

Chub mackerel, *Scomber japonicus* (Perciformes: Scombridae), a new host record for *Nerocila phaiopleura* (Isopoda: Cymothoidae)

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Abstract An ovigerous female of *Nerocila phaiopleura* Bleeker, 1857 was collected from the caudal peduncle of a chub mackerel, *Scomber japonicus* Houttuyn, 1782 (Perciformes: Scombridae), at the Hōyo Strait located between the western Seto Inland Sea and the Bungo Channell in western Japan. This represents a new host record for *N. phaiopleura* and its fourth record from the Seto Inland Sea and adjacent region.

Key words: Cymothoidae, fish parasite, Isopoda, *Nerocila phaiopleura*, new host record, *Scomber japonicus*

INTRODUCTION

The Hōyo Strait is located between the western Seto Inland Sea and the Bungo Channell in western Japan. This strait is famous as a fishing ground of two perciform fishes of high quality, *viz.*, chub mackerel, *Scomber japonicus* Houttuyn, 1782 (Scombridae), and Japanese jack mackerel, *Trachurus japonicus* (Temminck and Schlegel, 1844) (Carangidae), both of which are currently called “Seki-saba” and “Seki-aji”, respectively, as registered brands (*e.g.*, Ishida and Fukushige, 2010). The brand names are well known nationwide, and the price of the fishes is very high (up to 5,000 yen per kg). Under these situations, the fishermen working in the strait pay much attention to the parasites of the fishes they catch because those fishes are almost exclusively eaten raw as “sashimi.” Recently, a chub mackerel infected by a large parasite on the body surface (Fig. 1A) was caught by a fisherman in the Hōyo Strait and was sent to us for identification. The parasite was identified as the cymothoid isopod *Nerocila phaiopleura* Bleeker, 1857, which is reported herein as a new host record.

MATERIALS AND METHODS

The fish was commercially caught using hook and line in the Hōyo Strait off Saganoseki, Oita Prefecture, on 30 January 2017. It was found to harbor a large skin parasite before auction and immediately transported to the Oita Prefectural Agriculture, Forestry and Fisheries Research Center, Saeki, where it was examined for the parasite after being photographed and measured for total length (TL). The parasite was carefully removed from the fish, fixed and preserved in 70% ethanol. This parasite specimen was sent to Hiroshima University, Higashi-Hiroshima, for identification. It is deposited in the Crustacea (Cr) collection of the National Museum of Nature and Science, Tsukuba, Ibaraki Prefecture (NSMT-Cr 25583).



Fig. 1. A chub mackerel, *Scomber japonicus*, infected by an ovigerous female of *Nerocila phaiopleura* (A, B) and a fresh specimen of *N. phaiopleura* (C), dorsal view, NSMT-Cr 25583. The fish was commercially caught in the Hōyo Strait off Saganoseki, Oita Prefecture, western Japan, on 30 January 2017. Scale bars: 5 cm in A; 10 mm in B and C.

RESULTS AND DISCUSSION

The parasite was firmly attached to the caudal peduncle of the fish (306 mm TL) and oriented parallel to the fish's body (Fig. 1A-B). The parasite (Fig 1B-C) is an ovigerous female, measuring 32.2 mm in total length (including uropod rami) and 13.5 mm in maximum width (in ethanol). It has a cephalon with a broadly rounded anterior margin, large eyes, straight and long uropod exopods, and black stripes on the uropod exopods and lateral sides of the pleon and posterior pereonites. These morphological features fit the previous descriptions of *N. phaiopleura* (Bowman and Tareen, 1983; Bruce, 1987; Nagasawa and Shirakashi, 2017).

Nerocila phaiopleura is a skin parasite of various marine fishes in the Indo-West Pacific (e.g., Bowman and Tareen, 1983; Bruce, 1987; Bruce and Harrison-Nelson, 1988; Trilles *et al.*, 2011, 2013; Aneesh *et al.*, 2013; Nagasawa and Shirakashi, 2017). In this study, the parasite was found infecting *S. japonicus*, which belongs to the family Scombridae. To date, four species of this family are known to serve as the hosts for *N. phaiopleura*: Indian mackerel, *Rastrelliger kanagurta* (Cuvier, 1816), in India (Rameshkumar and Ravichandran, 2010; Trilles *et al.*, 2013); Indo-Pacific king mackerel, *Scomberomorus guttatus* (Bloch and Schneider, 1801), in India (Trilles *et al.*, 2011: table 1); Japanese Spanish mackerel, *Scomberomorus niphonius* (Cuvier, 1832), in Japan (Nagasawa and Tensha, 2016;

Hata *et al.*, 2017); and Pacific bluefin tuna, *Thunnus orientalis* (Temminck and Schlegel, 1844), in Japan (Nagasawa and Shirakashi, 2017). Thus, the collection of *N. phaiopleura* in this study represents a new host record for this parasite.

Nerocila phaiopleura has been reported three times before from two fish species in the Seto Inland Sea close to the Hōyo Strait: Japanese sardine, *Sardinopsis melanostictus* (Temminck and Schlegel, 1846) (Saito and Hayase, 2000) and Japanese Spanish mackerel (Nagasawa and Tensha, 2016; Hata *et al.*, 2017). This paper is the fourth record of *N. phaiopleura* from the Seto Inland Sea and its adjacent region. Another species of cymothoid isopod *Ceratothoa carinata* (Bianconi, 1869) is also known to parasitize Japanese scad, *Decapterus maruadsi* (Temminck and Schlegel, 1843) (Crangidae), in the western Seto Inland Sea near the Hōyo Strait (Nagasawa *et al.*, 2014).

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REFERENCES

- Aneesh, P.-T., Sudha, K., Arshad, K., Anilkumar, G., Trilles, J.-P., 2013. Seasonal fluctuation of the prevalence of cymothoids representing the genus *Nerocila* (Crustacea, Isopoda), parasitizing commercially exploited marine fishes from the Malabar Coast, India. *Acta Parasitologica*, **58**: 80-90.
- Bowman, T. E., Tareen, I. U., 1983. Cymothoidae from fishes of Kuwait (Arabian Gulf) (Crustacea: Isopoda). *Smithsonian Contribution to Zoology*, **382**: 1-30.
- Bruce, N. L., 1987. Australian species of *Nerocila* Leach, 1818, and *Creniola* n. gen. (Isopoda: Cymothoidae), crustacean parasites of marine fishes. *Records of the Australian Museum*, **39**: 355-412.
- Bruce, N. L., Harrison-Nelson, E. B., 1988. New records of fish parasitic marine isopod crustaceans (Cymothoidae, subfamily Anilocrinae) from the Indo-West Pacific. *Proceedings of the Biological Society of Washington*, **101**: 585-602.
- Hata, H., Sogabe, A., Tada, S., Nishimoto, R., Nakano, R., Kohya, N., Takeshima, H., Kawanishi, R., 2017. Molecular phylogeny of obligate fish parasites of the family Cymothoidae (Isopoda, Crustacea): evolution of the attachment mode to host fish and the habitat shift from saline water to freshwater. *Marine Biology*, **164**: 105. DOI 10.1007/s00227-017-3138-5.
- Ishida, T., Fukushige, M., 2010. The effects of fishery harbor-based brands on the brand equity of shore fish: an empirical study of branded mackerel in Japan. *Food Policy*, **35**: 488-495.
- Nagasawa, K., Tensha, K., 2016. *Nerocila phaiopleura* (Isopoda: Cymothoidae) parasitic on Japanese Spanish mackerel *Scomberomorus niphonius* in the Seto Inland Sea, Japan. *Biogeography*, **18**: 71-75.
- Nagasawa, K., Shirakashi, S., 2017. *Nerocila phaiopleura* (Isopoda: Cymothoidae), a cymothoid isopod parasitic on Pacific bluefin tuna, *Thunnus orientalis*, cultured in Japan. *Crustacean Research*, **46**: 95-101.
- Nagasawa, K., Fukuda, Y., Nishiyama, M., 2014. Further record of *Ceratothoa carinata* (Isopoda: Cymothoidae) parasitic on *Decapterus maruadsi* in Japanese waters. *Biogeography*, **16**: 59-61.
- Rameshkumar, G., Ravichandran, S., 2010. New host record, *Rastrelliger kanagurta*, for *Nerocila phaeopleura* parasites (Crustacea, Isopoda, Cymothoidae). *Middle-East Journal of Scientific Research*, **5**: 54-56.
- Saito, N., Hayase, Y., 2000. Note on an aegathoid stage of cymothoid isopod, *Nerocila phaiopleura* Bleeker, 1857 (Crustacea: Isopoda: Cymothoidae) stranded at Miho beach, Suruga Bay, middle of

- Japan. *I. O. P. Diving News*, **11**(10): 2-6. (in Japanese with English abstract).
- Trilles, J.-P., Ravichandran, S., Rameshkumar, G., 2011. A checklist of the Cymothoidae (Crustacea, Isopoda) recorded from Indian fishes. *Acta Parasitologica*, **56**: 446-459.
- Trilles, J.-P., Rameshkumar, G., Ravichandran, S., 2013. *Nerocila* species (Crustacea, Isopoda, Cymothoidae) from Indian marine fishes. *Parasitology Research*, **112**: 1273-1286.

マサバはイワシノコバンの新宿主

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要 旨 大分県佐賀関沖の豊予海峡で漁獲されたマサバの尾柄部に等脚類ウオノエ科のイワシノコバン *Nerocila phaiopleura* Bleeker, 1857の寄生を認めた。マサバはイワシノコバンの新宿主である。本報告は、瀬戸内海と周辺水域からのイワシノコバンの第4記録となる。

キーワード：イワシノコバン, ウオノエ類, 魚類寄生虫, 新宿主, 等脚類, マサバ