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Discovery of *Eucurtiopsis ohtanii* (Coleoptera, Histeridae) on an Oceanic Island of Japan

Masaaki NISHIKAWA

Kashiwagaya 1112–16, Ebina, 243–0402 Japan

and

Takuya FUKUZAWA

Laboratory of Entomology, Tokyo University of Agriculture,
Funako 1737, Atsugi, 243–0034 Japan

Abstract *Eucurtiopsis ohtanii* (SAWADA) is recorded from Hachijô-jima Is., an oceanic island of Japan. The mode of arrival of this species to the island is discussed on the basis of previously proposed mechanisms for insects' dispersal.

Most members of chlamydopsinine histerid beetles are presumed to be myrmecophilous or termitophilous distributed in South-Central America, the Australian and the Oriental Regions, and Japan, but a large distributional gap has hitherto been known in Continental Asia, with the exception of *Ceratohister pheidoliphilus* REICHENSPERGER described from India. Although collecting efforts by a modern method to clarify the chlamydopsinine fauna recently started (CATERINO, 2000–2006; TISHECHKIN & CATERINO, 2007), it is rarely known on the species distribution like an inter-island distribution or a continental distribution with insular population. *Eucurtiopsis ohtanii* (SAWADA) is the only known representative of the former pattern distributed in both Honshu and Kyushu of the Japanese Islands. Unexpectedly, this species was discovered on Hachijô-jima Island of the Southern Izu Islands which is ca. 180 km distant from the southern tip of the Izu Peninsula, the nearest mainland of Japan (Fig. 1). Collecting data are as follows: 1 ♂, 1 ♀, Sueyoshi [ca. 33°05′N 139°50′E], Hachijô-jima Island, Tokyo, Japan, 25–VIII–2007, S. FUJINUMA leg. (a flight intercept trap set along the periphery of a forest).

This is the first record of this species not only on Hachijô-jima Is. but also on the oceanic island of Japan. The Izu Islands including Hachijô-jima Is. consist of ca. 100 volcanic islands and reefs probably existing almost at the present position from the Pleistocene onwards (TAKAHASHI, 1995). *Eucurtiopsis ohtanii* is a myrmecophile undoubtedly associated with a symbiotic host ant, *Pheidole fervida* Fr. SMITH (NISHIKAWA

& MARUYAMA, 1993, as a host of *Eucurtiopsis* sp.; NISHIKAWA, 1995). In summarizing from the known records, it has been caught from ant' nest and its surroundings from April to May and September to October (NISHIKAWA & MARUYAMA, 1993; SAWADA, 1994; ÔHARA, 1994; MIYATANI, 1996; SHIMANO, 1996, 1998; INAHATA, 2004), and at the flight by a flight intercept trap from May to June (INAHATA, 2004; SUZUKI, 2004; NOMURA *et al.*, 2006; YAMAMOTO, 2008), but ecological informations about the beetle are still fragmentary. Anyway, there is no positive evidence suggesting this species' migration to a remote island like Hachijô-jima only by flight. However, it is naturally recognized that *E. ohtanii* has migrated to this island from somewhere in the past, and has colonized in the nest of the ant migrating to the island like Hachijô-jima Is. In general, four mechanisms have been recognized for insects' dispersal onto an oceanic island (ZIMMERMAN, 1948) : (a) marine drift (=raft), (b) wind (=through the air, flying actively or passively), (c) aid from other organisms, and (d) transported intentionally or accidentally by human beings. Because the third mode may be excluded in the case of this species, its migration must have been realized by one of the remaining three. A rafting-like transportation by an ocean current and an aerial migration by flight have already been proposed for the formation of the xylophagous beetle fauna of the Izu Islands (KONISHI, 1950; UMEYA, 1961; IGUCHI, 1985). The rafting has little possibility in this species. Though there is a suitable ocean current as the Kuroshio, we consider that it is more difficult for the species than for xylophagous beetles, because the main habitat of its symbiotic host ant is rotten wood. Flight seems to be promising rather than

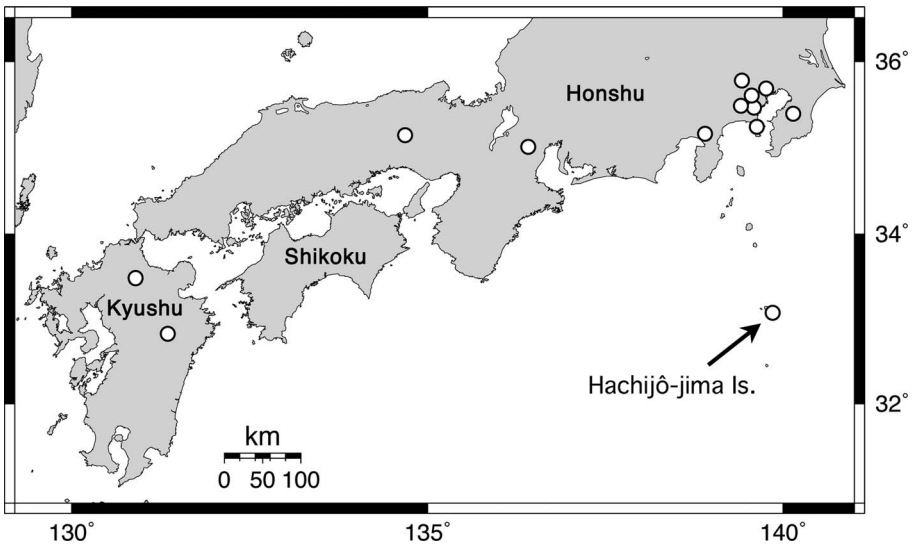

Fig. 1. Distribution of *Eucurtiopsis ohtanii* (SAWADA). Based on all published data in NISHIKAWA and MARUYAMA (1993), SAWADA (1994), ÔHARA (1994, 1999), NISHIKAWA (1995), MIYATANI (1996), SHIMANO (1996, 1998), INAHATA (2004), SUZUKI (2004), NOMURA *et al.* (2006), and YAMAMOTO (2008).

the preceding one. But a long-distance flight is difficult unless it is performed under an effective wind, because the species is regarded as having a low ability for flight. The human beings cannot be ignored especially in this island: *Protaetia pryeri pryeri* (JANSON) (Scarabaeidae) and *Opisthoplatia orientalis* (BURMEISTER) (Blattaria) are already recognized as immigrants transported from the subtropical area of Japan together with garden plants for sale. Thus, this case is really possible to migrate the species.

IGUCHI (1985) concluded that cerambycid beetle species belonging to the Honshu element on each island fauna of the Izu Islands reached from island to island by aerial migration, because the numbers of the species decreases with increasing distance from mainland Honshu. We basically accept his hypothesis. However, it is possible to expand its scope on the basis of the mechanism of the long-distance migration already clarified in plant hoppers (KISHIMOTO, 1975; NODA & KIRITANI, 1990; KIRITANI, 2002). Applying this to the case of microscopical beetles, *E. ohtanii* might be possible to migrate not only from island to island, but also directly from the Japanese mainlands other than Honshu when the necessary conditions given as the ascending air current to the boundary layer in a departure place, the existence of the low-level jet and the descending air current from the layer to an island are satisfied by the northward movement of the Baiu front. Unfortunately, it is not possible to find eventually a certain conclusion from the discussion, but we should pay more attention to the long-distance aerial migration of microscopical beetles that is possible under such seasonal condition of the weather of Japan.

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要　　約

西川正明・福沢卓也：日本の海洋島からのアリノスコブエンマムシの発見．—— これまで，日本の本州と九州からのみ記録されていたアリノスコブエンマムシ *Eucurtiopsis ohtanii* (SAWADA) が，海洋島である八丈島から発見されたので記録した．同時に，本種の八丈島への到達手段について，他の昆虫で推測されている渡海法を突き合わせつつ論じた．

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