

## ミミズの手帳

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### Copulatory behavior of a macrophagous leech *Orobdella octonaria* (Hirudinea: Arhynchobdellida: Orobdellidae)

The copulatory behavior of *Orobdella octonaria* Oka, 1895, a large macrophagous species which belongs to the suborder Erpobdelliformes (Order: Arhynchobdellida) is reported herein. At 08:40 JST on 31 March 2023, we found two individuals of a large predatory leech on submerged gravel in a headwater stream of a tributary of the Nagara river system at an elevation of 180 m (35.57°N, 136.84°E) in Seki City, Gifu Prefecture, Japan (Fig. 1A). The water temperature was 9.3°C. We dug out the leeches and filmed their behavior (Supplementary Movie 1). We released the leeches on the gravel of the stream after photographing and filming them. The individuals were identified as the octannulate *O. octonaria* because the copulatory body part of the individuals had more than 10 annuli as described by Nakano (2017a).

The leeches paired and superposed around the male gonopore and gastropore + female gonopore in the body somites XI–XIII of each other (Fig. 1B). Therefore, their copulatory behavior resembled that of the erpobdelliform *Erpobdella japonica* Pawłowski, 1962, in that they press the male gonopore against the ventral side of the clitellum of the partner (Nagao, 1957). The gastropore is a ventral opening of the *Orobdella* gastroporal duct, which is anterior to the female gonopore and is a spermatophore receptor organ (Nakano, 2017b). Consequently, the individuals we found were probably about to receive a spermatophore when their male gonopore and gastroporal ducts were superposed against each other. The reproductive seasons of several *Orobdella* species were thought to begin before early summer (Nakano, 2021). However, the current finding indicates that *O. octonaria*, one of the largest species within the genus, begins its mating season in the early spring.

*Orobdella* leeches have been considered terrestrial species (Sawyer, 1986). However, on 10 March 2021, a specimen of *O. octonaria* that had been predating a salamander (*Hynobius kimurae* Dunn, 1923) was discovered in the headwater stream of the Nagara river system (Nagano *et al.*, 2021). Given that the leech was discovered in the water, it is possible that *O. octonaria* may inhabit both terrestrial and freshwater environments in early spring.

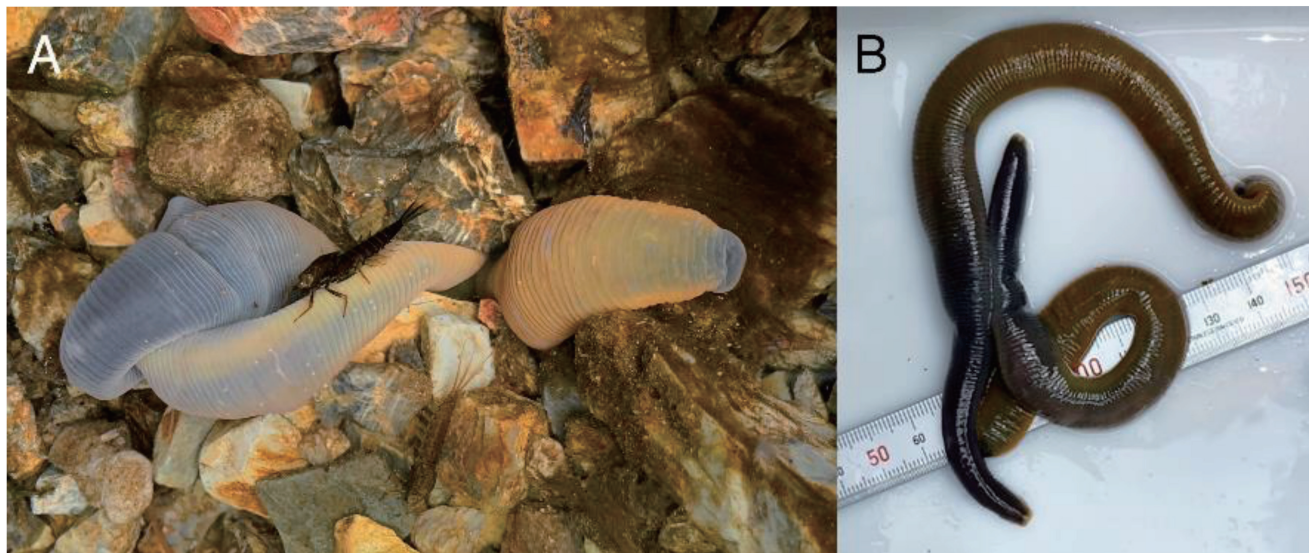
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Supplementary information is available at  
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**Supplementary Movie 1.** Copulation of the macrophagous leech *Orobdella octonaria*



**Fig. 1.** Copulation of *Orobdella octonaria*. A, two individuals in underwater gravel; B, paired individuals superposing around somites XI–XIII.