

***Calodium hepaticum* in Jungle Cats (*Felis chaus*) in Sri Lanka**

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ABSTRACT: *Calodium hepaticum* infection is rarely reported in carnivores. We describe two cases of *C. hepaticum* infection, causing liver lesions, in wild jungle cats (*Felis chaus*) in Sri Lanka.

Calodium hepaticum (syn *Capillaria hepatica*) is a zoonotic nematode parasite with a worldwide distribution (Fuehrer et al. 2011). It has a direct life cycle whereby adult worms reside within the hepatic parenchyma of the host and deposit eggs which are released to the environment after death (through decay, cannibalism, predation, or scavenging) and become infective. Rodents are the main host, and infection has been identified in a wide range of animals (Spratt and Singleton 2001) including domestic cats (*Felis catus*). A spurious infection was reported in captive Pallas's cats (*Otocolobus manul*; Basso et al. 2005). The parasite has a wide geographic and host distribution and a high prevalence (>50%) in some rodent populations (Fuehrer 2014). Infection is seldom detected in carnivores and is rarely associated with significant pathologic changes. We describe two cases of *C. hepaticum* infection leading to liver lesions in jungle cats (*Felis chaus*) in Sri Lanka.

Two adult female jungle cats were found alive but comatose near the Udawalawe National Park (6°28'N, 80°53'E), Department of Wildlife Conservation in Sri Lanka in August 2015 and January 2016. Both animals, which had traumatic injuries probably due to vehicular accidents, subsequently died and were subjected to a complete necropsy.

Both cats were emaciated, with serous atrophy of adipose tissue and moderate

muscle wasting. The livers were firm, yellow-brown, and caudally displaced due to diffuse hepatomegaly (Fig. 1A). On microscopic examination, the parenchyma was expanded and effaced by innumerable, biopericulated nematode eggs morphologically consistent with *C. hepaticum* (Fig. 1B; Chitwood and Lichtenfels 1972). The eggs were embedded in dense collagenous tissue and were associated with a mild mixed inflammatory response. Remaining hepatocytes were variably atrophic. Given the extent of the severity of the hepatic lesions and lack of other significant findings, *C. hepaticum* infection is the most likely cause of the emaciation.

Infection with *C. hepaticum* previously has not been reported in jungle cats. Jungle cats have a wide distribution in Asia and the Middle East and also occur in the Nile Valley in Africa (Duckworth et al. 2008). They have been observed in many different agricultural and forested areas, often close to human habitations (Mukherjee 1998). The jungle cat is one of four species of native wild felids: jungle cat, Sri Lankan leopard (*Panthera pardus*), fishing cat (*Prionailurus viverrinus*), and rusty-spotted cat (*Prionailurus rubiginosus*), that occur in Sri Lanka. Wild cat populations in general are declining due to anthropogenic factors including habitat degradation, snaring, nonselective trapping, and poisoning (Duckworth et al. 2008). Rodents are the main component of the jungle cat diet (Mukherjee et al. 2004), and anthropogenic habitat changes that alter rodent assemblages might have impacts on food sources for this species. If jungle cats are susceptible to *C.*

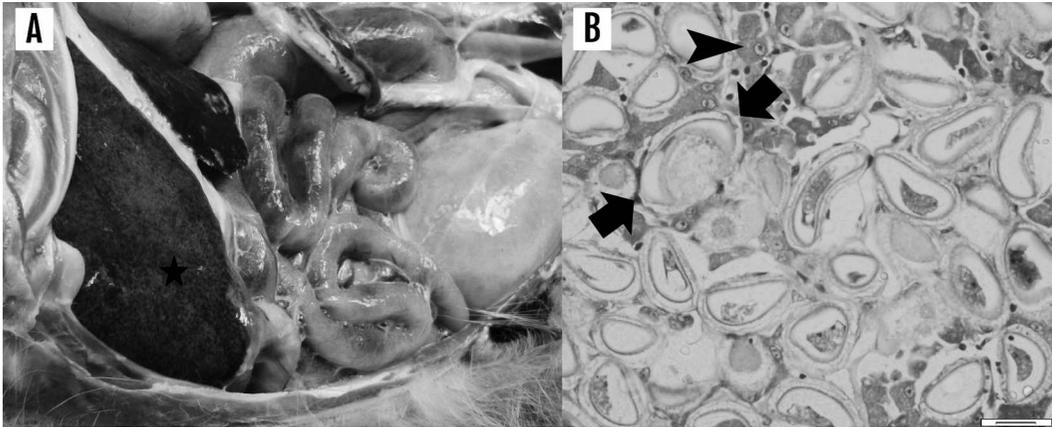


FIGURE 1. Infection of the liver of the jungle cat (*Felis chaus*) with *Calodium hepaticum*: (A) Caudal displacement of the liver due to hepatomegaly (asterisk). (B) Bioperculated (arrows) oval eggs with anisotropic shell walls within the hepatic parenchyma consisted of atrophied hepatocytes (arrowhead). H&E. Bar=20 μ m.

hepaticum, then changing rodent assemblages might also affect the dynamics of this parasite in jungle cats. Infection with *C. hepaticum* was reported in greater bandicoot rats (*Bandicota indica*) in Sri Lanka (Dissanaiké and Paramanathan 1961), a species that adapts easily to disturbed landscapes and has been increasing in number and range in response to farmland expansion in Sri Lanka (Yapa 2013). Although the prevalence and population-level significance of this parasite in rodent and carnivore hosts in Sri Lanka is not known, the potential for *C. hepaticum* to result in significant pathologic lesions and systemic illness in threatened carnivore species deserves further consideration and study.

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