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Argulus coregoni (Branchiura: Argulidae) parasitic on ayu, *Plecoglossus altivelis altivelis* (Plecoglossidae), in central Honshu, Japan

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Abstract: *Argulus coregoni* Thorell, 1864 was collected from the body surface of ayu, *Plecoglossus altivelis altivelis* (Temminck & Schlegel, 1846), from six rivers in Gifu, Achi, Mie, and Shiga prefectures, central Honshu, Japan. The collection of *A. coregoni* from Mie Prefecture represents its new prefectural record. Salmonids have been regarded as the major hosts of *A. coregoni* in Japanese rivers, but the present collections suggest that ayu is also important as a riverine host of the parasite.

Key words: *Argulus coregoni*, Branchiura, fish parasite, ayu, *Plecoglossus altivelis altivelis*, new prefectural record, riverine host

Our knowledge of the hosts and geographical distribution of *Argulus coregoni* Thorell, 1864, a skin parasite of freshwater fishes, has been increasing in Japan. One of the known Japanese hosts of *A. coregoni* is ayu, *Plecoglossus altivelis altivelis* (Temminck & Schlegel, 1846), which is a commercially important fish caught in inland waters. Although ayu is widely distributed in Japan ranging from southern Kyushu to southern Hokkaido, only limited information is available on *A. coregoni* from riverine ayu (Yamaguti, 1937, as *A. plecoglossi*; Nagasawa & Ikeda, 2011; Nagasawa *et al*., 2015). Recently, we collected *A. coregoni* from ayu in six rivers, central Honshu, Japan. Based on these collections, we discuss herein the status of ayu as a riverine host of *A. coregoni*.

In total, 22 specimens of *A. coregoni* were collected from the body surface of ayu in the following rivers: the Nagara River at Soda (35°33′26"N, 136°54′43"E), Mino, and Tokunaga (35°48′31"N, 136°53′56"E), Gujô, on 2 September 2012 and 29 June 2013 (n=3 and 1), respectively, the Maze River at Maze-Nakagiri (35°53′33"N, 137°09′35"E), Gero, on 5 July 2014 (n=1), the Shira River at Kando (35°38′27"N, 137°19′24"E), Higashi-Shirakawa, on 12 July 2014 (n=1), all in Gifu Prefecture; the Toyo River at Tôjô (34°52′10"N, 137°27′21"E), Toyokawa, and Tamine-Nagahara (35°03′51"N, 137°32′20"E), Shitara, on 21 August 2011 and 30 June 2013 (n=3 and 2), respectively, in Aichi Prefecture; the Miya River at Takiya (34°19′28"N, 136°14′07"E), Ôdai, on 24 May 2014 (n=9) in Mie Prefecture; and the Ado River at Tokiwagi (35°20′45"N, 136°01′25"E), Takashima, on 15 August 2012 (n=2) in Shiga Prefecture. Immediately after ayu were caught by "tomozuri" angling, they were examined by the naked eye for skin parasites, and individuals of *A. coregoni* found were carefully taken by fingers, fixed and later preserved in 70% ethanol. No data on fish size or prevalence and inten-

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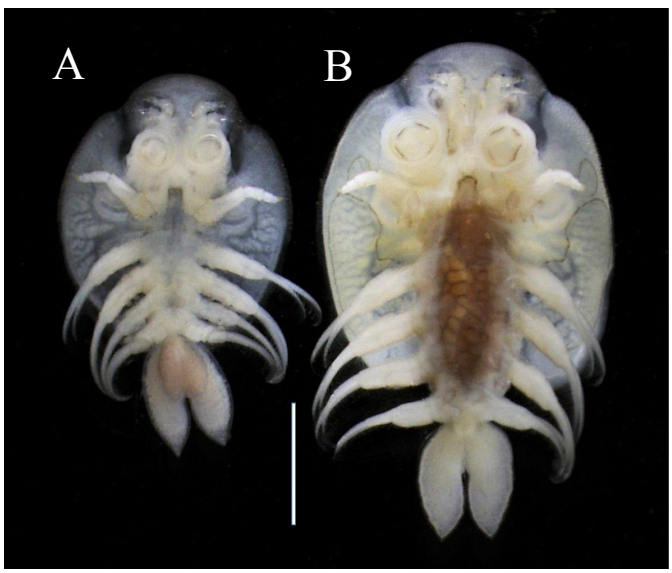

Fig. 1. *Argulus coregoni*, adult male (A, 6.4 mm long, ventral view) and adult female (B, 8.1 mm long, ventral view), NSMT-Cr 25861, from the body surface of *Plecoglossus altivelis altivelis* in the Miya River, Mie Prefecture, central Honshu. Ethanol-preserved specimens. Scale bar: 2 mm.

sity of *A. coregoni* were taken. Voucher specimens of *A. coregoni* have been deposited in the Crustacea (Cr) collection of the National Museum of Nature and Science, Tsukuba, Ibaraki Prefecture (NSMT-Cr 25857, 25858, 25859, 25860, 25861, and 25862 from the Nagara, Maze, Shira, Toyo, Miya, and Ado rivers, respectively).

The specimens of *A. coregoni* (Fig. 1) collected from the Miya River, Mie Prefecture (a new prefectural record) and the other rivers in Gifu, Aichi, and Shiga prefectures are in agreement with the descriptions of the species provided by Tokioka (1936), Yamaguti (1937), and Hoshina (1950). The specimens from the Miya River measured 4.8–6.4 (mean, 5.6) mm long × 3.0–3.8 (3.4) mm wide in males (n=2) and 6.0–8.1 (6.8) mm long × 3.6–5.0 (4.2) mm wide in females (n=7).

In Japan, salmonids are known to harbor *A. coregoni* in rivers (Kato, 1964; Takegami, 1984; Nagasawa & Kawai, 2008, 2015, 2016; Tamura & Maruyama, 2009; Nagasawa, 2009, 2011, 2017; Nagasawa *et al*., 2009, 2017) and have been regarded as the major riverine hosts of the parasite. However, due to the limited information on *A. coregoni* from riverine ayu, the status of this host species has not been discussed to date. In the present study, we collected the individuals of ayu infected by *A. coregoni* in the six rivers, central Honshu, which suggests that ayu also serves as an important riverine host for *A. coregoni*. In this region, salmonids are restricted to the upper reaches of rivers, while ayu usually occurs in the middle- and lower reaches of rivers. Thus, *A. coregoni* may occur widely from the upper to lower reaches of rivers, and we need more study to clarify the longitudinal distribution and host utilization of the species in rivers.

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