

Short Communication

Four new host records for the fish leech *Zeylanicobdella arugamensis* (Hirudinida: Piscicolidae), with an updated host list (1963-2012)

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Abstract. Specimens of *Zeylanicobdella arugamensis* de Silva, 1963 were collected from *Takifugu niphobles* (Tetraodontidae) and *Yongeichthys criniger* (Gobiidae) in the estuary near the mouth of the Okukubi River on Okinawa-jima Island, Okinawa Prefecture, southern Japan. Specimens of *Z. arugamensis* were also collected from *Periophthalmus argentilineatus* (Gobiidae) and *Redigobius bikolanus* (Gobiidae) at the mouth of the Teima River and in the lower reaches of the Kokuba River, respectively, on the same island. All of these collections constitute new host records for *Z. arugamensis*. A list of its known hosts is updated, containing 24 nominal teleost species and one unidentified marine eel in six orders and 17 families.

Key words: *Zeylanicobdella arugamensis*, Piscicolidae, leech, fish parasite, *Takifugu niphobles*, *Yongeichthys criniger*, *Periophthalmus argentilineatus*, *Redigobius bikolanus*, new hosts

The piscicolid leech *Zeylanicobdella arugamensis* de Silva, 1963 is a parasite of brackish-water or coastal marine teleosts in the tropical and subtropical regions of the Indo-West Pacific (Nagasawa & Uyeno, 2009). This species was originally described from Suri Lanka (as Ceylon) (de Silva, 1963) and has since been reported from South Africa, Iran, India, Thailand, Malaysia, Borneo, Singapore, Indonesia, the Philippines, Australia, and Japan (see Nagasawa & Uyeno, 2009 for the literature). This note reports on four new host records for *Z. arugamensis* based on specimens currently sampled in southern Japan. Leech specimens were fixed in an unrelaxed state in 10% formalin or 70% ethanol and later transferred to 5% formalin. The scientific names of fishes follow those recommended by Froese & Pauly (2012).

One and 29 specimens of *Z. arugamensis* were collected from the pectoral fin of one *Takifugu niphobles* (Jordan & Snyder, 1901) (Tetraodontidae) (standard length [SL]: 140 mm) and from the fins and body surface of four *Yongeichthys criniger* (Valenciennes, 1837) (Gobiidae) (SL: 69–83 mm) in the estuary near the mouth of the Okukubi River (26° 27'4"N, 127° 56'41"E) at Kin, Kin Town on Okinawa-jima Island, Okinawa Prefecture, southern Japan, on 29 April 2010 and 13 June 2010, respectively. The number of leeches found on individual *Y. criniger* was 1, 1, 5, and 22. In the last heaviest infestation, most of the leeches were attached to the dorsal fin of the fish (Fig. 1). Moreover, one specimen of *Z. arugamensis* was collected from the caudal fin of one *Periophthalmus argentilineatus* Valenciennes, 1837 (Gobiidae) (SL: 55 mm) at the mouth of the Teima River (26° 33'27"N, 128° 2'34"E) near Mihara, Nago City, on 11 January 2006, and

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Fig. 1. Heavy infestation of *Zeylanicobdella arugamensis* de Silva, 1963, on *Yongeichthys criniger* (Valenciennes, 1837) from the estuary near the mouth of the Okukubi River on Okinawa-jima Island, Japan. Scale in mm.

another specimen of the leech was taken from the ventral fin of one *Redigobius bikolanus* (Herre, 1927) (Gobiidae) (SL: 22 mm) in the brackish-water lower reaches of the Kokuba River (26°11'38"N, 127°41'33"E) at Kakazu, Tomigusuku City on 13 June 2010. These two rivers are also on Okinawa-jima Island. The morphology of the leech specimens collected in this study is identical to that of *Z. arugamensis* reported by Nagasawa & Uyeno (2009) from Okinawa-jima Island. The specimens ($N=29$ from *Y. criniger*) ranged from 4.2–13.5 (mean: 9.5) mm in total length (including the suckers) but consisted mostly of large specimens (usually 9–11 mm) with some small specimens (4 mm). Representative specimens are deposited in the Annelida collection at the National Museum of Nature and Science, Tsukuba (NSMT–An 418 from *Y. criniger*).

Zeylanicobdella arugamensis is not host-specific to fishes, and Nagasawa & Uyeno (2009) compiled a list of its hosts which contains 17 nominal teleost species and one unidentified species in five orders and 15 families. Currently, five papers have reported this leech (Reukert *et al.*, 2009; Kua *et al.*, 2009, 2010; Palm *et al.*, 2011; Hayes *et al.*, 2011), and two of them contained three new host records (*Siganus javus* (Linnaeus, 1766), *Lutjanus johnii* (Bloch, 1792), and *Epinephelus fuscoguttatus* (Forsskål, 1775)) (Reukert *et al.*, 2009; Palm *et al.*, 2011). Moreover, four new host records (*T. niphobles*, *Y. criniger*, *P. argentilineatus*, and *R. bikolanus*) are reported in this paper. Accordingly, as shown in Ta-

ble 1, a total of 24 nominal species and one unidentified species of teleosts in six orders and 17 families are now known as hosts of *Z. arugamensis*.

We thank an anonymous reviewer for comments on the manuscript. Part of this work received financial support from the Ocean Exposition Commemorative Park Management Foundation to K.N.

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Table 1. Hosts of *Zeylanicobdella arugamensis*. This list is compiled based on Nagasawa & Uyeno (2009), Reukert *et al.* (2009), Kua *et al.* (2009, 2010), Palm *et al.* (2011), Hayes *et al.* (2011) and the present study.

Order and family	Scientific name	English name	Locality	Literature
Anguilliformes				
Anguillidae	<i>Anguilla reinhardtii</i>	speckled longfin eel unidentified marine eel	Australia Singapore	* *
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Siluriformes				
Ariidae	<i>Arius maculatus</i>	spotted catfish	Sri Lanka	*
Bagridae	<i>Mystus gulio</i>	long whiskers catfish	Sri Lanka	*
Plotosidae	<i>Plotosus canius</i>	gray eel-catfish	India	*
Syngnathiformes				
Syngnathidae	<i>Hippocampus kuda</i>	spotted seahorse	Singapore	*
Mugiliformes				
Mugilidae	<i>Mugil cephalus</i>	flathead mullet	Indonesia*, Reukert <i>et al.</i> (2009)	
Perciformes				
Lutjanidae	<i>Lutjanus johnii</i>	John's snapper	Indonesia	Reukert <i>et al.</i> (2009)
Cichlidae	<i>Oreochromis mossambicus</i>	Mozambique tilapia	Sri Lanka, Japan	*
Gobiidae	<i>Glossogobius giuris</i>	tank goby	Sri Lanka	*
	<i>Scartelaos tenuis</i>	Indian Ocean slender mudskipper	Iran	*
	<i>Periophthalmus argentilineatus</i>	barred mudskipper	Japan	present study
	<i>Periophthalmus waltoni</i>	Walton's mudskipper	Iran	*
	<i>Redigobius bikolanus</i>	speckled goby	Japan	present study
	<i>Yongeichthys criniger</i>	—**	Japan	present study
Drepaneidae	<i>Drepane punctata</i>	spotted sicklefish	Sri Lanka	*
Clinidae	<i>Clinus cottoides</i>	bluntnose klipfish	South Africa	*, Hayes <i>et al.</i> (2011)
Bleenniidae	<i>Parablennius cornutus</i>	—	South Africa	*
Scotophagidae	<i>Scatophagus argus</i>	spotted scat	Indonesia	*, Reukert <i>et al.</i> (2009)
	<i>Siganus javus</i>	streaked spinefoot	Indonesia	Reukert <i>et al.</i> (2009)
Sillagimidae	<i>Sillago soringa</i>	soringa sillago	Thailand	*
Serranidae	<i>Epinephelus coioides</i>	orange-spotted grouper	Philippines, Indonesia	*
	<i>Epinephelus fuscoguttatus</i>	brown-marbled grouper	Indonesia	Palm <i>et al.</i> (2011)
Latidae	<i>Lates calcarifer</i>	barramundi	Malaysia	*, Kua <i>et al.</i> (2009, 2010)
Tetraodontiformes				
Tetraodontidae	<i>Takifugu niphobles</i>	—	Japan	present study
Unknown host			Borneo	*

*: See Nagasawa & Uyeno (2009) for the literature.

**: No English name is available in Froese & Pauly (2012).

- carifer*) under laboratory conditions. *Aquaculture*, **302**: 153–157.
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- (Received June 26, 2012; Accepted August 3, 2012)