

## Occurrence of a Celeuthetine Weevil, *Arrhaphogaster hachijoensis* (Coleoptera, Curculionidae) in the Izu Peninsula, Honshu, Japan

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**Abstract** A celeuthetine weevil, *Arrhaphogaster hachijoensis* MORIMOTO et MIYAKAWA, 1985, which has previously been considered to be endemic to the southern Izu Islands, was recently found in the Izu Peninsula, Honshu, the mainland of Japan, approximately 80 km from the periphery of its previous known range. The biology and distribution of the weevil are discussed.

The genus *Arrhaphogaster* ROELOFS, 1837, which belongs to subtribe Isopterina in the apterous tribe Celeuthetini, comprises two species endemic to Japan (MORIMOTO & KOJIMA, 2001). Although the current distribution of *Arrhaphogaster* weevils is limited to the Pacific-side of the Kantô and Tôkai Districts in central Honshu (i.e., Ibaraki, Tokyo, Chiba, Kanagawa, Shizuoka, Aichi, the Izu Islands) (ICHIGE & OHMOMO, 1996; MORIMOTO & KOJIMA, 2001; IZAWA *et al.*, 2009), several historical records from other areas exist. For example, Hokkaido is the type locality of the type species, *A. pilosa* ROELOFS, 1873, which has also been found in Nagano and Ishikawa of Honshu (MORIMOTO & KOJIMA, 2001). The two species in *Arrhaphogaster* are currently considered to have an allopatric distribution, with *A. pilosa* distributed in the Kantô and Tôkai Districts of Honshu and the northern Izu Islands (Izu-Ôshima and Toshima Islands), and *A. hachijoensis* MORIMOTO et MIYAKAWA, 1985 distributed in the southern Izu Islands (Miyake-jima, Mikura-jima and Hachijô-jima Islands) where it is considered to be endemic (MORIMOTO & KOJIMA, 2001; KOJIMA & ZHANG, 2012).

Recently, however, specimens of *A. hachijoensis* was found on the Izu Peninsula of central Honshu, where *A. pilosa* is also known to occur. Here, we record *A. hachijoensis* for the first time from the Izu Peninsula, Honshu, approximately 80 to 100 km from its previously known range.

A recent survey was conducted with a permission of the village office on Mikura-jima Island. This study was supported by a Grant-in-Aid for Scientific Research from the Japan Society for the Promotion of Science (KAKENHI, No. 24510333). The following abbreviations are used for specimen collectors: HK: Hiroaki KOJIMA, SM: Sumiaki MIYAKAWA, JO: Jun OKUMA, KT: Kentarô TSUJII, YW: Yasuaki WATANABE.

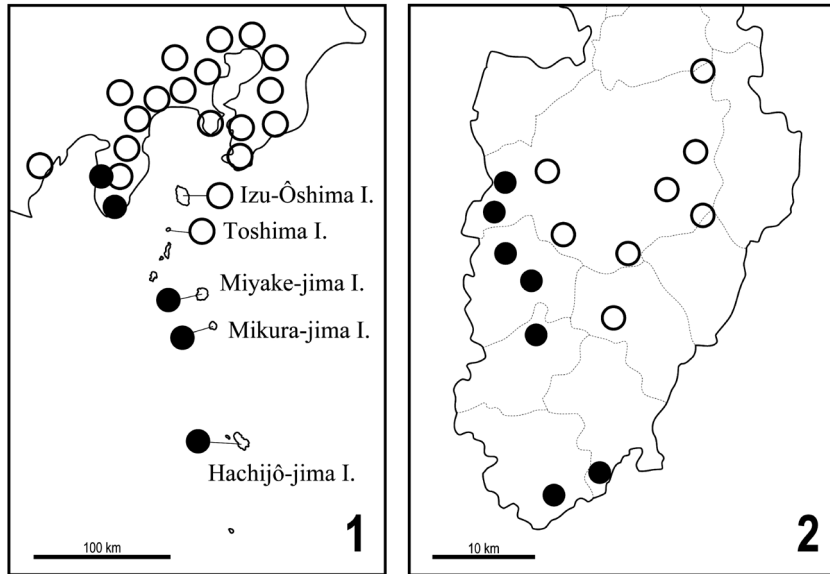
*Arrhaphogaster hachijoensis* MORIMOTO et MIYAKAWA, 1985

(Figs. 1–4)

*Arrhaphogaster* [sic] *hachijoensis* MORIMOTO & MIYAKAWA, 1985: 30.

*Arrhaphogaster hachijoensis*: MORIMOTO & KOJIMA, 2001: 278.

The male aedeagus and the external morphology of female are almost identical to that in *A. pilosa* (MORIMOTO & MIYAKAWA, 1985), but *A. hachijoensis* can be easily distinguished by the following features: elytra rather flat dorsally with distinct lateral edges on 8th intervals behind metacoxae in male (elytra convex dorsally and lacking distinct lateral edge on 8th intervals in male in *A. pilosa*).



Figs. 1–2. Distribution of *Arrhaphogaster* spp. (●: *A. hachijoensis*; ○: *A. pilosa*). — 1, Distribution in Kantô District of Honshu and the Izu Islands; 2, distribution in the Izu Peninsula.

Hind tibiae without spine at distal end in female (hind tibiae with small spine at distal end in female in *A. pilosa*). No overlap in the ranges of the two species.

Specimens from the Izu Peninsula, Honshu differ slightly from specimens from the southern Izu Islands by having almost recumbent dorsal vestiture, whereas those from the islands have subrecumbent dorsal vestiture. However, these differences are not considered to be sufficient to warrant separation at a specific level.

*Specimens examined.* [Honshu: Izu Peninsula (Shizuoka-ken)] 21 males and 12 females, Toi, Izu-shi, 10-V-1980, JO; 4 males and 7 females, 26-V-2012, HK; 5 males and 11 females, 17-VI-2013, HK. 7 males and 5 females, Yagisawa, Izu-shi, 27-V-2012, HK. 2 males and 2 females, Ôgusu, Nishiizu-chô, 11-V-1980, JO. 4 males and 4 females, Ôsouri, Nishiizu-chô, 26-V-2012, HK; 3 males and 4 females, 17-VI-2013, HK. 4 males and 2 females, Kadono, Matsuzaki-chô, 12-V-1980, JO. 4 males and 4 females, Funata, Matsuzaki-chô, 5-VI-2014, HK. 5 males and 2 females, Ôse, Minamiizu-chô, 4-V-2012, HK. 4 males and 2 females, Jyaishi, Minamiizu-chô, 5-VI-2014, HK. 5 males and 6 females, Ichinose, Minamiizu-chô, 5-VI-2014, HK. 10 males and 13 females, Tôji, Shimoda-shi, 29-IV-1987, SM; 14 males and 20 females, 30-IV-1990, HK. [Izu Islands: Hachijô-jima Is.] 1 male, Noboryôdôro, 19-V-2012, HK. 1 female, Kashidate, 16-V-2012, HK. 3 males and 1 female, Bôeidôro, 16-V-2012, HK. 1 male, Mt. Miharayama, 17-V-2012, HK. 1 male, Mihara-rindô, 13-V-2012, KT. 1 male and 1 female, Konsawa-rindô, 13-V-2012, HK; 1 male, 19-V-2012, KT; 1 male and 5 females, 2-VI-2013, HK. 26 males and 23 females, Ôike, Mt. Miharayama, 2 to 3-VI-2013, HK. [Izu Islands: Mikura-jima Is.] 1 male and 1 female, Nangô, 14-V-1967, YW. 1 male and 1 female, Kawada, 13-V-1967, YW; 1 male and 1 female, 18-V-1967, YW. 1 male, near Miyogaiké, 16-V-1967, YW. 1 male, near Akazawa, 20-V-1967, YW. 1 male, Sato, 24-V-1967, YW. 1 male, Mt. Oyama, 24-V-1967, YW. 3 males and 3 females, Obannoo, 22-IV-2014, HK.

*Distribution.* Japan: Izu Islands (Miyake-jima, Mikura-jima and Hachijô-jima Islands) and Honshu (western and southern Izu Peninsula). New to Honshu.



Figs. 3–4. Photographs of *Arrhaphogaster hachijoensis*. — 3, Habitus, copulating; 4, habitat (Tôji, Shimoda-shi).

**Biology.** Adult weevils are polyphagous and found on *Hydrangea* and *Deutzia* spp. of Saxifragaceae, *Eurya japonica* and *Camellia japonica* of Theaceae, *Ficus erecta* of Moraceae and *Castanopsis sieboldii* of Fagaceae, mostly in and around plantation forests of *Cryptomeria japonica* and *Chamaecyparis obtusa* from the end of April to the beginning of July.

### Discussion

In Honshu, *A. hachijoensis* is currently restricted to the lowland areas less than 500 m above sea level in the western and southern parts of the Izu Peninsula. The species is thus not considered to occur sympatrically with *A. pilosa*, which is distributed in mountainous area in the Izu Peninsula, usually more than 500 m above sea level (Figs. 1, 2), though *A. pilosa* occurs from lowland to mountainous areas in other localities. A recent survey also revealed that the adults of both species could be collected from the aforementioned shrubs mostly in and around plantation forests of two coniferous trees (Figs. 3, 4) not only in the Izu Peninsula but also in many other localities such as Chiba, Kanagawa, Shizuoka, Aichi and the Izu Islands. Although these shrubs occur elsewhere, *Arrhaphogaster* weevils were frequently found on these shrubs in the vicinity of plantation forests. Such coniferous trees as *Cryptomeria japonica* and *Chamaecyparis obtusa* are known to have been distributed naturally in the central to southern Izu Peninsula (HAYASHI, 1960), where two *Arrhaphogaster* weevils are occurring. However, since these coniferous trees are not native to the southern Izu Islands inhabited by *A. hachijoensis*, neither are they native to the northern islands inhabited by *A. pilosa*, it is necessary to confirm whether *A. hachijoensis* and *A. pilosa* are indeed native to the southern and northern Izu Islands, respectively. Further studies employing molecular techniques should therefore be undertaken to clarify this question.

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## 要 約

小島弘昭：ハチジョウヒメカタゾウムシ（コウチュウ目ゾウムシ科）の本州（伊豆半島）からの記録。——南伊豆諸島の固有種と考えられていたハチジョウヒメカタゾウムシ *Arrhaphogaster hachijoensis* MORIMOTO et MIYAKAWA, 1985 が本土部（伊豆半島）から見つかった。その結果、伊豆半島には本属の2種が分布することになる。現在のところ、ハチジョウヒメカタゾウムシの伊豆半島における分布は、半島の西側と南側の低地に限られていて、両種が同所的に分布する場所は知られていない。

また、最近の調査で、本属の種はスギやヒノキの植林地とその周辺で見つかることが多く、ハチジョウヒメカタゾウムシも針葉樹植林地とその周辺でのみ、アジサイやウツギなどの灌木から採集されるという状況が明らかとなった。本種が得られる植物は、植林地以外でも見つかるが、そのような場所から本種が採集されることは今回調査した限りではなかった。伊豆諸島には本来スギやヒノキは自生していなかったことなどから、今後、伊豆諸島固有種と考えられていたハチジョウヒメカタゾウムシの南伊豆諸島における分布ならびに北伊豆諸島にも生息するケブカヒメカタゾウムシの分布が自然分布かどうか確認する必要がある。

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