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A *Crataraea* species associated with *Formica chinensis* (Coleoptera: Staphylinidae: Aleocharinae)

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Abstract: *Crataraea myrmecophila* nov.sp. (China: Qinghai) is described and illustrated. The species was exclusively collected from nests of the ant *Formica chinensis* WHEELER 1913. It represents the first record of pronounced myrmecophily in the genus and the first record of the genus from the East Palaearctic region east of Middle Asia. *Crataraea* THOMSON 1858 is now represented in the Palaearctic region by five species.

Key words: Coleoptera, Staphylinidae, Aleocharinae, *Crataraea*, China, taxonomy, new species, *Formica*, myrmecophily.

Introduction

According to SMETANA (2004), the oxypodine genus *Crataraea* THOMSON 1858 was previously represented in the Palaearctic region by four species, two unrevised species (*C. eremita* PEYERIMHOFF 1931 and *C. rubripennis* FAUVEL 1872) from Algeria, *C. solskyi* (EPPELSHEIM 1888) from Uzbekistan, and *C. suturalis* (MANNERHEIM 1830), a species widespread and common in most of the West Palaearctic region and also adventive in North America (KLIMASZEWSKI et al. 2013).

For a long time, *Crataraea* had been placed near *Thiasophila* KRAATZ 1856 (represented in the Palaearctic region by nine myrmecophilous species), *Dexiogyia* THOMSON 1858 (two species associated with dead wood and bird nests, respectively, in the Palaearctic), and *Haploglossa* KRAATZ 1856 (in the Palaearctic with six species mostly associated with nests of birds and ants) (e.g., LOHSE 1974, SEEVERS 1978). Recently however, based on molecular data, OSSWALD et al. (2013) found that *Haploglossa*, *Dexiogyia*, and *Crataraea* + *Haploglossa* belonged to different clades and placed *Haploglossa* in the subtribe Dinardina, left *Dexiogyia* in the Oxypodina, and assigned *Crataraea* and *Haploglossa* to the Microglottina.

The only *Crataraea* species for which detailed natural history data are available is *C. suturalis*. It has been found - often synanthropically - in various kinds of decaying plant matter such as compost, straw, hay, mouldy vegetable supplies, in stables, barns and pens, occasionally also in forest leaf litter, decaying wood, and old mushrooms (HORION 1967). HORION (1967) concludes from these observations that the species is associated with nests of mice and rats. According to NEWTON et al. (2001), it has occasionally been found also in ant nests (*Formica* spp. and *Lasius* spp.).

Among material of unidentified Aleocharinae from China forwarded to me by Michael Schülke (Berlin) a series of specimens of *Crataraea* was found that had been collected from nests of *Formica chinensis* WHEELER 1913 in Qinghai province. An examination of this material revealed that it belonged to an undescribed species.

Material and methods

The material treated in this study is deposited in the following 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 the habitus and the forebody were created using a photographing device constructed by Arved Lompe (Nienburg) and CombineZ software. A digital camera (Nikon Coolpix 995) was used for the remaining photographs.

Body length was measured from the anterior margin of the mandibles (in resting position) to the abdominal apex, the length of the forebody from the anterior margin of the mandibles to the posterior margin of the elytra, head length from the anterior margin of the clypeus (without ante-clypeus) to the posterior margin of the head, 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 ventral process to the base of the median lobe. 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.

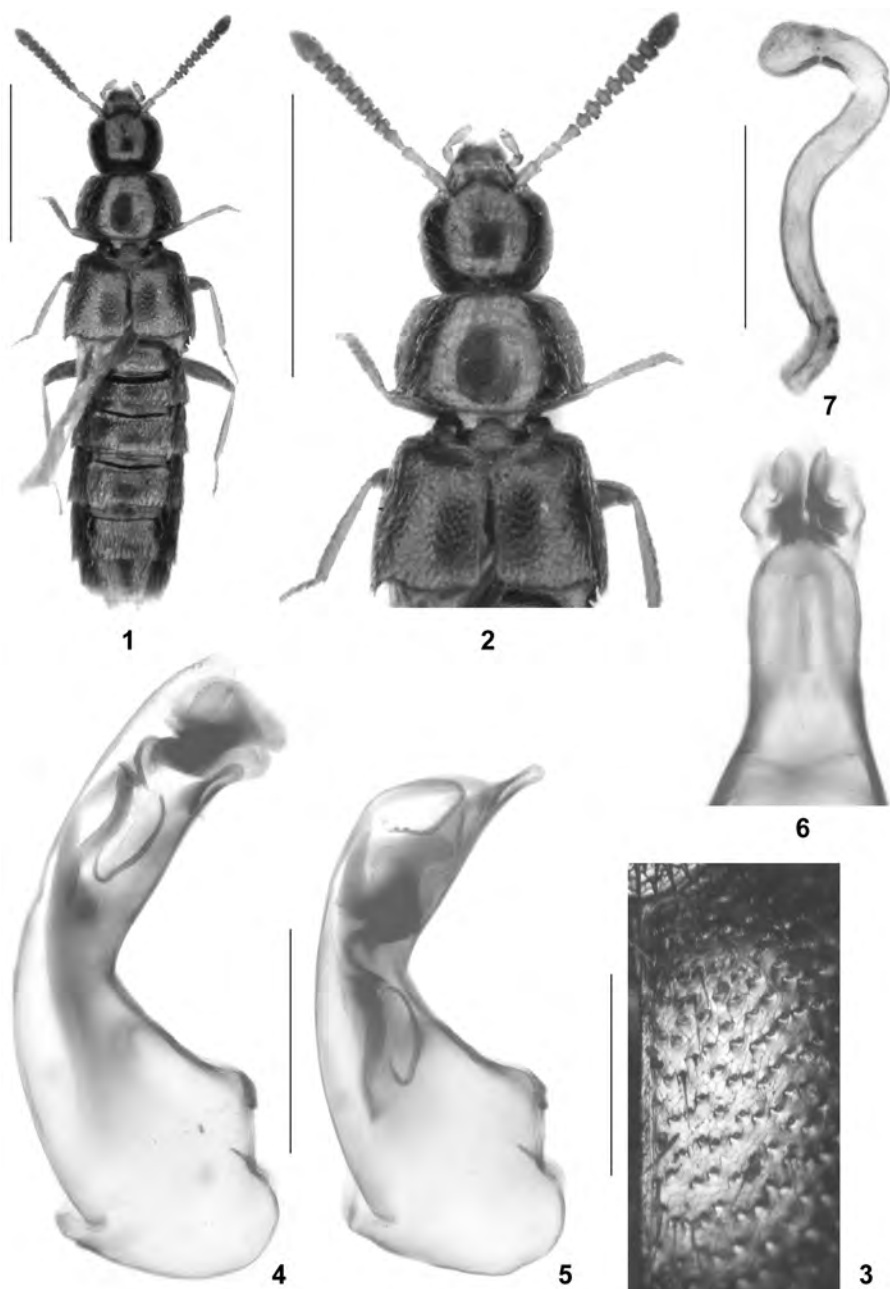
Crataraea myrmecophila nov.sp. (Figs 1-11)

Type material: Holotype ♂ [with two *Formica* workers attached to the pin]: "China: Qinghai Prov. [CH11-09a], Daban Shan, 62 km NNW Honggu, creek valley, 2236 m, Picea, Populus, Betula forest, 26°51'28.4"N, 102°37'07.6"E, / *Formica* nest, sifted [CH11-09a], 26.VI.2011, leg. M. Schülke, *Formica chinensis* Wheeler, 1913, det. B. Seifert [Nestprobe] / Holotypus ♂ *Crataraea myrmecophila* sp.n. det. V. Assing 2014" (cAss). **Paratypes:** 2♂♂, 3♀♀ [each of them with a *Formica* worker attached to the pin]: same data as holotype (cSch, cAss); 5♀♀: same data as holotype, but "[CH11-9d] ... 29.VI.2011" (cSch, cAss); 1♀: same data as holotype, but "[CH11-9g] ... 15.VII.2011" (cSch).

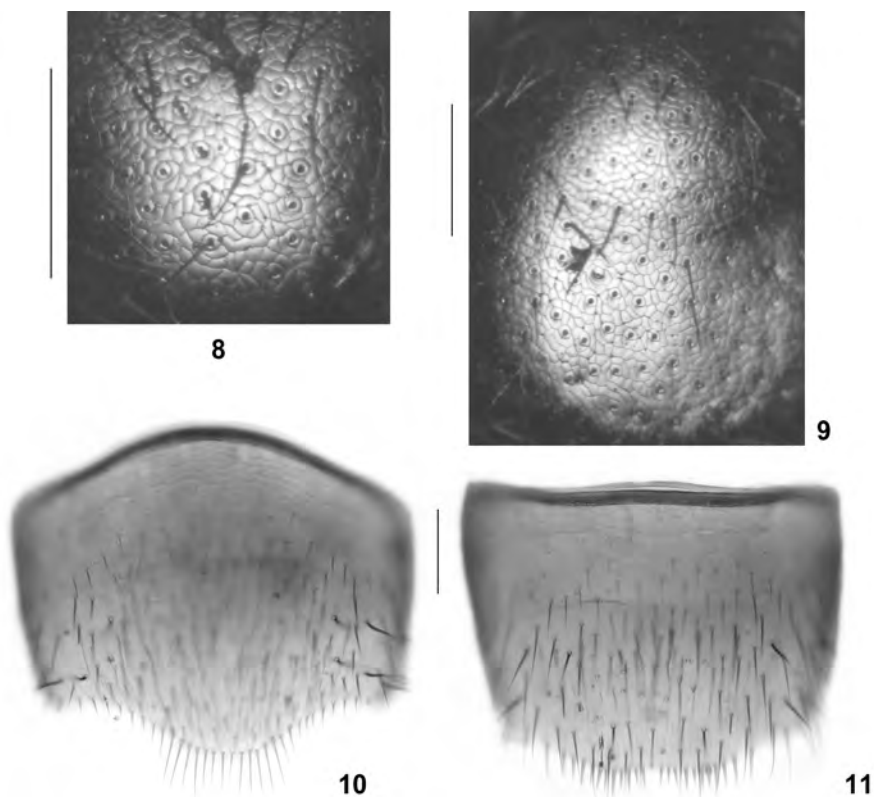
E t y m o l o g y : The specific epithet (adjective) alludes to the hypothesized myrmecophily of this species.

D e s c r i p t i o n : Body length 2.7-3.6 mm; length of forebody 1.2-1.5 mm. Habitus as in Fig. 1. Coloration: head blackish-brown to blackish; pronotum and elytra brown to dark-brown, the latter with the posterior sutural portion often somewhat paler; abdomen dark-brown, with the posterior margins of the segments reddish; legs and antennae dark-yellowish.

Head (Fig. 2) weakly transverse; punctation sparse and extremely fine, barely noticeable in the microreticulation (Fig. 8). Eyes weakly convex, slightly shorter than postocular region in dorsal view. Antenna (Fig. 2) incrassate apically; antennomeres IV-X strongly transverse, IV more than 1.5 times as wide as long, V-X at least twice as wide as long.



Figs 1-7: *Crataraea myrmecophila* nov.sp.: (1) habitus; (2) forebody; (3) right elytron; (4-5) median lobe of aedeagus in lateral view; (6) ventral process of median lobe in ventral view; (7) spermatheca. Scale bars: 1-2: 1.0 mm; 3-7: 0.2 mm.



Figs 8-11: *Crataraea myrmecophila* nov.sp.: (8) vertex; (9) median portion of pronotum; (10) male sternite VIII; (11) female sternite VIII. Scale bars: 0.1 mm.

Pronotum (Fig. 2) strongly transverse, approximately 1.5 times as broad as long and 1.4 times as broad as head; punctuation sparse and very fine; interstices with shallow, but distinct microreticulation (Fig. 9).

Elytra (Fig. 2) approximately as long as pronotum; punctuation much more distinct than that of head and pronotum (Fig. 3); interstices with shallow microsculpture. Hind wings fully developed. Metatarsomere I slightly longer than the combined length of II and III.

Abdomen narrower than elytra; punctuation moderately dense and moderately fine, rather sparse on tergites VII-VIII; tergites III-V shallowly impressed anteriorly; posterior margin of tergite VII with palisade fringe; posterior margin of tergite VIII weakly convex in both sexes.

♂: sternite VIII (Fig. 10) distinctly transverse, posterior margin convexly produced and with long marginal setae in the middle; median lobe of aedeagus (Figs 4-6) slightly more than 0.45 mm long, somewhat angled ventrally in lateral view.

♀: sternite VIII (Fig. 11) distinctly transverse, posterior margin convex (except for the weakly concave middle) and with row of short modified marginal setae; spermatheca as in Fig. 7.

Comparative notes: The new species is easily distinguished from *C. suturalis* by numerous characters, particularly the smaller body, the smaller eyes, the much less pronounced microreticulation of the head, pronotum, and abdomen, the more transverse antennomere III, the more transverse pronotum, the posteriorly less strongly and more broadly produced male sternite VIII, the differently shaped median lobe of the aedeagus, and by the longer and nearly straight proximal portion of the spermathecal capsule. For illustrations of the habitus and the sexual characters of *C. suturalis* see figures 36 and 192a-c in KLIMASZEWSKI et al. (2013). According to EPPELSHEIM (1888), *C. solskyi* from Uzbekistan has reddish elytra, a reddish abdominal apex, an extremely densely punctate and consequently nearly matt forebody, and antennae of different morphology (antennomere IV as long as broad; antennomeres V-X weakly transverse).

Distribution and natural history: *Crataraea myrmecophila* is the first representative of the genus to be recorded from the East Palaearctic region east of Middle Asia. The type locality is situated in the Daban Shan in Qinghai province, China. The specimens were exclusively sifted from nests of *Formica chinensis* in a mixed forest at an altitude of approximately 2340 m. The fact that the species was found in several ant nests, but was absent from sifted leaf litter samples in the same locality suggests that it is actually associated with the ant and not an accidental guest.

Acknowledgements

I am indebted to Michael Schülke (Berlin) for entrusting me with the material which this study is based on and for the permission to retain the holotype, as well as to Bernhard Seifert (Görlitz) for the identification of *Formica chinensis*. Benedikt Feldmann (Münster) proof-read the manuscript.

Zusammenfassung

Crataraea myrmecophila nov.sp. (China: Qinghai) wird beschrieben und abgebildet. Die offensichtlich myrmecophile Art wurde ausschließlich in Nestern der Ameise *Formica chinensis* WHEELER 1913 (Formicidae) gefunden. *Crataraea* THOMSON 1858 ist damit erstmals auch aus der Ostpaläarktis östlich von Mittelasiern nachgewiesen und mit insgesamt fünf Arten in der Paläarktis vertreten.

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