

Redescription of *Orobdella octonaria* (Hirudinida: Arhynchobdellida: Orobdellidae) with Designation of a Lectotype

Takafumi Nakano

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

(Received 1 November 2011; Accepted 9 April 2012)

An octannulate *Orobdella* leech, *Orobdella octonaria* Oka, 1895, is redescribed on the basis of one syntype collected from Hakone, Kanagawa Prefecture, Japan, and two newly obtained specimens, also from Hakone. It is distinguished from the other known species of *Orobdella* by its octannulate mid-body somites. No holotype of this species was originally designated. The present syntype from Hakone is designated as the lectotype of *O. octonaria* for the purpose of clarifying its taxonomic status and type locality.

Key Words: Hirudinida, Orobdellidae, *Orobdella octonaria*, redescription, lectotype, Japan.

Introduction

Orobdella Oka, 1895 is an East Asian genus of terrestrial macrophagous leeches (Sawyer 1986). It has generally been classified in the family Gastrostomobdellidae along with *Gastrostomobdella* Moore, 1929, another genus of terrestrial macrophagous leeches reported from Southeast Asia and Hawaii (Richardson 1971; Sawyer 1986; Nakano 2011a). Several different systematic positions have been proposed, however, for either *Orobdella* or this family (Oka 1895; Soós 1966; Richardson 1971; Sawyer 1986), and recent molecular phylogenetic studies have shown that *Orobdella* is rightfully placed within the suborder Erpobdelliformes (Oceguera-Figueroa *et al.* 2011; Nakano *et al.* 2012). Nakano *et al.* (2012) erected the monotypic family Orobdellidae for *Orobdella* on the basis of its morphology and phylogenetic position, and that classification is followed here.

Orobdella includes nine described species (Oka 1895; Richardson 1975b; Nakano 2010, 2011b, c, 2012). Among them, three species, *O. ijimai* Oka, 1895, *O. octonaria* Oka, 1895, and *O. whitmani* Oka, 1895, were established by Oka (1895) with neither sufficient description of their internal organs nor type designations. Recently, Nakano (2010) redescribed *O. whitmani* and designated a lectotype for it, because specimens from the three syntype localities turned out to include two different species. Based on newly collected topotypes, Nakano (2011c) also redescribed *O. ijimai*, a species for which the original type series was missing. Richardson (1971) redescribed *O. octonaria* based on one specimen collected from Nagano Prefecture, Japan, but he examined neither the type series nor specimens collected from its syntype localities. Among Oka's (1895) three species, *O. octonaria* is thus the last species in need of taxonomic revision.

Orobdella octonaria was originally described by Oka (1895) based on three specimens (syntypes) collected from Mt. "Kinkwazan" (sic: "Kinkazan" in the current Japanese orthography), Gifu, Gifu Prefecture, Japan, and the Hakone mountain range, Hakone, Kanagawa Prefecture, Japan. He mentioned that the syntypes were stored at the Museum of the Zoological Institution of the Tokyo Imperial University, which now forms part of the holdings of The University Museum, The University of Tokyo. However, these specimens were not found in the leech collection there in a recent search (Nakano and Itoh 2011). Fortunately, one syntype of *O. octonaria* collected from Hakone was found in the collections of the National Museum of Nature and Science, Tokyo (NSMT), where most of Oka's leech collection is now deposited (Nakano 2010). In addition, specimens were newly obtained from the locality at which this syntype had been collected. For the purpose of clarifying its taxonomic status and type locality, *O. octonaria* is redescribed herein based on all these specimens, with a lectotype designation.

Materials and Methods

Leeches were newly collected from Hakone, Kanagawa Prefecture, Japan (Fig. 1), under rocks along a mountain trail. Altitudes and coordinates for localities were obtained using a Garmin eTrex GPS unit.

Specimens were relaxed by the gradual addition of 95% ethanol to freshwater. Botryoidal tissue was taken from every specimen for future DNA extraction, and the remaining major portions of the bodies were fixed in 10% formalin and preserved in 70% ethanol. Two measurements were taken: body length (BL) from the anterior margin of the oral sucker to the posterior margin of the caudal sucker, and maximum body width (BW). Examination, dissection, and