

Bivaginogyrus obscurus (Monogenea: Dactylogyridae), a Gill Parasite of Two Cyprinids *Pseudorasbora pumila pumila* and *Pseudorasbora parva*, New to Japan

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The dactylogyrid monogenean *Bivaginogyrus obscurus* (Gussev, 1955) is redescribed from the gills of two cyprinids, *Pseudorasbora pumila pumila* Miyadi, 1930 in Nagano Prefecture and *P. parva* (Temminck and Schlegel, 1846) in Ibaraki Prefecture. These are the first records of this parasite in Japan. *Pseudorasbora p. pumila*, which is endemic to central Japan, represents a new host record for *B. obscurus*. This monogenean is the first helminth and the second parasite discovered from wild *P. p. pumila*.

Key Words: *Bivaginogyrus obscurus*, Monogenea, *Pseudorasbora pumila pumila*, *Pseudorasbora parva*, new country record, new host record, Japan.

Introduction

Cyprinids of the gobionine genus *Pseudorasbora* Bleeker, 1860 are natively distributed in Far East Asia, and two species and one unnamed subspecies occur in Japan (Nakamura 1969; Miyadi *et al.* 1976; Hosoya 2013). *Pseudorasbora pumila pumila* Miyadi, 1930 is endemic to central Honshu, Japan, and is on the verge of extinction because of competition and hybridization with introduced fishes and artificial alteration of the habitat (Nakamura 1969; Uchiyama 1989; Konishi *et al.* 2003, 2009; Konishi and Takada 2004, 2013; Konishi 2010). It has been designated as an endangered species by the Ministry of the Environment of Japan (Hosoya 2003). On the other hand, *Pseudorasbora parva* (Temminck and Schlegel, 1846) occurs in Japan, Korea, and China (Hosoya 2013). In Japan, the latter species is popular in recreational fishing and has a wider distribution range than *P. p. pumila* (Nakamura 1969; Anonymous 2010).

The dactylogyrid monogenean *Bivaginogyrus obscurus* (Gussev, 1955) is known to be a gill parasite of *P. parva* in the Eurasian continent (see the synonymy section for literature citations). In this paper we redescribe *B. obscurus* from *P. p. pumila* and *P. parva* as the first records of this parasite in Japan. The former cyprinid represents a new host record for *B. obscurus*.

Materials and Methods

Pseudorasbora pumila pumila was collected in ponds at Utabi (36°35'N, 138°06'E; 10 specimens) and Yamabuse (36°36'N, 138°05'E; one specimen), Shinonoi, Nagano Pre-

fecture, central Honshu, Japan, on 23 July and 30 October 2013, respectively. *Pseudorasbora parva* was collected in Lake Kasumigaura (36°04'05"N, 140°15'23"E) at Okijukumachi, Tsuchiura, Ibaraki Prefecture, central Honshu, Japan (eight and two specimens on 13 and 16 June 2014, respectively). At all sites, trap nets were used for fishing. Fish were brought on ice or alive to the laboratory, where they were measured for standard length (SL) in millimeters and examined for helminth parasites under a dissecting microscope. Monogeneans were picked up from the gills using small needles and flattened between a slide and a coverslip. Some of them were fixed in ammonium picrate glycerin (Lim 1991), while others were fixed in 70% ethanol and stained in Heidenhain's iron hematoxylin. All specimens were dehydrated through a graded ethanol series, cleared in xylene,

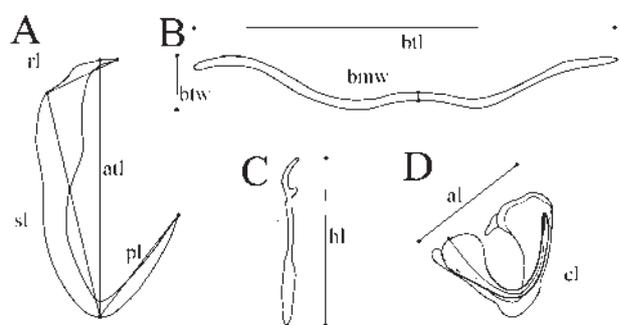


Fig. 1. Measurement axes of hard parts of *Bivaginogyrus obscurus* (Gussev, 1955). A, anchor; B, bar; C, hook; D, copulatory organ. Abbreviations: al, accessory piece length; atl, anchor total length; bmw, bar median width; btl, bar total length; btw, bar total width; cl, copulatory organ length; hl, hook length; pl, point length; rl, root length; sl, shaft length.