

## The role of mammals as carriers of pathogens with zoonotic potential

## El papel de los mamíferos como portadores de patógenos con potencial zoonótico

The COVID-19 pandemic, which occurred 4 years ago, left behind a renewed interest in the discussion of the role of mammals as carriers of pathogens with zoonotic potential. Previously, [Han et al. \(2016\)](#) stated that the mammalian orders with the highest number of species carrying this type of pathogens were Rodentia, Carnivora, and Chiroptera. It was also noted that the areas of the Earth with the most mammalian carriers matched the areas with high biological biodiversity, *i.e.*, those between latitudes 40° N and 40° S ([Morse et al. 2012](#); [Allen et al. 2017](#)). México is home to a high diversity of mammals (564 species; [Sánchez-Cordero et al. 2014](#)), and the orders mentioned above rank in the top 3 places in species richness (Rodentia 254, Chiroptera 144, and Carnivora 41). So, it is important to know their role as reservoirs or carriers of etiological agents that can spread from animals to humans. This is especially important because of the current loss rate of the original vegetation cover (for example, México lost 758,000 ha of tropical forest between 2002 and 2023; [Global Forest Watch 2024](#)) and because more people are moving into cities, which could make it easier for animals and people to come into contact with each other, potentially leading to a spillover.

Given this scenario, this special issue of *Therya Notes* entitled “The Role of Mammals as Carriers of Pathogens with Zoonotic Potential” presents advances on the topic in the American continent through 11 notes focused on rodents, bats, and marsupials. This issue addresses the issue of commensal rodents that inhabit urban and rural areas in central and southern México as carriers of the protozoa *Blastocystis* sp. and *Trypanosoma cruzi* ([Martínez-Hernández et al. 2024](#); [Panti-May et al. 2024](#)), which cause blastocystosis and Chagas disease in humans. The topic is also explored through wild rodent species, describing the role of some Heteromyidae rodent species from different semi-arid regions in México as hosts of 11 taxa of helminths, such as *Hymenolepis* sp. and *Protospirura dipodomis* ([Falcón-Ordaz et al. 2024](#)). Additionally, a review of the viruses, bacteria, protozoa, and ecto- and endoparasites carried by populations of olive soft-haired mouse (*Abrothrix olivacea*) in Chile is reported ([Gaona et al. 2024](#)). Finally, *Handleyomys rostratus* and *Sigmodon toltecus* are reported for the first time in Yucatán as carriers of *Amblyomma*, a genus of ticks reported as carriers of bacteria such as *Anaplasma* sp., *Ehrlichia* sp., and *Rickettsia* sp., which could cause febrile diseases in humans ([Palomo-Arjona et al. 2024](#)).

Regarding the order Chiroptera, the issue of bats as carriers of SARS-CoV-2 in urban and rural areas and sites covered by vegetation in Oaxaca, México, is addressed, where the authors emphasize the need to carry out additional studies to rule out or confirm the presence of this virus ([Hernández-Aguilar et al. 2024](#)). [Aguilar Setién et al. \(2024\)](#) also suggests that bats of the genus *Artibeus* are not efficient amplifiers or reservoirs of the Dengue and Zika viruses, although they recognized that humans could pass the virus to them. For the first time, *Rhogeessa tumida* has been reported as a carrier of the tick *Ornithodoros hasei*, which, in turn, carries a bacterium of the genus *Coxiella* sp. in Veracruz ([Grostieta et al. 2024](#)). It should be noted that some bacteria of this genus produce febrile diseases in humans. Finally, [Segura-Trejo et al. \(2024\)](#) report the presence of enterobacteria in the bat *Sturnira hondurensis* associated with a polluted water body in Xalapa, México, and highlight the importance of proper wastewater management to prevent it from being a potential source of infectious diseases for this and other wildlife species.

On the other hand, [Sánchez-Cordero et al. \(2024\)](#) reviewed reports of zoonotic pathogens in species of the family Didelphidae, particularly in *Didelphis*, a genus that shows the highest number of records of protozoa, bacteria, viruses, and helminths. Finally, [Corrales-Aguilar and Murillo \(2024\)](#) review the current state of knowledge about potential mammalian reservoirs of the SARS-CoV-2 virus and highlight the challenges in identifying key species in the transmission cycle of this virus.

These studies underline the role of rodents (wild and commensal), bats, and marsupials as carriers of viruses, bacteria, protozoa, ectoparasites, and endoparasites with zoonotic potential in México and Chile. Furthermore, these studies stress the need to continue producing knowledge on this subject, especially in an era of constant environmental changes that threaten the ecosystems where this fauna lives or that could pose a risk to people with whom they share cities or border-line areas between conserved vegetation, crops, and human settlements.

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