

SUB-ÁREA: Epidemiology, Zoonotic and Public Health Aspects

Animal leptospirosis on the Guiana Shield: the great unknown

Loïc Epelboin^{a,b}, Paul Le Turnier^a, Edith Guilloton^b, Mona Saout^c, Félix Djossou^a, Xavier Baudrimont^d, Antoine Roch^d, Cécile Richard-Hansen^e, Mathieu Picardeau^f, Magalie Pierre-Demar^{c,g}, Pascale Bourhy^f, Walter Lilienbaum^h, Benoit de Thoisyⁱ

- a. Unité des Maladies Infectieuses et Tropicales, Centre Hospitalier de Cayenne Andrée Rosemon, Cayenne, French Guiana
- b. Centre d'Investigation Clinique Antilles Guyane, Inserm 1424, Centre Hospitalier de Cayenne Andrée Rosemon, Cayenne, French Guiana
- c. Unité Mixte de Recherche, Tropical Biome and Immunophysiology (TBIP), Université de Guyane, Cayenne, French Guiana
- d. Pôle sécurité sanitaire des aliments, Direction Générale des Territoires et de la Mer (DGTM) de la Guyane, Ministère de l'Agriculture et de l'Alimentation, Cayenne, French Guiana
- e. Office français de la biodiversité Guyane (OFB), UMR EcoFoG, Kourou, French Guiana
- f. Unité Biologie des Spirochètes, Institut Pasteur, Paris, France
- g. Laboratoire, Centre Hospitalier de Cayenne Andrée Rosemon, Cayenne, French Guiana.
- h. Laboratório de Bacteriologia Veterinária, Departamento de Microbiologia e Parasitologia, Universidade Federal Fluminense, Niterói-RJ
- i. Laboratoire des Interactions Virus-Hôtes, Institut Pasteur de la Guyane, Cayenne, French Guiana

Leptospirosis is a cosmopolitan zoonosis caused by bacteria of the genus *Leptospira*. Whether the distribution is worldwide, the hot and humid climate of the tropics is particularly suitable to its spread. Although the disease is widely described in wild and domestic fauna in many tropical regions, information is scarce on the Guiana Shield. This region is located in the Amazonian region and comprises from east to west, part of the Brazilian States of Amapá and Pará, French Guiana, Suriname, Guyana, and the Bolivar State of Venezuela. The objective of this study was to make an inventory of the knowledge on animal leptospirosis on the Guiana Shield.

A comprehensive search was conducted through the indexed and informal medical literature in English, French, Spanish and Portuguese between 1950 and 2021.

No publication was found on the Brazilian and Venezuelan parts of the Guiana Shield, and none in Suriname. Four old publications (1959, 1961, 1965 and 1992), were found from French Guiana, mainly on rodents (*Rattus norvegicus*), and some on dogs (*Canis lupus familiaris*), marsupials (*Didelphis marsupialis*), a monkeys (*Saimiri sciureus*) and domestic pigs (*Sus scrofa domesticus*). The predominant serogroup was Icterohaemorrhagiae, but others were also found anecdotally such as Copenhageni, Ballum, Grippotyphosa, Sejroe, and Panama.

In Guyana, a study published in 1985 reported a seroprevalence of leptospirosis of 49.1% among 2,935 cattle from 734 farms in the main livestock areas of the country. The main serogroups identified were Sejroe, Icterohaemorrhagiae, Pomona, Tarassovi, Canicola and Grippotyphosa. . Another study investigating a cluster of 5 cases of human leptospirosis suggested a role of consumption of a wild rodent (*Cuniculus paca*).

Although we found other publications available on animal leptospirosis on the Guiana Shield there are several studies in the South American literature showing the presence of *Leptospira* in wild mammal species also occurring in the Guiana Shield such as white-lipped peccary (*Tayassu pecari*), white-collared peccary (*Pecari tajacu*), capybara (*Hydrochoerus hydrochaeris*), spiny rat (*Proechimys* sp.), terrestrial tapir (*Tapirus terrestris*), nine-banded armadillo (*Dasypus novemcinctus*), jaguar (*Panthera onca*), puma (*Puma concolor*), ocelot (*Leopardus pardalis*), crab racoon (*Procyon cancrivorus*), red coati (*Nasua nasua*), black spider monkey (*Ateles paniscus*) and brown capuchin (*Sapajus (Cebus) apella*) in Brazil, Peru, and Colombia. Leptospirosis infection has been suggested to drive reproductive declines in white-lipped peccaries and explain large cyclical variations in population densities observed on all the species range.

So far knowledge of animal leptospirosis is extremely limited in the Guiana Shield region. Studies are needed to better understand the presence and role of *Leptospira* in the region, and also to search for new serogroups specific to this Amazonian region.