

Spirorchiids (Digenea: Spirorchiidae) in Loggerhead Turtle (*Caretta caretta* Linnaeus 1758) in the State of São Paulo, Brazil: Tissue Lesions Due to Spirorchiid Eggs

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Abstract

Spirorchiids (Digenea: Spirorchiidae) are trematodes known to inhabit the circulatory system of turtles. Approximately 100 species are distributed among 20 genera, 10 of which are exclusive to sea turtles (Smith, 1997¹; Platt 2002²; Roberts et al., 2016³). Spirorchiid trematodes are implicated as an important cause of stranding and mortality in sea turtles worldwide. The impact of these parasites on sea turtle health is poorly understood due to biases in study populations and limited or missing data for some host species and regions (Jacobson et al., 2006; Stacy et al. 2010⁴; Chapman et al., 2019⁵).

This is the second report in Brazil and the first on the coast of São Paulo state of egg infection at helminths of the family spirorchiidae in sea turtle Loggerhead (*Caretta caretta*). This patient was admitted at the Center for Depetrolization and Rehabilitation of Marine Animals - Gremar Institute in March 2019.

It was a female loggerhead turtle measuring 92 cm (curvilinear carapace length) and weighing 69 kg found stranded in the Southeast Coast of São Paulo (Lat. - 24.2093672; Long. -46.8312621), during the "Santos Basin Beach Monitoring Project" (PMP-BS), which is part of the federal environmental licensing process conducted by IBAMA, for the activities of PETROBRAS exploration and production of oil and natural gas in the Santos basin Pré-salt. After further examination, a hook was found in nylon-linked esophagus, causing intestinal loops to fold. Patient died on due to complications in the clinical condition and necropsic examination was performed immediately. During the macroscopic examination, pulmonary congestion was observed with the presence of light-colored aerated fluid in the alveoli, hydroceloma and caseous enterocolitis. Organ samples were collected and fixed in 10% buffered formalin solution. The histopathological examination of the samples revealed the presence of mild generalized spirorchidiosis. Rare eggs from the spirorchiidae family eliciting giantocyte inflammatory response were found in brain, heart, liver, salt gland, eyeball and pancreas.

Infection of sea turtles by members of the Spirorchiidae family has gained recent decades, since many works have identified its occurrence in different parts of the world (Santoro et al., 2007⁵; Santoro et al., 2017⁶; Marchiori et al., 2017⁷). Most of the time, the diagnosis is only achieved through necropsy, revealing high prevalence in the analyzed animals. Injuries resulting from parasitism by members of this family in sea turtles are extremely harmful, and may even cause the death of the hosts in some situations (Chapman et al., 2019), or be an aggravating factor for other pathologies. Eight species of spirorchiids have been reported for Brazil, with lesions stemming from the accumulation of eggs found in the green turtle (*Chelonia mydas*), hawksbill turtle (*Eretmochelys imbricata*), olive Ridley turtle (*Lepidochelys olivacea*) and Loggerhead turtle (Werneck et al. 2016⁸). During macroscopic examination no nodules containing the eggs of parasites were found in region of the intestines or other organs analyzed. Due to the fact that it is a parasite with a significant impact on the health of other sea turtle species, the organ shake procedure and histopathological analysis of the necropsied animals are recommended in order to know the impact of the parasite on Loggerhead populations.

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