

The parasitic copepod *Lernaea cyprinacea* from freshwater fishes, including alien species (*Gambusia affinis* and *Rhodeus ocellatus ocellatus*), in central Japan

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Abstract Specimens of *Lernaea cyprinacea* Linnaeus, 1758 were collected from four species of
fish: bitterling *Rhodeus ocellatus ocellatus*, stone moroko *Pseudorasbora parva*, and crucian carp *Carassius* sp.) in ponds and rivers of Aichi Prefecture,
central Japan. The collections of the copepod from *Gambusia affinis* and *R. o. ocellatus*.

Key words *Lernaea cyprinacea*, *Rhodeus ocellatus ocellatus*

INTRODUCTION

In Japan, *Lernaea cyprinacea*

(newts and frog tadpoles) (Nagasawa *et al*
populations, various investigations of the species have been conducted, and our knowledge of its geographical distribution and hosts in Japan has been increasing (e.g., Uyeno *et al.*, 2011; Nagasawa, 2013; Nagasawa and Nitta, 2014; Nagasawa and Sato, 2014). Recently, we collected specimens of *L. cyprinacea* from freshwater fishes, including two species of alien fishes, the mosquitofish *Gambusia affinis* (Baird and Girard, 1853) (Cyprinodontiformes: Poeciliidae) and the rosy bitterling *Rhodeus ocellatus ocellatus* (Kner, 1866) (Cypriniformes: Cyprinidae), in Aichi Prefecture, central Japan. While many spe-

their parasite fauna is poorly known. The present collections of *L. cyprinacea*
each from *Gambusia affinis* and *R. o. ocellatus ocellatus* in Japan.

MATERIALS AND METHODS

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*et al.**G. affinis**Pseudorasbora parva*carp *Carassius**R. o. ocellatus***RESULTS**

Adult females of *L. cyprinacea* were found infecting two specimens of *G. affinis* (23.2 mm SL, Ama Pond, August 18, 2013; 19.5 mm SL, Chayagasaka Pond, October 14, 2013); one specimen of *R. o. ocellatus* (15.1 mm SL, Yahagi River, August 18, 2011); one specimen of *P. parva* (57.0 mm SL, Toda River, June 1, 2013); and five specimens of *Carassius* sp. (36.0 mm SL, Ueda River, November 13, 2011; 61.0 mm SL, Toda River, May 18, 2012; 25.5, 19.0, and 20.5 mm SL, Kamisawa Pond, June 3, 2012). The copepods inserted their anterior part of the body into the musculature of the host (Fig. 1D).

Carassius sp.

from the Toda River which was infected by four copepods. Attachment sites were the skin near the base

G. affinis *R. o. ocellatus*
P. parva

Carassius sp. (Fig. 1D). The copepods were

4.2-

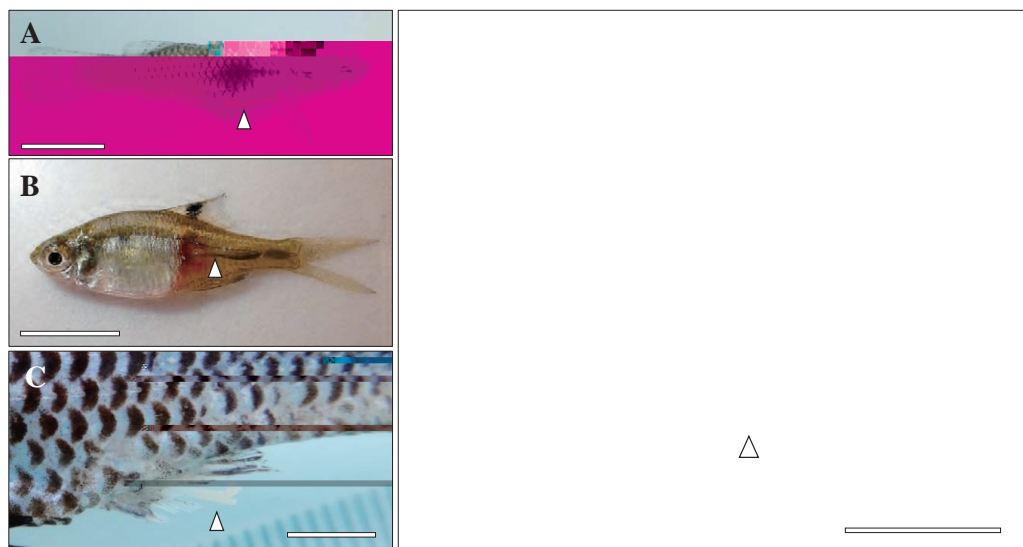


Fig. 1. Adult females of *Lernaean cyprinacea* (arrowheads) infecting *Gambusia affinis* (A), *Rhodes ocellatus ocellatus* (B), *Pseudorasbora parva* (C), and *Carassius* sp. (D) in Aichi Prefecture, central Japan. Scale bars: 5 mm in A, B, C; 2 mm in D.

DISCUSSION

Lernaea cyprinacea from *R. o. ocellatus* Sand *R. o. ocellatus* *i* *a*
et al., 2007). *b s* *fi* Sand *R. o. ocellatus* *i* *a*
us are not native to Japan: both species were introduced into Japan from Taiwan and China in 1916 and 1942, respectively (Sawara, 2002; Kano, 2002). Very little information is available about the parasite *Salsugius seculus* (Mizelle and Arcadi, 1945) (Monogenea: Ancyrocephalidae), *Genarchopsis goppo* Ozaki, 1925 (Trematoda: Derogenidae), and *Neoergasilus japonicus* (Harada, 1930) (Copepoda: Ergasilidae), are known to infect *fi* *Si* Japan (Shimazu *et al.*, 2011; Nagasawa and Uyeno, 2012; Nitta and Nagasawa, 2014). Also, only one species of parasite, *Acanthosentis (Acanthosentis) alternatospinus* Amin, 2005 (Acanthocephala: Quadrigyridae), has been reported from *R. o. ocellatus* in Japan (Amin, 2005). We need more work on the parasite fauna of *fi* *S*and *R. o. ocellatus* in Japan. *a*.

Our sampling was conducted in Aichi Prefecture, where there are several records of *L. cyprinacea* (Leigh-Sharpe, 1925; Matsui and Kumada, 1928; Kasahara, 1962). Leigh-Sharpe (1925) originally described *Lernaea (Lernaeocera) elegans* from the buccal cavity of the Japanese eel *Anguilla japonica* Temminck and Schlegel.

Prefecture. Subsequently, this species of copepod was synonymized with *L. cyprinacea* by Harding *et al.*, 2007).

However, based on the experiments made in Russia (see Kabata, 1979: 142-155), there is a suggestion that *L. elegans* is a valid species. Therefore, the present specimens of *L. cyprinacea* collected near the type locality of *L. elegans* are important and will be used to clarify validity of the latter species.

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愛知県産淡水魚に寄生していたイカリムシ

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プラザ・ヴェルデ B101

要旨 愛知県名古屋市と西尾市にある池沼と河川で採集した淡水魚を調べたところ, カイアシ類の1種, イカリムシ *Lernaea cyprinacea* Linnaeus, 1758の寄生を認めた。寄生を受けていたのはカダヤシ *Gambusia affinis*, タイリクバラタナゴ *Rhodeus ocellatus ocellatus*, モツゴ *Pseudorasbora parva* およびフナ属の1種 *Carassius* sp. である。わが国で, 国外外来魚のカダヤシとタイリクバラタナゴにイカリムシの寄生を認めたのは本論文が最初である。

キーワード: イカリムシ, カイアシ類, カダヤシ, 魚類寄生虫, タイリクバラタナゴ