

Note on a New Host of *Ichthyoxenus fushanensis*: An Endemic Species of Freshwater Fish, *Candidia barbatus*, in Taiwan

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(Manuscript received 10 November, 2005; accepted 11 January, 2006)

ABSTRACT: A new parasitic relationship between *Ichthyoxenus fushanensis*, an isopod parasite, and its host, *Candidia barbatus*, collected from a mountain stream, Hapen Creek, in northern Taiwan, is described. A host fish was easily identified by the presence of an external orifice at the base of the right pectoral fin. A pair of *I. fushanensis* were found in the body cavity of the host. Therefore, the present finding suggests that the infestation of *I. fushanensis* is likely no longer specific to *Varicorhinus barbatulus*.

KEY WORDS: *Ichthyoxenus fushanensis*, Isopod parasite, *Candidia barbatus*, Taiwan.

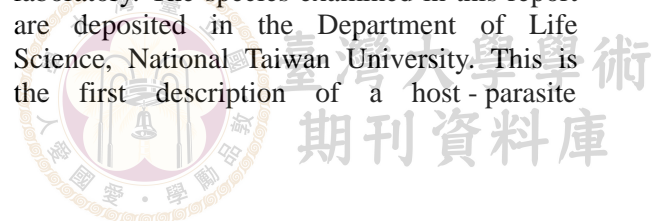
Ichthyoxenus fushanensis, a newly discovered parasitic species of cymothoid, was first described in 1999 (Tsai and Dai, 1999). Tsai and Dai (1999) reported that this parasitic isopod is specific to *Varicorhinus barbatulus*, occurring only in the upstream of Nanshi Hsi. Nanshi Hsi is a fast-running stream located in a mountainous area of northern Taiwan, at an altitude ranging from 520-1230 m.

This isopod induces a thin-walled membranous sac in the body cavity of the host, *V. barbatulus*, after their infestation (Tsai and Dai, 1999). The isopods lie upside down in the sac with their posterior ends oriented toward the orifice. The orifice, an opening of the sac directly to the outer environment, near the posterior, ventral margin of the pectoral fin of the host fish provides a channel for gas exchange, excretion of waste and release of mancas.

Tsai and Dai (1999) reported that this parasite is specific to *V. barbatulus* and does not infest other fishes inhabiting the same habitat. All of the infested *V. barbatulus* were

shorter than 130 mm in body length, although the maximum body length of this fish reaches about 360 mm (Tsai et al., 2001). However, the present findings indicate the infestation of *I. fushanensis* is unlikely specific to *V. barbatulus* alone. On 17 December 2004, we collected a *C. barbatus* (97.7 mm in total length) infested with a pair of *I. fushanensis* by hand cast nets from Hapen Creek, a headwater tributary of Nanshi Hsi (Fig. 1a). Hapen Creek is a natural, well-protected mountain creek where the fish fauna include *V. barbatulus*, *C. barbatus*, *Crossostoma lacustre*, *Rhinogobius candidianus*, *Cobitis sinensis*, and *Acrossocheilus paradoxus*, of which *V. barbatulus* and *C. barbatus* are dominant cyprinids (Chang et al., 1998). The infestation was easily detected by the presence of an external orifice at the base of the right pectoral fin. The orifice is 2.4 mm in length and 1 mm in width, respectively (Fig. 1b). A pair of *I. fushanensis* were found in a sac of the body cavity of the host (Fig. 1c). The body size of the male isopod (8.6 mm) was much smaller than the female (12.4 mm) (Figs. 1d & 1e). The fish and the pair of parasites were stored in 70% alcohol solution and brought to the laboratory. The species examined in this report are deposited in the Department of Life Science, National Taiwan University. This is the first description of a host - parasite

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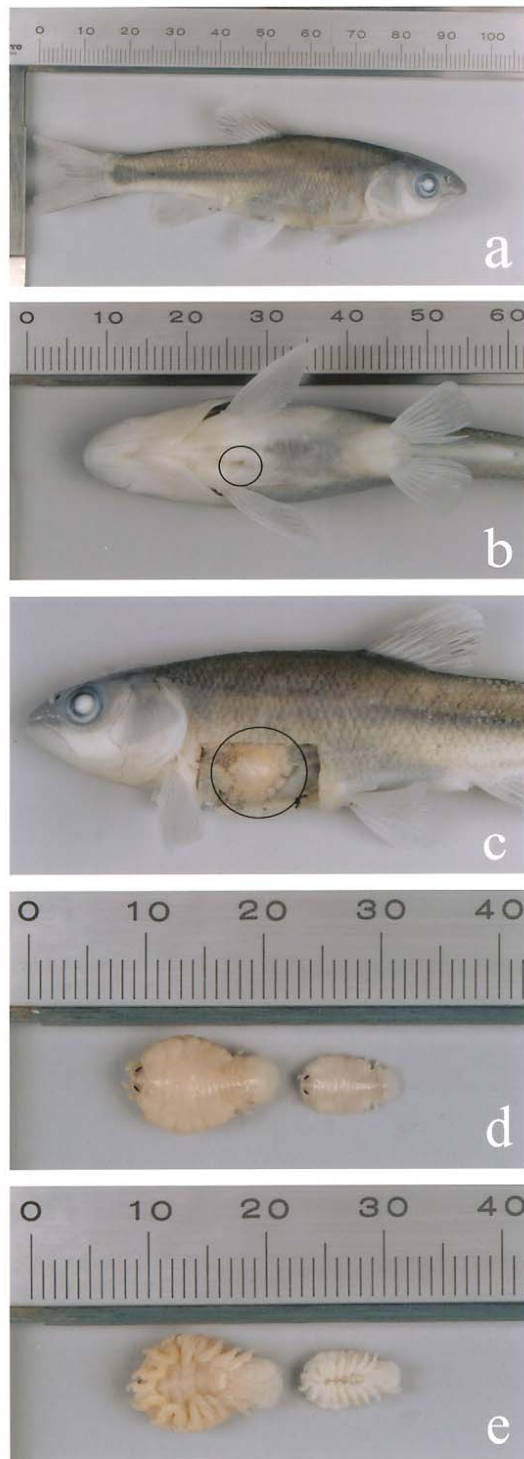


Fig. 1. A: *Candidia barbatus*. B: orifice. C: sac. D: *Ichthyoxenus fushanensis*, dorsal view. E: *Ichthyoxenus fushanensis*, ventral view. (Unit: mm)

relationship between *C. barbatus* and *I. fushanensis*. More research is necessary to investigate the ecology of this relationship, and

the incidence of *I. fushanensis* in *C. barbatus*. Additional research should be done to investigate if *I. fushanensis* has already infested other fish such as *Cobitis sinensis*, *Accrossocheilus paradoxus*, *Crossostoma lacustre* and *Rhinogobius candidianus* in the same habitat.

ACKNOWLEDGEMENTS

We thank Drs. Min-li Tsai and Kent Hatch for commenting on an earlier draft of this manuscript. We are also grateful to the support of National Science Council of Taiwan (NSC 93-2621-B002-003).

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福山魚怪的新記錄宿主：臺灣特有種淡水魚類－臺灣馬口魚

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(收稿日期：2005 年 11 月 10 日；接受日期：2006 年 1 月 11 日)

摘 要

本文報導福山魚怪 (*Ichthyoxenus fushanensis*) 與其新記錄宿主臺灣馬口魚 (*Candidia barbatus*) 之間的寄生狀況，而本報告中所採集到的此尾臺灣馬口魚取自位於臺灣北部山區的哈盆溪。由位於右側胸鰭基部的孔洞可以判斷此尾臺灣馬口魚已被魚怪寄生，同時在該尾魚的體腔中也發現一對福山魚怪。根據本紀錄推知，臺灣鏟頰魚可能已不再是福山魚怪唯一的宿主。

關鍵詞：福山魚怪、等腳類寄生蟲、臺灣馬口魚、臺灣。

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