

## ***Porocephalus* species (Pentastomida) infecting *Boa constrictor* (Boidae) and *Lachesis muta* (Viperidae) in northeastern Brazil**

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### **Resumo**

**Espécies de *Porocephalus* (Pentastomida) infectando *Boa constrictor* (Boidae) e *Lachesis muta* (Viperidae) na Região Nordeste do Brasil.** O Brasil possui uma grande diversidade de cobras, mas há poucos trabalhos realizados sobre parasitismo destas por pentastomídeos. No intuito de investigar o parasitismo pulmonar por pentastomídeos em grandes cobras na região nordeste, foram examinados seis espécimes de *Boa constrictor* e duas de *Lachesis muta* pertencentes à coleção do Serpentário da Universidade Federal de Pernambuco – UFPE, todos coletadas em localidades de mata úmida (Mata Atlântica). Apenas um espécime de *B. constrictor* estava infectado por *Porocephalus* sp. (intensidade de infecção 5,0). Apenas um espécime de *L. muta* estava infectado por *P. stilesi* (intensidade de infecção 15,0).

**Unitermos:** Endoparasitas, Pentastomida, cobras, Região Neotropical

### **Abstract**

Brazil has a great diversity of snakes, but there are few published works concerning parasitism in these animals. The present paper examined pulmonary infection by pentastomids in large snakes from northeastern Brazil, including six specimens of *Boa constrictor* and two examples of *Lachesis muta* from the Serpentarium of the Federal University of Pernambuco (UFPE), Brazil, all of which were collected in the Atlantic Coastal Forest. One specimen of *B. constrictor* was infected by *Porocephalus* sp. (intensity of infection 5.0) and one specimen of *L. muta* was infected by *P. stilesi* (intensity of infection 15.0).

**Key words:** Endoparasites, Pentastomids, snakes, Neotropical Region

Brazil has a great diversity of snakes and associated parasite fauna. These parasites have significant but little-studied roles in the regulation of ophidian populations, local extinctions, and the spread of infectious diseases. Among the principal snake parasites encountered in Brazil are the pentastomids, which are known to infect the respiratory tracts of these animals (Rego, 1981a, 1984 and 1987; Almeida and Christoffersen, 2002; Almeida et al., 2006 and 2007). Infections caused by these parasites can be very serious and/or lethal, causing lesions in lung tissues and obstruction of the trachea that can result in interstitial subacute pneumonia with congestion (Grego et al., 2004).

There are only four species of pentastomids known to parasitize snakes in Brazil: *Cephalobaena tetrapoda* encountered in the states of Ceará and São Paulo (Motta, 1963a and 1963b; Rego, 1983 and 1987; Almeida et al., 2006 and 2007), *Kiricephalus coarctatus* (Rego, 1981b) and *Porocephalus crotali* encountered in São Paulo (Rego, 1981a), and *Raillietiella furcocerca* encountered in the states of Ceará and São Paulo (Motta, 1963a and 1963b; Rego, 1983, 1984 and 1987; Almeida et al., 2006 and 2007).

Riley (1986) argued that pentastomids demonstrate a high degree of host specificity, but much evidence indicates that the neotropical species of this group are generalists, parasitizing diverse species and families of ophidians (booids, colubrids, elapids and viperines) (Motta, 1963a and 1963b; Rego, 1981a, 1981b, 1983, 1984 and 1987; Grego et al., 2004; Almeida et al., 2006 and 2007).

The great majority of published work on pentastomid parasitism concerns reports of their occurrence or taxonomic revisions. Infection levels (prevalence and average intensity of infections) have been specified in only three articles: Grego et al. (2004) reporting infections by *Porocephalus* sp. in *Bothrops jararaca*, and Almeida et al. (2006 and 2007) reporting infections of *C. tetrapoda* and *R. furcocerca* in *Philodryas nattereri* and *C. tetrapoda* in *Liophis lineatus*, and the parasitism of *Micrurus ibiboboca* by *Raillietiella* sp.

Our study sought to investigate lung endoparasites and their infection levels among snakes encountered in northeastern Brazil.

The ophidians examined were housed at the Serpenterium of the Federal University of Pernambuco (UFPE), Brazil. All of the snakes were collected within the Atlantic Coastal Forest biome, in the municipality of Recife, Pernambuco State, Brazil.

All of the animals died after seven months in captivity and were subsequently fixed in 10% formaldehyde, preserved in 70% alcohol and deposited in the Herpetology Collection of the Zoology Department - UFPE.

The respiratory tracts of the snakes were removed and examined for pentastomids using a stereomicroscope. The pentastomids found were cleared in Hoyer's medium, temporarily slide-mounted, preserved in ethanol 70%, and subsequently housed in the Zoological Collection of the Universidade Regional do Cariri (LZ-URCA). Pentastomid identification was based on the dimensions of the hooks (AD – overall length; CE – the distance between the extreme tip of the apodeme on the hook base and the dorsal surface of the hook), annulus number, and body length (Sambon, 1922; Rego, 1981a, 1984 and 1987; Riley, 1981). Photographs were taken with a digital camera connected to a stereomicroscope.

A total of eight snakes were examined, including six specimens of *Boa constrictor* (average length  $77 \pm 26.34$ cm) and two specimens of *Lachesis muta* (average length  $119 \pm 60.81$ cm). Only one specimen of *B. constrictor* demonstrated lung infection by *Porocephalus* sp. (intensity of infection 5.0) (Figure 1) and one specimen of *L. muta* was infected by *P. stilesi* (intensity of infection 15.0) (Figure 2A and 2B).



FIGURE 1: Detail of the cephalothorax of a male *Porocephalus* sp. from lung of *Boa constrictor* (scale bar = 2mm).

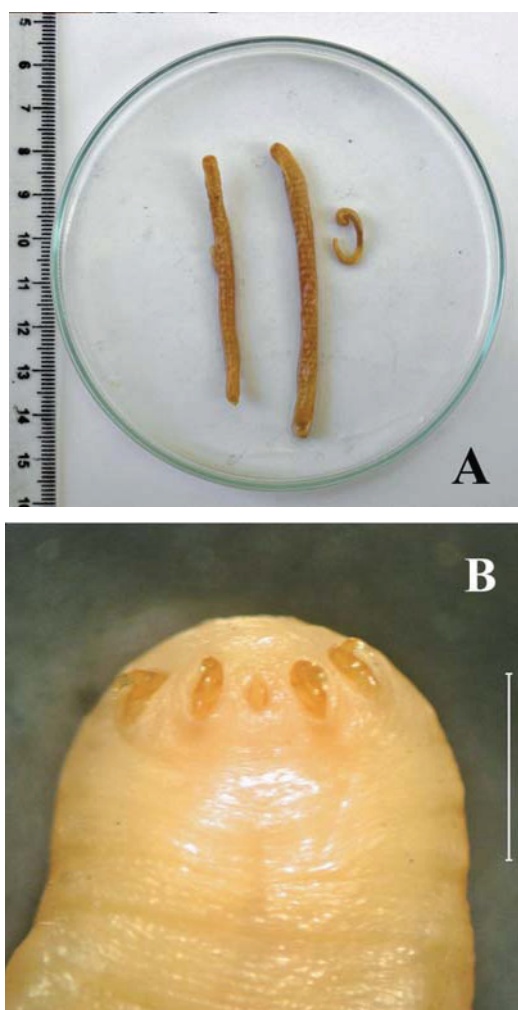


FIGURE 2: Ventral views of specimens of *Porocephalus stilesi* from the lungs of *Lachesis muta*: (A) two entire females (left) together with a small male (right); (B) detail of the cephalothorax of a female (scale bar = 3mm).

All of the porocephalids appeared to be adult forms, as the uteri of the females were completely filled with eggs and the males demonstrated adult morphological characteristics.

Only males of *Porocephalus* sp. were encountered in *B. constrictor*. The specimens of these pentastomids had body lengths of  $26-35 \pm 2.0$ mm, annuli not visible; AD  $414 \pm 3.50\mu\text{m}$  and CE  $223 \pm 1.0$ . The females of *P. stilesi* had body lengths of  $101-110 \pm 5.12$ mm;  $78-82 \pm 0.5$  annuli; posterior hook dimensions AD  $702 \pm 4.0\mu\text{m}$  and CE  $609 \pm 5.0$ ; the males of *P. stilesi* had body lengths of  $55-57 \pm 4.0$ mm, annuli not visible; AD  $580 \pm 1.0\mu\text{m}$  and CE  $309 \pm 7.01\mu\text{m}$ .

Grego et al. (2004) reported interstitial subacute pneumonia with congestion, edema, and granuloma-

tous hepatitis to be symptoms related to infections by *Porocephalus* sp. in *B. jararaca*. However, no lesions were observed in the specimens analyzed in the present study.

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