



Neonematobothrium annakohnae n. sp. (Digenea: Didymozoidae) parasitizing *Euthynnus alletteratus* (Perciformes: Scombridae) in the Southwest Atlantic Ocean

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Abstract

Purpose Describe a new species of didymozoid digenean *Neonematobothrium* Yamaguti, 1965 from the operculum of the scombrid fish, *Euthynnus alletteratus* (Rafinesque, 1810), in the Southwest Atlantic Ocean off Brazil.

Methods Thirty-four specimens of *E. alletteratus* were collected in the coastal zone of the state of Rio de Janeiro and obtained from local fishermen between 2006 and 2018 in the municipal market of São Pedro in Niterói, Brazil. The parasites were fixed in AFA (93% ethanol 70%, 5% formaldehyde, 2% glacial acetic acid) without pressure, stained with Langeron alcoholic acid carmine, dehydrated in an alcohol series, cleared in beachwood creosote or clove oil and mounted in Canada balsam as permanent slides.

Results *Neonematobothrium annakohnae* n. sp. is a member of the genus based on a combination of the following characteristics: body free, unencapsulated; body long and dorsoventrally flattened; esophagus surrounded by gland cells; ovary and vitellarium single, long, narrow and unbranched in the anterior and posterior halves of the body, respectively; uterus with three loops; and site of infection in subcutaneous tissue of scombrid fish. The new species differs from the two recognized species of the genus mainly by the size of the body, which is much larger, the shape of the genital pore, which is differentiated in a structure similar to a small sucker and by esophagus without diverticula.

Conclusions *Neonematobothrium annakohnae* n. sp. parasite of *E. alletteratus* from the Southwest Atlantic Ocean, described herein, represents the third species of Didymozoidae belonging to the genus *Neonematobothrium*. The two known species *Neonematobothrium kawakawa* Yamaguti, 1965 and *Neonematobothrium dorsale* Yamaguti, 1970 were described from fish belonging to the same genus of the host from Pacific Ocean. The diagnosis of the genus is enlarged to “esophagus with or without diverticula”, to fill the characteristics presented by the new species. The description of *N. annakohnae* n. sp. demonstrates the need to expand the studies of these interesting and intriguing group of parasites, due to the fact that number of known didymozoids taxa in the Atlantic Ocean is far from representing the real situation.

Keywords Brazil · Didymozoid · Trematodes · Little tunny · Scombrids

Introduction

Tuna and tuna-like species form the basis of very important commercial and recreational fisheries [1]. *Euthynnus alletteratus* (Rafinesque, 1810) (Perciformes, Scombridae), common named as little tunny, is a medium-sized epipelagic and

neritic tuna that is found in tropical and subtropical waters of the Atlantic Ocean, including the Caribbean Sea and the Gulf of Mexico, and also in the Mediterranean Sea and Black Seas [2].

Tuna species are commonly found to be parasitized by digeneans of the family Didymozoidae Monticelli, 1888, and, on rare occasions, severe infection caused by these parasites can reduce the commercial value of the catch [3]. They are among the large-bodied trematodes that can often be seen with the naked eye, parasitizing the skin, connective tissue and musculature of scombrid fishes [4].

Didymozoidae is the largest group of trematodes parasites of scombrid fishes. These are widely disseminated

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