



## A new species of the genus *Ishikawatrechus* (Coleoptera, Trechinae) from Japan

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### Abstract

A new species, *Ishikawatrechus bidilatatus* sp. nov., is described from the northwestern part of the Ishizuchi Range, Shikoku, Japan. The structure of the everted internal sac of the aedeagus in a fully inflated condition is observed and the taxonomic significance is discussed by comparing with a related species, *I. ishiharai* Uéno, 1994.

**Key words:** taxonomy, Trechini, subterranean species, internal sac, observational method, Ishizuchi Range, Shikoku

### Introduction

The genus *Ishikawatrechus* Habu, 1950 (Coleoptera, Carabidae, Trechinae, Trechini) is one of the subterranean trechine beetles, endemic to Shikoku, Japan and comprises 29 species and 1 subspecies (Uéno 2008, Uéno & Naitô 2008). The genus is easily distinguished from other subterranean Japanese trechines by having a sharp hook at the apical end of the ventral groove of the aedeagus (Uéno 1957).

This paper describes the 30th member of the genus, a new species, from the northwestern part of the Ishizuchi Range with a description of the everted internal sac in a fully inflated condition, and outlines an observational method for the trechine internal sac. Additionally, a description of the everted internal sac of the related species, *I. ishiharai* Uéno, 1994 is given for comparison and its taxonomic significance is discussed.

### Material and methods

This study was based on fresh specimens collected by the first author and his colleagues.

All specimens in this study were dug out or attracted by baited traps set on the upper hypogean zone, approximately 30–100 cm below ground. The type series is deposited in the Ehime University Museum, Matsuyama, Japan (EUMJ).

Terms used mainly follows Uéno (1957), but partly follows Liebherr (2011) for the female genital structures.

The abbreviations used in this study are as follows: CP = copulatory piece; EL = elytral length, measured along suture from apical margin of scutellum to apices; EW = maximum width of elytra; GC1 = basal gonocoxite 1; GC2 = apical gonocoxite 2; GP = gonopore; HL = head length from apical margin of clypeus to neck constriction; HW = maximum width of head; M = arithmetic mean; PA = width of pronotal front margin, between tips of front angles; PB = width of pronotal basal margin, between tips of hind angles; PL = pronotal length, measured along median line; PW = maximum width of pronotum; TL = HL+PL+EL.

For observation of the internal sac of the aedeagus, the entire male genital structures were extracted from the abdomen using fine forceps. Thence, they were put in 30% lactic acid solution for about 24 hours. After that, the muscles and visceral tissues were removed. After separating the aedeagus from the other parts, the basal part of the aedeagus was attached to the tip of a hypodermic syringe with a fine needle (TERUMO 29 G×1/2" 0.33×13 mm SS-10M2913A) using jelly instant glue composed of cyanoacrylate. When the adhesive dried, a little petroleum jelly was carefully injected into the internal sac through the aedeagus by the fine needle. After eversion and inflation, the aedeagus with the fine needle was soaked in acetone to dissolve the adhesive, and thence the aedeagus

swollen into an elongated bulb, with spicules on the longitudinal area which is extending from basal half to periphery of gonopore through ventral side; gonopore (GP, Figs 16–17, 19) opening on ventral side. Spicules (Figs 16–19) on basal half usually fine, scaly and weakly sclerotized, but those on the area obliquely and curvedly extending from dorsal left side to dorsum distinctly spinous and well sclerotized; those on apical half rudimentary sclerotized.

Female genitalia (n = 2, Figs 9–10). GC1 near quadrate, with 4 short setae on ventral side of apical margin and 2 short setae on dorsal side of inner margin near apex; GC2 slender, slightly curved outwardly, pointed at apex, well emarginated at middle of outer margin, with 2 ensiform setae on dorsal side near base and 2 nematiform setae on ventral side near apex.

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