

Marine leech *Ozobranchus margo* parasitizing loggerhead turtle (*Caretta caretta*) in Rio Grande do Sul, Brazil

Sanguessugas *Ozobranchus margo* parasitando uma tartaruga cabeçuda (*Caretta caretta*) no Rio Grande do Sul, Brasil

Carla Rosane Rodenbusch^{1*}; Fernanda Simone Marks¹; Cláudio Wageck Canal¹; José Reck²

¹Laboratório de Virologia, Faculdade de Veterinária, Universidade Federal do Rio Grande do Sul – UFRGS, Porto Alegre, RS, Brasil

²Laboratório de Parasitologia, Instituto de Pesquisas Veterinárias Desidério Finamor – IPVDF, Fundação Estadual de Pesquisa Agropecuária – FEPAGRO, Eldorado do Sul, RS, Brasil

Received September 6, 2011

Accepted April 9, 2012

Abstract

This paper reports the finding of several *Ozobranchus margo* (Annelida: Hirudinea) parasitizing a loggerhead turtle (*Caretta caretta*) that was found in the municipality of Tavares, state of Rio Grande do Sul, southern Brazil. Since this parasite is considered to be a vector of chelonid herpesvirus 5 (ChHV-5), the leeches collected were tested for the presence of this virus. All the specimens were negative on PCR analysis. Although *O. margo* is considered to be a common sea turtle parasite, this is the first official record describing collection of this parasite from a loggerhead turtle in southern Brazil, within the country's subtropical zone. This finding draws attention to the presence of this parasite and to the risk of leech-borne infectious diseases among turtles found along the coast of southern Brazil.

Keywords: *Ozobranchus margo*, Hirudinea, leech, loggerhead turtle, ectoparasite.

Resumo

Este artigo relata a descoberta de vários exemplares de *Ozobranchus margo* (Annelida Hirudínea) parasitando uma tartaruga cabeçuda (*Caretta caretta*) encontrada no município de Tavares, Rio Grande do Sul, sul do Brasil. Uma vez que esse parasito é considerado vetor do chelonid herpesvirus 5 (ChHV 5), as sanguessugas foram testadas para a presença deste vírus. Todas as amostras foram negativas pela análise de PCR. Embora o *O. margo* seja considerado um parasito comum de tartarugas marinhas, este é o primeiro registro oficial que descreve a coleta deste parasita em uma tartaruga cabeçuda no sul do Brasil, dentro da zona subtropical do país. Este achado chama a atenção para a presença deste parasita e para o risco de sanguessugas transmitirem doenças infecciosas em tartarugas no litoral sul do Brasil.

Palavras-chaves: *Ozobranchus margo*, Hirudinea, sanguessuga, tartaruga cabeçuda, ectoparasita.

Introduction

Leeches are members of phylum Annelida, class Hirudinida. Most leeches are blood-suckers and can be found as ectoparasites of several terrestrial or aquatic vertebrates (DAVIES; GOVEDICH, 2001). *Ozobranchus* spp. belongs to the family Ozobranchidae, characterized by the presence of typical lateral digitiform branchiae (MacCALLUM; MacCALLUM, 1918). This family includes two main species, which are permanent and exclusive ectoparasites of sea turtles: *O. branchiatus* and *O. margo* (CHRISTOFFERSEN, 2008).

Although *O. branchiatus* and *O. margo* can parasitize several species of sea turtles, these organisms demonstrate some degree of host preference. In general, *O. branchiatus* is commonly found

parasitizing the green turtle (*Chelonia mydas*). On the other hand, *O. margo* is more frequently associated with parasitism on the loggerhead turtle (*Caretta caretta*) (BUNKLEY-WILLIAMS et al., 2008).

A single turtle can carry more than one hundred leeches. Parasitism by *Ozobranchus* spp. may cause severe skin lesions, deep cutaneous erosion, eye injuries and even host death (DAVIES; CHAPMAN, 1974; SCHWARTZ, 1974; BUNKLEY-WILLIAMS et al., 2008). Another potential hazard associated with *Ozobranchus* spp. parasitism is the risk of chelonid herpesvirus 5 (ChHV-5) transmission. ChHV-5 is associated with the development of fibropapillomatosis (FP), a pathological condition of sea turtles characterized by occurrences of debilitating tumors in the skin and internal organs, which can progress to the animal's death (GREENBLATT et al., 2004).

Ozobranchus spp. is considered to be a common ectoparasite of sea turtles, and it has been reported to parasitize turtles in

*Corresponding author: Carla Rosane Rodenbusch
 Laboratório de Virologia, Faculdade de Veterinária,
 Universidade Federal do Rio Grande do Sul – UFRGS,
 Av. Bento Gonçalves, 9090, CEP 91540-000, Porto Alegre, RS, Brasil
 e-mail: carlarodenbusch@yahoo.com.br

different locations around the world (BUNKLEY-WILLIAMS et al., 2008; CHRISTOFFERSEN, 2008). *O. branchiatus* has been reported in *C. mydas* (MacCALLUM; MacCALLUM, 1918; WILLIAMS JUNIOR et al., 1994; PEREIRA et al., 2006) while *O. margoi* has been reported parasitizing both *C. caretta* and *C. mydas*. The places where *O. margoi* has been found in *C. mydas* include Florida and North Carolina (USA), Australia and Hawaii (RICHARDSON, 1969; SCHWARTZ, 1974; DAVIES; CHAPMAN, 1974). *O. margoi* has also been identified parasitizing *C. caretta* (DAVIES; CHAPMAN, 1974).

In Brazil, a great deal of anecdotal information circulates, especially among marine biologists and wild-animal veterinarians, regarding the presence of these parasites in turtles found on the coastline of tropical areas of the country. However, no official records reporting on collection and identification of *O. margoi* on sea turtles along the Brazilian coastland have been published, particularly in relation to the subtropical zone. Here, we report the finding of several *O. margoi* parasitizing a loggerhead turtle (*C. caretta*) that was found in the state of Rio Grande do Sul, Brazil. Also, the leeches collected were tested for the presence of ChHV-5 by means of PCR analysis.

Report and Discussion

A loggerhead sea turtle *C. caretta* (Figure 1a) was found dead on the beach sand in the municipality of Tavares (31° 19' 4.8" S and 50° 59' 49.2" W), state of Rio Grande do Sul, southern Brazil. Forty-eight adult specimens of *O. margoi* were identified attached to the skin of the pelvic region of the loggerhead turtle, around the cloaca (Figure 1b). Some leeches were collected. The specimens of *O. margoi* were deposited in the parasite collection of the Parasitology Laboratory of the Desidério Finamor Veterinary Research Institute (IPVDF), Brazil.

The *O. margoi* specimens collected (Figure 2) were identified based on morphological characteristics (DAVIES, 1978). Adult *O. margoi* specimens are usually 10-15 mm long. They are white/whitish and often show large dark spots, usually after a blood meal. The body is segmented, and divided into the trachelosome and urosome. They typically have five pairs of gills. These are thin bristle-like structures that branch out as smaller parts. The first gill pair occurs on segment XIII and is bigger and more complex than the others. From the second to the fifth pair, the gills become sequentially smaller and less complex. The mouth is terminal-ventral (DAVIES, 1978).

Some of the leeches collected were subjected to PCR analysis to detect ChHV-5. The leeches were macerated in sterile phosphate-buffered saline (PBS) solution and DNA extraction was conducted as previously established (CHOMCZYNSKI, 1993). PCR for ChHV-5 detection was carried out as described by Quackenbusch et al. (2001). The DNA samples from the leeches collected did not yield any amplicons through the PCR test, and therefore these samples were considered to be negative for ChHV-5. Although the leeches collected were negative for ChHV-5, we cannot dismiss the possibility that *Ozobranchus* spp. may be a vector for ChHV-5 along the Brazilian coastline. Greenblatt et al. (2004) reported that *Ozobranchus* spp. may carry a high viral load, reaching 10 million copies per leech. Moreover, considering the lack of reports on this subject, further studies searching for ChHV-5 and also for FP in sea turtles in southern Brazil should be conducted.

The loggerhead turtle is one of the most common sea turtles on the Brazilian coast, including in the country's subtropical zone. Nevertheless, this turtle is currently threatened with extinction, and is classified as an endangered species (IUCN, 2011). Wyneken et al. (1988) mentioned that the overall decline in sea turtle populations can be directly or indirectly attributed to the destruction of their habitats, and to anthropic action on the nesting beaches. Moreover, strong evidence suggests that predation

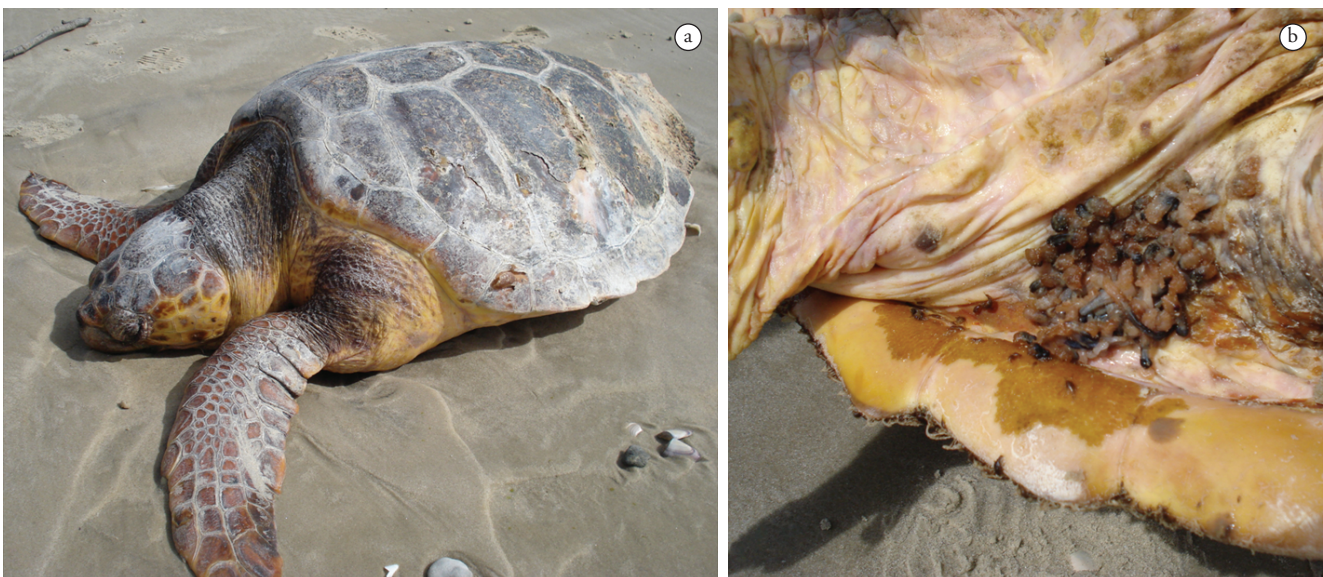


Figure 1. Panel a) Loggerhead turtle (*Caretta caretta*) found dead on the beach sand in the municipality of Tavares, state of Rio Grande do Sul, Southern Brazil. Panel b) Several marine leeches (*Ozobranchus margoi*) attached to the groin skin of the loggerhead turtle.



Figure 2. Two specimens of *Ozobranchus margoii* that were found attached to the loggerhead turtle. Bar 1 cm.

of juveniles and eggs, predatory fishing and water pollution contribute towards this risk. In order to avoid decreases in turtle populations, conservation programs are currently in progress in Brazil (MARCOVALDI; MARCOVALDI, 1999). It is important to note that, as a further important conservation procedure, the diseases that affect sea turtles should be identified. Occurrences of parasitic and infectious diseases can impair animal health and also cause death, thus reducing sea turtle numbers. In this regard, *Ozobranchus* spp. represents a health hazard to sea turtles, since it can cause direct damage and also be a vector for infectious agents.

As far as we are aware, this is the first official record describing collection of *O. margoii* on a loggerhead turtle (*C. caretta*) in Southern Brazil, within the country's subtropical zone. These findings draw the attention of marine biologists, veterinarians and parasitologists to the presence of this parasite and to the risk of leech-borne infectious diseases in sea turtles on the southern Brazilian coast.

References

Bunkley-Williams L, Williams Junior EH, Horrocks JA, Horta HC, Mignucci-Giannoni AA, Poponi AC. New leeches and diseases for the hawksbill sea turtle and the West Indies. *Comp Parasitol* 2008; 75(2): 263-270. <http://dx.doi.org/10.1654/4252.1>

Chomczynski P. A reagent for the single-step simultaneous isolation of RNA, DNA and proteins from cell and tissue samples. *Biotechniques* 1993; 15(3): 532-534, 536-537.

Christoffersen ML. A catalogue of the Piscicolidae, Ozobranchidae, and Arhynchobdellida (Annelida, Clitellata, Hirudinea) from South America. *Neotrop Biol Conserv* 2008; 3(1): 39-48.

Davies RW. The morphology of *Ozobranchus margoii* (Apathy) (Hirudinoidea), a parasite of marine turtles. *J Parasitol* 1978; 64(6):1092-1096. <http://dx.doi.org/10.2307/3279733>

Davies RW, Chapman CG. First record from North America of the piscicolid leech, *Ozobranchus margoii*, a parasite of marine turtles. *J Fish Res Board Can* 1974; 31(1):104-106. <http://dx.doi.org/10.1139/f74-016>

Davies RW, Govedich FR. Annelida: Euhirudinea and acanthobdellidae In: Thorp JH, Covich AP. *Ecology and Classification of North American Freshwater Invertebrates*. San Diego: Academic Press; 2001. p. 465-504. <http://dx.doi.org/10.1016/B978-012690647-9/50014-4>

Greenblatt RJ, Work TM, Balazs GH, Sutton CA, Casey RN, Casey JW. The *Ozobranchus* leech is a candidate mechanical vector for the fibropapilloma-associated turtle herpesvirus found latently infecting skin tumors on Hawaiian green turtles (*Chelonia mydas*). *Virology* 2004; 321(1):101-110. <http://dx.doi.org/10.1016/j.virol.2003.12.026>

International Union for Conservation of Nature - IUCN. *IUCN Red List of Threatened Species*. version 2011.1. [cited 2011 Aug 10]. Available from: <http://www.iucnredlist.org>.

MacCallum WG, MacCallum GA. On the anatomy of *Ozobranchus branchiatus* (Menzies). *B Am Mus Nat Hist* 1918; 38: 395-408.

Marcovaldi MA, Marcovaldi GG. Marine turtles of Brazil: the history and structure of Projeto TAMAR-IBAMA. *Biol Conser* 1999; 91(1): 35-41. [http://dx.doi.org/10.1016/S0006-3207\(99\)00043-9](http://dx.doi.org/10.1016/S0006-3207(99)00043-9)

Pereira S, Lima EHSM, Ernesto L, Mathews H, Ventura AA. Epibionts associated with *Chelonia mydas* from northern Brazil. *Mar Turtle News* 2006; 111: 17-18.

Quackenbush SL, Casey RN, Murcek RJ, Paul TA, Work TM, Limpus CJ, et al. Quantitative analysis of herpesvirus sequences from normal tissue and fibropapillomas of marine turtles with real-time PCR. *Virology* 2001; 287(1): 105-111. <http://dx.doi.org/10.1006/viro.2001.1023>

Richardson LR. The family Ozobranchidae redefined, and a novel Ozobranchiform leech from Murray River turtles (class Hirudinoidea: order Rhynchobdelliformes). *PL Soc New South Wales* 1969; 94: 61-80.

Schwartz FJ. The marine leech *Ozobranchus margoii* (Hirudinea: Piscicolidae) epizootic on *Chelonia* and *Caretta* sea turtles from North Carolina. *J Parasitol* 1974; 60(5): 889-890. <http://dx.doi.org/10.2307/3278927>

Williams Junior EH, Bunkley-Williams L, Bureson EM. Some new records of marine and freshwater leeches from Caribbean, southeastern U.S.A., eastern Pacific, and Okinawan animals. *J Helminthol Soc Wash* 1994; 61(1): 133-138.

Wyneken J, Burke TJ, Salmon M, Pedersen DK. Egg failure in natural and relocated sea turtle nests. *J Herpetol* 1988; 22: 88-96. <http://dx.doi.org/10.2307/1564360>