



CHARACTERIZATION OF TICKS IN THE GRAN MENDOZA AREA, MENDOZA, ARGENTINA

CARACTERIZACIÓN DE GARRAPATAS EN LA ZONA DE GRAN MENDOZA, MENDOZA, ARGENTINA

YAMÍN, Paula¹; DI CATALDO, Sophia²; VASCONCELOS, Daniela³; QUINTERO, Cristián Andrés^{4,*}

¹Universidad Juan Agustín Maza, Faculty of Veterinary and Environmental Sciences, Argentina.

² Consejo Nacional de Investigaciones Científicas y Técnicas (CONICET), IMBECU-CCT Mendoza, Argentina. ORCID: 0000-0001-5917-7175

³ Universidad Juan Agustín Maza, Faculty of Veterinary and Environmental Sciences, Veterinary Endocrinology Consultation Service, Argentina

⁴ Universidad Juan Agustín Maza, Laboratory of Molecular and Cellular Biology, Argentina. ORCID: 0000-0003-4365-4189

Corresponding author: cquintero@umaza.edu.ar

Received 12 May 2026; received in revised form 30 June 2026; accepted 14 August 2026

ABSTRACT

Background: Vector-borne diseases are increasingly important because they are emerging and re-emerging. Of the 867 tick species reported worldwide, 10% (86 species) have public health implications; 58 parasitize dogs, and 12 have been documented in Argentina. Tick-borne agents are increasingly relevant in the Cuyo region, with implications for both public health and domestic animal health. In Mendoza, the *Rhipicephalus sanguineus* complex and *Amblyomma tigrinum* have been documented. **Aim:** This study aimed to determine whether one tick genus predominated over the other, compared with previous studies in the region. **Methods:** We collected ticks from dogs attending municipal vaccination campaigns and veterinary clinics in several departments of the Greater Mendoza area (Ciudad/Capital, Luján de Cuyo, Godoy Cruz, and Guaymallén). Specimens were preserved in 70% (v/v) ethanol in sealed containers until analysis. Identification was performed using a stereomicroscope and the taxonomic keys of Nava. **Results:** The highest number of ticks was obtained from Ciudad/Capital, followed by Luján de Cuyo, Godoy Cruz, and Guaymallén. A total of 439 specimens were collected and classified by genus, species, and sex. Of these, 94.46% (415 ticks) corresponded to the *Rhipicephalus sanguineus* complex, including 193 females (43.96%) and 222 males (50.5%). The remaining 5.48% (24 ticks) were identified as *Amblyomma tigrinum*, including 17 females (3.89%) and 7 males (1.59%). **Discussion:** These findings confirm the marked predominance of the *Rhipicephalus sanguineus* complex among ticks collected from dogs in the Greater Mendoza area.

Keywords: Ticks; *Rhipicephalus sanguineus* complex; *Amblyomma tigrinum*; dogs; Mendoza.

RESUMEN

Antecedentes: Las enfermedades transmitidas por vectores son de creciente importancia debido a su naturaleza emergente y reemergente. De las 867 especies de garrapatas reportadas en todo el mundo, el 10% (86 especies) tienen implicaciones para la salud pública; 58 de estos parasitan perros, y 12 han sido documentados en Argentina. Los agentes transmitidos por garrapatas son cada vez más relevantes en la región de Cuyo, con implicaciones tanto para la salud pública como para la salud de los animales domésticos. En Mendoza se ha documentado la presencia del complejo *Rhipicephalus sanguineus* y *Amblyomma tigrinum*. **Objetivo:** El objetivo de este estudio fue determinar si un género de garrapatas predominaba sobre el otro, en comparación con estudios previos realizados en la región. **Métodos:** Se recolectaron garrapatas de perros que asistieron a campañas municipales de vacunación y clínicas veterinarias en varios departamentos del Gran Mendoza (Ciudad/Capital, Luján de Cuyo, Godoy Cruz y Guaymallén). Las muestras se conservaron en etanol al 70% (v/v) en recipientes sellados hasta el análisis. La identificación se realizó mediante microscopio estereoscópico y las claves taxonómicas de Nava. **Resultados:** El mayor número de garrapatas se obtuvo de Ciudad/Capital, seguido de Luján de Cuyo, Godoy Cruz y Guaymallén. Se recolectaron un total de 439 especímenes clasificados por género, especie y sexo. De ellas, el 94,46% (415 garrapatas) correspondieron al complejo *Rhipicephalus sanguineus*, incluyendo 193 hembras (43,96%) y 222 machos (50,5%). El 5,48% restante (24 garrapatas) fueron identificados como *Amblyomma tigrinum*, incluidas 17 hembras (3,89%) y 7 machos (1,59%). **Discusión:** Estos hallazgos confirman el marcado predominio del complejo *Rhipicephalus sanguineus* entre las garrapatas recolectadas en perros en el área del Gran Mendoza.

Palabras clave: Garrapatas; complejo *Rhipicephalus sanguineus*; *Amblyomma tigrinum*; perros; Mendoza.

1. INTRODUCTION

Vector-borne diseases are increasingly important because they are emerging and re-emerging. They account for approximately 17% of infectious diseases affecting humans and cause more than 700,000 deaths annually (Cabrera Orrego, 2021).

After mosquitoes, ticks are among the most important arthropod vectors of agents that can cause disease in domestic and wild animals and humans (Nava *et al.*, 2017). Of the 867 tick species reported worldwide, 10% (86 species) have implications for public health; 58 of these parasitize dogs, and 12 have been documented in Argentina (Mera y Sierra *et al.*, 2017; 8. Nava, S., & Cicuttin, G. L., 2025). Beyond their effects on host health, tick infestations are associated with economic losses in livestock and their by-products, substantial prevention and treatment costs, and increasing resistance to acaricides (Jongejan & Uilenberg, 2004). However, their main concern for public and veterinary health is their capacity to transmit pathogenic microorganisms of viral, parasitic, and bacterial origin. Frequently reported agents include the bacteria *Rickettsia rickettsii*, *R. conorii*, *Ehrlichia canis*, and *Mycoplasma haemocanis*, as well as the parasites *Babesia canis* and *Hepatozoon canis* (Álvarez Romina, 2017).

Tick-borne agents are increasingly relevant in the Cuyo region, with implications for public health and domestic animal health

(Fantozzi *et al.*, 2018). In Mendoza Province, several of these agents have been reported, including members of the genera *Ehrlichia*, *Anaplasma*, *Mycoplasma*, *Babesia*, *Hepatozoon*, and *Rickettsia* (Bergas Cristina, 2018; Vasconcelos, 2018, Di Cataldo & Guevara, 2024).

In Mendoza, the *Rhipicephalus sanguineus* complex and *Amblyomma tigrinum* have been documented (Bergas Cristina, 2018; Fantozzi *et al.*, 2018; Vasconcelos, 2018). Within the *R. sanguineus* complex, two lineages have been described: a tropical lineage, distributed in tropical and subtropical regions including northern Argentina, and a temperate lineage, distributed in temperate regions of Argentina, Chile, and Uruguay. The latter has been characterized as more suitable for transmitting *Rickettsia massiliae* (Fantozzi *et al.*, 2018; Monje *et al.*, 2016).

Despite the importance of ticks in the transmission and spread of infectious agents, there is little information available for the province of Mendoza. This study aimed to characterize ticks collected from dogs attending veterinary clinics and/or municipal vaccination campaigns at different sites in Greater Mendoza and to determine whether one tick group predominated, as reported in previous studies.

2. MATERIALS AND METHODS

2.1. Methods

2.1.1 Tick collection and identification

From August to December 2022, dogs attending municipal vaccination campaigns and veterinary clinics located in departments of the Greater Mendoza area were analyzed for ectoparasites (Ciudad/Capital, Luján de Cuyo, Godoy Cruz, and Guaymallén; Figure 1)..

Ticks were collected using forceps following the left-hand technique for a defined period of 5 minutes, examining body areas most frequently affected by ticks, including the ears, interdigital spaces, axillae, and inguinal folds (Marchiondo *et al.*, 2013). Specimens were preserved in 70% (v/v) ethanol in sealed containers until analysis (Vasconcelos, 2018). This preservation procedure was intended to maintain specimen integrity and DNA suitable for subsequent identification.

Species and sex identification were performed using a Luxeo 6Z stereomicroscope (Labomed), following the taxonomic keys of Nava *et al.* (2017).

3. RESULTS AND DISCUSSION

3.1. Results

3.1.1 Collection areas

Ticks were collected from areas with highly variable socioeconomic conditions, ranging from districts of Greater Mendoza characterized by deprivation and overcrowding to areas where animals had access to greater levels of veterinary care, including vaccination, deworming, and coat maintenance.

Among the sampling areas, Ciudad/Capital yielded the highest number of ticks, where the largest number of dogs attended the collection sites, followed by Luján de Cuyo, Godoy Cruz, and Guaymallén, as shown in Figure 1.

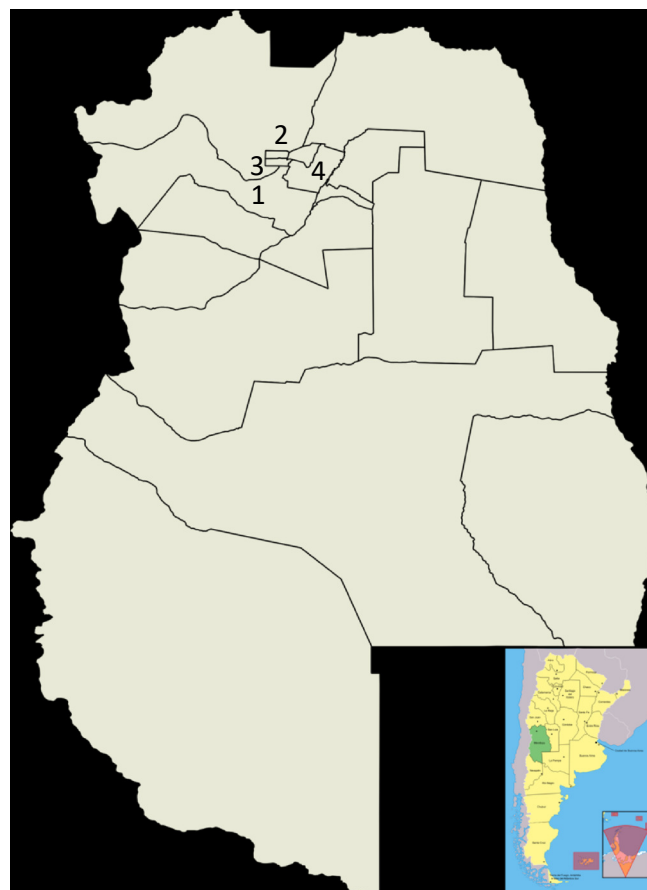


Figure 1. Map of Mendoza Province showing the departments from which samples were obtained. 1- Luján de Cuyo, 2, Ciudad de Mendoza, 3 Godoy Cruz, 4, Guaymallén. The inset shows a map of Argentina, with Mendoza marked in green.

3.1.2 Characteristics of the animals

All ticks (439 specimens) were obtained from dogs brought by their owners to the different collection sites. Among the animals examined, small- and medium-sized dogs with both long and short coats predominated. The general condition of the animals varied considerably according to the collection area; some animals had poor body condition (below 2.5 on a scale of 2 to 5) and did not have up-to-date health care plans.

3.1.3 The *Rhipicephalus sanguineus* complex was the most frequently identified tick group in Mendoza.

This tick complex is important because it vectors zoonotic pathogens that may affect both human and animal health (Fantozzi *et al.*).

In Argentina, the ticks that affect our pets, especially dogs, belong to the *Rhipicephalus sanguineus* complex and to different species of *Amblyomma* (Fantozzi *et al.*).

Of the 439 specimens collected, ticks were identified and classified by taxonomic group and sex. Figure 2 shows specimens of the *Rhipicephalus sanguineus* complex.

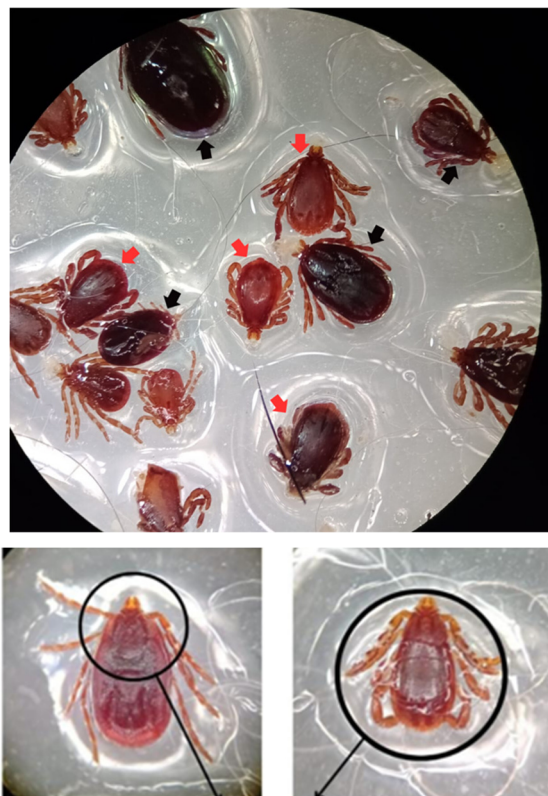


Figure 2. Upper panel. Specimens of the *Rhipicephalus sanguineus* complex. Images obtained using a Luxeo 6Z stereomicroscope (Labomed). Male individuals are indicated by black arrows and female individuals by red arrows. Lower panel: Image obtained using a Luxeo 6Z stereomicroscope (Labomed). Male (left) and female (right) specimens of the *Rhipicephalus sanguineus* complex.

To a lesser extent, *Amblyomma tigrinum* was also found in several cases; typical samples are shown in Figure 3.

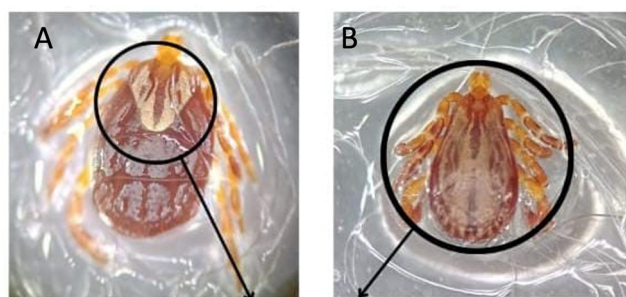


Figure 3. Image obtained using a Luxeo 6Z stereomicroscope (Labomed). A-Male and B-female specimens of *Amblyomma tigrinum*.

Specimen identification was based on morphological characteristics of the capitulum, particularly the shape and configuration of the basis capituli (Figure 4). Specimens assigned to the *Rhipicephalus sanguineus* complex exhibited the characteristic hexagonal basis capituli, with distinct lateral angles, whereas specimens identified as *Amblyomma tigrinum* showed a broader and more rectangular basis capituli, lacking the characteristic hexagonal outline observed in *Rhipicephalus*. These differences, together with other external morphological characters, supported the identification of the specimens.

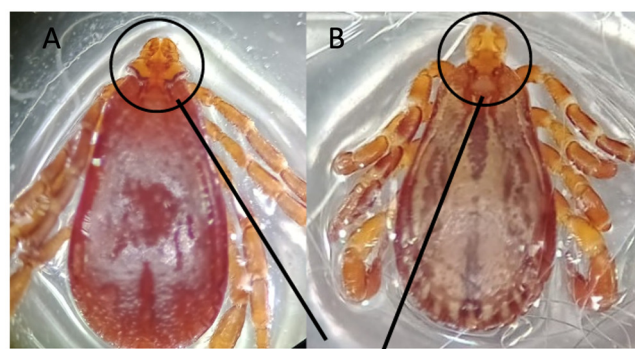


Figure 4. Differences in the basis capituli between a specimen of the *Rhipicephalus sanguineus* Complex (A) and a specimen of *Amblyomma tigrinum* (B)

3.2. Discussions

In Argentina, ticks affecting companion animals, particularly dogs, include the *Rhipicephalus sanguineus* complex and various *Amblyomma* species (Fantozzi *et al.*, 2018). In Mendoza, both groups affecting domestic dogs have been documented (Bergas Cristina, 2018; Fantozzi *et al.*, 2018; Vasconcelos, 2018).

Of the 439 specimens collected, ticks were identified and classified by taxonomic group and sex (Figure 5).

Of the specimens examined, 94.46% (415 ticks) corresponded to the *Rhipicephalus sanguineus* complex, including 193 females (43.96%) and 222 males (50.5%) (Figures 2). The remaining 5.48% (24 ticks) were identified as *Amblyomma tigrinum*, including 17 females (3.89%) and 7 males (1.59%) (Figure 3). No juvenile forms (larvae) were observed during the study.

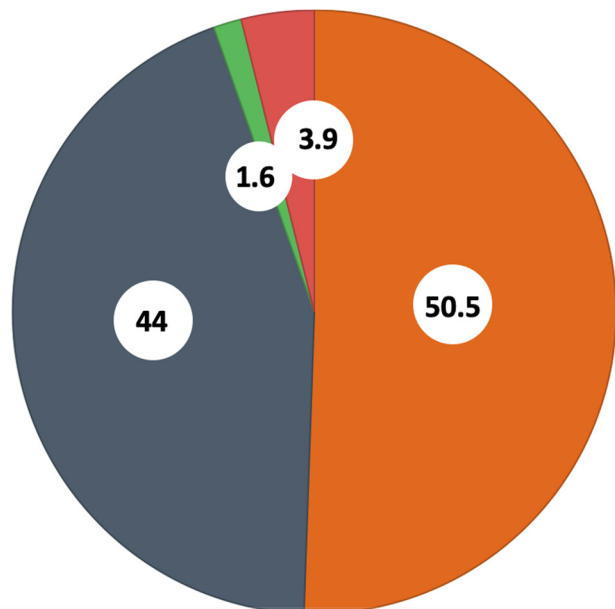


Figure 5. Percentage distribution of identified tick groups by sex. The graph shows the tick groups identified in the present study. Orange male *Rhipicephalus sanguineus*, grey female *Rhipicephalus sanguineus*, green male *Amblyomma tigrinum*, red female *Amblyomma tigrinum*

4. CONCLUSIONS

Identifying tick vectors in a region provides relevant information for assessing the potential occurrence of tick-borne pathogens and supports epidemiological surveillance. In the present study, the *Rhipicephalus sanguineus* complex represented 94.46% of all collected ticks, in agreement with previous reports from Mendoza (Bergas Cristina, 2018; Fantozzi *et al.*, 2018; Vasconcelos, 2018). The predominance of this complex highlights the importance of continued surveillance of ticks and tick-borne pathogens affecting both animals and humans. The data from this study may contribute to developing appropriate ectoparasite prevention and control strategies across the province's departments. Further studies should focus on molecular detection and characterization of pathogens carried by these arthropod vectors and on developing integrated surveillance and control measures.

Overall, these findings provide baseline information on the distribution of ticks collected from dogs in the Greater Mendoza area and support the need for continued surveillance of arthropod-borne pathogens and appropriate prevention and control measures.

5. DECLARATIONS

5.1. Study Limitations

Besides the sample size, no other limitations were known at the time of the study.

5.2. Acknowledgments

We would like to thank Universidad JA Maza for its support.

5.3. Funding source

The Agencia Nacional de Promoción de la Investigación, el Desarrollo Tecnológico y la Innovación funded this work (Grant: PICTO UUMM-2019-0044).

5.4. Competing Interests

The authors declare no financial, professional, or personal conflicts of interest that could have influenced the content or conclusions of this manuscript. All authors are affiliated solely with academic institutions.

5.5. Open Access

This article is licensed under a Creative Commons Attribution 4.0 (CC BY 4.0) International License, which permits use, sharing, adaptation, distribution, and reproduction in any medium or format, as long as you give appropriate credit to the original author(s) and the source, provide a link to the Creative Commons license, and indicate if changes were made. The images or other third-party material in this article are included in the article's Creative Commons license unless indicated otherwise in a credit line to the material. Suppose material is not included in the article's Creative Commons license, and your intended use is not permitted by statutory regulation or exceeds the permitted use. In that case, you will need to obtain permission directly from the copyright holder. To view a copy of this license, visit <http://creativecommons.org/licenses/by/4.0/>.

7. REFERENCES:

1. Monje LD, Linares MC, Beldomenico PM. Prevalence and infection intensity of *Rickettsia massiliae* in *Rhipicephalus sanguineus sensu lato* ticks from Mendoza, Argentina. *Microbes Infect.* 2016 Nov;18(11):701-705. doi: 10.1016/j.micinf.2016.06.008. Epub 2016 Jul 7. PMID: 27394145.
2. Ticks of the Southern Cone of America Diagnosis, Distribution, and Hosts with Taxonomy, Ecology and Sanitary Importance. 1st Edition - February 4, 2017. Santiago Nava, Jose M. Venzal, Daniel González Acuña, Thiago F. Martins, Alberto A Guglielmone.
3. Fantozzi, María Cecilia; Linares, Maria Cielo; Cuervo Bustamante, Pablo Fernando; Romoli, Andrés; Vittaz, Diego; *et al.*; Especies de garrapatas (Acari: Ixodidae) parásitas de perros (*Canis familiaris*) en zonas urbanas del Gran Mendoza, Argentina; Facultad de Ciencias Veterinarias, Universidad Nacional del Litoral; Fave Ciencias Veterinarias; 17; 1; 6-2018; 25-29
4. Portillo A, de Sousa R, Santibáñez S, Duarte A, Edouard S, Fonseca IP, Marques C, Novakova M, Palomar AM, Santos M, Silaghi C, Tomassone L, Zúquete S, Oteo JA. Guidelines for the Detection of *Rickettsia* spp. *Vector Borne Zoonotic Dis.* 2017 Jan;17(1):23-32. doi: 10.1089/vbz.2016.1966. PMID: 28055574.
5. VIGILANCIA DE GARRAPATAS Y EMERGENCIA DE ZOONOSIS EN MENDOZA, ARGENTINA. TICK SURVEILLANCE AND ZOONOSES EMERGENCE IN MENDOZA, ARGENTINA. R. Mera y Sierra; A. Romoli; A. Sarrión; M. Granzotto; D. Vasconcelos y G. Neira Centro de Investigación en Parasitología Regional, Universidad Juan Agustín Maza. Mendoza. Argentina.
6. Bontti, S. (2018). Evidencia serológica de *Rickettsiosis* en pacientes con sospecha de fiebre manchada en la provincia de Mendoza.
7. Labruna MB. Ecology of *rickettsia* in South America. *Ann N Y Acad Sci.* 2009 May;1166:156-66. doi: 10.1111/j.1749-6632.2009.04516.x. PMID: 19538276.
8. Nava, S., & Cicuttin, G. L. (2025). Garrapatas y zoonosis bacterianas asociadas en Argentina. *Medicina (Buenos Aires)*, 85(5), 1093-1107.
9. Patrick S. Sebastian, Fernando S. Flores, María N. Saracho-Bottero, Evelina L. Tarragona, José M. Venzal, Santiago Nava, Molecular detection of rickettsial bacteria in ticks of the genus *Ixodes* from the Southern Cone of America, *Acta Tropica*, Volume 210, 2020, 105588, ISSN 0001-706X, <https://doi.org/10.1016/j.actatropica.2020.105588>.
10. DI CATALDO, Sophia y GUEVARA, Manuel Alejandro. Detección molecular de *Hepatozoon canis* en perros de Mendoza, Argentina. *Rev. investig. vet. Perú* [online]. 2024, vol.35, n.3, e26059. Epub 30-Jun-2024. ISSN 1609-9117. <https://doi.org/10.15381/rivep.v35i3.26059>.
11. PREVALENCIA DE HEPATOZOON SPP. EN GARRAPATAS, MEDIANTE EL MÉTODO FROTIS DE HEMOLINFA. Universidad Juan Agustín Maza. Autor: Vasconcelos Daniela Director: Vet. Neira Gisela. Mendoza 2018
12. A.A. Marchiondo a,*, P.A. Holdsworth b, L.J. Fourie c, D. Rugg a, K. Hellmann d, D.E. Snyder e, M.W. Dryden f (Ed.). (2013). Asociación Mundial para el Avance de la Parasitología Veterinaria (WAAVP) segunda edición: Pautas para evaluar la eficacia de los parasiticidas para el tratamiento, prevención y control de infestaciones por pulgas y garrapatas en perros y gatos. ELSEVIER.
13. Javier López Del P., K. A. V. y. T. A. A. (2007). Evidencia clínica y serológica de *rickettsiosis* canina en Chile Javier López Del P., Katia Abarca V. y Teresa Azócar A. SOCHINF (Sociedad Chilena De Infectología).