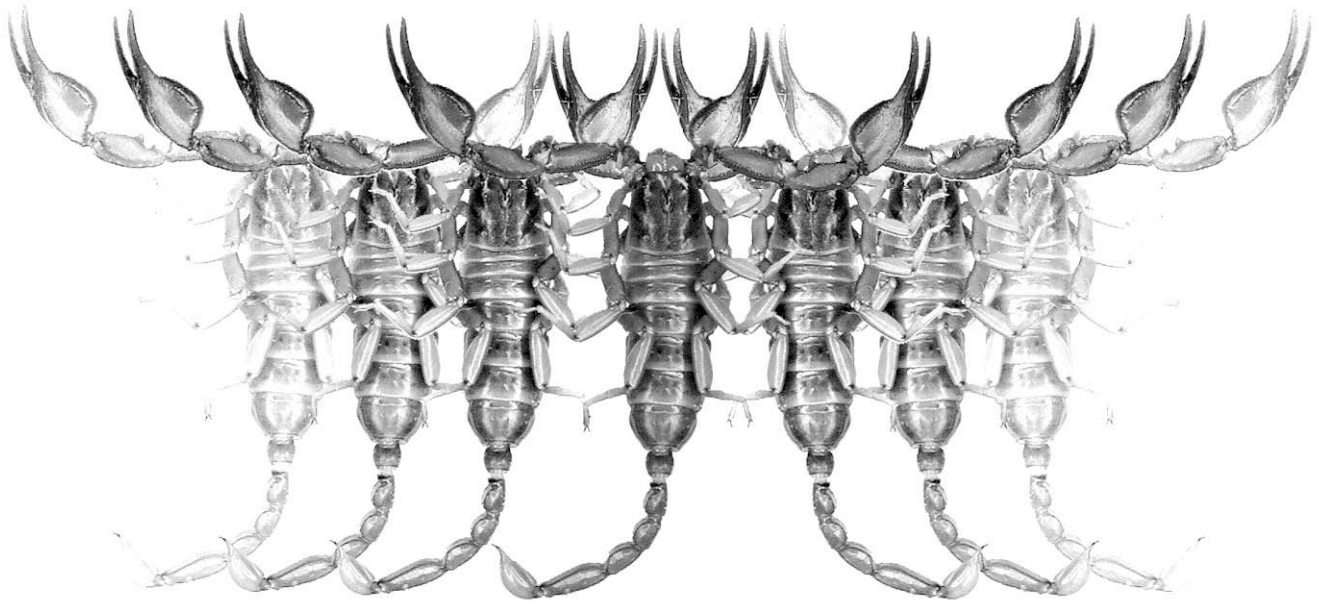


# *Euscorpium*

Occasional Publications in Scorpiology



*Alloscorpions wongpromi* sp. n. from Thailand and Laos  
(Scorpiones: Euscorpionidae: Scorpioninae)

František Kovařík, Michael E. Sologlad & Ondřej Košulič

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# *Euscorpius*

## Occasional Publications in Scorpiology

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## *Alloscorpiops wongpromi* sp. n. from Thailand and Laos (Scorpiones: Euscorpiidae: Scorpiopinae)

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<http://zoobank.org/urn:lsid:zoobank.org:pub:10D1BF41-572E-4DFC-8C43-86762C9526FA>

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### Summary

*Alloscorpiops wongpromi* sp. n. from Thailand and Laos is described and compared with all other species of the genus *Alloscorpiops* Vachon, 1980. A key is presented to all species of the genus. *A. wongpromi* sp. n. is characterized mainly by a higher number of trichobothria on the patella, which has 33–37 external and 21–22 ventral trichobothria, and a dark-colored telson. The subgenus *Laoscorpiops* Lourenço, 2013 is synonymized with the non-typical subgenus, because it was based on misinterpretation of the trichobothrial pattern, with two ventral accessory trichobothria on the chela regarded as part of the external *Eb* series.

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### Introduction

*Alloscorpiops* was described by Vachon (1980: 155) as a subgenus, and later elevated to genus rank by Stockwell (1989). Vachon distinguished *Alloscorpiops* from all other genera and subgenera of Scorpiopinae based on neobothriotaxy occurring on the ventral surface of the chela, total trichobothria numbering 10–13/14 (Figs. 9 and 15). The other genera, *Dasyscorpiops*, *Euscorpiops*, *Neoscorpiops*, *Parascorpiops*, and *Scorpiops*, are orthobothriotaxic with four trichobothria on this surface. Sologlad & Sissom (2001) revised the family Euscorpiidae, in which they placed the subfamily Scorpiopinae.

The only information published between 1890 and 2012 is on *Alloscorpiops anthracinus* (Simon, 1887) from Myanmar. In addition to *A. calmonti* Lourenço, 2013 and *A. citadelle* Kovařík, 2013, we now describe another *Alloscorpiops* species from Thailand and Laos. It appears that the distribution of the genus is wider than previously believed and that new occurrences can be expected.

### Systematics

*Alloscorpiops* Vachon, 1980  
(Figs. 1–24)

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

*Alloscorpiops*: Stockwell, 1989: 120; Sissom, 1990: 114; Kovařík, 1998: 141; Lourenço, 1998: 246; Fet, 2000: 487; Kovařík, 2000: 155; Sologlad & Sissom, 2001: 49, 93, figs. 99, 103, 117; Kovařík, 2009: 32; Kovařík, 2013: 1; Lourenço, 2013: 52.  
= *Alloscorpiops* (*Laoscorpiops*) Lourenço, 2013: 52.  
**Syn. n.**

Type species: *Scorpiops anthracinus* Simon, 1887.

DIAGNOSIS. Total length 37–72 mm. First to fourth metasomal segments with paired, parallel ventral median carinae. Pair median eyes and three pairs of lateral eyes present. Movable fingers of pedipalps with denticles in two rows. Patella of pedipalp with 23–37 external and 15–22 ventral trichobothria. Chela of pedipalp with 10–14 ventral trichobothria, of which one or two proximal accessory trichobothria can occur on the external surface. External surface of chela manus with *Db*, 5 *Et*, *Est*, *Esb* and 3 *Eb* trichobothria. Trichobothrium *Eb*<sub>3</sub> on external surface of chela is located between trichobothria *Dt* and *Est*.

COMMENTS. Lourenço's (2013: 52) discussion of the trichobothrial pattern of *A. calmonti* confused some important issues concerning nomenclature and homology. As discussed elsewhere, the genus *Alloscorpiops* is uniquely diagnosed in Scorpiopinae by the occurrence of neobothriotaxy on the ventral surface of the chelal palm. *A. calmonti*, with a large number of ventral trichobothria

ria, exhibits one or two additional accessory trichobothria that occur on the extreme external/ventral area of the palm, inline with the other ventral trichobothria. Lourenço argued that these trichobothria were part of the external basal (*Eb*) series, instead of considering them an extension of the neobothriotaxy present on the ventral surface of the palm. We consider this counterintuitive: why suggest that neobothriotaxy was derived independently on two surfaces when it is a simpler explanation to consider it a continuation of the ventral series; i. e., *additional* accessory trichobothria? We might point out that the occurrence of ventral trichobothria on the external surface (orthobothriotaxic in this case,  $V_4$ ) is known in several other genera in family Euscorpidae, such as *Euscorpium*, *Megacormus*, *Plesiochactas*, *Chactopsis*, and even *Troglocormus*, a member of Troglacormini, a sister tribe to *Alloscorpium* (see Soleglad & Sissom, 2001: figs. 88–93). In addition, we see that one of the accessory trichobothria designated as “*Eb*” by Lourenço (2013) is located on the ventroexternal carina of the palm, further suggesting it is a continuation of the ventral series. Whether one chooses to consider these two trichobothria as a continuation of the ventral series (our choice), or trichobothria belonging to the external basal series (unlikely in our opinion), these *are* accessory trichobothria, i.e., a product of neobothriotaxy. Unfortunately, which is a more serious matter, Lourenço sequentially renumbered the *Eb* series to include these two new trichobothria, and in doing so, contradicted the homology carefully established by Vachon (1974) for the entire Type C pattern. The two new accessory trichobothria are labeled  $Eb_1$  and  $Eb_2$ , and consequently, the *orthobothriotaxic* trichobothria  $Eb_1$ – $Eb_3$  become  $Eb_3$ – $Eb_5$ ! Clearly, what Lourenço (2013) designated as  $Eb_5$  is  $Eb_3$ , a trichobothrium whose location on the palm is an important character in diagnosing the genera of Scorpioninae (see Soleglad & Sissom, 2001: figs. 112–118).

The establishment of subgenus *Laoscorpium* by Lourenço was based solely on this trichobothrial pattern and its interpreted homology. However, as shown above, this homology is a misinterpretation (that resulted from combining orthobothriotaxic and accessory trichobothria and sequentially renumbering them), which ignores previously established homologies. Therefore, we consider *Laoscorpium* an invalid taxon, and a junior synonym of *Alloscorpium*.

*Alloscorpium anthracinus* (Simon, 1887)  
(Fig. 24)

*Scorpium anthracinus* Simon, 1887: 112; Pocock, 1893: 328; Kraepelin, 1899: 180; Pocock, 1900: 74.  
*Scorpium (Alloscorpium) anthracinus*: Vachon, 1980: 151 and 153, figs. 18–25.

*Alloscorpium anthracinus*: Kovařík, 1998: 141; Fet, 2000: 487; Kovařík, 2000: 155, figs. 8, 24, and 26; Soleglad & Sissom, 2001: 93; Kovařík, 2013: 3; Lourenço, 2013: 52 and 53.

= *Scorpium lindstroemii* Thorell, 1889: 573; Pocock, 1893: 328; Pocock, 1900: 74 (syn. by Kraepelin, 1913: 161–162, see Kovařík, 2013: 3).

*Scorpium (Alloscorpium) lindstroemi*: Vachon, 1980: 151.

*Alloscorpium lindstroemi*: Kovařík, 1998: 141.

*Alloscorpium lindstroemii*: Fet, 2000: 487; Kovařík, 2000: 156; Soleglad & Sissom, 2001: 34, 57, 58, 60, 65, 66, 68, 69, 93, and 94, figs. 4, 136, 143, 156, 177, 188, 189, 201, and 221; Soleglad & Fet, 2003a: 6; Soleglad & Fet, 2003b: 7; Lourenço, 2013: 52 and 53.

= *Scorpium lugubris* Thorell, 1889: 579; Pocock, 1893: 328 (syn. by Pocock, 1900: 74).

TYPE LOCALITY AND TYPE REPOSITORY. Tavoy, Myanmar; MNHN (Muséum national d’Histoire naturelle, Paris, France).

DIAGNOSIS. Total length 48–68 mm. Patella of pedipalp with 23–24 (5 *eb*, 2 *esb*, 2 *em*, 8–9 *est*, 6 *et*) external and 15–19 ventral trichobothria. Chela of pedipalp with 10–12 ventral trichobothria, all, except  $V_2$ , are contained in a continuous straight row adjacent to the ventroexternal carina, and none extend to the external surface. Pectinal teeth number 8–11.

*Alloscorpium calmonti* Lourenço, 2013  
(Fig. 24)

*Alloscorpium (Laoscorpium) calmonti* Lourenço, 2013: 52–55, figs. 1–4.

TYPE LOCALITY AND TYPE REPOSITORY. Laos, Pathoumphone District, 2 km before Ban Kiet Ngong; MNHN (Muséum national d’Histoire naturelle, Paris, France).

DIAGNOSIS. Total length of female holotype 72 mm. Color uniformly reddish black to black, telson blackish brown. Pectinal teeth number 10 in female, male unknown. Patella of pedipalp with 30 external and 18 ventral trichobothria. Chela of pedipalp with 13–14 ventral trichobothria; all, except  $V_2$ , are contained in a continuous straight row adjacent to the ventroexternal carina, with one or two proximal accessory trichobothria extending to the external surface. Male unknown. Chela length to width ratio in female holotype is 3.74.

COMMENTS. Lourenço (2013: 54, fig. 3C) counted five instead of three *Eb* trichobothria and 11–12 instead of 13–14 ventral trichobothria on the chela, because he



**Figures 1–6:** *Alloscorpions wongpromi* sp. n. 1–3. Male holotype, dorsal and ventral views, and chela external. 4–6. Female allotype, dorsal and ventral views, and chela external.

erroneously regarded two ventral trichobothria beyond the edge of ventroexternal carinae (i.e. on the external surface) as part of the *Eb* series (fig. 3D in Lourenço, 2013: 54). However, his fig. 3C shows only one ventral trichobothrium on the external surface (labeled by Lourenço as *Eb*), with the second located on the edge between the external and ventral surfaces (labeled by Lourenço also as *Eb*). Similarly, there is one trichobothrium located on the edge between the external and ventral surfaces in the paratype of *A. wongpromi* sp. n. (see Figs. 14–15).

As in all other species of *Alloscorpiops*, there is one “dorsal” trichobothrium also on the external surface, which the describer correctly identified as *Db* (see Lourenço, 2013: 54, fig. 3C).

*Alloscorpiops citadelle* Kovařík, 2013  
(Figs. 13, 24)

*Alloscorpiops citadelle* Kovařík, 2013: 2–8, figs. 3–22.

TYPE LOCALITY AND TYPE REPOSITORY. Thailand, Klong Phanom, 8.88039N 98.67387E ; first author’s collection (FKCP).

DIAGNOSIS. Total length 37–54 mm. Base color uniformly greenish black to black, telson yellow with a reddish sting, legs may be pigmented. Pectinal teeth number 10–11 in males, 8–9 in females. Patella of pedipalp with 29–34 external trichobothria (5 *eb*, 2–3 *esb*, 3 *em*, 12–17 *est*, 5–6 *et*) and 19–21 ventral trichobothria. Chela of pedipalp with 11–13 ventral trichobothria, all located on ventral surface of chela. One distally positioned accessory trichobothrium (fourth in position) is located outside of row of ventral trichobothria (see red arrow in Fig. 13). Sexual dimorphism minor, adult males have relatively larger pectines; there is no difference in length and width of metasomal and pedipalp segments, and fingers of pedipalps are almost straight in both sexes. Chela narrow, length to width ratio in both sexes is 4.4–4.7.

*Alloscorpiops wongpromi* Kovařík, Soleglad et  
Košulič, sp. n.  
(Figs. 1–12, 14–24)

<http://zoobank.org/urn:lsid:zoobank.org:act:E885F06E-29F0-439D-BC88-7784A4B987E5>

TYPE LOCALITY AND TYPE REPOSITORY. Thailand, Ubon Ratchathani Province, Khong Chiam District, 15° 15'16.65"N 105°27'10.04"E; first author’s collection (FKCP).

TYPE MATERIAL. Thailand, Ubon Ratchathani Province, Khong Chiam District, 15°17'48.97"N 105°28'20.04"E, dry dipterocarp forest, rock wall around trail, 10.XI.2012,

2 ♂ (holotype and paratype), 4 ♀ (allotype and paratypes) 17 juveniles (see Fig. 22), leg. O. Košulič. Laos, Champasak Province, Pak Sé District, Phou Salao Mountain near Pakse City, dry dipterocarp forest, 15° 05'11.37"N 105°48'28.46"E, 15.XI.2012, 1 ♂ im. (paratype), leg. O. Košulič. Most of adult specimens are in 75% alcohol in the first author’s collection (FKCP), except for two female paratypes and 17 juveniles which are alive. One of them (live female) is in private collection of Jana Plíšková (JPPC).

ETYMOLOGY. The species name is dedicated to the Thai arachnologist Prasithdi Wongprom, a good friend of the third author. Prasithdi greatly enriched OK’s knowledge of the Thai nature, culture and local Asian habits during his studies at Kasetsart University.

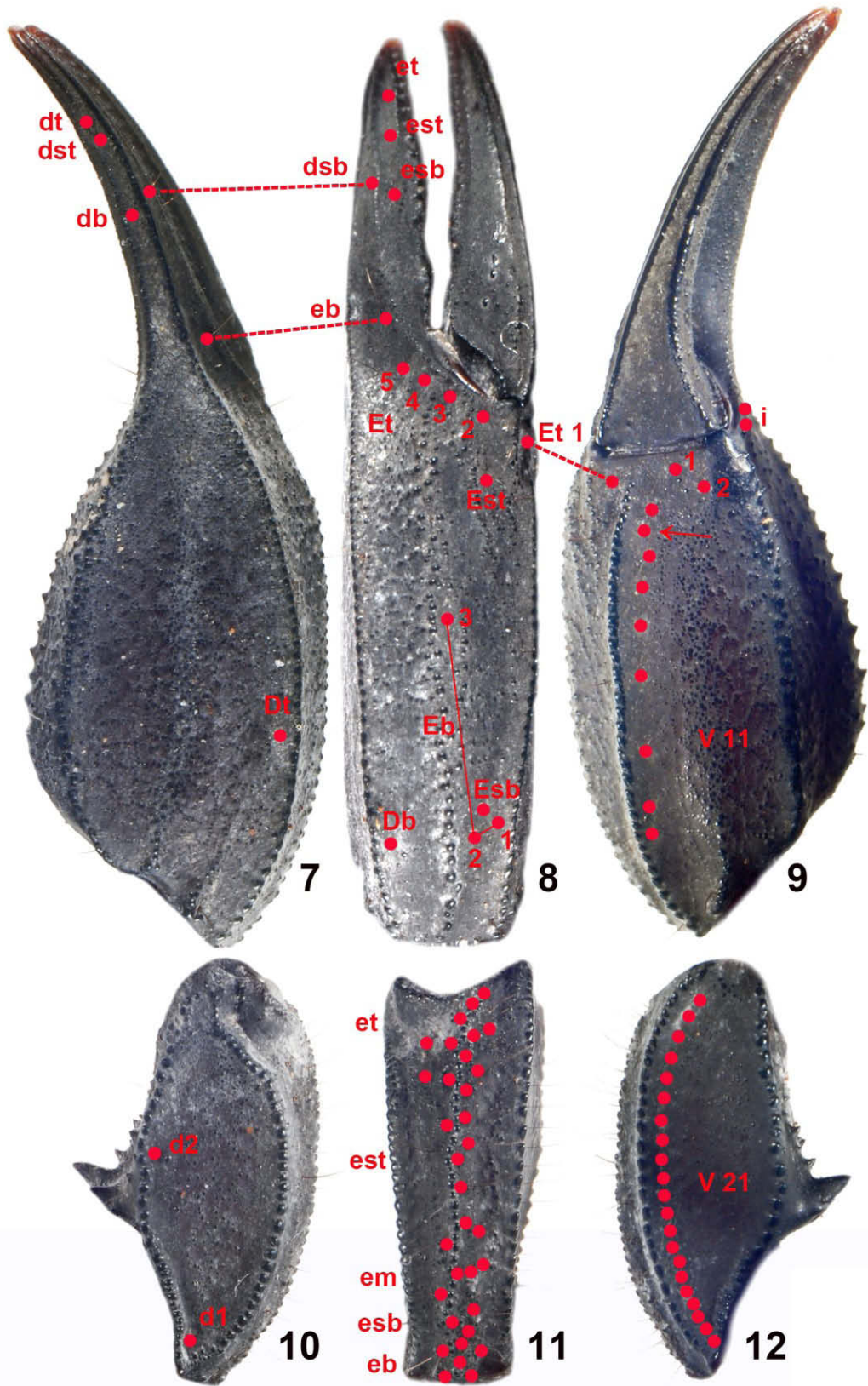
DIAGNOSIS. Total length 55 mm (male) to 66 mm (female). Base color uniformly greenish/reddish black to black, including telson. Pectinal teeth number 10–11 in males, 9–11 in females. Patella of pedipalp with 33–37 external trichobothria (5 *eb*, 5 *esb*, 3–4 *em*, 13–17 *est*, 7–9 *et*) and 21–22 ventral trichobothria. Chela of pedipalp with 11–12 ventral trichobothria, all, except *V*<sub>2</sub>, are contained in a continuous straight row adjacent to the ventroexternal carina, with the most proximal trichobothrium sometimes occurring on the edge between external and ventral surfaces. Sexual dimorphism minor, adult males have relatively larger pectines and narrower chela of pedipalp. Fingers of pedipalps almost straight in both sexes. Chela length to width ratio 3.2–3.37 in females, 3.75–3.83 in males.

DESCRIPTION. Total length 55 mm (male) to 66 mm (female). The base color is uniformly greenish/reddish black to black, including telson. Chelicerae are reddish brown and reticulate. For habitus see Figs. 1–2 and 4–5. Sexual dimorphism is minor, adult males have relatively larger pectines and narrower chela of pedipalp; there is no difference in length and width of the metasomal segments; fingers of pedipalps are almost straight in both sexes, more undulate in larger females (Fig. 6).

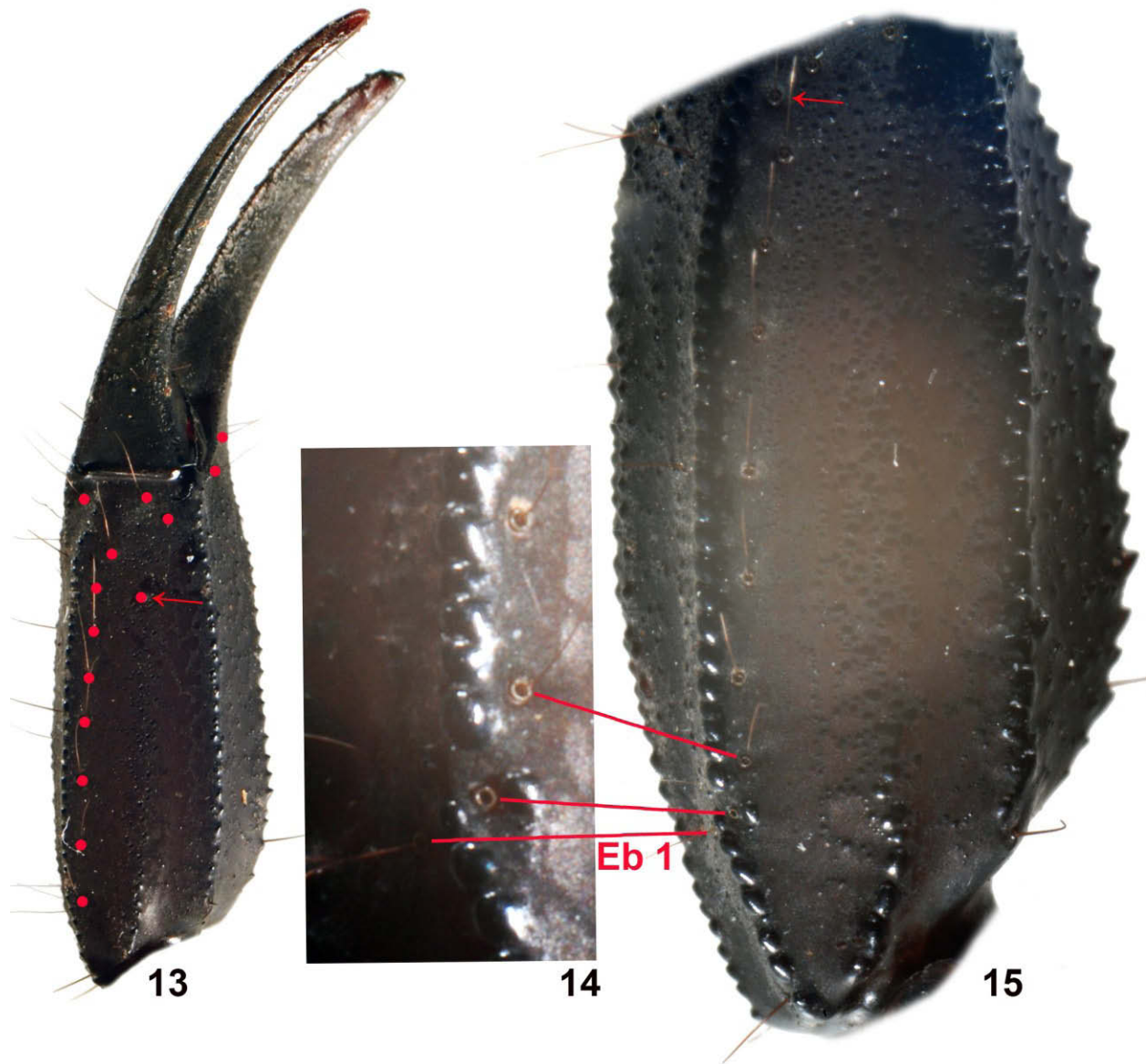
MESOSOMA AND CARAPACE: The mesosoma is granulated, with one median carina; the seventh sternite bears four carinae. The entire carapace is granulated, without carinae. The anterior margin of the carapace is markedly depressed in the middle. The carapace bears three lateral eyes of which two are normal and one is reduced. Pectinal teeth number 10–11 in males (3x10, 3x11) and 9–11 in females (3x9, 4x10, 1x11).

METASOMA AND TELSON (Figs. 18 and 19): The metasoma is sparsely hirsute and finely granulated, with sparse, relatively large granules. The first segment bears 10 carinae, the second to fourth segments bear eight carinae, and the fifth segment bears seven carinae. The dorsolateral carinae of the third and fourth segments





**Figures 7–12:** *Alloscorpiops wongpromi* sp. n. Female paratype, trichobothrial pattern indicated. 7. Chela dorsal. 8. Chela external. 9. Chela ventral (arrow points to inline position of fourth trichobothrium). 10. Patella dorsal. 11. Patella external. 12. Patella ventral.



**Figures 13–15:** 13. *Alloscorpiops citadelle* Kovařík, 2013, female allotype, chela ventral surface with trichobothria indicated (arrow points to out-of-line position of fourth trichobothrium). 14–15. *Alloscorpiops wongpromi* sp. n., immature male paratype from Laos, chela showing position of proximal ventral trichobothrium on ventroexternal carina (arrow points to in-line position of fourth trichobothrium).

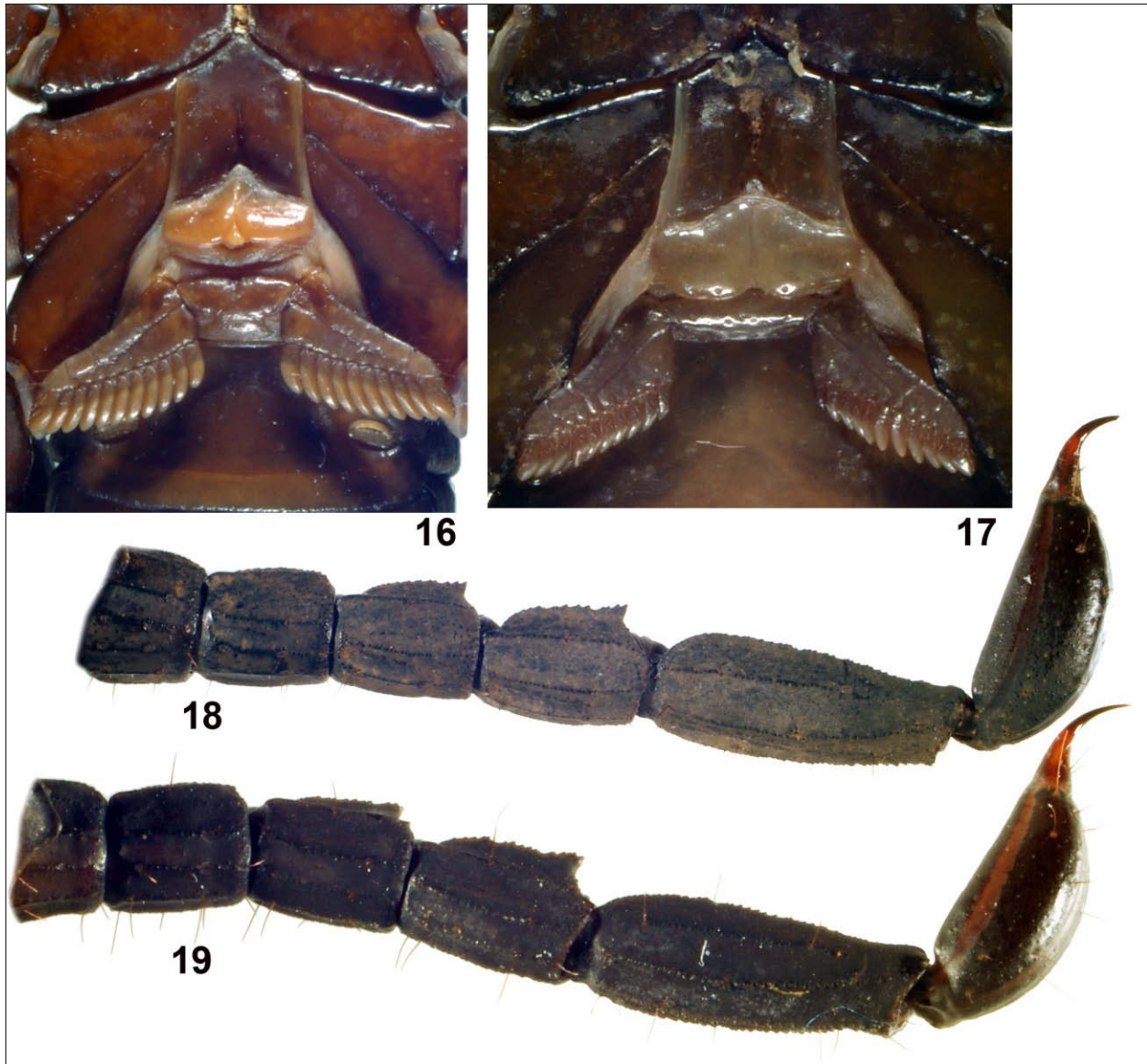
posteriorly terminate in a pronounced denticle. The telson is elongate, without granules.

**PEDIPALPS:** For position and distribution of trichobothria on the patella of pedipalps see Figs. 7–12 and 14–15. The patella bears 33–37 external trichobothria (5 *eb*, 5 *esb*, 3–4 *em*, 13–17 *est*, 7–9 *et*) and 21–22 (9x21, 5x22) ventral trichobothria (Fig. 12). Chela of pedipalp (Figs. 7–9, 14–15) with 11–12 ventral trichobothria; all, except  $V_2$ , are contained in a continuous straight row adjacent to the ventroexternal carina, with the most proximal trichobothrium sometimes occurring on the edge between external and ventral surfaces. The femur

and patella are granulated. The femur has five granulose carinae, and the patella has five carinae with pronounced internal twin tubercles. The manus dorsally bears fine, rounded granules, which in the central part form a longitudinal carina. The external surface of the chela is densely covered by minute granules and bears almost complete median carina. The movable fingers bear straight double rows of denticles with 14–15 external and 5–7 internal denticles.

**MEASUREMENTS** (in mm): Total length of male holotype 55; carapace length 8.3, width 8.5; metasoma and telson length 24.9; first metasomal segment length





**Figures 16–19:** *Alloscorpiops wongpromi* sp. n. 16–17. Pectinal areas. 18–19. Metasoma and telson, lateral view. 16, 18. Male holotype. 17, 19. Female allotype.

2.4, width 2.9; second metasomal segment length 2.6, width 2.45; third metasomal segment length 2.9, width 2.3; fourth metasomal segment length 3.5, width 2.15; fifth metasomal segment length 6.2, width 2; telson length 7.3; pedipalp femur length 8.2, width 2.9; pedipalp patella length 7.2, width 3.1; chela length 15.75; manus width 4.2; movable finger length 8.1. Total length of female allotype 65.5; carapace length 11.1, width 11.05; metasoma and telson length 31.5; first metasomal segment length 3.2, width 3.6; second metasomal segment length 3.35, width 3.1; third metasomal segment length 3.65, width 2.8; fourth metasomal segment length 4.35, width 2.55; fifth metasomal segment length 7.8, width 2.4; telson length 9.1; pedipalp femur

length 10.6, width 3.95; pedipalp patella length 8.95, width 4.2; chela length 20.9; manus width 6.2; movable finger length 10.7.

**VARIABILITY AND COMMENTS.** The male holotype has the most proximal accessory trichobothrium located very close to the ventroexternal carinae on the manus, and an immature male from Laos has the same trichobothrium on the edge between the external and ventral surfaces (Figs. 14–15).

Both adult males are smaller than the females, as they reached adulthood in one less ecdysis than the studied females. However, it is likely that as in other species the number of male ecdyses is variable, in which





Figures 20–21: *Alloscorpiops wongpromi* sp. n., live specimens. 20. Female paratype. 21. Immature male paratype from Laos.



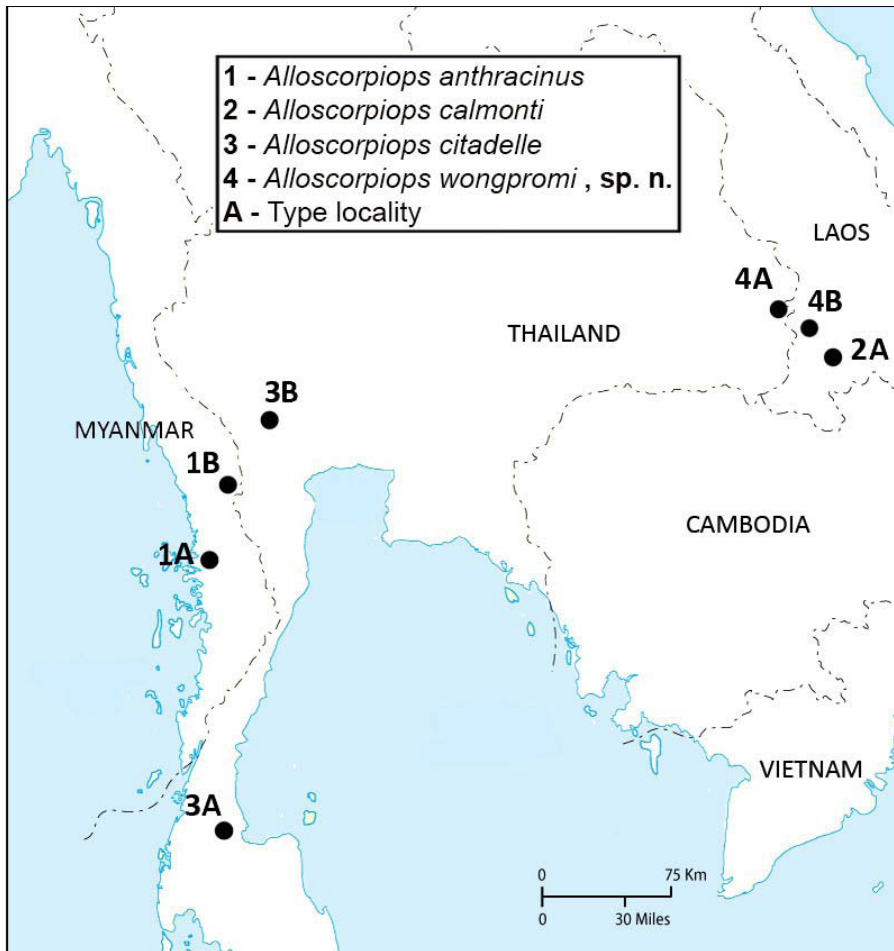


**Figure 22:** *Alloscorpiops wongpromi* sp. n., female paratype with newborn before (top) and after (bottom) first ecdysis.





**Figure 23:** Type locality of *Alloscorpiops wongpromi* sp. n. The majority of types were found in rock fissures.



**Figure 24:** Distribution map of genus *Alloscorpiops*.



case males that reach maturity after the same number of ecdyses as the females either would not show any morphometric difference in the shape of pedipalp segments or, conversely, the difference could be greater.

The female allotype was gravid and had 16 newborn and the female paratype delivered 17 newborn (Fig. 22). We suspected that the other two females could be also gravid, for which reason we have been keeping them alive in order to obtain data on the ontogenesis and more material to study.

**AFFINITIES.** The described features distinguish *Alloscorpiops wongpromi* sp. n. from all other species of the genus. They are recounted in the key. The main difference is in the trichobothrial pattern. *A. wongpromi* sp. n. has the highest number of external trichobothria on the patella (33–37, versus 29–34 in *A. citadelle*, 30 in *A. calmonti* and 23–24 in *A. anthracinus*) and of ventral trichobothria on the patella (21–22, versus 19–21 in *A. citadelle*, 18 in *A. calmonti* and 15–19 in *A. anthracinus*). The smallest difference in numbers of these trichobothria is between *A. wongpromi* sp. n. and *A. citadelle*. These two species differ in color of the telson (yellow in *A. citadelle* versus black in *A. wongpromi* sp. n.), total length (37–54 mm for *A. citadelle* versus 55–66 for *A. wongpromi* sp. n.) and the female chela of pedipalp length to width ratio (4.4–4.7 in *A. citadelle* versus 3.2–3.37 in *A. wongpromi* sp. n.).

**Key to species of *Alloscorpiops*** Vachon, 1980  
(see map in Fig. 24)

1. Patella of pedipalp with 23–24 external and 15–19 ventral trichobothria. .... *A. anthracinus* (Simon, 1887) – Patella of pedipalp with 29–37 external and 18–22 ventral trichobothria. .... 2
2. Accessory trichobothrium (see red arrow in Fig. 13) on ventral surface of chela located outside of a row of ventral trichobothria. Chela narrow, length to width ratio in both sexes is 4.4–4.7. Total length 37–54 mm. Telson yellow ..... *A. citadelle* Kovařík, 2013 – Accessory trichobothrium (see red arrow in Figs. 9 and 15) on ventral surface of chela located in a row of ventral trichobothria. Chela length to width ratio in females is 3.2–3.8. Total length 55–72 mm. Telson black. .... 3
3. Chela of pedipalp bears 13–14 ventral trichobothria, of them one or two located on external surface of chela (fig. 3C versus 3D in Lourenço, 2013: 54). Patella of pedipalp with 30 external and 18 ventral trichobothria. .... *A. calmonti* Lourenço, 2013 – Chela of pedipalp bears 11–12 ventral trichobothria. All ventral trichobothria located on ventral surface of chela (Fig. 9), or last trichobothrium can be located on

edge between external and ventral surfaces (Figs. 14–15). Patella of pedipalp with 33–37 external (5 *eb*, 5 *esb*, 3–4 *em*, 13–17 *est*, 7–9 *et*) and 21–22 ventral trichobothria. .... *A. wongpromi* sp. n.

## References

- BASTAWADE, D. B. 1997. Distribution of Neoscorpions scorpions in the western ghats of Maharashtra and Gujarat and possible trichobothridial variations among isolated populations. *Journal of the Bombay Natural History Society*, 94: 104–114.
- FET, V. 2000. Family Scorpionidae Kraepelin, 1905, pp. 487–502 IN: FET, V., W.D. SISSOM, G. LOWE & M. E. BRAUNWALDER. 2000. *Catalog of the Scorpions of the World (1758-1998)*. The New York Entomological Society, New York, 689 pp.
- KOVAŘÍK, F. 1998. *Štíři [Scorpiones]*. Publishing House "Madagaskar", Jihlava (Czech Republic), 176 pp. (in Czech).
- KOVAŘÍK, F. 2000. Revision of family Scorpionidae (Scorpiones), with descriptions of six new species. *Acta Societatis Zoologicae Bohemicae*, 64: 153–201.
- KOVAŘÍK, F. 2009. *Illustrated catalog of scorpions. Part I. Introductory remarks; keys to families and genera; subfamily Scorpioninae with keys to Heterometrus and Pandinus species*. Clairon Production, Prague, 170 pp.
- KOVAŘÍK, F. 2013. *Alloscorpiops citadelle* sp. n. from Thailand (Scorpiones: Euscorpionidae: Scorpioninae). *Euscorpionus*, 157: 1–9.
- KRAEPELIN, K. 1899. Scorpiones und Pedipalpi. In: F. DAHL (ed.): *Das Tierreich*. Herausgegeben von der Deutschen Zoologischen Gesellschaft. 8. Lieferung. R. Friedländer und Sohn Verlag, Berlin, 265 pp.
- KRAEPELIN, K. 1913. Neue Beiträge zur Systematik der Gliederspinnen. III. A. Bemerkungen zur Skorpionenfauna Indiens. B. Die Skorpione, Pedipalpen und Solifugen Deutsch-Ostafrikas. *Jahrbuch der Hamburgischen Wissenschaftlichen Anstalten*, 30: 123–196.
- LOURENÇO, W. R. 1998. Designation of the scorpion subfamily Scorpionsinae Kraepelin, 1905 as family Scorpionsidae Kraepelin, 1905 (stat. nov.): its generic composition and a description of a new species of *Scorpions* from Pakistan (Scorpiones, Scorpionsidae). *Entomologische Mitteilungen aus*

- dem Zoologischen Museum Hamburg, 12(157): 245–254.
- LOURENÇO, W. R. 2013. A new subgenus and species of *Alloscorpiops* Vachon, 1980 from Laos (Scorpiones, Euscorpiidae, Scorpioninae); implications for the taxonomy of the group. *Comptes Rendus Biologies*, 336: 51–55.
- POCOCK, R. I. 1893. Notes on the classification of scorpions, followed by some observations upon synonymy, with descriptions of new genera and species. *Annals and Magazine of Natural History*, 6(12): 303–331.
- POCOCK, R. I. 1900. *Arachnida. The Fauna of British India, Including Ceylon and Burma*. Published under the authority of the Secretary of State for India in Council. London: W. T. Blandford, xii, 279 pp.
- SIMON, E. 1887. Etude sur les Arachnides de l'Asie méridionale faisant partie des collections de l'Indian Museum (Calcutta). I. Arachnides recueillis à Tavoy (Tenasserim) par Moti Ram. *Journal of the Asiatic Society of Bengal*, 56: 101–117.
- SISSOM, W. D. 1990. Systematics, biogeography and paleontology. Pp. 64–160. In: Polis, G. A. (ed.). *The Biology of Scorpions*. Stanford University Press, Stanford, 587 pp.
- SOLEGLAD, M. E. & V. FET. 2003a. The scorpion sternum: structure and phylogeny (Scorpiones: Orthosterni). *Euscorpius*, 5: 1–34.
- SOLEGLAD, M. E. & V. FET. 2003b. High-level systematics and phylogeny of the extant scorpions (Scorpiones: Orthosterni). *Euscorpius*, 11: 1–175.
- SOLEGLAD, M. E. & SISSOM, W. D. 2001. Phylogeny of the family Euscorpiidae Laurie, 1896 (Scorpiones): a major revision. Pp. 25–111 in: Fet, V. & P. A. Selden (eds.), *Scorpions 2001. In Memoriam Gary A. Polis*. British Arachnological Society, Burnham Beeches, Bucks, 404 pp.
- STOCKWELL, S. A. 1989. *Revision of the Phylogeny and Higher Classification of Scorpions* (Chelicerata). Ph.D. Dissertation, Univ. of California Berkeley, Berkeley, 319 pp.
- THORELL, T. 1889. Viaggio di Leonardo Fea in Birmanie e regioni vicine. XXI. — Aracnidi Artrogastri Birmani raccolti da L. Fea nel 1885–1887. *Annali del Museo Civico di Storia Naturale di Genova*, 27: 521–729.
- VACHON, M. 1974. Etude des caractères utilisés pour classer les familles et les genres de Scorpions (Arachnides). 1. La trichobothriotaxie en Arachnologie. Sigles trichobothriaux et types de trichobothriotaxie chez les Scorpions. *Bulletin du Muséum National d'Histoire naturelle, Paris*, (3), 140 (Zool. 104), mai-juin 1973: 857–958.
- VACHON, M. 1980. Essai d'une classification sous-générique des Scorpions du genre *Scorpiops* Peters, 1861 (Arachnida, Scorpionida, Vaejovidae). *Bulletin du Muséum National d'Histoire Naturelle Paris*, 4 ser., 2, 1980: 143–160.