22	—	—	—	—	—	—	14	
	J	—	—	—	12	6	—	—	—	—	—	9	
<i>S. oligotrichus</i>		—	—	—	—	—	—	—	—	—	—	—	
<i>S. pachmarhicus</i>	M	—	—	—	x	—	—	—	—	—	—	—	
	F	—	—	x	—	—	—	—	—	—	—	—	
<i>S. petersii</i>	M	1	15	19	5	32	2	—	—	—	—	38	
	F	1	4	7	45	5	—	—	—	—	—	33	
	J	—	—	2	21	17	—	—	—	—	—	20	

Tab. 3. continued

	sex	number teeth in pecten										NS
		4	5	6	7	8	9	10	11	12	13	
<i>S. problematicus</i> sp. n.	M	—	—	—	—	6	—	—	—	—	—	3
	F	—	—	—	2	—	—	—	—	—	—	1
	J	—	—	—	6	2	—	—	—	—	—	4
<i>S. rohtangensis</i>		—	x	x	—	—	—	—	—	—	—	—
<i>S. sejnai</i> sp. n.	M	—	—	2	—	—	—	—	—	—	—	1
	F	3	5	3	1	—	—	—	—	—	—	6
<i>S. tibetanus</i>	M	—	1	1	3	1	2	4	2	—	—	7
	F	—	—	1	8	12	5	4	1	—	—	16
	J	—	—	1	3	10	7	5	2	—	—	14

chela of pedipalps. The shape of the chela of pedipalps gradually changes during ontogeny, which complicates identification of solitary immature specimens.

The descriptions of hereby synonymized species and subspecies were based on small numbers of specimens, which precluded any possibility of discerning variation.

Scorpiops affinis is based on an undisclosed number of specimens (Kraepelin 1898: 44), but there clearly were more than one and probably several because Kraepelin counted 5–7 pectinal teeth and the only type deposited at ZMUH, which I have examined, has 6 pectinal teeth. It is an immature specimen, probably a female, which I have designated as the lectotype. Its total length is 33.3 mm and it has 7 ventral trichobothria on the patella.

Scorpiops insculptus is based on a male and a female (Pocock 1900: 68), of which I examined the male and designated it the lectotype. Its total length is 36 mm (see Table 1), ventral trichobothria on the patella number 7, and pectinal teeth number 6. The manus of pedipalps bears non-granulated keels. This male was in 1980 examined also by Max Vachon (No. VA 2495). Kraepelin (1913) and Vachon (1980) regarded this taxon as a subspecies of *S. hardwickii*, whereas Tikader & Bastawade (1983) considered it a separate species. However, in my opinion there are no characters to separate *S. insculptus* from *S. hardwickii* or to even afford it the status of a subspecies.

Scorpiops austerus is based on a large number of specimens (Hirst 1911: 472), of which I examined a male and a female and designated them the lectotype and paralectotype No. 1, respectively. Ventral trichobothria on the patella number 7, and pectinal teeth number 6 in the male and 4–5 in the female.

Scorpiops crassimanus is based on a female without exact locality (Pocock 1899: 268), which I have examined. It has 8 ventral trichobothria on the patella and 5–6 pectinal teeth. Pocock (1899) distinguished *S. crassimanus* from *S. hardwickii* on keels and granulation on the dorsal surface of the manus and patella, which in *S. hardwickii* are very variable and therefore cannot be used as evidence for more than one species. Also the presence of 8 ventral trichobothria on the patella was later used as a character. However, this number is encountered in *S. hardwickii* too (for example in ZMUH specimens collected at Bhimtal) and can vary in an individual, with some of the examined specimens having 8 ventral trichobothria on one patella and 7 on the other (or 6 and 7). Examination of the holotype of *S. crassimanus* and the specimens listed under Material convinces me that *S. crassimanus* is not a valid species.

DISTRIBUTION. China (Tibet) (first report), India (Himachal Pradesh, Uttar Pradesh, Jammu, Kashmir, Punjab), Nepal (Gervais 1844a: 234, Kraepelin 1899: 182, Pocock 1900: 67, Tikader & Bastawade 1983: 407), Pakistan (first report).

***Scorpiops irenae* Kovařík, 1994**
(Figs 25, 58, Tables 1–3)

Scorpiops (Scorpiops) irenae Kovařík, 1994: 61.
Scorpiops irenae: Kovařík, 1998: 142.

TYPE LOCALITY AND TYPE DEPOSITION. Nepal, Arun Valley, Chichila-Mure; FKCP.

TYPE MATERIAL EXAMINED. **Nepal**: Arun Valley, Chichila-Mure, 2050 m, 7.VI.1992, 1FE (holotype), leg. J. Probst, FKCP.

DIAGNOSTIC CHARACTERS. Total length is 51.3 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. For position and distribution of trichobothria on the tibia of pedipalps see Figs 25, 58, and Kovařík (1994: 63 figs 1–6). There are 17 external trichobothria (5 eb, 2 esb, 2 em, 4 est, 4 et) (Fig. 5) and 6 ventral trichobothria on the patella, and only 3 ventral trichobothria (the least in the genus) on the manus (Fig. 25). Pectinal teeth number 5–6.

The holotype is black except for the chela and telson which are dark reddish brown, and tarsomere II which is lighter reddish brown.

The carapace bears sparse granules of different sizes. They are more closely spaced in the anterior part, which also bears two smooth, symmetrical facets situated behind the lateral eyes.

The manus of pedipalps dorsally bears irregular rows of fine granules forming a loose lattice with smooth central facets. In the center of the manus is a conspicuous longitudinal strip of larger granules.

The mesosoma bears one median keel and is very sparsely granulated. The ventral surface of the seventh mesosomal segment has four granulated keels.

All keels on the metasomal segments are pronounced and composed of toothlike tubercles. The dorsolateral keels of the second through fourth segments each terminate in a tooth which is larger than the preceding teeth. The spaces between keels contain sparse fine granules.

COMMENTS. This species is known only from the holotype. *S. irenae* is closest to *S. petersii*, from which it differs in having only three ventral trichobothria on the manus (Fig. 25).

DISTRIBUTION. Nepal (Kovařík 1994: 61).

***Scorpiops jendeki* Kovařík, 1994 stat. n.**
(Figs 59, 60, Tables 1–3)

Scorpiops (Scorpiops) hardwickei jendeki Kovařík, 1994: 62.
Scorpiops hardwickei jendeki: Kovařík, 1998: 142.

TYPE LOCALITY AND TYPE DEPOSITION. China, Yunnan Province, Gaoligongshan Nature Reserve 100 km west of Baoshan; FKCP.

TYPE MATERIAL EXAMINED. **China**: Yunnan Province, Gaoligongshan Nature Reserve 100 km west of Baoshan, 1FE (holotype), 1FE (paratype No. 4) 4FA (paratypes Nos 1–3, 5), 14.–21.VI.1993, leg. E. Jendek & O. Šauša, FKCP and NMPC (paratype No. 1).

FURTHER MATERIAL EXAMINED. **China**: Yunnan Province, Gaoligongshan, 100 km West of Baoshan, 24°57' N 98°45' E, 1M1FA (topotypes), 9.V.1995, leg. V. Kubáň, FKCP; Yunnan prov., Gaoligongshan, near Baoshan, VI.1996, 1FE, leg. Pacalaj.

DIAGNOSTIC CHARACTERS. Total length is 30–42.1 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. For position and distribution of trichobothria on the tibia of pedipalps see Figs 59–60 and

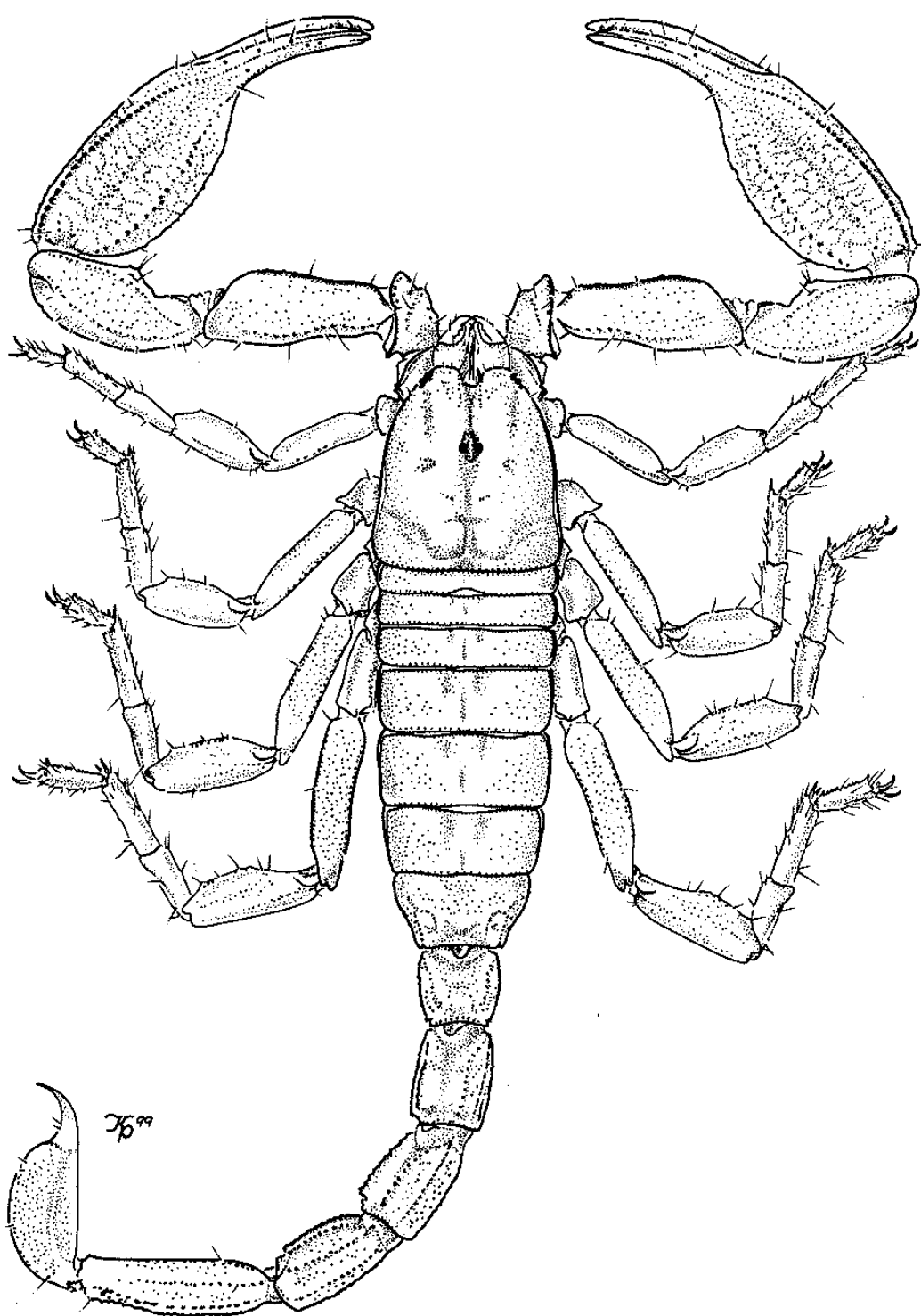


Fig. 49. *Scorpiops feti* sp. n., male holotype, dorsal aspect.

Kovářik (1994: 64 figs 7–12). There are 17 external trichobothria (5 eb, 2 esb, 2 em, 4 est, 4 et) (Fig. 5) and 6–7 ventral trichobothria on the patella (only one male and one female collected on 9.V.1995 have 7 ventral trichobothria on one patella of pedipalps and 6 on the other). Pectinal teeth number 4–5. Both males and females have fingers of pedipalps straight, without any flexure.

The carapace bears very sparse large granules, and behind the lateral eyes has a pair of smooth, symmetrical facets.

The manus of pedipalps dorsally bears irregular rows of granules forming a loose lattice with smooth central facets. In the center of the manus is a longitudinal strip of larger granules. Internal surface of the manus bears several well developed, pointed granules.

The first and second segments of the mesosoma lack a median keel. Other segments have a well developed median keel and sometimes also a vague lateral keel on each side. The seventh mesosomal segment bears four ventral keels.

All keels on metasomal segments are well developed and composed of toothlike tubercles that become slightly larger posteriorly. The spaces between keels contain sparse fine granules.

COMMENTS. This species was described as a subspecies of *S. hardwickii*. Upon examination of more specimens of *S. hardwickii* and obtaining more specimens of *S. jendeki* I have become convinced that they are separate species. The male of *S. jendeki* has the fingers of pedipalps straight, whereas in *S. hardwickii* they are flexed. Moreover, *S. jendeki* is smaller (Table 1) and differs in granulation of the carapace and presence of conspicuous pointed granules on the internal surface of manus of pedipalps.

DISTRIBUTION. China (Yunnan) (Kovářik 1994: 62).

Scorpiops kaftani Kovářik, 1993 (Fig. 61, Tables 1–3)

Scorpiops (Euscorpiops) kaftani Kovářik, 1993: 113.

Euscorpiops kaftani: Kovářik, 1998: 141.

TYPE LOCALITY AND TYPE DEPOSITION. Vietnam, Cuc Phuong; FKCP.

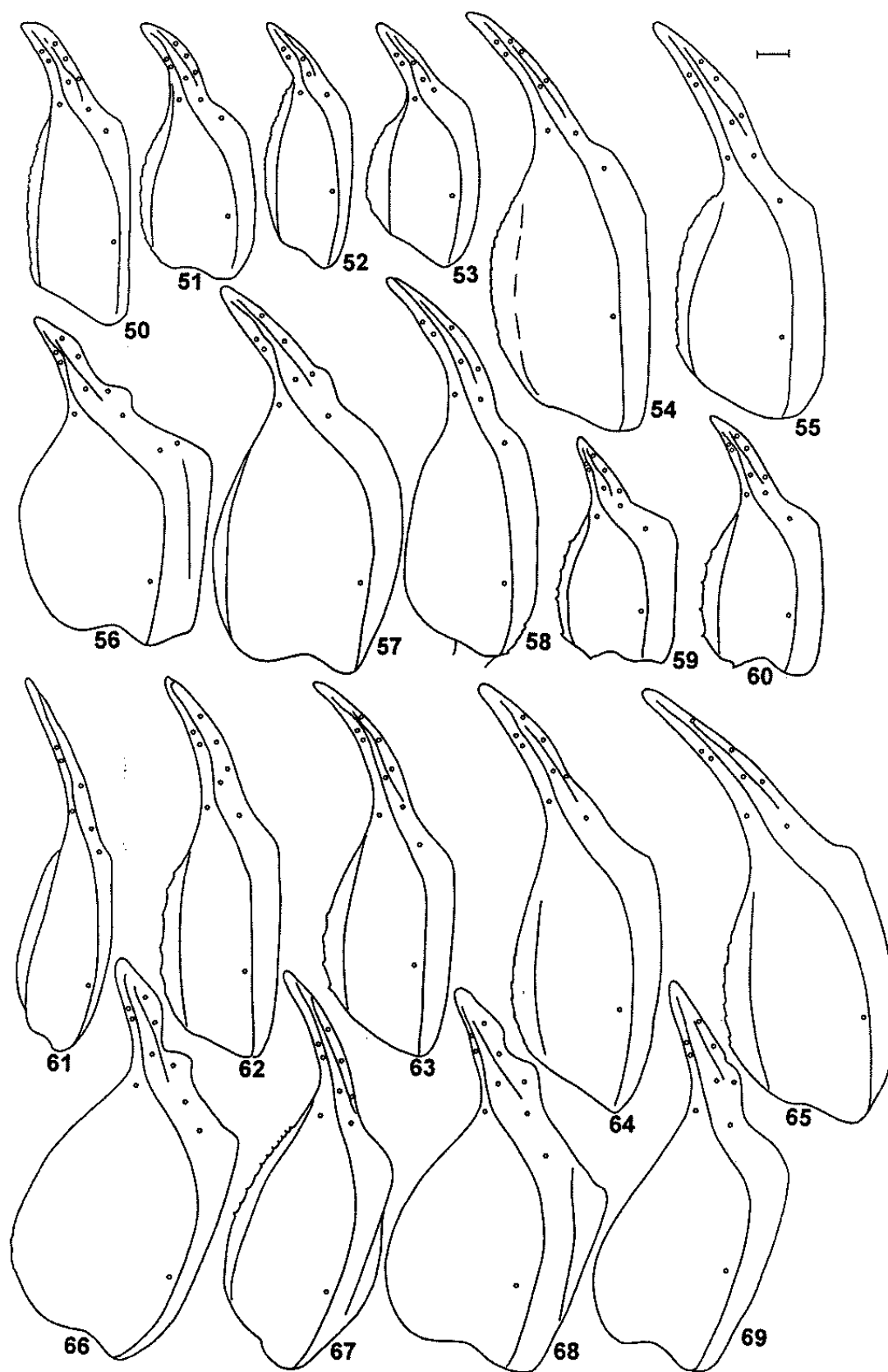
TYPE MATERIAL EXAMINED. **Vietnam**: prov. Ninh Binh, Cuc Phuong, V.1986, 1FE (holotype), leg. M. Kaftan, FKCP.

DIAGNOSTIC CHARACTERS. Total length of the female holotype is 31.5 mm. No other specimens are known. The fingers of pedipalps are straight. For position and distribution of trichobothria on the tibia of pedipalps see Fig. 61 and Kovářik (1993: 112 figs 7–12). There are 19 external trichobothria (5 eb, 2 esb, 2 em, 5 est, 5 et) and 13 ventral trichobothria on the patella. The habitus is shown in Kovářik 1993: 12. 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 6. The tibia of pedipalps is very narrow (Fig. 61, Table 1). The tibia length to manus width ratio is 4.4. The carapace bears large, unevenly spaced granules.

The manus of pedipalps dorsally bears keels forming a lattice. These keels are nearly smooth, composed of but a few granules.

→

Figs 50–69. Tibia of pedipalp, dorsal view. 50–51. *S. dastychi* sp. n. 50. Male holotype. 51. Female allotype. Figs 52–53. *S. farkaci* Kovářik. 52. Male holotype. 53. Female paratype No. 7. 54–55. *S. feti* sp. n. 54. Male holotype. 55. Female allotype. 56–57. *S. hardwickii* (Gervais). 56. FKCP male. 57. FKCP female. 58. *S. irenae* Kovářik, female holotype. 59–60. *S. jendeki* Kovářik. 59. FKCP male. 60. Female allotype. 61. *S. kaftani* Kovářik, male holotype. 62–63. *S. leptochirus* Pocock. 62. FKCP male. 63. FKCP female. 64–65. *S. problematicus* sp. n. 64. Male holotype. 65. Female allotype. 66. *S. margerisonae* sp. n., male holotype. 67. *S. sejnai* sp. n., male holotype. 68–69. *S. tibetanus* Hirst. 68. FKCP male. 69. FKCP female.



The mesosoma is sparsely granulated in the posterior half of each segment and bears one well developed median keel.

The keels on metasomal segments are pronounced but blunt. Also the dorsolateral keel is pronounced, but without pointed granules.

COMMENTS. *Scorpiops kaftani* is based on a single female and no other specimens have hitherto been found. Despite that the species is easily distinguished from all others in the genus *Scorpiops* on the very narrow tibia of pedipalps. The tibia length to manus width ratio is 4.4, which is the highest of all species of *Scorpiops* having more than 17 external trichobothria on the patella of pedipalps.

In August 1958 Cuc Phuong became a national park comprising 22000 ha (20°14' – 20°24' N and 105°29' – 105°44' E). The average temperature is 21°C (maximum 36°C in June and minimum 2°C in January), the average humidity is 90%, and the average rainfall is 2157 mm (224 rainy days annually). It is a basin in limestones and related carbonates, with altitudes of 200 – 350 m and surrounded by steep karst walls reaching 656 m above sea level, which separate the basin from extensive agricultural areas.

DISTRIBUTION. Vietnam (Ninh Binh) (Kovářik 1993: 113).

Scorpiops leptochirus Pocock, 1893

(Figs 37, 62, 63, Tables 1–3)

Scorpiops leptochirus Pocock, 1893: 325; Pocock, 1894: 79; Kraepelin, 1899: 181; Pocock, 1899: 268; Pocock, 1900: 69; Kraepelin, 1913: 158 (in part); Takashima, 1945: 98; Minnocci, 1974: 42; Kovářik, 1998: 142.
Scorpiops (*Scorpiops*) *leptochirus*: Vachon, 1980: 150; Tikader & Bastawade, 1983: 440; Kovářik, 1994: 65.

TYPE LOCALITY AND TYPE DEPOSITION. N. E. Bengal; BMNH.

TYPE MATERIAL EXAMINED. **Bangladesh**: N. E. Bengal, IMA (holotype), leg. F. Moore, BMNH No. 1893.10.29.11, rev. M. Vachon: 1980 (No. VA 2493).

FURTHER MATERIAL EXAMINED. **India**: W. Meghalaya, Garo Hills, Nokrek Nat. Park, 25°40' N 91°04' E, 1150 m, 2.–13.VII.1997, IME, leg. E. Afonin & V. Siniaev, FKCP; Assam, Nameri Nat. Park, 60 km N. of Tezpur, 150 m, 27°20' N 93°15' E, 24.VII–2.VIII.1997, IFE, leg. E. Afonin & V. Siniaev, FKCP.

DIAGNOSTIC CHARACTERS. Total length is 40–58 mm (Pocock 1900: 69). Measurements of the carapace, telson, segments of the metasoma and segments of the pedipalps, and numbers of pectinal teeth are given in Table 1. Mesosomal segments of the female bear large, closely spaced granules. In males the granules are effaced and widely spaced, or may be altogether absent in some individuals. Fingers of pedipalps are nearly straight in both sexes, but the tibia of pedipalps is much longer and narrower in the males. For position and distribution of trichobothria on the tibia of pedipalps see Figs 37, 62–63. There are 17 external trichobothria (5 eb, 2 esb, 2 em, 4 est, 4 et) (Fig. 5) and 7 ventral trichobothria on the patella (Fig. 29). Pectinal teeth number 7–9.

The carapace is granulated, but not densely.

The mesosoma bears one median keel, and the seventh mesosomal segment ventrally bears four conspicuous keels.

COMMENTS. This species is based on single specimen which Pocock (1893: 326) thought was probably a female. In 1980 Vachon examined the type and declared it a male. Pocock (1893: 326) stated that the type is without locality data, but later (1894: 79) gave the type locality as "N. E. Bengal". Today the holotype is in alcohol, but originally it was a pinned dry mount.

Scorpiops leptochirus was confused with *S. feti* sp. n. (Kraepelin 1913: 158), which makes some of its formerly published characters doubtful.

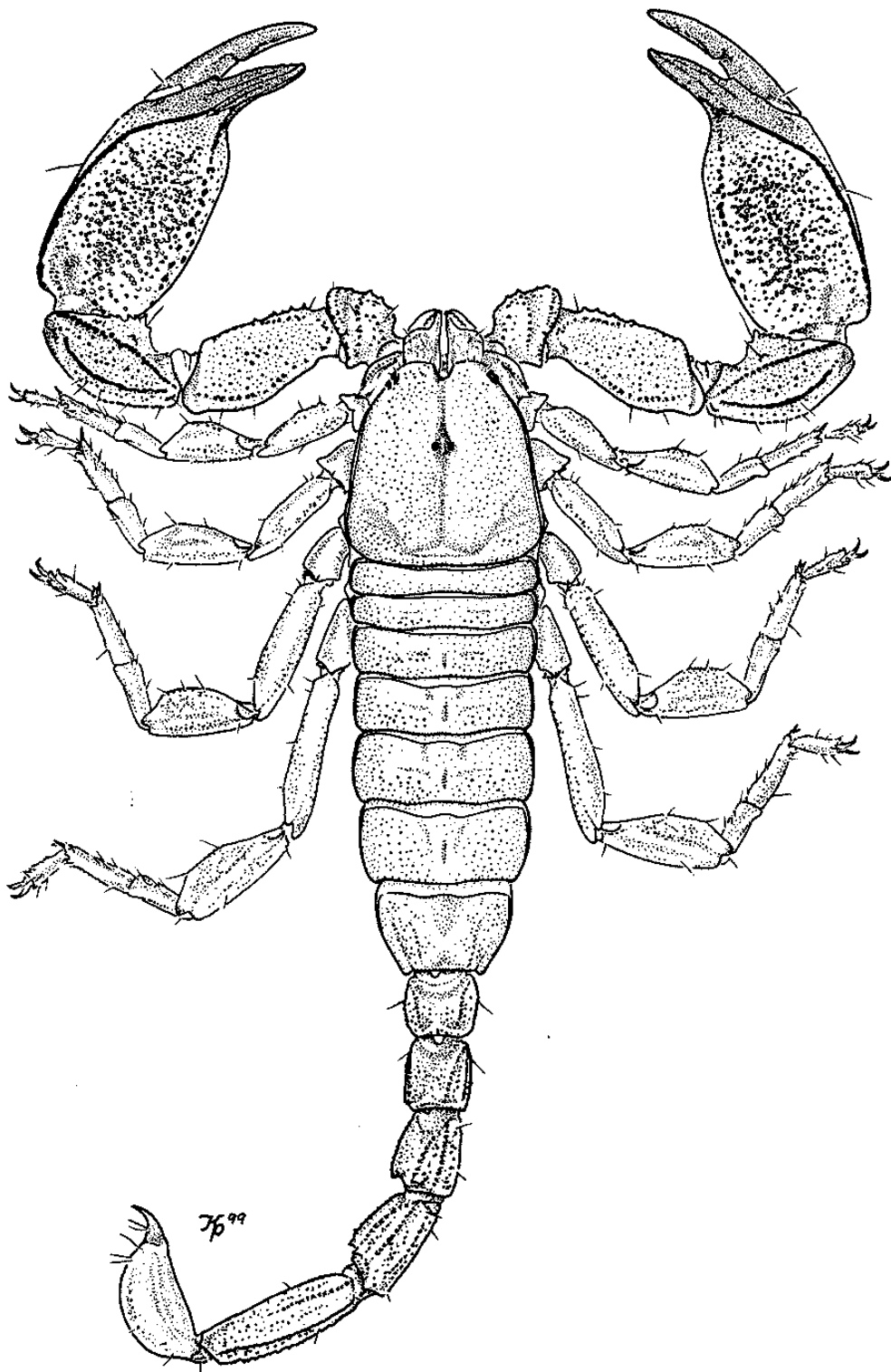


Fig. 70. *Scorpions margerisonae* sp. n., male holotype, dorsal aspect.

DISTRIBUTION. Bangladesh, India (Meghalaya, Assam) (Pocock 1894: 79, Tikader & Bastawade 1983: 445).

***Scorpiops lindbergi* Vachon, 1980**
(Figs 18, 19, 44, and 48, Tables 1–3)

Pareuscorpius lindbergi Lindberg, 1961: 31 (nomen nudum); Minnocci, 1974: 43.

Scorpiops (Euscorpiops) lindbergi Vachon, 1980: 155; Kovařík, 1993: 113.

Scorpiops (Euscorpiops) lindbergi: Vachon & Kinzelbach, 1987: 100.

Scorpiops lindbergi: Goyfon, 1993: 246.

Euscorpiops lindbergi: Kovařík, 1998: 141; Lourenço, 1998: 250.

Scorpiops kraepelini Lourenço, 1998: 246 (TL: Pakistan, Loralai District, 14 miles East of Ziarat; ZMUH); Kovařík, 1998: 142; **syn. n.**

TYPE LOCALITY AND TYPE DEPOSITION. Afghanistan, Kouh Djaouz, Tang-Saidan; MNHN.

TYPE MATERIAL EXAMINED. **Pakistan**: Loralai District, 14 miles East of Ziarat, VI.1961, 1MIFA (holotype and allotype of *Scorpiops kraepelini*), leg. J. Anderson; ZMUH.

FURTHER MATERIAL EXAMINED. **Pakistan**: northern Baluchistan, VIII.–IX.1965, leg. S. Minton, 3FA, det. W. D. Sissom in 1986 as *Scorpiops (Euscorpiops) lindbergi*. Two female are in MBCZ, one is in FKCP.

DIAGNOSTIC CHARACTERS. Total length is 35.4–47 mm. Habitus is shown in Fig. 48 and Vachon, 1980: 156 fig. 33. Male has the fingers of pedipalps strongly flexed, whereas in the female they are straight. For position and distribution of trichobothria on the tibia and patella of pedipalps see Figs 18, 19, 44 and Vachon, 1980: 157 figs 34–39. Measurements of the carapace, telson, segments of the metasoma and segments of the pedipalps, and numbers of pectinal teeth are given in Table 1. There are 18 or 19 external trichobothria on the patella (5 eb, 2 esb, 2 em, 4–5 est, 4–5 et). Due to variable position of some trichobothria, the same trichobothrium may be in the position of est4 or et2 (Figs 18–19). Ventral trichobothria on the patella number 10–12. One examined female from Pakistan and the holotype of *S. kraepelini* have only 10 ventral trichobothria on one patella, whereas other examined specimens have 11 on both. Pectinal teeth number 6–9. The carapace is either smooth or bears very fine granules.

Overall coloration is yellow.

The manus of pedipalps dorsally bears fine granules forming a lattice and a central longitudinal strip.

The surface of the mesosoma is uneven but without granules, and the posterior margins of its segments bear three inconspicuous median keels. The male (holotype of *S. kraepelini*) has a well discernible median keel. The anterior parts of mesosomal segments bear symmetrical depressions. The seventh mesosomal segment is ventrally smooth, but with four blunt, often vague keels.

The dorsolateral keel of the third and fourth metasomal segments is posteriorly toothlike and terminates in a larger tooth.

COMMENTS. This species is based on two males and five females. Prof. Vachon apparently informed Lindberg about his intention to describe the species as *Pareuscorpius lindbergi* and Lindberg (1961: 31) published this information. However, the species was described by Vachon only in 1980 as *Scorpiops (Euscorpiops) lindbergi*.

Lourenço (1998: 246) based *Scorpiops kraepelini* on one male and one female. He stated that *S. kraepelini* has 17 external trichobothria on the patella (Lourenço 1998: 253 and fig. 7 on p. 248) and his figure omitted one esb trichobothrium. However, this trichobothrium is poorly developed only on the right patella of pedipalps of the holotype, whereas on the left patella of the holotype and on both patellas of the allotype it is clearly discernible (Fig. 19). Because of the above features in

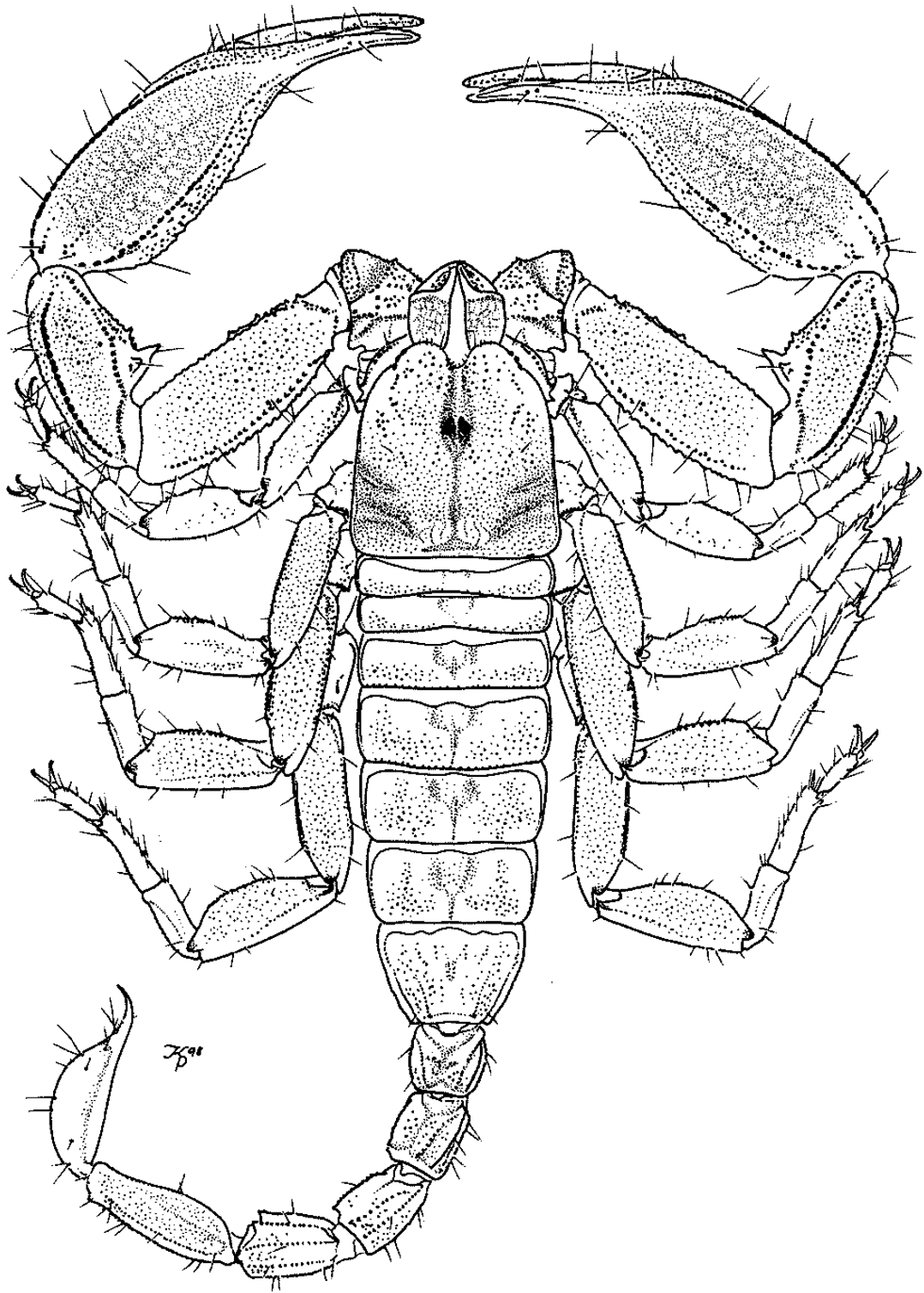


Fig. 71. *Scorpiops montanus* Karsch, FKCP male, dorsal aspect.

common, especially the yellow coloration, presence of 11 ventral trichobothria on the patella (Lourenço 1998: 248 fig. 8), and the position of trichobothrium Eb3 on the external surface of the tibia between trichobothria Dt and Db (see Fig. 44 and Lourenço, 1998: 248 fig. 3), I am certain that *S. kraepelini* is a synonym of *S. lindbergi*.

DISTRIBUTION. Afghanistan (Vachon 1980: 155), Pakistan (Lourenço 1998: 248).

***Scorpiops longimanus* Pocock, 1893**

(Figs 20, 39, Tables 1–3)

Scorpiops longimanus Pocock, 1893: 326; Kraepelin, 1894: 191; Kraepelin, 1899: 180; Pocock, 1900: 72; Birula, 1913: 416; Henderson, 1913: 132; Kraepelin, 1913: 160; Werner, 1934: 283; Roewer, 1943: 236; Takashima, 1945: 98; Minnocci, 1974: 42; Stahnke, 1974: 117; Dupré, Lambert & Gérard, 1997: 67.

Scorpiops (Euscorpiops) longimanus longimanus: Vachon, 1980: 155.

Scorpiops (Euscorpiops) longimanus: Tikader & Bastawade, 1983: 464; Bastawade, 1985: 261; Dupré, 1997: 2.

Euscorpiops longimanus: Kovařík, 1998: 141.

? *Scorpiops (Euscorpiops) longimanus benghami*: Vachon, 1980: 155.

Scorpiops flavimanus [sic]: Dupré, Lambert & Gérard, 1997: 49.

TYPE LOCALITY AND TYPE DEPOSITION. Silhet; BMNH.

MATERIAL EXAMINED. **India**: Assam, Nagecrat, 1FA, ZMUH; Sibsagar, 1MFA, ZMUH; Kobo, Abor. exped., 1FA, ZMUH; Kobo, VII.1913, 1M1FA, Mus. Calcutta, ZMUH No. 1564; Meghalaya state, East Khasi Hills, Umran (ca 800 m), 33 km N. of Shillong, 29.VI.–2.VII.1995, 1juv.A, leg. L. Bartolozzi & K. Werner, MZUF No. 1715; Meghalaya state, West Garo-Hills, Nokrek Nat. Park, ca 1100, 9.–17.V.1996, 1F2juvsA, leg. E. Jendek & O. Šauša, FKCP. **Myanmar**: Carin Hills, 900–1000 m, viaggio in Birmania, 20.X.1896, 2M1FA, leg. L. Fca, ZMUH; ober Birma, Samaguking, 1M1juv.A, Mus. Calcutta, X.1912, ZMUH.

DIAGNOSTIC CHARACTERS. Total length is 45–70 mm. Males have larger pectens, but fingers of pedipalps are straight and telsons narrow, prolonged in both sexes. For position and distribution of trichobothria on the tibia and patella of pedipalps see Figs 20, 39. Measurements of the carapace, telson, segments of the metasoma and segments of the pedipalps, and numbers of pectinal teeth are given in Table 1. There are 18 external trichobothria (5 eb, 2 esb, 2 em, 4 est, 5 et) (Fig. 20) and 9–11 ventral trichobothria on the patella (Fig. 28). Pectinal teeth number 6–9. The carapace bears sparse large granules.

The manus of pedipalps bears fine granules of equal size, which are more closely spaced in the center and in the remaining areas form a lattice. In the center of the manus there often is a pronounced longitudinal keel.

The mesosoma bears sparse smaller or larger granules and one median keel. The seventh mesosomal segment bears four keels which may not be well developed. The first metasomal segment bears 10 keels. The second through fourth segments bear eight keels and two additional poorly developed keels. The fifth metasomal segment bears seven keels, of which only one ventral keel is serrate. A mediolateral keel is present but incomplete. All keels are composed of equidimensional granules of nearly equal size. Dorsolateral keels of the first four segments posteriorly terminate in a pronounced tooth.

COMMENTS. *S. longimanus* is based on one female allegedly deposited at BMNH, but the specimen cannot be found. Kraepelin (1913) and Vachon (1974, 1980) regarded *S. binghamii* as a subspecies of *S. longimanus*, but Vachon's figure (1974: 942, fig. 226) lends some credence to the possibility that he based his conclusions on misidentified specimens.

DISTRIBUTION. Bangladesh, India (Arunachal Pradesh, Assam, Meghalaya) (Pocock 1893: 327, Tikader & Bastawade 1983: 470), Myanmar (Henderson 1913: 132).

***Scorpiops margerisonae* sp. n.**
(Figs 66, 70, Tables 1–3)

TYPE LOCALITY AND TYPE DEPOSITION. China, Tibet; FKCP.

TYPE MATERIAL EXAMINED. China, Tibet: IMA (holotype), FKCP.

ETYMOLOGY. Named after Janet Margerison-Knight, curator at the Natural History Museum, London, in appreciation of her kind help.

DIAGNOSTIC CHARACTERS. Total length of the male holotype is 51 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. Habitus is shown in Fig. 70. For position and distribution of trichobothria on the tibia of pedipalps see Fig. 66. There are 17 external trichobothria (5 eb, 2 esb, 2 em, 4 est, 4 et) (Fig. 5) and 8 and 9 ventral trichobothria (Fig. 28) on the patella. Trichobothrium Eb3 on the external surface of the tibia is between trichobothria Dt and Db (Fig. 47). Pectinal teeth number 12–13. The carapace is finely but sparsely granulated, with larger and more closely spaced granules only in its anterior portion.

The base color is dark brown to black, with the manus of pedipalps, legs, and telson reddish brown.

The dorsal surface of the manus is flat, with a dense cover of equal-sized granules. The fingers of pedipalps in the male holotype are strongly flexed (Fig. 66).

The mesosoma bears larger and more closely spaced granules primarily in the posterior half of each segment, and has one pronounced median keel. The ventral surface of the seventh mesosomal segment is granulated and bears four conspicuous keels.

All keels on metasomal segments are composed of large, irregularly shaped granules. Spaces between the keels are more finely granulated. The dorsolateral keels on the first through fourth metasomal segments are composed of backward-inclined teeth that become larger posteriorly.

AFFINITIES. The described features distinguish *S. margerisonae* sp. n. from all other species of the genus *Scorpiops*. They are recounted in the key below. The number of pectinal teeth (12–13) is the highest in the genus.

Scorpiops margerisonae sp. n. is closest to *S. tibetanus* with which it shares the number of trichobothria on the tibia and patella of pedipalps, body proportions, and total length. It differs from *S. tibetanus* chiefly in having a dorsally flat manus of pedipalps, shorter metasoma (Table 1), and smaller telson.

***Scorpiops montanus* Karsch, 1879**
(Figs 38, 41, 71, 72, Tables 1–3)

Scorpiops montanus Karsch, 1879: 107; Kraepelin, 1894: 192 (in part); Kraepelin, 1899: 180 (in part); Pocock, 1900: 70; Kraepelin, 1901: 273; Kraepelin, 1913: 159; Fage, 1933: 30; Werner, 1934: 283; Takashima, 1945: 97; Mani, 1959: 12; Minnocci, 1974: 42 (in part); Stahnke, 1974: 123; Tikader & Bastawade, 1977: 144; Moritz & Fischer, 1980: 319; Khatoon, 1986: 645; Goyffon, 1993: 246; Kovařík, 1993: 109; Kovařík, 1994: 61; Kovařík, 1998: 142.

Scorpiops montano: Simon, 1887: 113.

Scorpiops (Scorpiops) montanus: Vachon, 1980: 151; Tikader & Bastawade, 1983: 429; Bastawade, 1992: 100.

TYPE LOCALITY AND TYPE DEPOSITION. Himalaya; ZMHB.

TYPE MATERIAL EXAMINED. India: Himalaya, 1juv.A (holotype), leg. Trochnow, ZMHB No. 3064.

FURTHER MATERIAL EXAMINED. India: Ostindien, IMA, ZMUH; Dehra Dun, 1893, 1FA, ZMUH; Hardwar, X. 1912, 1M1F3juvsA, Mus. Calcutta, ZMUH; Stararduru, X. 1912, 1M2FA, Mus. Calcutta, ZMUH; Timli Siwalik,

18.VII.1956, Deutsche Indien-Expedition 1955–57, 2FA, ZMUH No. 22; Uttar Pradesh, Kumaon Hills, Bhimtal near Sattal, 27.III.1973, 1MA, 20.–22.V.1973, 2M3F3juvsA, leg. F. Smetacek, ZMUH No. 31, 34, 38, 41–2, 45, 50, 53; NW, Himachal Pradesh, Kulu Valley, Hurla Nál, Garsa (= Garsah), 1350–1450 m, IX–X.1982, 2FA, leg. M. L. Azzaroli, B. Lanza & V. Kumar, MZUF; Himachal Pradesh, Bhutan, Kulu dist., 740 m, 20.VII.1983, 2juvsA, leg. M. L. Azzaroli & Simonetta, MZUF; Uttar Pradesh bor., 1990, 2M1FA, FKCP; Rampur, 1992, 1ME, FKCP; Uttar Pradesh bor., Kotdwara env., 1F(im.)E, 1.–3.VIII.1994, leg. M. Snížek, FKCP; Himalaya, Dehra Dun, 14.II.1998, 2F, ZMUH.

DIAGNOSTIC CHARACTERS. Total length is up to 60 mm. The male has fingers of pedipalps strongly flexed (Fig. 41), whereas in the female they are flexed only slightly. Measurements of the carapace, telson, segments of the metasoma and segments of the pedipalps, and numbers of pectinal teeth are given in Table 1. Habitus is shown in Figs 71–72. For position and distribution of trichobothria on the tibia of pedipalps see Fig. 38. There are 17 external trichobothria (5 eb, 2 esb, 2 em, 4 est, 4 et) (Fig. 5) and 12–18 ventral trichobothria on the patella (Figs 26–27). The number of ventral trichobothria distinguishes *S. montanus* from all other species of the genus *Scorpiops* that have, like *S. montanus*, 17 external trichobothria on the patella of pedipalps (Fig. 5). Pectinal teeth number 6–9.

The carapace bears granules of unequal size, with a concentration of larger granules behind the lateral eyes. There is a pronounced central depression in the anterior margin of the carapace.

The manus of pedipalps bears unequal-sized granules, which in the center may be more packed and form a longitudinal strip. Tubercles on the external surface of the patella are large, pointed, and thornlike.

The mesosoma is granulated and bears one median keel, and sometimes also two vague additional keels that show little elevation and are not continuous. The seventh mesosomal segment bears two or four poorly developed keels.

All keels on metasomal segment are well developed and composed of equidimensional, nearly equal-sized granules. The dorsolateral keels of the first four segments posteriorly terminate in pronounced teeth.

COMMENTS. This species is based on one immature specimen 32 mm long and deposited at ZMHB. Tikader & Bastawade (1977: 434) claim that they studied two specimens from the type series at BMNH, but it is not possible (see Karsch 1879: 109).

Kraepelin (1894, 1899) was uncertain about the taxonomic position of this species and confused it with e. g. *S. binghamii*. For that reason his characterization of *S. montanus* cannot be accepted and specimens so labeled have to be revised one by one.

DISTRIBUTION. India (Himachal Pradesh, Uttar Pradesh, Punjab) (Karsch 1879: 107, Tikader & Bastawade 1983: 429), Pakistan (Khatoon 1986: 645).

Scorpiops oligotrichus Fage, 1933 (Tables 2, 3)

Scorpiops montanus oligotrichus Fage, 1933: 30; Takashima, 1945: 98.

Scorpiops oligotrichus: Fage, 1944: 73; Vachon, 1974: 942; Kovařík, 1998: 142; Lourenço, 1998: 249.

Scorpiops (Scorpiops) oligotrichus: Vachon, 1980: 151; Kovařík, 1993: 109; Kovařík, 1994: 65.

Scorpiops montanus: Fage, 1936: 181.

TYPE LOCALITY AND TYPE DEPOSITION. Laos, Bana, Djirinh; MNHN.

DIAGNOSTIC CHARACTERS. Total length is 32–33 mm (Fage 1944: 73). For position and distribution of trichobothria on the patella of pedipalps see Vachon (1974: 942, fig. 227). There are 17 external

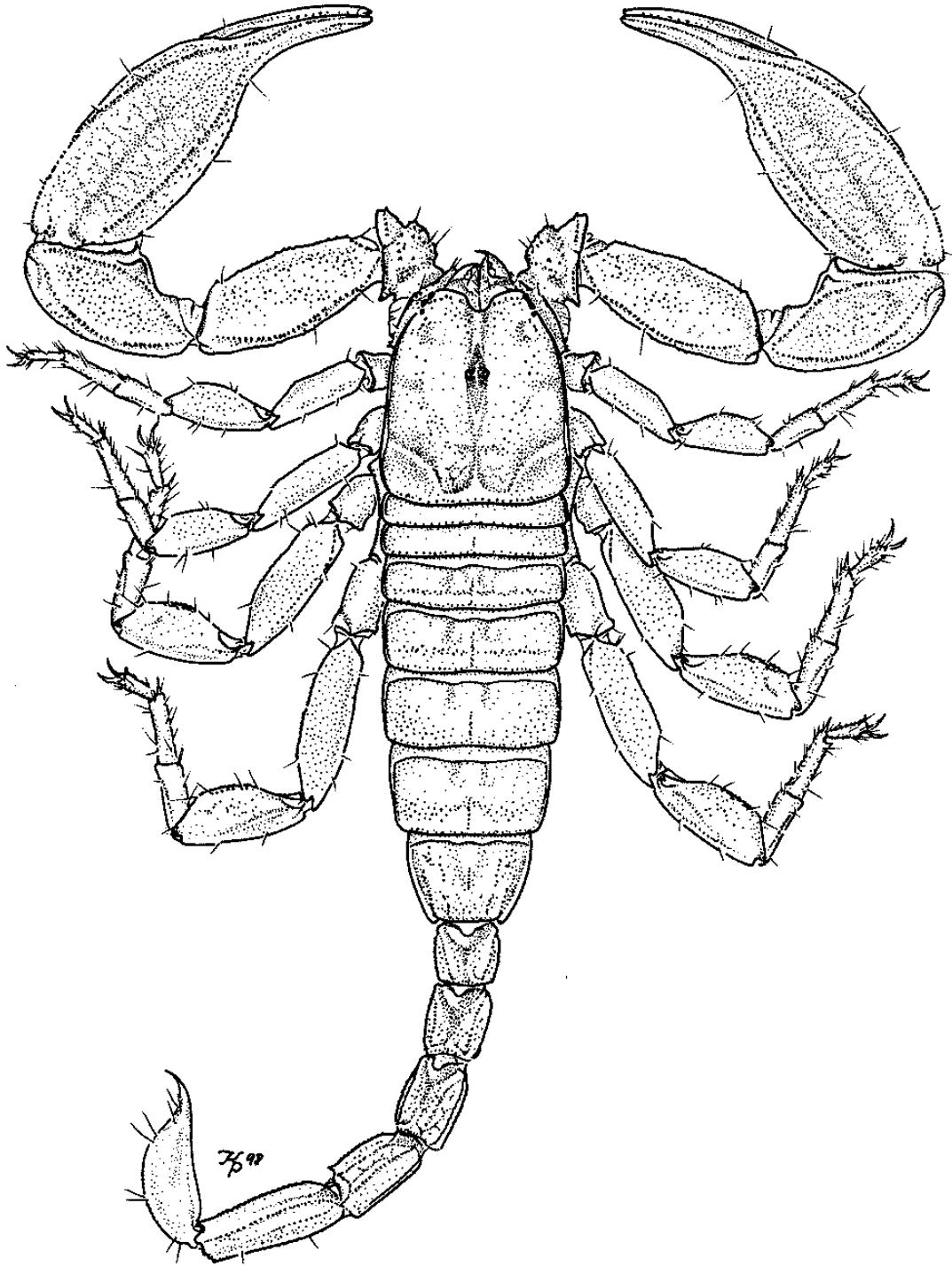


Fig. 72. *Scorpiops montanus* Karsch, FKCP female, dorsal aspect.

trichobothria (5 eb, 2 esb, 2 em, 4 est, 4 et) and 9 ventral trichobothria on the patella (Fage 1933: 30). Habitus is shown in Lourenço (1998: 249, fig. 10).

COMMENTS. This species is based on immature specimens collected in Laos (now Vietnam – Djiring and Bana) and originally regarded as a subspecies of *S. montanus*. In 1944, after seeing adult specimens from various localities in Laos and Vietnam (Pak Lay, Pak Sang, Luang Prabang), Fage raised it to the species level.

The characterization given by Fage (1944) is inadequate and lacks even features such as the number of pectinal teeth. Unfortunately, MNHN has not responded to my repeated requests for type specimens, and I have not been able to find other specimens of this species either. Therefore the diagnostic characters are based solely on the authors cited.

DISTRIBUTION. Laos, Vietnam (Fage 1933: 30, 1944: 73).

***Scorpiops pachmarhicus* Bastawade, 1992**

(Tables 2–3)

Scorpiops (Scorpiops) pachmarhicus Bastawade, 1992: 100; Kovařík, 1994: 65; Lourenço, 1998: 246.

Scorpiops pachmarhicus: Kovařík, 1998: 142.

TYPE LOCALITY AND TYPE DEPOSITION. India, Madhya Pradesh, Pachmarhi, 22°60'N, 78°50'E; NZSI.

DIAGNOSTIC CHARACTERS. Total length of the female holotype is 34.5 mm (Bastawade 1992: 100). For position and distribution of trichobothria on the tibia and patella of pedipalps see Bastawade (1992: 101, figs 6–8). There are 17 external trichobothria (5 eb, 2 esb, 2 em, 4 est, 4 et) and 10 ventral trichobothria on the patella (Bastawade 1992: 101). Pectinal teeth number 6 in the female and 7 in the male (Bastawade 1992: 102).

COMMENTS. This species is based on three mature females and one male obtained by D. F. Singh in August 1985 and October 1987 (Bastawade 1992: 102). The types have been deposited at NZSI. *S. pachmarhicus* is closest to *S. montanus*, from which it differs primarily in a more anterior position of the median eyes and in having 10 ventral trichobothria on the patella (Bastawade 1982: 101, fig. 7) rather than 12–18 as in *S. montanus* (Fig. 27).

Unfortunately, I have not been able to examine the types or any other specimens of this species, and the diagnostic characters are therefore based solely on Bastawade's description.

DISTRIBUTION. India (Madhya Pradesh) (Bastawade 1992: 102).

***Scorpiops petersii* Pocock, 1893**

(Figs 35, 42, Tables 1–3)

Scorpiops hardwickii not Gervais, 1843 and 1844 Peters, 1862: 510; Karsch, 1879: 106 (syn. by Pocock, 1893: 323).

Scorpiops petersii Pocock, 1893: 323; Kraepelin, 1894: 190; Pocock, 1900: 70; Takashima, 1945: 98; Minnocci, 1974: 42; Kovařík, 1998: 142.

Scorpiops petersi: Kraepelin, 1899: 181; Pocock, 1899: 268; Kraepelin, 1901: 273; Kraepelin, 1913: 159; Stahnke, 1974: 117; Kovařík, 1994: 61.

Scorpiops (Scorpiops) petersi petersi: Vachon, 1980: 150.

Scorpiops (Scorpiops) petersi: Tikader & Bastawade, 1983: 446.

? *Scorpiops petersi von-wicki* Birula, 1913: 417 (TL: Assam, Aborn-Gebirge); syn. n.

? *Scorpiops petersii von-wicki*: Minnocci, 1974: 42.

? *Scorpiops (Scorpiops) petersi von-wicki*: Vachon, 1980: 150.

TYPE LOCALITY AND TYPE DEPOSITION. Simla, in the Himalayas; BMNH.

TYPE MATERIAL EXAMINED. **India (Himachal Pradesh):** Himalaya, Simla, 1MA (lectotype), leg. Schlagintweit, BMNH. FURTHER MATERIAL EXAMINED. **Bhutan:** Phuntsholing (Kamjee), 1957, 1FA, FKCP; Bhutan, 1972, 1M5F3juvsA, No. BS 002/1-9, 1juvA, BS 015/1, 3juvsA, No. BS 013/1-3, NHMB; Phuntsholing, 200-400 m, 3M4F2juvsA, No. BS 001/1-9, 2juvsA, No. BS 014/1-2, 15.IV.1972, 1FA, No. BS 003/1, 3M5F3juvsA, No. BS 006/1-11, 1juvA, No. BS 008/1, 1juvA, No. BS 012/1, 21.-28.IV.1972, 1juvA, No. BS 009/1, 6.V.1972, 2F1juvA, No. BS 005/1-3, 3juvsA, No. BS 007/1-3, 1juvA, No. BS 011/1, 13.V.1972, 2juvsA, NHMB; Khala, 200 m, 25.IV.1972, 1juvA, No. BS 010/1, NHMB; Samchi, 7.-11.V.1972, 2F1MA, No. BS 004/1-3, NHMB; Kharbandi, 25.IV.1976, 1M1F1juvA, leg. K. Dorje, NHMB. **India:** IMA, SMFD No. 4415d; IFE, FKCP; Himalaya, 5MA, leg. Troctenow, ZMHB No. 3063; W. Himalaya, Murree, IMA, ZMUH; Burki, IMA, Mus. Calcutta, X.1912, ZMUH; 1893, 1M, Mus. Giessen, ZMUH; Simla, 1M1juvA, Mus. Calcutta, X.1912, ZMUH; Himalaya, Chakrata, 1FA, Deutsche Indien-Expedition 1955-57 Nr. 448, ZMUH No. 09; Himalaya, Molta, 3.000 m, 26.V.1956, 1FA, Deutsche Indien-Expedition 1955-57 Nr. 416, ZMUH No. 14; Himalaya, Molta, 3.000 m, 9.V.1956, 1FA, Deutsche Indien-Expedition 1955-57 Nr. 389, ZMUH No. 20; Himalaya, Molta, 3.000 m, 13.VI.1956, 1MA, Deutsche Indien-Expedition 1955-57 Nr. 432, ZMUH No. 17; Himalaya, Molta, Deutsche Indien-Expedition No. 402, 1955-57, 1MA, FKCP; Dorjee Khandu, 3.IX.1975, 1M1FA, leg. W. Wittmer, NHMB; Sikkim, Darjeeling Distr., Kalimpong, 3.IV.1976, 1M1juvA, 25.IV.1976, 1M1F1juvA, 5.VII.1981, 1MA, No. 141a, leg. B. Bhakta, NHMB; Sikkim, Chhuba Khola near Sintan, 25.IV.1977, 1juvA, leg. B. Bhakta, NHMB; Sikkim, Pelling, 1400 m, 10.IV.1978, 1juvA, leg. B. Bhakta, No. 141b, labelled *Scorpiops* (*Scorpiops*), det. M. Vachon 1980 (VA 2599), and labelled *Scorpiops asthenurus*, NHMB; Kashmir, Dachigan, VI.1980, 1MA, FKCP; Uttar Pradesh bor., Haridvar, Chila, 300 m, 1ME, 5.-14.VIII.1994, leg. M. Valenta, FKCP; Kashmir, Pahalgan, IFE, VII.1995, leg. R. Sauer, FKCP; Meghalaya state, West Garo Hills reg., TURA, 5-7.V.1996, 1FA, ca 700m, GPS (global positioning system) N25.30.7 E90.13.9, WGS (world graphic system) 84, leg. E. Jendek & O. Šauša, FKCP; NE, Maghalaya state, West Garo-Hills, Nokrek Nat. Park, ca 1100, 9.-17.V.1996, 1juvA, leg. E. Jendek & O. Šauša, FKCP; Dehra Dun, 14.II.1998, 1M1FA, ZMUH. **Pakistan:** Ginc (Chilas), 16.VI.1981, 1FA, leg. P. Letellier, FKCP; Himalaya mts, Kaghan valley, Thathabaya, 2200 m, 73°26'E, 34°36'N, 1.V.1998, leg. M. Lázsló & G. Ronkay, 1MA, HNHM, 1MA, FKCP.

DIAGNOSTIC CHARACTERS. Total length is up to 75 mm. In contrast to female, the male has fingers of pedipalps strongly flexed (Fig. 42). Measurements of the carapace, telson, segments of the metasoma and segments of the pedipalps, and numbers of pectinal teeth are given in Table 1. For position and distribution of trichobothria on the tibia of pedipalps see Fig. 42. Positions of ventral trichobothria on the patella and of external and dorsal trichobothria on the tibia are variable. There are 17 external trichobothria (5 eb, 2 esb, 2 em, 4 est, 4 et) (Fig. 5) and 7, or rarely 6 or 8, ventral trichobothria on the patella (Fig. 29). Pectinal teeth number 4-9.

The carapace is granulated, but not densely.

The mesosoma is granulated and bears one median keel, sometimes with two additional, weakly marked and interrupted keels (ZMHB males). The granules on mesosomal segments are widely spaced, with the distance between them far greater than their size. The seventh mesosomal segment ventrally bears four conspicuous keels.

The telson is strongly inflated, especially in males.

COMMENTS. This species is based on two specimens which Pocock (1893: 325) thought to be females. A label enclosed to the examined specimen shows that Stahnke designated it the lectotype and again marked as a female. However, I am certain it is an adult male, which in contrast to the female has the fingers of pedipalps markedly flexed (Fig. 42).

Examination of a number of specimens has shown considerable variation in number of pectinal teeth (4-9) and ventral trichobothria on the patella (6-8, usually 7), and in the position of certain trichobothria, mainly esb, em, est1, est3 and et2, on the patella (Fig. 5) and Esb, Eb (including Eb3), Est5 and dsb on the tibia (Fig. 2). It is therefore necessary to re-evaluate the characters used in distinguishing this species from others in the genus *Scorpiops*.

The holotype female of *S. petersii vonwicksi* is supposedly deposited at the Zoological Institute of Russian Academy of Sciences, St. Petersburg, but cannot be located and may have been permanently lost. Since Birula's description does not contain truly diagnostic characters and the

available literature does not mention any other specimens, I believe this subspecies to be most likely invalid.

DISTRIBUTION. Bhutan, India (Assam, Himachal Pradesh, Uttar Pradesh, Kashmir, Meghalaya, Sikkim) (Pocock 1893: 325, Vachon 1980: 150, Tikader & Bastawade 1983: 446), Pakistan (first report).

***Scorpiops problematicus* sp. n.**

(Figs 21, 40, 64, 65, Tables 1–3)

? *Scorpiops longimanus benghami*: Vachon, 1974: 942.

? *Scorpiops (Euscorpiops) longimanus benghami*: Vachon, 1980: 155.

Scorpiops (Euscorpiops) longimanus: Kovařík, 1993: 113; Kovařík, 1995: 200.

TYPE LOCALITY AND TYPE DEPOSITION. Thailand, prov. Chiang Mai, Doi Pui mt., 18°49'N–98°54'E; FKCP.

TYPE MATERIAL EXAMINED. **Thailand**: prov. Chiang Mai, Suthep-Pui, 20.IV.1991, 1FE (allotype), 1M(im.)E (paratype No. 2), leg. J. Farkaš, FKCP; Doi Chiang Dao, 1800 m, V.1991, 1M(im.)E (paratype No. 1), leg. D. Král, FKCP; prov. Chiang Mai, Doi Pui mt., 18°49'N–98°54'E, 1000–1600 m, 9.V.1996, 1ME (holotype), leg. S. Bečvář, FKCP; Mt. Doi Pui near Chiang Mai, 900–1100 m, 11.V.1997, 3juvsA (paratype Nos 4–6), leg. S. Bečvář j. and s., FKCP; Chiang Mai, 11.VI.1997, 1juv.A (paratype No. 3), leg. M. Snížek, FKCP.

ETYMOLOGY. The name alludes to the problems encountered in defining taxonomic position of this species, the type series of which was originally regarded as *Scorpiops longimanus* (viz also comments under *S. binghamii*).

DIAGNOSTIC CHARACTERS. Total length is 45.8 mm (male holotype) to 46.7 mm (female allotype). The male has a larger pecten than the female. Fingers of pedipalps are flexed and the telson long and narrow in both sexes. For position and distribution of trichobothria on the tibia and patella of pedipalps see Figs 21, 40, 64–65. Measurements of the carapace, telson, segments of the metasoma and segments of the pedipalps, and numbers of pectinal teeth are given in Table 1. External trichobothria on the patella number 19 (5 eb, 2 esb, 2 em, 5 est, 5 et) (Fig. 21), with the position of est5, et2, and et3 being somewhat variable. Ventral trichobothria on the patella number 11–12, with 12 only in paratype No. 1 and on one patella of paratype No. 6. Pectinal teeth number 7–8. The carapace is granulated, with the granules being larger anteriorly.

The manus of pedipalps dorsally bears fine granules of equal size, which in the central part are more closely packed and form a longitudinal keel, whereas elsewhere they form a lattice.

The mesosoma is granulated, with the granules being larger and more numerous in the posterior part of each segment. There is one median keel, and the seventh segment bears four inconspicuous keels. Keels on metasomal segments consist of fine granules of equal size. Only the dorsolateral keel is pronounced, serrate, and terminates in a large tooth.

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

S. problematicus sp. n. is closest to *S. longimanus* and *S. binghamii*, with which it has often been confused. It differs from these two species in the number and distribution of external trichobothria on the patella (see key). In contrast to *S. longimanus*, the fingers of pedipalps are flexed in both sexes.

***Scorpiops rohtangensis* Mani, 1959**

(Tables 2, 3)

Scorpiops rohtangensis Mani, 1959: 15; Minnocci, 1974: 42; Polis, 1990: 252; Goyfon, 1993: 246; Kovařík, 1998: 142.

Scorpiops (Scorpiops) rohtangensis: Vachon, 1980: 151; Tikader & Bastawade, 1983: 435; Kovařík, 1994: 65.

TYPE LOCALITY AND TYPE DEPOSITION. Himalaya, Rohtang Pass, 4300 m, North Aspect of Pir Panjal Range (Lahaul); NZSI.

DIAGNOSTIC CHARACTERS. Total length of the male holotype is 50 mm (Mani 1959: 15) or 37.75 mm (Tikader & Bastawade 1983: 435). For position and distribution of trichobothria on the tibia and patella of pedipalps see Tikader & Bastawade (1983: 438, figs 1211–1216). There are 17 external trichobothria (5 eb, 2 esb, 2 em, 4 est, 4 et) and 7 ventral trichobothria on the patella (Mani 1959: 15). Pectinal teeth number 6–7 (Mani 1959: 15) or 6 (Tikader & Bastawade 1983: 439). The mesosoma lacks a keel (Tikader & Bastawade 1983: 439).

COMMENTS. This species is based on a single male obtained by M. S. Mani in June 1954 at 4300 m elevation. The type has been deposited at NZSI (No. 3087/18). Mani (1959: 15) and Tikader & Bastawade (1983: 435–440) produced differing descriptions (see diagnostic characters) of the holotype, which is the only known specimen.

Unfortunately, I have not been able to examine the type, and the diagnostic characters are therefore based solely on the authors cited. The purported absence of a median mesosomal keel is questionable (it is present in fig. 1201 of Tikader & Bastawade 1983: 437). Although the information provided by Tikader & Bastawade (1983: 406) is included in the key below, a future examination of the holotype may show that *S. rohtangensis* is a synonym, most likely of *S. petersii*.

DISTRIBUTION. India (Punjab) (Mani 1959: 15).

***Scorpiops sejnai* sp. n.**
(Figs 22, 43, 67, Tables 1–3)

TYPE LOCALITY AND TYPE DEPOSITION. Vietnam, Bach-ma Nat. Park, 1200 m, 16°10' N–107°54' E; FKCP.

TYPE MATERIAL EXAMINED. **Vietnam:** Bach-ma Nat. Park, 1200 m, 16°10' N–107°54' E, 26.VII.–6.VIII.1996, IME (holotype), leg. V. Siniacv & E. Afonin, FKCP; Bach Ma, III.1997, 2im.4juvsA (paratypes Nos 1–6), leg. V. Šejna, FKCP.

ETYMOLOGY. Named after Vladimír Šejna of Prague, who collected most of the specimens.

DIAGNOSTIC CHARACTERS. Total length of the male holotype is 42.6 mm. The female is not known. The male has a large pecten, relatively wide telson, and slightly flexed fingers of pedipalps (Fig. 43). In immature males the fingers are straight. Measurements of the carapace, telson, segments of the metasoma and segments of the pedipalps, and numbers of pectinal teeth are given in Table 1. For position and distribution of trichobothria on the tibia and patella of pedipalps see Figs 22, 43, 67. External trichobothria on the patella number 18 (5 eb, 2 esb, 2 em, 4 est, 5 et) (Fig. 22) and their positions do not appear to vary. Trichobothrium et2 is placed more toward the center and could also be regarded as an est trichobothrium. Ventral trichobothria on the patella number 9 (Fig. 28). Pectinal teeth number 4–7. Granulation of the carapace is very fine.

The manus of pedipalps dorsally bears fine granules of equal size, which in the center are more closely packed and form a keel, whereas elsewhere they form a lattice. The internal surface of the manus bears long, slender thorns with blunt tips.

The mesosoma is covered with minute granules and bears one inconspicuous, blunt median keel. The seventh mesosomal segment ventrally bears four weakly marked keels.

Keels on metasomal segments are composed of fine granules. Only the dorsolateral keel is pronounced and serrate, with teeth of unequal size.

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

Scorpiops sejnai sp. n. is closest to *S. longimanus* and *S. asthenurus*, from which it differs in the shape of the manus of pedipalps (Fig. 67, Table 1) and in the position of trichobothrium et2 on the patella (see Figs 22, 15, and 20). The male of *S. asthenurus* has the fingers of pedipalps strongly flexed, the male of *S. sejnai* sp. n. has them only slightly flexed, and examined specimens of *S. longimanus* lack any flexure. *S. asthenurus* has a keel with several granules behind the lateral eyes, whereas *S. sejnai* sp. n. lacks such a keel.

***Scorpiops tibetanus* Hirst, 1911**

(Figs 47, 68, 69, Tables 1–3)

Scorpiops tibetanus Hirst, 1911: 472; Takashima, 1945: 99; Minnocci, 1974: 42; Kovarik, 1998: 142.

Scorpiops (Scorpiops) tibetanus: Vachon, 1980: 151; Kovarik, 1994: 61.

TYPE LOCALITY AND TYPE DEPOSITION. Tibet, Tsangpo Valley, Chaksam Ferry; BMNH.

TYPE MATERIAL EXAMINED. **China (Tibet)**: Chaksam Ferry, Tsangpo Valley, IMA (holotype), leg. L. A. Wadell, BMNH No. 1911.8.10.1.

FURTHER MATERIAL EXAMINED. **China (Tibet)**: 2FA, MZUF No. 1755; Lhasa, 3700 m, 2M1F1juvE, 18.VI.1995, leg. Wrzcionko, FKCP; Tibet centr. Schigadze, 4000 m, 8.VI.1996, 3M7F4juvsE, leg. Paulus, FKCP. ? : Kambu batsi, 12.IV.1939, 1M6F9juvsA, leg. Nachlass Eidmann, SMFD.

DIAGNOSTIC CHARACTERS. Total length is 50–65 mm. The male has fingers of pedipalps more flexed (Fig. 47) and manus shorter and broader than the female (Figs 68–69). Measurements of the carapace, telson, segments of the metasoma and segments of the pedipalps, and numbers of pectinal teeth are given in Table 1. For position and distribution of trichobothria on the tibia of pedipalps see Figs 47, 68–69. There are 17 external trichobothria (5 eb, 2 esb, 2 em, 4 est, 4 et) (Fig. 5) and 7–10 (usually 9, in one young 7 on one side) ventral trichobothria on the patella. Pectinal teeth number 5–11. The carapace is sparsely and finely granulated, sometimes with granules forming anteromedian keels in front of the median eyes.

The mesosoma is granulated chiefly in the posterior half of each segment and bears one median keel. The seventh mesosomal segment ventrally bears four conspicuous keels.

All keels on metasomal segments are composed of large, irregularly shaped granules. Spaces between the keels are finely granulated.

COMMENTS. *Scorpiops tibetanus* is based on a male (Hirst 1911: 472) which I have examined. The total length is 60.4 mm, ventral trichobothria on the patella number 8, and pectinal teeth number 7 or 8. The carapace is granulated, but not densely, and the granules are larger in the anteromedial part. This male was studied in 1980 by Vachon, who assigned it No. VA 2491.

This species is related to *S. hardwickii*, from which it differs in having a longer and narrower manus of pedipalps in the female, a higher number of ventral trichobothria on the patella of pedipalp, and a higher number of pectinal teeth.

DISTRIBUTION. China (Tibet) (Hirst 1911: 473).

Key to scorpioid genera and species

1. With 2 pairs of lateral eyes. *Parascorpiops montanus* Banks
- With 3 pairs of lateral eyes. 2
2. External trichobothria on patella number more than 50. *Dasyscorpiops grandjeani* Vachon
- External trichobothria on patella number less than 30. 3
3. Ventral trichobothria on manus number 10–12 (Fig. 24). *Alloscorpiops* Vachon 6

- Ventral trichobothria on manus number 3 or 4 (Figs 3, 25).	4
4. External trichobothria on patella number 22-27 (Figs 9-12).	<i>Neoscorpiops</i> Vachon 7
- External trichobothria on patella number 17-21 (Figs 5, 14-22).	<i>Scorpiops</i> Peters 5
5. External trichobothria on patella number 17 (Fig. 5).	9
- External trichobothria on patella number 18-21 (Figs 15, 16, 18-22).	25
6. Ventral trichobothria on patella number 16-19 (Fig. 26). Pectinal teeth number 10-11.	<i>Alloscorpiops anthracinus</i> (Simon)
- Ventral trichobothria on patella number 15. Pectinal teeth number 8.	<i>A. lindstroemii</i> (Thorell)
7. External trichobothria on patella number 22-25 (Figs 10-12). Ventral trichobothria on patella number 12-15.	8
- External trichobothria on patella number 26-27 (Fig. 9). Ventral trichobothria on patella number 15-18	<i>Neoscorpiops deccanensis</i> (Tikader & Bastawade)
8. External trichobothria on patella number 22-23 (Figs 10-11).	<i>N. satarensis</i> (Pocock)
- External trichobothria on patella number 25 (Fig. 12).	<i>N. tenuicauda</i> (Pocock)
9. Ventral trichobothria on manus number 4 (Fig. 3).	10
- Ventral trichobothria on manus number 3 (Fig. 25).	<i>Scorpiops irenae</i> Kovařík
10. Ventral trichobothria on patella number 6-10 (Figs 28-29).	11
- Ventral trichobothria on patella number 12-18 (Fig. 27).	<i>S. montanus</i> Karsch
11. Manus of tibia narrow and long. Adult male tibia length to manus width ratio higher than 2.6.	12
- Manus of tibia wide and short. Adult male tibia length to manus width ratio lower than 2.5.	20
12. Ventral trichobothria on patella number 6-9 (Figs 28-29).	13
- Ventral trichobothria on patella number 10.	<i>S. pachmarhicus</i> Bastawade
13. Ventral trichobothria on patella number 6-8 (Fig. 29).	15
- Ventral trichobothria on patella number 9 (Fig. 28).	14
14. Male manus length to manus width ratio 4 : 3.	<i>S. oligotrichus</i> Fage
- Male tibia length to manus width ratio 6.6 : 3.	<i>S. farkaci</i> Kovařík
15. Adult male tibia length to manus width ratio higher than 6.	<i>S. bhutanensis</i> Tikader & Bastawade
- Adult male tibia length to manus width ratio lower than 4.	16
16. Dorsal surface of mesosoma without keel.	<i>S. rohtangensis</i> Mani
- Dorsal surface of mesosoma with keel.	17
17. Male fingers of pedipalps flexed (Fig. 41). Total length 60-70 mm.	<i>S. petersii</i> Pocock
- Male fingers of pedipalps straight (Fig. 37). Total length 35-58 mm.	18
18. Male tibia length to manus width ratio higher than 3.5.	<i>S. leptochirus</i> Pocock
- Male tibia length to manus width ratio lower than 3.2.	19
19. Total length 35-41 mm. Male tibia length to manus width ratio higher than female (male about 3.1, female about 2.3) (Figs 50-51, Table 1).	<i>S. dastychi</i> sp. n.
- Total length 45-55 mm. Male tibia length to manus width ratio nearly same as female (about 2.9-3.1) (Figs 54-55, Table 1).	<i>S. feti</i> sp. n.
20. Pectinal teeth number 12-13.	<i>S. margerisonae</i> sp. n.
- Pectinal teeth number 4-11.	21
21. Total length more than 65 mm.	<i>S. petersii</i> Pocock
- Total length less than 65 mm.	22
22. Fingers of pedipalps in adults more or less flexed (Figs 32 or 41).	23
- Fingers of pedipalps straight in both sexes (Fig. 36).	<i>S. jendeki</i> Kovařík stat. n.
23. Male tibia length to manus width ratio 2.3.	<i>S. braunwalderi</i> sp. n.
- Male tibia length to manus width ratio lower than 2.2.	24
24. Pectinal teeth number 4-7, ventral trichobothria on patella number 6-7 or rarely 8, female tibia length to manus width ratio lower than 2.3.	<i>S. hardwickii</i> (Gervais)
- Pectinal teeth number 5-11 (very rarely 5-6), ventral trichobothria on patella number 8-10 or very rarely 7, female tibia length to manus width ratio higher than 2.4.	<i>S. tibetanus</i> Hirst
25. External trichobothria on patella number 20-21 (5 eb, 2 esb, 2 em, 6 est, 5-6 et). See Fig. 16.	<i>S. binghamii</i> Pocock
- External trichobothria on patella number 18-19 (Figs 18-22).	26
26. External trichobothrium Eb3 on tibia situated between trichobothria Dt and Est (Fig. 31), may be nearly on level of Dt (Fig. 43).	27
- External trichobothrium Eb3 on tibia situated between trichobothria Dt and Db, very close to Eb1-2 and Esb (Fig. 44).	<i>S. lindbergi</i> Vachon
27. External trichobothria on patella number 19 (Fig. 21).	28

- External trichobothria on patella number 18 (Fig. 15). 29
- 28. Ventral trichobothria on patella number 13. Tibia length to manus width ratio higher than 4. *S. kaftani* Kovařík
- Ventral trichobothria on patella number 11. Tibia length to manus width ratio lower than 3.5. *S. problematicus* sp. n.
- 29. Tibia length to manus width ratio 2.75. *S. sejnai* sp. n.
- Tibia length to manus width ratio higher than 3.1. 30
- 30. Total length 35.9–45 mm. Ventral trichobothria on patella number 8 or 9. *S. asthenurus* Pocock
- Total length 45–70 mm. Ventral trichobothria on patella number 9–12. *S. longimanus* Pocock

Checklist of family Scorpiopidae Kraepelin, 1905

Alloscorpiops Vachon, 1980

- Alloscorpiops anthracinus* (Simon, 1887)
- Alloscorpiops lindstroemii* (Thorell, 1889)
- = *Scorpiops lugubris* Thorell, 1889

Dasyscorpiops Vachon, 1974

- Dasyscorpiops grandjeani* Vachon, 1974

Neoscorpiops Vachon, 1980

- Neoscorpiops deccanensis* (Tikader & Bastawade, 1977)
- Neoscorpiops satarensis* (Pocock, 1900)
- Neoscorpiops tenuicauda* (Pocock, 1894)

Parascorpiops Banks, 1928

- Parascorpiops montanus* Banks, 1928

Scorpiops Peters, 1862

- = *Scorpiops* (*Euscorpiops*) Vachon, 1980 **syn. n.**
- Scorpiops asthenurus* Pocock, 1900
- Scorpiops bhutanensis* Tikader & Bastawade 1983
- Scorpiops binghamii* Pocock, 1893
- Scorpiops braunwalderi* **sp. n.**
- Scorpiops dastychi* **sp. n.**
- Scorpiops farkaci* Kovařík, 1993
- Scorpiops feti* **sp. n.**
- Scorpiops hardwickii* (Gervais, 1843)
- = *Scorpiops solidus* Karsch, 1879
- = *Scorpiops affinis* Kraepelin, 1898 **syn. n.**
- = *Scorpiops crassimanus* Pocock, 1899 **syn. n.**
- = *Scorpiops insculptus* Pocock, 1900 **syn. n.**
- = *Scorpiops austerus* Hirst, 1911
- = *Chaerilus pirpanjalus* Mani, 1959
- Scorpiops irenae* Kovařík, 1994
- Scorpiops jendeki* Kovařík, 1994 **stat. n.**
- Scorpiops kaftani* Kovařík, 1993
- Scorpiops leptochirus* Pocock, 1893
- Scorpiops lindbergi* Vachon, 1980
- = *Pareuscorpius lindbergi* Lindberg, 1961 (nomen nudum)
- = *Scorpiops kraepelini* Lourenço, 1998 **syn. n.**
- Scorpiops longimanus* Pocock, 1893
- Scorpiops margerisonae* **sp. n.**
- Scorpiops montanus* Karsch, 1879
- Scorpiops oligotrichus* Fage, 1933
- Scorpiops pachmarhicus* Bastawade, 1992
- Scorpiops petersii* Pocock, 1899
- = ? *Scorpiops petersi von-wicki* Birula, 1913 **syn. n.**
- Scorpiops problematicus* **sp. n.**
- Scorpiops rohtangensis* Mani, 1959
- Scorpiops sejnai* **sp. n.**
- Scorpiops tibetanus* Hirst, 1911

DISCUSSION

The family Scorpionidae has been accepted only recently. The first researcher to state in print that the inclusion of Scorpionsinae in the Vaejovidae is not correct was Stockwell (1989: 119), who also elevated all subgenera of the genus *Scorpions* to separate genera. His conclusions were formally confirmed by Lourenço (1998: 245), and with the exception of validity of the genus *Euscorpions* (see above) I concur with them.

Understanding of sexual dimorphism has proven important to differentiating among the *Scorpions* species. Identification of certain specimens, especially females, remains a problem however, and it is often impossible to identify juveniles. A major aspect of the dimorphism is the shape of the manus of pedipalps, which is often quite different in juvenile specimens.

Relatively large numbers of specimens are available for certain species, and their examination has revealed variation in the numbers of pectinal teeth and of ventral trichobothria on the manus. For instance in *S. tibetanus* and *S. hardwickii* sexual dimorphism (here the difference in the shape of the manus of pedipalps concerns not the male but the female) demonstrates clearly that they are separate species, whereas other characters are transitional and some may overlap (see number of pectinal teeth in Tab. 3). These two species are closely related.

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