

Helminths of *Anolis nitens* (Squamata, Polychrotidae), from Brazil and Ecuador, South America

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ANOLIS nitens (Wagler, 1830) is known to occur in Brazil, northern Peru, Ecuador, Suriname, French Guiana, Venezuela and Trinidad (Uetz & Hallermann, 2009). We know of no helminth records for *A. nitens*. The purpose of this note is to establish the initial helminth list for *A. nitens* as part of an ongoing investigation of helminths in South American lizards.

METHODS AND MATERIALS

Eighteen individuals of *Anolis nitens* collected by LJV were borrowed from the Department of Herpetology, Sam Noble Museum of Natural History (OMNH), University of Oklahoma, Norman, Oklahoma, USA. Eight were from Brazil (mean snout-vent length, SVL = 51.0 mm ± 12.2 SD, range = 30-60 mm, Acre State, OMNH 37000-37007, 5.0 km N Porto Walter, inland from the Rio Jurúa, 8°15'S, 72°46'W, collected February-April, 1996); ten were from Ecuador (mean SVL = 70.7 mm ± 6.7 SD, range = 60-80 mm, Sucumbíos Province, OMNH 40392-40401, Reserva Faunística Cuyabeno, Neotropic Turis, 00°00', 76°00'W, collected February-April, 1994). Lizards were field fixed in 10% formalin and preserved in 70% ethanol. The stomachs had previously been removed for an ecological study (Vitt et al., 2001). Small and large intestines, lungs, liver and body cavities were examined for helminths under a dissecting microscope. Nematodes were cleared in glycerol on a glass slide under a coverslip and examined with a compound microscope. Acanthocephalans were stained in hematoxylin, mounted in Canada balsam and studied as whole-mounts. Terminology

is in accordance with Bush et al. (1997).

RESULTS

Number of helminths, prevalence (number of infected hosts divided by number of hosts examined), mean intensity (mean number of helminths per infected host and range (lowest and highest intensities) are presented in Table 1. Found in *A. nitens* were five species of Nematoda, *Cosmocercoides variabilis* (Harwood, 1930) (small, large intestines), *Oswaldocruzia binae*, Ben Slimane and Durette-Desset. 1996 (small intestine), *Piratuba digiticaudata*, Lent and Freitas, 1941 (body cavity), *Strongyluris oscari*, Travassos, 1923 (small, large intestines), *Rhabdias* sp. (lung) and one species of Acanthocephala, *Acanthocephalus saurius*, Bursey and Goldberg, 2003 (small intestine). Voucher helminths were deposited in the United States National Parasite Collection (USNPC), Beltsville, Maryland as *A. nitens* Brazil: *Cosmocercoides variabilis* (USNPC 102067), *Piratuba digiticaudata* (USNPC 102068), *Rhabdias* sp. (USNPC 102069), *Acanthocephalus saurius* (USNPC 102070); Ecuador: *Cosmocercoides variabilis* (USNPC 102071), *Oswaldocruzia binae* (USNPC 102072), *Piratuba digiticaudata* (USNPC 102073), *Strongyluris oscari* (USNPC 102074).

DISCUSSION

Cosmocercoides variabilis is well known in salamanders, toads, frogs, lizards, snakes and turtles of Central and North America; a host list can be read in Bursey et al. (2007). *Anolis nitens*

Collection Locality	Helminth species	Number	Prevalence	Mean intensity	Range
Acre State, Brazil					
	<i>Cosmocercoides variabilis</i>	2	25%	1.0 ± 0.0	1
	<i>Piratuba digiticaudata</i>	2	13%	2.0 ± 0.0	2
	<i>Rhabdias</i> sp.	2	25%	1.0 ± 0.0	1
	<i>Acanthocephalus saurius</i>	2	13%	2.0 ± 0.0	2
Sucumbios Prov. Ecuador					
	<i>Cosmocercoides variabilis</i>	1	10%	1.0±0.0	1
	<i>Oswaldocruzia binae</i>	65	90%	7.2±4.8	2-14
	<i>Piratuba digiticaudata</i>	1	10%	1.0±0.0	1
	<i>Strongyluris oscar</i>	36	100%	3.6±3.2	1-12

Table 1. Number of helminths, prevalence, mean intensity and range of infection for six species of helminths in eight *Anolis nitens* from Brazil and ten from Ecuador.

represents a new host record and Brazil and Ecuador are new locality records for *C. variabilis*.

Oswaldocruzia binae was described from *Anolis chrysolepis* and *Anolis fuscoauratus* from Ecuador by Ben Slimane & Durette-Desset (1996). It also was reported in *Anolis biporcatus* from Panama by (Bursey et al., 2003). *Anolis nitens* represents a new host record for *Oswaldocruzia binae*. Brazil is a new locality record.

Piratuba digiticaudata has wide distribution in the New World tropics and has been reported from *Anolis baracoae*, *A. equestris* and *A. luteogularis* from Cuba (Barus & Coy Otero, 1969; Coy Otero & Barus, 1979), *Tropidurus torquatus* (Vicente & Jardim, 1980; Vicente, 1981), *T. spinulosus* (Vicente & Jardim, 1980; Vicente, 1981) from Brazil and *T. guarani* from Paraguay (Bursey & Goldberg, 2004a). *Anolis nitens* represents a new host record for *Piratuba digiticaudata*. Ecuador is a new locality record.

Strongyluris oscar is widespread in South America and has been found in *Anolis fuscoauratus* from Brazil, Ecuador and Peru (Bursey et al., 2005; Goldberg et al., 2006a). Hosts are summarized in Bursey et al. (2005). To that list should be added, *Eurolophosaurus nanuzae* (Fontes et al., 2003), *Tropidurus guarani* from Paraguay (Bursey & Goldberg, 2004a), and *Enyalis iheringii* and *E. perditus* from Brazil (Vrcibradic et al., 2008). *Anolis nitens* represents a new host record for *Strongyluris oscar*.

Three species of *Rhabdias* are currently known as parasites of Neotropical lizards, namely *R. anolis*, *R. leonae* and *R. nicaraguensis*. *Rhabdias*

of undetermined species has been reported from several species of lizards in tropical South American and the Caribbean (Torres-Ortiz, 1980; Bundy et al., 1987; Dobson et al., 1992; Goldberg et al., 2006a, 2006b; Vrcibradic et al., 2008).

Acanthocephalus saurius was described from *Anolis limifrons* from Costa Rica by Bursey & Goldberg (2003). It has previously been found in *Anolis capito* from Nicaragua and *Prionodactylus oshaughnessyi* from Brazil (Bursey & Goldberg, 2004b; Bursey et al., 2007). *Anolis nitens* represents a new host record for *Acanthocephalus saurius*; Ecuador is a new locality record.

In conclusion, published data indicates *Anolis* lizards are infected by a variety of generalist helminths which infect a wide spectrum of lizards.

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