

# First Record of *Mimobdella japonica* (Hirudinida: Arhynchobdellida: Salifidae) from Okinawajima Island, Ryukyu Islands, Japan, with a Description of the Specimens from the Ryukyu Islands

Takafumi Nakano

Department of Zoology, Graduate School of Science, Kyoto University, Kyoto 606-8502, Japan  
E-mail: nakano@zoo.zool.kyoto-u.ac.jp

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Two specimens of the large, predaceous salifid leech *Mimobdella japonica* Blanchard, 1897 were collected from Okinawajima island, Ryukyu Islands, Japan, representing the first record of this species from Okinawajima. A description is provided of the external and internal morphology of these specimens and two additional specimens of *M. japonica* from Amami-oshima island, also in the Ryukyu Islands. COI sequences showed no difference between the two specimens of *M. japonica* from Okinawajima and the two specimens from Amami-oshima (K2P distance=0%). This suggests that *M. japonica* is an introduced species in one or both of these islands.

**Key Words:** Hirudinida, Salifidae, *Mimobdella japonica*, first record, Okinawajima, Amami-oshima, Ryukyu islands, COI.

## Introduction

*Mimobdella* Blanchard, 1897 is a genus of large, predaceous leeches. The taxonomic position of *Mimobdella* has been ambiguous. In the original description, Blanchard (1897) placed this genus in the family Erpobdellidae (cited by him as Herpobdellidae, which is now regarded as a junior synonym of Erpobdellidae; Moore 1927a). Soós (1966) also concluded that *Mimobdella* belongs among the erpobdellids. However, Sawyer (1986) placed this genus in the Gastrostomobdellidae (cited as the subfamily Gastrostomobdellinae in his work) in the suborder Hirudiniformes along with two other genera of terrestrial macrophagous leeches, *Gastrostomobdella* Moore, 1929 and *Orobdella* Oka, 1895. Recently, Nakano (2011) re-examined the holotype of *Mimobdella japonica* Blanchard, 1897, the type species of *Mimobdella*, and showed that this species possesses diagnostic characters of the Salifidae (e.g., pharyngeal stylets). Accordingly he re-assigned *Mimobdella* to the family Salifidae in the suborder Erpobdelliformes (Nakano 2011; Nakano *et al.* 2012).

Two species were initially included in *Mimobdella*, *M. japonica* from Japan and *M. buttkoferi* Blanchard, 1897 from Borneo (Blanchard 1897). Blanchard (1897) did not designate a type species for *Mimobdella*, but Soós (1966) designated *M. japonica* as the type and placed two additional species in the genus, *M. africana* Moore, 1939 from Lake Tanganyika and *M. thienemanni* Augener, 1931 from Sumatra. Sawyer (1986) concluded that only three species truly belonged to *Mimobdella*, *M. japonica*, *M. buttkoferi*, and *M. thienemanni*. To determine the correct generic assign-

ment of erpobdelliform species, a description of the internal morphology of each species is crucial. Although Nakano (2011) provided information about the internal anatomy of the type species *M. japonica*, the internal morphology of the remaining species of *Mimobdella* has not been described. Thus, *M. japonica* is the only well-established species in this genus (Nakano 2011).

The holotype of *M. japonica* was collected by Philipp Franz von Siebold and is now deposited in the Naturalis Biodiversity Center in Leiden, The Netherlands (Blanchard 1897; Nakano 2011). The locality of collection of this specimen is described as “Japan” on its label (Nakano 2011). After its original description, *M. japonica* has been reported from various places in Japan and China (Oka 1910a, b, 1917, 1923; Yang 1996), but my examination of the holotype (Nakano 2011) led me to conclude that those records were based on misidentified specimens. Thus, the precise distribution of *M. japonica* is not well known. Two studies (Nakano 2011; Nakano *et al.* 2012) reporting *Mimobdella japonica* on the island of Amami-oshima in the Ryukyu Islands of southwest Japan provide the only confirmed locality for this species. Recently, newly collected specimens have come to hand of large salifid leeches from Okinawajima, farther south in the Ryukyu Islands. These specimens agree with those from Amami-oshima and are thus identified as *M. japonica*. As was noted above, information about the internal anatomy of *Mimobdella* species is severely limited. Based on an external and internal morphological examination of specimens from the Ryukyu Islands, an amended description of *M. japonica* is presented here. In addition, the significance of the invariant COI sequences obtained from