

Trechiamma ion (Coleoptera, Trechinae), a Remarkable New Species
from Chûgoku District, West Japan

Hisashi ASHIDA

Graduate School of Biostudies, Kyoto University, Kyoto, 606–8502 Japan

and

Akinao SOUMA

2–9–1–401, Aoyama-minami, Himeji, Hyôgo, 671–2223 Japan

Abstract A new anophthalmic trechine species belonging to the group of *Trechiamma oni* is described from the central part of Okayama Prefecture in western Honshu, under the name *T. ion* ASHIDA et SOUMA. This new species resembles *T. oni* in the configuration of male genitalia, but is easily discriminated from the latter species by external morphology, i.e., more elongate shape of elytra, presence of a pair of postangular setae on pronotum, and unique elytral chaetotaxy. Since the presence of three setiferous dorsal pores on the third stria of each elytron is quite exceptional among the members of the *T. oni* group, *T. ion* is regarded as a representative of a new species-complex in the group of *T. oni*.

Eleven species-groups are recognized in the trechine genus *Trechiamma* from Japan (UÉNO, 1985 a; ASHIDA, 2000). Of these, two distinct groups of *T. oni* and *T. yokoyamai* have so far been recorded from Okayama Prefecture in Chûgoku District, West Japan. The former group consisting only of anophthalmic species is known from two limestone caves and several upper hypogean habitats in the northern part of the prefecture (UÉNO, 1955, 1985 b, 1985 c, 2000; ASHIDA, 2001), whereas the latter consisting of oculate species from a number of caves in the Atetsu-Jôbô limestone area in the western part (UÉNO, 1958 b). Recently, we found a peculiar species of *Trechiamma*, which seemed to be an intermediate between the groups of *T. oni* and *T. yokoyamai* by external characteristics, from the central part of the prefecture. After a close examination of male genital organ, we concluded that it might belong to the former group. Here we are going to describe this interesting new species.

The abbreviations used herein are the same as those explained in ASHIDA (2001). Measurement was carried out using six male and six female specimens.

Trechiana (s. str.) *ion* ASHIDA et SOUMA, sp. nov.

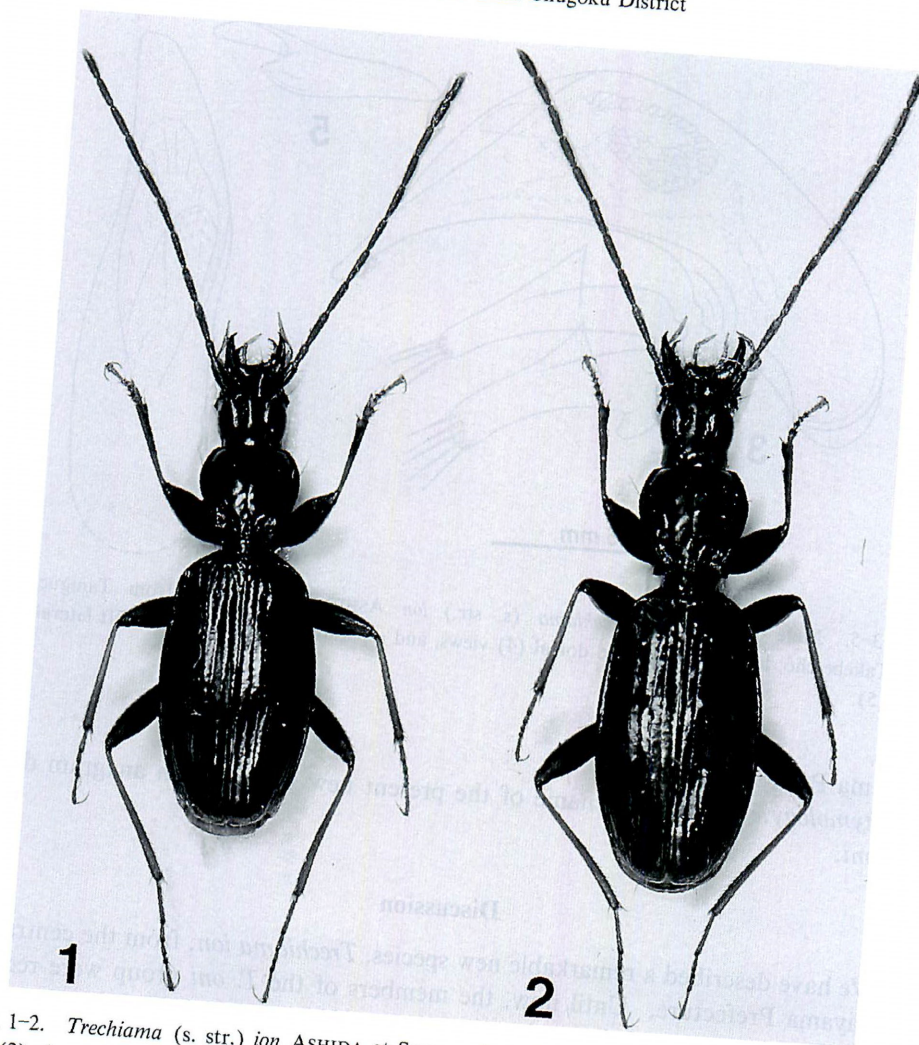
(Figs. 1-5)

Length: 5.90–7.10 mm in male, 5.60–6.15 mm in female (from apical margin of clypeus to apices of elytra).

Belonging to the group of *Trechiana oni* and similar in male genitalic features to *T. oni* (UÉNO, 1955, p. 30, figs. 1–2; 1985 b, pp. 168, 181, figs. 12–14) and *T. angustus* (UÉNO, 1985, p. 2, figs. 1–4), but externally different from the latter two species in the presence of a postangular pair of marginal setae on pronotum and three setiferous dorsal pores on the third stria of each elytron.

Color dark reddish brown with light-colored appendages. Head as in *T. oni*, but the remnant of eyes is a little larger; antennae more or less stouter. Pronotum more distinctly cordate than in *T. oni*, much wider than length, widest at about two-thirds from base, more strongly narrowed toward base than toward apex, moderately convex on dorsum, and depressed at basal part; frontal margin very slightly emarginate with obtuse front angles; sides strongly rounded in front, sinuate at basal fourth, and more or less divergent toward hind angles, which are sharp and protrude postero-laterad; postangular setae present; basal margin slightly emarginate at middle; PW/HW 1.39–1.51 (M 1.46), PW/PL 1.02–1.11 (M 1.08), PW/PA 1.39–1.51 (M 1.44), PW/PB 1.37–1.49 (M 1.43), PA/PB 0.95–1.04 (M 1.00). Elytra oblong-oval, slenderer and more elongate than those of *T. oni*, widest just behind the middle, and almost equally narrowed toward bases and apices; shoulders distinct unlike *T. oni*, with prehumeral borders more oblique; EW/PW 1.50–1.62 (M 1.55), EL/PL 2.75–2.87 (M 2.81), EL/EW 1.60–1.74 (M 1.68); dorsum somewhat depressed around suture, with striae rather shallowly impressed; three setiferous dorsal pores on stria 3 located at 12–17/100, 38–52/100 and 69–80/100 from base, and two pores on stria 5 at 21–24/100 and 58–65/100 from base. In two male paratypes, middle pore on stria 3 of left elytron and apical pore on stria 3 of right elytron lacking, respectively. Legs more or less stouter than in *T. oni*.

Male genital organ large, moderately sclerotized, and similar in basic structure to that of *T. oni*. Aedeagus about one-third as long as elytra, convex on dorsum, and moderately arcuate; basal part somewhat ampler than in *T. oni*, but less strongly curved ventrad; basal orifice rather small, whose sides are moderately emarginate; sagittal aileron small and narrow; viewed laterally, apical part gradually tapered toward apex and slightly curved ventrad, with the tip very slightly turned up; viewed dorsally, middle part sinuate, and gradually narrowed toward apex, which is subtruncated. Inner sac armed with well-developed teeth-patches and a copulatory piece; left proximal teeth-patch very large, horseshoe-shaped, consisting of large heavily sclerotized teeth; left apical teeth-patch also well-developed, consisting of small teeth and elongate scales; right dorsal teeth-patch small, lying just inside apical orifice; copulatory piece elongate, two-fifths as long as aedeagus, bilobed, with heavily sclerotized basal and left apical parts and very lightly sclerotized right apical lobe; left apical part triangular and slightly reflexed; right apical lobe hyaline, rolled ventrad, whose apex is rounded. Styles fairly

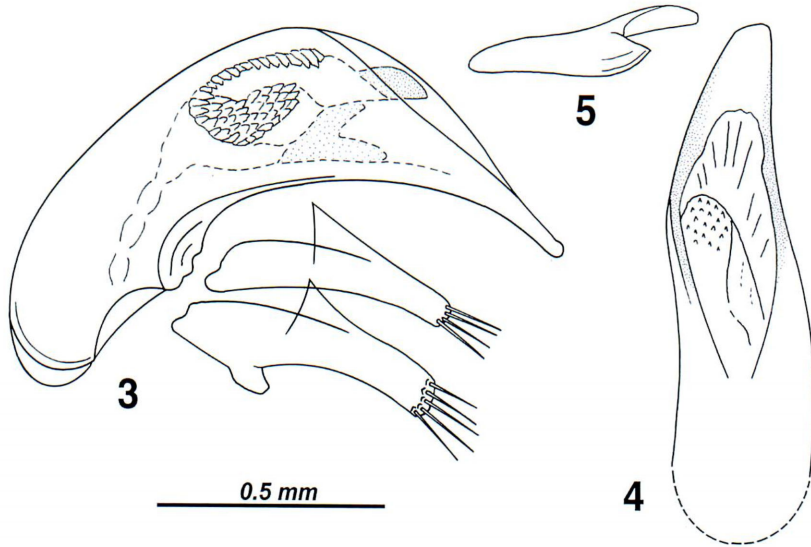


Figs. 1-2. *Trechiana* (s. str.) *ion* ASHIDA et SOUMA, from Taniguchi in Takebe-chō; ♂ (1) and ♀ (2), dorsal views.

short and broad; left one broader than the right, and provided with four to six setae at apex; right one with four to five setae at apex.

Type series. Holotype: ♂, 24-IX-2006, K. ITÔ leg. Paratypes: 1 ♂, 1 ♀, Taniguchi, 22-V-2005, A. SOUMA leg.; same locality, 3 ♂♂, 7 ♀♀, 24-IX-2006, T. SAITÔ & K. ITÔ leg.; 3 ♂♂, 5 ♀♀, same locality, 23-IX-2007, A. SOUMA, S. YAMASHITA & H. ASHIDA leg.; 1 ♀, western slope of Takajō-yama Hill (336 m in height), 24-IX-2006, T. SAITÔ leg.; 1 ♀, Nagao-shimo, 24-IX-2006, K. ITÔ leg. Holotype and one female paratype are preserved in the National Museum of Nature and Science, Tokyo.

Localities of type specimens. Taniguchi (130-150 m in altitude, type locality), Takajō-yama and Nagao-shimo, all in Wada-minami, Takebe-chō, Okayama-shi,



Figs. 3–5. Male genitalia of *Trechiamia* (s. str.) *ion* ASHIDA et SOUMA, from Taniguchi in Takebe-chô; left lateral (3) and dorsal (4) views, and separated copulatory piece, left lateral view (5).

Okayama Prefecture.

Etymology. The specific name of the present new species is an anagram derived from *oni*.

Discussion

We have described a remarkable new species, *Trechiamia ion*, from the central part of Okayama Prefecture. Until now, the members of the *T. oni* group were recorded from the northern part of the prefecture (UÉNO, 1955, 1985 b, 1985 c, 2000; ASHIDA, 2001), and those of the *T. yokoyamai* group were from the western part (UÉNO, 1958 b). The former group is anophthalmic, lacks postangular setae on pronotum except for the *T. yamajii* complex, and has stable elytral chaetotaxy of [0+2] (indicating the possession of 0 and 2 setiferous dorsal pores on striae 3 and 5, respectively), whereas the latter has faceted eyes, possesses postangular setae on the pronotum, and shows variable elytral chaetotaxy of [2–4+1–3]. On the other hand, *T. ion*, the present new species, is anophthalmic but has relatively large remnant of eyes, has postangular setae on pronotum, and shows a unique elytral chaetotaxy of [3+2]. At first sight of these external characteristics, the present new species looks to be an intermediate of these two groups. However, as illustrated above, the male genitalic features clearly show that it belongs to the *T. oni* group. At present, the members of this group distributed in Okayama Prefecture are classified into three species-complexes: the *oni* complex (*T. oni* S. UÉNO, 1955; *T. angustus* S. UÉNO, 1985; *T. humicola* S. UÉNO, 2000), the *fujitai*

complex (*T. yukikoeae* S. UÉNO, 1985; *T. moritai* S. UÉNO, 1985; *T. yamashitai* ASHIDA, 2001), and the *yamajii* complex (*T. yamajii* S. UÉNO, 2000). Since *T. ion* shares the common features with *T. oni* in terms of the male genitalia, we propose to establish a new species-complex of *T. ion* at the side of the *T. oni* complex.

Taniguchi, the type locality of the present species, is located on the left side of the Asahi-gawa River that flows from the Chûgoku Hills into the Seto Inland Sea, and is just a few hundred-meters distant from the river bank. The second and third localities are also on the left side of the river and about 2 km distant to the east and the southeast from the type locality, respectively. The type specimens of the present species were dug out from colluvium deposited along streams at the depth of 30–80 cm.

Taniguchi is about 18 km distant to the east by south from the Kanachi-ana Cave, one of the easternmost localities of *T. yokoyamai ishikawai*; about 28 km distant to the southeast from the Kôjira-*oni-no-ana* Cave, the type locality of *T. oni*; and about 25 km distant to the south-southwest from Yamoto, the type locality of *T. angustus*. Kôjira-*oni-no-ana* and Kanachi-ana Caves are located along different branches of the upstream of the Asahi-gawa River. Therefore, it may be possible that *T. ion* originated from a hybrid of *T. oni* and *T. yokoyamai ishikawai*, whose ancestors were drifted by flood of the Asahi-gawa River, and consequently met with each other and colonized at the downstream of the river. It is worth noting that *T. insolitus* S. UÉNO, 1959, another isolated species in the *T. oni* group, coexists with *T. yokoyamai yokoyamai* S. UÉNO, 1958, in the limestone caves of the Taishaku limestone area in Hiroshima Prefecture, and has quite unique elytral chaetotaxy of [3-4+0]. This may also be caused by a specific interaction between two different groups.

Acknowledgments

We thank Messrs. Kazue ITÔ, Takumi SAITÔ and Shun-Ichi YAMASHITA for their help in the field research, and Dr. Shun-Ichi UÉNO of the National Museum of Nature and Science, Tokyo, for his continuous guidance.

要 約

芦田 久・相馬明直：中国地方より見出されたオニメクラチビゴミムシ群の特異な1新種。——岡山県中央部に位置する岡山市建部町の旭川左岸よりオニメクラチビゴミムシ群に属する盲目の1新種を見出し、タケベメクラチビゴミムシ *Trechiana* (s. str.) *ion* ASHIDA et SOUMA と命名して記載した。本種の雄交尾器はオニメクラチビゴミムシのそれに似ており系統関係が示唆されるものの、上翅の形状、前胸後角に剛毛を有する点、上翅第3条に3つの剛毛孔点を有する点などの体の外見の特徴により容易に識別できる。とくに、上翅の剛毛式 [3+2] はオニメクラチビゴミムシ群の中では特異であることから、本種は独立の1系列を形成すると考えられるので、オニメクラチビゴミムシ群の中に新たなタケベメクラチビゴミムシ系列の設立を提唱した。

References

- ASHIDA, H., 2000. Checklist of Trechinae from Japan. Version VIII. 29 pp. Kansai Trechine Research Group, Kyoto. (In Japanese, with English title.)
- 2001. A new species of the group of *Trechiana oni* (Coleoptera, Trechinae) from Okayama Prefecture, western Honshu, West Japan. *Elytra, Tokyo*, **29**: 481–485.
- UÉNO, S.-I., 1955. Studies on the Japanese Trechinae (IV) (Coleoptera, Harpalidae). *Mem. Coll. Sci. Univ. Kyoto*, (B), **22**: 29–34.
- 1958 a. The cave trechids from the central part of the Chûgoku District, Japan. I. A new species of *Trechiana* from the Taishaku limestone area. *Ibid.*, (B), **25**: 181–184.
- 1958 b. The cave trechids from the central part of the Chûgoku District, Japan. II. The geographical races of *Trechiana yokoyamai* S. UÉNO. *Ibid.*, (B), **25**: 185–197.
- 1959. The cave trechids from the central part of the Chûgoku District, Japan. III. The group of *Trechiana oni* S. UÉNO. *Ibid.*, (B), **26**: 29–36.
- 1985 a. Trechinae. In UÉNO, S.-I., Y. KUROSAWA & M. SATÔ (eds.), *The Coleoptera of Japan in Color*, **2**: 64–88 [incl. pls. 12–16]. Hoikusha, Osaka. (In Japanese with English book title.)
- 1985 b. The group of *Trechiana oni* (Coleoptera, Trechinae) —its distribution and differentiation—. *Mem. natn. Sci. Mus., Tokyo*, (18): 163–198.
- 1985 c. Additions to the group of *Trechiana oni* (Coleoptera, Trechinae). *J. speleol. Soc. Japan*, **10**: 1–7.
- 2000. Two new anophthalmic *Trechiana* (Coleoptera, Trechinae) from the Hakubi Hills in western Honshu, Japan. *Elytra, Tokyo*, **28**: 21–30.