



# First record of *Norileca indica* (H. Milne-Edwards, 1840) (Crustacea: Isopoda: Cymothoidae) in *Rastrelliger kanagurta* from Goa, India

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Short communication

## Abstract

This study reports the occurrence of the parasitic isopod, *Norileca indica*, below the intestinal tract of Indian mackerel, *Rastrelliger kanagurta* for the first time from Goa, India. These parasites cause adverse environmental health and food safety concerns calling for close monitoring of food fishes.

**Keywords:** Ectoparasites, branchial cavity, operculum, Scombridae, parasite

## Introduction

The obligatory nature of cymothoids with teleost fishes is an intriguing aspect of research among parasitologists and fish pathologists. Cymothoids (Cymothoidae Leach, 1818) are commonly ectoparasitic isopods that predominantly infest different parts of diverse fishes. A total of 43 genera and 380 species of cymothoids exist (Panakkool-Thamban *et al.*, 2016) of which, 48 species belonging to 16 genera were recorded from the Indian fishes (Ravichandran *et al.*, 2019). The isopod,

*Norileca indica* (H. Milne-Edwards, 1840) is widely distributed as a protandric hermaphroditic parasite (Aneesh *et al.*, 2019) infecting several tropical fishes.

## Material and methods

We report here an observation of *N. indica* from the Indian mackerel, *Rastrelliger kanagurta* (Cuvier, 1817) for first time from Goa, central-west coast of India. *R. kanagurta* (Scombridae Rafinesque, 1815) is usually caught in purse-seine along Goa coast. This fish is pelagic mid-water dwelling that generally spawns in shoals near the water surface during summer (February to May). The highest parasitic infection in the carangid *Alepes kleinii* (Bloch, 1793) was reported in March along the Goa coast (Kudtarkar *et al.*, 2018).

## Results and discussion

*R. kanagurta* was collected from Panjim market in Goa on 16 February 2019. On dissection of five *R. kanagurta*, only one (11.3 cm long and 2.1 cm width) was infested with the isopod, *N. indica* which was 27 mm length and 18 mm width (Figs. 1, 2 and 3). *N. indica* was observed for the first time with their ventral surface facing inwards towards the digestive tract of the host fish which would have descended either through the



Fig. 1. Dorsal view of *Norileca indica* observed in *Rastrelliger kanagurta* (Scale 2 mm)



Fig. 2. Ventral view of *N. indica* observed in *R. kanagurta* (Scale 2 mm)

operculum or the branchial cavity. *N. indica* was identified by Dr P. T Aneesh (University of Kerala, Kerala) who communicated that the parasites would keep moving inside the body from the site of attachment. The isolated *N. indica* from the host was preserved in 70% ethanol, and the vouchered specimen was deposited at the National Institute of Oceanography, Goa (NIO.ISO-01.19).

The previous records of cymothoid isopod, *N. indica* from the branchial cavity of *R. kanagurta* was from Kerala (Rameshkumar *et al.*, 2015; Panakkool-Thamban *et al.*, 2016; Kottarathil *et al.*, 2019), Tamil Nadu (Ravichandran *et al.*, 2009; 2019) and Pakistan (Ahmed and Khan, 2012). In another species of mackerel, *R. brachysoma*, from the Upper Gulf of Thailand, *N. indica* was witnessed in the branchial cavity (Senarat *et al.*, 2018). Moreover, parasitism of *N. indica* in the branchial cavity of other fishes like bigeye scad from off Mumbai coast (Neeraja *et al.*, 2014) calls for further research on the host-specificity



Fig. 3. Anterior-Posterior view of the antennule of *N. indica* (Scale=0.6 mm)

noticed in *N. indica* with only *R. kanagurta* (Kottarathil *et al.*, 2019; Jemi *et al.*, 2020).

Though the occurrence of *N. indica* was commonly reported in the branchial cavity and the gills (Aneesh *et al.*, 2019), the present report of *N. indica* below the intestine of the host raise grave environmental and food safety concern of this commercially important fish. Close monitoring of the food fishes for parasites will ensure a steady supply of quality seafood and prevent high mortalities of fishes and disturbance in biodiversity alterations.

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## References

- Ahmed, F. and M. A. Khan. 2012. Ectoparasite, *Norileca indica* (Milne Edwards, 1840) (Crustacean, Isopoda, Cymothoidae) from the mouth cavity and branchial chamber of *Rastrelliger kanagurta* (Cuv, 1817) from Karachi Coast, Pakistan. *J. Biol. Biotech.*, 9 (1&2): 93-98.
- Aneesh, P. T., A. K. Helna, J. P. Trilles and K. Chandra., 2019. A taxonomic review of the genus *Joryma* Bowman and Tareen, 1983 (Crustacea: Isopoda: Cymothoidae) parasitising the marine fishes from Indian waters, with a description of a new species, *Mar. Biodiver.*, 49:1449-1478.
- Jemi, J. N., A. A. M. Hatha and C. K. Radhakrishnan. 2020. Seasonal variation of the prevalence of cymothoid isopod *Norileca indica* (Crustacea, Isopoda), parasitizing on the host fish *Rastrelliger kanagurta* collected from the Southwest coast of India. *J. Parasit. Dis.*, 44 (2): 314-318.
- Kottarathil, H. A., A. V. Sahadevan, R. Kattamballi and S. Kappalli. 2019. *Norileca indica* (Crustacea: Isopoda, Cymothoidae) infects *Rastrelliger kanagurta* along the Malabar coast of India—seasonal variation in the prevalence and aspects of host-parasite interactions. *Zool. Studies.*, 58: 35.
- Kudtarkar, S. N., M. C. Sathe and A. K. Jaiswar. 2018. Occurrence of isopod parasite on *Alepes kleinii* (Bloch, 1793) from Mumbai and Goa coast of India, *Int. J. Fish. Aqua. Stud.*, 6(2): 551-555.
- Neeraja, T., G. Tripathi and U. Shameem. 2014. Occurrence of the isopod, *Norileca indica* (Isopoda: Cymothoidae) on bigeye scad, *Selar crumenophthalmus* (Bloch) off Mumbai coast, India. *Indian J. Fish.*, 61(1): 49-56.

- Panakkool-Thamban, A., H. A. Kottarathil and S. Kappalli. 2016. Branchial cymothoids infesting the marine food fishes of Malabar coast. *J. Parasit. Dis.*, 40(4):1270-1277.
- Rameshkumar, G., M. Ramesh, S. Ravichandran, J. P. Trilles and S. Subbiah. 2015. New record of *Norileca indica* from the west coast of India. *J. Parasit. Dis.*, 39(4): 712-715.
- Ravichandran, S., G. Rameshkumar, M. B. Babu and K. Kumaravel. 2009. Infestation of *Rastrelliger kanagurta*, with Cymothoid Isopod, *Joryma brachysoma* in the Colachel Environment of Southwest Coast of India. *World J. Fish Mar. Sci.*, 1(2): 80-84.
- Ravichandran, S., P. Vigneshwaran and G. Rameshkumar. 2019. A taxonomic review of the fish parasitic isopod family Cymothoidae Leach, 1818 (Crustacea: Isopoda: Cymothoidea) of India, *Zootaxa*, 4622(1): 001-099.
- Senarat, S., W. Jiraungkoorskul, J. Kettratad, N. To-orn, P. Poolprasert, C. Sudtongkong, T. Pengsakul, C. Para and W. Sukparangsi. 2018. Prevalence, site of infection, and differentiating oocytes of the cymothoid isopod, *Norileca indica* (Milne Edwards, 1840) from its infected short mackerel, *Rastrelliger brachysoma*, in the Upper Gulf of Thailand. *J. App. Sci.*, 17(2): 1-8.