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First record of Leishmaniasis in wild Jaguars (*Panthera onca*) from Mexico

Heliot Zarza
Departamento de Ciencias Ambientales, CBS, Universidad Autónoma Metropolitana Unidad Lerma, Hidalgo Pte. 46, La Estación, 52006, Lerma de Villada, México. h.zarza@correo.ler.uam.mx
Andrés Arias-Alzate
Laboratorio de Análisis Espaciales, Instituto de Biología, Universidad Nacional Autónoma de México, Ciudad Universitaria, 04510, México, D.F. México. & Grupo de Mastozoología Universidad de Antioquia, Medellín, Colombia.
José F. González-Maya
Instituto de Ecología, Universidad Nacional Autónoma de México, Ciudad Universitaria, 04510, México, D.F. México. & ProCAT Colombia, Bogotá, Colombia.
Cuauhtémoc Chávez
Departamento de Ciencias Ambientales, CBS, Universidad Autónoma Metropolitana Unidad Lerma, Hidalgo Pte. 46, La Estación, 52006, Lerma de Villada, México.
Gerardo Ceballos
Instituto de Ecología, Universidad Nacional Autónoma de México, Ciudad Universitaria, 04510, México, D.F. México.

Leishmaniasis is a vector-borne disease and parasitic zoonosis that occurs worldwide (i.e., Latin America, Africa and Eurasian countries; Desjeux 2005, Dahroug et al. 2010, 2011, Otranto et al. 2013). It is caused by parasitic kinetoplastids of the *Leishmania* genus transmitted by arthropod vectors (i.e. sandflies such as *Lutzomyia* spp.) and presents a great diversity of clinical profiles, depending on the affected areas (Otranto et al. 2013). This disease mainly affects humans and wild carnivoran species, mostly canids, with dogs as major reservoir hosts (Deane & Deane 1954, Silva et al. 2000, Figueiredo et al. 2008, Dantas-Torres et al. 2012). Even though domestic and wild felids are unusual reservoirs, and rarely develop the disease, several studies suggest that these species may play an important role in the epidemiology of the disease (Poli et al. 2002, Maia et al. 2008, Nasereddin et al. 2008, Dantas-Torres et al. 2012). Here we report the first record of a clinical manifestation of Leishmaniasis disease in a wild Jaguar (*Panthera onca*) in Quintana Roo, Mexico.

The case was recorded in March 29, 2002 on a wild male Jaguar, between 10 and 12 years-old, captured in the tropical deciduous forest of Southern Yucatan Peninsula. This capture is part of a long-term Jaguar conservation project carried since 1998 to date in Southern Campeche and Quintana Roo states (18°15′15″ N, 89°56′47″ W). After physical examination the Jaguar exhibited a poor health condition; the right eye was diagnosed with cataracts, more than 100 ectoparasites were removed (*Dermatobia hominis* and ticks (Ixodidae)), and showed a complex cutaneous anomaly in the face. The individual was also diagnosed with pigmented fangs and receding gums, indicating and advanced age of the individual. According to the diagnosis, the jaguar had a large ulcerative lesion on the lips and mouth, with granulated tissue, which was associated with a leishmaniasis lesion and not as a product of previous fight injuries or others causes (Figure 1). It is important to note that only 3 from 34 jaguars captured so far have shown similar injuries.

Cutaneous leishmaniasis can affect cartilaginous tissue and internal structures, including striated muscle and eventually bone, causing severe destruction of these tissues (Desjeux 2005), as detected in this individual. To our knowledge, this is the first report of a clinical manifestation of leishmaniasis in a wild Jaguar in the Americas. Records of wild canids acting as reservoirs have been published for species such as the Hoary fox (*Lycalopex vetulus*, Deane & Deane 1954, Courtenary et al. 1996), the Crab-Eating fox (*Cerdocyon thous*, Silva et al. 2000), and the Bush Dog (*Speothos venaticus*, Figueiredo et al. 2007), but for felids there are only occurrence records in domestic cats (Poli et al. 2002, Maia et al. 2008, Nasereddin et al. 2008) and no prior cases had been documented in wild felids such as Jaguars. Nevertheless, Dahroug et al. (2010, 2011) determine the presence of *Leishmania chagasi* in captive individuals of *Puma concolor*, *Panthera onca* and *Panthera leo* at the zoological park of the Federal University of Mato Grosso, suggesting that felines, both domestic and wild, can act as reservoirs of *L. chagasi* in endemic areas. Although at the current time no other reports of wild felids exist with the disease, or acting as

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reservoirs, the impact of leishmaniasis over wild felids remains uncertain, as well as the roll in the epidemiological chain of domestic cats that interact with wildlife in areas where the disease is present. Further studies are needed in order to understand the incidence and prevalence of *Leishmania* spp. in wild felids and other carnivoran species and its implications in the peridomestic and domestic cycles and its interaction with natural ecosystems.

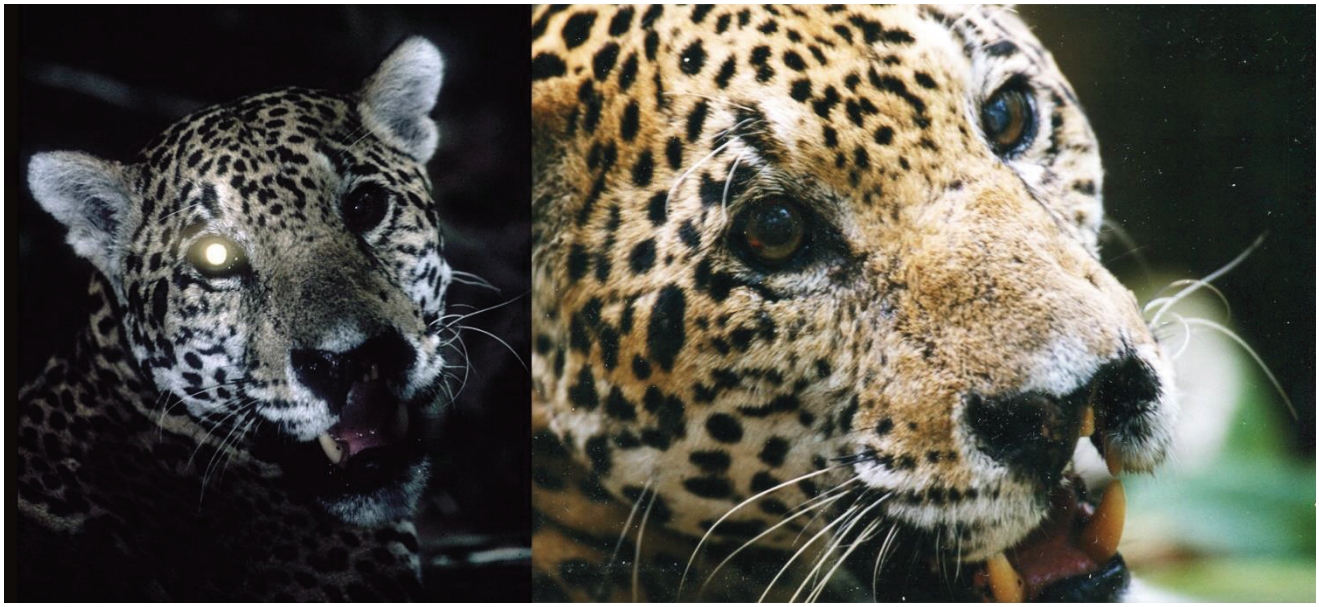

Figure 1. Wild Jaguar (*Panthera onca*) captured in Quintana Roo, Mexico displaying a clinical manifestation of Leishmaniasis.

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