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Nota

CLINICAL SIGNS SUGGESTIVE OF MANGE INFESTATION IN A FREE-RANGING MANED WOLF (*Chrysocyon brachyurus*) IN THE MOXOS SAVANNAHS OF BENI, BOLIVIA

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ABSTRACT. Sarcoptic mange is usually endemic in wild canid populations. Several other infectious and parasitic disease agents have been reported for free-ranging maned wolves (*Chrysocyon brachyurus*). This field report documents the sighting of a free-ranging maned wolf in the Beni department of Bolivia with clinical signs suggestive of sarcoptic mange-like infestation. The constant threat of transmission of mange from domestic dogs as well as other species of wild canids could have detrimental effects on the population.

RESUMEN. **Señales clínicas de infestación por sarna en el borochi (*Chrysocyon brachyurus*) en los llanos de Moxos, departamento del Beni, Bolivia.** La sarna sarcóptica es generalmente endémica de las poblaciones de cánidos silvestres. Algunos agentes de enfermedades infecciosas y parasitarias han sido reportados para el borochi (*Chrysocyon brachyurus*) en estado silvestre. Este trabajo documenta el avistaje de un borochi silvestre en el departamento del Beni, Bolivia, con signos clínicos que sugieren infestación por sarna sarcóptica. La amenaza constante de transmisión de sarna proveniente de perros domésticos así como de otras especies de cánidos silvestres puede tener efectos desfavorables en la población.

Key words: Bolivia. Canidae. Maned wolf. Mange. Moxos savannahs.

Palabras clave: Bolivia. Borochi. Canidae. Llanos de Moxos. Sarna.

The maned wolf, *Chrysocyon brachyurus* (Illiger, 1815), is a large omnivorous canid inhabiting the grasslands and scrub forests of South America (Rodden et al., 2008). Though range countries include Argentina, Bolivia, Brazil, Paraguay, Peru, and Uruguay (Rodden et al., 2008), their current range is centered in the Cerrado ecoregion of central Brazil, Paraguay and the lowlands of Eastern Bolivia (Queirolo et al., 2011). Due to their large home ranges

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(25 km to over 80 km) and solitary habits, they are found in low densities throughout their range (Rodden et al., 2008). According to Muir and Emmons (2012), no reliable estimate of the global maned wolf population is known. An estimate from 2005 of 23 600 individuals (Rodden et al., 2008) overestimated the population in Brazil and a revised estimate of the maned wolf population proposes approximately 14 700 animals occurrence in the wild, with the vast majority in Brazil (Muir and Emmons, 2012). Though categorized as Near Threatened on the IUCN Red List (Rodden et al., 2008) and listed as a CITES Appendix II species, it is considered "endangered" by the United States Fish and Wildlife Service and included by most range countries on their own Red Lists of threatened or endangered species (Queirolo et al., 2011). In Bolivia the maned wolf (local name = borochi) is considered Near Threatened (Chavez, 2009) with an estimated population of at least 1000 individuals (Muir and Emmons, 2012). Found in the departments of Santa Cruz, Beni and La Paz, the species primarily inhabits Cerrado forests and humid savannahs but its range includes the drier parts of Beni and the Pantanal flooded grasslands (Queirolo et al., 2011; Muir and Emmons, 2012).

The IUCN identified four main threats to maned wolves: habitat reduction, road mortality, problems associated with domestic dogs, and hunting for folkloric medicine (Rodden et al., 2008), and Muir and Emmons (2012) add the threats of fire and climate change to the population in Bolivia. The threat from domestic dogs exists in the form of competition for food resource, aggression and disease transmission (Rodden et al., 2008) with disease considered the main threat from domestic dogs in Bolivia (Muir and Emmons, 2012).

The diversity and apparent increase in diseases in wildlife have raised concerns that pathogens may pose a substantial threat to biodiversity; disease risks from domestic animals are now a recognized threat to the long-term conservation of free-ranging wildlife (Smith et al., 2009). Expanding human populations and habitat fragmentation are increasing the proximity of wildlife to humans and their domestic animals, also increasing the likelihood of disease spillover (Deem and Emmons, 2005). For a variety of wild carnivore species, domestic dogs in particular have been the suspected and proven source of diseases and pathogens (Fiorello et al., 2004). There have been several reports of exposure to an infection with disease agents in various species of wild canids in Latin America (Deem et al., 2002; Deem and Emmons, 2005), as well as studies of disease prevalence in domestic carnivores (Fiorello et al., 2004). In Bolivia, the exposure to infectious and parasitic disease agents has been reported for free-ranging maned wolves in the Noel Kempff Mercado National Park (Deem and Emmons, 2005). To the authors knowledge there have been no reports of disease in maned wolves outside of national parks. This field report documents the sighting of a free-ranging maned wolf in the Beni department of Bolivia with clinical signs suggestive of sarcoptic mange-like infestation.

Sarcoptic mange, is a highly contagious and pruritic ectoparasitic disease of domestic and free-ranging canids worldwide (Deem et al., 2002). The diseases caused by *Sarcoptes scabiei* mites and transmission is possible between different canid species (Deem et al., 2002). Mites at any life stage can be transmitted by direct and indirect contact as they can persist in the environment for hours to weeks (Fiorello et al., 2004). Sarcoptic mange is usually endemic in wild canid populations but can occasionally cause epidemics. Epidemics are density dependent and may occur when there are changes in virulence or pathogenicity in existing mite populations (Pence et al., 1983). The mange is a chronic debilitating disease, which is not a direct cause of death. Epidemics may have no effect at population level (Pence et al., 1983).

Fiorello et al. (2004) tested domestic canines living in three towns bordering the Madidi National Park in Bolivia for antibodies of *S. scabiei* and over half of the dogs tested were positive. There have also been case reports of *S. scabiei* in free-ranging pampas foxes (*Lycalopex gymnocercus*) in the Gran Chaco area of Bolivia (Deem et al., 2002).

On July 22th 2011, LG, co-author, found a considerably underweight, free-ranging maned wolf with clinical signs suggestive of a sarcoptic

Fig. 1. Maned wolf (*Chrysocyon brachyurus*) at rancho La Victoria, llanos de Moxos, Bolivia. Note the signs of mange infestation.

mange-like infestation (**Fig. 1**) on the Victoria cattle ranch of Cercado Province (13º 37' S, 65º 07' W, 139 m asl) in the north central area of the Beni department. The maned wolf was walking slowly in an open grassland area, and after a visual contact with LG, it went into a dense shrubland area. The maned wolf did not run at any point and seemed very weak.

The prevalence of mange within the maned wolf population in the Beni department of Bolivia is unknown, neither are the domestic or wild canid species that act as the source of this mange. Maned wolves occur in low densities, their large home ranges are stable, breeding pairs have limited contact and overlap, and movement of floater individuals occurs between territories (Rodden et al., 2008; Muir and Emmons, 2012). This implies that intraspecies transmission would be unlikely. Due to the high frequency of *S. scabiei* in domestic dog populations found by Fiorello et al. (2004), though in a neighbor department of Bolivia, it is possible that domestic dogs are responsible for sarcoptic mange-like transmission to free-ranging maned wolves in the Beni department; however, it is necessary to obtain samples to identify the mite species. In fact, making a confirmed parasitological diagnosis of mange in a wild maned wolf would be a very important record, considering that the first such record in Brazil was not formally published.

Sarcoptic mange epidemics can cause significant population declines, even local extirpation, in wildlife, especially in species that are already threatened by other factors, such as habitat loss or overexploitation (Fisher et al., 2009). Moreover severe cases of sarcoptic mange have resulted in significant decreases in fat deposits and overall body weight and in increased mortality rate of infested individuals (Pence et al., 1983; Deem and Emmons, 2005). However, this had no effect on overall mortality in populations of the coyote, *Canis latrans* (Pence et al., 1983).

The photographed individual appears to have a severe infestation and is considerably underweight. In species with limited wild individuals and low density populations, the constant threat of transmission of sarcoptic mange from domestic dogs may well have detrimental effects on the population (Deem and Emmons, 2005). Further studies are needed to confirm the presence of Acari species infestations on maned wolves in the study area and other localities, and to examine their host-parasite interactions. The parallel study of Acari disease dynamics within domestic dogs would allow estimation of epidemics risks and suggest possible preventive sanitary strategies in dogs for the management and conservation of wild maned wolves.

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