

An Alien Monogenean, *Ligictaluridus pricei* (Platyhelminthes: Ancyrocephalidae), Parasitic on the Channel Catfish *Ictalurus punctatus* (Actinopterygii: Siluriformes: Ictaluridae) in Japan

Masato Nitta^{1,2} and Kazuya Nagasawa¹

¹ Graduate School of Biosphere Science, Hiroshima University,
1-4-4 Kagamiyama, Higashi-Hiroshima, Hiroshima 739-8528, Japan
E-mail: licht.bsn.mono@gmail.com (MN)
² Corresponding author

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The alien monogenean *Ligictaluridus pricei* (Mueller, 1936), parasitic on the gills of the channel catfish *Ictalurus punctatus* (Rafinesque, 1818), is described from Lake Kasumigaura, Ibaraki Prefecture, central Honshū, Japan, as a new country record. This monogenean is native to North America and is known as an introduced parasite in Eurasia. As it is not strictly host-specific to ictalurids, native freshwater fishes in Japan have a risk of infection by this monogenean species.

Key Words: *Ligictaluridus pricei*, Monogenea, *Ictalurus punctatus*, alien species, new country record, Japan.

Introduction

Since 1971, the channel catfish *Ictalurus punctatus* (Rafinesque, 1818) (Siluriformes: Ictaluridae) has been transplanted to Japan from the U.S.A. multiple times for aquaculture (Maruyama *et al.* 1987). In 1982, channel cat fish escaped from typhoon-damaged culture cages set in the Edo River of the Tone River system, central Honshū, and have since become established in this river system and its connecting lake, Lake Kasumigaura (Ashihara 1984; Hirata and Nagano 2000; Hanzawa 2004). Recently, the channel cat fish population has increased dramatically in this lake (Hanzawa 2004; Matsuzaki *et al.* 2011; Arayama and Iwasaki 2012). This species also has been introduced from North America to many other countries and regions of Europe and Asia for aquaculture and recreational fishing (Welcomme 1981, 1988). This paper reports on the ancyrocephalid monogenean *Ligictaluridus pricei* (Mueller, 1936) from the gills of *I. punctatus* in Lake Kasumigaura, Japan, as a new country record.

Materials and Methods

One channel catfish (standard length: 358 mm) was collected by angling in Lake Kasumigaura (36°04'05"N, 140°15'23"E) at Okijuku, Tsuchiura city, Ibaraki Prefecture, Japan, on 13 June 2014. The fish was killed by icing in the field and examined for parasites under a dissecting microscope. Monogeneans were picked up from the gills using small needles and flattened on glass slides under cover slips, whereupon some were fixed between the slide and cover glass in ammonium picrate glycerin (Lim 1991), while others were fixed in 70% ethanol. The latter specimens were

stained in Heidenhain's iron hematoxylin, and both sets of specimens were dehydrated through a graded ethanol series, cleared in xylene, and mounted permanently in Canada balsam. Drawings were made with the aid of a drawing tube fitted on an Olympus BX51 light microscope. The basic method of measuring sclerotized structures (Fig. 1) and the morphological terminology employed herein follow Klassen and Beverley-Burton (1985a, b) and Beverley-Burton (1984), respectively. All measurements were obtained from images taken by an Olympus DP20 digital camera using ImageJ software (version 1.48i). Measurements, in micrometers, are expressed as the mean \pm standard deviation followed in parentheses by the range and the number (n) of specimens examined. The numbering of marginal hook pairs follows Llewellyn (1963). Fish identification was based on Hosoya (2013), and the scientific and common names of fishes used in this paper follow Froese and Pauly (2014). Specimens are deposited in the Platyhelminthes collection of the National Museum of Nature and Science, Tsukuba city, Ibaraki Prefecture, Japan (NSMT-Pl).

Ligictaluridus pricei (Mueller, 1936)
(Fig. 2)

Cleidodiscus pricei Mueller, 1936: 459, 461, 464, figs 11–15; Mueller 1937: 214; Seamster 1938a: 14; Seamster 1938b: 605, 608, 610–611, figs 1–7; Summers and Bennett 1938: 248; Mizelle and Cronin 1943: 206–207, 219, 221, pl. 1: figs 65–74; Mizelle and Donahue 1944: 608–609; Mizelle and Regensberger 1945: 680–681, 697, pl. 1: figs 51–55; Sproston 1946: 233; Seamster 1948: 168; Hargis 1952: 112; Hargis 1953: 95; Mizelle and Klucka 1953: 722–723; Mizelle and Webb 1953: 208; Krueger 1954: 278; Mizelle *et al.* 1961: 634; Allison 1963: 347; Yamaguti 1963: 63, fig.