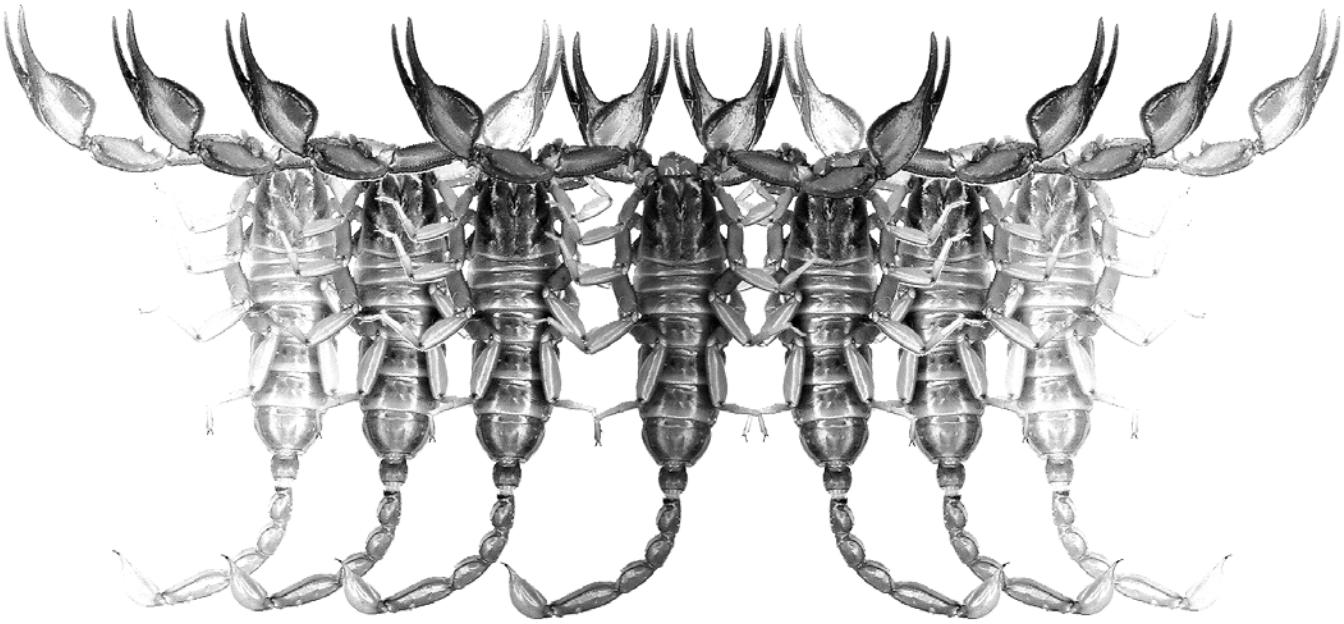
Euscorpius

Occasional Publications in Scorpiology



Three New Species of the Genera *Euscorpiops* Vachon, 1980 and *Scorpiops* Peters, 1861 from Asia (Scorpiones: Euscorpiidae, Scorpiopinae)

František Kovařík

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Occasional Publications in Scorpiology

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Derivatio Nominis

The name *Euscorpius* Thorell, 1876 refers to the most common genus of scorpions in the Mediterranean region and southern Europe (family Euscorpiidae).

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- **NMW**, Naturhistorisches Museum Wien, Vienna, Austria
- **BMNH**, British Museum of Natural History, London, England, UK
- **MZUC**, Museo Zoologico "La Specola" dell'Universita de Firenze, Florence, Italy
- **ZISP**, Zoological Institute, Russian Academy of Sciences, St. Petersburg, Russia
- **WAM**, Western Australian Museum, Perth, Australia
- **NTNU**, Norwegian University of Science and Technology, Trondheim, Norway

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Three new species of the genera *Euscorpiops* Vachon, 1980 and *Scorpiops* Peters, 1861 from Asia (Scorpiones: Euscorpiidae, Scorpiopinae)

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Summary

Euscorpiops beccaloniae **sp. n.** from Myanmar, *E. novaki* **sp. n.** from Tibet, and *Scorpiops demisi* **sp. n.** from India are described and compared with other species of these and related genera. A key to the species of the *Euscorpiops* is provided. In *Euscorpiops beccaloniae* **sp. n.** external trichobothria on the patella number 18 (5 *eb*, 2 *esb*, 2 *em*, 4 *est*, 5 *et*) and ventral trichobothria on the patella number 12. Pedipalp fingers in the male are flexed, female is unknown. In *E. novaki* **sp. n.** external trichobothria on the patella number 19 (5 *eb*, 2 *esb*, 2 *em*, 5 *est*, 5 *et*) and ventral trichobothria on the patella number 9. Pedipalp fingers in the male are flexed, female is unknown. In *Scorpiops demisi* **sp. n.** external trichobothria on the patella number 18 (5 *eb*, 2 *esb*, 2 *em*, 4 *est*, 5 *et*) and ventral trichobothria on the patella number 14 and 15.

Abbreviations

List of depositories: BMNH, Natural History Museum, London, United Kingdom; FKCP, Personal collection of František Kovařík, Prague, Czech Republic.

Systematics

Euscorpiops Vachon, 1980

(Figs. 1–8, 10–11, 13–16, Table 1)

Scorpiops Kraepelin, 1899: 179 (in part); Sissom, 1990: 114 (in part); Kovařík, 2000: 164 (in part); Kovařík, 2001: 85 (in part).

Scorpiops (*Euscorpiops*) Vachon, 1980: 155 (in part); Tikader & Bastawade, 1983: 452 (in part); Bastawade, 1997: 104 (in part).

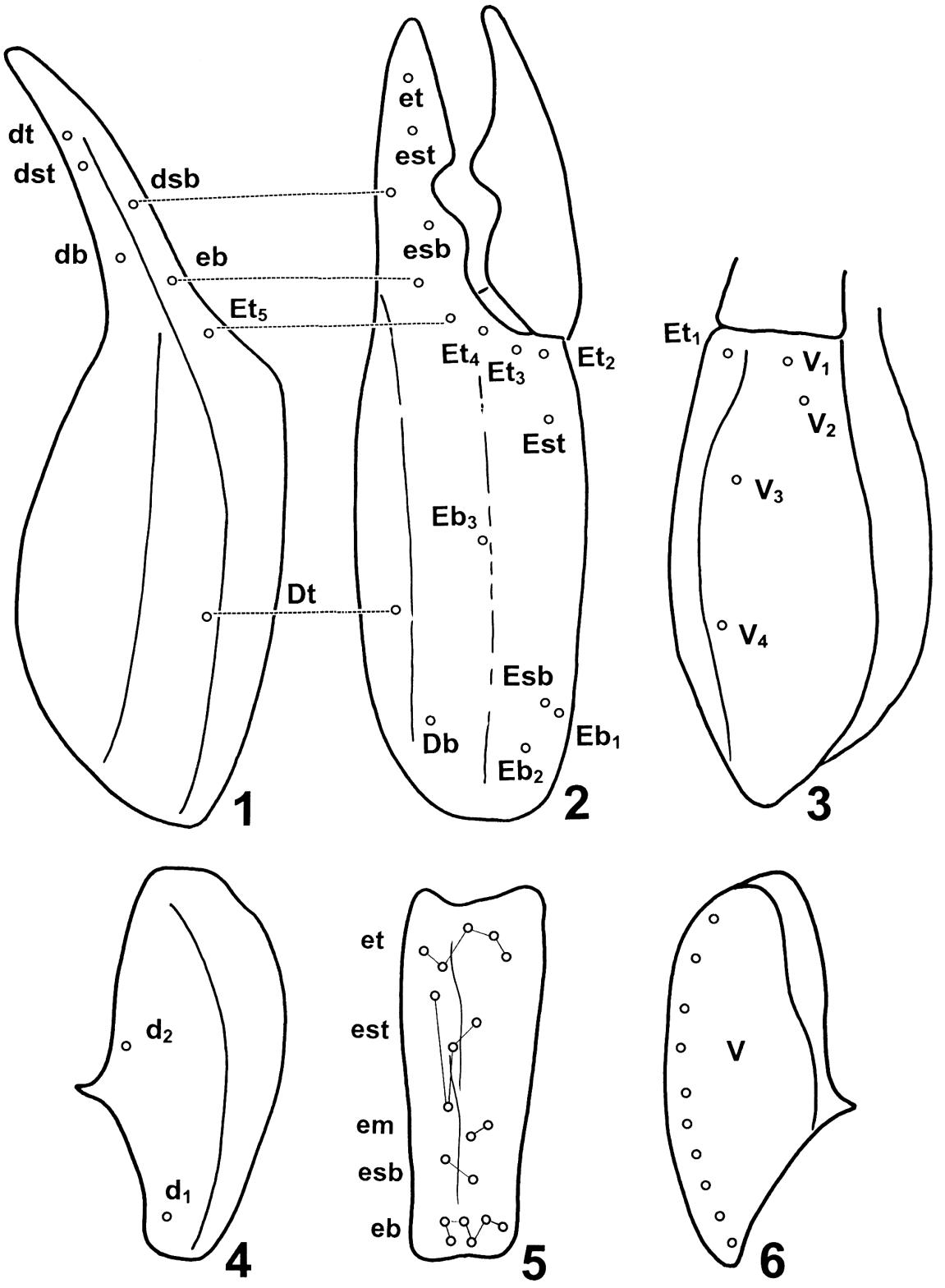
Euscorpiops: Stockwell, 1989: 120 (in part; unpublished); Kovařík, 1998: 141 (in part); Lourenço, 1998: 246 (in part); Fet, 2000: 488 (in part); Soleglad & Sissom, 2001: 93; Kovařík, 2004: 13.

Type species: *Scorpiops asthenurus* Pocock, 1900

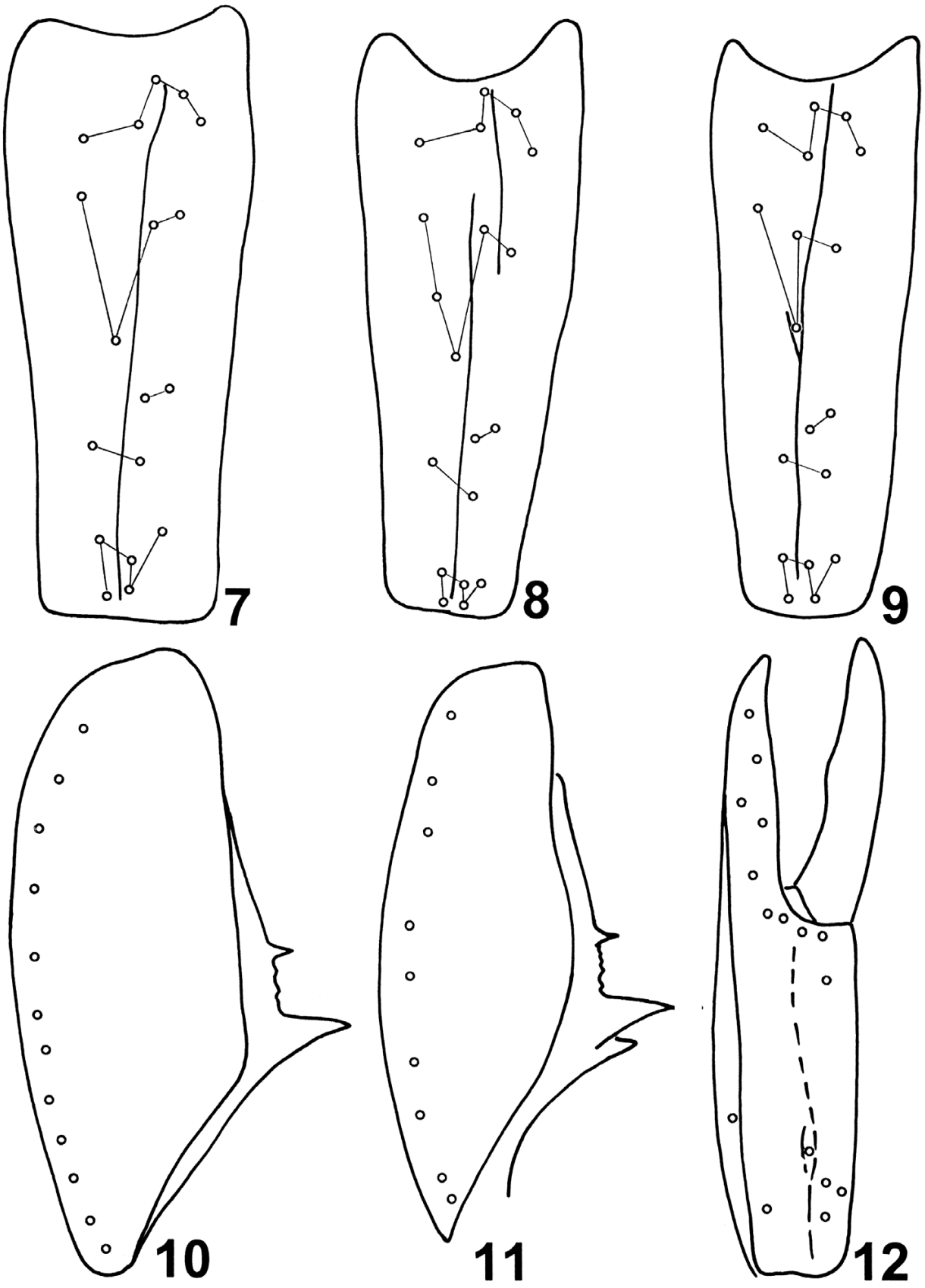
DIAGNOSIS. Ventral edge of cheliceral movable finger with 5 – 7 denticles. Three pairs of lateral eyes and 17–21 external trichobothria on pedipalp patella. Ventral surface of patella bears 6–18 trichobothria. Ventral surface of manus bears 4 trichobothria, of which V_4 is always situated on ventral aspect of chela. Trichobothrium Eb_3 on external surface of chela is located between trichobothria *Dt* and *Est*. Telson vesicle/aculeus juncture with annular ring.

COMMENTS. *Euscorpiops* was described by Vachon (1980: 155) as a subgenus, and was elevated to the genus level by Lourenço (1998). Vachon (1980) distinguished *Euscorpiops* from *Scorpiops* on the number of external trichobothria on the patella, 17 in *Scorpiops*, and 18–20 in *Euscorpiops*. Vachon (1980) also described *Scorpiops* (*Euscorpiops*) *lindbergi* Vachon, 1980, whose different morphology and closeness to species placed in *Scorpiops* has led me to synonymize *Euscorpiops* with *Scorpiops* (see Kovařík, 2000: 164). At that time, I also synonymized *S. kraepelini* Lourenço, 1998 with *S. lindbergi* Vachon, 1980 and pointed out the position of trichobothrium Eb_3 in relation to species groups (see Kovařík, 2000: 166).

Soleglad & Sissom (2001) revised the family Euscorpiidae, in which they placed the subfamily Scorpiopinae and revived the genus *Euscorpiops*, but did so on the basis of position of trichobothrium Eb_3 (Figs. 2 and 12 and Soleglad & Sissom, 2001: 52, figs. 114, 115) rather than on the number of trichobothria on the patella. It caused the transfer of *Euscorpiops lindbergi* (Vachon, 1980) (= *Scorpiops kraepelini* Lourenço, 1998) to



Figures 1–6: *Euscorpiops kubani* Kovařík, 2004, male holotype: **1.** chela dorsal**; 2.** chela external; **3.** manus ventral; **4.** patella dorsal; **5.** patella external; **6.** patella ventral. In Figs. 1 to 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 to 6 show the distribution of trichobothria on the patella of pedipalp. Explanation: First letters: *D*, dorsal; *E*, external; *I*, internal; V, ventral. Second or second plus third letters: *b*, basal; *sb*, suprabasal; *m*, medial; *st*, subterminal; *t*, terminal; *v*, ventral. Numerals distinguish individual trichobothria of the same series. Designation and description of trichobothria after Vachon (1974). Morphological terminology after Stahnke (1970).



Figures 7–12: 7 and 10. *Euscorpiops beccaloniae* **sp. n.**, male holotype. **8 and 11**. *Euscorpiops novaki* **sp. n.**, male holotype. **9 and 12.** *Scorpiops demisi* **sp. n.**, female holotype. **7–9.** patella external, **10–11.** patella ventral; **12.** chela external.

	Euscorpiops beccaloniae sp.n. male holotype	*Euscorpiops novaki* sp.n. male holotype	*Scorpiops demisi* sp.n. female holotype
Total length	58.0	47.0	41.2
Carapace length	9.4	8.1	6.0
width	9.2	8.0	5.9
Metasoma and telson length	29.7	25.7	16.2
segment I length	3.0	-	1.7
width	3.4	-	1.9
segment II length	3.1	2.6	1.9
width	3.1	2.4	1.7
segment III length	3.3	2.9	2.0
width	3.0	2.2	1.5
segment IV length	3.9	3.6	2.5
width	2.9	2.2	1.4
segment V length	7.2	6.5	3.9
width	2.7	2.3	1.3
telson length	9.2	7.6	4.2
Pedipalp femur length	9.5	8.9	6.0
width	3.5	2.9	2.4
patella length	8.2	7.9	5.4
width	3.9	3.1	2.3
chela length	17.5	16.2	11.5
width	5.3	4.5	3.2
finger mov. Length	8.8	8.0	5.3
Pectinal teeth	8:9	8:8	7:7

Table 1: Measurements (in millimeters) of holotype specimens.

Scorpiops and, vice versa, of *S. montanus* Karsch, 1879 to *Euscorpiops*.

Euscorpiops beccaloniae sp. n.

(Figs. 7, 10, 13–14, Table 1)

TYPE LOCALITY AND TYPE REPOSITORY. **Myanmar** (Burma), Kachin Hills, Mali Hka Valley, 3000 ft. (BMNH).

TYPE MATERIAL. **Myanmar** (Burma), Kachin Hills, Mali Hka Valley, 3000 ft., 7.XII.1930, 1♂ (holotype), leg. F. Kingdon Ward, BMNH. No other material.

ETYMOLOGY: Named after Janet Beccaloni, curator at the Natural History Museum, London, in appreciation of her kind help.

DIAGNOSIS. Adult male holotype 58 mm long. Base color uniformly reddish black. Pectinal teeth number 8 and 9. External trichobothria on patella number 18 (5 *eb*, 2 *esb*, 2 *em*, 4 *est*, 5 *et*); ventral trichobothria on patella number 12. Chela length to width ratio = 3.3. Male pedipalp fingers flexed. Female unknown.

DESCRIPTION: The adult male holotype is 58 mm long. Measurements of the carapace, telson, segments of the metasoma and segments of the pedipalps, and numbers of pectinal teeth are given in Table 1. The base color is uniformly reddish black. For habitus see Figs. 13 and 14.

MESOSOMA AND CARAPACE: The mesosoma is granulated, with one median carina, and the seventh segment ventrally bears four inconspicuous carinae. The entire carapace is granulated, without carinae. Pectinal teeth number 8 and 9.

METASOMA AND TELSON: The metasoma is smooth, with only sparse granules. The first segment bears 10 carinae, the second through fourth segments bear eight carinae, and the fifth segment bears seven carinae, all composed of granules some of which are pointed. The dorsolateral carinae of the third and fourth segments posteriorly terminate in a pronounced tooth. The telson is elongate, with minute granules, exhibiting an annular ring at the vesicle/aculeus juncture.

PEDIPALPS: For position and distribution of trichobothria on the patella of pedipalps see Figs. 7 and 10. External trichobothria on the patella number 18 (5 *eb*, 2 *esb*, 2 *em*, 4 *est*, 5 *et*) (Fig. 7), and ventral trichobothria on the patella number 12 (Fig. 10). The femur is granulated and has six granulose carinae, and the patella has five carinae with pronounced internal double tubercles. The manus dorsally bears fine rounded granules, which in the central part form a longitudinal carina. The movable fingers bear straight double rows of granules with internal and external granules. The male pedipalp fingers (Fig. 2) are flexed.

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

Euscorpiops beccaloniae **sp. n.**. is closest to *E. kubani*, *E. longimanus* and *E. problematicus*, of which only *E. longimanus* has been recorded from Myanmar. In *E. longimanus* the pedipalp fingers are nearly straight in both sexes (Kovařík, 2000: 173, fig. 39), whereas in the male of *E. beccaloniae* **sp. n.**. they are flexed (the female is unknown). Of all these species *E. beccaloniae* **sp. n.**. has the highest number (12) of ventral trichobothria on the patella of pedipalp.

Euscorpiops novaki sp. n.

(Figs. 8, 11, 15–16, Table 1)

TYPE LOCALITY AND TYPE REPOSITORY. **China**, Tibet, Bomi env. 29°52' N, 95°45'E, ca 3000 m; author‘s collection (FKCP)

TYPE MATERIAL. **China**, Tibet, Bomi env. 29°52' N, 95°45'E, ca 3000 m, 1988, 1♂ (holotype), leg. P. Rojek, FKCP. No other material.

Figure 13: *Euscorpiops beccaloniae* **sp. n.**, male holotype, dorsal aspect.

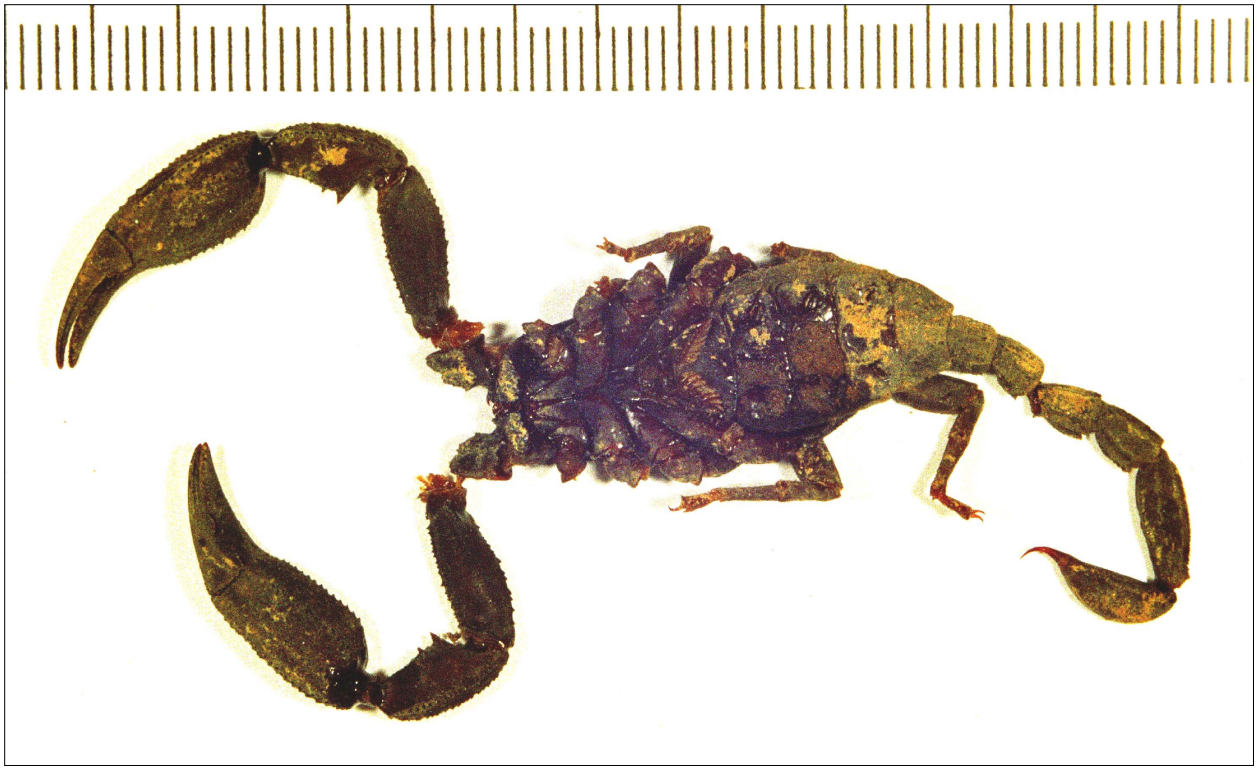


Figure 14: *Euscorpiops beccaloniae* **sp. n.**, male holotype, ventral aspect.

ETYMOLOGY: Named after Jindřich Novák, chief editor of the Akva Tera Forum magazine and my friend.

DIAGNOSIS. Adult male holotype 47 mm long. Base color uniformly reddish brown. Pectinal teeth number 8. External trichobothria on patella number 19 (5 *eb*, 2 *esb*, 2 *em*, 5 *est*, 5 *et*); ventral trichobothria on patella number 9. Chela length to width ratio = 3.6. Male pedipalp fingers flexed. Female unknown.

DESCRIPTION: The adult male holotype is 47 mm long. Measurements of the carapace, telson, segments of the metasoma and segments of the pedipalps, and numbers of pectinal teeth are given in Table 1. The base color is uniformly reddish brown. For habitus see Figs. 15 and 16.

MESOSOMA AND CARAPACE: The mesosoma is densely granulated, with one median carina, and the seventh segment ventrally bears four granulate carinae. The entire carapace is granulated, without carinae. Pectinal teeth number 8.

METASOMA AND TELSON: The metasoma is sparsely granulated. The first segment is missing, the second through fourth segments bear eight carinae, and the fifth segment bears seven carinae, all composed of granules some of which are pointed. The dorsolateral carinae of the third and fourth segments posteriorly terminate in a pronounced tooth. The telson is elongate, smooth, with several granules, vesicle/aculeus juncture with annular ring..

PEDIPALPS: For position and distribution of trichobothria on the patella of pedipalps see Figs. 8 and 11. External trichobothria on the patella number 19 (5 *eb*, 2 *esb*, 2 *em*, 5 *est*, 5 *et*) (Fig. 8), and ventral trichobothria on the patella number 9 (Fig. 9). The femur is granulated, has six granulose carinae, and the patella has five carinae with pronounced internal double tubercles. The manus dorsally bears fine rounded granules, which in the central part form a longitudinal carina. The movable fingers bear straight double rows of granules with internal and external granules. The male pedipalp fingers (Fig. 2) are flexed.

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

Euscorpiops novaki **sp. n.** is closest to *E. kubani*, *E. longimanus* and *E. beccaloniae* **sp. n.** *E. longimanus* has the pedipalp fingers nearly straight in both sexes (Kovařík, 2000: 173, fig. 39), whereas in the male of *E. novaki* **sp. n.** they are flexed (the female is unknown). Whereas *E. beccaloniae* **sp. n.** has 12 ventral trichobothria on the patella of pedipalps, *E. novaki* **sp. n.** has only 9. *E. kubani* differs from *E. novaki* **sp. n.** in the position and number of external trichobothria on the patella - *E. kubani* has 6 *eb*, 2 *esb*, 2 *em*, 4 *est*, and 5 *et* (Fig. 5), whereas *E. novaki* **sp. n.** has 5 *eb*, 2 *esb*, 2 *em*, 5 *est*, and 5 *et* (Fig. 8). *E. novaki* **sp. n.** is the first species of the genus found in Tibet.

Key to the species of *Euscorpiops*

1. External trichobothria on patella number 17 2
– External trichobothria on patella number 18–21 (Fig. 3) .....……..... 3

2. Ventral trichobothria on patella number 7 .... ***E. bhutanensis*** (Tikader & Bastawade, 1983)
– Ventral trichobothria on patella number 12–18 .... ..……..... ***E. montanus*** (Karsch, 1879)

3. External trichobothria on patella number 20–21 (5 *eb*, 2 *esb*, 2 *em*, 6 *est*, 5–6 *et*). .... ***E. binghamii*** (Pocock, 1893)
– External trichobothria on patella number 18–19 4

4. *est* trichobothria on patella number 4 (Fig. 5 and 7) 5
– *est* trichobothria on patella number 5 (Fig. 8) 9

5. Chela length to width ratio 2.75 .... ***E. sejnai*** (Kovařík, 2000)
– Chela length to width ratio higher than 3 6

6. Male pedipalp fingers flexed (Fig. 2.) 7
– Male pedipalp fingers straight (fig. 39 in Kovařík, 2000: 173) ..... ***E. longimanus*** (Pocock, 1893)

7. Ventral trichobothria on patella number 8–10 8
– Ventral trichobothria on patella number 12 .... ***E. beccaloniae*** **sp. n.**

8. Ventral trichobothria on patella number 8 or 9. Pectinal teeth number 5 or 6. Bhutan and India. ..... ***E. asthenurus*** (Pocock, 1900)
– Ventral trichobothria on patella number 10, rarely 9. Pectinal teeth number 7 or 8. Northern Laos. .... ***E. kubani*** Kovařík, 2004

9. Ventral trichobothria on patella number 11–13 10
– Ventral trichobothria on patella number 9 .... ***E. novaki*** **sp. n.**

10. Ventral trichobothria on patella number 13. Chela length to width ratio higher than 4 .... ***E. kaftani*** (Kovařík, 1993)
– Ventral trichobothria on patella number 11. Chela length to width ratio lower than 3.5 .... ***E. problematicus*** (Kovařík, 2000)

Figure 15: *Euscorpiops novaki* **sp. n.**, male holotype, dorsal aspect.

Figure 16: *Euscorpiops novaki* **sp. n.**, male holotype, ventral aspect.

Scorpiops Peters, 1861
(Figs. 9, 12, 17–18, Table 1)

Scorpiops Peters, 1861: 510; Kraepelin, 1899: 179 (in part); Vachon, 1980: 143 (in part); Tikader & Bastawade, 1983: 403 (in part); Stockwell, 1989: 120 (unpublished); Sissom, 1990: 114 (in part); Kovařík, 1998: 142 (in part); Fet, 2000: 491 (in part); Kovařík, 2000: 162 (in part); Kovařík, 2001: 85 (in part); Soleglad & Sissom, 2001: 93.
Scorpiops (*Euscorpiops*) Vachon, 1980: 155 (in part).
Euscorpiops: Kovařík, 1998: 141 (in part); Lourenço, 1998: 246 (in part); Fet, 2000: 488 (in part).
Type species: *Scorpiops hardwickei* (Gervais, 1843)

DIAGNOSIS. Ventral edge of cheliceral movable finger with 5–7 denticles. Three pairs of lateral eyes and 17–19 external trichobothria on patella of pedipalps. Ventral surface of patella bears 6–15 trichobothria. Ventral surface of manus bears 3 or 4 trichobothria, of which V_4, if not absent, is always situated on ventral aspect of chela. Trichobothrium Eb_3 on external surface of chela is located between trichobothria *Db* and *Dt*.

Scorpiops demisi sp. n.
(Figs. 9, 12, 17–18, Table 1)

TYPE LOCALITY AND TYPE REPOSITORY. **India**, Himachal Pradesh, Kasumpti env., 5000 ft.; author´s collection (FKCP).

TYPE MATERIAL. **India**, Himachal Pradesh, Kasumpti env., 5000 ft, 1988, 1♀ (holotype), leg. P. Rojek, FKCP. No other material.

ETYMOLOGY: Named after René Demis, my friend and insect breeder.

DIAGNOSIS. Adult female holotype 41 mm long. Base color uniformly reddish brown, fingers black, legs and telson yellowish brown. Pectinal teeth number 7. External trichobothria on patella number 18 (5 *eb*, 2 *esb*, 2 *em*, 4 *est*, 5 *et*); ventral trichobothria on patella number 14 and 15. Chela length to width ratio = 3.6.

DESCRIPTION: The adult female holotype is 41.2 mm long. Measurements of the carapace, telson, segments of the metasoma and segments of the pedipalps, and numbers of pectinal teeth are given in Table 1. The base color is uniformly reddish brown, fingers are black, legs and telson are yellowish brown. For habitus see Figs. 17 and 18.
MESOSOMA AND CARAPACE: The mesosoma bears several granules and primarily in the hind portion one median carina; the seventh segment is ventrally smooth, without carinae. The entire carapace bears sparse minute granules and lacks carinae. Pectinal teeth number 7.
METASOMA AND TELSON: The metasoma is smooth, with only sparse granules. The first segment bears 10 carinae, the second through fourth segments bear eight carinae, and the fifth segment bears seven carinae, all composed of granules some of which are pointed. The ventral carina of the fifth segment posteriorly forks to form the letter Y. The dorsolateral carinae of the third and fourth segments posteriorly terminate in a pronounced tooth. The telson is elongate, smooth, with minute granules.
PEDIPALPS: For position and distribution of trichobothria on the patella of pedipalps see Figs. 9 and 12. External trichobothria on the patella number 18 (5 *eb*, 2 *esb*, 2 *em*, 4 *est*, 5 *et*) (Fig. 9), and ventral trichobothria on the patella number 14 and 15. The femur is granulated, has six granulose carinae, and the patella has five carinae with pronounced internal double tubercles. The manus dorsally bears fine rounded granules, which in the central part form a longitudinal carina. The movable fingers bear straight double rows of granules with internal and external granules. The female pedipalp fingers (Fig. 12) are neither straight nor flexed but undulate (the male is unknown).

AFFINITIES. The described features distinguish *Scorpiops demisi* **sp. n.** from all other species of the genus.

In the shape of the chela and the pronounced tooth that terminates dorsolateral carinae of the third and fourth metasomal segments, *Scorpiops demisi* **sp. n.** resembles *Alloscorpiops* Vachon, 1980, which however has 10–12 ventral trichobothria on the manus (*Scorpiops* has only 3 or 4), and *Neoscorpiops* Vachon, 1980, which however has trichobothrium Eb_3 on the external surface of the chela always situated between trichobothria *Dt* and *Db* (fig. 30 in Kovařík, 2000: 165).

Within *Scorpiops,* the new species is comparable only with *S. lindbergi* Vachon, 1980 (= *S. kraepelini* Lourenco, 1998) from Afghanistan and Pakistan, because these are the only species of the genus that have the numbers of external trichobothria on the patella other than 17 (18 in *S. demisi* **sp. n.** and 18 or 19 in *S. lindbergi*). However, *S. lindbergi* has only 10–12 ventral trichobothria on the patella, whereas *S. demisi* **sp. n.** 14 and 15, which is the highest number in the entire genus.

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Figure 17: *Scorpiops demisi* **sp. n.**, female holotype, dorsal aspect.

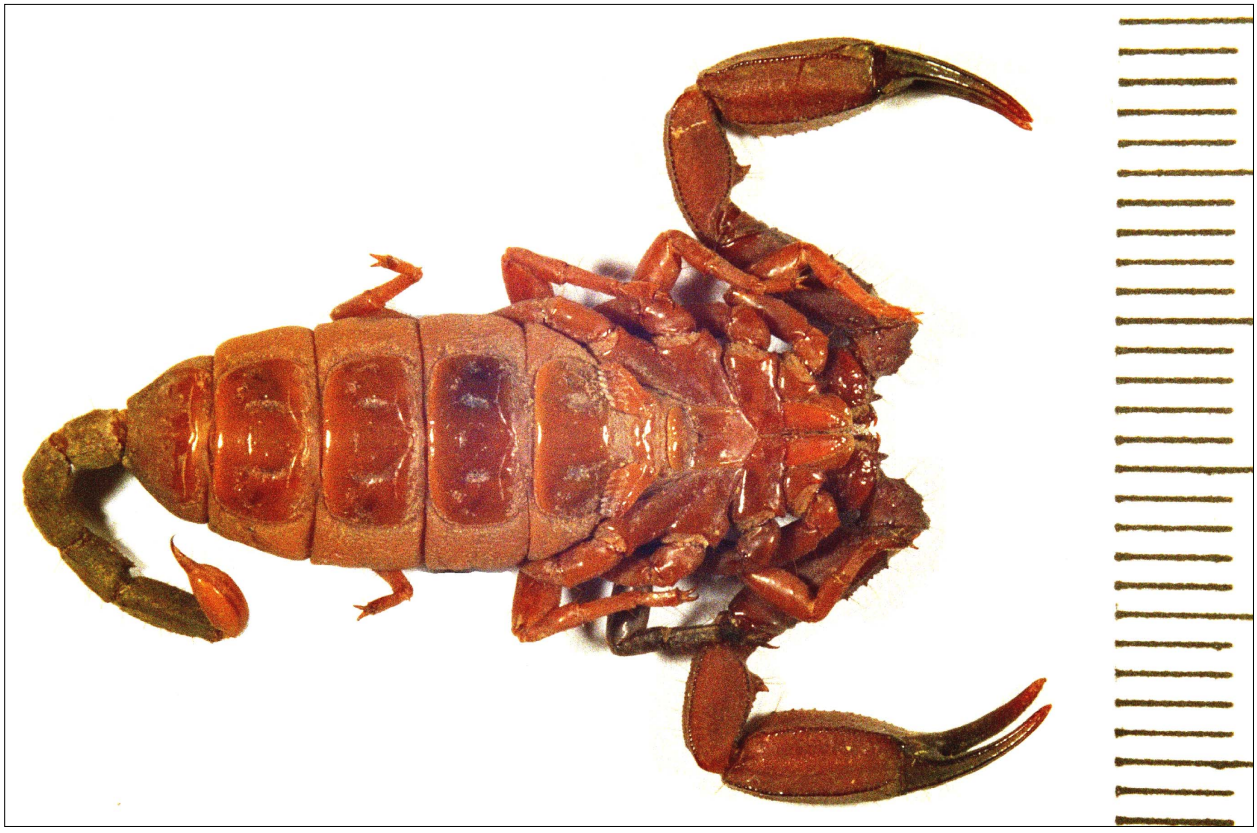

Figure 18: *Scorpiops demisi* **sp. n.**, female holotype, ventral aspect.

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