

First report of parasitic isopod *Norileca indica* milne-edwards, 1840 from Northern part of East coast of India

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Abstract

During a local survey on Shankarpur, West Bengal, East coast of India authors came across some specimens of *Norileca indica* Milne-Edwards, 1840 with its host fish *Rastrelliger kanagurta* (Cuvier, 1816). The present report communicate here on the occurrence of *Norileca indica* Milne-Edwards, 1840 first time from the Northern part of east coast of India.

Keywords: Ecto-Parsite, First report, Isopod, *Norileca*.

Introduction

India with a long coastline of over 8000 km and a network of 14 major, 44 medium and 162 minor rivers along with their tributaries has a very diverse range of ecosystems such as estuaries, backwaters, lagoons, mangroves, coral reefs, lakes etc. which are rich in fish and shellfishes (Zingde, 2007). These are often parasitized by a variety of fauna including the crustaceans. Among the crustacean parasites, isopods are noteworthy. These are associated with many species of commercially important fishes and shell fishes and causes significant losses to fisheries by way of killing, stunting or damaging the fishes thereby limiting aquaculture production and its economic viability. Most of the isopod parasites are external but they may also be found internally occurring in gill chamber, haemocoel, body and buccal cavities. Isopods are associated

with fishes from Himalayan mountain streams to abyssal depths of the sea. They are mostly marine, shallow-water and coastal, however, a few cymothoids, aegids and corallanids also occur in the inland freshwaters. Some marine/ brackish water cymothoids even invade coastal freshwaters. Ectoparasitic isopods often pose problems by infecting fishes and crustaceans in the wild and aquaculture.

Knowledge of isopod parasites from fish and shellfishes of India is still scarce. Schiödte and Meinert (1881-83) recorded *Nerocila recurvispina* (Cymothoidae) from Calcutta. Incidentally, this was the first isopod parasite recorded from mainland India. different parasite species have been recorded from marine fishes from India. This is, however, only a small fraction of marine fish parasites. A thorough knowledge of parasitic fauna is an

essential pre-requisite to prevent and overcome future fish disease and parasitic outbreaks. Keeping this in mind, the present work was undertaken with a view to filling up this gap. The parasitic isopods have been found to consist of six families under four suborders, namely, Epicaridea, Flabellifera, Gnathidea and Anthuridea. A total of 104 species of isopod parasites of both fishes and shellfishes belonging to these six families are collated and have been listed based on literature and collection present in the National Zoological Collection of the Zoological Survey of India, Kolkata. Of the six families, the family Bopyridae contains the highest number of 47 species infesting mainly prawns, shrimps, lobsters and crabs, followed by the family Cymothidae representing 32 species. The occurrence and distribution of all these isopod parasites from various ecosystems and hosts are depicted and discussed.

The fish and shell-fishes are parasitized by a number of cymothoid isopods which has been investigated and reported by a number of researchers (Barnard, 1936; Tiwari, 1953; Bal and Joshi, 1959; Pillai, 1964; Ramakrishna and Venkataramaniah 1978; Misra and Nandi, 1986; Rajkumar et al., 2005a & b, 2006; Trilles et al., 2011). Bopyrid isopods have been worked out by a number of workers (Chopra, 1923, 1930; George, 1947; Thomas, 1977; Lalitha Devi, 1982; Ghatak and Misra, 1983; Nandi and Raut, 1985; Shyamasundari et al., 1993; Jayasree et al., 2001; Thirumilu, 2011).

Species belongs to Family Cymothoidae are obligate parasites of fishes. They attach externally on the gills or in the mouth, a few flesh burrowing species also exists. Found in the buccal cavity of fishes. They cause weight loss of their host and produce lesions in the branchial chamber, buccal cavity and body surface. A callus like thickening often

develops on the gill arch and gill filament due to persistent irritation by the appendages of the parasites, thereby causing reduction of gill surface.

There are several works were available on the isopods parasites in marine fishes from Indian coast and those studies indicates most of the fishes are infected by mainly Cymothoids isopods. Trilles et al., 2011 comprehensively give a checklist of Indian Cymothoidae and covered 74 papers from 1783 to 2011, all those works deals with Indian cymothoidae. After that also some importance works were done (Aneesh, et al., 2013; Bharadhirajan et al., 2014; Neeraja et al., 2014; Raja et al., 2014; Rameshkumar et al., 2014a, 2014b, 2014c; Rameshkumar et al., 2013a, 2013b; Sivasubramanian and Ravichandran, 2013; Trillees et al., 2012 and 2013). A Cymothoid parasitic isopod *Norileca indica* Milne-Edwards, 1840 was reported from Off Mumbai coast (Neeraja et al., 2014), Parangipettai (Rameshkumar et al., 2013a and b) and Cochin (Rameshkumar et al., 2014c). During a course of studies on Fishes and their parasites along the East coast of India the authors came across some specimens of *Norileca indica* with its host fishes, the present report communicate here on the occurrence of *Norileca indica* Milne-Edwards, 1840 first time from the Northern part of east coast of India.

Materials and methods

Isopod along with fishes collected from Shankarpur fishing harbor, West Bengal. Ecto parasitic isopods were removed from buccal cavity of host species *Rastrelliger kanagurta* (Cuvier, 1817): Indian Mackerel. After collection fresh photo were taken. Fishes were preserved in 10% formaldehyde solutions and isopods were preserved in 95% ethanol. The prevalence (infected host fish

number/number of examined host × 100%) and intensity (total parasites number/number of infected host) were calculated according to Margolis et al., (1982).

Results

Host species

Rastrelliger kanagurta (Cuvier, 1816)

Identifying characters

Medium size fishes with deep, fusiform body. Head longer than body depth. Maxilla partly concealed and extending hind margin of eye. Gill rakers very long and visible when mouth open. Teeth on jaws in single rows, minute and pointed. Two dorsal fin widely separated. Scale small, ctenoid.

Colour: Upper part of the body bluish green; flanks silvery with golden tint. Two rows of small dark spots on the side of the dorsal fin base. Dorsal fin yellowish with black spots.

Parasitic Isopod

Norileca indica Milne-Edwards, 1840.

Isopod characters

Body either twisted left or right side. Body 2.4-2.5 times as long as wide (Fig. 1.) pereonite 4 widest. Cephalon slightly immersed in pereonite. Antennule (8 articles) extending to pereonite 1; Pleonite 5 about as wide as pleonite 1. Antenna (9 articles) slightly longer than antennules. Mandible with large palp; maxilliped palp article 2 longer than article 3, article 3 with four recurved spines. Pleopods 1-4 with lamellar rami; pleopods 1-5 increasing in size. Endopod slightly tapered.

Distribution

Norileca indica Milne-Edwards, 1840 is widely distributed in Indo-West Pacific region: most commonly in Sumatra, Indonesia,

Philippines, New Guinea, north-western Australia, Madagascar, China and Thailand (Rameshkumar et al., 2014c). In Indian coastal water the distribution of *Norileca indica* Milne-Edwards, 1840 present in table 1.

Parasitological parameters

A total of 394 isopods were collected, among them 326 were attached with host species. A total of 2668 fish species were collected and observed for isopod parasitic infection; among those fishes 326 ex. under 34 species and 19 families were found to infect by those isopods. From those parasites 28 example of *Norileca indica* were found in the buccal cavity of *Rastrelliger kanagurta* (Fig 2). Prevalence and intensity of *Norileca indica* Milne-Edwards, 1840 are shown in below:

Host Species: *Rastrelliger kanagurta* (Cuvier, 1816),

Family: Scomberidae,

Examined host species: 124,

Infected host species: 28,

Prevalence: 22.58,

Intensity: 14.07.

Discussion

Rastrelliger kanagurta (Cuvier, 1816) is a common marine fish in both the coast of India, and *Norileca indica* Milne-Edwards, 1840 is till now collected from a single host species only. The present study support that this parasitic isopod is common in this coastal area. This host species were also infested frequently by another two isopod species namely, *Nerocila phaeopleura* and *Joryma brachysoma* (Trilles et al., 2011) but in our present study we only encountered the former species only as parasite of the said fishes.



Fig. 1. *Norileca indica* Milne-Edwards, 1840.



Fig. 2. *Norileca indica* Milne-Edwards, 1840 inside the buccal cavity of *Rastrelliger kanagurta* (Cuvier, 1816).

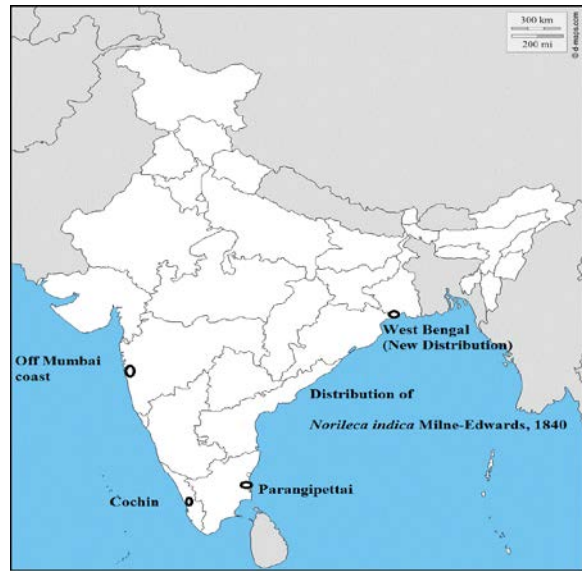


Fig. 3. Distribution of *Norileca indica* Milne-Edwards, 1840 in India.

Table 1. Location and host species of *Norileca indica* Milne-Edwards, 1840.

References	Rameshkumar et al., 2013a & 2013b and 2014 c.	Neeraja et al., 2014
Location	Parangipettai and Cochin	Of Mumbai coast
Host species	<i>Rastrelliger kanagurta</i>	<i>Selar crumenophthalmus</i>
Isopod	<i>Norileca indica</i>	

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