RESEARCH NOTE

Helminths of Geoffroy’s cat, *Oncifelis geoffroyi* (Carnivora, Felidae) from the Monte desert, central Argentina

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Abstract
Gastrointestinal parasites were collected from 7 free-ranging Geoffroy’s cats, *Oncifelis geoffroyi* from Lihué Calel National Park, Argentina. Also, fecal samples were analyzed from these animals and 3 other sympatric ones. The helminths were identified as *Vigosospirura potekhina*, *Didelphonema longispiculata*, *Pterygodermatites cahirensis*, *Trichuris campanula*, *Ancylostoma tubaeforme*, *Toxocara cati*, and *Taenia* sp. Fecal analysis revealed the presence of eggs of *Capillaria* sp. and an unidentified anoplocephalid tapeworm, and coccidian oocysts. The findings of *V. potekhina*, *D. longispiculata*, *P. cahirensis*, and *T. campanula* represent first records of these species in *O. geoffroyi*. Further, the former three had never been reported in South America.

Key words
Gastrointestinal parasites, *Oncifelis geoffroyi*, Felidae, Argentina

Information on the helminths of Neotropical felids is scarce. Although 10 of the 12 existing wild felids of the Americas can be found in Argentina (Nowell and Jackson 1996), there are few reports of these carnivore parasites in that country. One of the most widespread species in southern South America is the Geoffroy’s cat, *Oncifelis geoffroyi* (d’Orbigny et Gervais, 1844), which can be found from southern Brazil and Bolivia throughout southern Patagonia in Argentina and Chile. Although this species occurs in a wide variety of habitat types, most of this cat’s range encompasses arid and semiarid environments (Gomes de Oliveira 1994, Nowell and Jackson 1996). Like most other small wild cats of the region, the biology of this species is poorly known. Its helminth fauna is one of the least explored topics.

In central Argentina, the Geoffroy’s cat population of Lihué Calel National Park (LCNP; 37°57’S 65°33’W, 9900 ha) is being studied by the project *Gatos del Monte*. This protected area, representing the Monte Ecoregion, is composed of flat terrain except for a large, isolated set of bare rock hills (590 m a.s.l.). The vegetation is characterized by a mosaic of creosote bush flats (*Larrea* sp.), grasslands (mainly bunch grasses of the *Stipa* sp.), and mixed shrub patches (Administración de Parques Nacionales, Buenos Aires, 1983). A severe drought occurred in 2003 in central Argentina. In some places such as the LCNP, this was the most severe drought since 1965. As a result, six radio-collared adult female Geoffroy’s cats were found dead between May-June 2003. Necropsies and parasite collection were conducted. Death was tentatively attributed to starvation, which was later confirmed by histopathology. Additionally, in July 2004 an adult male cat was shot by a farmer near the park’s boundaries and it was necropsied to collect parasites. A fecal sample had been previously taken from each dead cat and from three other sympatric radio-collared cats. By previously described methods (Beldomenico et al. 2003), each section of the gastrointestinal tract was searched for metazoan parasites, and fecal samples were preserved in 3.5% formalin saline until analyzed at the laboratory by a sedimentation-flotation technique. Five of

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each specific adult parasites or eggs were measured, and the measurements were reported as arithmetic mean and standard deviation (SD). When fewer specimens were available for measuring, the range or the unique value were reported. 

Voucher specimens were deposited at the Colección de Parasitos de Vertebrados Silvestres of Universidad Nacional del Litoral, Esperanza, Argentina (Acc. no: LP00016-LP00035). Our findings are summarized in Table I.

Fig. 1. Parasites recovered from necropsied Geoffroy’s cats from Lihué Calel National Park, Argentina: A – cestode egg, B – oral extremity of *Vigispirura potekhina*, C – oral extremity of *Didelphonema longispiculata*, D – vulvar region of *Trichuris campanula*, E – oral extremity of *Pterygodermatites cahirensis*, F – caudal extremity of a male *Pterygodermatites cahirensis*. Scale bars = 25 µm
**Fecal analysis**

*Capillaria* sp. eggs measuring 49.5 (SD = 2.6) × 37.9 µm (SD = 2.8) were detected in 4 of 9 fecal samples. Eggs resembling *Ancylostoma* sp., measuring 65.6 (SD = 3.5) × 37.9 µm (SD = 2.8) were detected in 2 of 9 fecal samples. *Trichuris* sp. eggs measuring 70.6 (SD = 5.7) × 32.2 µm (SD = 3.5) were detected in 5 of 9 fecal samples. Eggs resembling *Toxocara* sp., measuring 74.4 (SD = 14.9) × 60.3 µm (SD = 7.2) were detected in 1 of 9 fecal samples. Triangular cestode eggs with a pyriform apparatus resembling those of Anoplocephalidae (Fig. 1A) were found in one sample. Immature coccidian oocysts measuring 26.2 µm (SD = 1.7) were detected in 2 of 9 fecal samples. These findings are not different from those reported for other Neotropical felids (Patton et al. 1986).

**Adults**

*Vigisospirura potekhina* (Petrov et Potekhina, 1953) (Spirurida, Spirocercidae) (Fig. 1B): a total of 39 adult specimens was collected from the oesophagus and 11 from the stomach of 5 cats. The female: male ratio (FMR) was 4.1. This spirurid parasitizes both felids and badgers, *Meles meles* (Torres et al. 2001) in the Old and the New World. This represents the first report of the species in South America.

*Didelphonema longispiculata* (Hill, 1939) (Spirurida, Spirocercidae) (Fig. 1C): 160 adult specimens were collected from the stomach of 2 cats. The FMR was 4.0. Although this New World parasite has been found in marsupials and felids of North America (Stewart and Dean 1971, Pence and Eason 1980, Wong et al. 1980) and badgers, *Meles meles* (Torres et al. 2001) in the Old and the New World. This represents the first report of the species in South America.

*Pterygodermatites (Multipectines) cahirensis* Quentin, 1969 (Spirurida, Dicturictariidae) (Fig. 1E–F): a single male of this species was found in the small intestine of one necropsied cat. The spicules measured 161 × 15 µm. This parasite is prevalent in canids from the Old and the New World (Young and Pence 1979). In the southern United States, it is commonly found in coyotes (*Canis latrans*) and less frequently in bobcats (*Lynx rufus*) (Stone and Pence 1978). Although *P. cahirensis* is considered to be distributed in carnivores worldwide (Young and Pence 1979), this is the first record from South America.

*Trichuris campanula* Linstow, 1889 (Enoplida, Trichuridae) (Fig. 1D): 97 adult specimens were collected from the large intestine of 3 cats. The FMR was 1.7. In males, the spicule measured 1065 µm (SD = 105) and was contained within a spinous sheath. Until the late 1970’s, the findings of feline whipworms in the New World were confined to South America and Cuba (Enzie 1951; Hass 1973, 1978). To date, the only *Trichuris* sp. reported for domestic cats are *Trichuris serrata* Linstow, 1879 and *Trichuris campanula* Linstow, 1889 (Urioste 1923, Clarkson 1960, Kelly 1973, Ng and Kelly 1975, Hass and Meisels 1978). Both species were originally described from domestic cats from Brazil. Regardless of wild felids, there is only one record of a *Trichuris* sp. (named *Trichocephalus*) from a tiger-cat (*Leopardus tigrinus*) in Brazil (Diesing 1851). Our finding constitutes the first record of *T. campanula* for *O. geoffroyi*.

*Ancylostoma tubaeforme* (Zeder, 1800) (Strongyliida, Ankylostomatidae): nine hookworms were found in the small intestine of two Geoffroy’s cats. The FMR was 0.6. *A. tubaeforme* is a cosmopolitan hookworm of cats (Anderson 2000). In the Neotropical region, it was reported for otter cat, *Herpailurus yagouaroundi*; jaguar, *Panthera onca* (Thatcher 1971); and Argentinean *O. geoffroyi* (Martinez 1987). The infection by this species may indicate interaction with domestic cats.

*Toxocara cati* (Shrank, 1788) (Ascaridida, Ascarididae): 211 specimens were collected from the stomach and small intestine of 6 cats. The FMR was 3.25. This ascarid is a cosmopolitan parasite of felids, including domestic cats and wild felids in the subfamilies Felinae and Pantherinae (Anderson 2000, de la Fuente et al. 1998). In the southern United States, it is commonly found in coyotes (*Canis latrans*) and less frequently in bobcats (*Lynx rufus*) (Stone and Pence 1978). Although *P. cahirensis* is considered to be distributed in carnivores worldwide (Young and Pence 1979), this is the first record from South America.

**Table I.** Helminths collected from free-ranging *Oncifelis geoffroyi* from Lihué Calel National Park, Argentina

<table>
<thead>
<tr>
<th>Helminth Name</th>
<th>Prevalence</th>
<th>Maximum intensity</th>
<th>Length, females (µm)</th>
<th>Mean (µm)</th>
<th>Length, males (µm)</th>
<th>Mean (µm)</th>
<th>Eggs, measures (µm)</th>
</tr>
</thead>
<tbody>
<tr>
<td><em>D. longispiculata</em></td>
<td>2/7</td>
<td>1/7</td>
<td>3/7</td>
<td>6/7</td>
<td>3/7</td>
<td>5/7</td>
<td>2/7</td>
</tr>
<tr>
<td><em>P. cahirensis</em></td>
<td>146</td>
<td>1</td>
<td>37</td>
<td>57</td>
<td>10.5</td>
<td>6.5–10.0</td>
<td>31 × 15</td>
</tr>
<tr>
<td><em>T. campanula</em></td>
<td>3/7</td>
<td>23.9</td>
<td>10.5</td>
<td>2.5</td>
<td>10.9</td>
<td>6.4</td>
<td>30.8 × 36.5</td>
</tr>
<tr>
<td><em>V. potekhina</em></td>
<td>5/7</td>
<td>15.7</td>
<td>8.2</td>
<td>0.3</td>
<td>15.7</td>
<td></td>
<td>74.4 × 60.3</td>
</tr>
<tr>
<td><em>A. tubaeforme</em></td>
<td>6.5–10.0</td>
<td>3/7</td>
<td>2.5</td>
<td>0.4</td>
<td>5/7</td>
<td>65.6–37.9</td>
<td>70.6 × 32.2</td>
</tr>
</tbody>
</table>

*In millimeters, *b*in micrometers, NA – is not available.
2000). This species was found in association with *Toxocara canis* in free-ranging *O. geoffroyi* from northern Argentina (Martinez 1987). The infection by this species probably represents interaction with domestic cats.

*Taenia* sp. (Cestoda, Taeniidae): 3, 7 and 37 tapeworms of this genus were found in the small intestines of 3 cats, respectively. The scolex diameter measured 524–620 µm, the rostellar diameter was 356–403 µm, and the suckers ranged from 201 to 248 µm. Total numbers of hooks ranged from 40 to 46; large hooks were 165 to 170 µm long and small hooks 130 to 140 µm long. Eggs were typical of *Taeniidae*. For South America, the only records of *Taenia* spp. of felids are *Taenia omissa* Lühe, 1910 from cougar (*Puma concolor*), and *Taenia macrocystis* (Diesing, 1850) from *O. geoffroyi*, *P. onca* and *H. yagouaroundi* (Verster 1969, Schmidt and Martin 1978). The number, size, and shape of the rostellar hooks found here are quite different from *T. omissa* and *T. macrocystis*, as well as the common North American taeniids of felids, *T. taeniaeformis* and *T. rileyi*. Hook size and shape seem closest to *T. hydatigena*, but the size of the large hooks is at the extreme low end of the range for this species, which has not been reported from South America (Loos-Frank 2000). It is possible the species found here is undescribed and more study is warranted (Robert L. Rausch, pers. commun.). To date, the only cestode reported for South America to date is *Taenia* sp. (Cestoda, Taeniidae): 3, 7 and 37 tapeworms of this genus were found in the small intestines of 3 cats, respectively. The number, size, and shape of the rostellar hooks found here are quite different from *T. omissa* and *T. macrocystis*, as well as the common North American taeniids of felids, *T. taeniaeformis* and *T. rileyi*. Hook size and shape seem closest to *T. hydatigena*, but the size of the large hooks is at the extreme low end of the range for this species, which has not been reported from South America (Loos-Frank 2000). It is possible the species found here is undescribed and more study is warranted (Robert L. Rausch, pers. commun.).

The findings of *V. potekhina*, *D. longispiculata*, *P. cahirensis*, and *T. campanula* represent the first records of these species in *O. geoffroyi*. Further, the former three had never been reported for South America. Probably, this reflects lack of investigation rather than recent introduction of the parasites. Infections with *T. cati*, *A. tubaeforme* and *T. cf. hydatigena* might be the result of interactions with domestic cats.

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**References**


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