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Parasitic copepod *Ergasilus sieboldi* (Copepoda; Ergasilidae) of marble goby (*Oxyeleotris marmorata*) from Chachoengsao province, Thailand

Worakrit Worananthakij[1]* and Worawit Maneepitaksanti[2]

[1] Department of Biology, Faculty of Science, King Mongkut's Institute of Technology Ladkrabang

[2] Department of Animal and Aquatic Science, Faculty of Agriculture, Chiang Mai University

* Corresponding author: worakrit.wo@kmitl.ac.th

ABSTRACT: Marble goby (*Oxyeleotris marmorata*) is one of the most commercially important species in Thailand. Young marble gobies are routinely collected from the wild for fish farms, where they are raised to market size. Although general parasite surveys of marble goby have been previously conducted, the identifications of the parasite species are lacking. Therefore, this study aims to identify the parasites from the gills of marble goby. One hundred twenty marble goby were collected from three channels of Bang Pakong River in Chachoengsao province, Thailand, from October 2013 to March 2014. Fish samples were transported to the laboratory of the Department of Biology, Faculty of Science, King Mongkut's Institute of Technology Ladkrabang for parasite examination. Fish samples were infected with five parasitic protozoans (*Henneguya* sp., *Tetrahymena* sp., *Trichodina* sp., *Trypanosoma* sp., *Vorticella* sp.) and one copepod. The latter parasite was identified as *Ergasilus sieboldi* based on its pyriform body shape and 1-segmented leg 5 with one proximolateral seta and two terminal setae, and occurred on 5% of the fish samples, with 1.1 mean abundance. This study provides the first morphology demonstration of this parasite from marble goby in Chachoengsao Province for the first time in Thailand.

Keywords: Marble goby; parasitic crustacean; Chachoengsao province

Introduction

The marble goby is a widely distributed species of fish in the family Eleotridae native to fresh and brackish waters of the Mekong and Chao Praya basins, as well as rivers and other water bodies in Cambodia, Thailand, Malaysia, Singapore, Indochina, the Philippines, and Indonesia. This fish is highly popular among the Chinese community due to its fine texture and tasty white flesh (Rainboth, 1996) Marble goby (*Oxyeleotris marmorata*) is also one of the most commercially important species in Thailand. Young marble gobies are routinely collected from the wild for fish farms, where they are raised to market size. Although general parasite surveys of marble goby have been previously conducted (Chinabut, 1980; Lerssuthichawal and Supamattaya, 2005), however some parasites need to be identified to specific species for treatment and disease control. Parasitic copepod is commonly found from both of freshwater and marine fish hosts. Even though in the sutural area such as the estuary where are the low salinity not only some fish species can adapt to survive but the parasite can adapt itself also. Moreover, this parasite can cause the high mortality or reduced weight, total length and condition factor in some fish by the attachment and tissue feeding procedure (Lester and Roubal, 1995). Therefore, the aim of this study is to identify the parasitic crustacean found from the gill of marble goby in Chachoengsao province Thailand.

Methodology

One hundred and twenty fish samples were monthly collected (n=20/month) from three channels of Bang Pakong River in Chachoengsao province, Thailand, during October 2013 to March 2014 by local farmer. Live fish samples were transported to the laboratory of the Department of Biology, Faculty of Science, King Mongkut's Institute of Technology Ladkrabang for parasite examination. Gills were removed

from the fishes and examined with the stereoscopic microscope. Parasitic copepods were collected from the gills of the fishes examined and fixed in 70% ethanol. They were cleared in lactophenol for 24 hours and examined using the wooden slide technique of Humes and Gooding (1964). Morphological terminology to describe the parasitic copepods sampled follows Kabata (1979). Drawings were made with the aid of a drawing tube attached to the compound microscope. Average measurements (all in micrometers) are followed by the range in parentheses. The ecological terms follow those defined by Bush et al. (1997): prevalence is a percentage of infected fish in a sample, and mean abundance is an average number of parasites per host examined.

Results

One species of copepod was recovered from Marble goby (120[40.0-300±57.9] g BW, 16.9[12.0-24.0±2.5] cm TL). General morphology of live specimen showed brownish body color with 2 elongate egg sacs at the end of body **(Figure 1A)**. The latter parasite was identified as *Ergasilus sieboldi* based on its pyriform body shape **(Figure 1B),** grasping organ well develop (antenna) **(Figure 1C)**, 2-segmented exopod of leg 4 **(Figure 1D)** and 1-segmented of leg 5 with one proximolateral seta and two terminal setae **(Figure 1E),** and occurred on 5% of the fish samples, with 1.1 mean abundance.

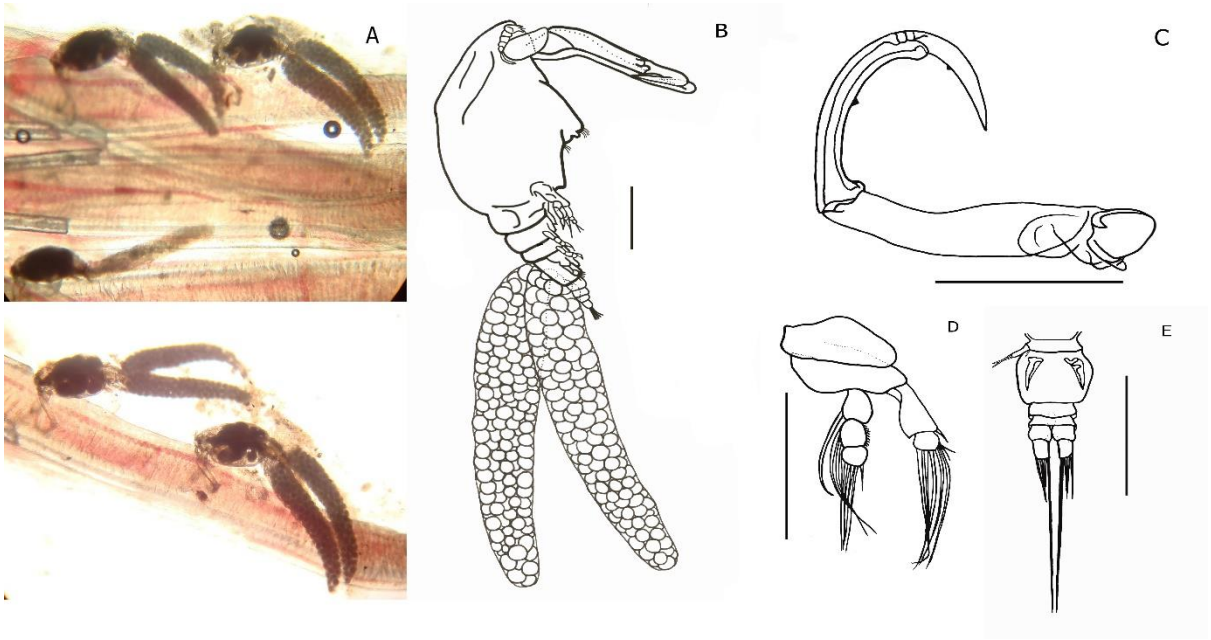

Figure 1 A, Live specimens; B, Habitus; C, Antenna; D, Leg 4; E, Urosome with leg 5: B, 200 µm; C, 200 µm; D, 100 µm; E, 200 µm

Discussion

Ergasilus sieboldi is a common parasite with wide host range of freshwater and brackish water fishes (Molnar and Szekely, 1997). In Europe, this parasite has been recorded in 14 species of Britain freshwater fishes (Alston and Lewis, 1994) 21 species of fish in Brazil (Motta Amado and Rocha, 1995). In Thailand, several report of ergasilids was done in many species of freshwater, unfortunately those of report were not identified in to the species level. Kabata (1979) reported the *Ergasilus* sp. from marble goby. So, this study clarifies the species of this parasites as *E. sieboldi*. Additionally, this finding showed the host-parasite relationship between marble goby and *E. sieboldi*, it may because of marble goby' biology. According to the experiment of Abrosov and Bauer (1959) they found this parasite preferred to attached fish host in the

bottom away from the shore where was the habitat of Marble goby. Moreover, the area of this study close to the estuary area it represented the migratory of this parasite to low salinity area also. Pathologically, Hamouda (2018) demonstrated the histopathological features of *Bagrus bajad*'s gills infected with *E. seiboldi* in Egypt (55% prevalence) showed the presence of parasite between the gill filaments associated with marked necrotic changes of the gill lamellae, atrophy and sloughing of the secondary gill lamellae. Also, there were marked adhesions of the gill lamellae and leukocytic infiltration in between the secondary lamellae. By comparison, in this study only 5% of infection by *E. seiboldi* was found, however the presence of this parasite may caused of gill damage, loss of gill surface area for respiration, especially at high water temperatures (Vinobaba, 2007).

Conclusions

This study provides the first description of *E. sieboldi* from the gills of marble goby in Chachoengsao province, Thailand for parasitic crustacean identification and will be useful for parasitic disease treatment and control also.

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