

Amblyomma sp. infestation on a Javan Pangolin (*Manis javanica*) at the Cikananga Wildlife Center

Tetty Barunawati Siagian^{1,*}, Muhamad Fikri^{1,2}, Wahyu², Inna Rakhmawati²

¹ Veterinary Paramedic Study Program, College of Vocational Studies, IPB University, Kumbang Street No. 14, IPB Cilebende Campus, Bogor, West Java, Indonesia

² Cikananga Wildlife Center, Sukabumi, West Java, Indonesia

ABSTRACT: Javan Pangolins in ex-situ conservation are vulnerable to tick infestations. This study aimed to identify the tick species infesting three female Javan Pangolins at the Cikananga Wildlife Center, all confiscated by the Conservation Area Management in Sukabumi, Indonesia, from wildlife trafficking. One pangolin had a documented history of tick infestation. Tick collection involved carefully handling and restraining the pangolins, opening their scales, and applying cotton soaked in 70% alcohol to the infested areas for five minutes. The ticks were removed with anatomical tweezers and preserved in 70% alcohol. Microscopic identification at 100x magnification revealed the ticks to be *Amblyomma* sp., characterized by a rectangular capitulum base, long slender palpi, an anal ridge and groove, and 13 festoons. This study concludes that the ticks infesting Javan Pangolins at the Cikananga Wildlife Center belong to the *Amblyomma* species, highlighting the importance of ongoing monitoring and management of ectoparasites in conservation environments.

Keywords:

Amblyomma sp., festoon, Javan Pangolin, tick

■ INTRODUCTION

The Javan Pangolin (*Manis javanica*), also known as the Sundanese or Malayan Pangolin, is one of the last remaining pangolin species globally, primarily found in Indonesia (Withaningsih *et al.*, 2021). Its distribution includes Java, Sumatra, Kalimantan, and several other Indonesian islands (Sompud *et al.*, 2019). This unique mammal is distinguished by its keratin-covered scales, a tongue half the length of its body, and a lack of teeth, feeding primarily on ants and termites (Takandjandji & Sawitri, 2016).

The Javan Pangolin population has declined by 9.12% over the past 45 years, driven by illegal trade due to demand for traditional medicine, bushmeat, habitat loss and degradation, low reproductive rates, limited food sources, and disease (Challender *et al.*, 2019). Ex-situ conservation has been proposed to counter this decline (Ngau *et al.*, 2021). However, in ex-situ environments, Javan Pangolins face health challenges, particularly tick infestations (Zhang *et al.*, 2021). Ticks cause itching and anaemia and serve as vectors for various pathogens (Zhai *et al.*, 2021).

Tick infestations have been documented in several ex-situ conservation areas, including reports of *Amblyomma javanense* infesting pangolins in Guangdong, China (Zhai *et al.*, 2021), Nigeria (Fawole *et al.*, 2023), Singapore (Kwak *et al.*, 2018), and India (Mohapatra & Panda, 2014). However, information on tick infestations in Javan Pangolins in Indonesia remains limited. Such data is crucial for ex-situ conservation institutions to manage captive breeding and healthcare

for pangolins effectively. This study aims to identify the tick species infesting Javan Pangolins at the Cikananga Wildlife Center in Indonesia.

■ CASE

Signalement and Anamnesis: Tick identification was conducted on three Javan Pangolins at the Cikananga Wildlife Center, all female and confiscated by the Conservation Area Management authorities in Sukabumi and Bogor, Indonesia. One of the pangolins had a known history of tick infestation. **Tools and Materials:** The tools used included cotton, gloves, anatomical tweezers, glass slides, small plastic tubes, and a microscope. The primary material used was 70% alcohol. **Collection and Identification of Tick Samples:** The Javan Pangolins were handled by securing their tails to facilitate tick collection. Ticks were collected by gently combing the scales. The scales were manually opened, and cotton wool soaked in 70% alcohol was applied to the infested areas for 5 minutes. The ticks were then removed using anatomical tweezers and placed in plastic tubes containing 70% alcohol for preservation. For identification, ticks were extracted from the tubes using anatomical tweezers, placed on glass slides, and examined under a microscope at 100x magnification (Figure 1).

Received: 02-05-2024 | Revised: 30-05-2024 | Accepted: 02-06-2024



Copyright © 2024 CC-BY-SA. This is an Open Access article distributed under the terms of the Creative Commons Attribution ShareAlike 4.0 International License (<https://creativecommons.org/licenses/by-sa/4.0/>).

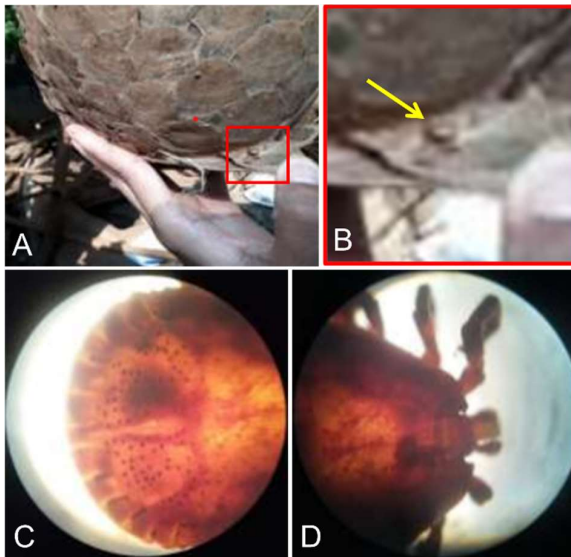


Figure 1. Ticks infesting the Javan Pangolins at the Cikananga Wildlife Center. (A) Ticks residing on the pangolin's scales, (B) a close-up view indicated by the yellow arrow, and the identification of the tick as *Amblyomma* sp., showing the (C) posterior and (D) anterior body parts.

■ RESULT AND DISCUSSION

The ticks infesting the Javan Pangolins at the Cikananga Wildlife Center were identified as *Amblyomma* sp. (Figure 1). This species is characterized by several distinct morphological features: the anterior part has long, slender palpi and a rectangular base capitulum, while the posterior part contains an anal ridge and groove, with 13 festoons on the adult tick's idiosoma. Coxae I have two wide, blunt, and well-separated spurs, whereas coxae II, III, and IV each have broad, blunt, and rounded spurs. These morphological characteristics align with the descriptions provided by Jabin *et al.* (2019) and Zhai *et al.* (2021), with the festoons being a particularly distinctive feature (Jabin *et al.*, 2019).

Pangolins heavily infested with ticks exhibit poor health conditions, including anaemia, emaciation, weakness, and loss of appetite, as Zhai *et al.* (2021) noted. *Amblyomma* sp. is a hard tick in the family Ixodidae, commonly found on Javan Pangolins, Indian Pangolins, and wild boars. This tick species is distributed across Vietnam, Indonesia, Malaysia, India, Sri Lanka, the Philippines, and Thailand. It is known to act as a vector for *Ehrlichia* spp. (Zhai *et al.*, 2021) and *Babesia* sp. (Chong *et al.*, 2023).

■ CONCLUSION

This study highlights the identification of *Amblyomma* sp. as the tick species infesting Javan Pangolins at the Cikananga Wildlife Center, emphasizing the need for ongoing monitoring and management of ectoparasite infestations to protect the health and well-being of pangolins in ex-situ conservation settings.

■ AUTHOR INFORMATION

Corresponding Author

*TBS: tettyvirus@gmail.com

Veterinary Paramedic Study Program, College of Vocational Studies, IPB University, Bogor, West Java, INDONESIA.

■ ACKNOWLEDGMENT

The authors would like to express their sincere gratitude to the Cikananga Wildlife Center for granting permission to conduct this study and for their invaluable support throughout the research on Javan Pangolins.

■ REFERENCES

- Challender D, Baillie J, Ades G, Kaspal P, Chan B, Khatiwada A, Xu L, Chin S, KC R, Nash H, Hsieh H. 2014. *Manis pentadactyla*. The IUCN Red List of Threatened Species. e. T12764A45222544.
- Chong SQ, Yeo D, Aidil NI, Ong JL, Chan AH, Fernandez CJ, Lim BT, Khoo MD, Wong AM, Chang SF, Yap HH. 2023. Detection of a novel *Babesia* sp. in *Amblyomma javanense*, an ectoparasite of Sunda pangolins. *Parasites & Vectors*. 16(1):432.
- Fawole EO, Adeyefa A, Olapade BB, Jarikre T, Omotosho O, Emikpe B, Morenikenji O. 2023. Parasites of white-bellied pangolins retrieved from trade for conservation in South-West Nigeria. *Research Square*. 1-12.
- Jabin G, Dewan Y, Khatri H, Singh SK, Chandra K, Thakur M. 2019. Identifying the tick *Amblyomma javanense* (Acari: Ixodidae) from Chinese pangolin: generating species barcode, phylogenetic status and its implication in wildlife forensics. *Experimental and Applied Acarology*. 78:461-467.
- Kwak ML, Hsu CD, Douay G, Ahmad AA. 2018. The first authenticated record of the pangolin tick *Amblyomma javanense* (Acari: Ixodidae) in Singapore, with notes on its biology and conservation. *Experimental and Applied Acarology*. 76(4):551-557.
- Mohapatra R, Panda S. 2014. Husbandry, behaviour and conservation breeding of Indian Pangolin. *Folia Zoologica*. 63(2):78-80.
- Ngau C, Fahmi H, Faizal M, Shariff Y, Kamarudin Z, Topani R, Hashim AKA, Ryan JJR. 2021. First captive born sunda pangolin (*Manis javanica* Desmarest, 1822) in Malaysia. *Journal of Wildlife and Parks*. 36:95-103.
- Sompud J, Sompud CB, Pei KJ, Sun NC, Repin R, Tuh F. 2019. Sunda Pangolin *Manis javanica* (Mammalia: Pholidota: Manidae) of Gaya Island, Sabah. *Journal of Threatened Taxa*. 11(5):13552-13556.
- Takandjandji M, Sawitri R. 2016. Analysis of capture and trade of sunda pangolin (*Manis javanica* Desmarest, 1822) in Indonesia. *Jurnal Analisis Kebijakan Kehutanan*. 13(2):85-101.
- Withaningsih S, Nasrudin A. 2021. Correlation between landscape structure and distribution of Javan Pangolin (*Manis javanica*) in an extreme landscape. *Biodiversitas: Journal of Biological Diversity*. 22(2):920-932.
- Zhai J, Wu Y, Chen J, Zou J, Shan F, Li W, Chen W, Zhou N. 2021. Identification of *Amblyomma javanense* and detection of tick borne *Ehrlichia* spp in confiscated Malayan Pangolin. *International Journal for Parasitology: Parasites and Wildlife*. 14:107-116.
- Zhang F, Ming Y, Xu N, Wang W, Wu S. 2021. Vitamin A deficiency and its treatment in captive Sunda Pangolins. *Veterinary Medicine and Science*. 7(2):554-558.