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A New Oculate *Trechiama* (Coleoptera, Trechinae) from the Southeastern Part of the Kitakami Mountains, Northeast Japan

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Abstract A new oculate species of the trechine genus *Trechiama* is described from the subalpine zone of a high mountain at the southeastern part of the Kitakami Mountains, Northeast Japan, under the name of *T. ohkurai*. It belongs to the *meridianus* lineage of the group of *T. oreas*, and is recognized at first sight on the large ample hind body and the absence of the second dorsal pore on the 3rd elytral stria. Comments are made on a trechine beetle probably referable to the same species, which occurs in several limestone caves lying near the foot of the mountain.

The Kitakami Mountain Range, stretching from north to south for more than 200 km on the Pacific side of northeastern Honshu, is one of the oldest massifs in the Japanese Islands. It is a kind of peneplain and is not particularly high except for the central part, which attains to a height of 1,914 m; most mountains on the other parts barely exceed 1,000 m above sea-level. Contrary to the other mountain ranges in northeastern Honshu, it is wholly non-volcanic and abounds in limestone strata, though the terrestrial cave fauna is relatively simple.

Two groups of apterous trechine beetles have been known from this mountain range, that is, *Trechiama* and *Kurasawatrechus*. The former occurs either in the subalpine zone or in caves, while the latter is either cavernicolous or upper hypogean. Most species of the former genus belong to the *oreas* lineage of the group of *T. oreas* (UÉNO, unpublished data), but an isolated species of the *meridianus* lineage occurs on Mt. Goyô-zan and its immediate vicinities at the southeastern part of the Kitakamis. The occurrence of this new species was preliminarily noticed in a previous paper of mine (UÉNO, 1994, p. 31), and I am going to introduce it into science in the present paper, which is dedicated to the memory of the late Mr. Masafumi OHKURA.

The abbreviations used herein are the same as those explained elsewhere.

I am deeply indebted to Messrs. Hirohisa KIZAKI and Yoshinari TORII, who submitted to my study rare cave specimens of the new trechine beetle.

Trechiama (s. str.) ***ohkurai*** S. UÉNO, sp. nov.

[Japanese name: Ohkura-naga-chibigomimushi]

(Figs. 1–8)

Length: 6.05–6.90 mm (from apical margin of clypeus to apices of elytra).

Belonging to the *meridianus* lineage of the group of *T. oreas*, and recognized at first sight on the large ample hind body, particularly in ♂♂, and the absence of the second setiferous dorsal pore on the 3rd elytral stria.

A relatively large species similar to *T. meridianus* S. UÉNO (1994, p. 28, figs. 5–8) in the configuration of head and prothorax, but different from the latter in the proportion of hind body to fore body and in elytral chaetotaxy. Colour as in *T. meridianus*, though usually darker, especially on the posterior half of head, pronotum, and elytra except for sutural intervals and lateral margins.

Head as in *T. meridianus*; eyes similarly variable in both size and convexity, usually flat but rarely a little convex; genae three-fifths to nine-tenths (usually about three-fourths) as long as eyes, either straight or very slightly convex; antennae usually reaching basal two-fifths of elytra, sometimes a little longer than that in ♂. Pronotum narrower on an average than in *T. meridianus*, with the sides less strongly arcuate in front and less widely divergent posteriad in basal area, widest at about three-fifths from base; PW/HW 1.41–1.50 (M 1.44), PW/PL 1.10–1.19 (M 1.14), PW/PA 1.54–1.68 (M 1.61), PW/PB 1.38–1.49 (M 1.43), PB/PA 1.07–1.18 (M 1.13); ante-basal sinuation distinct though usually shallow; hind angles more or less sharp in most individuals, sometimes nearly rectangular; sculptures as in *T. meridianus*.

Elytra obviously larger in ♂♂ than in *T. meridianus*, though similar to the latter in certain ♀♀, usually a little less convex, widest at about three-sevenths from bases; EW/PW 1.65–1.79 (M 1.72), EL/EW 1.50–1.59 (M 1.56); striae shallower than in *T. meridianus* though entire, nearly smooth; apical striole usually less divergent anteriad than in *T. meridianus*, gently arcuate, and usually joining or almost joining stria 5 through sinuation though sometimes directed to stria 7; intervals usually flat even on the disc; stria 3 with two setiferous dorsal pores at 1/12–1/10 and 3/5–2/3 from base, respectively; stria 5 also with two setiferous dorsal pores at 1/10–1/8 and 1/3–3/7 from base, respectively; preapical pore situated on or slightly behind the level of the terminus of apical striole, and evidently more distant from apex than from suture; other features as in *T. meridianus*. Ventral surface as in *T. meridianus*.

Legs relatively long and slender; protibiae straight, gently dilated towards apices, each with a deep longitudinal groove on the external face; tarsi thin, tarsomere 1 longer than tarsomeres 2–3 together but shorter than tarsomeres 2–4 together in both meso- and metatarsi; in ♂, protarsomeres 1 and 2 widely dilated and stoutly produced inwards at apices.

Male genital organ small, heavily sclerotized, similar in many respects to that of *T. oniceps* S. UÉNO (1989, p. 128, figs. 7–11) of the Kamuro Mountains. Aedeagus relatively short, about three-tenths as long as elytra, lightly depressed, hardly arcuate at

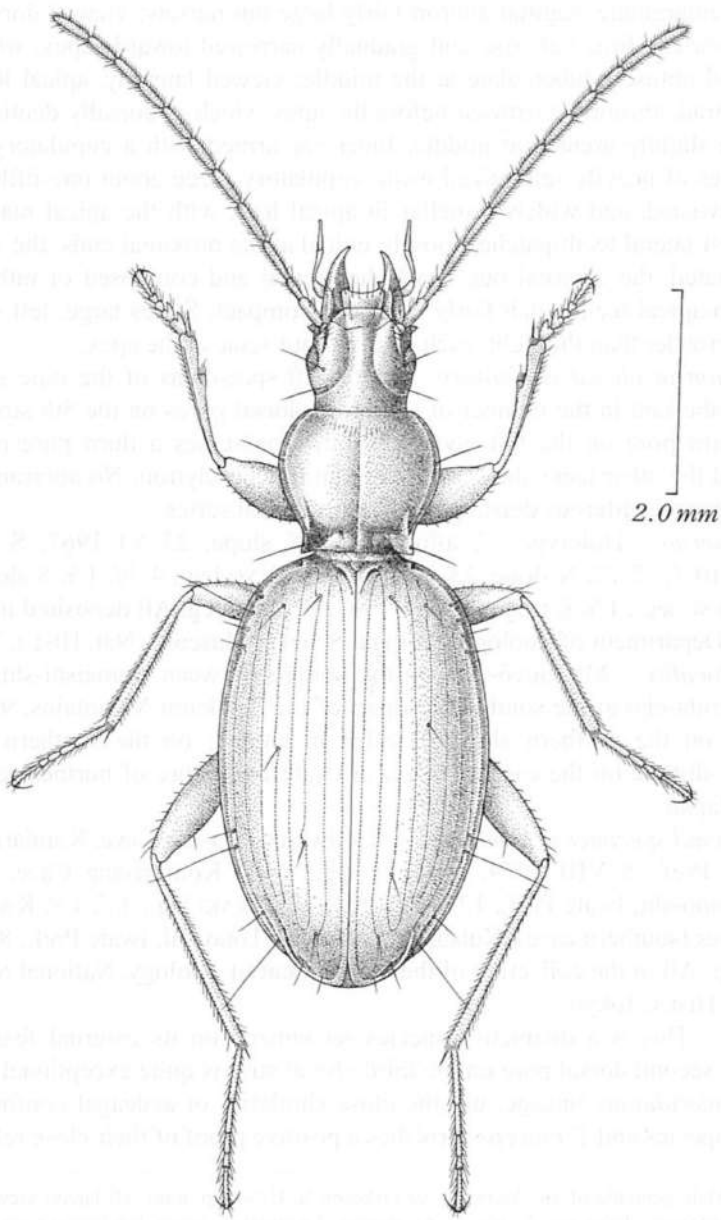


Fig. 1. *Trechiama* (s. str.) *ohkurai* S. UÉNO, sp. nov., ♂, from Mt. Goyô-zan on the Kitakami Mountains.

middle, and rather abruptly bent ventrad at the basal part; dorsal margin regularly arcuate at middle in profile; basal part large and short, with large basal orifice whose sides are deeply emarginate; sagittal aileron fairly large but narrow; viewed dorsally, apical lobe symmetrical, broad at base and gradually narrowed towards apex, which is subtruncate and obtusely tuberculate at the middle; viewed laterally, apical lobe slightly curved ventrad, abruptly narrowed before the apex which is dorsally denticulate; ventral margin slightly arcuate at middle. Inner sac armed with a copulatory piece and three patches of heavily sclerotized teeth; copulatory piece about one-fifth as long as aedeagus, twisted, and widely lamellar in apical half, with the apical margin widely rounded; left lateral teeth-patches loosely united at the proximal ends, the internal one dorsally dilated, the external one nearly horizontal and composed of rather lamellar teeth; dorso-apical teeth-patch fairly large and compact. Styles large, left style longer and much broader than the right, each bearing four setae at the apex.

Variation in elytral chaetotaxy. Of the 20 specimens of the type series, three (3 ♂♂) are aberrant in the number of setiferous dorsal pores on the 5th stria; one possesses a third pore on the left elytron, another possesses a third pore on the right elytron, and the other lacks the second pore on the left elytron. No aberrancy is found in the number of setiferous dorsal pores of the internal series.

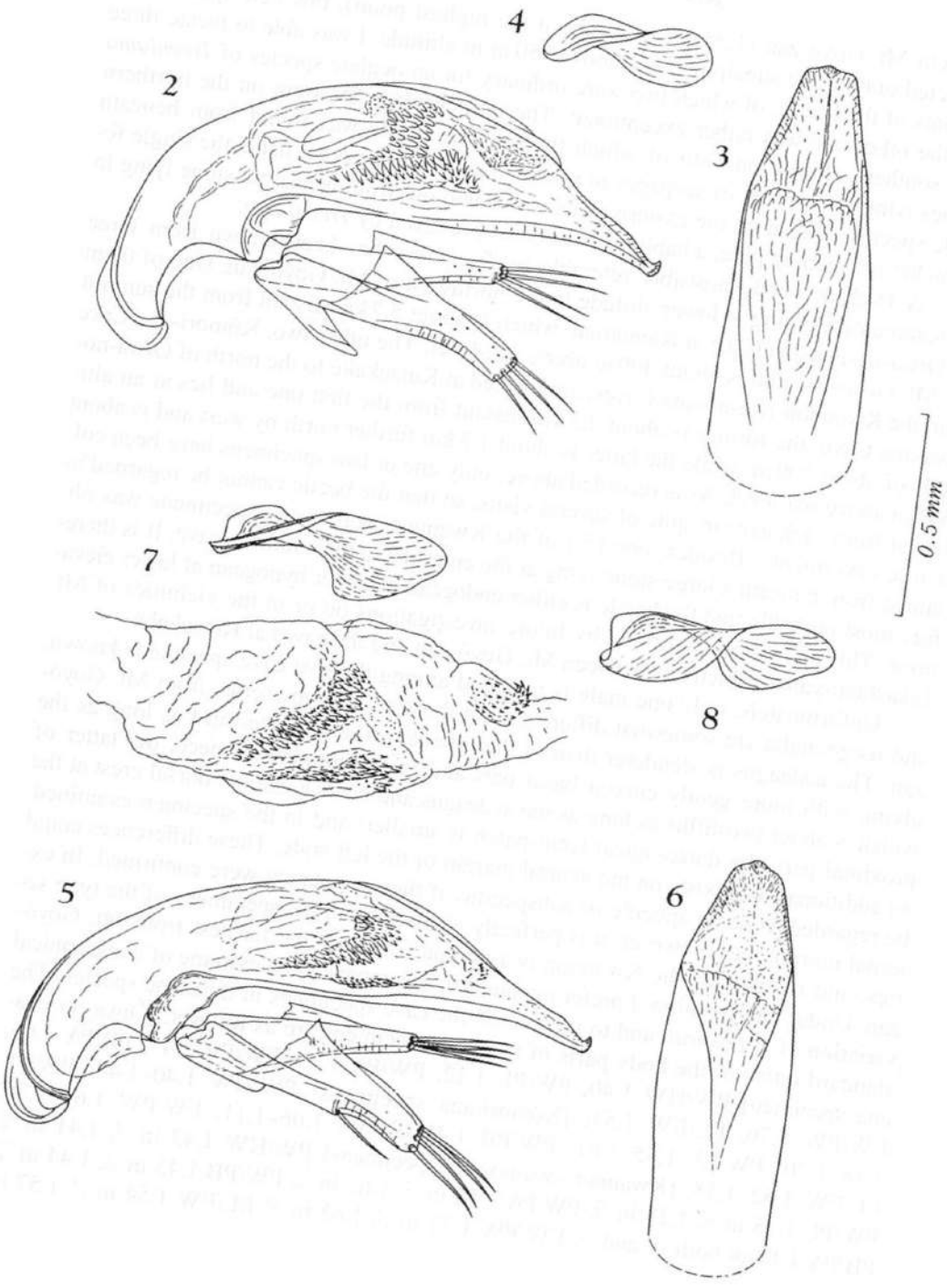
Type series. Holotype: ♂, allotype: ♀, N slope, 23–VI–1967, S. UÉNO leg. Paratypes: 10 ♂♂, 2 ♀♀, N slope, 23–VI–1967, S. UÉNO leg.; 4 ♂♂, 1 ♀, S slope, 22–VI–1967, S. UÉNO leg.; 1 ♀, E ridge, 22–VI–1967, S. UÉNO leg. All deposited in the collection of the Department of Zoology, National Science Museum (Nat. Hist.), Tokyo.

Type locality. Mt. Goyô-zan, on the borders between Kamaishi-shi, Ohfunato-shi and Sumita-chô at the southeastern part of the Kitakami Mountains, 950–1,250 m in altitude on the northern slope, 1,280 m in altitude on the southern slope, and 1,320 m in altitude on the eastern ridge, in Iwaté Prefecture of northeastern Honshu, Northeast Japan.

Additional specimens examined. 1 ♀, Ôiwa-no-iwa-ana Cave, Kamiarisu, Sumita-chô, Iwaté Pref., 5–VIII–1979, Y. TORII leg.; 2 ♀♀, Kômori-ana Cave, Kutsukaké, Kamigô, Tôno-shi, Iwaté Pref., 17–VIII–1983, H. KIZAKI leg.; 1 ♂, 1 ♀, Kwannon-iwa-no-ana Caves (southern cave), Kutsukaké, Kamigô, Tôno-shi, Iwaté Pref., 8–VII–1954, S. UÉNO leg. All in the collection of the Department of Zoology, National Science Museum (Nat. Hist.), Tokyo.

Notes. This is a distinctive species recognized on its external features alone. Loss of the second dorsal pore on the third elytral stria is quite exceptional for a member of the *meridianus* lineage, but the close similarity of aedeagal conformation between this species and *T. oniceps* furnishes a positive proof of their close relationship.

Figs. 2–8. Male genitalia of *Trechiama* (s. str.) *ohkurai* S. UÉNO, sp. nov.; left lateral view (2, 5), apical part of aedeagus, dorso-apical view (3, 6), separated copulatory piece, left lateral view (4), separated and extended inner sac and separated copulatory piece, left lateral view (7), and separated copulatory piece, oblique left dorsal view (8). —— 2–4. Topotypical specimen, from Mt. Goyô-zan. —— 5–8. Cave specimen, from the Kwannon-iwa-no-ana Caves.


4
2
3
0.5 mm
7
8
5
6

On Mt. Goyô-zan (1,351 m in height at the highest point), this new species was collected only in the subalpine zone above 950 m in altitude. I was able to locate three habitats of the beetle, of which two were ordinary for an oculate species of *Trechiama* but the other one was rather exceptional. The ordinary habitats were on the northern and southern slopes, on both of which the trechine beetle was found from beneath stones lying at the sides of seepages in shaded places. On the other hand, the single female specimen taken on the eastern ridge was found out from beneath a stone lying in a thicket of creeping pine, a habitat which is not preferred by *Trechiama*.

A trechine beetle probably referable to *T. ohkurai* has been known from three limestone caves lying at lower altitude to the northwest of Mt. Goyô-zan. One of them is Ôiwa-no-iwa-ana Cave at Kamiarisu, which is about 5.7 km distant from the summit of Mt. Goyô-zan and is about 400 m above sea-level. The other two, Kômori-ana Cave and the Kwannon-iwa-no-ana Caves, are located at Kutsukaké to the north of Ôiwa-no-iwa-ana Cave; the former is about 2.5 km distant from the first one and lies at an altitude of about 700 m, while the latter is about 1.3 km further north by west and is about 560 m above sea-level. As is recorded above, only one or two specimens have been collected from each cave in spite of several visits, so that the beetle cannot be regarded as a true cavernicole. Besides, one (♂) of the Kwannon-iwa-no-ana specimens was obtained from beneath a large stone lying at the entrance to the southern cave. It is therefore most probable that the beetle is either endogean or upper hypogean at lower elevations. This should be confirmed by future investigations on or in the vicinities of Mt. Takashizu-yama, which lies between Mt. Goyô-zan and the caves at Kutsukaké.

Unfortunately, only one male is included among the five cave specimens known, and its genitalia are somewhat different from those of the type series from Mt. Goyô-zan. The aedeagus is slenderer than in the type series, about one-third as long as the elytra, with more gently curved basal part and larger copulatory piece, the latter of which is about two-fifths as long as the aedeagus and bears a distinct dorsal crest at the proximal part; the dorso-apical teeth-patch is smaller; and in the specimen examined, an additional seta exists on the ventral margin of the left style. These differences could be regarded as being specific or subspecific, if their constancy were confirmed. In external morphology, however, it is perfectly identical with the specimens of the type series, and its locality, the Kwannon-iwa-no-ana Caves, is the farthest from Mt. Goyô-zan. Under this situation, I prefer to consider it to represent an extreme of geographical variation of *T. ohkurai*, and to include all the cave specimens in the same species. The standard ratios of the body parts of the cave specimens are as follows: [Ôiwa-no-iwa-ana specimen] PW/HW 1.40, PW/PL 1.12, PW/PA 1.55, PW/PB 1.47, PB/PA 1.06, EW/PW 1.76, EL/EW 1.54; [Kômori-ana specimens] PW/HW 1.40–1.44, PW/PL 1.18–1.20, PW/PA 1.55–1.61, PW/PB 1.46, PB/PA 1.06–1.11, EW/PW 1.61–1.70, EL/EW 1.52–1.58; [Kwannon-iwa-no-ana specimens] PW/HW 1.43 in ♂, 1.41 in ♀, PW/PL 1.15 in ♂, 1.18 in ♀, PW/PA 1.58 in ♂, 1.61 in ♀, PW/PB 1.43 in ♂, 1.44 in ♀, PB/PA 1.11 in both ♂ and ♀, EW/PW 1.72 in ♂, 1.63 in ♀, EL/EW 1.54 in ♂, 1.57 in ♀.

It is of particular interest from the zoogeographical viewpoint that *T. ohkurai*, a member of the *meridianus* lineage, is isolated at the eastern side of the Kitakami Mountains, or at the other side of the distributional range of the *oreas* lineage. At present, I cannot satisfactorily account for the formation of this discontinuous distribution. As was already pointed out in a previous paper of mine (UÉNO, 1994, p. 31), the members of the *meridianus* lineage are restricted to non-volcanic old mountains, whereas those of the *oreas* lineage usually occur on recent (often Postglacial) volcanoes. This seems to mean that the speciation of the former took place much earlier than that of the latter. However, the Kitakami Mountains, one of the oldest massifs in Japan, are exceptional to this generalization, since they are mostly occupied by the members of the latter lineage including at least two cave species. It is possible to regard *T. ohkurai* as a relict of an old fauna, most of which were already replaced by newcomers, but this is just a possibility and needs further investigations for verification.

This interesting new species is dedicated to the late Mr. Masafumi OHKURA, who unexpectedly passed away on August 21, 1995, at the age of 80, from aftereffect of the terrible shock caused by the Hanshin Earthquake that had destroyed his home on January 17 of the same year. OHKURA was a pioneer amateur carabidologist in Japan, taught me the rudiments of carabid taxonomy when I was a schoolboy, and was a good friend of mine ever since (cf. UÉNO, 1995, p. 1).

要　約

上野俊一：北上山地南東部に隔離されたナガチビゴミムシ属の1新種．—— 北上山地南東部の五葉山とその北西部に位置する3カ所の石灰洞から，有眼のナガチビゴミムシの一種を記載し，オオクラナガチビゴミムシ *Trechiama ohkurai* S. UÉNO と命名した．この種は，奥羽山脈から白神山地にかけての，非火山性地域に広く分布する，マヒルナガチビゴミムシ亜群に属するが，体の後半部がとくに雄で大きいことと，上翅第3条の第2孔点を欠くこととで，ほかの種から容易に区別できる．イワキナガチビゴミムシ亜群の種が広く分布する北上山地の一部に，このような別亜群の種が局在することは，生物地理学的にみてたいへん興味深い．なお，新種名は，昨年の8月に急逝された大倉正文氏に捧げたものである．

References

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