



Utilization of alien freshwater fishes by the parasitic copepod *Neoergasilus japonicus* (Ergasilidae) on Okinawa-jima Island, Japan, with a list of its known hosts

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Abstract

Currently, many fish parasites have been dispersed worldwide via the movement of fishes for food, sport, or the aquarium trade. The freshwater parasitic copepod *Neoergasilus japonicus* (Harada, 1930) is such an example: it is native to eastern Asia, but has been introduced to southern Asia, Europe, and North America. Since *N. japonicus* has been regarded as an important alien parasite in such regions, more information is needed on the ecology and host-parasite relationships of this species. In this study, specimens of *N. japonicus* were collected from the following seven alien freshwater fishes on Okinawa-jima Island, southern Japan: redbelly tilapia (*Tilapia zillii*), Mozambique tilapia (*Oreochromis mossambicus*), and Nile tilapia (*O. niloticus niloticus*) (Perciformes: Cichlidae); bluegill (*Lepomis macrochirus*) (Perciformes: Centrarchidae); Indian glassy fish (*Pseudambassis ranga*) (Perciformes: Ambassidae); mosquitofish (*Gambusia affinis*) (Cyprinodontiformes: Poeciliidae); and vermiculated sailfin catfish (*Pterygoplichthys disjunctivus*) (Siluriformes: Loricariidae). Copepods occurred on alien fishes taken from reservoirs, but were absent on those from rivers. The dorsal fin was most heavily infected, followed by the anal fin, gills, and body surface. The native freshwater fishes in our sampling locations have been replaced by alien fishes that were introduced from various regions of the world. Our results therefore showed that this low host-specific species can persist by utilizing alien fishes as hosts even after the native fishes have either disappeared or greatly decreased in abundance. A list is also given of fishes (88 species and 3 subspecies in 7 orders and 16 families) reported as hosts of *N. japonicus*.

Key words: Copepoda, parasite, host-specificity, invasive fish

Introduction

Neoergasilus japonicus (Harada, 1930) is an ectoparasitic copepod of native freshwater fishes of eastern Asia, and has currently spread to Europe and North America (Hudson & Bowen 2002) as well as southern Asia (Sabitha Kumari *et al.* 2009). This species was described originally as *Ergasilus japonicus* by Harada (1930) based on specimens from cyprinid fishes collected in Taiwan, but later transferred to the genus *Neoergasilus* by Yin (1956). In eastern Asia, *N. japonicus* has been found in China (Yin 1956, 1962; Wang 1959, 1964; Men & Mu 1965; Chen 1973; Ding 1977; Kuang & Qian 1983, 1991; Xu 1987; Kuang & Liu 1992a, b; Jin *et al.* 1993a, b; Zhang & Ma 1994; Guo *et al.* 1994a, b; Yue *et al.* 1997; Gao *et al.* 2010), Korea (Kim & Choi 2003), Vietnam (Ky & Te 2007),