



## A new species of *Amystax* Roelofs, 1873 endemic to the mountainous area of the Yakushima World Natural Heritage site, Kyushu, Japan

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### Abstract

*Amystax urara* Kojima and Yôro, **sp. nov.** is described from the mountainous area of the Yakushima World Natural Heritage island, Kyushu, southwestern Japan. Adult weevils were captured on leaves of *Pieris japonica* var. *yakushimensis* and *Buxus microphylla* var. *japonica* (Ericaceae and Buxaceae, respectively). This is the second species of this genus known from the island.

**Key word:** taxonomy, new taxa, Entiminae, Tanymericini, species discovery

### Introduction

Yakushima Island, one of the Ōsumi Islands in Kyushu, southwestern Japan, is rounded in shape with a circumference of 132 km and an area of approximately 504 km<sup>2</sup>. This mountainous island is covered with forest and is the first World Natural Heritage site designated in Japan. Many of the mountains on Yakushima Island have peaks exceeding 1,000 m in elevation, and of these, Mt. Miyanouradake is the highest in Kyushu at 1,936 m. The mountainous nature of Yakushima is the reason why it is referred to as “The Alps of the Ocean”. The unique characteristics of the island’s natural environment, such as the old growth forest and the stratification of vegetation zones, which ranges from subtropical to subarctic, is the reason why Yakushima Island was designated a world heritage site in 1993 (Yakushima Town, 2018).

As little is known about the weevil species diversity at high elevations on the island, the first author conducted field surveys in the mountainous area of Yakushima Island from June to October in 2019. After beating a shrub of *Rhododendron yakushimanum* Nakai (Yakushima-shakunage in Japanese; Ericaceae) at Nageishidaira on the way to Mt. Miyanouradake, the author found a specimen of a peculiar flightless broadnosed weevil species. While the taxonomic placement of the weevil was not immediately apparent, the initial impression of the author was that it may be new to science. As further sampling of the *Rhododendron* shrubs did not yield any more specimens, the author shifted his attention to searching under stones, a habitat frequented by this group of weevils. However, this was also unsuccessful and no additional specimens were obtained. The author then began sampling the lower vegetation composed of species such as *Pieris japonica* var. *yakushimensis* T. Yamaz. (Yakushima-asebi in Japanese; Ericaceae), which was relatively common, and these searches yielded some additional specimens. Closer inspection of the unidentified weevil revealed that it belonged to the tanymericine genus *Amystax* Roelofs, 1873.

In this paper, the authors describe this peculiar new species.

### Material and methods

Standard techniques for the examination of dry, pinned entomological specimens were used. Measurement of the spermathecal length  $\alpha$  follows Nakamura & Morimoto (2015). Type specimens will be preserved in the Laboratory of Entomology, Tokyo University of Agriculture, Atsugi (TUA).

***Amystax urara* Kojima and Yôro, sp. nov.**

http://zoobank.org/urn:lsid:zoobank.org:act:D4A26A9A-BEC8-495C-9CCC-0854A2978384

(Figs. 1–11 & 13–17)

**Description.** Male. Length: 5.8–7.0 mm (including rostrum); width: 2.0–2.4 mm.

Brownish to blackish brown; antennae and legs reddish to brownish black; scaling variable (Figs. 1–4 & 6–8), dense, scales ovate to circular, grayish brown to ash green with metallic shimmer (or luster); pronotum with stripes; elytra with transverse band behind middle between third intervals, sometimes band indefinite; underside with only hair-like scales.

Head 1.4 times as wide as rostrum; rostrum 1.2 times as long as wide, widest and weakly depressed at base, with faint marginal carina at epistome; postmentum with pair of long setae at middle; eyes moderately convex, exterior contour in dorsal aspect angled about 45° at junction to basal side of rostrum. Pronotum 1.3–1.4 times as wide as head, nearly as wide as long, widest slightly before middle, weakly arcuate at sides; disc wrinkled, without granules or median furrow. Scutellum triangular, bare. Elytra 1.6–1.7 times as long as wide, widest at basal fifth, neither costate across basal margin nor sinuate at side margin; intervals flat, with row of subrecumbent decurved scale-like setae, each slightly longer than one scale on dorsum and becoming longer, inclined on declivity; striae weakly punctate, each puncture filled with lanceolate scale.

Terminalia as illustrated (Figs. 13–16); aedeagal body nearly as long as apodeme, with apical part tapered and attenuate apically; flagellum very long, longer than total length of aedeagus.

Female. Length: 5.7–6.5 mm (including rostrum); width: 2.2–2.3 mm.

Differs from the male by the following points: scaling denser, stripes of pronotum and band of elytra often indefinite; and elytra 1.5–1.6 times as long as wide. Spermatheca (Fig. 14) rather large, about 0.5 mm in length  $\alpha$ , ramus and collum not differentiated and very short.

**Type material.** Holotype male, Nageishidaira (1,700 m a.s.l.), Yakushima Is., Kagoshima Pref., 10.VI.–12.VIII.2019, H. Kojima. Paratypes: 6 males and 8 females, same data as the holotype (all TUA).

**Distribution.** Japan (Kyushu: mountainous area on Yakushima Island).

**Etymology.** “Urara” means beautiful things in Japanese, and is also the name of our close associate on Yakushima Island, Mrs. Urara Ogata of the Riverside Café Bar, St. Pote. The brownish gray to ash green lustrous scales of this species make it the brightest species in the genus *Amystax*.

**Biology.** Adults were found on the leaves of *Pieris japonica* var. *yakushimensis* T. Yamaz. and *Buxus microphylla* var. *japonica* (Müll. Arg. ex Miq.) Rehder et E.H. Wilson from June to the middle of August. They were not found in October at the type locality. Adults are common in July and their feeding scars were observed on leaf margins of the aforementioned shrubs (Figs. 9 & 10). The microhabitat of this weevil seems to be restricted to shrubs on nearly flat or gently sloping areas at the type locality; no adults were found on shrubs on slopes.

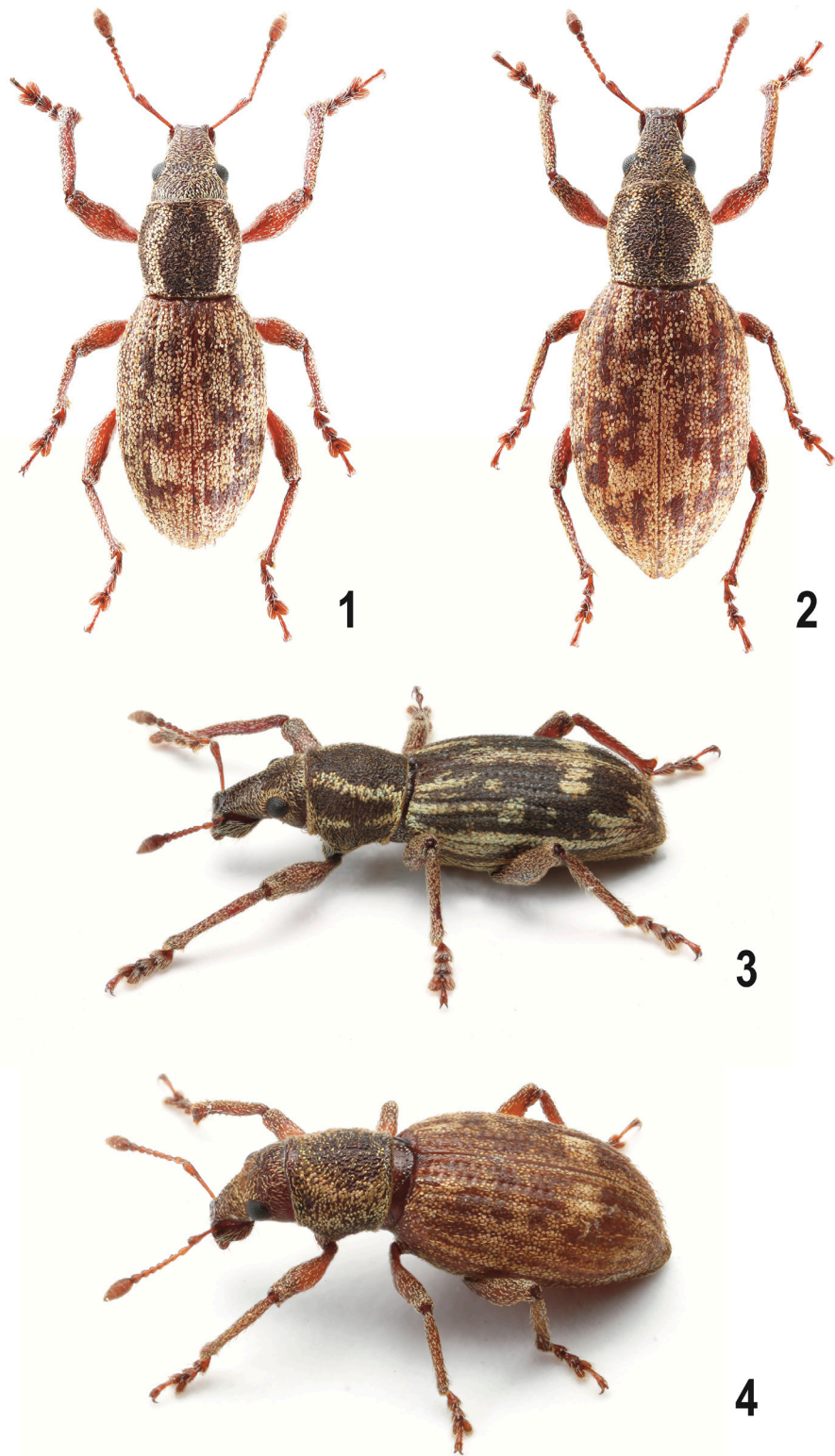
The type locality, Nageishidaira, is a relatively flat, rocky site, ca. 1,700 m a.l.s., with low-growing shrubs such as *R. yakushmanum*, *P. japonica* var. *yakushimensis*, *Buxus microphylla* var. *japonica* (Tsuge in Japanese; Buxaceae), etc. Weevils appeared to associate with, not only *P. j.* var. *yakushimensis*, but also *B. m.* var. *japonica*.

**Remarks.** The new species can easily be separated from other congeners, including the recently described *Amystax yakushmanus* Nakamura and Morimoto, 2015, by the following key.

- 1(2) Scales grayish brown to ash green with metallic shimmer. Rostrum with rather shallow transverse depression at base. Pronotum reticulate and without granules on disc. Elytra neither costate nor depressed along basal margin; striae weakly punctate, each puncture with lanceolate scale (Fig. 11). Underside clothed with only hair-like scales . . . . . *A. urara* **sp. nov.**
- 2(1) Scales grayish, pale ochraceous or brownish, usually without metallic shimmer. Rostrum with more or less distinct transverse depression at base. Pronotum granulate on disc. Elytra costate along basal margin and shallowly depressed along hind margin of costa; striae coarsely punctate, each puncture with broad ovate scale (Fig. 12). Underside densely clothed with ovate scales. . . . . *A. yakushmanus* and other congeners

**Discussion**

The discovery of this new species was unexpected because it is highly conspicuous in terms of coloration as well as body size, sometimes measuring 7.0 mm in length. It is very rare to discover such a relatively large weevil in Japan as a number of Japanese coleopterists have conducted intensive surveys throughout the country, including on Yakushima Island.



**FIGURES 1–4.** Habitus photos of *Amystax urara* **sp. nov.** 1. male (Holotype), 2. female (paratype), 3. male (paratype), 4. female (paratype).





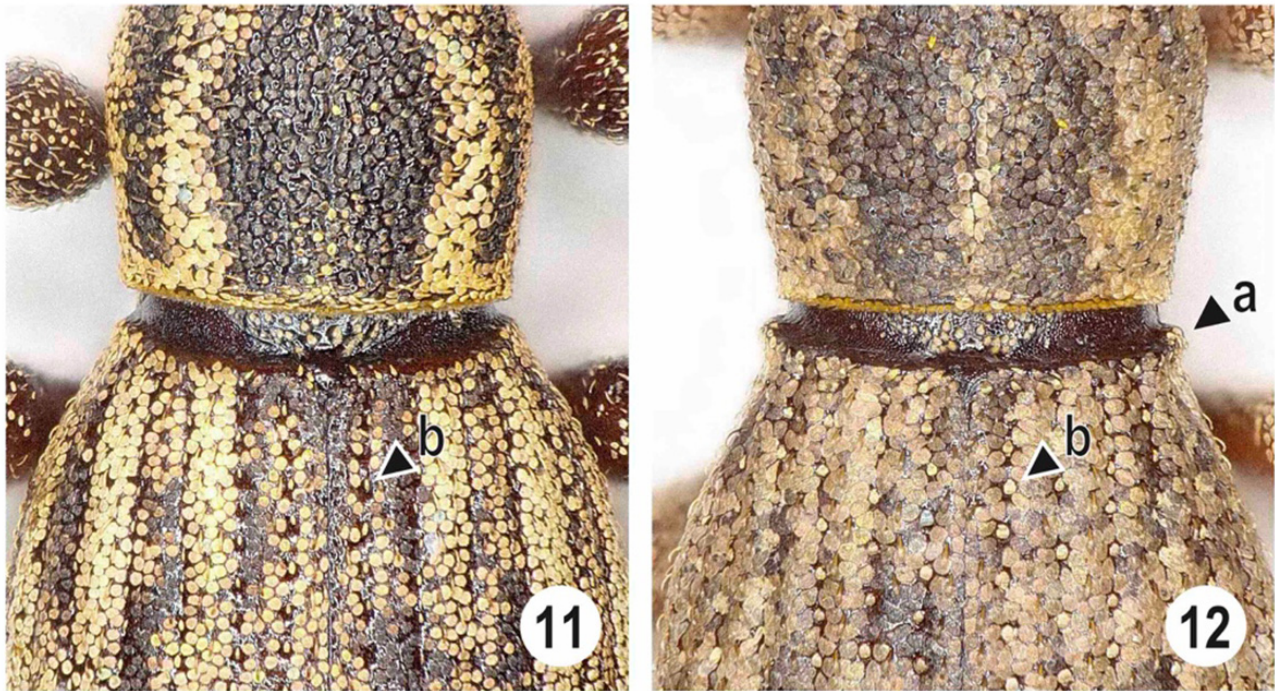
**FIGURES 5–10.** Habitat, habitus and adult host plants of *Amystax urara* sp. nov. 5. Habitat in Nageishidaira (ca. 1,700 m a.s.l.), 6. adult, female, 7. ditto, male, 8. ditto, female, 9. *Pieris*, 10. *Buxus microphylla* var. *japonica*.

The existence of this weevil has likely escaped discovery because the locality in which it is distributed has been designated as a Special National Park Zone, a Special Japanese Natural Treasure, and a World Natural Heritage site. Consequently, field surveys in the area have long been strictly prohibited without permission.

Presently, the distributional range of this weevil is considered to be relatively narrow and restricted to one site at



ca. 1,700 m a.s.l. Further surveys should therefore be undertaken to more accurately clarify the range of this species and to see whether it is indeed restricted to such a narrow area. The congener, *Amystax yakushmanus* occurs up to ca. 1,500 m a.s.l., which is almost contiguous with the range of *A. urara* on the same Mt. Miyanoura route. Thus, these species do not have a sympatric distribution at present. *Amystax urara* inhabits open and exposed areas of lower vegetation at altitudes above the upper limit of montane forest, whereas *A. yakushmanus* prefers shady habitat within the forest or along the forest periphery. The bright scales of *A. urara* may be an adaptation to its exposed habitat as congeneric species inhabit shady areas and have a more obscure coloration. All of the mountain peaks over 1,000 m on Yakushima Is. should be surveyed for species of *Amystax* in the future.



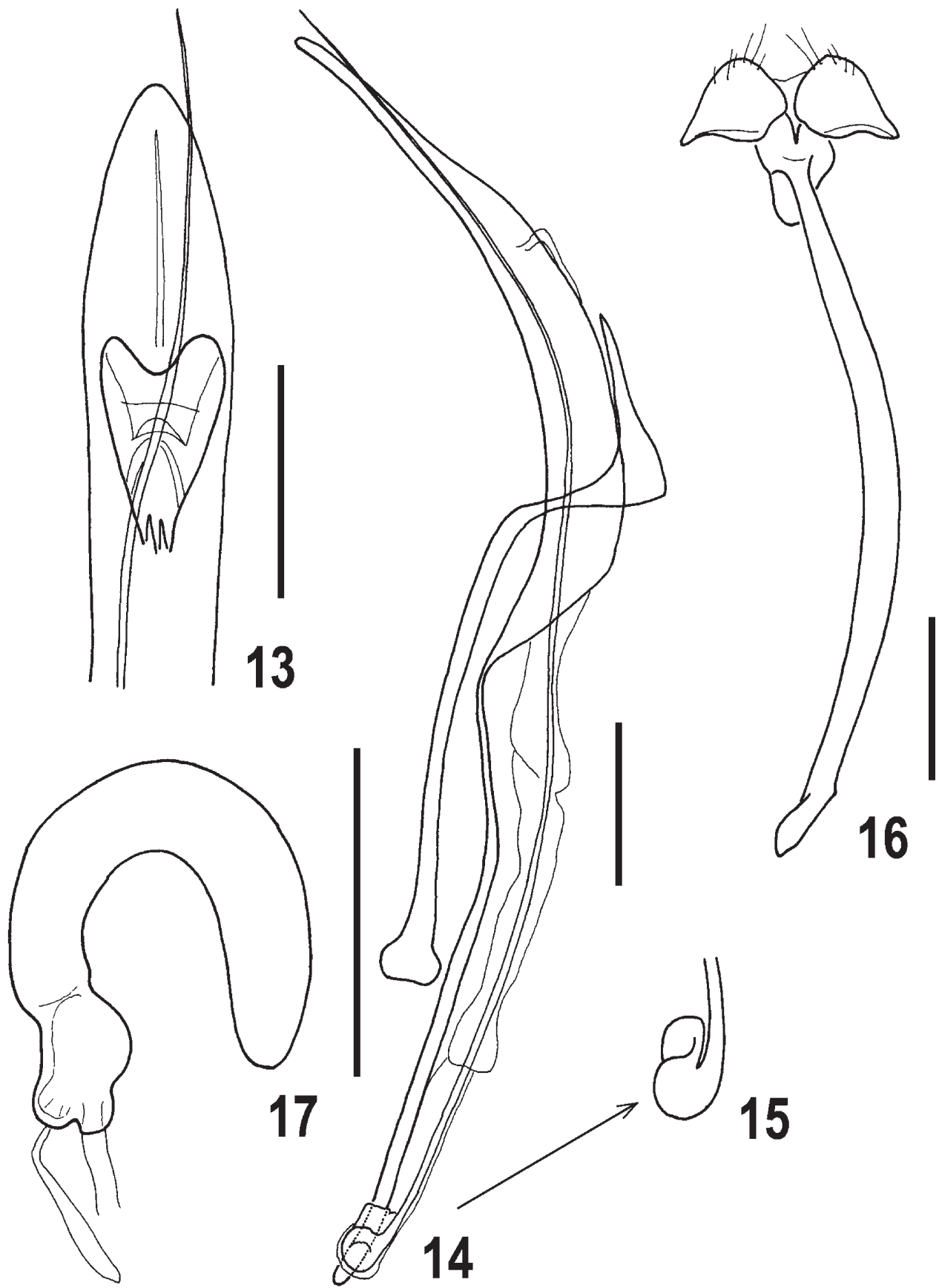
**FIGURES 11–12.** Pronotum and elytral base of *Amystax* spp. 11. *A. urara* sp. nov., 12. *A. yakushmanus* Nakamura et Morimoto (the arrows a and b indicate a costa along basal margin of elytra and a scale of strial puncture, respectively).

## Acknowledgments

This study was supported in part by a grant from JSPS KAKENHI (15K06937 to HK). Field surveys were conducted with the permission of the Ministry of the Environment and the Agency for Cultural Affairs, Government of Japan. The senior author thanks Mmes. Mitsuko Hidaka and Michiko Kisaku of the Japanese Hotel Shisuikan and Mrs. Urara Ogata of the Riverside Cafe Bar St. Pote, Anbô for their kind support during his stay, Messrs Shunsuke Shimamoto, Junsaku Harada and Tomoya Saeki for their help taking photos of specimens, and Dr. Hiraku Yoshitake for his constructive comments on the manuscript.

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**FIGURES 13–17.** Aedeagus and spermatheca of *Amystax urara* **sp. nov.** 13. Aedeagus, dorsal, 14. ditto, lateral with tegmen. 15. terminal part of flagellum, lateral and enlarged, 16. 9th sternite and spiculum gastrale, 17. spermatheca.