Two *Nerocila* species parasitizing *Pomadasys maculatus* from Nagapattinam, Southeast coast of India

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Abstract Two species of Cymothoidae (*Nerocila loveni* and *Nerocila sundaica*) were collected on the host fish *Pomadasys maculatus* from the Nagapattinam coast. *Pomadasys maculatus* is a new host for these parasitic isopods not previously recorded in the world. *Nerocila loveni* was mainly attached on the caudal peduncle of the fish and *N. sundaica* was collected from the pectoral fin and the body of the host. For *N. loveni* and *N. sundaica*, the prevalence reached 28.70 and 26.08 % respectively. One parasite was collected per host fish.

Keywords Cymothoidae · Parasitic isopods · *Nerocila loveni* · *N. sundaica* · New host record · *Pomadasys maculatus*

Introduction

The isopods (Crustacea, Isopoda) live in a wide variety of environments, from terrestrial habitats to marine and fresh waters though they are most commonly found in shallow

marine waters. Isopods of the family Cymothoidae (Leach 1818) are well adapted to parasitism on a wide variety of host spp., mostly fishes (Bunkley-Williams 1984; Piasecki and Avenant-Oldewage 2008). Using seven pairs of sharply hooked legs and specialized mouthparts, they attach on the body and the fins or in the buccal and the branchial cavities of the host fishes (Brusca et al. 2001). Males are always smaller than females (Thatcher 1993). The copulation and insemination occur on the host (Brusca 1978). They are haematophagous parasites feeding principally on host blood, but sometimes they are able to eat also the mucus, epithelium and subcutaneous tissues of their hosts (Ramdane et al. 2007). They induce significant economic losses to fisheries (Printrakoon and Purivirojkul 2011).

About 330 species of cymothoid isopods were reported worldwide (Trilles 1994), but only around 26 species are recorded from India (Rameshkumar et al. 2013a). Most of the reports on Indian marine cymothoidae are from east coast and such studies are very few on west coast (Trilles et al. 2011). In the present study, *Pomadasys maculatus* (Bloch 1793), a fish belonging to the family Haemulidae, is reported as a new host for the *Nerocila* species *N. loveni* (Bovallius 1887) and *N. sundaica* (Bleeker 1857).

Materials and methods

The fishes were collected from the Nagapattinam landing center which is located in Tamil Nadu, Southeast coast of India. The body, fins, head, gills and buccal cavity of each specimen were thoroughly examined for parasitic isopods. The collected specimens were fixed in 70 % alcohol. Identifications and morphometric characteristics follow Bovallius (1887), Bleeker (1857), Bruce and Harrison-Nelson (1988) and Trilles et al. (2013). The sampling

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locality, the host fish and the site of attachment on the host fish were recorded. The prevalence was calculated according to Bush et al. (1997) and the Mean intensity according to Margolis et al. (1982). Host nomenclature and fish taxonomy are according to Fish Base (Froese and Pauly 2013). Vouchers are held in the Department of Zoology of the Bharathiar University (Rameshkumar collection), Coimbatore-641046, Tamil Nadu, India.

Results

Two species of cymothoid isopods belonging to the genus *Nerocila*, *N. loveni* and *N. sundaiica*, were collected on *P. maculatus* from the Nagapattinam coast. *P. maculatus* is a new recorded host for the two species.

Nerocila loveni was mainly found attached to the caudal peduncle of the host (Fig. 1). Of 108 *P. maculatus* examined, 31 specimens were parasitized by this species. Thirty one parasitic females were collected. The prevalence reached 28.70 % and the Mean intensity was equal to 1. Tissue damages were observed on the host fish (Fig. 2).

Of 161 *P. maculatus* examined, 42 specimens were parasitized by *N. sundaiica*. The prevalence reached 26.08 % and the Mean intensity was equal to 1. Twenty eight parasites were found on the pectoral fin of the host fish and 14 on the body (Fig. 3).

Nerocila loveni was first described from the northern central Indo-Pacific region, Java coasts, by Bovallius (1887) from an unidentified host. It was later reported from *Leiognathus* sp. (Bruce and Harrison-Nelson 1988), *Eubleekeria splendens* from the Nagapattinam coast (Rameshkumar et al. 2013b; Trilles et al. 2013), *Carangoides malabaricus* and *Escualosa thoracata* from the Malabar coast (Aneesh et al. 2013). Now, the distribution of this parasitic isopod includes the Java coasts (Bovallius 1887), Batavia and the Siam gulf (Nierstrasz 1915, 1931; Trilles 1979, 1994), Singapore, Thailand, Borneo and Sarawak (Bruce and Harrison-Nelson 1988), the Malabar coast (Aneesh et al. 2013), the Nagapattinam coast (Rameshkumar et al. 2013b; Trilles et al. 2013; Present study) and

Fig. 1 *Nerocila loveni* attached on the caudal peduncle of *P. maculatus*

Fig. 2 Tissue damages induced by a *N. loveni* female attached on the caudal peduncle of *P. maculatus*

Fig. 3 *Nerocila sundaiica* parasitizing *P. maculatus*

Parangipettai, Southeast coast of India (Rameshkumar et al. 2014b).

Nerocila sundaiica was firstly identified by Bleeker (1857). Later, Bowman (1978) re-described this species collected in and near the mouth of croakers from Hong Kong, Singapore and Persian Gulf. This species was previously recorded from *Scatophagus argus* (Trilles 1979), *Pseudosciaena polyactis* (Bruce 1982), *Sciaena* sp., *Eleutheronema* sp. and *Mugil* sp. (Bruce and Harrison-Nelson, 1988). In India, this parasitic isopod was previously reported by Chidambaram and Menon (1945) in the West coast from 6 different fish species, i.e., *Otholites ruber*, *Therapon jarbua*, *Engraulis mystax*, *Serranus gilberti*, *Pellona indica* and *Sardinella fimbriata*. It was later reported by Trilles et al. (2013) from six host species belonging to five families and six genera, including *C. malabaricus*, *Ilisha melastoma*, *Opisthopterus tardoore*, *O. ruber*, *Selaroides leptolepis* and *Therapon puta*. The geographical range of this widely distributed species includes the South China and Java Seas in the Pacific Ocean, the Bay of Bengal, the Arabian Sea and the Persian Gulf in the

Northern Indian Ocean (Bowman 1978). It was also reported from the Red Sea and the Northern Indian Ocean (Bruce 1982), Nagapattinam (Trilles et al. 2013; Rameshkumar et al. 2014a) and Parangipettai, Southeast coast of India (Rameshkumar et al. 2014b).

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