

# ZOONOTIC PARASITES INFECTING FREE-LIVING ARMADILLOS FROM BRAZIL

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## RESUMO

Armadillos are specialist diggers and their burrows are used to find food, seek shelter and protect their pups. These burrows can also be shared with dozens of vertebrate and invertebrate species and; consequently, their parasites and vectors, including the zoonotics. Giant armadillo's (*Prionomys maximus*) burrows for example, are used by more than 54 vertebrates, such as tamanduas (*Tamandua tetradactyla*), ocelots (*Leopardus pardalis*), tayras (*Eira barbara*), wild peccaries (*Tayassu pecari* and *Pecari tajacu*), rodents and marsupials. Armadillos live and dig burrows in organic or inorganic matter, under a variety of biotic and abiotic conditions. Humans have a direct relationship with armadillos causing negative impacts on populations, usually killing them for cultural beliefs, poaching for medicine, or hunting for handcrafted musical instruments. In Latin America, armadillos are hunted for food due to their taste and high protein level, and are considered relevant species for public health. As a part of the Xenarthra Health initiative of the Giant Armadillo Conservation Program, the present study was developed with the aim to diagnose five zoonotic parasites; *Toxoplasma gondii* (toxoplasmosis), *Trypanosoma cruzi* (Chagas disease), *Leishmania* spp. (leishmaniasis), *Paracoccidioides brasiliensis* (paracoccidioidomycosis) and *Mycobacterium leprae* (Hansen's disease) in four wild- caught armadillo species from two different Brazilian ecosystems, the Cerrado (Brazilian savanna) and the Pantanal (wetland). In the Pantanal, forty-three armadillos of the four species were captured (*P. maximus*, *Euphractus sexcinctus*, *Cabassous unicinctus* and *Dasylops novemcinctus*), while, in the Cerrado, seven individuals of two species were sampled (*E. sexcinctus* and *D. novemcinctus*). *Trypanosoma cruzi* DTU TcIII were isolated from 2 out of 43 (4.65%) armadillos, including one of them also infected with *Trypanosoma rangeli*. Antibodies anti-*T. gondii* were detected in 13 out of 43 (30.2%) armadillos. All ear biopsy samples from the 43 individuals from Pantanal and the seven from Cerrado tested negative for both *Leishmania* sp and *M. leprae*. On contrary, all lungs, spleen, liver and ear biopsy samples tested positive for *P. brasiliensis*. Armadillos were infected by *T. cruzi*, *T. rangeli*, *P. brasiliensis*, and presented seric antibodies to *T. gondii*, highlighting the importance of those armadillos could have in the epidemiology of zoonotic parasites. This is the first report of armadillo exposure to *T. gondii* in the Pantanal of Mato Grosso do Sul, and the first record of this infection for the species *C. unicinctus*. Armadillo's ecological studies may also favor the obtaining of relevant information concerning the health status of a given environment. Long-term surveillance health programs involving armadillos should be encouraged, and the data obtained from these should help to better: 1) understand the prevalence data or occurrence of diverse parasites, especially the zoonotic ones, in the ecosystems they occur; 2) Identify the role of armadillos as reservoir hosts of different parasite species; 3) provide precise geographic locations and disease risk map analysis; 4) develop actions and preventive disease control initiatives considering the parasites that can be transmitted by armadillos; and 5) develop low-cost strategies for health studies considering wild animals, humans and their ecosystems.

**PALAVRAS-CHAVE:** Cingulata, *Trypanosoma cruzi*, *Toxoplasma gondii*, *Paracoccidioides brasiliensis*, *Mycobacterium leprae*, *Leishmania* sp.

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