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Lesser Grison (*Galictis cuja* Molina, 1782) as host of *Dioctophyme renale* Goeze, 1782

*Furão Pequeno (***Galictis cuja** *Molina, 1782) como hospedeiro de* **Dioctophyme renale** *Goeze, 1782*

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ABSTRACT: The *Dioctophyme renale* is a helminth parasite of the kidney usually seen in domestic and wild carnivores and rarely in human beings. This is a report about the parasitism of *D. renale* found in the kidney of two roadkill lesser grisons (*Galictis cuja*) in the North of the state of Santa Catarina, Brazil. The report of this parasitism in this species is important to complement the records about this native carnivore as a contributor in the epidemiologic chain while host/disseminator of this helminth with zoonotic potential.

KEYWORDS: *Dioctophyma*; wild animal; mustelids; roadkill; kidney parasitism.

RESUMO: O *Dioctophyme renale* é um helminto parasita renal observado normalmente em carnívoros domésticos e silvestres e excepcionalmente em seres humanos. Relata-se o parasitismo por *D. renale* em rim de dois furões pequenos (*Galictis cuja*) encontrados mortos por atropelamento no Norte do estado de Santa Catarina, Brasil. Relatar esse parasitismo nessa espécie é importante, para que se possam somar dados relativos a participação deste carnívoro nativo na cadeia epidemiológica como hospedeiro/ veiculador desse helminto com potencial zoonótico.

PALAVRAS-CHAVE: *Dioctophyma*; animal silvestre; mustelídeo; atropelamento em rodovia; parasitismo renal.

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The lesser grison (*Galictis cuja*) is a mammal that belongs to the Mustelidae Family, Order Carnivora and can be found in South America, from East to South in Brazil (REID; HELGEN, 2008). It frequently occurs near water but can also be seen in opened (MARES et al., 1989) and agricultural areas (REID; HELGEN, 2008). Its diet consists mainly of small and medium-sized vertebrates such as rodents, lagomorphs, birds, frogs, lizards, snakes and eggs (QUINTANA et al., 2000). This species is not in the Brazilian List of Endangered Fauna (MACHADO et al., 2005) and is considered least concern by the Red List of Threatened Species of the International Union for Conservation of Nature (IUCN) (IUCN, 2014). However it is important to note that its population is unknown.

According to VIEIRA (1996), *G. cuja* is the fifth most often road killed mammal species in Central Brazil, corresponding to 6.1% of all roadkill in the region. Considering that the consequences of parasitic diseases in this species increase the incidence of roadkill, researches about the helminth fauna of wild animals are as important to the wildlife conservation as to public health (LAFFERTY, 1997), since some of the parasites have a zoonotic potential.

The study of endoparasites of wild animals is important in order to comprehend the ecology, natural history, life cycle, and evolution of both parasites and hosts (SILVA et al., 2008). Brazil lacks researches in this filed. The aim of this study is to report *Dioctophyme renale* parasitism of two specimens of *Galictis cuja* in the north of Santa Catarina state, Brazil, in a region where there is a large incidence of this nematode in domestic dogs (PEDRASSANI; CAMARGO, 2004; PEDRASSANI et al., 2009).

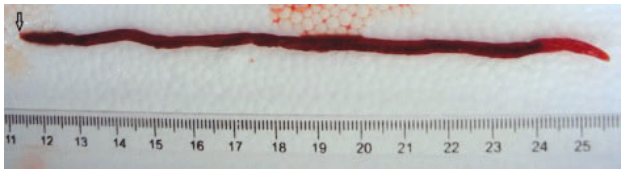

Figure 1. *Dioctophyme renale* removed from right kidney of *Galictis cuja*. Note: The black arrow indicates the male copulatory muscular bursa.

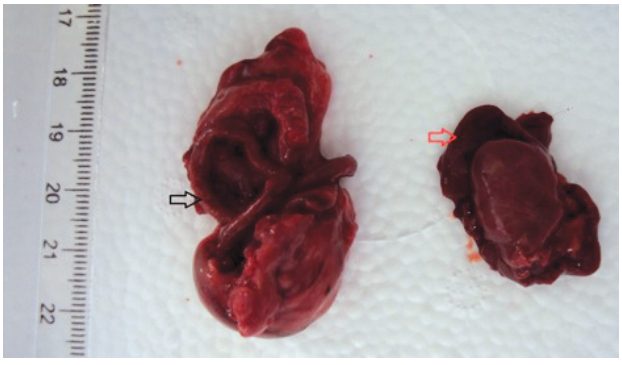

Figure 2. Kidneys from necropsied *Galictis cuja*. Right kidney increased in size and parasited by *Dioctophyme renale* (black arrow) and left kidney with normal size and absence of parasitism (red arrow).

Two *G. cuja* used in this study were found dead in a local highway in Canoinhas, Santa Catarina state (latitude 26º6'1,02"S; longitude 50º17 23'27,26"O), and both had signs of a recent roadkill. The carcasses were placed in isothermal boxes and sent to Universidade do Contestado for necropsy. The parasites found were washed in saline solution 0.9%, fixed in alcohol 70º, analyzed in a stereoscopic microscope, identified, and morphologically classified according to the classification key (ANDERSON; BAIN, 1982).

The first specimen was an adult female G. cuja, found in October 2014. Its necropsy revealed a male *Dioctophyme renale* parasite in the right kidney, measuring a total 14.8 cm in length and 0.45 cm in diameter (Fig. 1). The right kidney was dysmorphic and hypertrophied and just a small amount of its parenchyma was preserved (Fig. 2). The left kidney was apparently intact (Fig. 2).

The second lesser grison was found in November 2014 and was also an adult female. Its necropsy revealed a *D. renale* female parasite in the right kidney, measuring 23.3 cm in length and 0.6 cm in diameter. The right kidney was dysmorphic and — due to mechanic and enzymatic actions of the helminth — its parenchyma was nearly destroyed; just a portion of the cortical remained. Some parasites (*Crenosoma* sp.) were also found in its bronchioles (PEDRASSANI et al., 2015).

The *Dioctophyme renale* (Goeze, 1782) Collet-Meygret, 1802 (Dioctophymatidae), known as the giant kidney worm, is distributed worldwide and is frequently reported as a parasite of domestic (mainly dogs) and wild carnivores (MONTEIRO et al., 2002; PEDRASSANI et al., 2009; PESENTI et al., 2012; RIBEIRO et al., 2009; ZABOTT et al., 2012). In the Neotropical region, many carnivore species have already been reported as a definitive host, such as the maned wolf (*Chrysocyon brachyurus*), the crab-eating raccoon (*Procyon cancrivorus*), the vinegar dog (*Speothos venaticus*), the South American coati (*Nasua nasua*), the crab-eating fox (*Cedocyon thous*) and the lesser and greater grisson (*Galictis cuja* and *G. vittata*) (BARROS et al., 1990; REIS et al., 2006; PEDRASSANI et al., 2009; PESENTI et al., 2012; ZABOTT et al., 2012).

This parasite is found in the kidney (mostly in the right one) or loose inside the abdominal cavity of its hosts. When inside the kidney, it causes a progressive destruction of the cortical and medullar layers, and the kidney is reduced to a fibrous capsule (LEITE et al., 2005; PEDRASSANI et al., 2009).

The definitive host is infected by the direct ingestion of the intermediate host, an aquatic oligochaeta annelida (*Lumbriculus variegatus*), when the latter is infected by the parasite larvae in its third stage (infecting larvae). Another way of infection is through the ingestion of the paratenic host, fishes and frogs (MEASURES; ANDERSON, 1985; PEDRASSANI et al., 2009).

In São Cristóvão District, municipality of Três Barras, Santa Catarina state, which is separated from the municipality of Canoinhas by the Canoinhas River, the parasitism of *D. renale* is frequently observed in domestic dogs (PEDRASSANI; CAMARGO, 2004). According to local studies, there is a

prevalence of 5.17% of *D. renale* larves in *Chaunus ictericus* (PEDRASSANI et al., 2009), an amphibian with a wide geographic distribution. *C. ictericus* has an easy adaptability to modified environments and it is commonly found near human habitations (SABAGH; CARVALHO-E-SILVA, 2008).

The Highway where both lesser grisons were found is close to Canoinhas River and São Cristóvão District (SC). According to QUINTANA et al. (2000), the lesser grison's diet includes toads as the *C. Ictericus* found in this region. These facts corroborate with previous studies (PEDRASSANI; CAMARGO, 2004; PEDRASSANI et al., 2009), indicating that the *D. renale* is endemic to this location.

There aren't many studies about wild animals roadkills in Santa Catarina, but COSTA (2011) reported that the *G. cuja* is the third most common one — among small and medium sized mammals — on BR 101 Highway (north of the state). Since two infected specimens were found in a short period, it is believed that the cycle of the *D. renale* on lesser grisson developed sustainable ways of surviving. Considering its zoonotic nature, the parasitism in this area should be continuously monitored.

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