

**Observation of the Asian Turtle Tick
Amblyomma geoemydae Cantor, 1847 (Acari: Ixodidae)
on the Asian leaf turtle *Cyclemys dentata* Gray,
1831 in Coron Island, Philippines**

Tristan Luap P. Senarillos^{1,3*}, Jahn Zylke T. Ong^{1,4,5}, Karlen Mignon Acaba¹,
Alpha Joyce Fernandez¹, Jestine Crhistia Gatdula^{1,6}, and Leticia E. Afuang²

¹Graduate School, University of the Philippines Los Baños,
Los Baños, Laguna 4031 the Philippines

²Animal Biology Division, Institute of Biological Sciences,
University of the Philippines Los Baños, Los Baños, Laguna 4031 the Philippines

³Philippine Eagle Foundation, Philippine Eagle Center,
Malagos, Baguio District 8000 Davao City, the Philippines

⁴Wildlife Matters Organization Inc., Sta. Mesa, Manila 1016 the Philippines

⁵ASEAN Centre for Biodiversity,
University of the Philippines Los Baños, Laguna 4031, Philippines

⁶*Ugnayan ng Pahinungod*, UP Open University,
Maahas, Los Baños, Laguna 4030 the Philippines

The Asian leaf turtle (*Cyclemys dentata*) is a freshwater turtle species found in select Southeast Asian countries, including the Philippines. Our understanding of *C. dentata*'s ecology in the Philippines is not yet fully understood and documented, and this is derived only from a few studies. In this paper, we present our single-event observation of an ectoparasite interaction between *C. dentata* and the Asian turtle tick (*Amblyomma geoemydae*) from *Sitio* Malbato, *Barangay* Bintuan Coron, Palawan. Our discovery serves as the second documented instance of this ectoparasite on *C. dentata* in the Philippines, hence extending its known distribution outside mainland Palawan. This finding contributes to the limited understanding of *C. dentata*'s ecology and underscores the need for further field-based observations, which are crucial for their research and conservation.

Keywords: *Amblyomma geoemydae*, Asian leaf turtle, coastal scutes, distribution record, ectoparasite, natural history, Palawan PAIC

The Asian leaf turtle (*Cyclemys dentata* Gray, 1831) is morphologically distinct in its shell shape resembling a serrated, ovoid to roundish leaf (Fritz *et al.* 2007). It is distributed throughout much of the Southeast Asian countries – including Indonesia (Sumatera, Bali, Java, and Kalimantan), Malaysia (Peninsular Malaysia, Sabah, and

Sarawak), Singapore, Thailand, and the Philippines (As-singkily *et al.* 2021; Priambodo *et al.* 2023). It is one of the seven freshwater turtle species native to the Philippines that is currently known so far from the Palawan and the Sulu biogeographic region (Diesmos *et al.* 2008; Blanck *et al.* 2023), inhabiting small streams in primary and secondary hill forests and freshwater swamps and is rarely

*Corresponding author: tristanenarillos18@gmail.com

found in artificial habitats and agricultural areas (Diesmos *et al.* 2008; As-singhily *et al.* 2021).

Little is known about the natural history of *C. dentata* populations in the Philippines. Existing knowledge is primarily derived from the studies conducted by Diesmos *et al.* (2008) focusing on the species' status, and distribution – as well as works by Siroky and Modry (2010), Amarga *et al.* (2022), and Yu (2023), which examined ectoparasite interactions. In this paper, we contribute an additional observation on the ectoparasite ecology of *C. dentata* from Coron Island, Palawan, thereby augmenting our understanding of the ecology of this lesser-studied freshwater turtle species.

We conducted a rapid biodiversity assessment in *Sitio* Malbato, *Barangay* Bintuan, Coron Island, the Philippines, from 09–12 Nov 2023. Following the protocols set by the Palawan Council for Sustainable Development, we performed a non-invasive sampling technique mainly of opportunistic listing of wildlife and *in situ* photography. The objective of the assessment is to document the local terrestrial biodiversity in the area. Situated in the Calamian Islands in northern Palawan, Coron is the third-largest island in the region. Calamian islands, along with the Palawan mainland and its nearby offshore islands, form the Greater Palawan Biogeographic Region, also known as the Palawan Pleistocene Aggregate Island Complex (PAIC). The Desiktoy River, located within the watershed area of Kingfisher Park, surrounds our assessment site. The area is surrounded by a lowland evergreen forest and is situated at an elevation of approximately 102 m above sea level. It is an important conservation area and is within a key biodiversity area (KBA-67 Calamianes Group of Islands) (Mallari *et al.* 2001).

On the night of 10 Nov 2023, at around 2145 hr, we encountered a solitary adult female *C. dentata* actively swimming in an inland stream (Figure 1). Upon examination, we noticed the presence of an ectoparasite attached to its carapace (Figures 2A and B). We documented our observation through *in situ* photography using an Oppo Reno 6 5G smartphone. The turtle was released at the capture site after standard documentation. Based on specific characteristics such as elongated palps, eyes, two rounded spurs on coxa I, and a 4/4 dentition (Amarga *et al.* 2022), we identified this ectoparasite as the oriental tick species *Amblyomma geoemydae*. This observation aligns with findings by Chao *et al.* (2022), wherein *A. geoemydae* adult ticks were observed attached to the carapace of the yellow-margined box turtle (*Cuora flavomarginata*). However, our findings differ somewhat from those of Amarga *et al.* (2022), who noted that adult *A. geoemydae* ticks and nymphs tend to aggregate in skin folds near the head and at the base of the tail of *C. dentata*. This suggests that *A. geoemydae* can attach to various parts of the turtle's external body.



Figure 1. Adult ♀ Asian leaf turtle (*Cyclemis dentata*) photographed *in situ*.

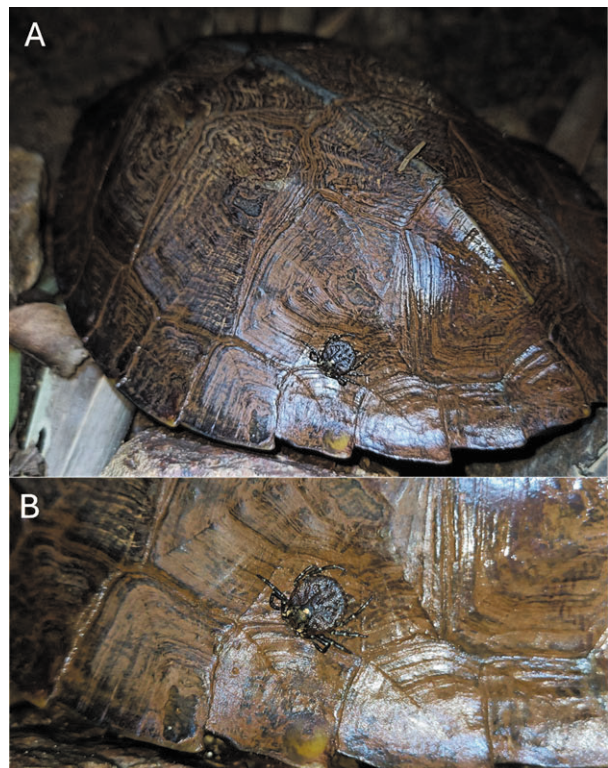


Figure 2. Asian turtle tick (*Amblyomma geoemydae*) attached on the carapace of *C. dentata*: [A] *A. geoemydae* positioned at the dorso-posterior axis; [B] close-up of *A. geoemydae* attached to the costal scute of *C. dentata*.

Amblyomma geoemydae is an ectoparasite primarily associated with Testudines, particularly tortoises and riparian turtles of various genera – including *Cuora*, *Cyclemys*, *Geoemyda*, *Heosemys*, *Indotestudo*, *Mauremys*, *Manouria*, and *Melanochelys*. Additionally, it has been reported in other vertebrate groups such as reptiles, birds, and mammals (Amarga *et al.* 2022; Chao *et al.* 2022).

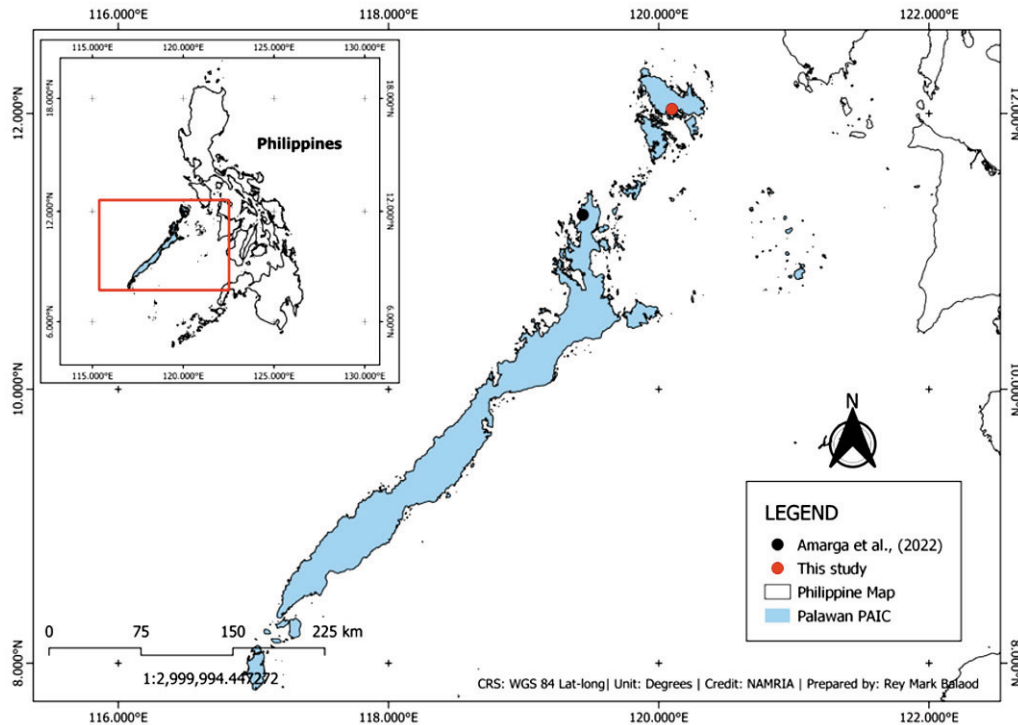


Figure 3. Confirmed distribution of the Asian turtle tick (*Amblyomma geoemydae*) in the Philippines.

Our single observation of *A. geoemydae* in *C. dentata* population on Coron is the first for the island and the second known in the Philippines. The first instance was documented by Amarga *et al.* (2022) – also in *C. dentata* in El Nido, Palawan – thus expanding its recognized distribution range (Figure 3). This information contributes to the need for more understanding of the ecology of *C. dentata*. Notably, *A. geoemydae* has not been observed in other native freshwater Philippine turtles like the Malayan soft-shelled turtle (*Dogania subplana*), Asian giant softshell turtle (*Pelochelys cantorii*), Philippine box turtle (*C. philippinensis*), Sunda box turtle (*C. couro*), spiny turtle (*Heosemys spinosa*), and Palawan forest turtle (*Siebenrockiella leytensis*), hence prompting the need for further field-based observations.

Investing in basic research such as this study helps scientists understand how a species interacts within its environment and with other species. It aids in identifying knowledge gaps and prioritizing research areas. The emphasis on specific aspects of a species' biology, ecology, or behavior facilitates more targeted and impactful research efforts. Furthermore, species with detailed natural history information derive greater benefits, as researchers can more effectively design and implement conservation strategies tailored to the specific needs of the species (McKeon *et al.* 2019).

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