

## ***Nerocila* sp. (Isopoda: Cymothoidae) parasitizing *Mugil liza* (Teleostei: Mugilidae) in São Francisco do Sul, Santa Catarina, Brazil**

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### **Resumo**

***Nerocila* sp. (Isopoda: Cymothoidae) parasite of *Mugil liza* (Teleostei: Mugilidae) capturado em São Francisco do Sul, estado de Santa Catarina, Brasil.** Isópodes da família Cymothoidae são ectoparasitos de peixes, com baixa especificidade de hospedeiros, comumente encontrados fixados nas brânquias, boca, cavidade opercular, narinas e tegumento de ampla variedade de hospedeiros. Os danos causados são variáveis em função do grau de parasitismo e do sítio de infestação e podem provocar desconforto respiratório nos hospedeiros. O objetivo deste estudo foi relatar a ocorrência do isópode *Nerocila* sp. Leach, 1818 parasitando *Mugil liza* Valenciennes, 1836, capturada na Baía da Babitonga, estado de Santa Catarina, Brasil. Uma fêmea de 24 mm de comprimento e 11 mm de largura contendo ovos de  $1.18 \pm 0.08 \times 1.03 \pm 0.06$  mm, foi encontrada na nadadeira peitoral de *M. liza*.

**Palavras-chave:** Baía da Babitonga; Crustáceo; Parasito; Tainha

### **Abstract**

Isopods from the family Cymothoidae are fish ectoparasites displaying low host specificity found commonly attached to the gills, mouth, opercular cavity, nostrils and body surface of several host species. Damage can vary according to the degree of parasitism and the infestation site and may provoke respiratory discomfort in hosts. The aim of this study was to report the occurrence of a *Nerocila* sp. Leach, 1818 isopod parasitizing *Mugil liza* Valenciennes, 1836 captured in the Babitonga Bay, Santa Catarina State, Brazil. The female parasite specimen was recovered from the pectoral fin of *M. liza* and was 24 mm in length and 11 mm in width, and the mean egg size was  $1.18 \pm 0.08 \times 1.03 \pm 0.06$  mm.

**Key words:** Babitonga Bay; Crustacean; Mullet; Parasite

The Isopoda are dorsoventrally flattened crustaceans inhabiting both marine and freshwater environments (RAMESHKUMAR et al., 2016). Some isopod species play important roles in food webs by participating in the decomposition of material in natural or altered environments (ESPINOSA-PÉREZ; HENDRICKX, 2001; WILSON, 2008). Other species may act as ectoparasites of fish, usually parasitizing the gills, mouth, opercular cavity, nostrils and body surface of hosts (BOWMAN; TAREEN, 1983; CHARFI-CHEIKHROUHA et al., 2000; RAMDANE et al., 2007).

*Nerocila* spp. can be highlighted as one of the species from Cymothoidae (Leach, 1818) and is among the parasitic isopods (BRUSCA et al., 2001). They possess prehensile pereopods through their powerful curved claws and highly modified buccal parts that help them to remain attached to their hosts (THATCHER, 2006). They are also temporary and obligatory parasites and display low host specificity (ESPINOSA-PÉREZ; HENDRICKX, 2001; SMIT et al., 2014). The Cymothoidae life cycle is protandric and monoxenic (involving just one host) with direct transmission and sexual dimorphism (LEONARDOS; TRILLES, 2003; HIRANO et al., 2006); they are blood-feeding organisms, but can also feed on body surface mucus as well as epithelial and subcutaneous host tissues (RAMDANE et al., 2007).

Host damage can vary according to the degree of parasitism and infestation site and ranges from light to severe damage with hemorrhage and tissue destruction. In general, severe damage can result in secondary infections. One of the main problems associated with parasitism is the repugnant appearance of infested fish, because parasites can be seen by the naked eye; this can cause significant economic losses to fisheries (EIRAS, 2004; LIMA et al., 2013; EIRAS; CASTRO, 2016).

The mullet *Mugil liza* is a widely distributed species and an important fisheries resource. They are traditionally exploited by inshore fishing and have been incorporated into various cultural events. Their bodies are elongated and fusiform, and notable morphological characteristics include the display of dark longitudinal striae alternating with white striae. They are detritivorous, pelagic and catadromous fish that form large schools during

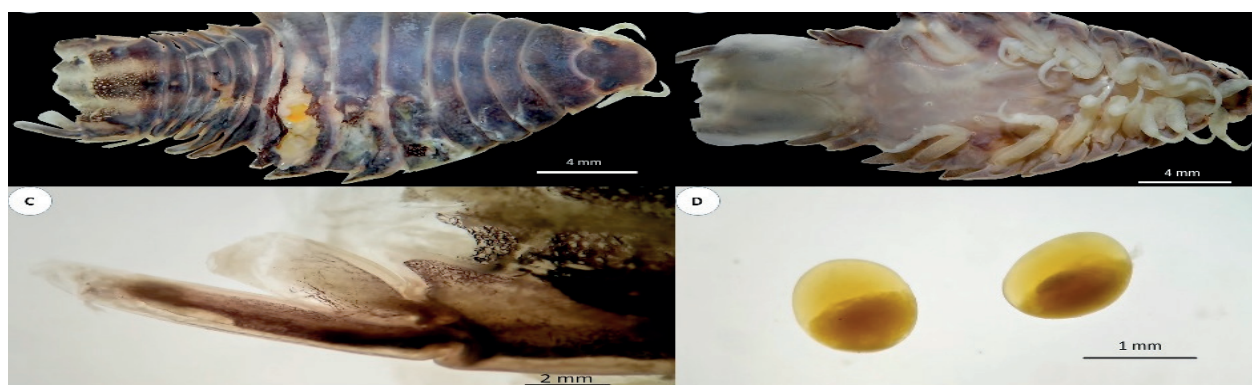
reproductive migrations (SECKENDORFF; AZEVEDO, 2007; MENEZES et al., 2010).

Bruce (1987), Ramdane et al. (2007), Öktener et al. (2010), Kayış and Ceylan (2011), Al-Zubaidy and Mhaisen (2013), Mahmoud et al. (2016), describe the occurrence of *Nerocila* in mugilids, but they do not mention *M. liza* as hosts. In this study we report the occurrence of the isopod *Nerocila* sp. parasitizing specimen of *M. liza* captured in Babitonga Bay, Santa Catarina, Brazil.

One male mullet specimen measuring 41 cm in total length, 38.4 cm standard length and with a weight of 983 g was captured in March 2016 by a fisherman using a net in Babitonga Bay (26°12'50.0"S, 48°39'00.2"W) in the São Francisco do Sul municipality, Santa Catarina State, Brazil. The parasite was found attached to the right pectoral fin of the fish (Figure 1) and was removed and placed in alcohol 70 for posterior identification according to Bruce (1987), Trilles (1975) and Brusca (1981). The host was identified according to Menezes et al. (2010; 2015).

The female isopod measured 24 mm long and 11 mm wide and was identified as *Nerocila* sp. (Figure 2) harboring  $1.18 \pm 0.08 \times 1.03 \pm 0.06$  mm sized eggs.

As the present report, *Nerocila* sp. has been reported parasitizing various teleost fish from Australia, New Zeland, Red Sea, France, Mediterranean Sea, Atlantic and North Ocean (BOWMAN; TAREEN, 1983; ÖKTENER et al., 2010; ABDEL-LATIF, 2016; YOUNES et al., 2016). *Nerocila* spp. have also been reported in Chondrichthyes fish, including sharks (MOREIRA; SADOWSKY, 1978). In Brazil, *Nerocila fluviatilis* Schiödt and Meinert, 1881 was reported by Sartor (1986) on the continental shelf of the state of Rio Grande do Sul, and *Nerocila armata* Dana, 1853 was reported in the states of São Paulo, Rio de Janeiro and Rio Grande do Sul (PIRES-VANIN, 1998; EIRAS; CASTRO, 2016). On the other hand, *N. armata* has been reported in the gill chamber and mouth of *Cichla ocellaris* (Bloch & Schneider, 1801), *Crenicichla saxatilis* (Linnaeus, 1758), *Leporinus fasciatus* (Bloch, 1794), *Mustelus canis* (Mitchill, 1815), *Micropogonias furnieri* (Desmarest 1823), *Pogonias cromis* (Linnaeus,

FIGURE 1: *Nerocila* sp. parasitizing the fin of *Mugil liza* (Valenciennes, 1836).FIGURE 2: Female *Nerocila* sp. (Leach, 1818) parasite specimen on *Mugil liza* (Valenciennes, 1836) (A – dorsal view; B – ventral view; C – uropod; D – eggs).

1766) and *Pseudauchenipterus nodosus* (Bloch, 1794) from Rio de Janeiro, Rio Grande do Sul and São Paulo (LUQUE et al., 2013); however, this species has not been reported on *M. liza* until the present study.

Using subaquatic pictures, Öktener et al. (2010) studied *Nerocila* parasites in mugilid fish from the Aegean and Black Seas. According to Bruce (1987), Al-Zubaidy and Mhaisen (2013) and Ramdane et al. (2007), *Nerocila* occurs mostly in Mugilidae fish, which corroborates results from the current study on the mullet *M. liza*.

This is the first report of *Nerocila* sp. on a mullet from southern Brazil. Additional studies are needed to elucidate the patterns of parasitism by these isopods on *M. liza* and other mullets, mainly for evaluating their potential to cause economic damage.

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