Zoologia

Thunnus obesus (Perciformes, Scombridae), a new host record for three species of Digenea from the coastal zone of the state of *Rio de Janeiro*, Brazil: Research note

Thunnus obesus *(Perciformes, Scombridae), novo hospedeiro para três espécies de Digenea do litoral do estado do Rio de Janeiro, Brasil*: *Nota científica*

Marcia Cristina Nascimento Justo[1]
Anna Kohn[1]

ABSTRACT

Several fish species are known as host for Digenea trematods. Here, we describe three trematod species as parasites of the Bigeye tuna (*Thunnus obesus*), which is an important fishing resource for Brazil. We examined 35 specimens of *T. obesus* obtained from fishermen in Cabo Frio, Rio de Janeiro, southeastern Brazil. We found *Brachyphallus parvus* and *Tetrochetus coryphaenae*in the stomach and *Lecithochirium microstomum*in the intestine of fish.

Keywords: *Brachyphallus parvus*. Fish parasites. *Lecithochirium microstomum*. *Tetrochetus coryphaenae*.

RESUMO

Diversas espécies de peixes são conhecidas como hospedeiros detrematódes. Aqui nós registramos três espécies Digenea parasitando Thunnus obesus *(Albacora-bandolim), que é um importante recurso pesqueiro para o Brasil.*

---

[1] Fundação Oswaldo Cruz, Laboratório de Helmintos Parasitos de Peixes. Av. Brasil, 4365, Manguinhos, 21040-360, Rio de Janeiro, RJ, Brasil. *Correspondência para/*Correspondence to: M.C.N. JUSTO. *E-mail*:<marciajusto@ioc.fiocruz.br>.
Financial support: *Conselho Nacional de Desenvolvimento Científico e Tecnológico*.

Examinamos 35 espécimes de T. obesus *obtidos de pescadores em Cabo Frio, Rio de Janeiro, Brasil. Encontramos* Brachyphallus parvus *e* Tetrochetus coryphaenae *parasitando o estômago e* Lecithochirium microstomum *parasitando o intestino deste hospedeiro.*

Palavras-chave: Brachyphallus parvus. *Parasitos de peixes*. Lecithochirium microstomum.Tetrochetus coryphaenae.

INTRODUCTION

The Bigeye tuna - *Thunnus obesus* (Lowe, 1839) - is a large, predatory pelagic tuna fish inhabiting tropical and temperate waters between 50º N and 45º S, except in the Mediterranean. It is an important commercial species around the world (Collette & Nauen, 1983), specially in the Southwest Atlantic Ocean, where it is one of the largest fishery resource. However, currently it is captured close to the maximum sustainable yield. As a result, it is considered as vulnerable by the The International Union for the Conservation of Nature red list (Collette *et al*., 2011).Its diet is opportunistic, mainly composed by fish, cephalopod mollusks, and crustaceans (Gorni *et al*., 2013), but varying according to prey availability. However, little is known about helminth parasites infecting *T. obesus*, despite its ecological and economic importance. Therefore, more taxonomic studies involving its parasites and diseases are necessary.

MATERIAL AND METHODS

We examined 35 *Thunnus obesus* obtained from fishermen in Cabo Frio, Rio de Janeiro, Brazil (22º52’46"S; 42º01’07" W), being 14 females (44 - 64 cm standard body length; 1.70 - 4.55 kg) and 21 males (41 - 73 cm standard body length; 1.23 - 6.25 kg). Parasites were fixed by compression in AFA (Alcohol 93%, Formalin 5%, Acetic acid 2%), stained in alcoholic-acid carmine, dehydrated inalcohol series, cleared in methyl salicylate, and mounted in Canada balsam. We calculated parasitism indexes following Bush *et al*. (1997).

Specimens are deposited in the *Coleção Helmintológica do Instituto Oswaldo Cruz* (CHIOC, Helminthological Collection of the Instituto Oswaldo Cruz), Rio de Janeiro, Brazil: *B. parvus* (CHIOC nº 37.066 a-g, 37.067, 37.068, 37.069); *L. microstomum* (CHIOC nº 37.070, 37.071, 37.072 a-b, 37.065, 37.074, 37.075, 37.076 a-b, 37.077, 37.078, 37.079) and *T. coryphaenae* (CHIOC nº 37.073 a-e).

RESULTS AND DISCUSSION

We found three parasite species infecting *Thunnus obesus*: *Brachyphallus parvus* (Manter, 1940); Skrjabin & Guschanskaya, 1955 (Hemiuridae), *Lecithochirium microstomum* Chandler, 1935 (Hemiuridae), and *Tetrochetus coryphaenae* Yamaguti, 1934 (Accacoeliidae). This is the first time *T. obesus*is reported as new host for *B. parvus*, *L. microstomum,* and *T. coryphaenae*.

We found 65 specimens of *B. parvus* in the stomach of six fish, with mean intensity of 10.83 ± 9.26, and mean abundance of 1.86 ± 2.01. This species is known to parasite *Porichthys porosissimus* (Valencianes, 1837) in Argentina (referred as *Lecithochirium parvum* in Tanzola *et al*., 1997), and *Macruronus magellanicus* (Lönnberg, 1907) in Chile (Oliva, 2001) and Falklands (Gaevskaya & Kovaleva, 1978). In Brazil (see Travassos *et al.*, 1967), it is known to parasite *Pomatomus saltator* (Linnaeus, 1766) (Rego *et al*., 1983; Luque & Chaves, 1999), *Priacanthus arenatus* (Cuvier, 1829), *Cephalopholis fulva* (Linnaeus, 1758) (Fabio, 2000, 2001), *Lutjanus synagris* (Linnaeus, 1758) (Justo *et al*., 2003), and *Dactylopterus volitans* (Linnaeus, 1758) (Cordeiro & Luque, 2005).

We found 13 specimens of *L. microstomum* in the intestine of three fish, mean intensity of 4.33 ± 5.58

and mean abundance of 0.37 ± 0.57. It is known to parasite different hosts in South America (Kohn *et al*., 2007). In Scombrid fishes, *L. microstomum* was found in *Euthynnus alletteratus* (Rafinesque, 1810) from the Galapagos (Manter, 1940) and in *Auxis thazard* (Lcepède, 1800) in Brazil (Mogrovejo *et al*., 2004). In the Pacific Ocean, it was found in *E. alletteratus* and *Euthynnus affinis* (Cantor, 1849) (Pozdnyakov, 1990).

We found six specimens of *T. coryphaenae* in the stomach of one fish. This helminth was described by Yamaguti (1934) from *Coryphaena hippurus* (Linnaeus, 1758) from the Pacific Ocean. Posteriorly, it was also found in *Thunnus albacares* (Bonnaterre, 1788) occurring in the same ocean (Korataeva, 1976). It was also reported parasitizing *C. hippurus* (Oliva, 1984) in Chile and *T. albacares* in Brazil (Fernandes *et al*., 2002).

REFERENCES

Bush, A.O.; Lafferty, K.D.; Lotz, J.M. & Shostak, A.W. (1997). Parasitology meets ecology on its own terms: Margolis *et al*. revised. *Journal of Parasitology,* 83(4):575-83.

Collette, B.; Acero, A.; Amorim, A.F.; Boustany, A.; Canales Ramirez, C.; Cardenas, *et al.* (2011). *Thunnus obesus*.The IUCN Red List of Threatened Species. Version 2014.3. Available from: <www.iucnredlist.org>. (Accessed: 2015 January 29).

Collette, B.B. & Nauen, C.E. (1983). FAO Species Catalogue. Vol. 2. Scombrids of the World. An annotated and illustrated catalogue of tunas, mackerels, bonitos and related species know to date. Rome: Italy. (*FAO Fisheries Synopses*, 125, v.2).

Cordeiro, A.S. & Luque, J.L. (2005). Metazoan parasites of flying gurnards, *Dactypopterus volitans* (Linnaeus, 1758) (Osteichthyes: Dactylopteridae) from the coastal zone of the State of Rio de Janeiro, Brazil. *Acta Scientiarum Biological,*27(2):119-23.

Fábio, S.P. (2000). Helmintos parasitos de *Priacanthus arenatus* Cuvier, 1829 (Pisces: Priacanthidae) em Cabo Frio, RJ, Brasil. *Boletim do Museu Nacional*, 421:1-14.

Fábio, S.P. (2001). Trematódeos parasitos de *Cephalopholis fulva* (Linnaeus, 1758) (Pisces: Serranidae) em Angra dos Reis, RJ, Brasil. *Boletim do Museu Nacional*, 456:1-8.

Fernandes, B.M.M.; Kohn, A. & Santos, A.L. (2002). Some Digenea parasites of tunny from coast of *Rio de Janeiro* State, Brazil. *Brazilian Journal Biology*, 62(3):453-7.

Gaevskaya, A.V. & Kovaleva, A.A. (1978). Data on the trematodes of fishes from the Southwestern Atlantic.*Vestnik Zoologii,* 3:60-6.

Gorni, G.R.; Goitein, R. & Amorim, A.F. (2013). Description of diet of pelagic fish in the Southwestern Atlantic, Brazil. *Biota Neotropica*, 13(1):61-9.

Justo, M.C.N.; Fernandes, B.M.M. & Kohn, A. (2003). New records Digenea parasites of Brazilian marine fishes. *Arquivos de Ciências do Mar*, 36:101-4.

Kohn, A.; Fernandes, B.M.M. & Cohen, S.C. (2007). *South American trematodes parasites of fishes*. Rio de Janeiro: Imprinta Express.

Korataeva, V.D. (1976). On the fauna of trematodes of the family Accacoeliidae from Pacific fishes. *Biologiia Moria*, 4:60-2.

Luque, J.L. & Chaves, N.D. (1999). Community ecology of metazoan parasites of bluefish *Pomatomus saltator* (Linnaeus) (Osteichthyes, Pomatomidae) from the coast of Rio de Janeiro State, Brazil. *Revista Brasileira de Biologia*, 16(3):711-23.

Manter, H.W. (1940). Digenetic trematodes of fishes from the Galapagos Islands and the neighboring Pacific. *Allan Hancock Pacific Expeditions,* 2:325-497.

Mogrovejo, D.C.; Lent, H. & Santos, P.S. (2004). Morphological aspects of marine Monogenea (Platyhelminths) parasitic on the gills of *Auxisthazard* (Lacèpede) (Scombridae) from Rio de Janeiro, Brazil. *Revista Brasileira de Zoologia,* 1(2):201-6.

Oliva, M.M. (1984). New records of digenetic trematodes in marine fishes from Antofagasta. *Revista Ciencia y Tecnología del Mar,* 8:9-15.

Oliva, M.M. (2001). Metazoan parasites of *Macruronus magellanicus* from Southern Chile as biological tags. *Journal of Fish Biology,* 58:1617-22.

Pozdnyakov, S.E. (1990). *[Helminths of scombrid-like fishes of the world's Oceans]*. Vladivostok: Academy of Sciences of the URSS. (In Russian).

Rego, A.A.; Vicente, J.J.; Santos, C.P. & Wekid, R.M. (1983). Parasitas de anchovas, *Pomatomus saltatrix* (L.) do Rio de Janeiro. *Ciência e Cultura*, 35:1329-36.

Tanzola, R.D.; Guagliardo, S.E.; Brizzola, S.M. & Arias, M.V. (1997). Helminth fauna of *Porichthys porosissimus* (Pisces: Batrachoidiformes) in the estuary of Bahia Blanca, Argentina. *Helminthologia*, 34:221-7.

Travassos, L.; Freitas, J.F.T. & Bührnheim, P.F. (1967). Relatório da excursão do Instituto Oswaldo Cruz ao Estado do Espírito Santo em novembro de 1964. *Boletim do Museu de Biologia Mello Leitão,* 31:1-5.

Yamaguti, S. (1934). Studies on the helminth fauna of Japan. Part 2. Trematodes of fishes. I. *Japanese Journal Zoology,* 5:249-541.

Received: February 9, 2015
Final version: August 28, 2015
Approved: September 22, 2015