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Three new species of *Deinopteroloma* from Vietnam and China (Coleoptera: Staphylinidae: Omaliinae)

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A b s t r a c t : Three species of *Deinopteroloma* JANSSON, 1946 are described and illustrated: *Deinopteroloma uncinatum* nov.sp. (North Vietnam: environs of Sa Pa), *D. dispar* nov.sp. (North Vietnam: environs of Sa Pa), and *D. obtortum* nov.sp. (China: southern Gansu). The genus is reported from Vietnam and the Oriental region for the first time. Additional records of *D. chiangi* SMETANA, 1990 and *D. gracile* SMETANA, 2001 are reported from Taiwan and Sichuan, respectively. The distribution of the genus in Asia east of the Himalaya is mapped. Including the new species, *Deinopteroloma* currently includes 17 species and is distributed in the western Nearctic, the southern East Palaearctic, and the northern Oriental regions.

K e y w o r d s : Coleoptera, Staphylinidae, Omaliinae, *Deinopteroloma*, Palaearctic region, Oriental region, China, Vietnam, taxonomy, new species, new record.

Introduction

Originally assigned to the Silphidae, the genus *Deinopteroloma* JANSSON, 1946 was subsequently transferred to the subfamily Omaliinae (Anthophagini) of the Staphylinidae by SMETANA (1985), who included nine species from North America (two species), Burma (two species from the Kambaiti pass at the border with the Chinese province Yunnan), and the Himalaya (five species from the region from Nepal to Assam). An additional species from Nepal was described only one year later (SMETANA 1986). SMETANA (1990) then added a new species from Taiwan and presented a key to the eleven *Deinopteroloma* species known at that time. The first two species from China, *D. tricuspidatum* and *D. hamatum* from Fujian, were recorded by SMETANA (1996), and a third species from China, *D. gracile* from Shaanxi, was described by SMETANA (2001), who presented a key to the Chinese representatives of the genus. Thus, prior to the present study, *Deinopteroloma* included a total of 14 species distributed in the West Nearctic and the southern East Palaearctic regions. Most of the species from the East Palaearctic regions are known only from their respective type localities.

Material of Staphylinidae collected during recent field trips to the Qinling Shan (China) and to North Vietnam included four specimens (three males and one female) of *Deinopteroloma*. An examination of these specimens revealed that they represented three undescribed species, one from the Chinese province Gansu and two from North Vietnam, from where the genus is recorded for the first time.

Material and methods

The material treated in this study is deposited in the following private collections:

cAss..... author's private collection

cSch..... private collection Michael Schülke, Berlin

The morphological studies were conducted using a Stemi SV 11 microscope (Zeiss Germany) and a Jenalab compound microscope (Carl Zeiss Jena). The images of external characters and of the aedeagi in dry preparation were created using a photographing device constructed by Arved Lompe (Nienburg) and CombineZ software, the photographs of the aedeagi in transparent light with a digital camera (Nikon Coolpix 995). The map was created using MapCreator 2.0 (primap) software.

Total length was measured from the apices of the mandibles to the abdominal apes, the length of the forebody from the apices of the mandibles to the posterior margin of the elytra, pronotal length was measured along the middle, elytral length at the suture from the apex of the scutellum to the posterior margin of the elytra, and the length of the aedeagus from the apex of the longer paramere to the base of the aedeagal capsule. The "parameral" side (i.e., the side where the sperm duct enters) is referred to as the ventral, the opposite side as the dorsal aspect.

Descriptions

Deinopteroloma uncinatum nov.sp. (Figs 1-3, 9-11, 19-20, 26, Map 1)

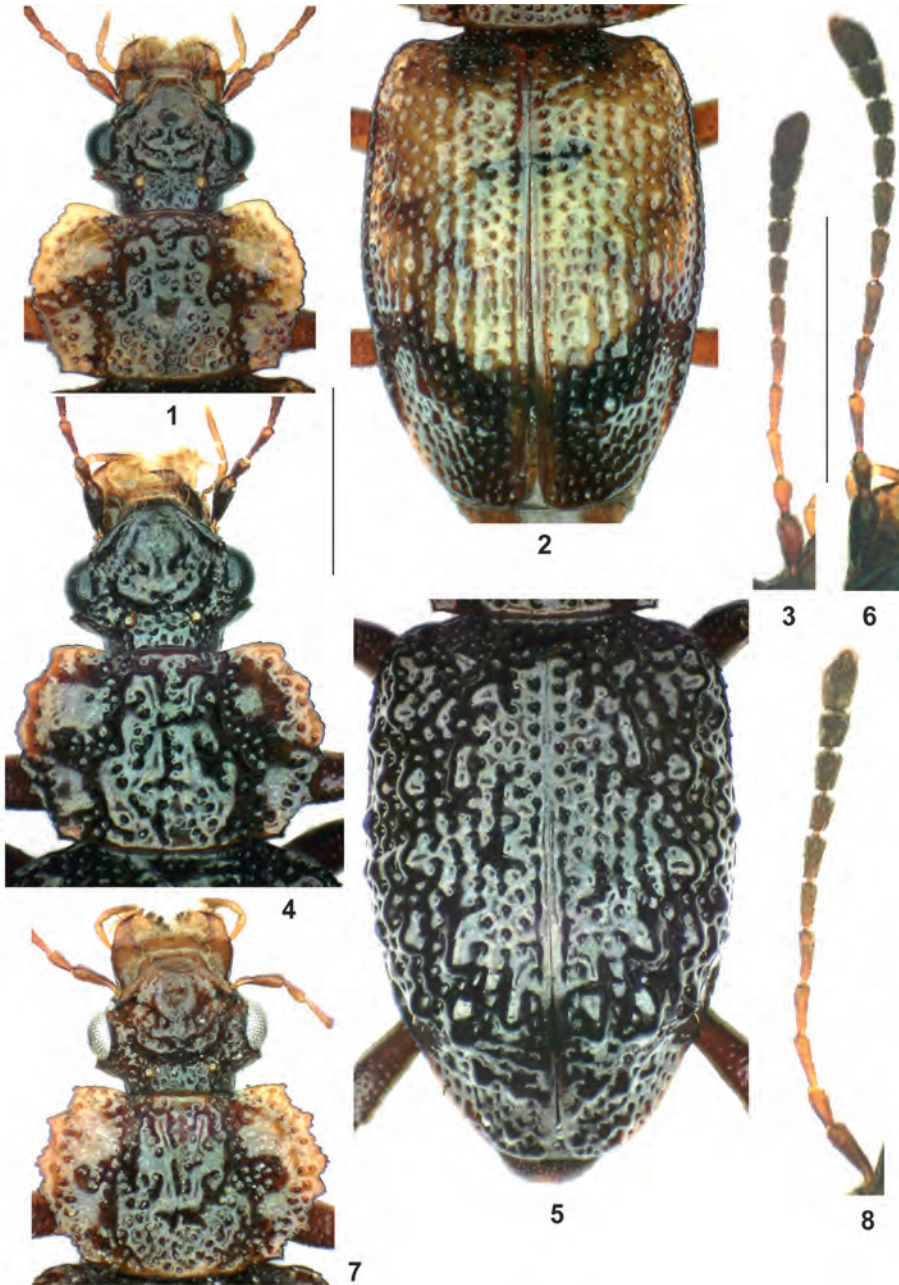
Type material: Holotype ♂: "N-Vietnam - pass 8 km NW Sa Pa, 22°21'10"N, 103°46'01"E, 2010 m, secondary forest, 5.VIII.2013, V. Assing [7+2] / Holotypus ♂ *Deinopteroloma uncinatum* sp.n. det. V. Assing 2015" (cAss).

E t y m o l o g y : The specific epithet (Latin, adjective: hook-shaped) alludes to the shape of the apices of the parameres of the aedeagus.

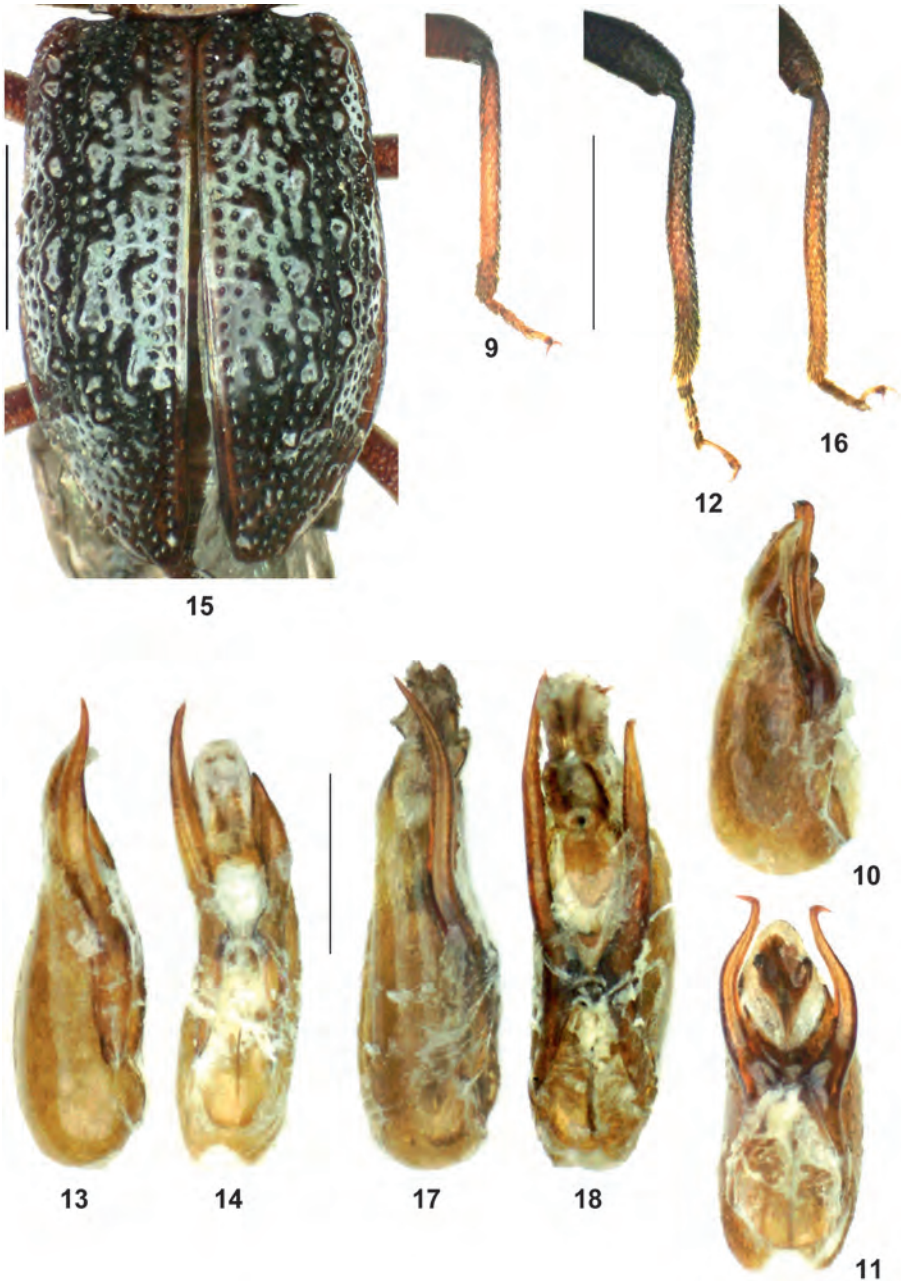
D e s c r i p t i o n : Body length 5.0 mm; length of forebody 4.5 mm. Coloration: head dark-brown; pronotum brown with broadly dark-yellowish lateral margins; elytra bicoloured, pale yellowish-brown with the posterior third blackish; abdomen brown; legs reddish-brown; antenna with antennomeres I-IV reddish and V-X gradually more infuscate apically, IX-XI blackish; maxillary palpi pale-reddish.

Head (Fig. 1) deeply impressed near eyes, these impressions with coarse and somewhat irregular punctation; median and posterior portions of dorsal surface with three partly interrupted transverse series of coarse punctures situated in narrow impressions; between these impressions with smooth and glossy elevations; frons smooth and glossy, without microsculpture. Antenna 1.8 mm long and shaped as in Fig. 3.

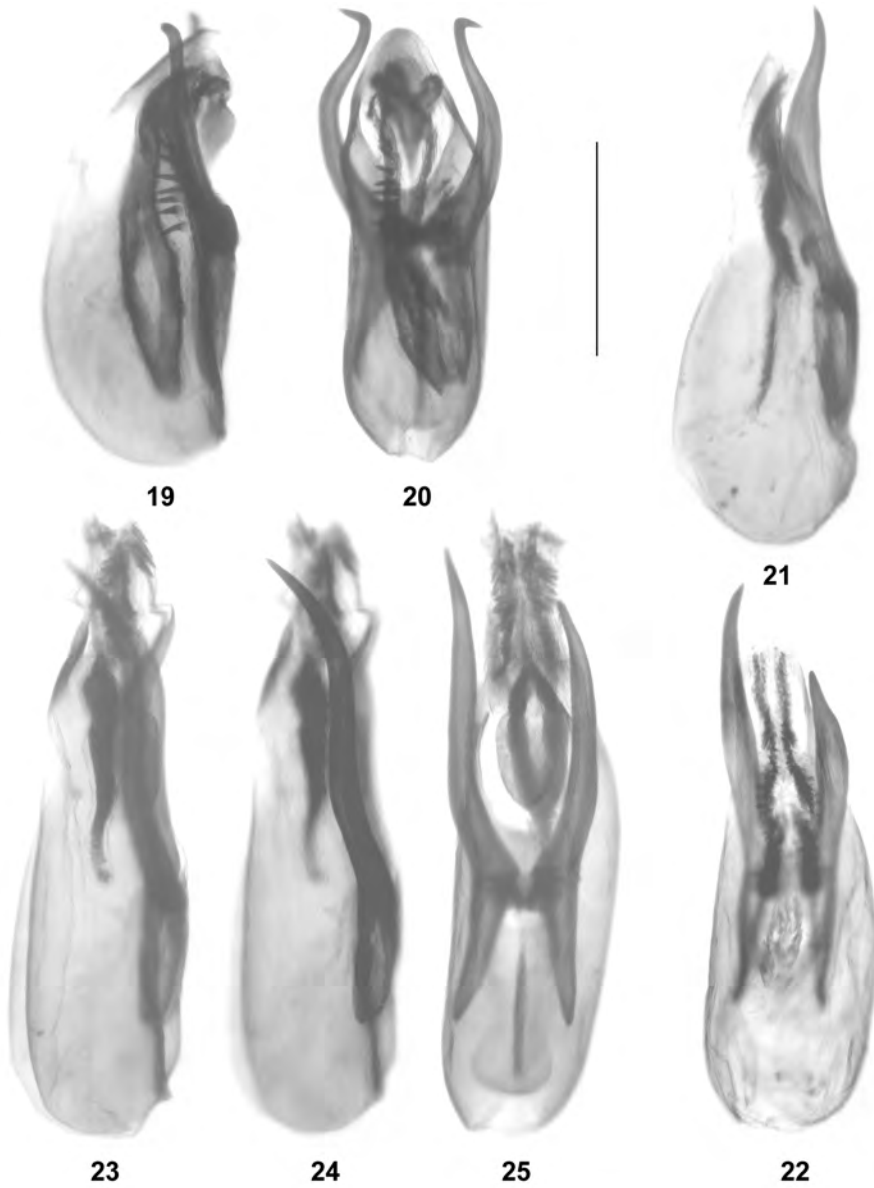
Pronotum (Fig. 1) 1.6 times as broad as long and 1.6 times as broad as head; lateral margins finely crenulate and with somewhat irregular outline, but without distinct tooth-like processes; lateral portions strongly impressed; surface of median portion uneven, with longitudinal and transverse smooth elevations, behind middle with a subcircular smooth elevation; punctation coarse, rather dense in antero-median and postero-median portions, sparser in lateral portions, and very irregular and scattered in median portion.



Figs 1-8: *Deinopteroloma uncinatum* nov.sp. (1-3), *D. dispar* nov.sp. (4-6), and *D. obtortum* nov.sp. (7-8): (1, 4, 7) head and pronotum; (2, 5) elytra; (3, 6, 8) antenna. Scale bars: 1.0 mm.



Figs 9-18: *Deinopteroloma uncinatum* nov.sp. (9-11), *D. dispar* nov.sp. (12-14), and *D. obtortum* nov.sp. (15-18): (9, 12, 16) metatibia and metatarsus; (10-11, 13-14, 17-18) aedeagus in dry preparation in lateral and in ventral view; (15) elytra. Scale bars: 9, 12, 15-16: 1.0 mm; 10-11, 13-14, 17-18: 0.5 mm.



Figs 19-25: *Deinopteroloma uncinatum* nov.sp. (19-20), *D. dispar* nov.sp. (21-22), and *D. obtortum* nov.sp. (23-25): aedeagus in transparent light in lateral and in ventral view. Scale bar:: 0.5 mm.



Fig. 26: Type locality of *Deinopteroloma uncinatum*. Photo: Paul Wunderle.

Elytra (Fig. 2) 2.6 times as long as pronotum and 1.3 times as long as combined width; lateral margins smoothly curved in dorsal view; punctation coarse and arranged in partly irregular series (except in posterior portion of elytra); each elytron with approximately 12-15 rather indistinct smooth tubercles. Legs rather short; metatibia (Fig. 9) 1.2 mm long; protibia weakly bisinuate at inner side; meso- and metatibiae nearly straight.

♂: protarsomeres I-IV very weakly dilated; aedeagus (Figs 10-11, 19-20) 1.1 mm long; both parameres smoothly curved in ventral view and apically conspicuously hook-shaped, slightly extending beyond apex of median lobe, left paramere slightly longer than right paramere; internal sac with a series of seven distinctly sclerotized spines.

Comparative notes: *Deinopteroloma uncinatum* is distinguished from all its congeners by the distinctive morphology of the aedeagus, particularly by the shapes of the parameres and the internal structures. In addition, it differs from the geographically closest congeners as follows:

from *D. semiflavum* JANSSON, 1946 (Northeast Burma; male unknown) by larger size (*D. semiflavum*: 3.5 mm), different coloration (*D. semiflavum*: elytra yellowish with blackish spots; mouthparts brown; legs dark-brown), and the absence of microsculpture on the head;

from *D. diabolicum* JANSSON, 1946 (Northeast Burma) by much paler coloration, the relatively broader and more transverse pronotum, and the absence of long recurved spines on the lateral margins of the pronotum;

from *D. gracile* SMETANA, 2001 (Shaanxi, Sichuan) by larger body size (*D. gracile*: 3.2-

3.6 mm), the convex lateral margins of the elytra, and the short subhumeral elytral elevation;

from *D. tricuspidatum* SMETANA, 1996 (Fujian) by much paler coloration and indistinct elytral elevations;

from *D. hamatum* SMETANA, 1996 (Fujian) by larger size (*D. hamatum*: 3.7-3.9 mm), paler coloration, and weakly pronounced elytral elevations.

For illustrations of the aedeagi of the compared species (except *D. semiflavum*) see SMETANA (1985, 1996, 2001).

Distribution and bionomics: The teneral holotype was collected at a pass to the northwest of Sa Pa, North Vietnam (Map 1), by sifting leaf litter and roots of herbs and ferns at the margin of a secondary deciduous forest at an altitude of 2010 m (Fig. 26). For an additional photograph see ASSING (2015: figure 12).

***Deinopteroloma dispar* nov.sp. (Figs 4-6, 12-14, 21-22, 27, Map 1)**

Type material: Holotype ♂: "N-Vietnam - pass 8 km NW Sa Pa, 22°21'13"N, 103°46'01"E, 2030 m, forest margin, 9.VIII.2013, V. Assing [10+2] / Holotypus ♂ *Deinopteroloma dispar* sp.n. det. V. Assing 2015" (cAss).

Etyymology: The specific epithet (Latin, adjective: different, unequal) alludes to the conspicuously different lengths of the parameres of the aedeagus.

Description: Body length 5.4 mm; length of forebody 5.1 mm. Coloration: body black, except for the rather narrowly brownish anterior three-fourths of the lateral margins; legs blackish, with the inner faces of the tibiae and the tarsi brownish; antennae blackish, with antennomeres II and III dark-brown with reddish-brown apices; maxillary palpi pale-brown.

Head (Fig. 4) deeply impressed near eyes, these impressions with coarse and somewhat irregular punctation; median and posterior portions of dorsal surface with three partly interrupted transverse series of coarse punctures situated in narrow impressions; between these impressions with smooth and glossy elevations; frons smooth and glossy. Antenna 2.4 mm long and shaped as in Fig. 6.

Pronotum (Fig. 4) 1.6 times as broad as long and 1.5 times as broad as head; lateral margins irregularly and distinctly dentate; middle of lateral portions with very deep impression, in front of and behind this impression with smooth area; in anterior two-thirds of median portion with two pronounced oblong and smooth tubercles on either side of middle; postero-laterally with another smooth elevation on either side; between smooth elevations with very coarse punctation.

Elytra (Fig. 5) 2.6 times as long as pronotum and 1.38 times as long as combined width; lateral margins smoothly and weakly curved in dorsal view; punctation coarse and arranged in partly irregular series (except in posterior portion of elytra), these series interrupted by numerous (nearly 30 on each elytron) pronounced, large and strongly elevated smooth tubercles. Legs rather long and stout; femora, particularly metafemur, dilated; metatibia (Fig. 12) 1.5 mm long; all tibiae bisinuate.

♂: protarsomeres I-IV moderately dilated; aedeagus (Figs 13-14, 21-22) 1.3 mm long; left paramere long, basally stout, and apically acute, distinctly extending beyond apex of median lobe; right paramere short and stout, far from reaching apex of median lobe; internal sac with two series composed of numerous small moderately sclerotized structures.

Comparative notes: This species is characterized particularly by the distinctive aedeagus with parameres of conspicuously different lengths and shapes, as well as by rather larger size, dark coloration, the presence of numerous pronounced elevations on the pronotum and elytra, and the modifications of the legs. It additionally differs from *D. tricuspidatum*, with which it shares the dark coloration and pronounced tubercles on the elytra, by larger size (*D. tricuspidatum*: 4.3-4.6 mm), the absence of pale spots on the elytra, the absence of striate microsculpture on the head, differently arranged tubercles and impressions on the pronotum and elytra, dilated male protarsomeres I-IV, and probably also the modified legs with dilated femora and bisinuate tibiae (not indicated in description of *D. tricuspidatum*). For illustrations of the aedeagus of *D. tricuspidatum* see SMETANA (1996).

Distribution and bionomics: The type locality is only some meters away from that of *D. uncinatum* (on the other side of the road) (Map 1). The holotype was sifted from leaf litter and roots of herbs at the margin of a secondary deciduous forest at an altitude of 2030 m. The locality is illustrated in Fig. 27.



Fig. 27: Type locality of *Deinopteroloma dispar*. Photo: Paul Wunderle.

***Deinopteroloma obtortum* nov.sp. (Figs 7-8, 15-18, 23-25, Map 1)**

Type material: Holotype ♂: "CHINA [16] - S-Gansu, S Longnan, Min Shan, 33°03'13"N, 104°40'57"E, 2200 m. 6.VIII.2012, V. Assing / Holotypus ♂ *Deinopteroloma obtortum* sp.n. det. V. Assing 2015" (cAss). Paratype ♀: same data as holotype, but leg. M. Schülke (cSch).

E t y m o l o g y : The specific epithet is the past participle of the Latin verb *obtorquere* (to bend back) and alludes to the shape of the parameres of the aedeagus.

Description: Body length 4.8-5.4 mm; length of forebody 4.4-5.0 mm. Coloration: head dark-brown, with the frons paler brown; pronotum dark-brown with the lateral margins broadly dark-yellowish; elytra dark-brown; legs dark-brown with the tibiae partly paler brown and the tarsi dark-yellowish to yellowish-brown; antennae with antennomeres I-IV reddish-brown and V-XI dark-brown to blackish-brown; maxillary palpi yellowish.

Head (Fig. 7) deeply impressed near eyes; median and posterior portions of dorsal surface with three partly interrupted transverse series of coarse punctures situated in narrow impressions; between these impressions with smooth and glossy elevations; all impressions and posterior portion of head with coarse punctures; frons elevated and with very shallow transverse microsculpture posteriorly and more distinct transverse microsculpture anteriorly. Antenna 2.3 mm long and shaped as in Fig. 8.

Pronotum (Fig. 7) 1.54-1.56 times as broad as long and 1.63 times as broad as head; lateral margins irregularly and very coarsely serrate; middle of lateral portions with very deep impression, in front of and behind this impression with smooth area; in anterior two-thirds of median portion with two more or less oblong smooth tubercles on either side of middle; postero-laterally with smaller tubercle on either side; postero-median portion with a distinct impression; between smooth elevations with very coarse punctation.

Elytra (Fig. 15) 2.6-2.7 times as long as pronotum and 1.36-1.45 times as long as combined width; lateral margins smoothly and weakly curved in dorsal view; punctation coarse and arranged in partly irregular series (except for posterior portion of elytra), these series interrupted by 15-20 pronounced smooth tubercles on each elytron; posterior fifth of elytra without tubercles. Legs rather long and moderately stout; femora, particularly metafemur, moderately dilated; metatibia (Fig. 16) 1.5 mm long; meso- and metatibiae very weakly bisinuate.

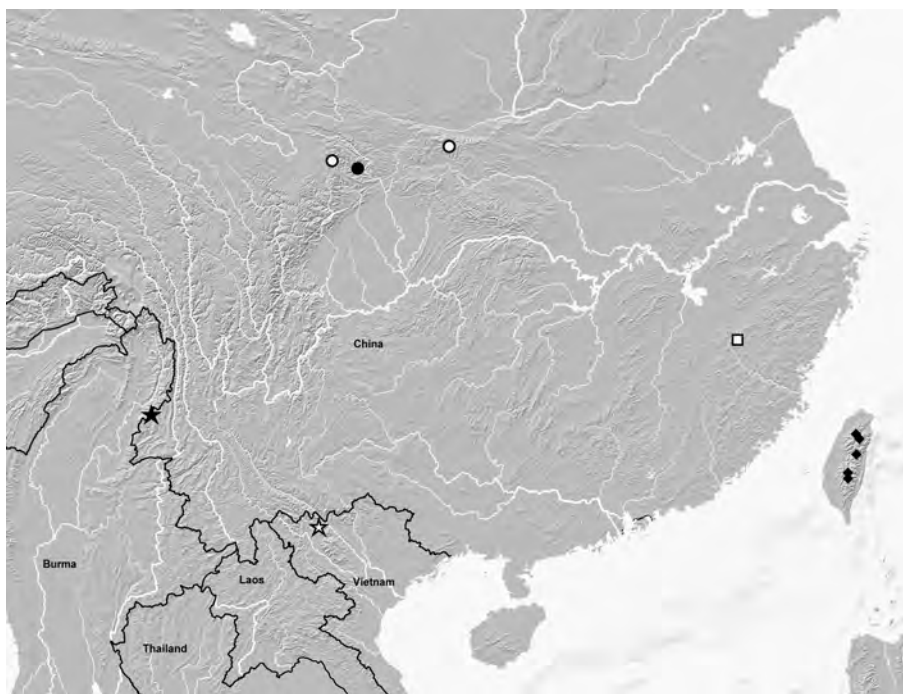
♂: protarsomeres I-IV very weakly dilated; aedeagus (Figs 17-18, 23-25) 1.4 mm long; both parameres slender, apically bent dorsad and extending beyond apex of median lobe; left paramere slightly longer than right paramere; internal sac with a long dark membranous structure and apically with two series composed of small and weakly sclerotized spines.

I n t r a s p e c i f i c : The paratype differs from the holotype by less pronounced and less oblong antero-median elevations of the pronotum, less strongly serrate lateral margins of the pronotum, and slightly less numerous tubercles on the elytra.

Comparative notes: This species is characterized particularly by the distinctive aedeagus with parameres apically bent dorsad, rather large size, the presence of distinct elevations on the pronotum and elytra, and the coarsely and irregularly serrate lateral margins of the pronotum. It additionally differs from the geographically closest congener, *D. gracile* (Shaanxi, Sichuan), by larger body size, a more transverse head, a

much broader and more transverse pronotum, less slender elytra, distinctly darker coloration of the pronotum, elytra, legs, and antennae, more coarsely and irregularly serrate lateral margins of the pronotum, much more numerous and much more pronounced elevations on the elytra, and less coarse and less distinctly seriate punctuation of the elytra. For illustrations of the aedeagus of *D. gracile*, whose parameres are much more slender, less sclerotized, and of subequal length (right paramere slightly longer than the left paramere), see SMETANA (2001).

Distribution and bionomics: The type locality is situated in the Min Shan to the south of Longnan, southern Gansu (Map 1), at an altitude of 2200 m. The specimens were sifted from moist litter and roots in a secondary pine forest with hazelnut.



Map 1: Distribution of *Deinopteroloma* in Asia east of the Himalaya: *D. semiflavum* and *D. diabolicum* (black star); *D. obtortum* (black circle); *D. gracile* (white circles); *D. uncinatum* and *D. dispar* (white star); *D. tricuspidatum* and *D. hamatum* (white square); *D. chiangi* (black diamonds).

***Deinopteroloma gracile* SMETANA, 2001 (Map 1)**

Material examined: China: 1♂, N-Sichuan, 70 km N Songpan, road S 301, above Gan lake, 33°15'N, 103°46'E, 2700 m, spruce forest with birch, litter, moss, and dead wood sifted, 12.VIII.2012, leg. Schülke (cAss).

Comment: This species was previously known only from the type locality in the Qinling Shan, Shaanxi (SMETANA 2001). The above male represents the first record from Sichuan (Map 1).

***Deinopteroloma chiangi* SMETANA, 1990 (Map 1)**

M a t e r i a l e x a m i n e d : Taiwan: 1♀, Hsinchu Hsien, Jienshih, Hsinkuang tribal village, road 60, km 48, 1800 m, mountain forest, 25.III.2008, leg. Vít (cAss).

C o m m e n t : The known distribution of this species is confined to Taiwan (Map 1). SMETANA (1990, 2001) reported it from four localities.

Acknowledgements

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Zusammenfassung

Drei Arten der Gattung *Deinopteroloma* JANSSON, 1946 werden beschrieben und abgebildet: *Deinopteroloma uncinatum* nov.sp. (Nord-Vietnam: Umgebung von Sa Pa), *D. dispar* nov.sp. (Nord-Vietnam: Umgebung von Sa Pa) und *D. obtortum* nov.sp. (China: Süd-Gansu). Die Gattung wird erstmals aus Vietnam und der Orientalis nachgewiesen. Weitere Nachweise von *D. chiangi* SMETANA, 1990 und *D. gracile* SMETANA, 2001 werden von Taiwan bzw. aus Sichuan gemeldet. Die Verbreitung der Gattung in Asien östlich des Himalaya wird anhand einer Karte illustriert. Einschließlich der neuen Arten enthält *Deinopteroloma* derzeit 17 Arten; die Verbreitung der Gattung beschränkt sich auf das westliche Nordamerika, die südliche Ostpaläarktis und die nördliche Orientalis.

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