

A New Species of *Orobdella* (Hirudinida: Arhynchobdellida: Gastrostomobdellidae) from Tsushima Island, Japan

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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A quadrannulate species of the genus *Orobdella* Oka, 1895 from Tsushima Island, Japan, *Orobdella tsushimensis* sp. nov., is described. It differs from other quadrannulate species of *Orobdella* in possessing the following combination of characters: color yellowish, III and IV uniannulate, male gonopore at XI b6, gastropore in XIII a1/a2, female gonopore in XIII a1/a2, 1/2+5 between gonopores, XXVI triannulate, gastroporal duct small and bottle-shaped, epididymides in XVI to XIX, and atrial cornua coniform.

Key Words: Hirudinida, Gastrostomobdellidae, *Orobdella*, new species, gastroporous, Tsushima Island, Japan.

Introduction

The terrestrial macrophagous leech genus *Orobdella* Oka, 1895 includes five species (Nakano 2010). This genus has been placed in the family Gastrostomobdellidae along with *Gastrostomobdella* Moore, 1929, based on the presence of a gastropore and gastroporal duct (Richardson 1971, 1975; Nakano 2010). Gastrostomobdellid leeches have a euthylaematous pharynx as do leeches of the suborder Hirudini-formes, but the male genital organs are those typical of the suborder Erpobdelliformes (Moore 1929, 1935, 1946; Richardson 1971, 1975; Nakano 2010). Richardson (1971, 1975) did not specify in which suborder the Gastrostomobdellidae should be placed. Sawyer (1986) placed this family in the Hirudini-formes on account of the euthylaematous pharynx, discounting the erpobdelloid male organs. In addition, the ovisacs of *Gastrostomobdella* are elongated and thus also resemble those typical of Erpobdelliformes (Moore 1929, 1935, 1946; Nakano, unpublished data). Gastrostomobdellidae *sensu* Sawyer (1986) includes the genus *Mimobdella* Blanchard, 1897; however, the internal anatomy of the type species of this genus, *Mimobdella japonica* Blanchard, 1897, is still unknown. Both the phylogenetic position of the family Gastrostomobdellidae and its monophyly thus still remain uncertain.

Three patterns of mid-body somite annulation have been known in different species of *Orobdella* (Oka 1895; Soós 1966; Gilyarov *et al.* 1969; Richardson 1971, 1975; Lukin 1976; Sawyer 1986; Nakano 2010): 1) quadrannulate (*O. esulcata* Nakano, 2010, *O. kawakatsuorum* Richardson, 1975, and *O. whitmani* Oka, 1895); 2) sexannulate (*O. ijimai* Oka, 1895); and 3) octannulate (*O. octonaria* Oka, 1895). These species