

New Locality Record for the Reptile Tick *Amblyomma helvolum* Koch, 1844 (Acari: Ixodidae) on the Bicol Peninsula, Luzon Island, Philippines

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ABSTRACT

Amblyomma helvolum Koch, 1844 is an Oriental and Australasian hard tick primarily associated with reptiles, particularly order Squamata. It is widespread across Southeast Asia where it usually parasitic on skinks, monitor lizards, and snakes. Here, we present a new locality record for *A. helvolum* parasitizing Gray's keeled skink (*Tropidophorus grayi*) in Bicol Peninsula, Luzon Island, Philippines. Also, this is the second published documentation of *A. helvolum* on the Bicol Peninsula after it was first reported in 1988.

KEYWORDS: Distribution, ectoparasite, reptile, tick.

INTRODUCTION

The genus *Tropidophorus* Duméril and Bibron (Reptilia: Scincidae) in the Philippines is represented by four species, all of which are endemic (Greer and Biswas, 2004; Honda *et al.*, 2005). Among these Philippine *Tropidophorus*, Gray's keeled skink (*Tropidophorus grayi* Günther, 1861) has the widest recorded distribution range encompassing three faunal regions (Binaday *et al.*, 2017). This semi-aquatic, endemic species has been reported to occur in Luzon, Catanduanes, Polillo, Masbate, Leyte, Samar, Cebu, Negros, and Panay (Brown *et al.*, 2009). In its natural habitat, *T. grayi* usually prefers to inhabit moist and cool microhabitats such as riparian areas, dead wood, and aggregates of vegetation materials (*e. g.*, fallen branches and leaves) near streams and brooks (Auffenberg and Auffenberg, 1988; Supsup *et al.*, 2016). Like other scincids, *T. grayi* is also known to harbor ectoparasitic arthropods including the reptile-associated tick, *Amblyomma helvolum* (Auffenberg, 1988).

Amblyomma helvolum Koch, 1844 is a reptile-associated hard tick native to Oriental and Australasian zoogeographic realms (Robinson, 1926). It has a wide distribution range spanning across mainland and maritime Southeast Asia extending eastward to Papua New Guinea and Australia (Robinson, 1926; Voltzit and Keirans, 2002; Petey *et al.*, 2019). Northward, it

is also documented in Taiwan (Robbins 2005). Due to increasing reptile trade in recent years, *A. helvolum* have been transported outside its native range (Simmons *et al.*, 2002). In terms of host association, *A. helvolum* is primarily associated with skinks, monitor lizards (genus *Varanus*), and snakes (Anastos, 1950; Auffenberg, 1988; Simmons *et al.*, 2002). In rare cases, *A. helvolum* has been reported on testudines and mammals but these cases are accidental parasitism (Petney *et al.*, 2019). In the Bicol Peninsula, parasitism of *A. helvolum* on skinks was first reported by Auffenberg (1988) from specimens collected in Caramoan municipality (Camarines Sur province). Prior to this paper, Auffenberg (1988) served as the first and sole published report of *A. helvolum* in the Bicol Peninsula. Here, we report a new locality record of *A. helvolum* in Bicol Peninsula and it serves as an additional geographic record for *A. helvolum* in the Philippines as well as second report in Bicol Peninsula after more than 30 years.

MATERIALS AND METHODS

This observation was conducted during a visit in Busay Falls, Malilipot municipality, Albay Province (13° 18' 27.5148" N, 123° 44' 3.552" E) (Figure 1). The area is predominantly covered in secondary forest and riparian vegetations include *Angiopteris* sp. (Marattiaceae), *Ficus* spp. (Moraceae), *Homalomena* sp. (Araceae), *Leea* sp. (Vitaceae), *Musa* sp. (Musaceae), and *Selaginella*

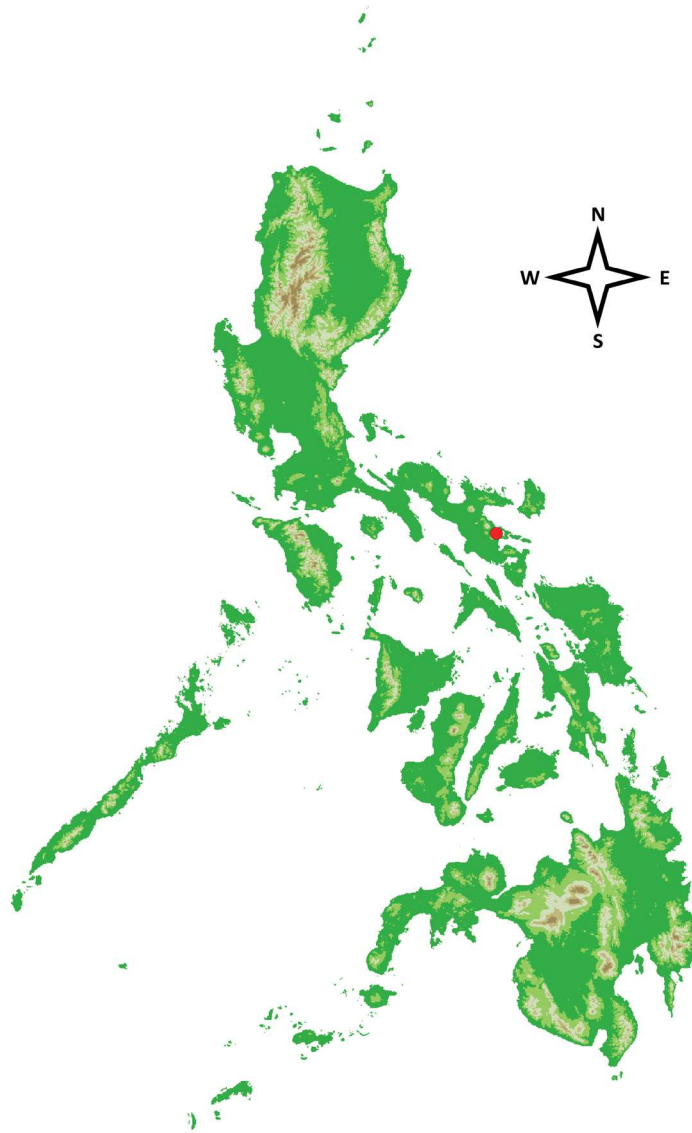


Figure 1. Location of Busay Falls (Albay) in the Bicol Peninsula of Luzon (Philippines).

sp. (Selaginellaceae). Also, jade vine (*Strongylodon macrobotrys* Gray), an endangered forest-associated liana endemic in the Philippines, was documented in the area. The stream tributaries are shallow with mixture of sandy and rocky substrate, often covered by low-lying canopy. Microhabitat, host skink, and ticks were photographed using Canon EOS-7D DSLR Camera.

RESULTS AND DISCUSSION

Observation

On March 30, 2018 (9:00-10:00am), an adult Gray's keeled skink was spotted foraging near stream banks in one of the tributaries of Busay Falls (Figure 2). Upon closer observation, three adult specimens of *Amblyomma helvolum* (two engorged female and one male) were

noticed attached on the lateral area of the skink (Figure 3).

Amblyomma helvolum was first described from a female specimen collected in Manila, Philippines (Koch, 1844). This species occupies a wide geographic range and have been reported to occur in countries including Indonesia, Laos, Malaysia, Nicobar Island, Philippines, Taiwan, Thailand, Vietnam (Kohls, 1957; Auffenberg, 1988; Petney and Keirans, 1996; Voltzit and Keirans, 2002; Robbins, 2005; Durden *et al.*, 2008; Petney *et al.*, 2019). *Amblyomma helvolum* is primarily parasitic with reptiles including skinks, snakes, and varanid lizards (Auffenberg, 1988; King and Keirans, 1997; Petney *et al.*, 2019). In some cases, *A. helvolum* has been reported to parasitize mammals as well (Voltzit and Keirans, 2002).



Figure 2. Microhabitat and foraging area of the Gray's keeled skink (*Tropidophorus grayi*). This species usually prefers cool, shady, and damp areas of the stream and brook banks (inset).



Figure 3. Engorged females (yellow box) and male (red box) *Amblyomma helvolum* parasitizing *Tropidophorus grayi*. Inset: Records of *A. helvolum* in Bicol Peninsula (blue dot - Caramoan municipality; red - Busay Fall, Albay).

In the Philippines, *A. helvolum* have been reported in Culion archipelago, mainland Luzon, Leyte, mainland Mindanao, mainland Palawan, and Tawi-Tawi (Koch, 1844; Kohls, 1950; Wilson, 1969; Auffenberg, 1988; Velasquez and Eduardo, 1994). Within mainland Luzon, published locality records of *A. helvolum* were from Manila and Caramoan municipality (Koch, 1844; Auffenberg, 1988; Velasquez and Eduardo, 1994). Presence of *A. helvolum* on *T. grayi* in Bicol Region was first reported by Auffenberg (1988) from specimens collected in Caramoan municipality (Camarines Sur province) (Fig. 3, inset). Aside from *T. grayi*, *Dasia grisea* (Gray 1845), *Gonocephalus sophiae* (Gray 1845), *Otosaurus cumingii* Gray 1845, *Varanus olivaceus* Hallowell 1857 (listed as *Varanus grayi*), and *Varanus dalubhasa* Welton *et al.*, 2014 (listed as *Varanus salvator*) were also reported as host species for *A. helvolum* in Bicol Peninsula (Auffenberg, 1988).

CONCLUSION

Prior to this paper, published report of *Amblyomma helvolum* in Luzon Island is only Manila and Camarines Sur. Here, we present a record of *A. helvolum* in Albay province as additional locality record of *A. helvolum* in the Philippines. Also, this is the second published documentation of *A. helvolum* in Bicol Peninsula after it was first reported in 1988.

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