



Infestation of yellowtip halfbeak fish, *Hemiramphus marginatus* (Lesueur 1821), a new host of *Nerocila exocoeti* (Crustacea, Isopoda, Cymothoidae) in South East coast of India

S. N. SETHI^{1*}, S. K. PATRA² AND M. K. TRIPATHY²

^{1*}Madras Research Centre of CMFRI, ICAR, 75, Santhom High Road, R.A.Puram, Chennai-28, India

²College of Fisheries, OUAT, Rangailunda, Berhampur, Odisha, India

*sethisatyanarayana@yahoo.co.in

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ABSTRACT

The ecto-parasite *Nerocila exocoeti* (Crustacea, Isopoda, Cymothoidae) is reported for the first time from the yellowtip halfbeak fish, *Hemiramphus marginatus* (Teleostei, Beloniformes, Hemiramphidae), collected from Light House Kuppam, Marina Beach, Chennai, South-east coast of India. This was abnormal position on the head surface of host fishes is unique. This black isopod naturally occurs in the marine fish belongs to Exocoetidae family. This is the second time this isopod has been collected in the south coast of India and the first for this host fishes. *Nerocila exocoeti* parasitized 22.55% (15 of 150) of the examined *Hemiramphus marginatus*.

Key words: *Hemiramphus marginatus*, Isopod, *Nerocila exocoeti*, yellowtip halfbeak fish

INTRODUCTION

Parasitic fish diseases constitute one of the most important problems in the fisheries sector. Cymothoids are obligatory fish parasites, infest mostly commercially important fishes. They are protandric hermaphrodites and blood suckers, living on the skin, gill filaments, or in the mouth of the fishes. These parasites retard growth followed by emaciation. Pathological conditions resulting from parasitic diseases assume high magnitude of epidemics under crowded and other unnatural conditions among fish. The order Isopoda includes both terrestrial and aquatic species and represents the second largest order of crustaceans. Isopods are widely distributed in all types of habitats, from terrestrial to marine, fresh and ground waters, and some species are known to be parasitic. Ectoparasitic isopods of the family Cymothoidae inhabit freshwater, brackish and marine environments, utilizing various fish hosts. They may be observed on the body surface, or in the buccal and branchial

cavities of the hosts (Trilles, 1969; Brusca, 1981; Ravichandran et al., 2009a; b; Ravichandran et al., 2011; Rameshkumar and Ravichandran 2010, Rameshkumar et al., 2011; Sethi, 2012, Sethi et al., 2013 and Roy et al., 2015). Oktener and Trilles 2004. Report on the Cymothoids (Crustacea, Isopoda) collected from marine fishes in Turkey. Bruce and Harrison-Nelson (1988) reported *Nerocila trichiura*, parasitic on flying fishes of the genera *Exocoetus* and *Cypselurus*. *Nerocila* is a large genus of the family Cymothoidae including at least 65 species living attached on the skin or on the fins of fishes. As already reported by Trilles (1972, 1979), Williams and Williams (1980, 1981), and Bruce (1987a, b), several species are morphologically highly variable and their identification is often difficult. The variability was particularly studied in *Nerocila armata* and *Nerocila orbigny* (Monod, 1931), *Nerocila excisa* (Trilles, 1972), *Nerocila sundaica* (Bowman, 1978), *Nerocila acuminata* (Brusca, 1981), *Nerocila arres*, and *Nerocila kisra*

(Bowman and Tareen, 1983), and *N. orbigny*, *Nerocila monodi*, and *Nerocila phaiopleura* (Bruce, 1987a).

Unusual attachment of *Nerocila exocoeti* in *Hemiramphus far* (Forsskal, 1775) from Parangipettai south east coast of India was reported by Sivasubramanian and Ravichandran during 2015. In this study, we report the occurrence of cymothoid isopods in *Hemiramphus marginatus* for the first time and provide new geographic record for *N. exocoeti* on the south-east coast of India.

MATERIALS AND METHODS

A total of 150 yellowtip halfbeak fish, *Hemiramphus marginatus*, ranging average of 275.8±13.5 mm in length and weight 75.06±11.88 g respectively, were captured from January to December 2011 in Light House Kuppam, Marina Beach, Chennai, South-east coast of India (13°00'N, 80°30' E) and examined for the presence of ecto-parasites. Collected parasites were fixed in 70% ethanol (w/v). Morphological characteristics obtained from collected isopod specimens were used for the identification of parasites according to Pillai (1954), Trilles (1969, 1977 & 1989.), Bruce and Harrison-Nelson (1988). The taxonomic classification of the halfbeak fish host was carried out following Food and Agriculture Organization, FAO sheets (Fischer and Whitehead, 1974) and Fish base (Froese and Pauly, 2008). Sivasubramanian et al., studied during 2011 that the Infestation of *Exocoetus volitans* (Linnaeus, 1758), a new host of *Nerocila exocoeti* (Crustacea, Isopoda, Cymothoidae). Bariche and Trilles (2005) studied in Preliminary check-list of Cymothoids (Crustacea, Isopoda) from Lebanon, parasitizing on marine fishes. New host record, *Parablennius sanguinolentus* (Teleostei, Perciformes, Blenniidae) for *Nerocila bivittata* (Crustacea, Isopoda, Cymothoidae) (Alas et al., 2008). Unusual attachment of *Nerocila exocoeti* in *Hemiramphus far* (Forsskal, 1775) from Parangipettai south east coast of India was reported by Sivasubramanian and Ravichandran during 2015.

RESULTS AND DISCUSSION

Fifteen (22.5%) out of the 150 yellowtip half beak fish *Hemiramphus marginatus* examined specimens were infested with parasitic isopods. The parasites were found on the body surface. Based on morphological characteristics provided below, the isopods were determined as *Nerocila exocoeti* (Fig.1-2). Body surface of the infested fish was abraded due to the infestation. These isopods have occupied much of the head region of the host possibly making discomfort to swim, eat and also other activities of the host fishes. However, some relatively large cymothoids occupy much of the skin tissue. The site of attachment of the parasites on their hosts was also observed.

Prevalence and infestation intensity

The prevalence of infestation of *Nerocila exocoeti* on *H. marginatus* was 22.5% (15 of 150) of the examined fishes. Ten ovigerous females of *N. exocoeti* were collected. Infestation intensity ranged from 1-2 per fish.

Description of female parasite

Body length 25-28 mm, width 7-8 mm body longer than broad, symmetrical, bluish black or steel blue with uniform distribution of chromatophores; cephalon- hemispherical with smoothly rounded anterior margin, posterior border tirsinuate, eyes dark, distinct, set off posteriolateral aspect of cephalon; pleon – distinct narrower than pereon (Fig 3).

Description of male parasite

Body length 10-118 mm, 4-5 width, body very small; eyes dark. Total length of body 2.2-2.9 times maximum width. Body narrower than in female. Head not immersed. Eyes obvious in juveniles and immature males. Pleonites 1 and 2 with ventrolateral margins produced; lateral margins of 15 pleonites not produced.

Geographical distribution

N. exocoeti has a wide range of distribution. It was previously recorded from the Southern India



Fig. 1. *Nerocila exocoeti* attached to the head of yellow tip halfbeak fish, *Hemiramphus marginatus* (lateral view)

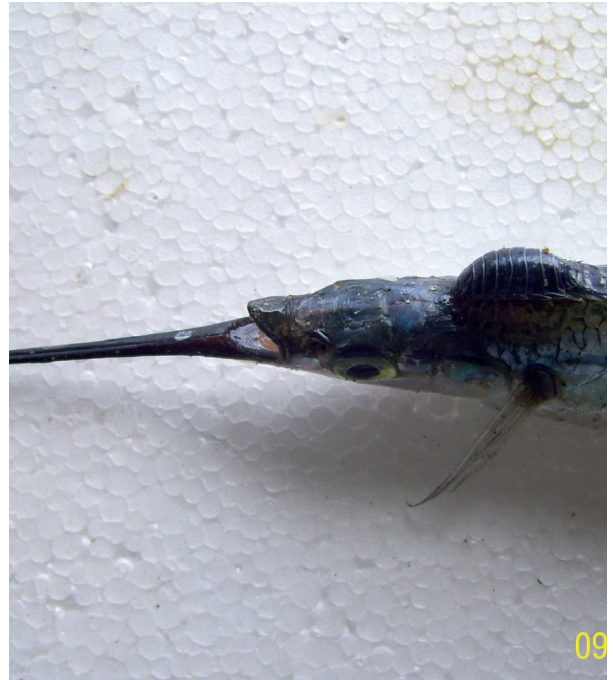


Fig. 2. External lesion due to the infestation of *Nerocila exocoeti*, the damaged skin patch on the head of *Hemiramphus marginatus*



Fig. 3. Dorsal and ventral view of the female of *Nerocila exocoeti* infested on *Hemiramphus marginatus*

(Pillai, 1954) to Papua New Guinea (Trilles, 1977), Indonesia and Taiwan (Bruce and Harrison-Nelson, 1988). The distribution of this species was extended to the Parangipettai, Southeastern coasts of India and also extended to Light House Kuppam, Marina Beach, Chennai, South-east coast of India.

Hosts

The members of family Hemiramphidae are the specific hosts for *N. exocoeti*. Known host spectrum includes *Paraxocoetus brachypterus*, *Cypselurus comatus* (Bruce and Harrison-Nelson, 1988) *Exocoetus volitans* (Sivasubramanian and Ravichandran, 2015) and the range of host fishes is here extended and now includes *Hemiramphus marginatus* (present study).

CONCLUSION

In this study, *N. exocoeti* is recorded for the first time from the *H. marginatus*, together with India, which is a new geographic record. According to its rare occurrence, it is probable that *H. marginatus* might be an occasional or accidental host for this species.

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