**Eurasian Journal of Veterinary Sciences**
https://eurasianjvetsci.org
**pISSN:**1309-6958/**eISSN:**2146-1953
Eurasian J Vet Sci 2025;41:e0454
**DOI:**10.63673/eurasianjvetsci.454

**Case Report**

# A Novel Host Record: *Hyalomma aegyptium* (Linnaeus, 1758) infestation on the Mediterranean Chameleon, *Chamaeleo chamaeleon* (Linnaeus, 1758) in Türkiye

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**Abstract**

The aim of this study is to report a tick infestation detected on the Mediterranean Chameleon (*Chamaeleo chamaeleon*) in the Demre district of Antalya Province, located on the southern coast of Türkiye. A tick specimen collected from the orbital area was morphologically identified as *Hyalomma aegyptium* (Linnaeus, 1758) using microscopic examination. Although *Hy. aegyptium* infestation is common in tortoises of the genus *Testudo* and some lizard species, it is infrequent in chameleons. This study represents a new host-parasite relationship for *Hy. aegyptium* in Türkiye, and in the world.

Keywords: Acari, Chameleon, Host-Parasite Relationships, Reptile Ectoparasites

**Received:** 01.02.2025
**Accepted:** 22.07.2025
**Published:** 05.08.2025

**How to cite this article?**
Eren G, 2025. A Novel Host Record: *Hyalomma aegyptium* (Linnaeus, 1758) infestation on the Mediterranean Chameleon, *Chamaeleo chamaeleon* (Linnaeus, 1758) in Türkiye
Eurasian J Vet Sci, 41, e0454

## Introduction

*Hyalomma aegyptium*, also known as the tortoise tick, is a three-host hard tick species distributed in the Balkans, North Africa, and the Middle East (Mihalca et al 2017). Although the main host group of this species is tortoises of the genus *Testudo*, it has also been reported in members of the orders Artiodactyla (cattle, deer, wild boar, and camel), Perissodactyla (horse), Carnivora (dog), Eulipotyphla (hedgehog), Lagomorpha (rabbit), Rodentia, as well as some bird and lizard species (Hoogstraal and Kaiser 1960, Apanaskevich 2003, Široký et al 2006). In studies conducted in Türkiye, *Hy. aegyptium* species ticks have been reported on the Balkan Wall Lizard (*Podarcis tauricus*) (Eren and Açıcı 2024), the Mediterranean spur-thighed tortoise (*Testudo graeca*), the southern, white-breasted hedgehog (*Erinaceus concolor*), the domestic cattle (*Bos taurus*), the domestic goat (*Capra hircus*), and also on humans (Bursalı et al 2012, İnci et al 2016).

This case report presents the first recorded infestation of *Hyalomma aegyptium* on a Mediterranean chameleon (*C. chamaeleon*), both in Türkiye and worldwide.

## Case presentation

In October 2024, a tick infestation was observed on a chameleon in the walking path between the buildings at the Demre Campus of the Mediterranean Fisheries Research, Production and TrainingInstitute in Antalya province of Türkiye (Figure 1). A specimen of a nymph-stage tick (n = 1) attached to the orbital area (Figure 2A) was removed using blunt-ended forceps.

The tick specimen was stored in 70% ethanol within a microtube (2 ml), until morphological identification. The tick specimen was identified as *Hyalomma aegyptium* based on morphological characteristics observed under a stereomicroscope (Nikon SMZ 745T, Tokyo, Japan), including the shape of the gnathosoma, the shape and length of palp segment II, the shape and length of the hypostome, the structure and shape of setae on the alloscutum, scutum morphology, the shape and length of

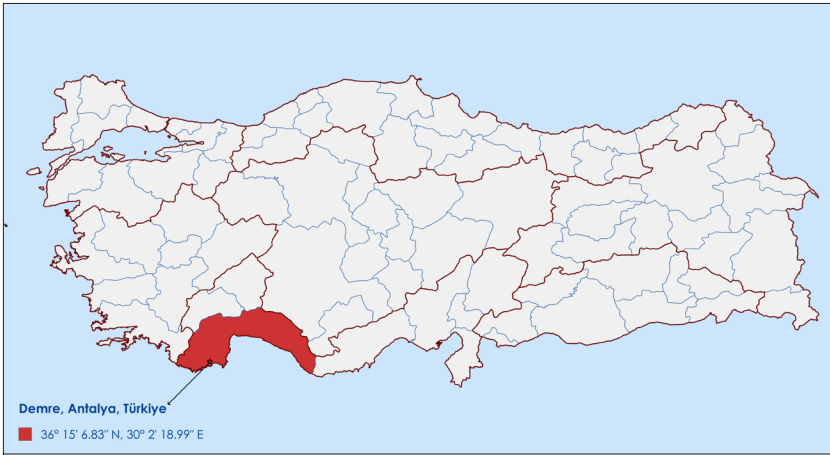


Figure 1. Capture site of tick-infested Mediterranean chameleon (*C. chamaeleon*) in southern Türkiye.

the lateral and medial spurs on the coxae I, and the shape of the peritreme (Apanaskevich 2003). The animal host photograph was taken using a Digital SLR Camera (Nikon D5300, Tokyo, Japan), and the photograph of the tick was taken using a microscope-integrated camera (Figure 2).

## Results and discussion

The family Chamaeleonidae Gray, 1825 includes over 200 species within 12 genera under two subfamilies, Brookesiinae Angel, 1942 and Chamaeleoninae Gray, 1825, and also members of this family are known as chameleons. Chameleons are distributed over a wide geographic area, including Africa, Madagascar, Southwest Asia and the Mediterranean region (Glaw 2015). Mediterranean Chameleon (*C. chamaeleon*) is the only representative of this family in Mediterranean region of Türkiye (Yaşar et al 2021).

In recent years, there has been increased research on detecting reptile ectoparasites (ticks and mites) (Fajfer 2012) and the pathogens (A*naplasma spp., Borrelia spp.,* and *Rickettsia spp.*) (Mendoza-Roldan et al 2019, Mendoza-Roldan et al 2021) carried by ectoparasites. Previous studies have rarely examined chameleons as hosts, possibly because they were not often infected with ectoparasites. As a result, less is known about the ectoparasitic composition of these hosts compared to other reptilian hosts. According to The Hard Ticks of the World (Guglielmone et al 2014), different researchers have reported finding the ticks *Amblyomma tholloni* Neumann, 1899, *Hyalomma truncatum* Koch, 1844 and *Rhipicephalus microplus* (Canestrini, 1888) on the chameleon hosts. In addition, *Rhipicephalus kohlsi* has previously been reported on the Mediterranean chameleon (*Chamaeleo chamaeleon*) in Türkiye (Yaman and Zerek

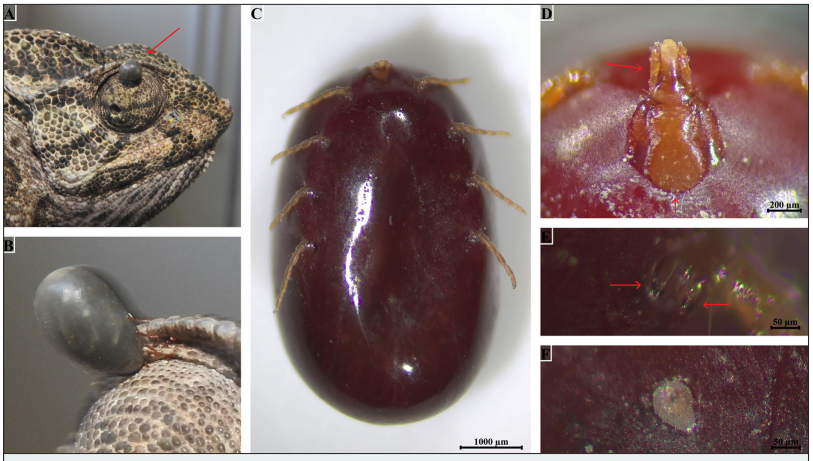


Figure 2. Engorged nymph of *Hy. aegyptium* attached to the upper edge of the orbital crest of the chameleon (A); dorsolateral view (B); ventral view (C); scutum and palps (D), spurs on the coxae I (E), and peritreme (F).

2016). However, an analysis of the photographs provided in that study suggests that the morphology of the tick is more consistent with a species of the genus *Hyalomma*—most likely *Hy. aegyptium* based on the shape of the basis capituli and the capitulum, the length of the palp segments, and the spurs on the coxae I—suggesting a possible misidentification.

## Conclusion

Consequently, the present study has reported *Hy. aegyptium* infestation on the Mediterranean chameleon (*C. chamaeleon*) for the first time in the world. In addition, the Mediterranean chameleon is a new host record for *Hy. aegyptium* in Türkiye. This data is highly valuable for clarifying reptile-parasite relationships both in Türkiye and worldwide, as well as for understanding the host range of *Hy. aegyptium*. However, conclusions cannot be drawn from a single case. Therefore, conducting large-scale comprehensive ectoparasitological studies in regions where the host species is distributed will help clarify the ectoparasitic load and composition of chameleons in Türkiye.

## Declarations

### Competing Interests

Author declare that there are no conflicts of interest related to the publication of this article.

### Funding

No funding was received for this study

### Availability of Data and Materials

The data that support the findings of this study are available on request from the corresponding author.

### Ethical Statement

Informed consent was obtained from the animal owner.

### Author Contributions

Motivation / Concept: GE; Design: GE; Control/Supervision: GE Data Collection and Processing: GE; Analysis and Interpretation: GE; Literature Review: GE; Writing the Article: GE; Critical Review: GE.

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