

Rediscovery of *Mytilicola orientalis* (Copepoda: Mytilicolidae) from wild Pacific oysters *Crassostrea gigas* in Japan

Kazuya Nagasawa* and Masato Nitta

Graduate School of Biosphere Science, Hiroshima University,
1-4-4 Kagamiyama, Higashi-Hiroshima, Hiroshima, 739-8528 Japan

Abstract. Ault females and males of the mytilicolid copepod *Mytilicola orientalis* Mori, 1935 were found in the intestine of its type host, the Pacific oyster *Crassostrea gigas* (Thunberg, 1793), collected in the brackish reaches of the Kamo River, Hiroshima Prefecture, western Honshu, Japan. This represents a rediscovery of *M. orientalis* from wild Pacific oysters in Japan.

Key words: *Mytilicola orientalis*, bivalve parasite, Pacific oyster, *Crassostrea gigas*

The mytilicolid copepod *Mytilicola orientalis* Mori, 1935 (Poecilostomatoida) is an intestinal parasite of various marine bivalves (Boxshall, 2013). The species was originally described by Mori (1935) based on adult females and males from the Pacific oyster *Crassostrea gigas* (Thunberg, 1793) (as *Ostrea gigas*) collected at Kusatsu (type locality) and Miyajima Wharf on the coast of Hiroshima Bay, the Seto Inland Sea (as the Inland Sea), Hiroshima Prefecture, western Honshu, Japan. In this country, the copepod was also found from two species of the mytilid genus *Mytilus*, *M. coruscus* Gould, 1861 (as *M. crassitesta*) (Mori, 1935) and *M. galloprovincialis* Lamarck, 1819 (as *M. edulis galloprovincialis*) (Do & Kajihara, 1986). In East Asia, the copepod has also been reported from Korea (Kim, 2004). With shipments of *C. gigas*, *M. orientalis* was accidentally introduced to the west coast of the U.S.A. and Canada in North America, and to France, the Netherlands, Germany, Portugal, Ireland, and the Mediterranean Sea in Europe (Francisco *et al.*, 2010;

Elsner *et al.*, 2011; see Bower, 2010 for the earlier literature). Various aspects of the biology of *M. orientalis* as an alien parasite have been reviewed by Bower (2010). In Japan, the species has never been found from wild populations of its type host (*C. gigas*) for 80 years since the original description. During a survey of parasites of aquatic invertebrates of western Japan, we successfully rediscovered *M. orientalis* from wild individuals of *C. gigas* in Hiroshima Prefecture, which is herein reported.

Thirty-nine specimens of *C. gigas* were collected from the piers of the Minami Bridge (34°19'41.2"N, 132°53'52.1"E) across the Kamo River in Takehara, Hiroshima Prefecture, on 2 November 2013. This collection site is located at about 200 m upstream from the river mouth and is affected by tides from the Seto Inland Sea. The specimens were transported alive to the laboratory of Hiroshima University, where they were measured for shell height (SH, mm) and examined for metazoan parasites. When copepods were found, they were removed and fixed in 70% ethanol. Two copepods (a female and a male) were dissected for identification, and voucher specimens (four females and three males) are deposited

*Corresponding author: ornatus@hiroshima-u.ac.jp

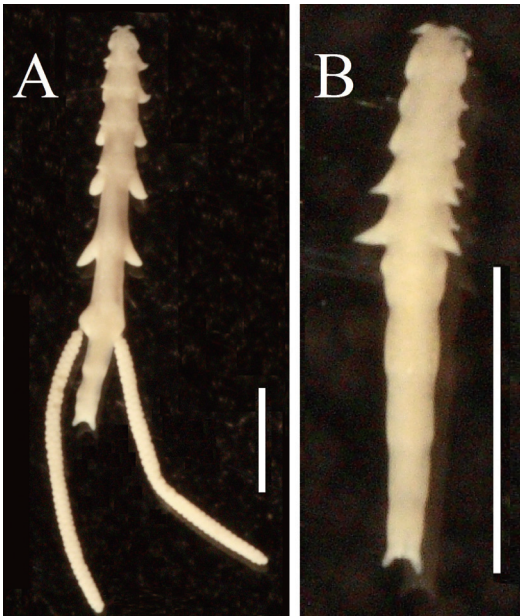


Fig. 1. *Mytilicola orientalis*, NSMT-Cr 22943, from *Crassostrea gigas* in Hiroshima Prefecture, Japan. A, ovigerous female, dorsal view; B, adult male, dorsal view. Scale bars: 2 mm in A and B.

in the Crustacea (Cr) collection of the National Museum of Nature and Science, Tsukuba, Ibaraki Prefecture, Japan (NSMT-Cr 22943).

Three (7.7%; 53.4, 62.9, and 49.5 mm SH) of the 39 specimens (34.7–83.2 [mean 58.2] mm SH) of *C. gigas* were found infected by a total of 15 copepods (eight, two, and five [mean 5.0] copepods per host, respectively) in their intestines. The copepods, identified as *M. orientalis* based on Mori (1935) and Do & Kajihara (1986), consisted of nine adult (mostly ovigerous) females (2.6–7.5 [mean 6.2] mm long) and six adult males (1.8–4.0 [mean 3.2] mm long). This represents the second record of *M. orientalis* from a wild population of *C. gigas* in Japan. Since *M. orientalis* was found parasitizing *C. gigas* attached to the bridge piers in brackish waters, the free-living stage of the copepod may be tolerant to a wide range of salinity before infecting its hosts.

Little information is yet available on the biology of *M. orientalis* in Japan: in addition to two papers

on the morphology of its adults from *C. gigas* and *M. galloprovincialis* (Mori, 1935; Do & Kajihara, 1986), only one note is present in a local newsletter, in which Yamazaki (1950) briefly reported on its occurrence in *C. gigas* cultured in Hiroshima Bay. We need more study in Japan on the biology of *M. orientalis*, including its host range, reproduction, larval development, growth, seasonal occurrence, and pathogenicity, in order to compare with the knowledge obtained in North American and European countries, into which the copepod was unintentionally introduced.

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