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

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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 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 Hirudiniformes, 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 Hirudiniformes 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are elongated and thus also resemble those typical of Erpobdelliformes (Moore 1929, 1935, 1946; Nakano, unpublished data).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