

A REVIEW OF NEOTROPICAL *AMBLIOMMA* SPECIES (ACARI: IXODIDAE)

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ABSTRACT: This review includes descriptions of all available Neotropical *Amblyomma* species, keys to males and females, synonymy lists, geographical distribution, and host-parasite associations. Note that three species have not been included in our study, because samples were not available for comparison. However, these are valid species: *Amblyomma hirtum* Neumann, 1906, *Amblyomma bouleengeri* Hirst et Hirst, 1910, and *Amblyomma beaurepairei* Voglesang et Santos Dias, 1953.

KEYWORDS: ticks, Ixodidae, Amblyomminae, *Amblyomma*, South America, Central America, systematics

INTRODUCTION

This paper is a review of the Neotropical *Amblyomma* species, which follows previous publications on the Asian and African taxa (Voltzit and Keirans 2002, 2003). Approximately a third of the 126 known *Amblyomma* species (Horak et al. 2002) occur in the Neotropical zoogeographical region, where these three-host ticks parasitize a large diversity of host groups, including amphibians, reptiles, birds, and mammals. Forty-five *Amblyomma* taxa are endemic to the Neotropics, whereas 11 of them also occur in the Nearctic region (Guglielmone et al. 2003a). Herein, we include descriptions of all available Neotropical *Amblyomma* adult specimens, taxonomic keys to their identification, synonymy data, and information on geographical distribution and host associations.

HOSTS AND DISTRIBUTIONS OF THE NEOTROPICAL *AMBLIOMMA* SPECIES

Amblyomma albopictum Neumann, 1899

This species occurs in the Caribbean, but has also been reported from Central America. It was recorded from Cuba, the Dominican Republic, Haiti, and Honduras, where it parasitizes different species of reptiles (Robinson 1926; Clifford and Kohls 1961; Guglielmone et al. 2003a). The occurrence of this species in Brazil remains questionable because the specimen mentioned by Robinson (1926) was found on a very unusual host, a porcupine, and more importantly, it is not available for verification in the Göldi collection (Barros-Battesti et al. 2006). Collections of this tick from Costa Rica maintained at the USNTC, were mislabeled and contained in fact only specimens of *A. scutatatum*. Costa Rica should, therefore, not be included in the distribution of *A. albopictum* (Guglielmone et al. 2003a; Barros-Battesti et al. 2006). It has been noted that the number of spurs on Coxa I reported for both male and female *A. albopictum* varies from one to two, and that descriptions of this species are char-

acterized by numerous discrepancies (Pérez Vigueras 1934; Santos Días 1958; Cerny, 1966, 1969; Guglielmone et al. 2003a). This situation strongly suggests that there is a need for a thorough reevaluation of the taxonomy of *A. albopictum* based on more samples collected from a large variety of geographical areas. Our description is based on samples currently available to us.

Amblyomma antillarum Kohls, 1969

This Caribbean tick species is known to feed on iguanas and has been collected in Anegada, one of the British Virgin Islands, and possibly also in Dominica (Kohls 1969; Keirans 1985). Because of the endangered status of its main host, *Iguana pinguis*, this tick should also be included in the list of endangered tick species (Keirans 1985; Durden and Keirans 1996).

Amblyomma argentinae Neumann, 1904

The type of *A. argentinae* was found on a tortoise in Argentina, and although it has since been reported from other countries (Venezuela, Peru, and Chile), according to Guglielmone et al. (2003a) and Gonzalez-Acuña et al. (2003), the occurrence of this reptile-associated tick can only be confirmed for Argentina, where its main host is *Geochelone chilensis* (Guglielmone et al. 2001). Guglielmone et al. (2001) also provide evidence for the name *A. testudinis*, often used for this tick species, to be abandoned.

Amblyomma aureolatum (Pallas, 1772)

Adults of this tick species feed on carnivores, with a particular affinity for canids, whereas immatures have often been collected from birds and rodents (Arzua et al. 2003; Guglielmone et al. 2003c; Pinter et al. 2004). *Amblyomma aureolatum* also parasitizes humans (Guglielmone et al. 2006). The presence of *A. aureolatum* is confirmed for Argentina, Brazil, French Guiana, Paraguay, Suriname, and Uruguay, whereas its reported occur-

rence in Bolivia, Guatemala, and Venezuela is more doubtful (Guglielmone et al. 2003a, c). This tick, which was often referred to as *A. striatum*, until Schulze (1941) reviewed its taxonomic status, was also frequently confused or synonymized with *A. ovale* (Neumann 1899; Robinson 1926; Tonelli Rondelli 1937). It wasn't until 1961, that Aragão and Fonseca (1961b) clarified the systematics of what they called the «*ovale complex*». *Amblyomma aureolatum* was recently found infected with the agent of Rocky Mountain spotted fever (Pinter and Labruna 2006).

***Amblyomma auricularium* (Conil, 1878)**

With the exception of Chile, Ecuador, Peru, Paraguay, and Suriname, this tick has been collected in all other South American countries, in Central America, and Trinidad & Tobago, reaching sometimes the Nearctic region (Jones et al. 1972; Lord and Day 2000). It feeds on *Xenarthra* species, mainly armadillos (Guglielmone et al. 2003b).

***Amblyomma brasiliense* Aragão, 1908**

Artiodactyla and Perissodactyla are the usual hosts of *A. brasiliense* which can, however, also bite humans (Guglielmone et al. 2006). This tick is known to occur in Argentina, Brazil, and Paraguay (Aragão and Fonseca 1961a; Boero 1957; Guglielmone et al. 2003a).

***Amblyomma cajennense* (Fabricius, 1787)**

Amblyomma cajennense is probably the tick most commonly encountered in the southern half of the American continent where it is considered to be a major livestock pest (Kohls 1958). It occurs in Central America, the Caribbean Islands, Mexico, Southern Texas in the United States, and in all South American countries with the exception of Chile and Uruguay (Jones et al. 1972; Guglielmone et al. 2003a). Although domestic ungulates are the main hosts of this tick species, *A. cajennense* can feed on a large variety of mammals, including humans, and birds (Estrada-Peña et al. 2004; Guglielmone et al. 2006). Until recently, it was considered the main vector of *Rickettsia rickettsii* in the Neotropics. We now know that *A. aureolatum* is another peridomestic vector of *Rickettsia rickettsii*, the agent of Rocky Mountain spotted fever (Pinter and Labruna 2006).

***Amblyomma calcaratum* Neumann, 1899**

The only known hosts of adults of *A. calcaratum* are the Neotropical anteaters belonging to the genera *Tamandua* and *Myrmecophaga*. Larvae were reportedly collected from birds (Jones et al. 1972).

The geographical distribution of this tick includes Argentina, Belize, Bolivia, Brazil, Colombia, Costa Rica, Ecuador, French Guiana, Panama, Paraguay, Peru, Suriname, Trinidad & Tobago, and Venezuela (Jones et al. 1972; Caceres et al. 2002; Guglielmone et al. 2003a). The accidental occurrence of this tick in Kentucky was reported by Bloemer et al. (1987).

***Amblyomma coelebs* Neumann, 1899**

Amblyomma coelebs feeds on Perissodactyla, more often on tapirs, and has been collected in almost every country in Central and South America, from southern Mexico to Argentina, with the exception of Chile and Uruguay (Jones et al. 1972; Guglielmone et al. 2003a). Adults and nymphs are known to feed on humans in Brazil (Guglielmone et al. 2006). A nymph, molecularly identified as *A. coelebs*, was recently collected from a man who had traveled to Guyana (Beati, unpublished data).

***Amblyomma crassum* Robinson, 1926**

Only the female of this tick species is known. *Amblyomma crassum* was collected in Colombia, Peru, and Venezuela. Its known hosts are *Geocoleone* spp. (Robinson 1926; Fairchild et al. 1966; Jones et al. 1972; Guglielmone et al. 2003a).

***Amblyomma cruciferum* Neumann, 1901**

Amblyomma cruciferum is only known from Haiti and Puerto Rico and its hosts are reptiles (Robinson 1926; Bequaert 1932).

***Amblyomma darwini* Hirst et Hirst, 1910**

The unique host of this tick, the iguana *Amblyrhynchus cristatus* is confined to the Ecuadorian Galapagos Islands (Hirst and Hirst 1910; Schulze 1936).

***Amblyomma dissimile* Koch, 1844**

Reptiles, but sometimes also toads (*Bufo* spp.), are hosts to this tick species, which is found in Central America, the Caribbean, and in all South America with the exception of Chile (Jones et al. 1972; Guglielmone et al. 2003a). *Amblyomma dissimile* has also been found occasionally in North America (Bequaert 1932). The female of this species closely resembles that of *A. rotundatum*. The main differences between these two species have been discussed by Lampo et al. (1997).

***Amblyomma dubitatum* Neumann, 1899**

The Neotropical tapirs and capybara species are the usual hosts of *A. dubitatum*, a tick often incorrectly referred to as *Amblyomma cooperi*. It is known to occur in Argentina, Bolivia, Brazil, Par-

aguay, Uruguay, and Venezuela (Jones et al. 1972; Guglielmone et al. 2003a). This tick is also known to carry rickettsial agents of unknown pathogenicity to humans (Labruna et al. 2004b).

***Amblyomma extraoculatum*
Tonelli-Rondelli, 1939**

The type of *A. extraoculatum* was found in Singapore (Neumann 1899). It is likely that what is called *A. extraoculatum* in the Neotropics is a different species, first described by Tonelli-Rondelli (1939) as *A. romitii* (Barros-Battesti, personal communication). In South America, this tick mainly feeds on capybaras and was collected in Brazil, French Guiana, Guyana, Suriname, and Venezuela (Jones et al. 1972; Guglielmone et al. 2003a).

***Amblyomma fulvum* Neumann, 1899**

This tick is only known to feed on the giant anaconda, *Eunectes marinus*. Because this reptile has never been found in Brazil, there is some doubt about the locality where the type was collected (Keirans 1972; Guglielmone et al. 2003a). Other areas where this tick supposedly occurs include Venezuela and French Guiana. The female of *A. fulvum* is unknown.

***Amblyomma fuscum* Neumann, 1907**

The male of *Amblyomma fuscum* Neumann, 1907 was described from five specimens collected on a *Boa constrictor* L. (?) from South America (locality not stated), but this species has not been recorded as a valid taxon in some lists proposed by current taxonomists. However, after a comparison between the Brazilian material of *A. fuscum* deposited in the Acari Collection of the Butantan Institute, São Paulo, Brazil, and the male type deposited in Leiden Museum of Natural History, the Netherlands, the taxonomic validity of *A. fuscum* was restored (Barros-Battesti et al. 2005).

This is a rare tick parasitizing Reptilia (Squamata) and Mammalia (Edentata, Carnivora, and Didelphimorphia).

***Amblyomma geayi* Neumann, 1899**

Amblyomma geayi is a parasite of Xenarthra (*Bradypus* spp.) and has been collected in Brazil, Guyana, French Guiana, Colombia, Panama, Peru, and Suriname (Aragão and Fonseca 1961a; Guglielmone et al. 2003a).

***Amblyomma goeldii* Neumann, 1899**

Guglielmone et al. (2003a) are of the opinion that *A. goeldii*, a reptile tick, can only be found in French Guiana because this species was frequently confused with *A. rotundatum* in the early literature.

***Amblyomma humerale* Koch, 1844**

Amblyomma humerale is found in Brazil, French Guiana, Guyana, Suriname, Peru, Trinidad & Tobago, Venezuela, Bolivia, Colombia, and Ecuador. Its reported occurrence in Uruguay appears to be more doubtful (Guglielmone et al. 2003a). A nymph of this tick species has been collected from a migratory bird in Canada (Morshed et al. 2005), but they have also been found on lizards, opossums, and anteaters (Labruna et al. 2002). The hosts of adult *A. humerale* are, usually, reptiles but dogs have also been found parasitized by this tick species in Brazil (Barros-Battesti et al. 2006).

***Amblyomma imitator* Kohls, 1958**

The distribution of this species of tick ranges from southern Texas, to Honduras, and Guatemala (Kohls 1958). *Amblyomma imitator* was so named, because it strongly resembles *A. cajennense*. The two species are difficult to differentiate, but isoenzymatic analyses have helped determining that the two species are genetically distinct (Hilburn et al. 1989).

***Amblyomma incisum* Neumann, 1906**

This tick has been recorded primarily from tapirs (*Tapirus terrestris*). It is known to occur in the Amazon area of Paraguay, Peru, and Brazil. An additional population of *A. incisum* occurs in the Atlantic coastal area of Brazil, and is morphologically distinguishable from the Amazonian form. The taxonomic status of the two entities still needs to be determined (Labruna et al. 2005). Labruna et al. (2005) established that reports of this tick from Guyana and Venezuela referred actually to *A. latepunctatum* (Tonelli Rondelli 1939). Because *A. incisum* was often confused with *A. scalpturatum* and *A. latepunctatum*, specimens from Ecuador and French Guiana need to be reexamined before the presence of *A. incisum* in these countries can be confirmed (Labruna et al. 2005).

***Amblyomma inornatum* (Banks, 1909)**

The distribution area of this tick covers the southwestern part of Texas (United States), where it feeds on a large variety of mammals, often dogs and rabbits (Cooley and Kohls 1944). The immatures are also known to parasitize birds. *Amblyomma inornatum* has been reported to occur in some Central American countries, where its presence needs to be confirmed (Guglielmone et al. 2003a).

***Amblyomma latepunctatum*
Tonelli-Rondelli, 1939**

Labruna et al. (2005) have reported the presence of this tick in the Amazon area of Brazil,

Guyana, Ecuador, French Guiana, Peru, and Venezuela. Their recent redescription of *A. latepunctatum* shows that *A. latepunctatum*, a parasite of *Tapirus terrestris*, has consistently been incorrectly identified as either *A. scalpturatum* or *A. incisum* (Tonelli Rondelli 1939).

***Amblyomma longirostre* (Koch, 1844)**

Amblyomma longirostre is a widespread porcupine parasite found in Bolivia, Brazil, French Guiana, Paraguay, Trinidad & Tobago, Venezuela, Colombia, Panama, southern Mexico, Uruguay, and Argentina (Jones et al. 1972; Guglielmone et al. 2003a, Venzal et al. 2003a). Immatures are often carried by migratory birds far from their original areas and have frequently been collected in the United States (Fairchild et al. 1966; Jones et al. 1972). *Amblyomma longirostre* collected from a Brazilian porcupine were found infected with a rickettsial strain of unknown pathogenicity for humans (Labruna et al. 2004a).

Amblyomma macfarlandi

Keirans, Hoogstraal et Clifford, 1973

This tick parasitizes *Geochelone elephantopus*, the giant tortoise of the Galapagos Islands (Ecuador) (Keirans et al. 1973). This tick, like all other ticks collected from the Galapagos tortoises, was included in a list of endangered tick species (Durden and Keirans 1996).

***Amblyomma maculatum* Koch, 1844**

The morphologically very closely related *A. maculatum*, *A. triste* and *A. tigrinum*, have often been confused (Kohls 1956), thus making the delimitation of their geographical area extremely difficult. *Amblyomma maculatum* is essentially a Nearctic species, but it has been reported from countries as far south as Uruguay. Its presence in Peru and Ecuador appears to be confirmed (Guglielmone et al. 2003a). This tick feeds on a wide range of domestic and wild mammals including humans, and its immatures can parasitize birds. *Amblyomma maculatum* has been found infected with rickettsial organisms of unknown pathogenicity for humans in Peru (Blair et al. 2004). In the United States, however, it is the vector of a newly recognized human disease caused by *Rickettsia parkeri* (Paddock et al. 2004), which has also been found in Uruguay in the closely related *A. triste* (Venzal et al. 2004).

***Amblyomma multipunctum* Neumann, 1899**

Although this tick was originally described from a *Tapirus* sp. in North America, it is definitely

a South American species, found in Venezuela, Colombia, Ecuador, and Bolivia (Neumann 1899; Robinson 1926; Jones et al. 1972; Guglielmone et al. 2003a).

***Amblyomma naponense* (Packard, 1869)**

Amblyomma naponense is a parasite of ungulates and Xenarthra, and is known to occur in Brazil, Colombia, French Guiana, Guyana, Panama, Peru, Surinam, Venezuela, Bolivia, Costa Rica, and Ecuador (Jones et al. 1972; Guglielmone et al. 2003a).

***Amblyomma neumanni* Ribaga, 1902**

The primary hosts of *A. neumanni* are domestic and wild ungulates, but dogs and humans are also often parasitized (Guglielmone et al. 2006). This tick was collected in Argentina, Colombia, and Uruguay (Guglielmone and Hadani 1985; Guglielmone et al. 2003a; Nava et al. 2006).

***Amblyomma nodosum* Neumann, 1899**

Amblyomma nodosum, like its close relative *A. calcaratum*, feeds on neotropical anteaters (*Tamandua* and *Myrmecophaga*). This tick was found in Bolivia, Brazil, Colombia, Costa Rica, Guatemala, Nicaragua, Panama, Trinidad & Tobago, Argentina, southern Mexico, and Venezuela (Robinson 1926; Jones et al. 1972; Guglielmone et al. 2003a).

***Amblyomma oblongoguttatum* Koch 1844**

Amblyomma oblongoguttatum is not strictly associated with any host: it was collected from mammals, birds and humans (Guglielmone et al. 2006). The presence of this tick species was reported from Surinam, Bolivia, Brazil, Guyana, Panama, French Guiana, southern Mexico, Venezuela, Belize, Guatemala, Colombia, Costa Rica, Peru, and Nicaragua (Jones et al. 1972; Guglielmone et al. 2003a; Mendoza-Urbe and Chávez-Chorocco 2004).

***Amblyomma ovale* Koch, 1844**

Adults of *A. ovale* show a predilection for carnivores, in particular for wild felids (Guglielmone et al. 2003c), whereas immatures have been collected from rodents and carnivores (Fairchild et al. 1966; Jones et al. 1972; Guglielmone et al. 2003a, c). This tick has also been found parasitizing humans (Guglielmone et al. 2006). Its distribution ranges throughout most of the Neotropics, from Mexico to Argentina, but is absent from southern Argentina, Uruguay, and Chile (Jones et al. 1972; Guglielmone et al. 2003a, b). It carries *Hepatozoon* spp. in Brazil (Forlano et al. 2005). For a discussion on its taxonomy, refer to *A. aureolatum* (Aragão and Fonseca 1961b).

***Amblyomma paca* Aragão, 1911**

This tick can often be collected from the paca, *Agouti paca*, but it can also feed on other mammals. It has been reported from Guyana, Surinam, Belize, Brazil, Colombia, Panama, Paraguay, and Venezuela (Aragão and Fonseca 1961a; Jones et al. 1972; Guglielmone et al. 2003a).

***Amblyomma parvitarsum* Neumann, 1901**

Adult *A. parvitarsum* feed on ungulates, whereas the immature stages presumably prefer birds and reptiles (Need et al. 1991). After excluding an unlikely record for this tick species on a penguin in Brazil, its distribution range includes Argentina, Bolivia, Chile, and Peru (Guglielmone et al. 2003a; González-Acuña et al. 2003).

***Amblyomma parvum* Aragão, 1908**

Amblyomma parvum is found on a wide variety of domestic and wild mammals and on man (Guglielmone et al. 2006). Its distribution spans from southern Mexico, through Central America and part of South America: Venezuela, Bolivia, French Guiana, Brazil, Paraguay, and Argentina (Jones et al. 1972; Guglielmone et al. 1990; Guglielmone et al. 2003a; Nava et al. 2006).

***Amblyomma pecarium* Dunn, 1933**

This tick feeds on Arthiodactyla and peccarys in particular. It has been reported from Panama, southern Mexico, and Bolivia (Dunn 1933; Guglielmone 2003a).

***Amblyomma pictum* Neumann, 1906**

Amblyomma pictum is associated with Xenarthra and is found in Brazil, French Guiana, Guyana, and Panama (Robinson 1926; Fairchild et al. 1966; Guglielmone et al. 2003a).

***Amblyomma pilosum* Neumann, 1899**

Amblyomma pilosum feeds on *Goechelone elephantopus* the giant tortoise of the Galapagos Islands (Ecuador) (Keirans et al. 1973).

***Amblyomma pseudoconcolor* Aragão, 1908**

This tick has been reported from Argentina, Brazil, French Guiana, Paraguay, Surinam, Uruguay, and Bolivia. It is usually specific to Xenarthra (Robinson 1926; Guglielmone et al. 2003b).

***Amblyomma pseudoparvum* Guglielmone, Mangold et Keirans, 1990**

The mara, *Dolichotis salinicola*, and cattle are the hosts to this tick species, which is only known to occur in a restricted area of Argentina (Guglielmone et al. 1990).

***Amblyomma quadricavum* (Schulze, 1941)**

Amblyomma quadricavum is known from the islands of Haiti, Cuba, Puerto Rico, and Jamaica and has been reported from several snake species (Keirans and Klompen 1996).

***Amblyomma rotundatum* Koch, 1844**

This parthenogenetic tick species has been found from Argentina to Mexico (Jones et al. 1972). It is now also established in the United States (Oliver et al. 1993) where it was originally carried by one of its main hosts, the highly invasive *Bufo marinus*. Its other hosts are reptiles. Diagnostic characters for the differentiation of *A. rotundatum* from the closely resembling *A. dissimile* have been outlined by Lampo et al. (1997). Although this is a parthenogenetic tick, two males, obtained in a laboratory colony, were described by Keirans and Oliver (1993).

***Amblyomma sabanerae* Stoll, 1894**

This tick has been collected from reptiles, often on tortoises, in Central America and Surinam (Guglielmone et al. 2003a). Immatures, however, have been carried on birds and reptiles into the Nearctic Region (Burridge et al. 2000; Scott et al. 2001).

***Amblyomma scalpturatum* Neumann, 1906**

A recent review of the taxonomic status of *A. incisum*, *A. scalpturatum*, and *A. latepunctatum* provides us with updated host and geographical distribution data for *A. scalpturatum* (Labruna et al. 2005). Its occurrence is confirmed in the Amazon area of Venezuela, Guyana, Peru, Ecuador, Bolivia, Surinam, and Brazil. Other records are from Colombia, and French Guiana. The South American tapir (*Tapirus terrestris*) is the primary host for the adult stage of this tick (Labruna et al. 2005).

***Amblyomma scutatum* Neumann, 1899**

This tick is known to infest reptiles in Central America, Mexico, Venezuela, Brazil and Paraguay (Hoffmann 1946; Vargas and Hoffmann 1952; Jones et al. 1972; Guglielmone et al. 2003a).

***Amblyomma tapirellum* Dunn, 1933**

The host of this tick is primarily the tapir. Originally described from Panama, it has also been collected in Nicaragua, Colombia, Belize, and Venezuela (Dunn 1933; Jones et al. 1972; Guglielmone et al. 2003a).

***Amblyomma tigrinum* Koch, 1844**

Because *A. tigrinum*, *A. triste*, and *A. maculatum* have often been confused in earlier publications, the delimitation of the geographical range of each of

these species is difficult to establish, but it is fairly safe to believe that this tick occurs in Argentina, Bolivia, Brazil, Chile, French Guiana, Paraguay, Peru, Uruguay, and Venezuela (Kohls 1956; Jones et al. 1972; Guglielmone 2003a; Gonzales-Acuña et al. 2004). Adult *A. tigrinum* feed on carnivores; immatures have often been recorded from birds. *Amblyomma tigrinum* can also parasitize humans (Venzal et al. 2003b; Guglielmone et al. 2006).

***Amblyomma torrei* Pérez Viguera, 1934**

This tick was collected from *Cyclura* spp. from Cuba, the Bahama Islands (Pérez Viguera 1934; Durden and Knapp 2005), Puerto Rico, and the Caiman Islands.

***Amblyomma triste* Koch, 1844**

Adults of *A. triste* feed primarily on carnivores, but have also been collected from humans (Venzal et al. 2003b; Guglielmone et al. 2006). The immatures have been collected from rodents and Didelphimorphia. As for *A. tigrinum* and *A. maculatum*, often confused with *A. triste*, the delimitation of its areas of distribution is tentative (Kohls 1956; Aragão and Fonseca 1961a). Nevertheless, the occurrence of *A. triste* is confirmed for Brazil, Colombia, Argentina, Venezuela, Ecuador, Peru, and Uruguay (Guglielmone et al. 2003a; Guzmán-Cornejo et al. 2006).

Amblyomma usingeri

Keirans, Hoogstraal et Clifford, 1973

This tick is only known from the Galapagos Islands (Ecuador) where it parasitizes three subspecies of *Geochelone elephantopus*, the giant tortoise, and the iguana *Conolophus subcristatus* (Keirans et al. 1973).

***Amblyomma variegatum* (Fabricius, 1794)**

This tick mainly feeds on domestic cattle and wild large Artiodactyla. Immatures also parasitize birds, which are responsible for carrying *A. variegatum* outside its natural range. Widespread in subsaharan Africa, *A. variegatum* was imported on cattle to the Caribbean in modern times (Voltzit and Keirans 2003; Walker and Olwage 1987).

***Amblyomma varium* Koch, 1844**

Amblyomma varium was reported from Argentina, Brazil, Chile, Colombia, Costa Rica, French Guiana, Guatemala, Nicaragua, Panama, Peru, and Venezuela, although its occurrence in Chile is doubtful because the sloths, specific host of the adults of *A. varium*, do not occur there (Jones et al. 1972; Guglielmone et al. 2003a, Barros-Battesti et al. 2006).

***Amblyomma williamsi* Banks, 1924**

This tick is exclusively found in the Galapagos Islands (Ecuador), where it feeds on iguanas of the genus *Conolophus* (Guglielmone et al. 2003a).

DESCRIPTIONS OF SPECIES

Amblyomma albopictum

Male (Fig. 1). Measurements from 2 specimens. Length from apices of scapulae to posterior scutal margin 3.75, 4.23; breadth 2.9, 3.3. Outline oval broadest at level of spiracular plates. Scutum brown, ornate, whity-gray, dim patch covers almost all of the scutum; narrow, brown areas without the whity pigment situated symmetrically on this patch. Scutal punctations large and deep along the margins of body and very small and shallow in the central area. Large punctations brown, so whity-gray patch seems to be perforated. Scapulae short, triangular. Cervical grooves pit-like, very small, crescent, situated at a distance from anterior margin of scutum. Marginal groove absent. Fестоons rectangular, without chitinous plates extending beyond the posterior margin of the festoons. Eyes marginal, relatively small, flat.

Capitulum length from palpal apices to posterior margin of basis 1.1, 1.2; breadth 0.71. Posterior margin of basis capituli slightly convex or straight, cornua absent, lateral margins straight, ventrally posterior margin straight. Punctations of basis capituli few, small, shallow. Palpi length 0.71, 0.77; breadth 0.24, 0.27; surface of segment II smooth, bright. Segment II 2.1, 2.5 times longer than segment III, length of segment II 0.43, 0.5; length of segment III 0.2. Segment I ventrally with a sloping ridge ending posteriorly with a small, blunt spur. Segment III ventrally with a globular, bright bulge on anteromedial margin. Palpal setae: dorsolateral setae short, thin, slightly curved, dorsomedial setae short, almost straight; ventrolateral setae very short, slightly curved; ventromedial setae long, more thick, curved. Palpal segment I ventrally with a single not long seta. Hypostome length 0.59, 0.6; length of toothed portion 0.39; apex with a large corona of fine denticles, notched, each half of the apex with a triangular projection near the median axis; dental formula 3/3.

Legs marble-like: yellow with purple, very thin threads. Coxa I with 2 spurs, the external spur long, triangular, narrowly rounded; internal spur very short, broadly rounded. Coxae II–IV each with a single, triangular spur, short and rounded on II and III, but larger and directed medially on IV. All

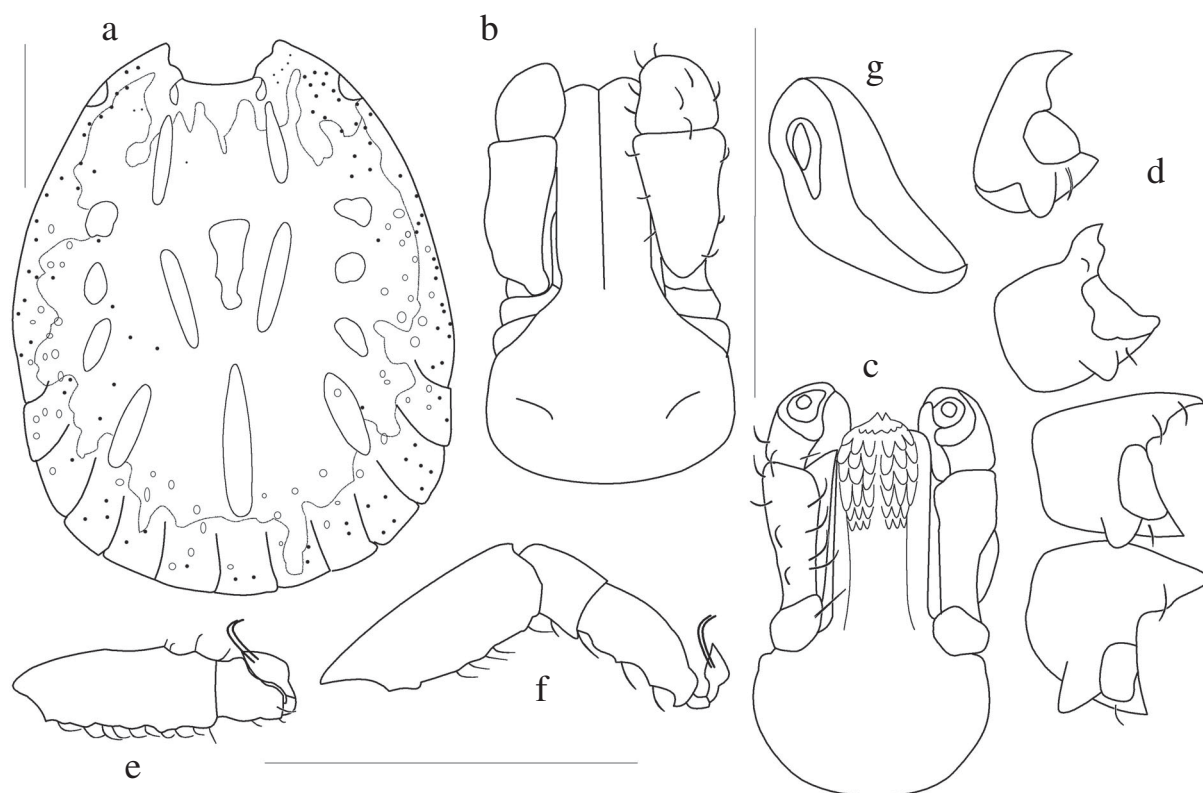


Fig. 1. *Amblyomma albopictum*, male: a — scutum; b — gnathosoma, dorsal view; c — gnathosoma, ventral view; d — coxae; e — tarsus I; f — tarsus and tibia IV; g — spiracular plate. Scale bar 1 mm.

coxae with a translucent, large bubble situated in front and laterally of external spur. Trochanters lack spurs. Tarsus I length 0.71, 0.8; width 0.23, 0.26; without ventroapical hook and with a small, sharp, dorsal hump. Tarsus IV length 0.57, 0.64; breadth 0.17, 0.21; with one sharp ventroapical hook and one triangular, pointed ventral hook. Tibia IV length 0.57, 0.66; breadth 0.21, 0.24.

Venter with very few, short, thin setae. Genital aperture situated between coxae II. Spiracular plate long and narrow, its medial and lateral margins nearly parallel, posterior margin straight, dorsal prolongation very long, narrow, forming an obtuse angle with anterior-posterior axis. Postanal groove with shallow, unpaired, posteriorly directed, median groove extending to the festoon. Integumentary hard elements of the ventral skeleton of idiosoma consist of very small unpaired anal and 2 paired postanal shields, and evident festoons' shields.

Female (Fig. 2). Measurements from one partially engorged specimen. Length from apices of scapulae to posterior body margin 5.63; breadth 4.0. Dorsal and ventral body setae very short and thin, few in number. Marginal groove absent. Festoons broad, rectangular.

Scutum length 2.13; breadth 2.5; brown, yellow in the posterior part and dark around the eyes;

ornate, gray, dim patch covers almost all of the scutum with the exception of anterior area and eyes areas. Posterior margin narrowly rounded, posterolateral margins nearly straight. Scutal punctations large and deep in each lateral area, small and very shallow in central and posterior areas. Scapulae sharp, with evident ledges. Cervical grooves deep, short, converging anteriorly, then diverging as very shallow depressions. Eyes large, marginal, flat.

Capitulum length from palpal apices to posterior margin of basis 1.21; breadth 0.8; dorsally basis capituli rectangular, posterior margin straight, lateral margins almost straight; cornua absent; ventrally posterior margin convex. Porose areas very small, oval, diameter of one area 0.14; interporose area 0.14. Palpi length 0.81; breadth 0.24. Segment II 2.4 times longer than segment III, length of segment II 0.56; length of segment III 0.23. Segment I ventrally smooth. Palpal setae short, slightly curved. Palpal segment I ventrally with a long seta. Hypostome length 0.79; length of toothed portion 0.43; with a large corona of fine denticles apically, notched, each half of apex triangular; dental formula 3/3.

Legs. Coxa I with 2 triangular spurs, the external spur large, internal spur very short. Coxae II–IV each with a single, short, triangular, narrowly round-

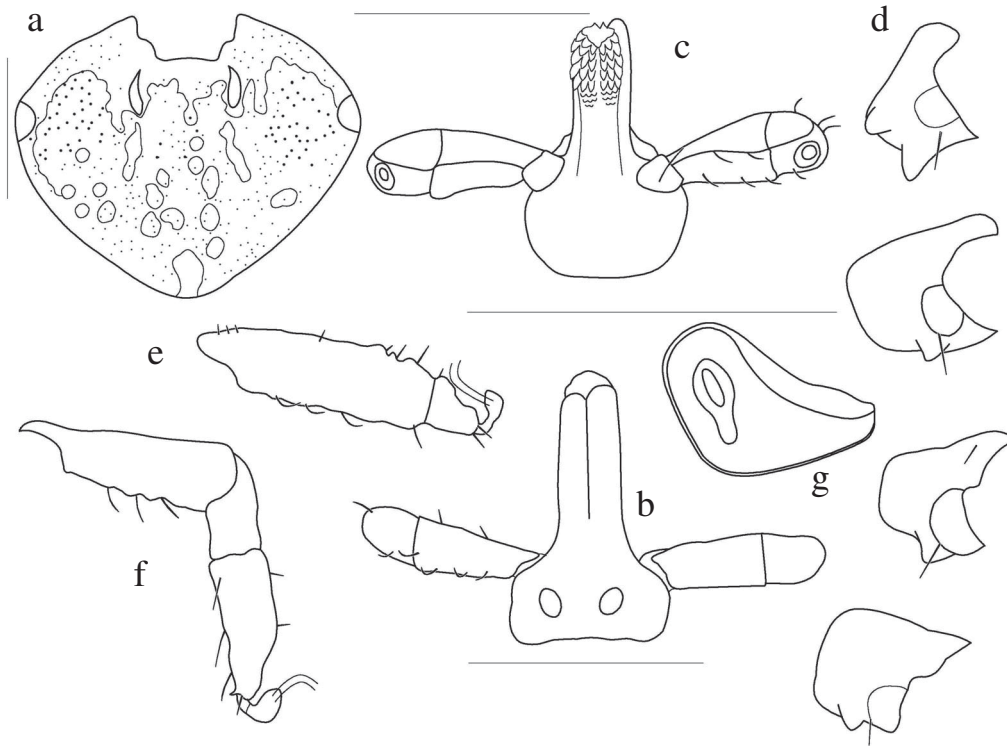


Fig. 2. *Amblyomma albopictum*, female: a — scutum; b — gnathosoma, dorsal view; c — gnathosoma, ventral view; d — coxae; e — tarsus I; f — tarsus and tibia IV; g — spiracular plate. Scale bar 1 mm.

ed spur. All coxae each with a translucent, large bubble situated in front and laterally of external spur. Trochanters lack spurs. Tarsus I length 1.07; width 0.26; without ventroapical hook. Tarsus IV length 0.94, breadth 0.21, with a sharp, small ventroapical spur. Tibia IV length 0.93, breadth 0.29.

Medial and lateral margins of spiracular plate parallel, medial and posterior margins straight, dorsal prolongation very long, narrow, perpendicular to anterior-posterior axis of spiracular plate, lateral margin with a not broad, sclerotized border. Genital aperture «U» shaped, situated between coxae II–III. Postanal groove with shallow, unpaired, posteriorly directed, median groove extending to the festoon.

Material: 2 males (US National Tick Collection, RML 48967) found in Miami Serpentarium, host from Haiti or Dominican Republic, 21.12.1967, ex *Cyclura cornuta*, coll. W.E. Haast; female (US National Tick Collection, RML 50381) Dominican Republic, 5 km. E. of Pedernales, 5.06.1964, ex *Cyclura cornuta*, coll. A. Schwartz.

Amblyomma antillorum

Male (Fig. 3). Measurements from 2 specimens. Length from apices of scapulae to posterior scutal margin 3.0, 3.0; breadth 2.58, 2.6. Outline oval broadest at level of festoon I. Scutum light

brown, ornate, whity-gray, dim patches forming the symmetrical pattern: four large patches in each lateral area, two very large patches in the posterior area, and three in the central area, the fore-patch of them triangular with broadly rounded angles, its posterior part horseshoe-shaped, more white. Scutal punctations very small and shallow in the central area and larger, more dense and deep along the margins of body, situated mainly on enameled patches. Cervical grooves pit-like, crescent, small, deep, situated at a distance from anterior margin of scutum. Marginal groove absent. Festoons broad, without chitinous plates extending beyond the posterior margin of the festoons. Eyes marginal, large, flat.

Capitulum length from palpal apices to posterior margin of basis 0.77, 0.86; breadth 0.57, 0.6. Posterior margin of basis capituli slightly concave or undulated, cornua absent, lateral margins straight, ventrally posterior margin straight. Punctations of basis capituli small, shallow, relatively dense. Palpi length 0.54, 0.57; breadth 0.17, 0.17; surface of segment II slightly wrinkled. Segment II 1.9, 2.1 times longer than segment III, length of segment II 0.36, 0.37; length of segment III 0.17, 0.2. Segment I ventrally with a sharp ridge ending posteriorly with a small, sharp spur. Segment III ventrally with

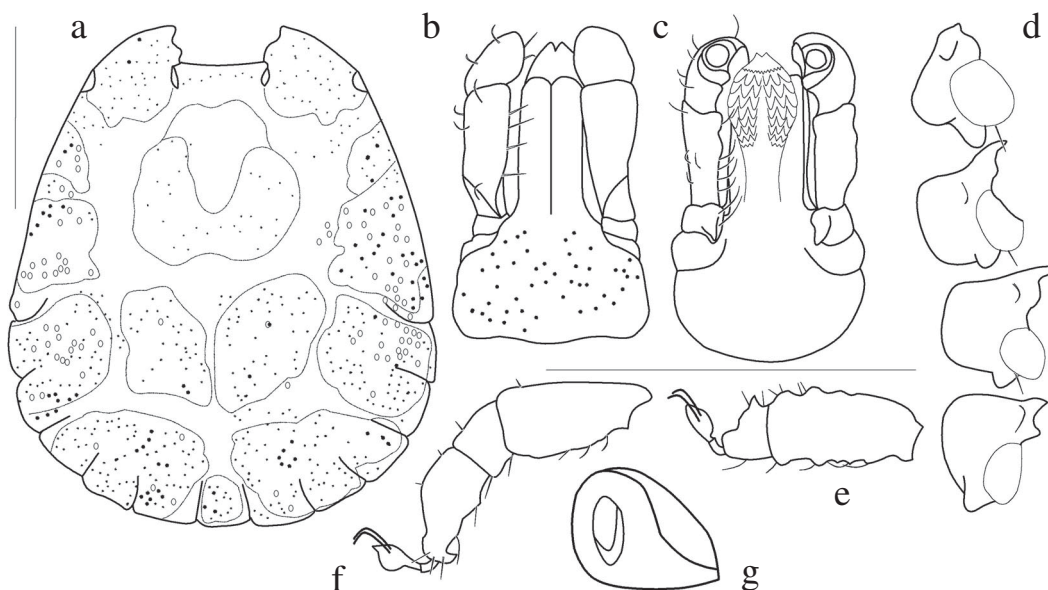


Fig. 3. *Amblyomma antillorum*, male: a — scutum; b — gnathosoma, dorsal view; c — gnathosoma, ventral view; d — coxae; e — tarsus I; f — tarsus and tibia IV; g — spiracular plate. Scale bar 1 mm.

a globular bulge on anteromedial margin. Palpal setae: dorsolateral setae short, curved; dorsomedial setae longer, almost straight; ventrolateral setae short, curved; ventromedial setae longer, curved. Palpal segment I ventrally with one or two long, slightly curved setae. Hypostome length 0.57, 0.6; length of toothed portion 0.36, 0.39; apex with a corona of fine denticles, notched, each half of the apex with a triangular projection near the median axis; dental formula 3/3.

Legs marble-like: yellow with purple, very thin threads. Coxa I with 2 short spurs, the external spur longer, triangular; internal spur broadly rounded. Coxa I with a triangular, low callosity anteriorly. Coxae II–IV each with a single, triangular, broadly rounded spur, spur on coxa IV longer. All coxae with a translucent, very large bubble situated in front and laterally of external spur. Trochanters lack spurs. Tarsus I length 0.54, 0.59; width 0.2, 0.21; without ventroapical hook and with a small, sharp, dorsal hump. Tarsus IV length 0.44, 0.46; breadth 0.16, 0.17; with a single sharp ventroapical hook. Tibia IV length 0.43, 0.43; breadth 0.2, 0.2.

Venter with very short and thin setae situated only on festoons. Genital aperture situated between coxae II. Spiracular plate long, its medial and lateral margins slightly diverging, medial margin convex, posterior margin straight, dorsal prolongation narrow, triangular, perpendicular to anterior–posterior axis. Postanal groove with shallow, unpaired, posteriorly directed, median groove

extending to the festoon. Integumentary hard elements of the ventral skeleton of idiosoma absent.

Female (Fig. 4). Measurements from 2 slightly engorged specimens. Length from apices of scapulae to posterior body margin 4.4, 4.5; breadth 3.3, 3.4. Dorsal and ventral body setae very short and thin, few in number. Marginal groove absent. Festoons rectangular.

Scutum length 1.6, 1.6; breadth 2.0, 2.1; yellow-brown, cervical grooves and each eyes area dark-brown; whitish-gray, dim anteriorly and richer in the posterior area pigment covers almost the all scutum. Posterior margin narrowly rounded, posterolateral margins nearly straight. Scutal punctations of different sizes, shallow. Scapulae pointed, their medial margins with ledges. Cervical grooves pit-like, crescent and deep in the anterior part then diverging as very shallow depressions. Eyes small, marginal, flat.

Capitulum length from palpal apices to posterior margin of basis 0.86, 0.93; breadth 0.64, 0.64; posterior margin straight, lateral margins slightly convex; cornua absent; ventrally posterior margin convex. Punctations of basis capituli few, medium in size, shallow. Porose areas small, round, not deeply depressed, diameter of one area 0.09, 0.09; interporose area 0.16, 0.16. Palpi length 0.64, 0.64; breadth 0.16, 0.17. Segment II 2.3–2.5 times longer than segment III, length of segment II 0.4, 0.43; length of segment III 0.17, 0.17. Segment I ventrally with a sharp ridge. Palpi slightly wrinkled. Segment III ventrally with a globular bulge on anter-

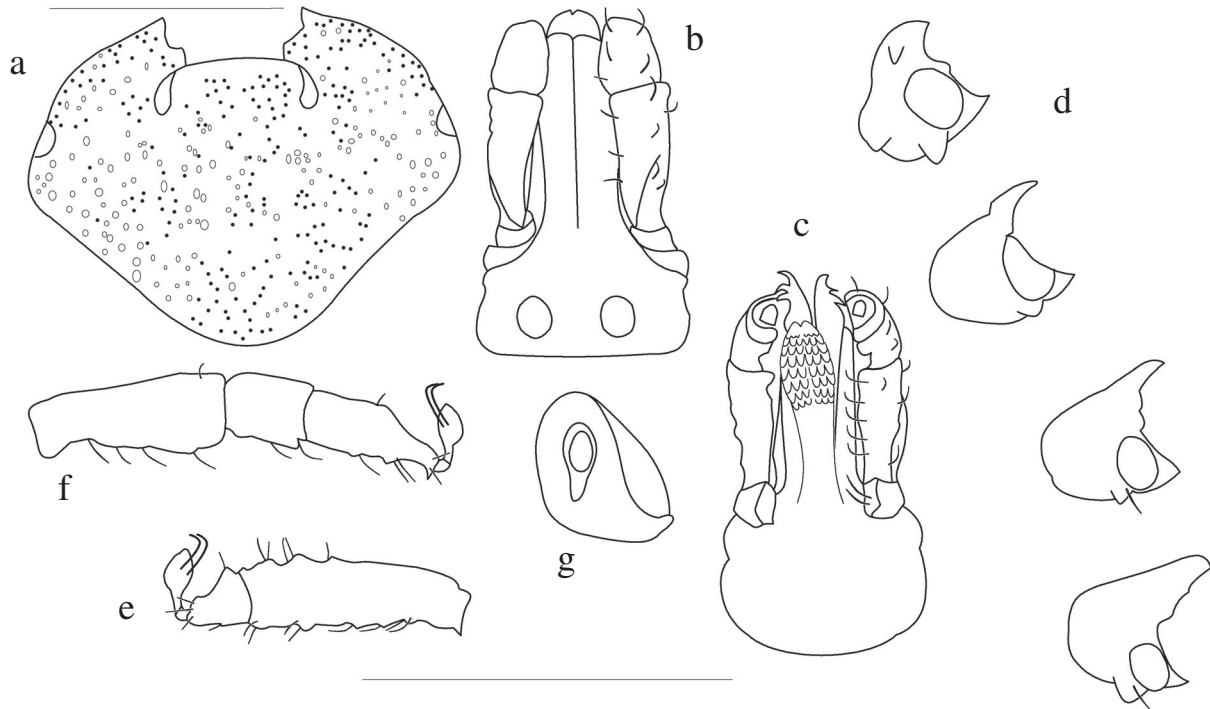


Fig. 4. *Amblyomma antillorum*, female: a — scutum; b — gnathosoma, dorsal view; c — gnathosoma, ventral view; d — coxae; e — tarsus I; f — tarsus and tibia IV; g — spiracular plate. Scale bar 1 mm.

omedial margin. Palpal setae: dorsolateral setae 5 short, relatively thick, curved on II and 2 longer, thin, curved on III; dorsomedial setae long, thin, slightly curved on II and III; ventrolateral setae 4 very short, thin, curved on II and 2 short, slightly curved on III; ventromedial setae longer, slightly curved on II and III. Palpal segment I ventrally with one or two long, slightly curved setae. Hypostome length 0.57, 0.61; length of toothed portion 0.29, 0.33; narrowly rounded apically with corona of fine denticles and central notch; dental formula 3/3.

Legs. Coxa I with 2 short, triangular, rounded spurs, the external spur longer. Coxa I with a triangular, blunt, low callosity anteriorly. Coxae II–III each with a single, very small, triangular spur. Coxa II with a blunt, low callosity anteriorly. Coxa IV with a single, short, triangular, rounded spur. All coxae each with a translucent, very large bubble situated in front and laterally of external spur. Trochanters lack spurs. Tarsus I length 0.8, 0.81; width 0.2, 0.2; without ventroapical hook and with a small, sharp, dorsal hump. Tarsus IV length 0.57, 0.64, breadth 0.14, 0.17, with a sharp ventroapical hook and one small, blunt ventral hump. Tibia IV length 0.5, 0.57, breadth 0.21, 0.21.

Medial and lateral margins of spiracular plate parallel, medial and posterior margins slightly convex, dorsal prolongation not long, nearly perpendicular to anterior–posterior axis of spiracular plate.

Genital aperture «V» shaped, situated between coxae II–III. Postanal groove with deep, unpaired, posteriorly directed, median groove extending to the festoon.

Material: 2 males, 2 females (US National Tick Collection, RML 117958) British Virgin Islands, Anegada Island, Bones Bight, 18.07.1985, ex *Iguana pinguis*, coll. J. Lazell.

Amblyomma argentineae

Male (Fig. 5). Measurements from 2 specimens. Length from apices of scapulae to posterior scutal margin 4.5, 4.6, breadth 3.7, 3.9. Outline oval, broadest at level of legs IV. Scutum brown; ornate, some dim, enameled, bronze patches situated in each scapular area, between cervical grooves, along the lateral margins, and on the festoons; in the center almost inconspicuous patches. Scapulae with sharp, pyramidal ledges on the medial margins. Scutal punctations of different sizes, sparse in the central area and numerous on the enameled patches. Cervical grooves deep, short, converging. Marginal groove absent. Festoons broad, rectangular, without chitinous plates beyond the posterior margin of the festoons. Eyes large, marginal, flat.

Capitulum length from palpal apices to cornua apices 1.39, 1.43, breadth 0.8, 0.86. Posterior margin straight, cornua short, rounded; external margins straight, ventrally posterior margin straight. Palpi length 0.86, 0.86, breadth 0.19, 0.2. Segment

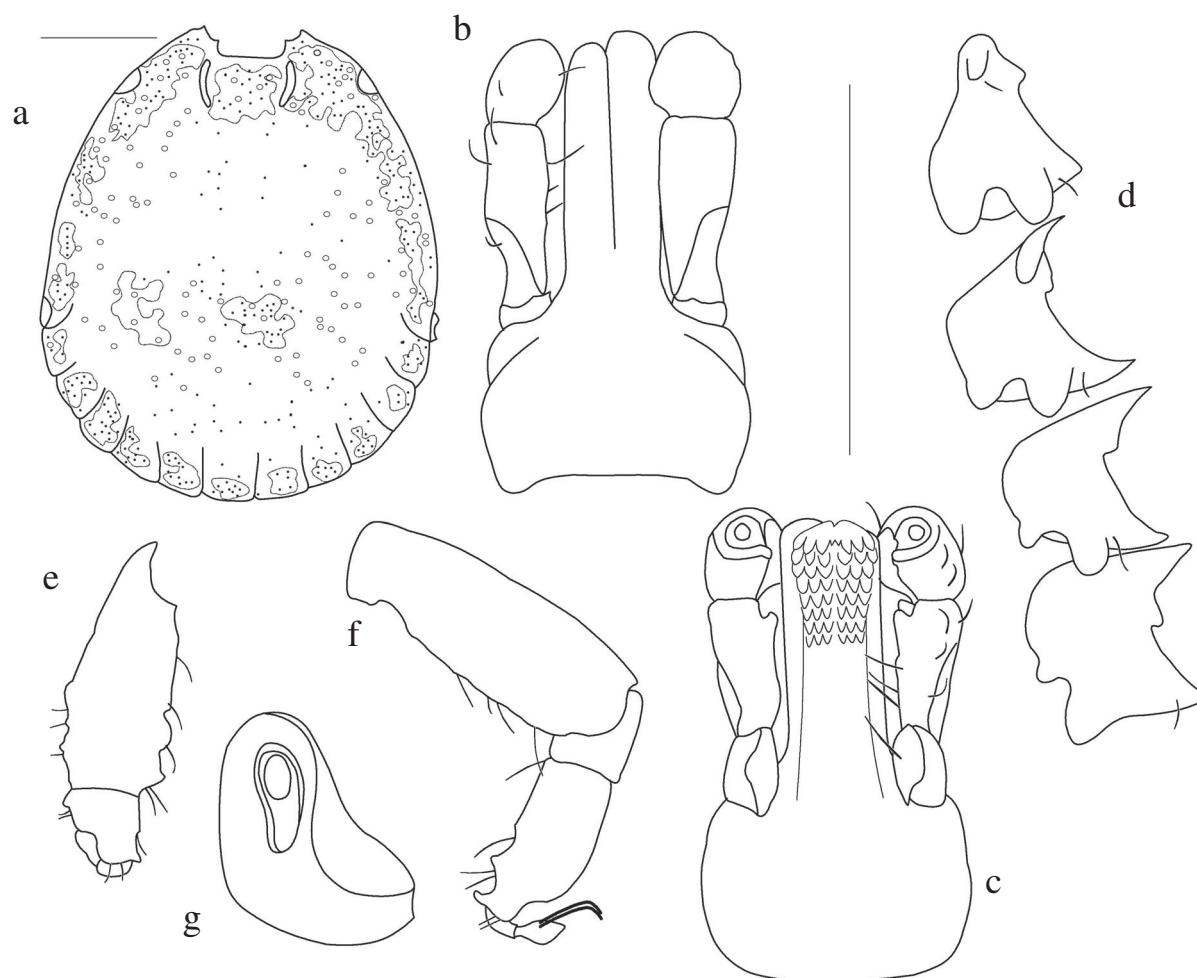


Fig. 5. *Amblyomma argentiniae*, male: a — scutum; b — gnathosoma, dorsal view; c — gnathosoma, ventral view; d — coxae; e — tarsus I; f — tarsus and tibia IV; g — spiracular plate. Scale bar 1 mm.

II 2.2 times longer than segment III, length of segment II 0.54, 0.47, length of segment III 0.24, 0.26. Segment II dorsally with long, triangular spur directed posteriorly similar to high, sharp ridge. Segment I ventrally with a high, sloping ridge ending posteriorly with a long, pointed spur directed posteromedially. Segment II ventrally with a sharp, pyramidal projection on anteromedial margin. Palpal setae: dorsolateral setae short, thick, curved; dorsomedial setae longer, needle-shaped, straight; ventrolateral setae short, thick, curved; ventromedial setae long, straight. Palpal segment I ventrally with a long, straight seta. Hypostome length 0.77, 0.79, length of toothed portion 0.43, 0.43; apex notched, with a corona of fine denticles, first row directed anteriorly; dental formula 3/3.

Legs yellow, with dark-brown patches on ventral surface of all segments; apical part of each segment darker. Coxa I with 2 short, equal in length, rounded spurs. Coxa I with a small, rounded spur-like callosity anteriorly. Coxae II–IV each

with 2 rounded spurs, the external spur slightly larger. Trochanters lack spurs. Tarsus I length 0.97, 1.0, width 0.3, 0.3; with a small, pointed, apical spur. Tarsus IV length 0.77, 0.87, breadth 0.21, 0.23; with a not large apical hook and small, triangular ventral hump. Tibia IV length 0.93, 1.07, breadth 0.31, 0.36.

Genital aperture situated between coxae II. Medial and lateral margins of spiracular plate parallel, medial margin straight, posterior margin convex, dorsal prolongation very long, narrow, forming an obtuse angle with anterior-posterior axis of spiracular plate, lateral margin with large, chitinous border. Postanal groove with unpaired median groove extending to the anal shield. Integumentary hard elements of the ventral skeleton of idiosoma consist of two small, paired postanal shields situated nearly festoons, and large festoon shields.

Female (Fig. 6). Measurements from 2 specimens. Length from apices of scapulae to posterior body margin 4.7, 4.8, breadth 4.0, 4.0. Dorsal and ventral body setae few, very short. Marginal groove

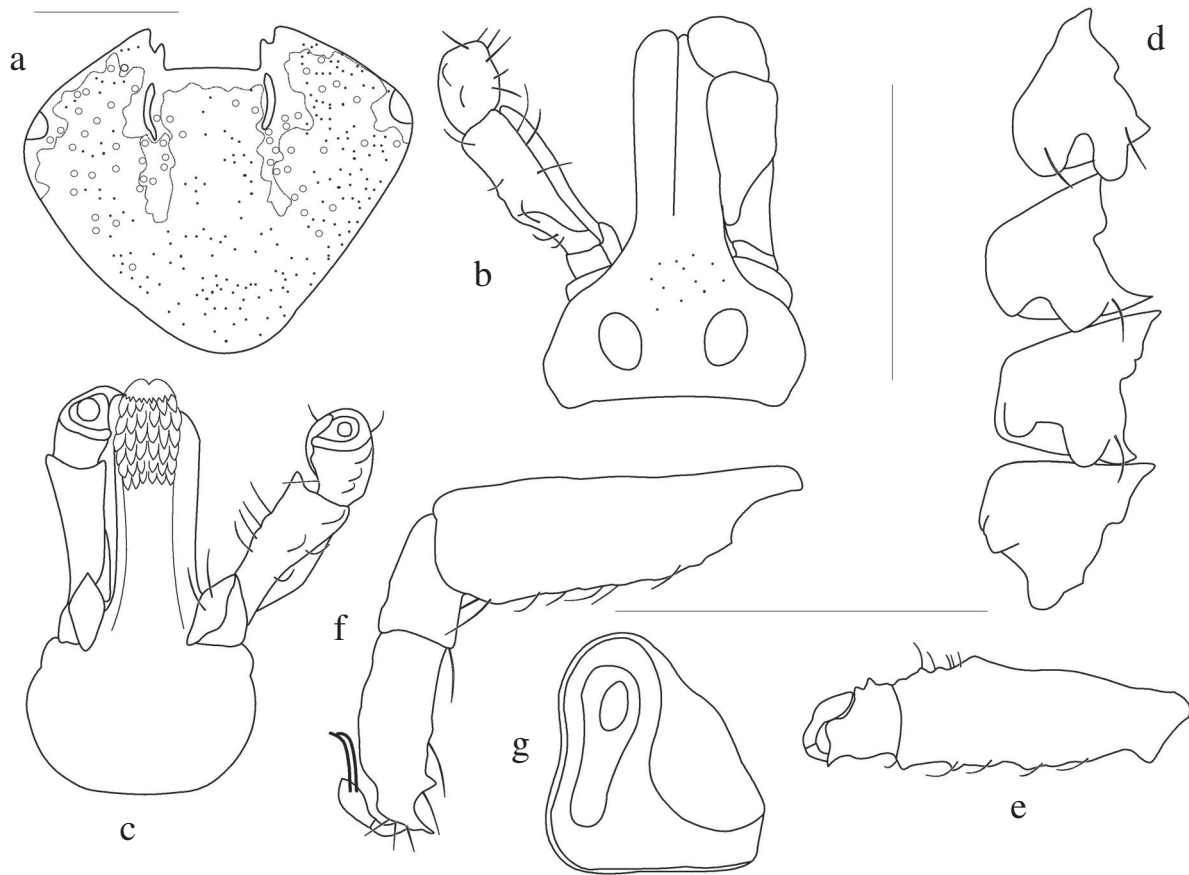


Fig. 6. *Amblyomma argentinae*, female: a — scutum; b — gnathosoma, dorsal view; c — gnathosoma, ventral view; d — coxae; e — tarsus I; f — tarsus and tibia IV; g — spiracular plate. Scale bar 1 mm.

complete, beginning near the posterior margin of scutum. Festoons broad, rectangular.

Scutum length 2.5, 2.6, breadth 2.9, 2.9; brown, ornate, dim, silvery-gray or silvery-red pigment covers almost the all scutum excepting scapulae and cervical grooves. Posterior margin of scutum narrowly rounded, anterolateral margins slightly convex, posterolateral margins nearly straight. Punctations large and deep peripherally and between cervical grooves on a background of numerous, small and very shallow punctations. Scapulae with high, pyramidal projections on the medial margins. Cervical grooves long, deep and crescent anteriorly, then diverging and very shallow. Eyes large, marginal, slightly bulging.

Capitulum length from palpal apices to cornua apices 1.46, 1.5, breadth 0.93, 0.94; cornua very short, rounded; posterior margin straight, lateral margins convex; ventrally posterior margin straight. Punctations of basis few, small, shallow. Porose areas oval, deeply depressed, diameter of one area 0.16, 0.17, interporose area 0.19, 0.21. Palpi length 0.97, 1.0, breadth 0.21, 0.23. Segment II 2.6–2.8 times longer than segment III,

length of segment II 0.64, 0.67, length of segment III 0.23, 0.26. Segment II dorsally with long, triangular spur directed posteriorly. Segment I ventrally with a high, sloping ridge ending posteriorly with a long, narrowly rounded spur directed posteromedially. Segment II ventrally with a sharp, pyramidal spur on anteromedial margin. Segment III ventrally with a thick roller on anterior margin. Palpal setae: dorsolateral setae short and more long, thick, curved; dorsomedial setae long, needle-shaped, almost straight; ventrolateral setae short, thick, slightly curved; ventromedial setae long, thick, almost straight. Palpal segment I ventrally with 2 long, straight setae. Hypostome length 0.86, 0.89, length of toothed portion 0.43, 0.43; apex narrowly rounded, with small central notch; dental formula 3/3.

Legs yellow-brown, apical part of each segment whitish-yellow. Coxa I with 2 short, rounded, equal in length spurs. Coxae II–IV each with 2 short, rounded spurs equal on II and III, on IV the external spur larger. Trochanters lack spurs. Tarsus I length 1.1, width 0.29; with a blunt, small apical spur. Tarsus IV length 1.0, 1.07, breadth 0.2, 0.21,

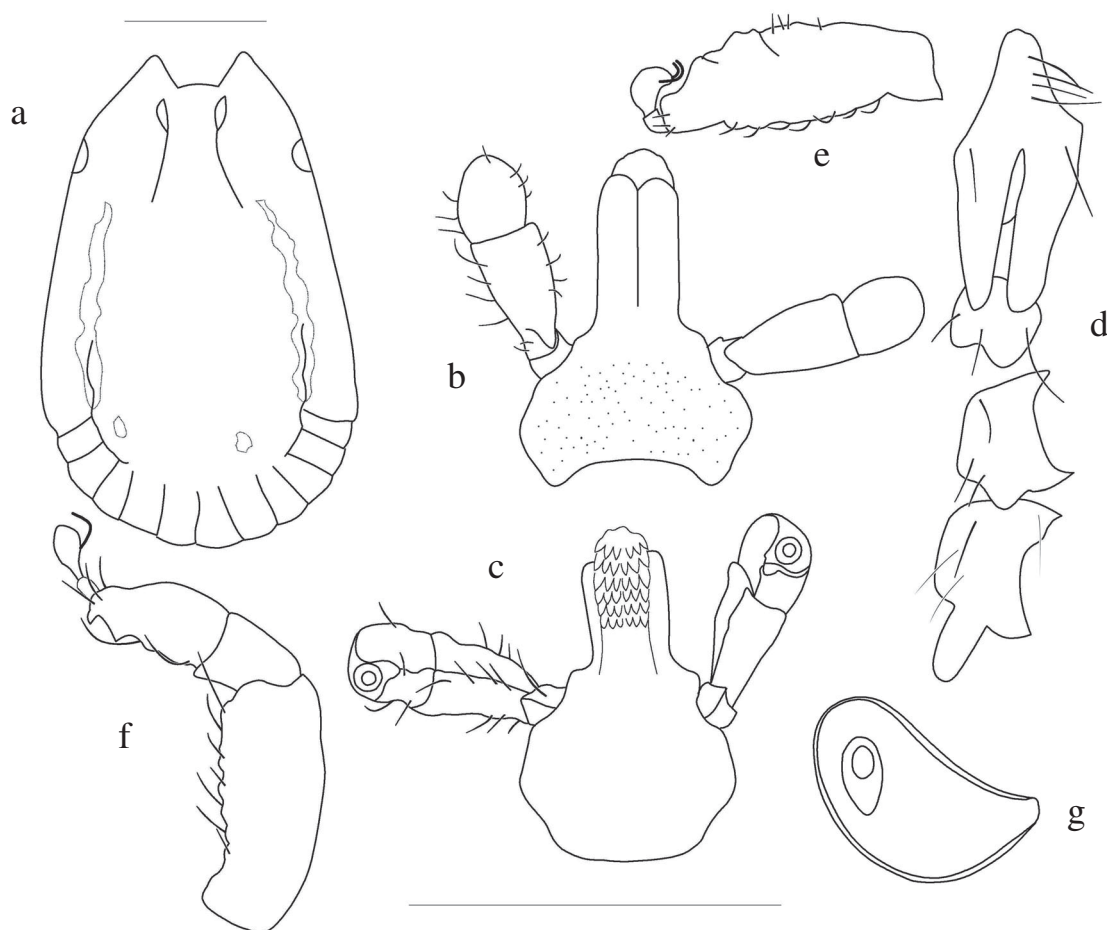


Fig. 7. *Amblyomma aureolatum*, male: a — scutum; b — gnathosoma, dorsal view; c — gnathosoma, ventral view; d — coxae; e — tarsus I; f — tarsus and tibia IV; g — spiracular plate. Scale bar 1 mm.

with a pointed apical hook and pointed, ventral hump. Tibia IV length 0.97, 1.0, breadth 0.29, 0.33.

Spiracular plate subtriangular, medial and lateral margins parallel, medial margin concave, posterior margin straight, dorsal prolongation very long, narrow, perpendicular to anterior-posterior axis of spiracular plate, lateral margin with a very large, sclerotized border. Genital aperture «U» shaped, situated between coxae II–III. Postanal groove with unpaired, posteriorly directed, median groove extending to the festoon.

Material: 2 males and 2 females (US National Tick Collection, RML 118614) Argentina, Santiago del Estero, May 1983, ex *Geochelone chilensis*, coll. S. Salas and J. Frazier.

Amblyomma aureolatum

Male (Fig. 7). Measurements from one specimen. Length from apices of scapulae to posterior scutal margin 3.75, breadth 2.1. Outline oval, broadest at the level of spiracular plate. Scutum yellow-brown, darker in the anterior half; slightly ornate, with some small, irregular-shaped, white-goldish

patches in the posterior and lateral areas. Scutal punctations dense, not very deep, medium in size. Cervical grooves deep, narrow, converging, then diverging as very shallow depressions. Marginal groove incomplete, very shallow, beginning at level of legs III and embracing two festoons. Festoons long, narrow, ventrally with rectangular, chitinous plates with sharp posterior margins, invisible dorsally. Eyes marginal, large, flat.

Capitulum length from palpal apices to cornua apices 1.0, breadth 0.69. Basis capituli wrinkled, with relatively large punctations. Posterior margin of basis concave, cornua large, triangular, narrowly rounded; external margins triangular, ventrally posterior margin convex. Ventrally posterior and lateral margins of basis very sclerotized, lateral margins with rounded, auriculae-like projections. Palpi length 0.64, breadth 0.19. Segment II 1.6 times longer than segment III, length of segment II 0.37, length of segment III 0.23. Palpi bright, with few, shallow punctations. Segment I ventrally with a low, sloping ridge, segment III ventrally with a triangular, rounded spur,

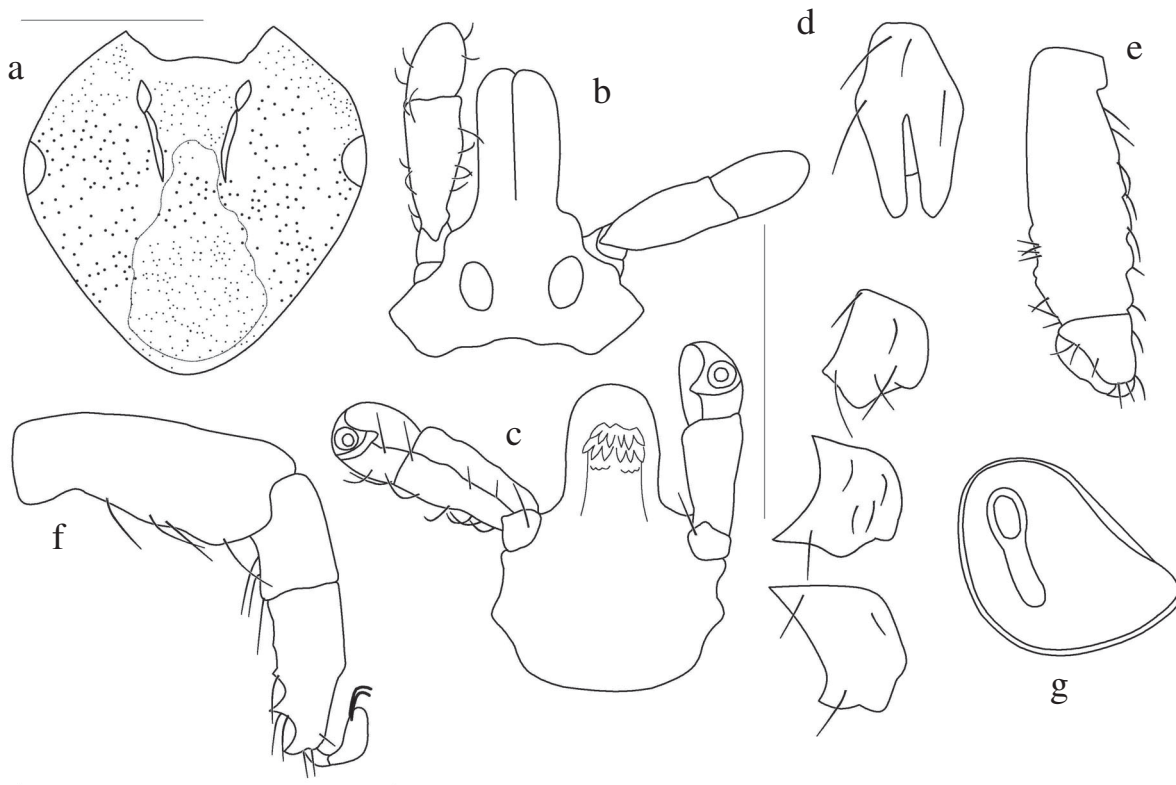


Fig. 8. *Amblyomma aureolatum*, female: a — scutum; b — gnathosoma, dorsal view; c — gnathosoma, ventral view; d — coxae; e — tarsus I; f — tarsus and tibia IV; g — spiracular plate. Scale bar 1 mm.

directed posteriorly. Palpal setae long, thin, dorso-medial setae slightly shorter. Palpal segment I ventrally with a very long seta. Hypostome length 0.57, length of toothed portion 0.36; apex triangular, slightly notched, with a corona of fine denticles; dental formula 3/3.

Legs. Coxa I split, with 2 extremely long, equal spurs, reaching the middle of coxa II. Coxa II with 2 broadly rounded spurs, the external spur larger. Coxa III with 2 short, broadly rounded spurs, the internal spur almost invisible. Coxa IV with a single, large, rounded spur slightly curved laterally. Ventral spurs of trochanters absent; dorsally trochanter I with a broad, rounded, paddle-shaped spur. Tarsus I length 0.89, width 0.26; without apical spur, with 5 sloping ventral ridges. Tarsus IV length 0.64, breadth 0.21; with strong apical hook and sharp, triangular, ventral spur. Tibia IV length 0.8, breadth 0.29.

Venter with very long, thin, needle-shaped setae. Genital aperture situated between coxae II. Spiracular plate large, lateral and medial margins nearly parallel, medial and posterior margins convex, dorsal prolongation short, forming an obtuse angle with anterior-posterior axis. Postanal groove with a shallow, unpaired median groove extending to the festoon. Integumentary hard elements of the

ventral skeleton of idiosoma absent but festoons ventrally with large, chitinous plates.

Female (Fig. 8). Measurements from one partially engorged specimen. Length from apices of scapulae to posterior body margin 5.45, breadth 4.3. Dorsal and ventral body setae few, very short and thin. Marginal groove incomplete, embracing two festoons. Festoons rectangular.

Scutum length 2.13, breadth 2.1; brown, poorly ornate; large, dim, goldish-pink patch in the posterior area. Scutal punctations dense, large, deep and small, shallow along the anterior margin. Cervical grooves narrow, pit-like, very deep, converging, then diverging as very shallow depressions. Eyes large, marginal, slightly bulging.

Capitulum length from palpal apices to cornua apices 1.29, breadth 0.94. Basis capituli hexagonal, posterior margin slightly undulated, cornua short, broad, triangular; lateral margins triangular; ventrally posterior margin convex, with sharp, sclerotized border. Ventrally lateral margins of basis with rounded, very sclerotized, short auriculae-like projections. Punctations of basis capituli very few, small. Porose areas small, oval, deeply depressed, diameter of one area 0.14, interporose area 0.2. Palpi length 0.89, breadth 0.2. Segment II 1.9 times longer than segment III, length of segment II 0.54,

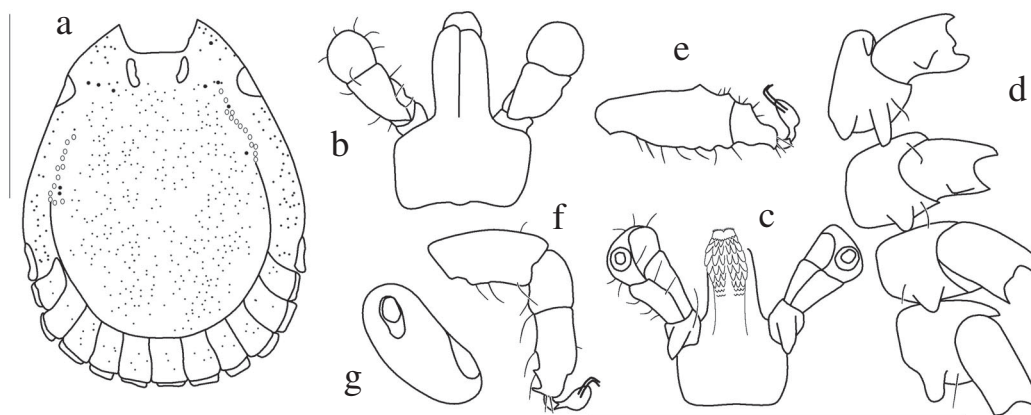


Fig. 9. *Amblyomma auricularium*, male: a — scutum; b — gnathosoma, dorsal view; c — gnathosoma, ventral view; d — coxae; e — tarsus I; f — tarsus and tibia IV; g — spiracular plate. Scale bar 1 mm.

length of segment III 0.28. Palpi bright, slightly wrinkled. Segment I with low, sloping, ventral ridge. Segment III ventrally with a broad border on anterior margin elongated posteromedially. Palpal setae long, lateral setae curved; medial setae straight. Palpal segment I ventrally with a single, very long seta. Hypostome with broken apex; dental formula 3/3.

Legs. Coxa I split, with 2 extremely large, triangular spurs. Coxa II with 2 short, broad, triangular spurs, the external spur slightly longer. Coxa III with 2 short, rounded spur, the internal spur almost invisible. Coxa IV with a single, triangular, short spur, more narrow than on III. Ventral spurs of trochanters absent; trochanter I with broadly rounded dorsal spur. Tarsus I length 1.0, width 0.29; without spur. Tarsus IV length 0.84, breadth 0.24, with strong, apical hook and triangular, ventral spur. Tibia IV length 0.87, breadth 0.33.

Medial and lateral margins of spiracular plate diverging, medial and posterior margins nearly straight, dorsal prolongation short, nearly perpendicular to anterior-posterior axis of spiracular plate. Genital aperture «U» shaped, situated between coxae II–III. Postanal groove with shallow, unpaired, posteriorly directed, median groove extending to the festoon.

Material: male and female (US National Tick Collection, No. 15502) Sao Paulo, Brazil, 1938, ex *Canis familiaris*, coll. H.B. Aragao.

Amblyomma auricularium

Male (Fig. 9). Measurements from 2 specimens. Length from apices of scapulae to posterior scutal margin 2.25, 2.68, breadth 1.63, 2.05. Outline oval broadest at level of legs IV. Scutum brown or yellow-brown, inornate. Scutal surface smooth

with small, shallow punctations distributed regularly. Cervical grooves pit-like, deep and almost straight, situated at a distance from anterior margin of scutum. Marginal groove complete, beginning as deep punctations at level of legs II. Festoons narrow, long, with rectangular chitinous plates beyond the posterior margin of the festoons. Eyes marginal, large, flat.

Capitulum length from palpal apices to cornua apices 0.9, 1.1, breadth 0.75, 0.85. Basis capituli with few, small punctations. Posterior margin slightly undulated, cornua very short, rounded; external margins straight, ventrally posterior margin straight. Palpi length 0.41, 0.36, breadth 0.17, 0.16. Segment II 1.6 times longer than segment III, length of segment II 0.23, 0.21, length of segment III 0.14, 0.13. Surface of segment II smooth, bright. Segment I ventrally with a long, triangular, rounded spur directed posteriorly and ventrally. Palpal setae: dorsolateral setae short, thin, slightly curved; dorsomedial setae short, almost straight; ventrolateral setae short, slightly curved; ventromedial setae long, thin, almost straight. Palpal segment I ventrally with a single long seta. Hypostome length 0.33, 0.4, length of toothed portion 0.23, 0.24; apex spatulate, with a corona of fine denticles, first row of denticles directed anteriorly; dental formula 3/3.

Legs. Coxa I with 2 rounded spurs, the external spur longer and more narrow. Coxa I with a narrow, sharp, spur-like callosity anteriorly. Coxae II–IV each with a single, broadly rounded, triangular spur, spur on coxa IV longer, directed posteriorly. Trochanter I with a single, ventral, short, triangular spur, spur on trochanter II shorter and broader. Tarsus I length 0.59, 0.64, width 0.19, 0.2; without ventroapical hook but with 2 ventral, small, blunt

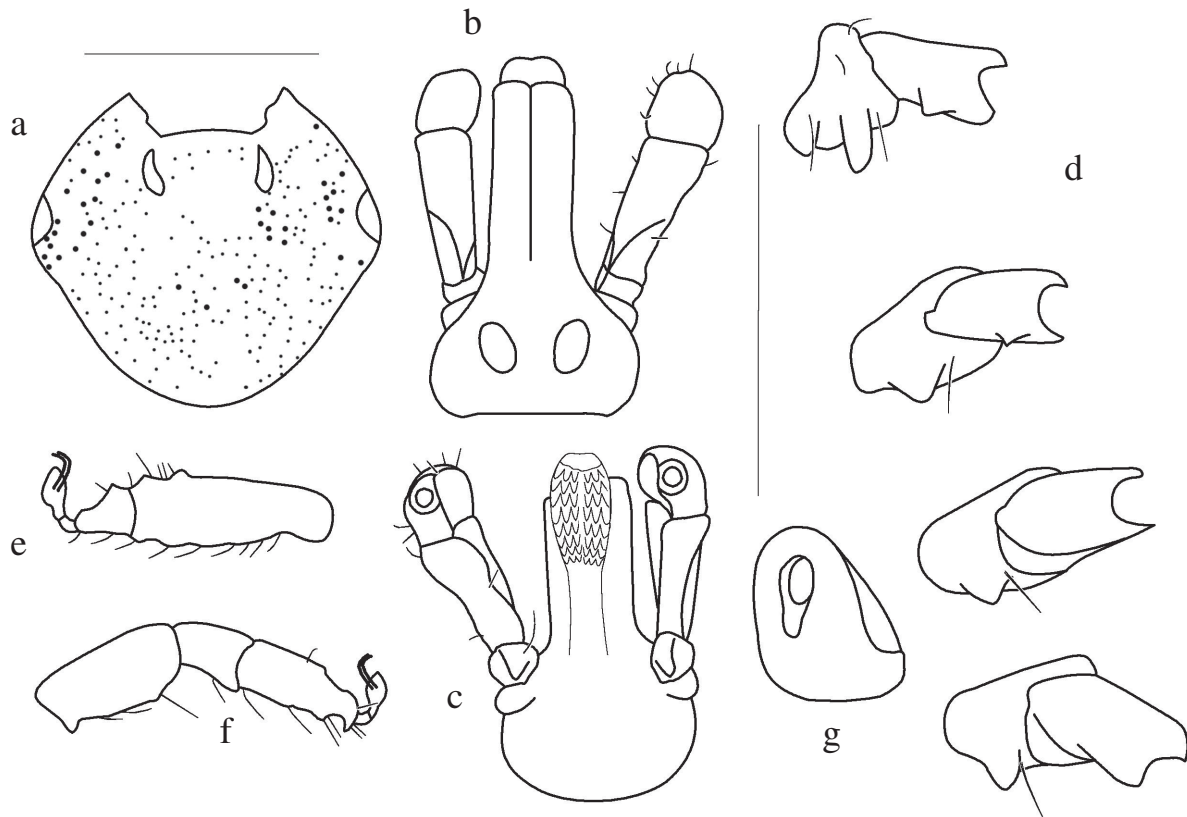


Fig. 10. *Amblyomma auricularium*, female: a — scutum; b — gnathosoma, dorsal view; c — gnathosoma, ventral view; d — coxae; e — tarsus I; f — tarsus and tibia IV; g — spiracular plate. Scale bar 1 mm.

humps. Tarsus IV length 0.44, 0.53, breadth 0.13, 0.16; with a strong ventroapical hook and triangular, pointed ventral hump. Tibia IV length 0.34, 0.47, breadth 0.17, 0.21.

Venter with few, short, cone-like, pointed setae. Genital aperture situated between coxae II. Spiracular plate long, oval, medial and lateral margins parallel, medial margin nearly straight, dorsal prolongation relatively broad, fluently curved. Postanal groove with a thin, unpaired median groove extending to the festoon. Integumentary hard elements of the ventral skeleton of idiosoma poor developed, there are small chitinous point-plaques only along the unpaired median groove and along the genital groove.

Female (Fig. 10). Measurements from 2 specimens (one female slightly engorged, one unfed). Length from apices of scapulae to posterior body margin 3.5, 4.75, breadth 2.7, 3.7. Dorsal body setae very short, cone-like, few, situated around lateral margins of body. Ventral body setae very short, thick, cone-like on festoons, others very few and more thin. Marginal groove complete, beginning near the posterior margin of scutum. Festoons rectangular.

Scutum length 1.5, 1.8, breadth 1.6, 1.8; yellow-brown in the central area and dark-brown in each lateral area, inornate. Punctations small and medium in size, dense. Cervical grooves deep, narrow, crescent, pit-like anteriorly then diverging as very shallow depressions. Eyes large, marginal, slightly bulging.

Capitulum length from palpal apices to cornua apices 1.0, 1.0, breadth 0.64, 0.69; cornua very short almost absent; posterior margin straight, lateral margins convex; ventrally posterior margin convex. Porose areas small, oval, deeply depressed, diameter of one area 0.1, 0.1, interporose area 0.14, 0.16. Palpi length 0.63, 0.66, breadth 0.17, 0.17. Length of segment II 0.44, 0.49, length of segment III 0.16, 0.21. Segment I ventrally with a high, pyramidal spur directed ventrally. Palpal setae short, thin, medial of them slightly curved. Palpal segment I ventrally with a single, very thin, long seta. Hypostome rounded apically, with corona of fine denticles and small central notch; its length 0.57, 0.6, length of toothed portion 0.33, 0.33; dental formula 3/3.

Legs. Coxa I with 2 rounded spurs, the external spur larger. Coxae II–IV each with a single, broad,

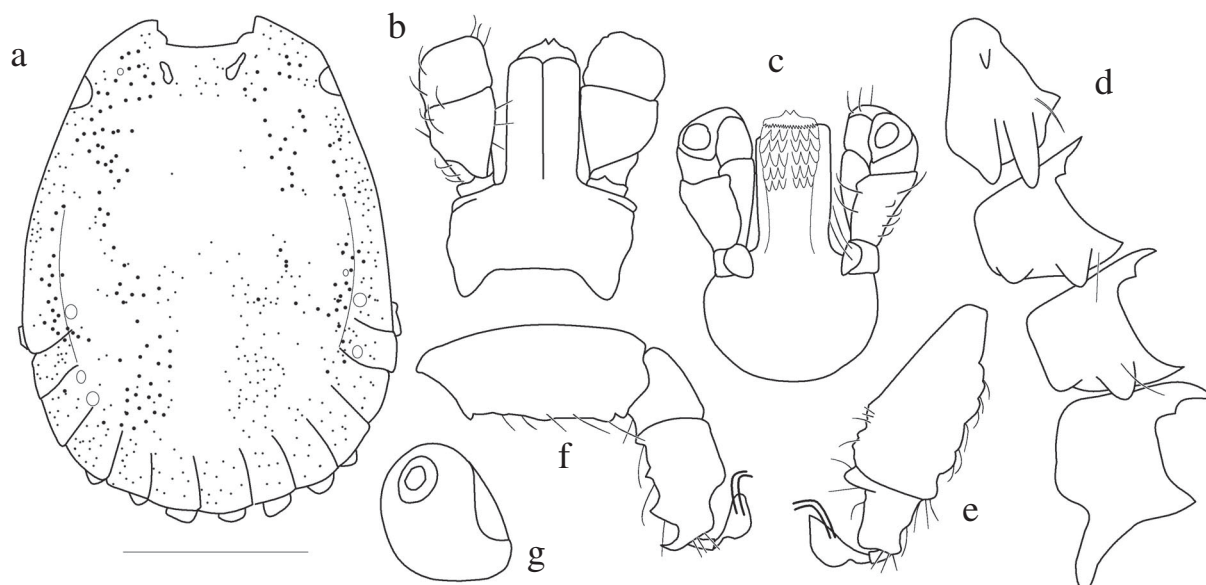


Fig. 11. *Amblyomma brasiliense*, male: a — scutum; b — gnathosoma, dorsal view; c — gnathosoma, ventral view; d — coxae; e — tarsus I; f — tarsus and tibia IV; g — spiracular plate. Scale bar 1 mm.

triangular spur, spur on coxa IV longer. Trochanters I–II with a single triangular spur, spur on first trochanter larger. Tarsus I length 0.71, 0.71, width 0.21, 0.24; without ventroapical hook but with 2 ventral, small, blunt humps. Tarsus IV length 0.63, 0.67, breadth 0.17, 0.19, with one strong ventroapical hook and one pointed, triangular ventral hump. Tibia IV length 0.46, 0.53, breadth 0.21, 0.23.

Medial and lateral margins of spiracular plate diverging, medial and posterior margins straight, dorsal prolongation broad, perpendicular to anterior-posterior axis of spiracular plate. Genital aperture «U» shaped, situated between coxae II–III. Postanal groove with unpaired, posteriorly directed, median groove extending to the festoon.

Material: 2 males and 2 females (US National Tick Collection, RML 119057) Honduras: illegally imported specimen, National Zoological Park, Washington, 3.02.1988, ex *Dasypus novemcinctus* (male), sent by A.D. Bratthauer.

Amblyomma brasiliense

Male (Fig. 11). Measurements from one specimen. Length from apices of scapulae to posterior scutal margin 3.1; breadth 2.3. Outline oval broadest at level of spiracular plate. Scutum yellow-brown, bright, ornate, whity-pale, more noticeable in each eyes area patch covers almost the all scutum. Scutal punctations small, almost lacking in the central area. Cervical grooves pit-like, very small, deep, situated at a distance from anterior margin of scutum. Scapulae short, their medial margins with ledges. Marginal groove very shallow, incomplete,

beginning at level of legs III and embracing the first festoons. Festoons narrow, with narrow, transparent chitinous plates extending beyond the posterior margin of the festoons. Eyes marginal, large, slightly bulging.

Capitulum length from palpal apices to cornua apices 0.74; breadth 0.56. Posterior margin of basis capituli straight, cornua large, triangular, lateral margins undulated, ventrally posterior margin convex. Punctations of basis capituli few, small, shallow. Palpi length 0.46; breadth 0.29; surface of segment II smooth, bright. Segment II 1.6 times longer than segment III, length of segment II 0.26; length of segment III 0.16. Segment I ventrally with a sharp ridge ending posteriorly with a small spur. Segment II ventrally with a small, globular hump on anteromedial margin, segment III ventrally with a small, triangular, rounded hump on anteromedial margin. Palpal setae: dorsolateral setae thin, slightly curved; dorsomedial setae longer, almost straight; ventrolateral setae short, slightly curved; ventromedial setae long, thin, slightly curved. Palpal segment I ventrally with 2 very long, thin setae. Hypostome length 0.46; length of toothed portion 0.3; with a corona of fine denticles apically, first row of denticles directed anteriorly; apex spatulate, each half of the apex with a triangular projection near the median axis. Dental formula 3/3.

Legs. Coxa I with 2 long, triangular spurs, the external spur longer and reaching the anterior margin of coxa II; internal spur broader. Coxa I with a

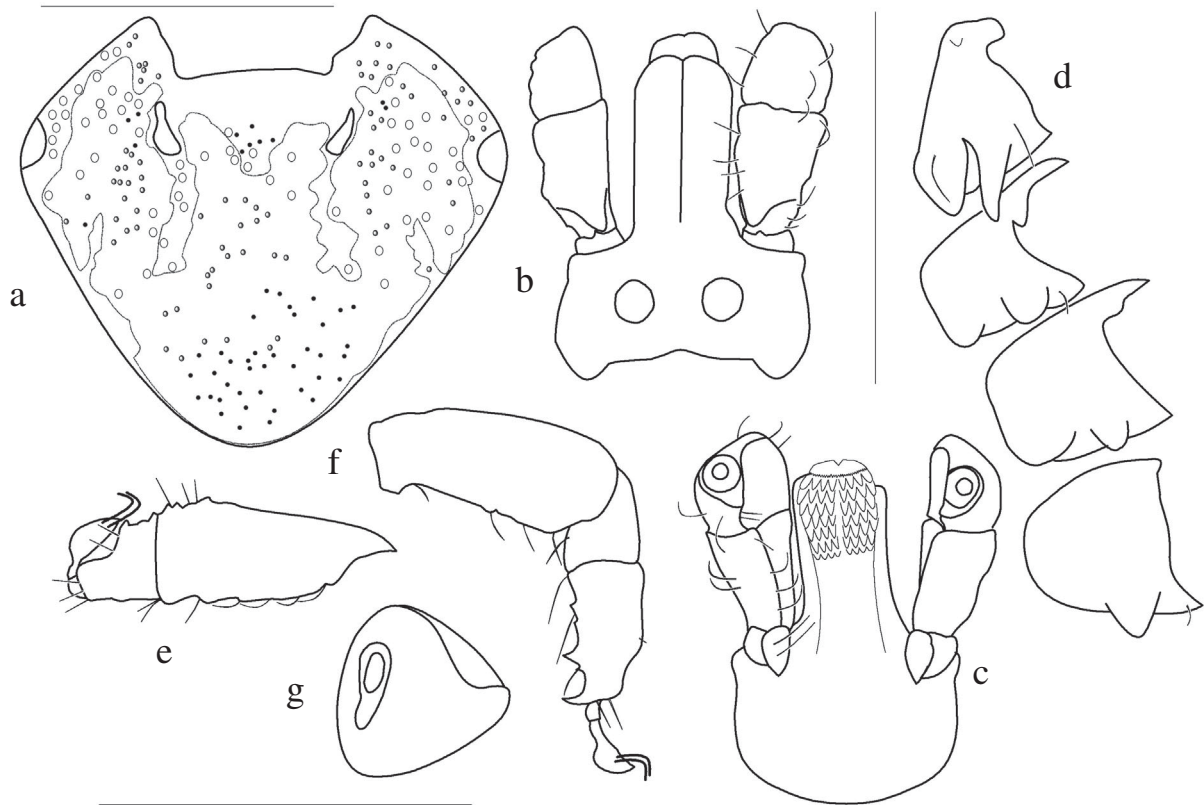


Fig. 12. *Amblyomma brasiliense*, female: a — scutum; b — gnathosoma, dorsal view; c — gnathosoma, ventral view; d — coxae; e — tarsus I; f — tarsus and tibia IV; g — spiracular plate. Scale bar 1 mm.

small, sharp callosity anteriorly. Coxae II–III each with 2 spurs, the external spur relatively large, triangular, rounded; internal spur very short, broadly rounded. Coxa IV with a single very long, narrow spur directed posteromedially. Trochanters lack spurs. Tarsus I length 0.8; width 0.29; with blunt ventroapical hump and with sharp, high, dorsal ridge. Tarsus IV length 0.57; breadth 0.21; with one very sharp ventroapical hook and a triangular, pointed ventral hump. Tibia IV length 0.7; breadth 0.27.

Venter with very short, cone-like setae. Genital aperture situated between coxae II. Spiracular plate oval, with broad dorsal prolongation perpendicular to anterior-posterior axis. Postanal groove with unpaired, posteriorly directed, median groove extending to the festoon. Integumentary hard elements of the ventral skeleton of idiosoma consist of festoons' shields extending beyond the posterior margin of the festoons.

Female (Fig. 12). Measurements from one specimen. Length from apices of scapulae to posterior body margin 3.55; breadth 2.5. Ventral body setae very short and thin, almost invisible. Marginal groove complete, beginning near the posterior margin of scutum. Festoons each with a pyramidal, chitinous hump visible from the dorsum.

Scutum length 1.6; breadth 1.9; light brown, ornate; bright, metallic, gold-reddish patch covers almost the all scutum except the cervical grooves and scapular area. Posterior margin narrowly rounded, posterolateral margins nearly straight. Scutal punctations relatively large in each lateral area and small and shallow in the posterior part of scutum. Scapulae blunt, their medial margins with ledges. Cervical grooves pit-like, deep in the anterior part then diverging as very shallow depressions, reaching the three fourth of the scutal length. Eyes large, marginal, slightly bulging.

Capitulum length from palpal apices to cornua apices 0.9; breadth 0.79; posterior margin with small, triangular notch, lateral margins slightly convex; cornua triangular, broadly rounded; ventrally posterior margin convex. Porose areas very small, round, not deeply depressed, diameter of one area 0.14; interporose area 0.14. Palpi length 0.47; breadth 0.21. Segment II 2.1 times longer than segment III, length of segment II 0.39; length of segment III 0.19. Segment I ventrally with a sharp ridge forming a narrowing paddle directed posteriorly. Palpal surface slightly wrinkled. Segment III ventrally with a small, triangular, rounded hump on anteromedial margin. Palpal setae:

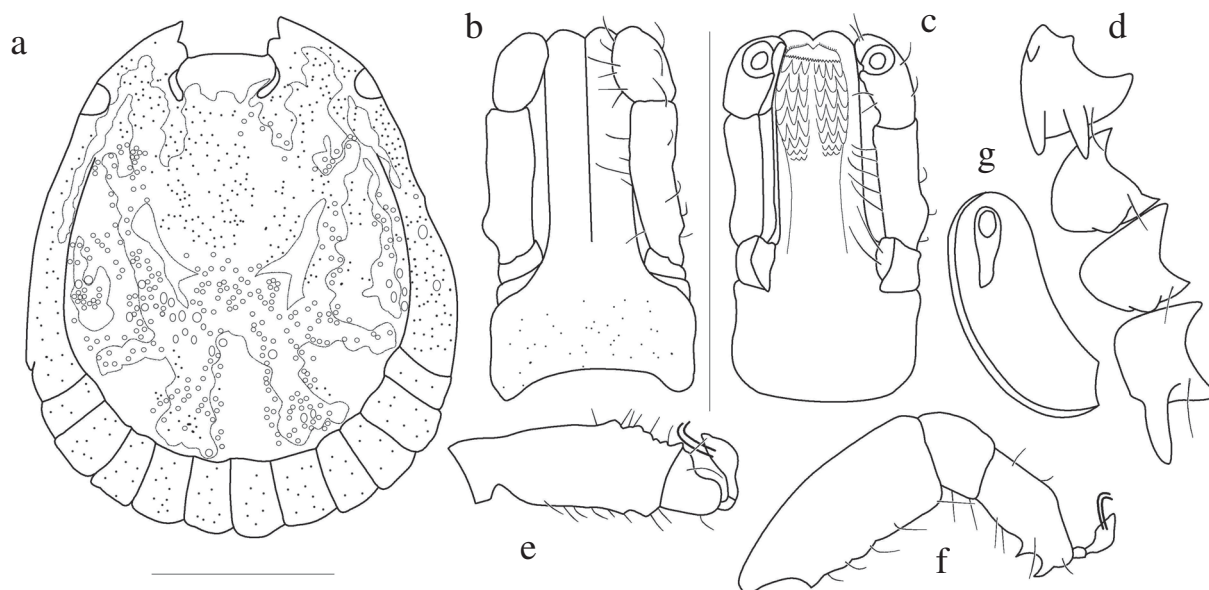


Fig. 13. *Amblyomma cajennense*, male: a — scutum; b — gnathosoma, dorsal view; c — gnathosoma, ventral view; d — coxae; e — tarsus I; f — tarsus and tibia IV; g — spiracular plate. Scale bar 1 mm.

dorsolateral setae thin, curved; dorsomedial setae short, very thin, slightly curved; ventral setae short, thin, curved. Palpal segment I ventrally with two not long, almost straight setae. Hypostome length 0.57; length of toothed portion 0.39; apex spatulate, with a corona of fine denticles, first row of denticles directed anteriorly; dental formula 4/4.

Legs. Coxa I with 2 long, triangular spurs, the external spur the longest, narrow, directed posterolaterally; internal spur broader, narrowly rounded. Coxa I with very small, blunt callosity anteriorly. Coxae II–III each with 2 short, broadly rounded spurs, the external spur slightly longer. Coxa IV with a single, triangular, rounded spur. Trochanters lack spurs. Tarsus I length 0.93; width 0.29; without ventroapical hook and with 3 small, blunt, ventral humps. Tarsus IV length 0.67, breadth 0.21, with a strong ventroapical hook and one small, sharp ventral hump. Tibia IV length 0.76, breadth 0.29.

Spiracular plate triangular, medial margin convex, posterior margin straight, dorsal prolongation forming an acute angle with anterior-posterior axis. Genital aperture «U» shaped, situated between coxae II–III. Postanal groove with clear, unpaired, posteriorly directed, median groove extending to the posterior margin of body and crossing the festoon.

Material: male and female (US National Tick Collection, No. 12521 A) Brasilia, San Paulo, Cantareira, 3.10.1935, ex *Tayassu tayassu*, coll. F. da Fonseca.

Amblyomma cajennense

Male (Fig. 13). Measurements from 2 specimens. Length from apices of scapulae to posterior scutal margin 3.15, 3.3; breadth 2.5, 2.6. Outline oval broadest at level of spiracular plate. Scutum light brown, festoons whitish with yellow and/or bright, brown in the middle; ornate, bronze, pale narrow patches forming the symmetrical pattern. Scutal punctations small, regular in the anterior part and larger, more numerous on color patches. Cervical grooves very thin, shallow in the anterior part then pit-like, crescent, deep. Scapulae sharp, their medial margins with ledges. Marginal groove complete, beginning at level of legs II. Festoons narrow, without chitinous plates extending beyond the posterior margin of the festoons. Eyes marginal, large, slightly bulging.

Capitulum length from palpal apices to cornua apices 1.11, 1.14; breadth 0.6, 0.61. Posterior margin of basis capituli slightly concave, cornua triangular, rounded, lateral margins straight, ventrally posterior margin straight. Punctations of basis capituli small, shallow. Palpi length 0.77, 0.76; breadth 0.14, 0.14; surface of segment II smooth, bright. Segment II 1.8–2.0 times longer than segment III, length of segment II 0.47, 0.47; length of segment III 0.23, 0.26. Segment I ventrally with a sharp ridge ending posteriorly with a small spur. Palpal setae: dorsolateral setae thin, slightly curved; dorsomedial setae not long, almost straight; ventrolateral setae short, slightly curved; ventromedial setae long, thin, almost straight. Palpal segment I

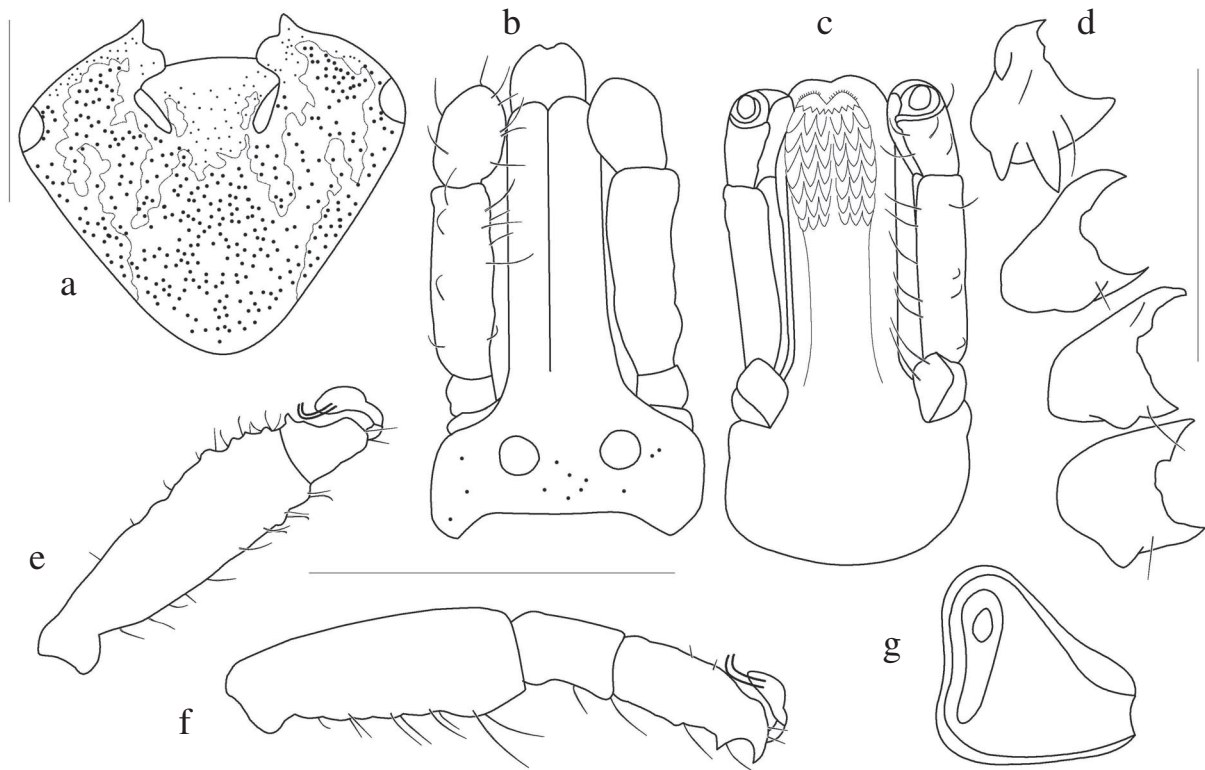


Fig. 14. *Amblyomma cajennense*, female: a — scutum; b — gnathosoma, dorsal view; c — gnathosoma, ventral view; d — coxae; e — tarsus I; f — tarsus and tibia IV; g — spiracular plate. Scale bar 1 mm.

ventrally with 2 long, thin setae. Hypostome length 0.73, 0.74; length of toothed portion 0.45; with a corona of fine denticles apically, first row of denticles directed anteriorly; apex spatulate, with small central notch. Dental formula 3/3.

Legs. Coxa I with 2 broadly separated, long, narrow, triangular spurs, the external spur longer and reaching the anterior margin of coxa II. Coxa I with a small, sharp callosity anteriorly. Coxae II–III each with a single, broadly rounded spur. Coxa IV with a single, very long, narrow, slightly curved laterally spur. Trochanters lack spurs. Tarsus I length 0.87, 0.89; width 0.26, 0.29; with blunt ventroapical hump and blunt, small, dorsal hump. Tarsus IV length 0.57, 0.6; breadth 0.2, 0.21; with one very sharp, ventroapical hook and a triangular, pointed ventral hump. Tibia IV length 0.64, 0.74; breadth 0.29, 0.3.

Venter with very short, cone-like setae. Genital aperture situated between coxae II. Spiracular plate long, relatively broad, lateral and medial margins parallel, dorsal prolongation very broad, fluently curved. Postanal groove with shallow, unpaired, posteriorly directed, median groove not extending to the festoon. Integumentary hard elements of the ventral skeleton of idiosoma absent.

Female (Fig. 14). Measurements from 2 specimens. Length from apices of scapulae to posterior body margin 4.15, 4.2; breadth 3.3, 3.4. Ventral body setae very short and thin, slightly curved. Marginal groove complete, beginning near the posterior margin of scutum. Festoons each with a pyramidal, chitinous hump visible from the dorsum.

Scutum length 2.1, 2.2; breadth 2.1, 2.1; light brown, ornate; very large, metallic, gold-reddish patch covers almost the all scutum except the cervical grooves and posterolateral area. Posterior margin of scutum narrowly rounded, posterolateral margins nearly straight. Scutal punctations medium in size, dense, regularly. Scapulae sharp, long, their medial margins with ledges. Cervical grooves pit-like, deep in the anterior part then diverging as very shallow depressions, reaching one third of the scutal length. Eyes large, marginal, slightly bulging.

Capitulum length from palpal apices to cornua apices 1.4, 1.44; breadth 0.8, 0.84; posterior margin straight or slightly concave, lateral margins slightly convex; cornua triangular, broad; ventrally posterior margin slightly convex. Porose areas very small, round, not deeply depressed, diameter of one area 0.13, 0.14; interporose area 0.16, 0.17. Palpi length 0.96, 1.0; breadth 0.24, 0.24. Segment II 2.4 times

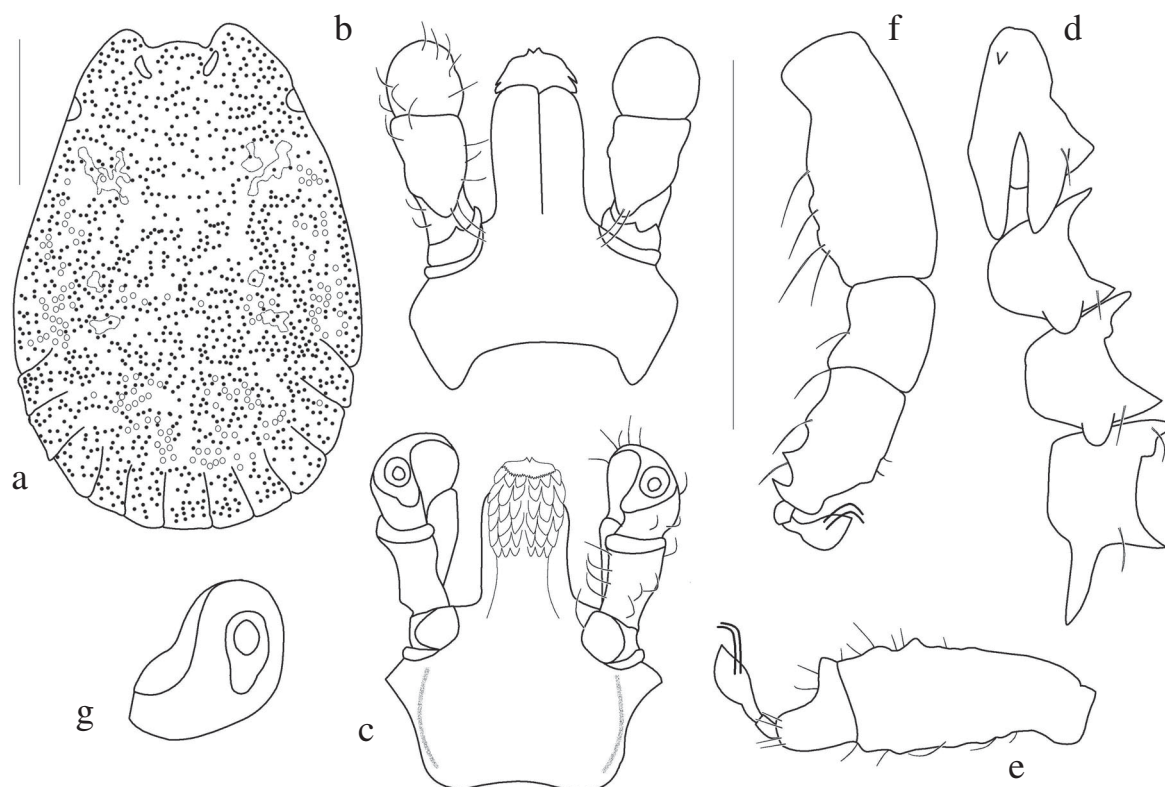


Fig. 15. *Amblyomma calcaratum*, male: a — scutum; b — gnathosoma, dorsal view; c — gnathosoma, ventral view; d — coxae; e — tarsus I; f — tarsus and tibia IV; g — spiracular plate. Scale bar 1 mm.

longer than segment III, length of segment II 0.61, 0.64; length of segment III 0.26, 0.27. Segment I ventrally with a sharp ridge. Palpal surface slightly wrinkled. Segment III ventrally with a small, triangular, rounded hump on anteromedial margin. Palpal setae: dorsolateral setae thin, curved; dorsomedial setae long, thin, slightly curved; ventrolateral setae short, thin, curved; ventromedial setae long, slightly curved. Palpal segment I ventrally with two long, almost straight setae. Hypostome length 0.87, 0.93; length of toothed portion 0.46, 0.47; with a corona of fine denticles apically, apex rounded, notched, first row of denticles directed anteriorly; dental formula 3/3.

Legs. Coxa I with 2 long, triangular spurs, the external spur longer, directed posterolaterally; internal spur narrow, sharply rounded. Coxa I with sharp, spur-like callosity anteriorly. Coxae II–III each with a single, short, triangular, broadly rounded spur. Coxa IV with a single, triangular, rounded spur. Trochanters lack spurs. Tarsus I length 1.14, 1.14; width 0.27, 0.29; without ventroapical hook and with a sharp, dorsal hump. Tarsus IV length 0.8, 0.81, breadth 0.2, 0.2, with a strong ventroapical hook and one small, sharp ventral hump. Tibia IV length 0.89, 0.9, breadth 0.3, 0.31.

Spiracular plate triangular, medial and lateral margins diverging, medial margin concave, posterior margin straight, dorsal prolongation very broad, perpendicular to anterior-posterior axis. Genital aperture «U» shaped, situated between coxae II–III. Postanal groove with clear, unpaired, posteriorly directed, median groove extending to the festoon.

Material: 2 males and 2 females (US National Tick Collection, RML 122972) Brazil, Mato Grosso, 130 km from Corumba, Pantanal, 24.01.1998, ex *Sus scrofa*, coll. Rita, Heitor, Hermogenes.

Amblyomma calcaratum

Male (Fig. 15). Measurements from 2 specimens. Length from apices of scapulae to posterior scutal margin 3.87, 3.9; breadth 2.65, 2.7. Outline oval broadest at level of spiracular plate. Scutum dark-brown; ornate, some small, irregular-shaped, metallic, goldish-pink patches in the lateral and posterior areas. Scutal punctations dense, relatively deep, larger in the lateral and posterior areas. Cervical grooves small, pit-like, oval or bean-shaped, very deep, situated at a distance from anterior margin of scutum. Scapulae broadly rounded. Marginal groove absent. Festoons narrow, with-

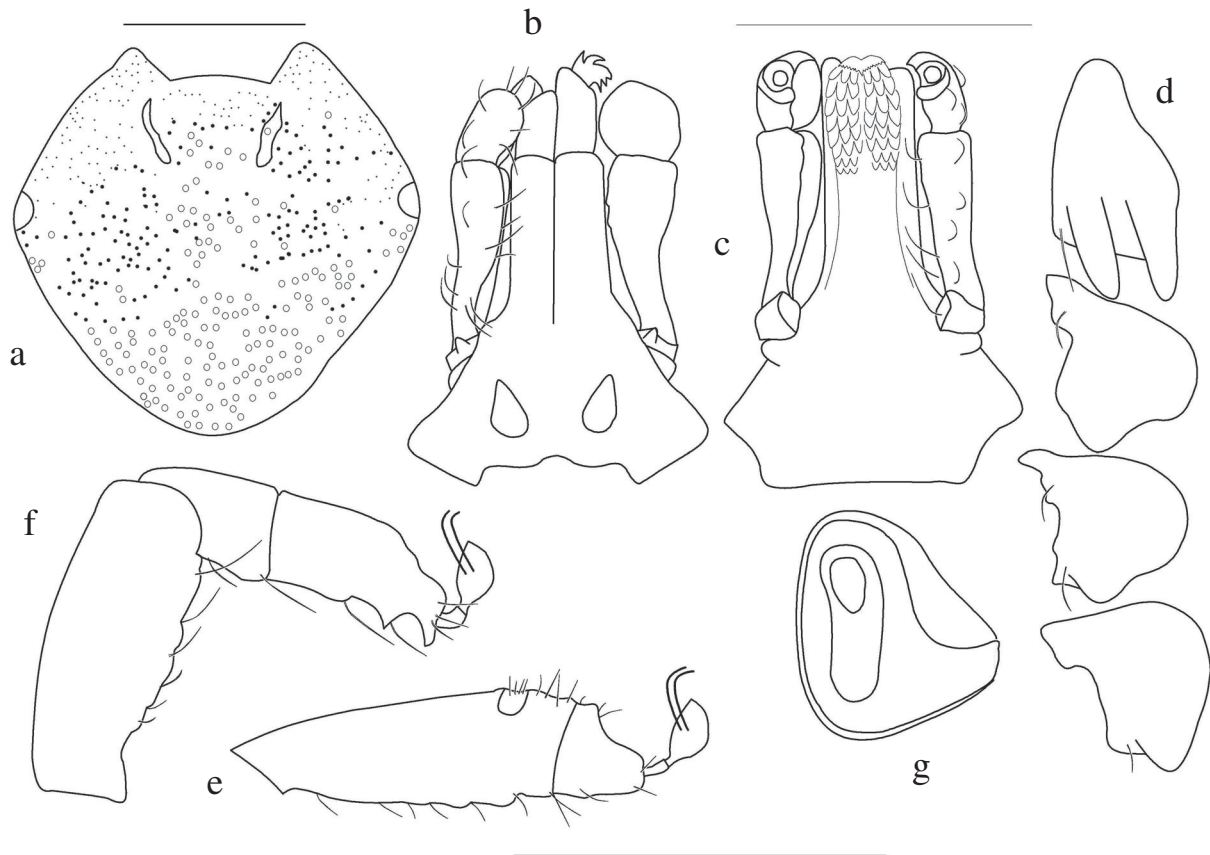


Fig. 16. *Amblyomma calcaratum*, female: a — scutum; b — gnathosoma, dorsal view; c — gnathosoma, ventral view; d — coxae; e — tarsus I; f — tarsus and tibia IV; g — spiracular plate. Scale bar 1 mm.

out chitinous plates extending beyond the posterior margin of the festoons. Eyes marginal, large, flat.

Capitulum length from palpal apices to cornua apices 1.0, 1.0; breadth 0.8, 0.81. Posterior margin of basis capituli concave, cornua large, triangular, narrowly rounded, posterolateral margins straight, ventrally posterior margin concave. Punctations of basis capituli relatively numerous, small and large. Palpi length 0.61, 0.64; breadth 0.21, 0.23; surface of segment II smooth, bright. Segment II 1.6 times longer than segment III, length of segment II 0.36, 0.37; length of segment III 0.21, 0.23. Segment II dorsally with a triangular, rounded spur directed posteriorly; on the tip of this spur 2 long, slightly curved setae directed posteriorly too. Segment I dorsally with a small, triangular spur directed anteriorly; ventrally with a rounded paddle directed posterolaterally. Segment III ventrally with a triangular, rounded spur on anteromedial margin. Palpal setae: dorsolateral setae thin, slightly curved; dorsomedial setae short, thin, almost straight on II and longer and slightly curved on III; ventrolateral setae short, curved; ventromedial setae long, curved. Palpal segment I ventrally with a long, slightly curved seta. Hypostome length 0.53, 0.56; length of

toothed portion 0.3, 0.31; apex with a large corona of fine denticles, notched, each half of the apex with a triangular projection near the median axis. Dental formula 3/3.

Legs. Coxa I with 2 very long, narrow, triangular spurs, both reaching the anterior margin of coxa II, the internal spur slightly longer. Coxa I with a small, sharp callosity anteriorly. Coxae II–III each with a single, triangular, rounded spur. Coxa IV with a single, very long, triangular, sharp spur directed posteromedially. Trochanters lack spurs. Tarsus I length 0.93, 0.93; width 0.31, 0.33; with 3 blunt ventral humps and sharp, high, dorsal hump. Tarsus IV length 0.71, 0.74; breadth 0.23, 0.24; with one strong, ventroapical hook and a triangular, pointed ventral hump. Tibia IV length 0.76, 0.76; breadth 0.34, 0.36. Leg segments with narrow, light annular wheels at distal ends.

Venter with very short, thin setae. Genital aperture situated between coxae II. Lateral and medial margins of spiracular plate slightly diverging, medial margin slightly convex, posterior margin almost straight, dorsal prolongation long, broad, forming an obtuse angle with anterior-posterior axis of spiracular plate. Postanal groove with shal-

low, thin, unpaired, posteriorly directed, median groove extending to the festoon. Integumentary hard elements of the ventral skeleton of idiosoma absent, ventral surface bright, with dense, large punctations.

Female (Fig. 16). Measurements from 2 specimens. Length from apices of scapulae to posterior body margin 4.6, 4.6; breadth 3.25, 3.25. Ventral and dorsal body setae few, very short and thin. Marginal groove complete, beginning near the posterior margin of scutum. Festoons rectangular.

Scutum length 2.25, 2.25; breadth 2.4, 2.4; dark-brown, inornate. Posterior margin of scutum narrowly rounded, posterolateral margins nearly straight. Scutal punctations medium in size, dense, regularly. Scapulae rounded. Cervical grooves very deep, narrow, converging, beginning at a distance from anterior margin of scutum, then diverging as very shallow depressions. Eyes large, marginal, slightly bulging.

Capitulum length from palpal apices to cornua apices 1.44, 1.53; breadth 1.13, 1.14; posterior margin almost straight or slightly undulated, lateral margins triangular, narrowly rounded; cornua relatively large, triangular, rounded; ventrally posterior margin straight. Porose areas deep, narrow, oval, diverging, diameter of one area 0.14, 0.14; interporose area 0.19, 0.2. Palpi length 1.06, 1.07; breadth 0.21, 0.21. Segment II 2.4–2.6 times longer than segment III, length of segment II 0.64, 0.67; length of segment III 0.24, 0.29. Palpal surface slightly wrinkled with few, small punctations. Segment I dorsally with pyramidal spur directed anteriorly, ventrally with a slope ridge. Segment III ventrally with a small, triangular, rounded hump on anteromedial margin. Palpal setae: dorsolateral and dorsomedial setae long, thin, curved, 2 long setae on the basis of segment II directed posteriorly; ventrolateral setae short, thin, curved; ventromedial setae long, slightly curved. Palpal segment I ventrally with a long, almost straight seta. Hypostome length 0.9, 0.93; length of toothed portion 0.49, 0.49; with a corona of fine denticles apically, apex bluntly rounded, with small central notch, first row of denticles directed anteriorly; dental formula 3/3.

Legs. Coxa I with 2 subequal, very long, triangular spurs. Coxae II–III each with a single, short, triangular, broadly rounded spur. Coxa IV with a single, triangular, longer and more narrow, sharply rounded spur. Trochanters lack spurs. Tarsus I length 1.2, 1.3; width 0.34, 0.36; without ventroapical hook and with a small, rounded dorsal hump.

Tarsus IV length 0.93, 1.0, breadth 0.23, 0.26, with a strong ventroapical hook and one small, sharp ventral hump. Tibia IV length 0.9, 0.93, breadth 0.37, 0.37.

Spiracular plate triangular, medial and lateral margins slightly diverging, medial margin straight, posterior margin straight, dorsal prolongation long, forming an acute angle with anterior-posterior axis. Genital aperture «U» shaped, situated between coxae II–III. Postanal groove with thin, unpaired, posteriorly directed, median groove extending to the festoon.

Material: 2 males and 2 females (US National Tick Collection, RML 52093) Venezuela, Apure, 4 km N.W. El Nula (San Camilo) El Milagro, 20.02.1968, ex *Tamandua longicaudata*, coll. A.L. Tuttle.

Amblyomma coelebs

Male (Fig. 17). Measurements from 2 specimens. Length from apices of scapulae to posterior scutal margin 5.25, 5.3; breadth 4.0, 4.3. Outline broadly oval, broadest at level of spiracular plate. Scutum brown; ornate, some large, irregular-shaped, metallic, goldish-pink with green patches in the lateral, central, and posterior areas and on the festoons. Scutal punctations dense, regularly, small and large. Cervical grooves pit-like, deep, narrow, crescent, situated at a distance from anterior margin of scutum. Marginal groove complete, beginning at level of legs IV. Festoons narrow, with rectangular, chitinous plates extending beyond the posterior margin of the festoons. Eyes marginal, large, slightly bulging.

Capitulum length from palpal apices to cornua apices 1.57, 1.6; breadth 1.0, 1.0. Posterior margin of basis capituli slightly concave, cornua broad, rounded, lateral margins straight, ventrally posterior margin convex. Punctations of basis capituli small, dense. Palpi length 0.99, 1.0; breadth 0.33, 0.36. Segment II dorsally smooth, bright in one specimen and with slanting, deep wrinkle in second specimen. Segment II 1.6 times longer than segment III, length of segment II 0.56, 0.57; length of segment III 0.33, 0.36. Segment I ventrally with a large, rounded paddle directed posteriorly. Segment II ventrally with a sharp ridge on the anterior margin, ending with a triangular, rounded spur directed posteromedially. Segment III dorsally with a small, rounded hump on the anterior margin; ventrally with a triangular, rounded hump on anteromedial margin. Palpal setae: dorsolateral setae thin, slightly curved, 2 long setae on the basis of

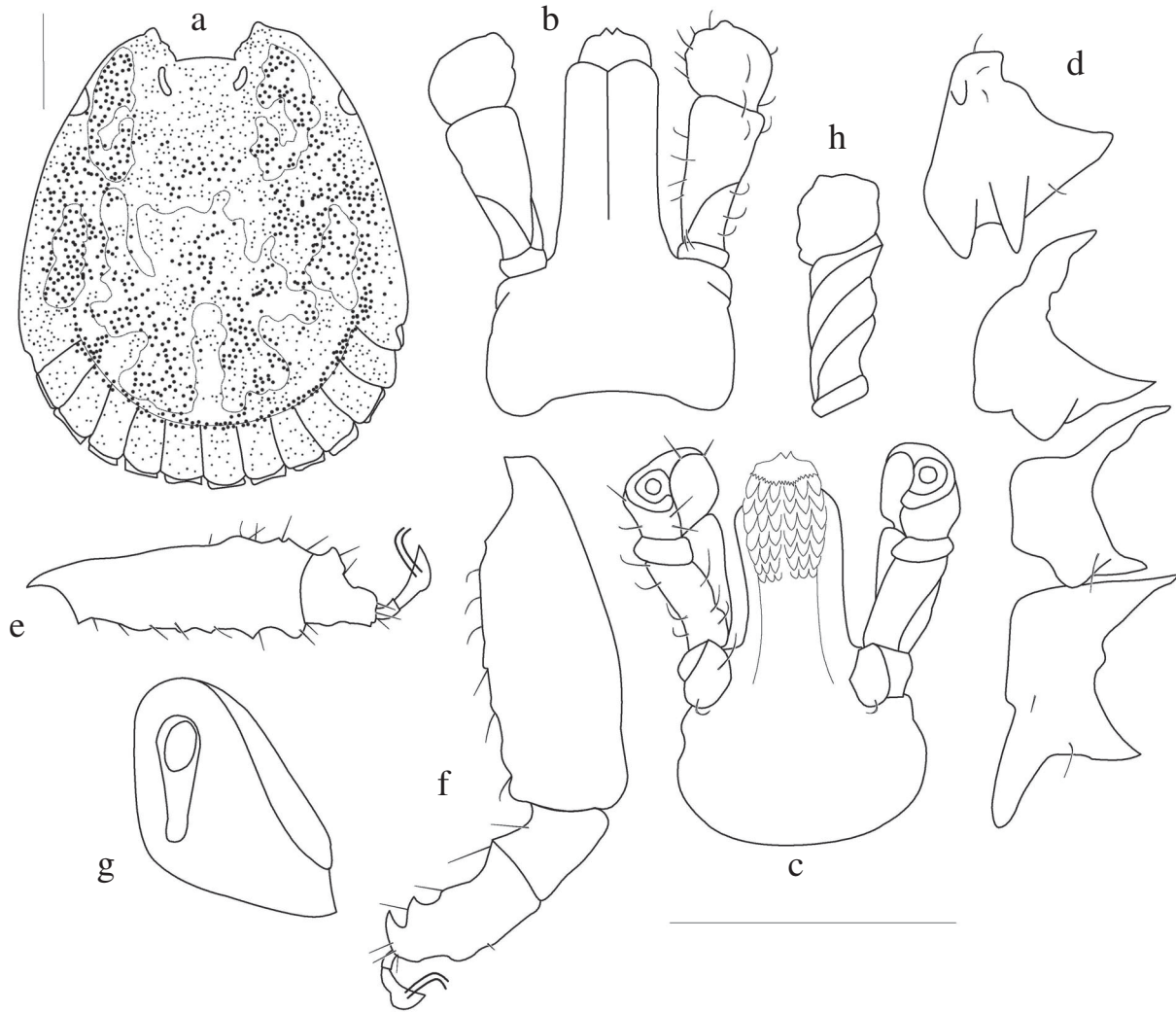


Fig. 17. *Amblyomma coelebs*, male: a — scutum; b — gnathosoma, dorsal view; c — gnathosoma, ventral view; d — coxae; e — tarsus I; f — tarsus and tibia IV; g — spiracular plate; h — palpa in second specimen, dorsal view. Scale bar 1 mm.

segment II directed posteriorly; dorsomedial setae short, thin, straight on II and longer on III; ventrolateral setae thin, slightly curved; ventromedial setae long, thin, almost straight. Palpal segment I ventrally with a relatively thick, slightly curved seta on anteromedial margin and with a short seta turned down towards the dorsal surface of the rounded paddle. Hypostome length 1.0; length of toothed portion 0.5; apex with a large corona of fine denticles, notched, each half of the apex with a triangular projection near the median axis. Dental formula 3/3.

Legs. Coxa I with 2 long, narrow, triangular spurs, the internal spur broader. Coxa I with a large, narrowly-rounded, spur-like callosity anteriorly. Coxae II–III with 2 broad spurs, the external spur larger, triangular, internal spur very short, rounded. Coxa IV with a single, very long spur, directed posteromedially. Trochanters lack spurs. Tarsus I

length 1.3, 1.36; width 0.36, 0.39; with 2 blunt, ventral humps. Tarsus IV length 0.94, 0.96; breadth 0.26, 0.27; with one strong, ventroapical hook and a large, triangular, pointed ventral hump. Tibia IV length 1.29, 1.29; breadth 0.47, 0.49.

Venter with few, short and thin setae. Genital aperture situated between coxae II. Spiracular plate long, lateral and medial margins slightly diverging, medial margin straight, posterior margin almost straight, dorsal prolongation long, broad, forming an obtuse angle with anterior-posterior axis. Postanal groove with a short, unpaired, posteriorly directed, median groove extending to the unpaired anal shield. Integumentary hard elements of the ventral skeleton of idiosoma consist of long, narrow unpaired anal and 2 paired postanal shields (lateral shields long, narrow, medial shields small, oval, consisting of very small, chitinous point-plaques), and light festoons' shields.

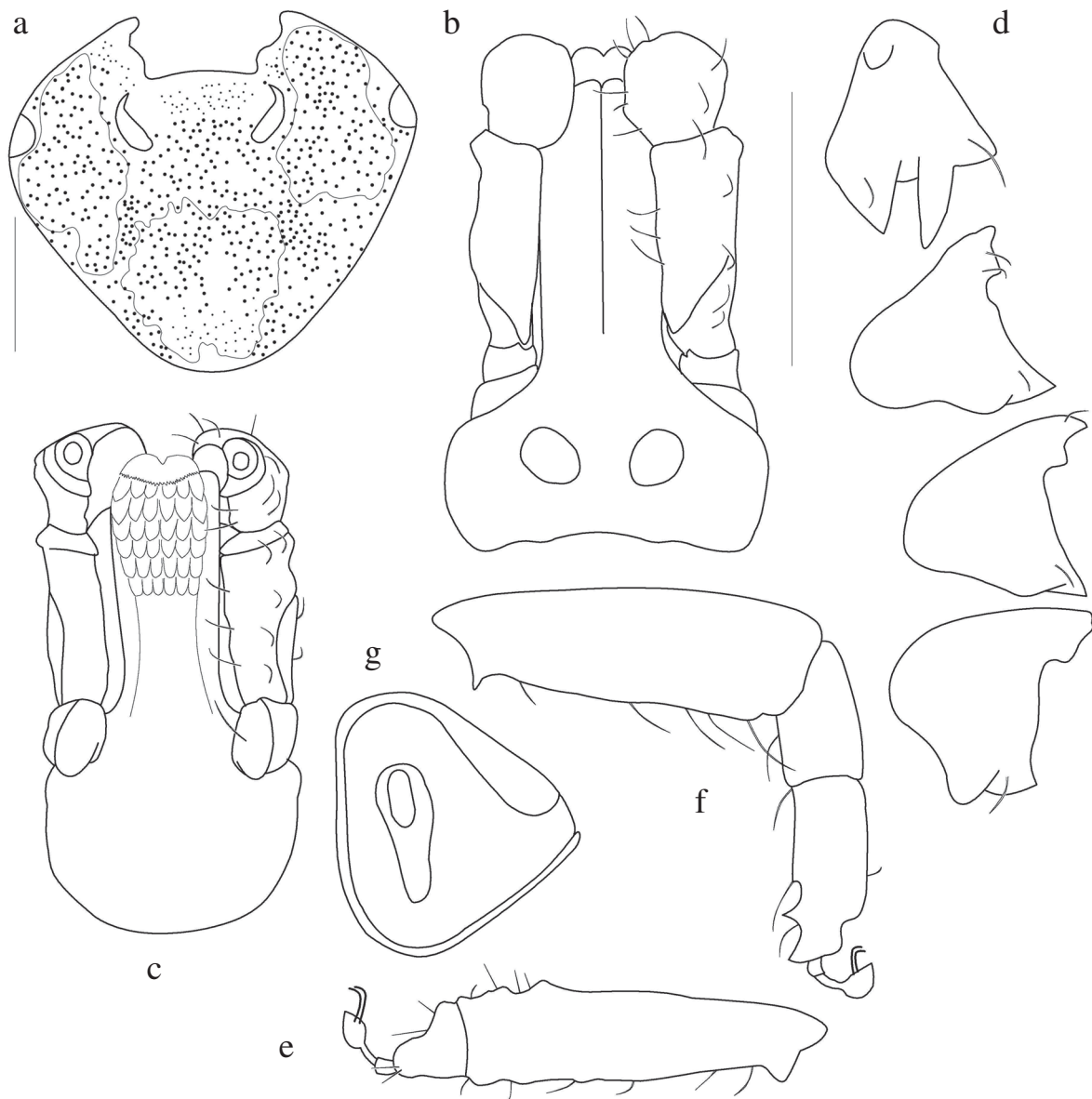


Fig. 18. *Amblyomma coelebs*, female: a — scutum; b — gnathosoma, dorsal view; c — gnathosoma, ventral view; d — coxae; e — tarsus I; f — tarsus and tibia IV; g — spiracular plate. Scale bar 1 mm.

Female (Fig. 18). Measurements from 2 specimens. Length from apices of scapulae to posterior body margin 6.0, 6.3; breadth 4.85, 5.1. Dorsal body setae very short and thin, only on festoons; ventral setae very short and thin, relatively dense. Marginal groove complete, beginning near the posterior margin of scutum. Festoons rectangular.

Scutum length 2.5, 2.9; breadth 3.25, 3.3; dark-brown, ornate, two large, metallic, crimson patches with gold-greenish border between cervical grooves and eyes and one large patch in the posterior part of the scutum. Posterior margin of scutum narrowly rounded, posterolateral margins slightly convex. Scutal punctations dense, regularly, small and medium. Scapulae long, sharp, medial

margins with ledges. Cervical grooves very deep, large, pit-like, crescent, beginning at a distance from anterior margin of scutum, then diverging as very shallow depressions. Eyes large, marginal, slightly bulging.

Capitulum length from palpal apices to cornua apices 1.91, 1.96; breadth 1.23, 1.3; posterior margin almost straight or slightly undulated, lateral margins convex; cornua evident, broadly rounded; ventrally posterior margin convex. Punctations of basis capituli very small and shallow. Porose areas small, oval, not deeply depressed, diameter of one area 0.21, 0.21; interporose area 0.19, 0.2. Palpi length 1.3, 1.33; breadth 0.33, 0.36. Segment II 2.2–2.3 times longer than segment III, length of

segment II 0.74, 0.79; length of segment III 0.33, 0.36. Palpi slightly wrinkled. Segment I dorsally with small, triangular spur directed anteriorly, ventrally with a large, oval paddle directed posteriorly and ventrally. Segment II ventrally with a sharp ridge on the anterior margin, ending with a triangular, rounded spur directed posteromedially. Segment III ventrally with a triangular, rounded hump on anteromedial margin. Palpal setae long, thin, curved. Palpal segment I ventrally with a long, slightly curved seta. Hypostome length 1.1, 1.2; length of toothed portion 0.59, 0.6; with a large corona of fine denticles apically, apex bluntly rounded, with small central notch, first row of denticles directed anteriorly; dental formula 3/3.

Legs. Coxa I with 2 triangular, sharply rounded spurs, the external spur slightly longer, internal spur broader. Coxa I with a sharp, spur-like callosity anteriorly. Coxa II with 2 spurs, the external spur short, broadly rounded, internal spur very short, broadly rounded paddle-shaped. Coxa III with 2 spurs, the external spur shorter than on II, broadly rounded, internal spur almost invisible, chitinous ridge on the posterior margin of coxa. Coxa IV with a single, large, triangular, rounded spur. Trochanters lack spurs. Tarsus I length 1.67, 1.7; width 0.37, 0.37; without ventroapical hook and with 2 blunt, ventral humps; dorsally with a high, rounded hump. Tarsus IV length 1.27, 1.29, breadth 0.3, 0.3, with a strong ventroapical hook and one pointed, triangular ventral hump. Tibia IV length 1.5, 1.53, breadth 0.44, 0.47.

Spiracular plate large, triangular, medial and lateral margins diverging, medial and posterior margins straight, dorsal prolongation long, forming an acute angle with anterior-posterior axis. Genital aperture «U» shaped, situated between coxae II–III. Postanal groove with thin, unpaired, posteriorly directed, median groove extending to the festoon.

Material: 2 males and 2 females (US National Tick Collection, RML 28212) Chiapas, Mexico, Rio de la Venta, selvas de El Mercadito, Cintalapa, altitude 450 m, 23.05.1949, ex *Tapirella bairdii*, sent by Miguel Alvarez del Toro.

Amblyomma crassum

Female (Fig. 19). Measurements from one specimen. Length from apices of scapulae to posterior body margin 8.0; breadth 6.9. Dorsal and ventral body setae very short and thin, almost inconspicuous. Marginal groove complete, beginning near the posterior margin of scutum. Festoons large, broad and long.

Scutum length 4.25; breadth 4.38; dark-brown and light-brown between cervical grooves, ornate, two small, pink, metallic patches between scapulae and eyes and the same patch in the posterior part of scutum. Posterior margin of scutum narrowly rounded, posterolateral margins slightly convex. Scutal punctations very small in the anterior part of the scutum, larger in the central and lateral areas, very large around the eyes. Scapulae rounded, medial margins with ledges. Cervical grooves relatively long, very deep, almost straight anteriorly, then converging and broader. Eyes large, marginal, slightly bulging.

Capitulum length from palpal apices to cornua apices 2.9; breadth 1.6; posterior margin straight, anterolateral margins straight and diverging, posterolateral margins straight and converging; cornua short, triangular, broad; ventrally posterior margin convex. Punctations of basis capituli few, small, shallow. Porose areas small, oval, deeply depressed, diameter of one area 0.26; interporose area 0.31. Palpi length 1.98; breadth 0.43. Segment II 2.7 times longer than segment III, length of segment II 1.3; length of segment III 0.5. Palpi wrinkled. Segment I ventrally with a sharp ridge more slope in the anterior part with posterior, small spur. Palpal setae: dorsolateral setae long, curved, thin on III and more thick on II; dorsomedial setae long, thin, slightly curved; ventrolateral setae short, relatively thick, curved on II and longer on III; ventromedial setae long, relatively thick, slightly curved. Palpal segment I ventrally with a long, almost straight seta. Hypostome length 1.7; length of toothed portion 0.79; with a large corona of fine denticles apically, apex bluntly rounded, with small central notch; dental formula 5/5 in the 3 anterior rows then 4/4.

Legs. Coxa I with 2 subequal, short, rounded spurs, the internal spur broader. Coxa I with a large, rounded callosity anteriorly equally broad as the external spur. Coxae II–III each with 2 subequal, short, rounded spurs, the internal spur broader. Coxa II with a thick, high, hump-like callosity anteriorly. Coxa IV with 2 short, rounded spurs, the external spur larger, triangular. Trochanters lack spurs. Tarsus I length 1.68; width 0.5; with small, blunt ventroapical hook and with 2 blunt, high ventral humps; dorsally with some small, pointed humps. Tarsus IV length 1.45, breadth 0.38, with a strong ventroapical hook and one pointed, triangular ventral hump. Tibia IV length 1.9, breadth 0.55.

Spiracular plate large, triangular, its medial and lateral margins diverging, medial and posterior

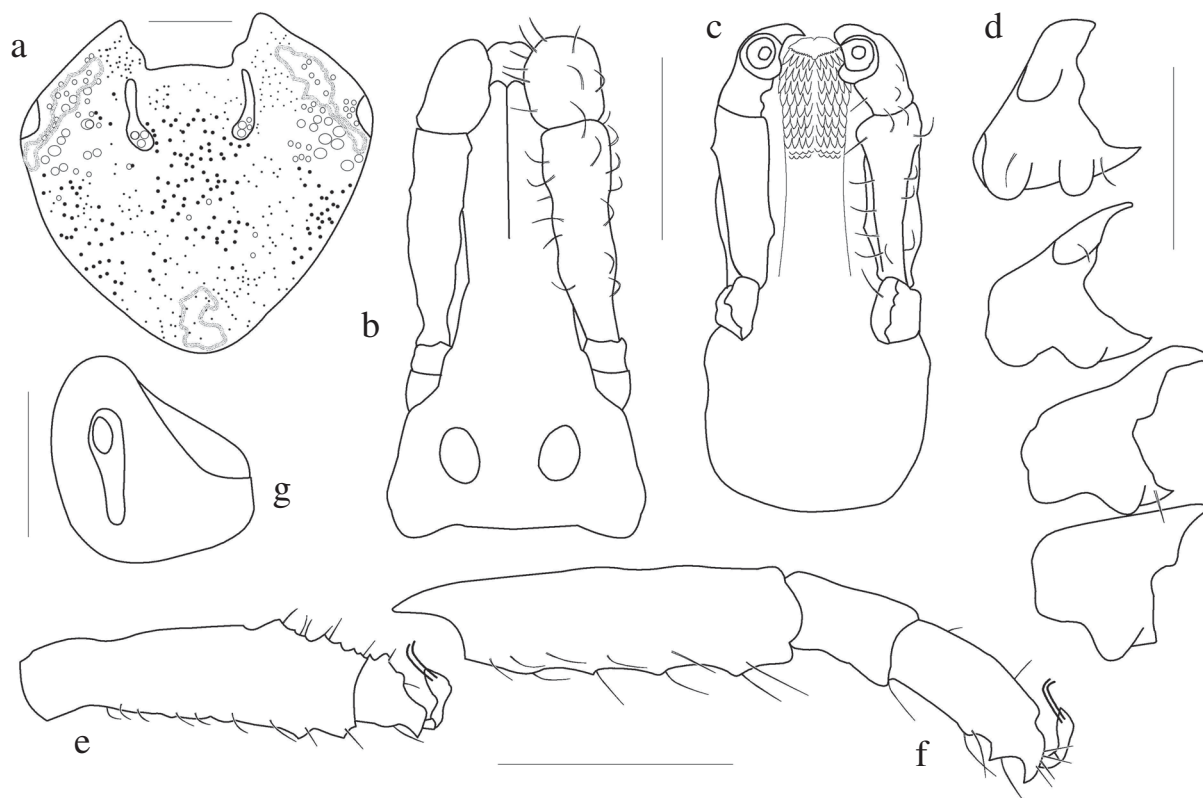


Fig. 19. *Amblyomma crassum*, female: a — scutum; b — gnathosoma, dorsal view; c — gnathosoma, ventral view; d — coxae; e — tarsus I; f — tarsus and tibia IV; g — spiracular plate. Scale bar 1 mm.

margins nearly straight, dorsal prolongation broad, perpendicular to anterior-posterior axis of spiracular plate. Genital aperture «U» shaped, situated between coxae II. Postanal groove with unpaired, posteriorly directed, median groove extending to the festoon.

Material: female (US National Tick Collection, RML 37773) Peru, Sheshea River Basin at the headwaters of the Peruvian Amazon, 1960 or 1961, from a log, coll. G.E. Dickinson.

Amblyomma cruciferum

Male (Fig. 20). Measurements from 2 specimens. Length from apices of scapulae to posterior scutal margin 2.95, 3.3; breadth 2.8, 3.1. Outline nearly round, broadest at level of spiracular plate. Scutum brown, in the posterior part light yellow, translucent; inornate. Scutal punctations shallow, small and medium, dense excepting the narrow areas forming the symmetrical pattern. Cervical grooves deep, short, converging. Marginal groove absent. Festoons broad, rectangular, without chitinous plates extending beyond the posterior margin of the festoons. Eyes marginal, large, flat.

Capitulum length from palpal apices to cornua apices 1.0, 1.1; breadth 0.66, 0.71. Posterior margin of basis capituli straight, cornua short, broadly

rounded, lateral margins straight, ventrally posterior margin straight. Basis capituli with small and shallow punctations. Palpi length 0.71, 0.71; breadth 0.15, 0.16. Segment II dorsally smooth. Segment II 1.8–2.0 times longer than segment III, length of segment II 0.43, 0.46; length of segment III 0.21, 0.24. Segment I ventrally without spur. Segment III ventrally with a triangular, rounded hump on anteromedial margin. Palpal setae: dorsolateral setae relatively long, curved; dorsomedial setae long, curved on II and long, almost straight on III; ventrolateral setae relatively long, curved; ventromedial setae long, curved. Palpal segment I ventrally with a long, almost straight seta. Hypostome length 0.66, 0.69; length of toothed portion 0.31, 0.33; apex with a corona of fine denticles, notched, each half of the apex with a triangular projection near the median axis. Dental formula 3/3.

Legs. Coxa I with 2 triangular, broadly rounded spurs, the external spur longer and more narrow. Coxa I with a low, roller-like callosity anteriorly. Coxae II–IV each with 2 rounded spurs, the external spur triangular, larger, internal spur very short. Trochanters lack spurs. Tarsus I length 0.64, 0.69; width 0.21, 0.24; with a blunt, small ventral hump and with a high, rounded hump dorsally. Tarsus IV

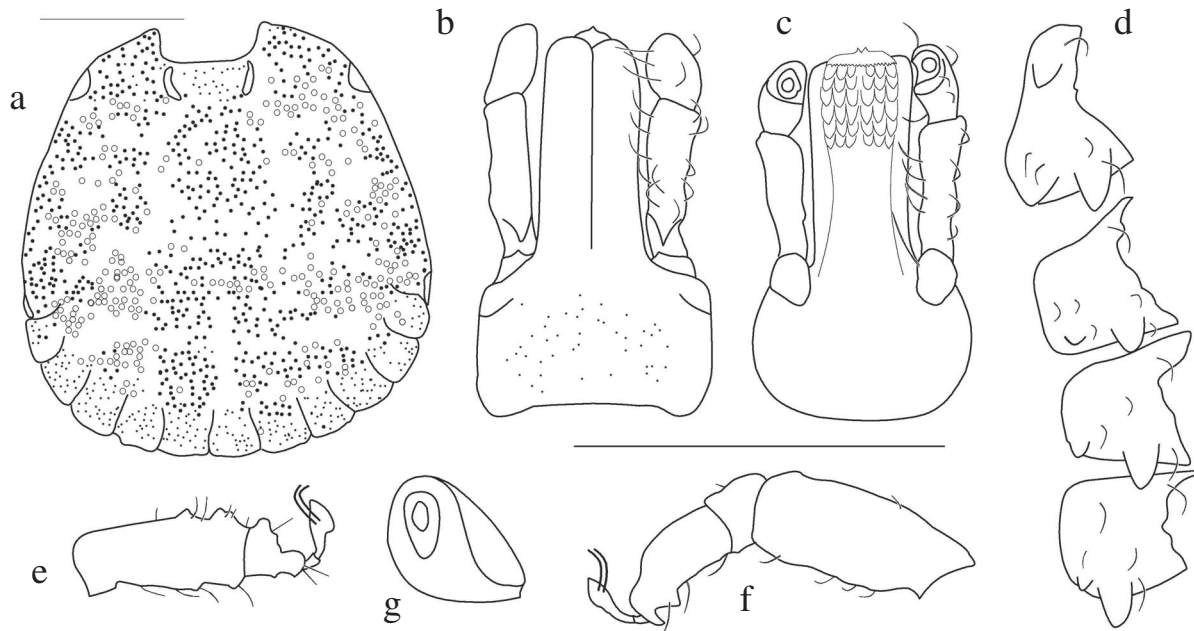


Fig. 20. *Amblyomma cruciferum*, male: a — scutum; b — gnathosoma, dorsal view; c — gnathosoma, ventral view; d — coxae; e — tarsus I; f — tarsus and tibia IV; g — spiracular plate. Scale bar 1 mm.

length 0.54, 0.54; breadth 0.17, 0.17; with one strong, ventroapical hook and a large, pointed ventral hook. Tibia IV length 0.59, 0.66; breadth 0.24, 0.27.

Venter with very short, thick, cone-like, relatively dense setae; dorsal setae relatively long, thick, per one only on postero-medial angle of festoons. Genital aperture situated between coxae II. Lateral and medial margins of spiracular plate nearly parallel, medial margin convex, posterior margin almost straight, dorsal prolongation narrow, perpendicular to anterior-posterior axis. Postanal groove with a shallow, almost invisible, unpaired, posteriorly directed, median groove extending to the unpaired anal shield. Integumentary hard elements of the ventral skeleton of idiosoma consist of evident festoons' shields and some small sclerotized point-plaques in place of unpaired anal and medial paired postanal shields.

Female (Fig. 21). Measurements from 2 partially engorged specimens. Length from apices of scapulae to posterior body margin 5.7, 7.5; breadth 4.25, 5.25. Dorsal body setae short, thick, stick-like, curved, relatively dense, setae along the body margins longer and more dense. Ventral body setae short, more thin, almost straight, stick-like. Marginal groove absent. Festoons rectangular.

Scutum length 2.13, 2.15; breadth 2.38, 2.5; dark-brown, inornate. Posterior margin of scutum broadly rounded, posterolateral margins slightly convex. Scutal punctations large, shallow, dense.

Scapulae long, medial margins with ledges. Cervical grooves deep, crescent, pit-like in the anterior part then diverging as shallow depressions. Eyes large, marginal, slightly bulging.

Capitulum length from palpal apices to cornua apices 1.24, 1.24; breadth 0.76, 0.79; posterior margin straight, lateral margins slightly concave; cornua very short, broadly rounded; ventrally posterior margin straight. Punctations of basis capituli few, small, shallow. Porose areas oval, not deeply depressed, diameter of one area 0.11, 0.14; interporose area 0.16, 0.17. Palpi length 0.86, 0.86; breadth 0.23, 0.26. Segment II 1.9–2.1 times longer than segment III, length of segment II 0.5, 0.5; length of segment III 0.23, 0.26. Palpi wrinkled. Segment I ventrally without spur. Palpal setae: dorsolateral setae long, thin, curved; dorsomedial setae very long, thin, curved; ventrolateral setae shorter than dorsal setae, curved; ventromedial setae long, slightly curved. Palpal segment I ventrally with a long, almost straight seta. Hypostome length 0.74, 0.79; length of toothed portion 0.43; with a large corona of fine denticles apically, apex rounded, with small central notch; dental formula 3/3.

Legs. Coxa I with 2 subequal, short spurs, the external spur triangular, internal spur very broad, rounded. Coxa I with a blunt, spur-like callosity anteriorly. Coxae II–III each with 2 triangular spurs, the external spur larger. Coxa IV with 2 spurs, the external spur triangular, long, rounded, broad, internal spur very small, almost invisible. Trochant-

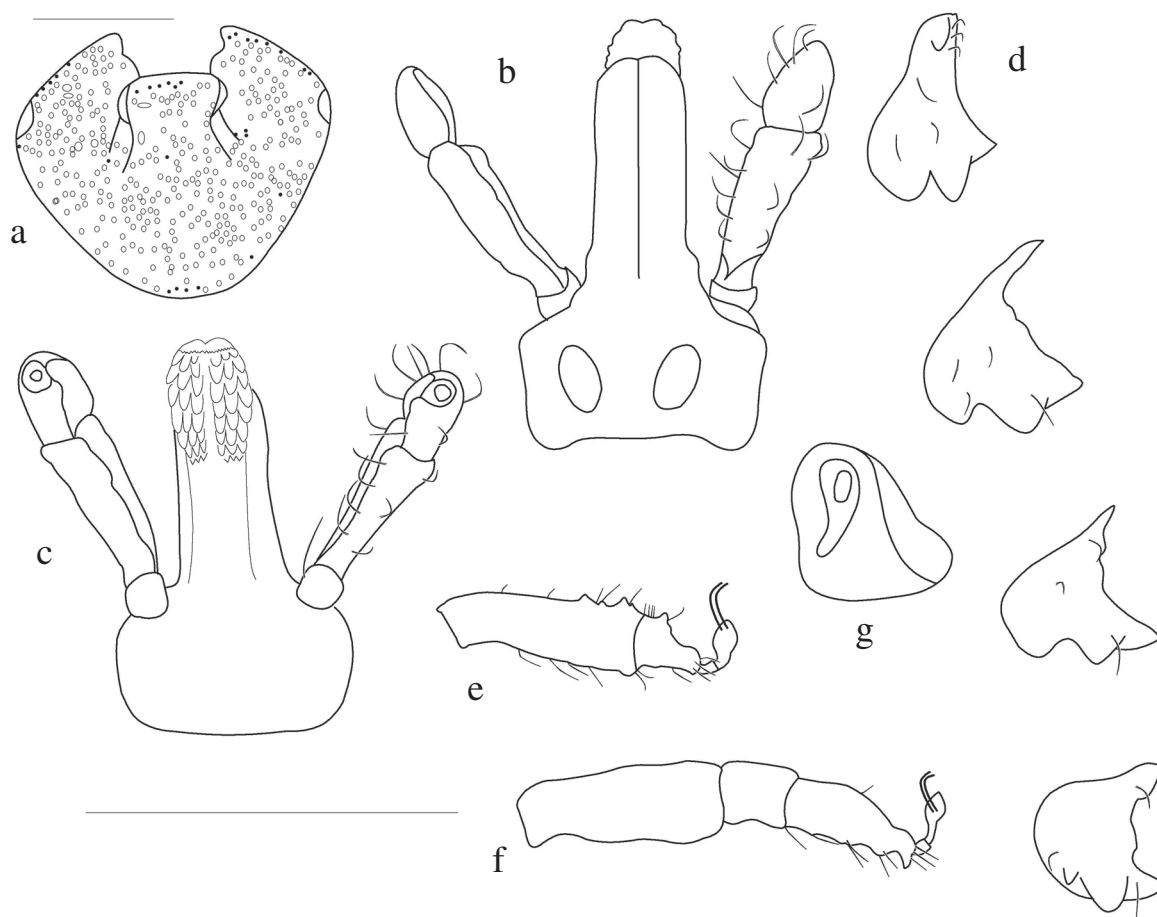


Fig. 21. *Amblyomma cruciferum*, female: a — scutum; b — gnathosoma, dorsal view; c — gnathosoma, ventral view; d — coxae; e — tarsus I; f — tarsus and tibia IV; g — spiracular plate. Scale bar 1 mm.

ers lack spurs. Tarsus I length 0.74, 0.74; width 0.23, 0.27; with a blunt, small ventral hump and with one high, rounded and two small, sharp humps dorsally. Tarsus IV length 0.61, 0.64, breadth 0.23, 0.27, with a sharp ventroapical hook and one small, blunt ventral hump. Tibia IV length 0.59, 0.64, breadth 0.23, 0.26.

Lateral and medial margins of spiracular plate nearly parallel, medial margin slightly convex, posterior margin almost straight, dorsal prolongation very narrow, pointed, perpendicular to anterior-posterior axis. Genital aperture «V» shaped, situated between coxae III. Postanal groove with unpaired, posteriorly directed, median groove extending to the festoon.

Material: 2 males and 2 females (US National Tick Collection, RML 57230) Brasilia, Manaus, Mona Island, September 1944, ex Iguana (*Cyclura monensis*), coll. H. A. Beatty.

Amblyomma darwini

Male (Fig. 22). Measurements from 5 specimens. Length from apices of scapulae to posterior scutal margin 2.7 (2.3–3.2); breadth 2.2 (1.9–2.5).

Outline oval, broadest at level of the middle of scutum. Scutum dark-brown; ornate, with dim, bronze pigment on bulging areas. Scutum with deep, round in the centre and oval in the posterial area depressions of different sizes, situated symmetrically. Scutal punctations deep, small and large, very dense inside the depressions. Cervical grooves long, deep, almost parallel or slightly converging anteriorly, then diverging. Marginal groove absent. Festoons rectangular, without chitinous plates extending beyond the posterior margin of the festoons but with very sclerotized posterior edges. The fifth festoon the broadest, central festoon narrow. Eyes marginal, large, slightly bulging.

Capitulum length from palpal apices to cornua apices 0.61 (0.53–0.69; breadth 0.48 (0.44–0.54). Posterior margin of basis capituli straight, cornua broad, rounded, lateral margins straight, ventrally posterior margin straight. Basis capituli with few, small, shallow punctations. Palpi length 0.39 (0.33–0.44); breadth 0.15 (0.13–0.17). Segment II dorsally slightly wrinkled, with narrow basis and triangular, rounded projection directed laterally. Segment

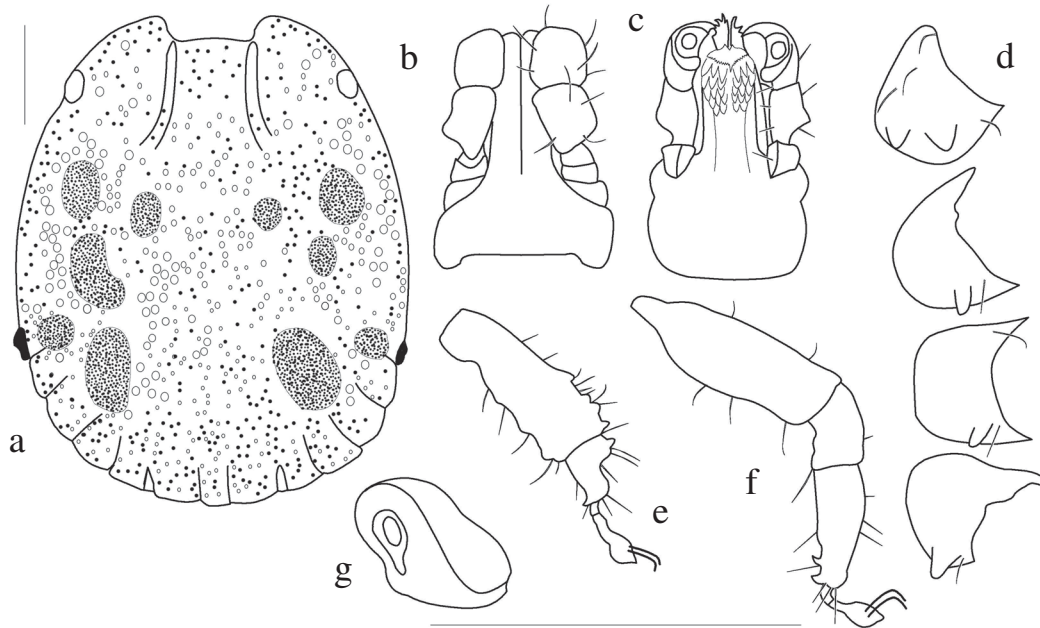


Fig. 22. *Amblyomma darwini*, male: a — scutum; b — gnathosoma, dorsal view; c — gnathosoma, ventral view; d — coxae; e — tarsus I; f — tarsus and tibia IV; g — spiracular plate. Scale bar 1 mm.

II 1.7–2 times longer than segment III, length of segment II 0.22 (0.19–0.24); length of segment III 0.12 (0.1–0.16). Segment I ventrally with a high, sharp ridge. Segment III ventrally with a rounded hump on anteromedial margin. Palpal setae long, thin, almost straight. Palpal segment I ventrally with a not long, thin seta. Hypostome length 0.33 (0.3–0.36); length of toothed portion 0.2 (0.19–0.21); apex with a corona of fine denticles, notched, each half of the apex triangular. Dental formula 3/3.

Legs marble-like: yellow with purple, very thin threads. Coxa I with 2 short, triangular, nearly equal spurs. Coxae II–IV each with a single, short, narrow, triangular spur, largest on IV. Trochanters lack spurs. Tarsus I length 0.62 (0.57–0.69); width 0.17 (0.14–0.2); with a small ventral hump and with some pointed humps dorsally. Tarsus IV length 0.53 (0.47–0.57); breadth 0.15 (0.14–0.17); with one strong, ventroapical hook and a large, pointed ventral hook. Tibia IV length 0.56 (0.53–0.57); breadth 0.2 (0.19–0.21).

Venter with long, thin, relatively dense setae; dorsal setae very short, thin, only on scutal margins. Genital aperture situated between coxae II. Spiracular plate long, narrow, lateral and medial margins parallel, medial margin concave, posterior margin convex, dorsal prolongation very narrow, forming an obtuse angle with anterior-posterior axis of spiracular plate. Lateral margin of spiracular plate with very large, bulging, chitinous border visible from above. Venter without ventral plaques but very

sclerotized, bulging in the central area. This bulge edged with a deep marginal groove with a flat surface from the outside. Postanal groove with a deep, unpaired, posteriorly directed, median groove extending to the ventral bulge.

Female (Fig. 23). Measurements from 4 specimens. Length from apices of scapulae to posterior body margin 2.9 (2.3–3.4); breadth 2.3 (1.8–2.85). Dorsal body setae long, wide, stick-like, situated in blocks forming the symmetrical pattern as figured (Fig. 23b). Scutum with some, stick-like, curved setae in each scapular area. Ventral body setae dense, long, thin, straight, in the posterior area wider and longer than dorsal setae. Marginal groove absent. Festoons rectangular.

Scutum length 1.4 (1.2–1.6); breadth 1.7 (1.4–2.1); dark-brown, ornate, with dim, bronze pigment on bulging areas. Posterior margin of scutum narrowly rounded, posterolateral margins nearly straight, anterolateral margins convex. Scutal punctations moderate in size, relatively dense, regularly. Scapulae short, broadly rounded. Scutum with 2 paired, very deep depressions with small and numerous punctations inside; medial depressions large, oval, lateral depressions small, rounded. Cervical grooves oval, deeply depressed, with numerous punctations inside. Eyes large, marginal, slightly bulging.

Capitulum length from palpal apices to cornua apices 0.8 (0.66–0.96); breadth 0.59 (0.5–0.67); posterior margin straight, lateral margins slightly convex; cornua very short, rounded; ventrally

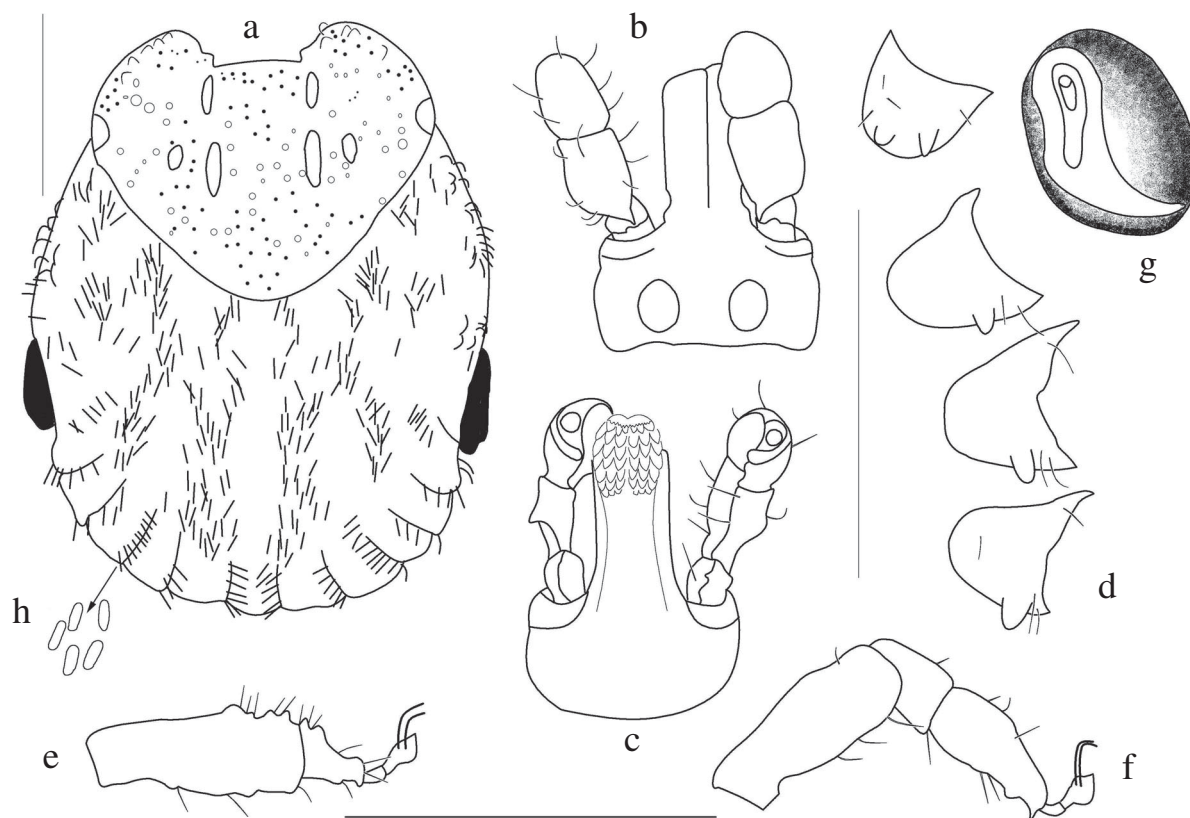


Fig. 23. *Amblyomma darwini*, female: a — scutum; b — gnathosoma, dorsal view; c — gnathosoma, ventral view; d — coxae; e — tarsus I; f — tarsus and tibia IV; g — spiracular plate; h — idiosomal setae. Scale bar 1 mm.

posterior margin straight. Surface of basis capituli smooth, bright. Porose areas small, oval, deeply depressed, diameter of one area 0.1; interporose area 0.14–0.16. Palpi length 0.55 (0.46–0.64); breadth 0.17 (0.14–0.21). Segment II dorsally with narrowly rounded, lateral projection. Segment II 1.5–1.7 times longer than segment III, length of segment II 0.31 (0.27–0.34; length of segment III 0.2 (0.16–0.24). Palpi slightly wrinkled. Segment I ventrally with high ridge. Segment III ventrally with a rounded hump on anteromedial margin. Palpal setae: dorsolateral setae slightly curved, relatively thick and long on II and more thin, needle-shaped, slightly curved on III; dorsomedial setae thin, needle-shaped, slightly curved; ventrolateral setae long, thin, slightly curved; ventromedial setae long, thin. Palpal segment I ventrally with a long, almost straight seta. Hypostome length 0.48 (0.4–0.54); length of toothed portion 0.28 (0.24–0.33); with a large corona of fine denticles apically, apex rounded, with small central notch; dental formula 3/3.

Legs marbled-like: yellow with purple, thin threads. Coxa I with 2 subequal, very short, triangular spurs. Coxae II–IV each with a single, short, narrow, triangular spur, largest on IV. Trochanters

lack spurs. Tarsus I length 0.75 (0.66–0.83); width 0.21 (0.16–0.27); with a small ventral hump and with some pointed humps dorsally. Tarsus IV length 0.6 (0.53–0.69), breadth 0.16 (0.13–0.19), with a sharp ventroapical hook and one small, blunt ventral hump. Tibia IV length 0.57 (0.51–0.64), breadth 0.23 (0.2–0.26).

Lateral and medial margins of spiracular plate parallel, medial margin concave, posterior margin slightly convex, dorsal prolongation very narrow, long, forming an obtuse angle with anterior-posterior axis of spiracular plate. Lateral margin of spiracular plate with very large and bulging, bright, chitinous border visible from above. Genital aperture «V» shaped, situated between coxae III. Postanal groove with unpaired, posteriorly directed, median groove extending to the festoon.

Material: 2 males, 2 females (US National Tick Collection, RML 64623, HH 37704) Galapagos Islands, Genovesa Island, Darwin Bay, 28.07.1974, ex *Amblyrhynchus cristatus*, coll. R.C.A. Rice, sent by Dr. H. Hoogstraal; 2 males, 2 females (US National Tick Collection, RML 64614) Galapagos Islands, Isabela Island, Punta Albemarle, 31.07.1974, ex *Amblyrhynchus cristatus*, coll. R.C.A. Rice.

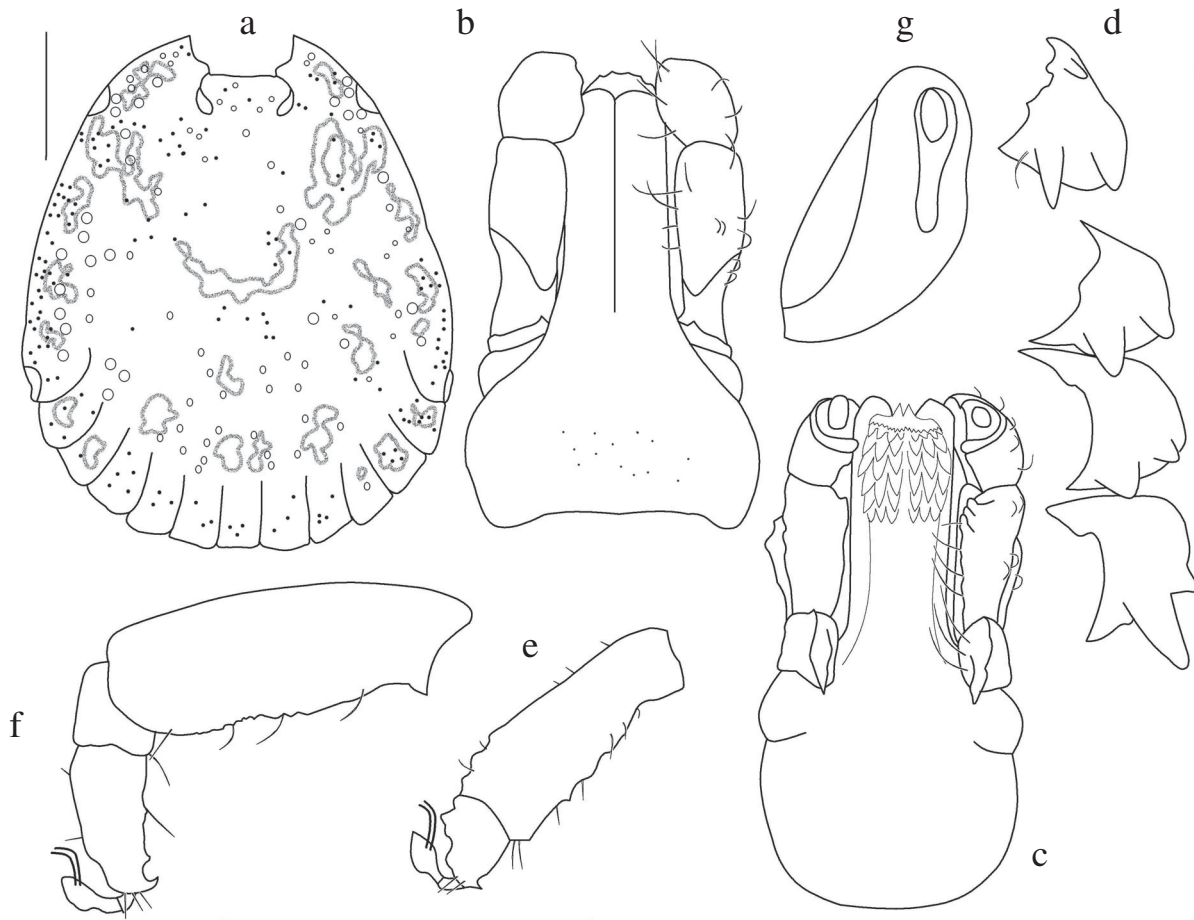


Fig. 24. *Amblyomma dissimile*, male: a — scutum; b — gnathosoma, dorsal view; c — gnathosoma, ventral view; d — coxae; e — tarsus I; f — tarsus and tibia IV; g — spiracular plate. Scale bar 1 mm.

Amblyomma dissimile

Male (Fig. 24). Measurements from 2 specimens. Length from apices of scapulae to posterior scutal margin 4.4, 4.45; breadth 3.5, 3.7. Outline oval, broadest at level of spiracular plate. Scutum brown; ornate, ornamentation consist of many small, lacy, metallic, goldish-red with green patches. Scutal punctations larger and more deep peripherally and small, shallow in the central area. Cervical grooves short, deep, converging. Marginal groove absent. Festoons narrow, without chitinous plates extending beyond the posterior margin of the festoons but with very sclerotized posterior edges. Eyes marginal, large, flat.

Capitulum length from palpal apices to cornua apices 1.4, 1.43; breadth 0.9, 0.9. Posterior margin of basis capituli straight, cornua short, sharply rounded, lateral margins convex, ventrally posterior margin straight. Basis capituli slightly wrinkled, with few, small, shallow punctations. Palpi length 0.86, 0.9; breadth 0.21, 0.21. Segment II dorsally wrinkled, with triangular, rounded projection di-

rected posteriorly. Segment II 2.2 times longer than segment III, length of segment II 0.56, 0.57; length of segment III 0.24, 0.26. Segment I ventrally with a sharp, sinuous ridge ending posteriorly with a pointed spur. Segment III ventrally with a small, rounded hump on anteromedial margin. Palpal setae: dorsolateral setae short, relatively thick, slightly curved; dorsomedial setae longer, thin, slightly curved; ventrolateral setae short, curved; ventromedial setae long, thick, slightly curved. Palpal segment I ventrally with 2 long, thick, slightly curved setae in first specimen and with 3 setae per segment in second specimen. Hypostome length 0.83, 0.83; length of toothed portion 0.41, 0.44; apex notched, each half of the apex concave, with a triangular projection near the median axis. Dental formula 3/3.

Legs. Coxa I with 2 narrow, triangular, sharply rounded spurs, the external spur longer. Coxa I with an evident, sharp, spur-like callosity anteriorly. Coxae II–III each with 2 short, triangular, rounded spurs, the external spur larger. Coxa IV with 2

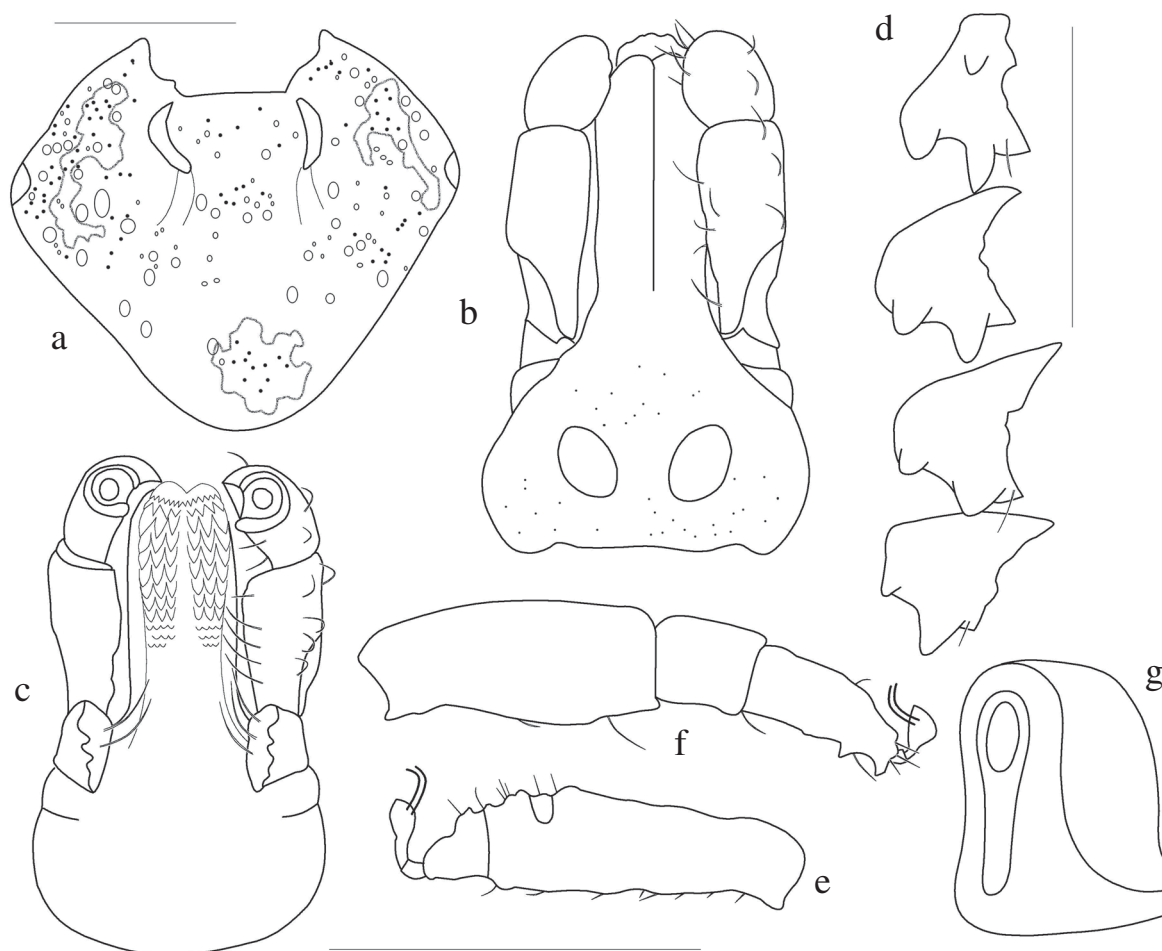


Fig. 25. *Amblyomma dissimile*, female: a — scutum; b — gnathosoma, dorsal view; c — gnathosoma, ventral view; d — coxae; e — tarsus I; f — tarsus and tibia IV; g — spiracular plate. Scale bar 1 mm.

spurs, the external spur large, triangular, directed posteromedially, internal spur very short, triangular. Trochanters lack spurs. Tarsus I length 0.93, 0.99; width 0.27, 0.29; with a small, pointed apical hump. Tarsus IV length 0.69, 0.7; breadth 0.23, 0.24; with one strong, ventroapical hook and a large, pointed ventral hook. Tibia IV length 1.13, 1.14; breadth 0.37, 0.37.

Venter with dense, short, curved setae more thick than dorsal setae; dorsal setae few, very short, thin, only on festoons. Genital aperture situated between coxae II. Spiracular plate long, lateral and medial margins parallel, medial margin concave, posterior margin convex, dorsal prolongation very long, fluently curved. Venter without ventral plaques. Postanal groove with a thin, unpaired, posteriorly directed, median groove extending to the festoon.

Female (Fig. 25). Measurements from 2 specimens. Length from apices of scapulae to posterior body margin 4.5, 4.8; breadth 3.4, 3.7. Dorsal body setae very short and thin, few only on festoons,

ventral body setae few, very short and thin. Marginal groove complete, beginning near the posterior margin of scutum. Festoons broad.

Scutum length 2.4, 2.4; breadth 2.5, 2.7; brown, ornate, a large, metallic, goldish-crimson patch in the posterior part of scutum and two large patches between scapulae and eyes. Posterior margin of scutum narrowly rounded, posterolateral margins nearly straight, anterolateral margins convex. Scutal punctations few, small and very large. Scapulae sharp, their medial margins with ledges. Cervical grooves long, deep and converging anteriorly, then shallow and diverging. Eyes large, marginal, flat.

Capitulum length from palpal apices to cornua apices 1.5, 1.57; breadth 0.9, 0.94; posterior margin straight or slightly undulated, lateral margins convex; cornua very short, rounded; ventrally posterior margin convex. Punctations of basis capituli few, small, shallow. Porose areas oval, not deeply depressed, diameter of one area 0.19, 0.19; interporose area 0.14, 0.14. Palpi length 0.97, 1.0; breadth 0.21, 0.21. Segment II dorsally slightly wrinkled,

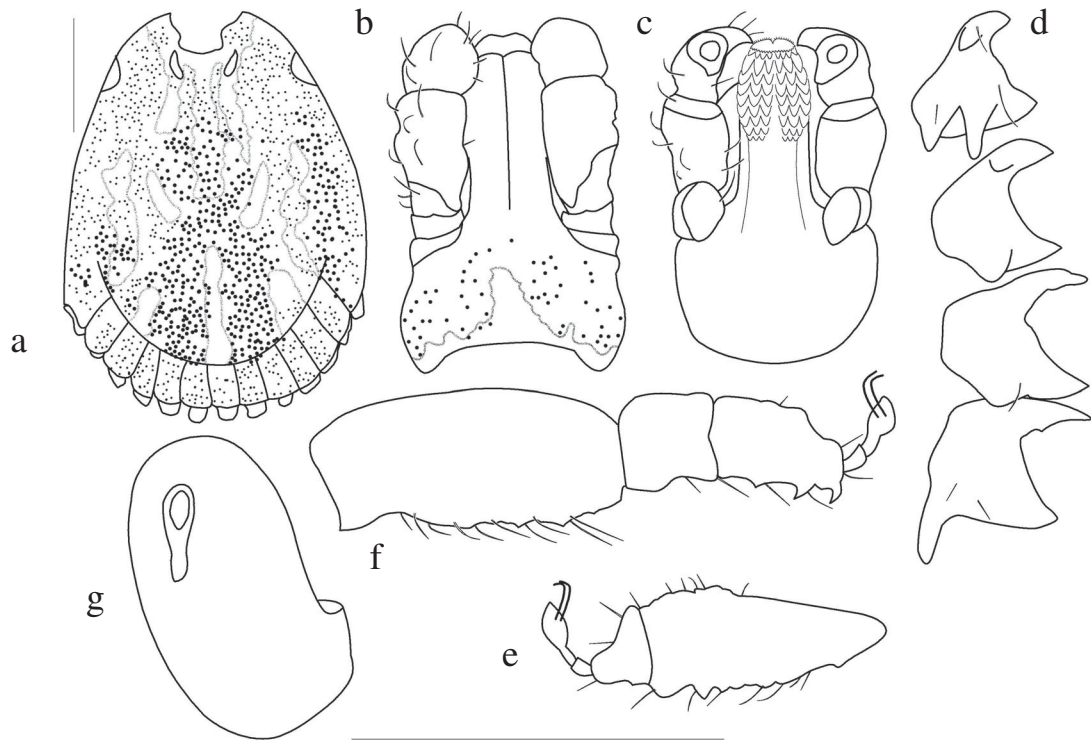


Fig. 26. *Amblyomma dubitatum*, male: a — scutum; b — gnathosoma, dorsal view; c — gnathosoma, ventral view; d — coxae; e — tarsus I; f — tarsus and tibia IV; g — spiracular plate. Scale bar 1 mm.

with long, narrowly rounded projection directed posteriorly. Segment II 2.2–2.4 times longer than segment III, length of segment II 0.64, 0.67; length of segment III 0.27, 0.3. Segment I ventrally with a sharp, sinuous ridge ending posteriorly with a pointed spur. Segment III ventrally with a small, rounded hump on anteromedial margin. Palpal setae: dorso-lateral setae short, relatively thick, curved; dorso-medial setae long, more thin, almost straight; ventrolateral setae short, thick, curved; ventromedial setae long, slightly curved. Palpal segments I each ventrally with 2 long, thick, slightly curved setae in the first specimen and in the second specimen one segment with 2 and the other with 3 setae. Hypostome length 0.89, 0.9; length of toothed portion 0.43, 0.44; apex rounded, notched; dental formula 3/3.

Legs. Coxa I with 2 short, triangular, sharply rounded spurs, the external spur slightly longer. Coxa I with an evident, sharp, spur-like callosity anteriorly. Coxae II–IV each with 2, triangular, rounded spurs, the external spur larger, internal spur on IV very small. Trochanters lack spurs. Tarsus I length 1.07, 1.07; width 0.29, 0.29; without spurs. Tarsus IV length 0.86, 0.89, breadth 0.21, 0.23, with a sharp ventroapical hook and one pointed ventral hump. Tibia IV length 1.03, 1.07, breadth 0.31, 0.33.

Lateral and medial margins of spiracular plate parallel, medial margin concave, posterior margin almost straight, dorsal prolongation narrow, long, approximately perpendicular or forming a acute angle with anterior-posterior axis of spiracular plate. Lateral margin of spiracular plate with very large, chitinous border. Genital aperture «U» shaped, situated between coxae II–III. Postanal groove with unpaired, posteriorly directed, median groove extending to the festoon.

Material: 2 males, 2 females (US National Tick Collection, RML 46147) Trinidad, Soldado Rock, 16.06.1963, ex *Iguana iguana*, coll. T.H.G. Aitken.

Amblyomma dubitatum

Male (Fig. 26). Measurements from 2 specimens. Length from apices of scapulae to posterior scutal margin 3.4, 3.9; breadth 2.6, 2.9. Outline oval, broadest at level of spiracular plate. Scutum dark-brown; ornate, some large, confluent, metallic, pale-pink patches cover almost all of the scutum. Scutal punctations dense, larger in the central and posterior areas, along the marginal groove and on the festoons. Punctations absent on symmetrical, bright areas without the metallic pigment. Large punctations on the metallic patches brown, so these

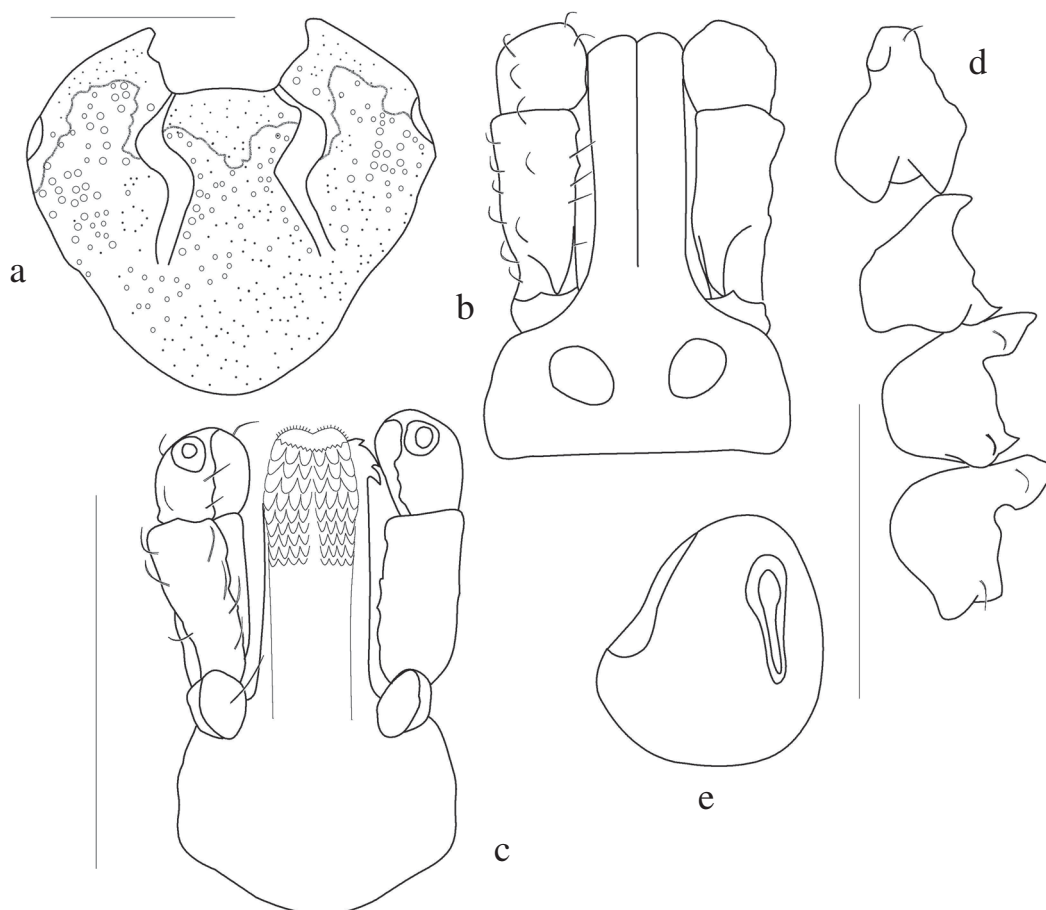


Fig. 27. *Amblyomma dubitatum*, female: a — scutum; b — gnathosoma, dorsal view; c — gnathosoma, ventral view; d — coxae; e — spiracular plate. Scale bar 1 mm.

patches seems to be perforated. Cervical grooves pit-like, deep, narrow, crescent, situated at a distance from anterior margin of scutum. Marginal groove complete, beginning at level of legs IV. Festoons very narrow, with rectangular, chitinous plates extending beyond the posterior margin of the festoons. Eyes marginal, large, slightly bulging.

Capitulum length from palpal apices to cornua apices 0.87, 0.97; breadth 0.6, 0.67. Posterior margin of basis capituli straight, cornua large, triangular, rounded, lateral margins convex, ventrally posterior margin convex. Basis capituli with metallic, goldish-pink patch in the posterior part and with small, shallow, dense punctations. Palpi length 0.54, 0.64; breadth 0.2, 0.23. Segment II dorsally wrinkled. Segment II 1.5–1.8 times longer than segment III, length of segment II 0.29, 0.36; length of segment III 0.19, 0.2. Segment I ventrally with an oval paddle directed posteriorly and ventrally. Segment III ventrally with a triangular, rounded hump on anteromedial margin. Palpal setae: dorsolateral setae thin, slightly curved; dorsomedial setae short, thin, straight; ventrolateral setae short, slightly

curved; ventromedial setae short, almost straight. Palpal segment I ventrally with a relatively short, slightly curved seta. Hypostome length 0.5, 0.53; length of toothed portion 0.3, 0.33; apex with a corona of fine denticles, notched, first row of denticles directed anteriorly. Dental formula 3/3.

Legs. Coxa I with 2 subequal, triangular, sharply rounded spurs, the internal spur broader. Coxa I with a sharp, triangular callosity anteriorly. Coxae II–III each with a single, short, triangular, broadly rounded spur. Coxa IV with a single, long, narrow, triangular, straight or slightly curved laterally spur. Trochanters lack spurs. Tarsus I length 0.79, 0.86; width 0.29, 0.29; with 2 blunt and pointed ventral humps and with high, sharp ridge dorsally. Tarsus IV length 0.6, 0.67; breadth 0.2, 0.24; with one strong, ventroapical hook and a large, pointed ventral hook. Tibia IV length 0.79, 0.88; breadth 0.31, 0.4.

Venter with few, very short and thin setae. Genital aperture situated between coxae II. Spiracular plate very large, oval, dorsal prolongation very broad, forming an acute angle with anterior-posterior axis. Postanal groove with a short, unpaired,

posteriorly directed, median groove extending to the unpaired anal shield. Integumentary hard elements of the ventral skeleton of idiosoma consist of long, narrow unpaired anal and one paired, very small postanal shields, and large, very sclerotized festoons' shields.

Female (Fig. 27). Measurements from one specimen. Length from apices of scapulae to posterior body margin 4.25; breadth 3.1. Dorsal and ventral body setae very short and thin, almost invisible. Marginal groove complete, beginning near the posterior margin of scutum. Festoons nearly square.

Scutum length 2.37; breadth 2.47; light-brown, ornate, whity-gray, dim patch covers almost all of the scutum excepting the anterior and anterolateral margins, and cervical grooves. Posterior margin of scutum narrowly rounded, posterolateral margins slightly concave. Scutal punctations deep, regularly, larger in each lateral area. Scapulae long, sharp, medial margins with ledges. Cervical grooves long, deep and converging anteriorly, then more shallow, straight and diverging. Eyes large, marginal, slightly bulging.

Capitulum length from palpal apices to posterior margin of basis 1.29; breadth 0.94; posterior margin straight, lateral margins slightly convex; cornua absent; ventrally posterior margin narrowly rounded. Punctations of basis capituli very few, small, shallow. Porose areas small, oval, deeply depressed, diameter of one area 0.17; interporose area 0.14. Palpi length 0.9; breadth 0.41. Segment II 3 times longer than segment III, length of segment II 0.57; length of segment III 0.19. Palpi wrinkled. Segment I ventrally with a large, oval paddle directed posteriorly and ventrally. Palpal setae: dorsolateral setae not long, thin, curved; dorsomedial setae short, more thick, slightly curved; ventrolateral setae thin, curved; ventromedial setae thick, curved on II and thin, almost straight on III. Palpal segment I ventrally with a not long, slightly curved seta. Hypostome length 0.89; length of toothed portion 0.46; with a large corona of fine denticles apically, apex bluntly rounded, with small central notch, first row of denticles directed anteriorly; dental formula 3/3 in the 4 anterior rows then 4/4.

Legs. Coxa I with 2 subequal, triangular, broad spurs, the internal spur broader. Coxa I with a rounded, spur-like callosity anteriorly. Coxae II–III each with a single, rounded spur. Coxa IV with a single, larger than on III, triangular, rounded spur. Trochanters lack spurs. All tibia and tarsi broken.

Spiracular plate very large, rounded, dorsal prolongation very broad, forming an acute angle with anterior-posterior axis. Genital aperture broken. Postanal groove with thin, unpaired, posteriorly directed, median groove extending to the festoon.

Material: 2 males (US National Tick Collection, RML 107040) Brazilia, Mato Grosso, Pantanal, Rio Paraguai, Fazenda Acutizal, 19.10.1977, ex *Hydrochoerus hydrochaeris*, coll. G. Shaller and one female (US National Tick Collection, RML 34690) Paraguay, Rio, South of Descalvades, from capybara.

Amblyomma extraoculatum

Male (Fig. 28). Measurements from 2 specimens. Length from apices of scapulae to posterior scutal margin 3.5, 3.6; breadth 2.8, 2.8. Outline oval, broadest at level of legs IV. Scutum brown, inornate; with two lateral X-shaped wrinkles, scutal punctations dense, small, shallow and few, large, more deep, some areas of scutum bright, without punctations. Cervical grooves deep, short, converging. Marginal groove absent. Festoons narrow, without chitinous plates extending beyond the posterior margin of the festoons. Eyes marginal, large, slightly bulging.

Capitulum length from palpal apices to cornua apices 1.07, 1.11; breadth 0.67, 0.69. Posterior margin of basis capituli straight, cornua large, triangular, rounded, lateral margins convex, ventrally posterior margin straight. Basis capituli with few, small, shallow punctations. Palpi length 0.71, 0.71; breadth 0.2, 0.2. Segment II dorsally smooth, bright, with triangular, rounded projection directed posteriorly. Segment II 1.8–2.0 times longer than segment III, length of segment II 0.43, 0.44; length of segment III 0.21, 0.24. Segment I ventrally without spurs. Palpal setae: dorsolateral setae short, slightly curved on II and longer, almost straight on III; dorsomedial setae short, slightly curved on II and long, almost straight on III; ventrolateral setae short, thick; ventromedial setae long, thick, almost straight. Palpal segment I ventrally with 2 long, almost straight setae. Hypostome length 0.64, 0.66; length of toothed portion 0.31, 0.33; apex notched, with a corona of fine denticles, first row directed anteriorly; each half of the apex straight, with a triangular projection near the median axis. Dental formula 4/4.

Legs. Coxa I with 2 spurs, the external spur longer and reaching the anterior margin of coxa II, narrow, triangular; internal spur broader, triangu-

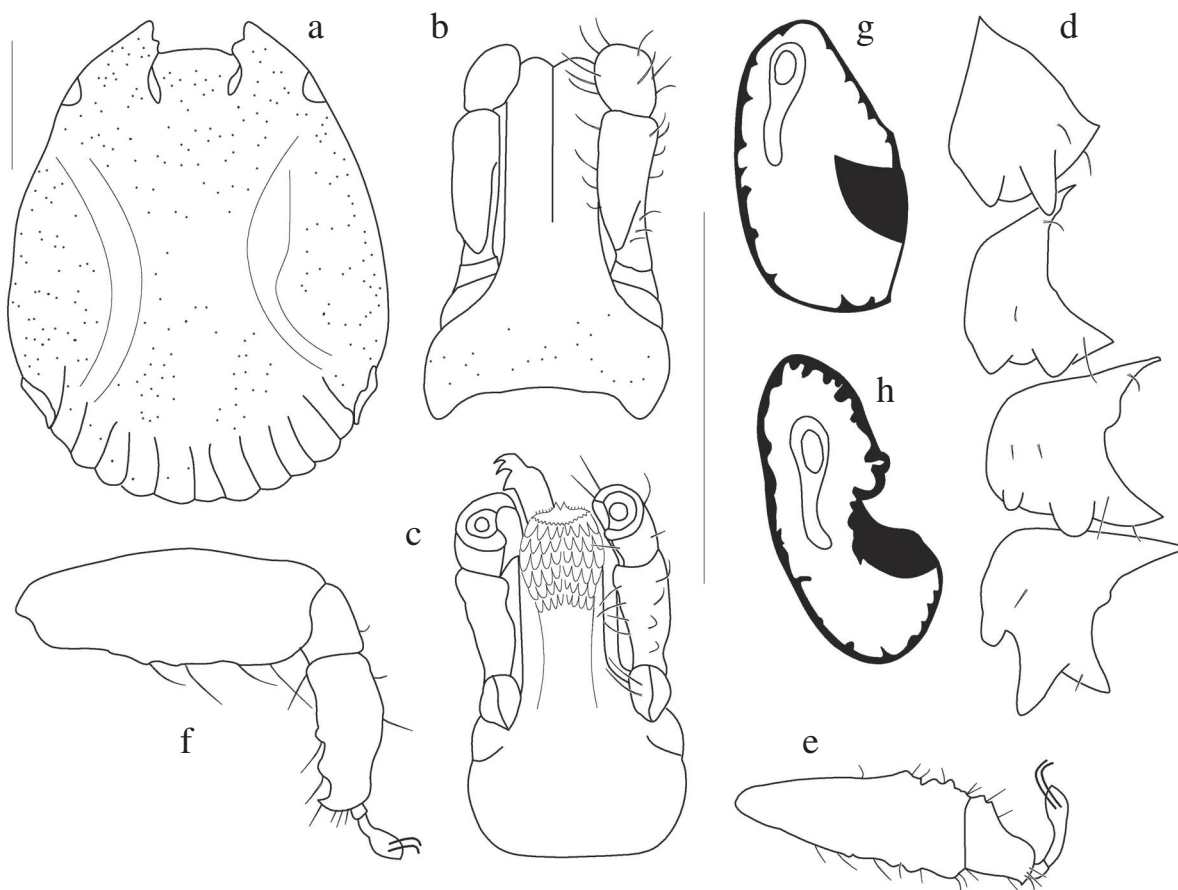


Fig. 28. *Amblyomma extraoculatum*, male: a—scutum; b—gnathosoma, dorsal view; c—gnathosoma, ventral view; d—coxae; e—tarsus I; f—tarsus and tibia IV; g, h—spiracular plates. Scale bar 1 mm.

lar, rounded. Coxae II–III each with 2 short, triangular, rounded spurs, the external spur larger, the external spur larger. Coxa IV with 2 triangular, narrowly rounded spurs, the external spur long. Trochanters lack spurs. Tarsus I length 0.9, 0.91; width 0.29, 0.29; with a blunt ventral hump. Tarsus IV length 0.69, 0.74; breadth 0.2, 0.21; with one strong, ventroapical hook and a pointed ventral hook. Tibia IV length 0.99, 1.0; breadth 0.36, 0.36.

Venter with dense, short, thick, cone-like setae; dorsal setae short and thin, only along the edges of festoons. Genital aperture situated between coxae II. Spiracular plate long, with very broad dorsal prolongation, chitinous border scalloped as figured (Fig. 28g). Integumentary hard elements of the ventral skeleton of idiosoma consist of relatively large, rectangular, festoons' shields. Postanal groove with a thin, unpaired, posteriorly directed, median groove extending to the festoon.

Female (Fig. 29). Measurements from 2 specimens. Length from apices of scapulae to posterior body margin 4.9, 5.3; breadth 3.7, 4.3. Dorsal body setae very dense, relatively long, thick, flat, stick-like, ventral body setae less dense, short, on fes-

toons longer, thick, stick-like. Marginal groove incomplete, beginning at level of legs III and ending before the first festoon. Festoons rectangular.

Scutum length 2.3, 2.4; breadth 2.4, 2.7; brown, ornate, a large, bifurcate in the anterior part, metallic, crimson patch in the central part of scutum and two large patches between scapulae and eyes. Posterior margin of scutum narrowly rounded, posterolateral margins nearly straight, anterolateral margins slightly convex. Scutal punctations dense, small, shallow and medium in size and more deep. Scapulae sharp, their medial margins with ledges. Cervical grooves long, converging anteriorly, then slightly diverging, almost reaching the posterior scutal margin. Eyes large, marginal, slightly bulging.

Capitulum length from palpal apices to cornua apices 1.56, 1.6; breadth 1.03, 1.07; posterior margin concave, lateral margins almost straight; cornua short, triangular, broadly rounded; ventrally posterior margin straight. Porose areas oval, deeply depressed, diameter of one area 0.17, 0.21; interporose area 0.14, 0.19. Palpi length 1.1, 1.11; breadth 0.18, 0.2. Segment II dorsally wrinkled, with triangular,

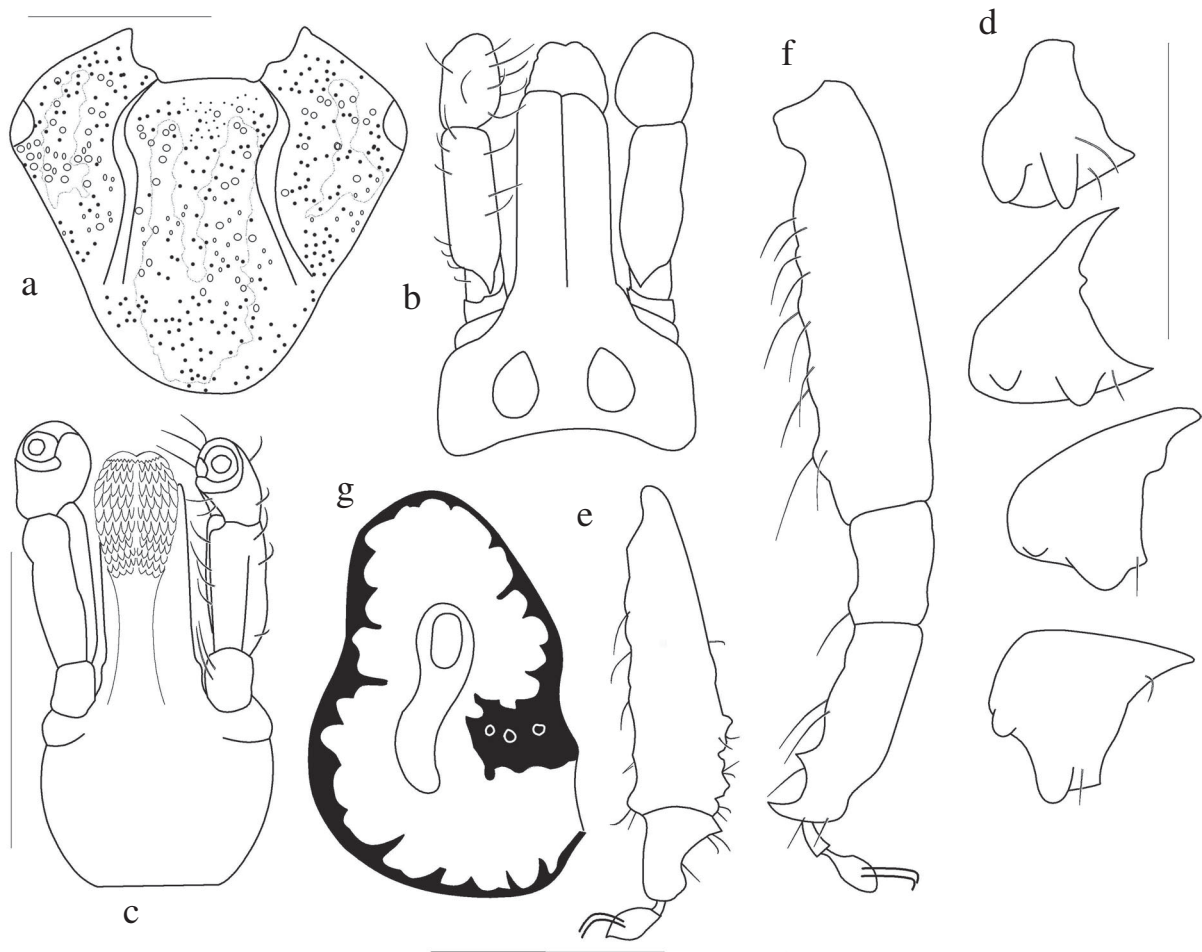


Fig. 29. *Amblyomma extraoculatum*, female: a — scutum; b — gnathosoma, dorsal view; c — gnathosoma, ventral view; d — coxae; e — tarsus I; f — tarsus and tibia IV; g — spiracular plate. Scale bar 1 mm.

narrowly rounded projection. Segment II 1.8 times longer than segment III, length of segment II 0.64, 0.68; length of segment III 0.36, 0.37. Segment I ventrally without spurs. Palpal setae: dorsolateral setae short, thick, stick-like, slightly curved on II and long, thin, slightly curved on III; dorsomedial setae long, thin, almost straight; ventrolateral setae short, thick, slightly curved; ventromedial setae long, thick, slightly curved. Palpal segment I ventrally with 2 long, almost straight setae. Hypostome length 0.93, 1.0; length of toothed portion 0.5, 0.53; apex bluntly rounded, notched, with a corona of fine denticles, first row directed anteriorly; dental formula 5/5.

Legs. Coxa I with 2 triangular, rounded spurs, the external spur longer; internal spur broader. Coxae II–III each with 2 short, triangular, rounded spurs, the external spur broader, internal spur on III very small. Coxa IV with 2 triangular, rounded spurs, the internal spur very short. Trochanters lack spurs. Tarsus I length 1.19, 1.21; width 0.29, 0.31; without apical spurs but with rounded ventral hump;

dorsally with some, sharp humps. Tarsus IV length 1.04, 1.17, breadth 0.24, 0.27, with very sharp ventroapical hook and one pointed ventral hump. Tibia IV length 1.31, 1.37, breadth 0.39, 0.39.

Spiracular plate large, medial margin concave, posterior margin slightly convex, dorsal prolongation very broad, perpendicular to anterior-posterior axis; chitinous border of spiracular plate scalloped as figured (Fig. 29g). Genital aperture «U» shaped, situated between coxae II–III. Postanal groove with unpaired, posteriorly directed, median groove extending to the festoon.

Material: 2 males, 2 females (US National Tick Collection, RML 50100) Venezuela, Bolivar, 146 km S., 7 km E. Ciudad Bolivar, Hato San Jose, 11.03.1967, ex *Hydrochoeris hydrochoeris*, coll. N.E. Peterson, D.B. & R.B. Peacock.

Amblyomma fulvum

Male (Fig. 30). There is male holotype in the US National Tick Collection only and we quote the

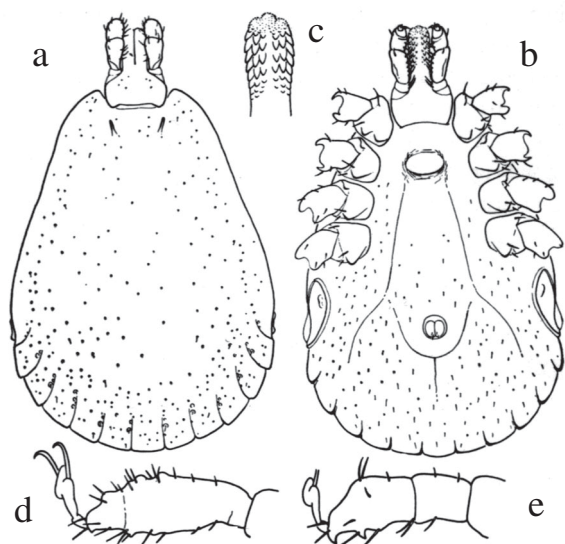


Fig. 30. *Amblyomma fulvum*, male: a — dorsal view; b — ventral view; c — hypostome, d — tarsus I; e — tarsus IV. After Keirans (1972).

description and figures by Keirans (1972). Length from apices of scapulae to posterior scutal margin 4.25, breadth 3.18. Outline oval, broadest at level of spiracular plates. Scutum very smooth, glabrous, inornate. Scutal punctations extremely sparse, indistinct, minute. Cervical grooves short, moderately deep, converging and slightly curved. Marginal groove absent. Festoons long, not clearly delineated, ventrally each festoon, excluding the central, bearing a broad, slightly extended posterointernal tubercle. Eyes flat, inconspicuous.

Capitulum length from palpal apices to posterior margin of basis 1.2, breadth 0.75. Posterior margin of basis capituli straight, cornua short, bluntly rounded; lateral margins slightly convex, ventrally posterior margin concave. Palpi moderate in length and width, length of segment II 0.38, length of segment III 0.25, the articulation between the 2 segments slightly indented. Palpal setae: dorsolateral setae short, slightly curved; dorsomedial setae slightly longer, almost straight; ventrolateral setae short, slightly curved; ventromedial setae relatively long, almost straight. Palpal segment I ventrally with 2 long setae. Hypostome length of toothed portion 0.4; apex rounded, with a large corona of fine denticles; dental formula 3/3.

Legs. Coxa I with 2 broad, subequal spurs, the internal spur larger. Coxae II–IV each with a single, triangular spur; increasing in size through coxa IV. Trochanters lack spurs. Tarsus I length 0.75, width 0.29; without apical spur. Tarsus IV

length 0.7, breadth 0.25; with a large, pointed apical hook and triangular, pointed ventral spur.

Genital aperture situated between coxae II. Spiracular plate comma-shaped, with narrow dorsal prolongation forming an obtuse angle with anterior-posterior axis of spiracular plate. Integumentary hard elements of the ventral skeleton of idiosoma absent. Postanal groove with a short, unpaired median groove not extending to the festoon.

Amblyomma fuscum

Male (Fig. 31). Measurements from 3 specimens. Length from apices of scapulae to posterior scutal margin 4.43 (4.15–4.68); width 3.63 (3.5–3.9). Outline oval, broadest at level of spiracular plates. Scutum ornate, brown-yellowish, with small light spots. Scutal punctations small and large, numerous, shallow in each lateral area, absent in the central area. Medial margins of scapulae with ledges. Cervical grooves short, deep, converging. Marginal groove absent. Festoons rectangular, without chitinous plates extending beyond the posterior margin of the festoons. Eyes flat.

Capitulum length from palpal apices to cornua apices 1.43 (1.33–1.59), width 0.8 (0.73–0.86), dorsally with few shallow punctations, posterior margin slightly concave, cornua absent or very small, broadly rounded, external margins straight or slightly convex, ventrally posterior margin straight. Palpi length 1.01 (0.93–1.1), width 0.26 (0.24–0.29); shallowly wrinkled. Segment II 2.2 times longer than segment III, length of segment II 0.64 (0.57–0.71); length of segment III 0.3 (0.29–0.31). Segment I ventrally with a sharp ridge. Hypostome length 0.93 (0.86–1.0); length of toothed portion 0.48 (0.43–0.5); with a small corona of fine denticles, apex notched, each half of the apex with a triangular projection near the median axis. Dental formula 4/4.

Legs. Coxa I with 2 broad, rounded spurs, the external spur slightly longer, internal spur broader. Coxa I with a large, strong spur-like callosity in the anterior part. Coxae II–III each with a single broadly rounded paddle-shaped spur. Coxa IV with a triangular, narrowly rounded spur. Trochanters lack spurs. Tarsus I length 1.1 (1.0–1.2); width 0.32 (0.29–0.36); with 2 small ventral humps and one sharp dorsal hump. Tarsus IV length 0.79 (0.77–0.89); width 0.21 (0.19–0.23); with 1 strong ventroapical hook and 1 strong ventral hook. Tibia IV length 0.90 (0.79–1.0), width 0.33 (0.31–0.36).

Venter with numerous, short, thick, cone-like setae. Genital aperture situated between coxae II–III. Medial margin of spiracular plate straight, pos-

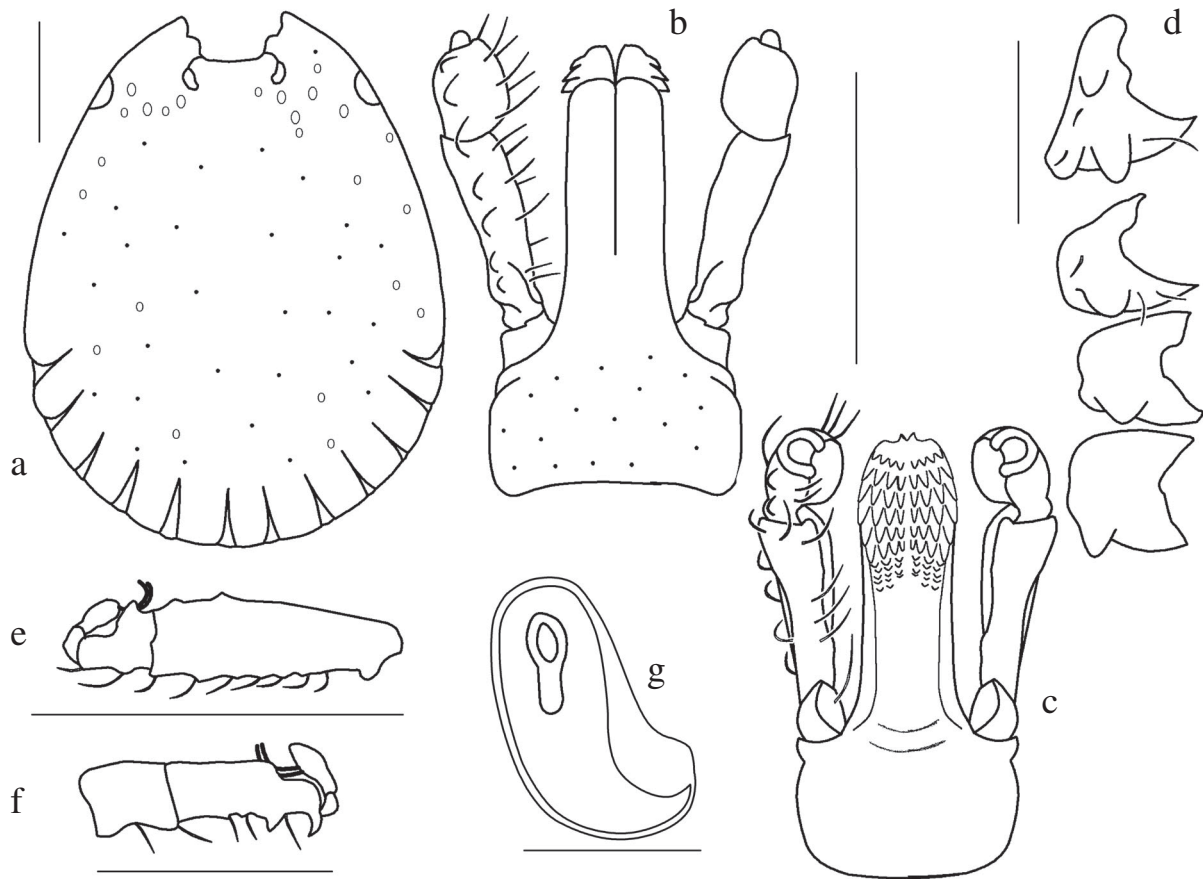


Fig. 31. *Amblyomma fuscum*, male: a — scutum; b — gnathosoma, dorsal view; c — gnathosoma, ventral view; d — coxae; e — tarsus I; f — tarsus and tibia IV; g — spiracular plate. Scale bar 1 mm.

terior margin convex, medial and lateral margins parallel, dorsal prolongation narrow, perpendicular to anterior-posterior axis. Postanal groove with unpaired, posteriorly directed, median groove extending to the festoon. Integumentary hard elements of the ventral skeleton of idiosoma consist of festoons' shields, integument of the ventral hind half of idiosoma with punctations.

Female (Fig. 32). Measurements from 2 specimens (one female slightly engorged). Length from apices of scapulae to posterior body margin 4.55, width 3.75. Dorsal body setae very few, short, thin. Ventral body setae few, short, stick-like, curved. Marginal groove thin, incomplete, beginning at level of legs IV and embracing first festoons. Festoons evident.

Scutum length 2.3, 2.6; width 2.9, 3.0. Ornate, brown-yellowish, with small light spots, posterior margin broadly rounded, posterolateral margins slightly concave. Medial margins of scapulae with ledges. Scutal punctations deep, small, numerous in each scapular area and very few, deep and large in each posterolateral area. Cervical grooves pit-like. Eyes flat.

Capitulum length from palpal apices to cornua apices 1.5, 1.6; width 0.97, 1.0; cornua very small, broadly rounded, posterior margin slightly concave, lateral margins bluntly rounded; ventrally posterior margin straight; dorsally with few shallow punctations. Porose areas oval, deeply depressed, diameter of one area 0.17, interporose area 0.19. Palpi length 1.2, 1.1; width 0.26, 0.24. Segment II 2.3, 2.7 times longer than segment III, length of segment II 0.76, length of segment III 0.34, 0.29. Palpi shallow wrinkled. Segment I ventrally with a sharp ridge. Hypostome length 1.0, 1.2; length of toothed portion 0.59, 0.61; with a large corona of fine denticles apically, apex bluntly rounded, notched; dental formula 4/4.

Legs. Coxa I with 2 broad, rounded spurs, the external spur slightly longer. Coxa I with a large spur-like callosity in the anterior part. Coxae II–III each with a single broadly rounded paddle-shape spur. Coxa IV with a broad triangular spur. Trochanters lack spurs. Tarsus I length 1.3, 1.4; width 0.33, with 2 small ventral humps. Tarsus IV length 0.93, 1.0; width 0.33, with one strong ventroapical hook and one strong ventral hook. Tibia IV length 1.07, 0.93; width 0.34, 0.33.

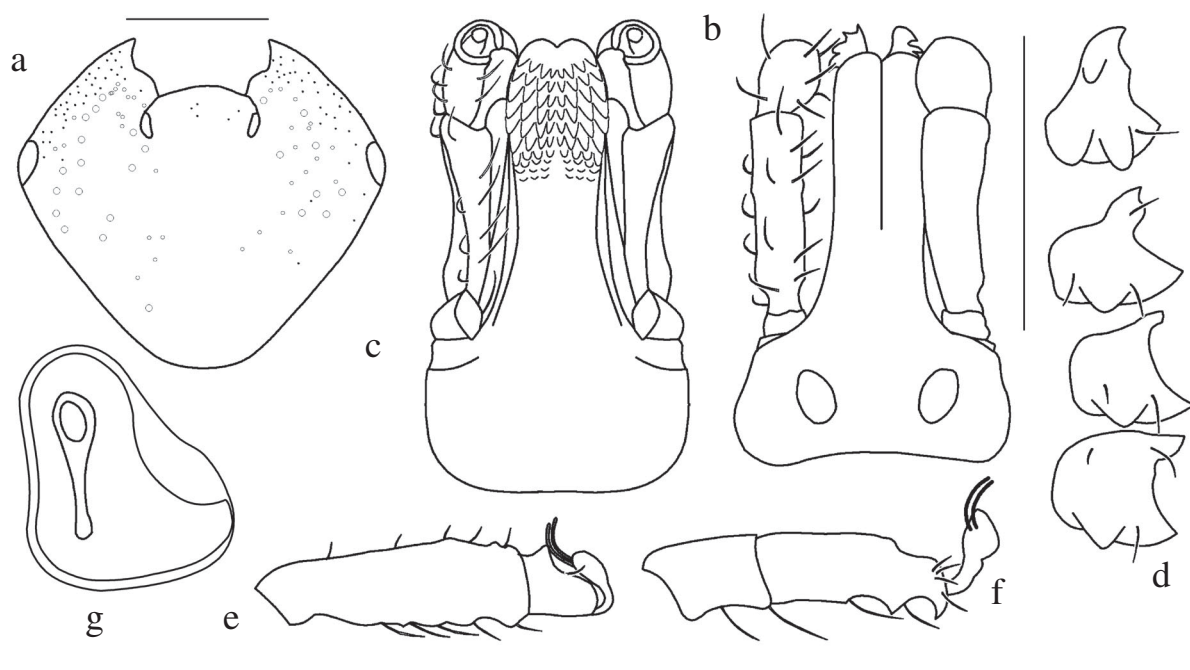


Fig. 32. *Amblyomma fuscum*, female: a — scutum; b — gnathosoma, dorsal view; c — gnathosoma, ventral view; d — coxae; e — tarsus I; f — tarsus and tibia IV; g — spiracular plate. Scale bar 1 mm.

Medial margin of spiracular plate straight or slightly concave, posterior margin straight, medial and lateral margins parallel, dorsal prolongation relatively broad, forming an acute angle with anterior-posterior axis. Genital aperture «U» shaped, situated between coxae II–III. Postanal groove with unpaired, posteriorly directed, median groove extending to the festoon.

Material: 3 males and 2 females (Instituto Butantan, Laboratorio de Parasitologia, Sao Paulo, Brasil, IBSP 1457) Nao tem, 9.08.1938, ex *Tatu mirim* (Amadillo), coll. A. Prado.

Amblyomma geayi

Male (Fig. 33). Measurements from 2 specimens. Length from apices of scapulae to posterior scutal margin 7.0, 7.05; breadth 5.0, 5.4. Outline oval, broadest at level of spiracular plate. Scutum red-brown; ornate, ornamentation consist of many small, lacy, metallic, goldish-pink and green patches forming two longitudinal rows. Scutal punctations small, very dense, regularly. Cervical grooves short, deep, almost straight, converging. Marginal groove complete, beginning at level of legs III. Festoons narrow, long, without chitinous plates extending beyond the posterior margin of the festoons. Eyes marginal, large, slightly bulging.

Capitulum length from palpal apices to posterior margin of basis 1.6, 1.64; breadth 1.14, 1.21. Posterior margin of basis capituli straight, cornua absent, lateral margins triangular, narrowly round-

ed, ventrally posterior margin straight. Basis capituli with dense, small, shallow punctations. Palpi length 1.1, 1.14; breadth 0.29, 0.33. Segment II dorsally wrinkled. Segment II 2 times longer than segment III, length of segment II 0.63, 0.64; length of segment III 0.31, 0.33. Segment I ventrally with a low, almost invisible ridge, dorsally with a small spur directed anteriorly. Palpal setae: dorsolateral setae short, very thin, curved; dorsomedial setae short, thin, slightly curved; ventrolateral setae short, very thin, curved; ventromedial setae longer, thin, almost straight. Palpal segment I ventrally with a single, not long, thin seta. Hypostome length 0.86, 0.87; length of toothed portion 0.4, 0.4; apex notched, each half of the apex with a triangular projection near the median axis. Dental formula 3/3.

Legs red-brown, distal ends of some segments yellow, look like as annular wheels. Coxa I with 2 triangular spurs, the external spur larger, internal spur short, rounded. Coxae II–IV each with a single, triangular spur, more narrow on IV. Trochanters lack spurs. Tarsus I length 1.53, 1.54; width 0.44, 0.46; without spurs. Tarsus IV length 1.5, 1.51; breadth 0.39, 0.41; with one pointed, ventro-apical hook and a small, sharp ventral hook. Tibia IV length 1.57, 1.64; breadth 0.54, 0.57.

Venter with very few, short and thin setae; dorsal setae very few, short and thin, only on festoons. Genital aperture situated between coxae II. Lateral and medial margins of spiracular plate

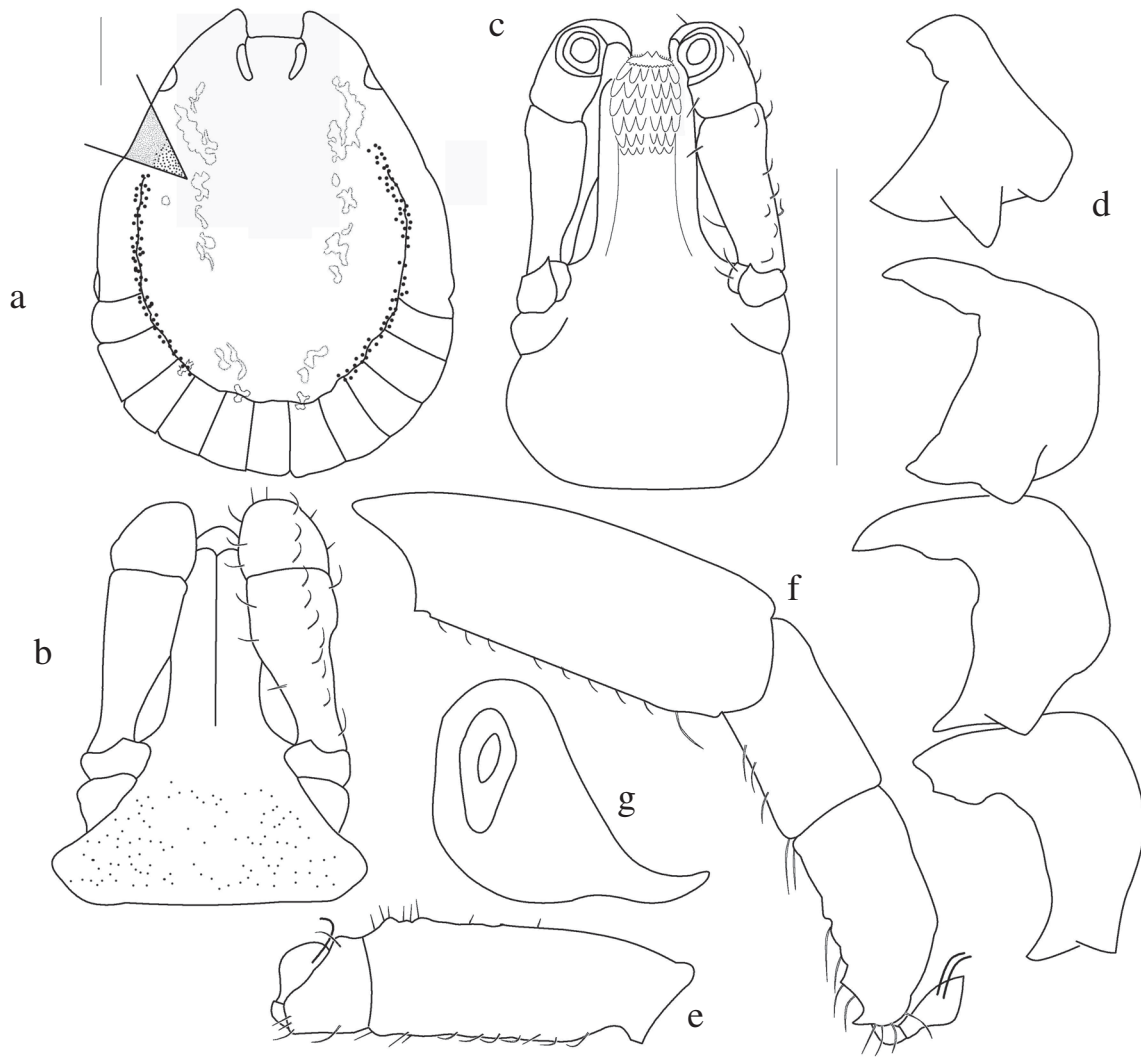


Fig. 33. *Amblyomma geayi*, male: a — scutum; b — gnathosoma, dorsal view; c — gnathosoma, ventral view; d — coxae; e — tarsus I; f — tarsus and tibia IV; g — spiracular plate. Scale bar 1 mm.

diverging, medial margin nearly straight, posterior margin concave, dorsal prolongation very narrow, long, perpendicular to anterior-posterior axis of spiracular plate. Integumentary hard elements of the ventral skeleton of idiosoma consist of long, triangular unpaired anal and 2 paired, rounded postanal shields, and rectangular festoons' shields. All shields encircled with thin grooves and projecting from the ventral surface. Postanal groove with very short, unpaired, posteriorly directed, median groove extending to the unpaired anal shield.

Female (Fig. 34). Measurements from 2 specimens. Length from apices of scapulae to posterior body margin 5.35, 5.5; breadth 4.25, 4.4. Dorsal and ventral body setae very short and thin, few only on festoons. Marginal groove complete, beginning near the posterior margin of scutum. Festoons broad.

Scutum length 2.75, 2.9; breadth 3.0, 3.05; dark brown and yellow-brown between cervical

grooves, ornate, a metallic, goldish-pink with green border patch in the posterior part of scutum with two branches directed anteriorly and two small patches in each posterolateral area. Posterior margin of scutum narrowly rounded, posterolateral margins convex, anterolateral margins convex. Scutal punctations numerous, small and medium in size, shallow. Cervical grooves short, not deep, almost parallel, situated at a distance from anterior margin of scutum. Eyes large, marginal, flat.

Capitulum length from palpal apices to posterior margin of basis 1.71, 1.73; breadth 1.13, 1.14; posterior margin straight, lateral margins triangular; cornua absent; ventrally posterior margin slightly convex, with very sclerotized border. Punctations of basis capituli few, medium in size, shallow. Porose areas narrow, oval, deeply depressed, diameter of one area 0.14, 0.16; interporose area 0.26, 0.27. Palpi length 1.24, 1.26; breadth 0.17, 0.2.

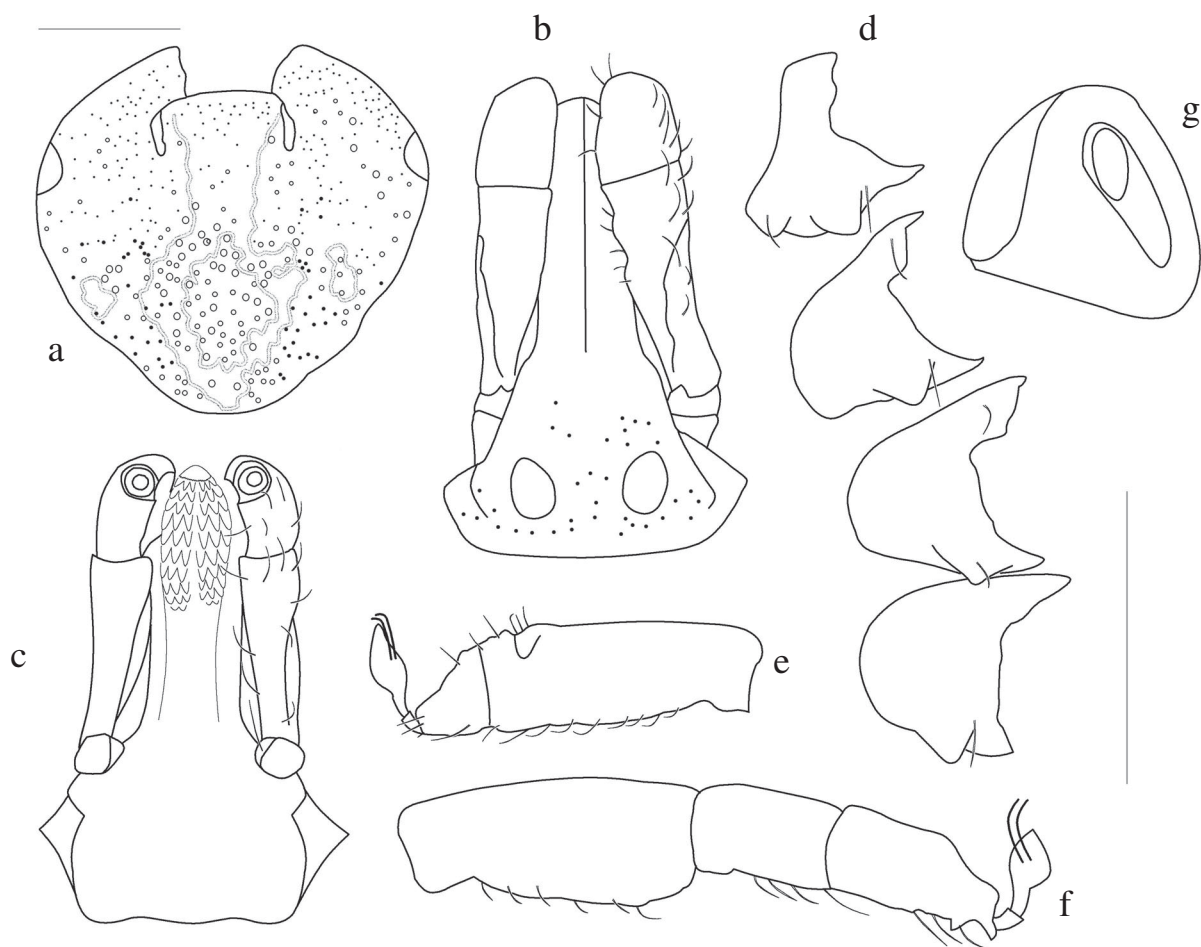


Fig. 34. *Amblyomma geayi*, female: a — scutum; b — gnathosoma, dorsal view; c — gnathosoma, ventral view; d — coxae; e — tarsus I; f — tarsus and tibia IV; g — spiracular plate. Scale bar 1 mm.

Segment II dorsally wrinkled. Segment II 2.3–2.4 times longer than segment III, length of segment II 0.79, 0.81; length of segment III 0.34, 0.34. Segment I ventrally with a sharp ridge, dorsally with a small, pyramidal spur directed anteriorly. Segment II ventrally with a small, bluntly rounded hump on anteromedial margin. Palpal setae: dorsolateral setae very long, thin, curved; dorsomedial setae short, thin, slightly curved; ventrolateral setae long, thin, curved; ventromedial setae very long, thin, slightly curved. Palpal segments I ventrally with a single, long, thin seta. Hypostome length 1.07, 1.07; length of toothed portion 0.57, 0.57; apex narrowly rounded; dental formula 3/3.

Leg segments with thin, yellow, annular wheels at distal ends. Coxa I with 2 triangular spurs, the external spur larger, internal spur very short, broadly rounded. Coxae II–IV each with a single, triangular, broad spurs, longer and more narrow on IV. Trochanters lack spurs. Tarsus I length 1.16, 1.21; width 0.37, 0.37; without spurs. Tarsus IV length 1.24, 1.26, breadth 0.31, 0.31, with a pointed,

ventroapical hook and one sharp, ventral hump. Tibia IV length 1.21, 1.21, breadth 0.44, 0.46.

Spiracular plate oval, medial margin convex, posterior margin straight, dorsal prolongation pointed, short, forming an acute angle with anterior-posterior axis of spiracular plate. Lateral margin of spiracular plate with very large, chitinous border. Genital aperture «U» shaped, situated between coxae II–III. Postanal groove with unpaired, posteriorly directed, median groove extending to the festoon.

Material: 2 males (US National Tick Collection, RML 119156) Panama, Bocas del Toro Province, Isla Colon, La Gruta, 9.02.1988, ex *Bradypus griseus*, coll. Frank M. Greenwell; 2 females (US National Tick Collection, RML 112903) Brazilia, Amazonas, Manaus, 26.02.1978, ex *Bradypus tri-dactylus*, coll. Robin C. Best I.N.P.A.

Amblyomma goeldii

Male (Fig. 35). Measurements from one specimen. Length from apices of scapulae to posterior scutal margin 3.55; breadth 2.58. Outline oval,

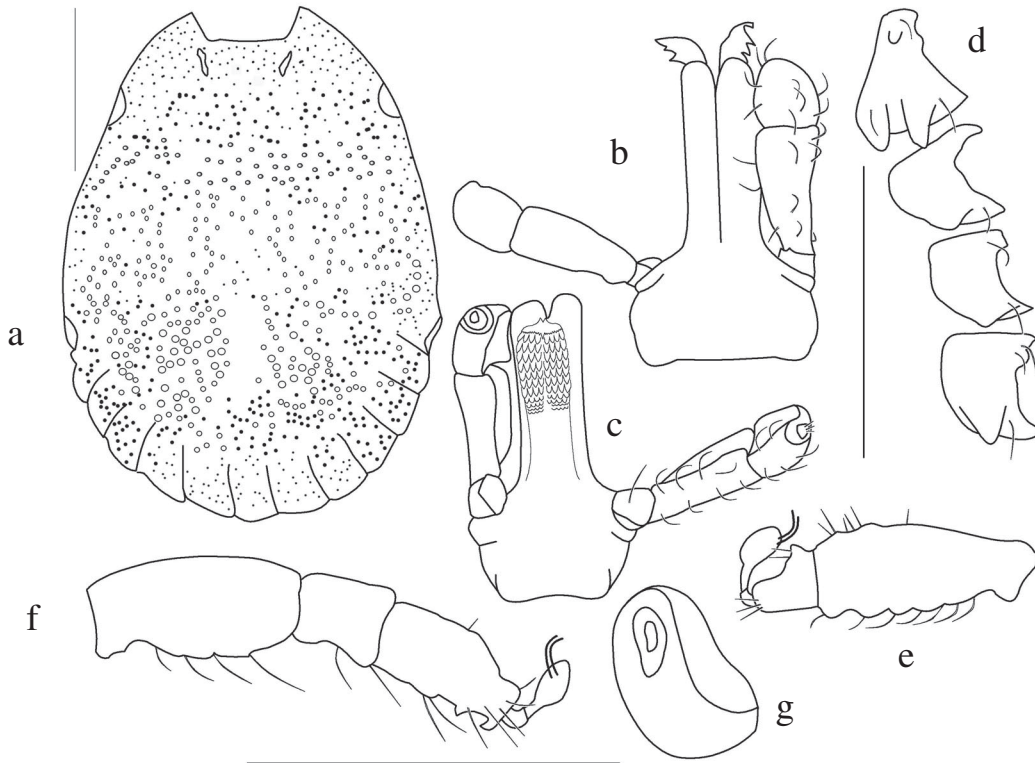


Fig. 35. *Amblyomma goeldii*, male: a — scutum; b — gnathosoma, dorsal view; c — gnathosoma, ventral view; d — coxae; e — tarsus I; f — tarsus and tibia IV; g — spiracular plate. Scale bar 1 mm.

broadest at level of spiracular plate. Scutum brown, darker in the anterior scutal half; inornate. Scutal punctations dense, medium, regularly, not deep. Cervical grooves very short, deep, converging. Marginal groove absent. Festoons rectangular, without chitinous plates extending beyond the posterior margin of the festoons. Eyes marginal, large, slightly bulging.

Capitulum length from palpal apices to cornua apices 1.09; breadth 0.71. Posterior margin of basis capituli straight, cornua short, broadly rounded, lateral margins convex, ventrally posterior margin concave. Basis capituli with relatively dense, small, shallow punctations. Palpi length 0.77; breadth 0.23. Segment II dorsally slightly wrinkled. Segment II 2.1 times longer than segment III, length of segment II 0.46; length of segment III 0.21. Segment I ventrally with a oval paddle directed posterolaterally. Palpal setae: dorsolateral setae long, thin, curved; dorsomedial setae shorter, straight; ventrolateral setae short, curved; ventromedial setae very long, curved. Palpal segment I ventrally with a single, long, thin, straight seta. Hypostome length 0.71; length of toothed portion 0.4; apex notched, with a corona of fine denticles, first row directed anteriorly; each half of the apex with a

triangular projection near the median axis. Dental formula 4/4.

Legs. Coxa I with 2 equal, large, narrow, triangular spurs. Coxa I with a small, sharp, spur-like callosity anteriorly. Coxae II–III each with a single, short, triangular, broadly rounded spur. Coxa IV with a single, narrow, triangular spur longer than on III. Trochanters lack spurs. Tarsus I length 0.86; width 0.29; with some blunt, rounded ventral humps. Tarsus IV length 0.71; breadth 0.19; with one strong, ventroapical hook and a sharp ventral hook. Tibia IV length 0.64; breadth 0.27.

Venter with very short and thin setae, situated along the posterior margin of body; dorsal setae very short and thin, few only on festoons. Genital aperture situated between coxae II. Spiracular plate oval, its lateral and medial margins parallel, medial margin convex, dorsal prolongation broad, perpendicular to anterior-posterior axis of spiracular plate. Integumentary hard elements of the ventral skeleton of idiosoma consist of not large festoons' shields only. Postanal groove with shallow, unpaired, posteriorly directed, median groove extending to the festoon.

Female (Fig. 36). Measurements from one semi-engorged specimen. Length from apices of

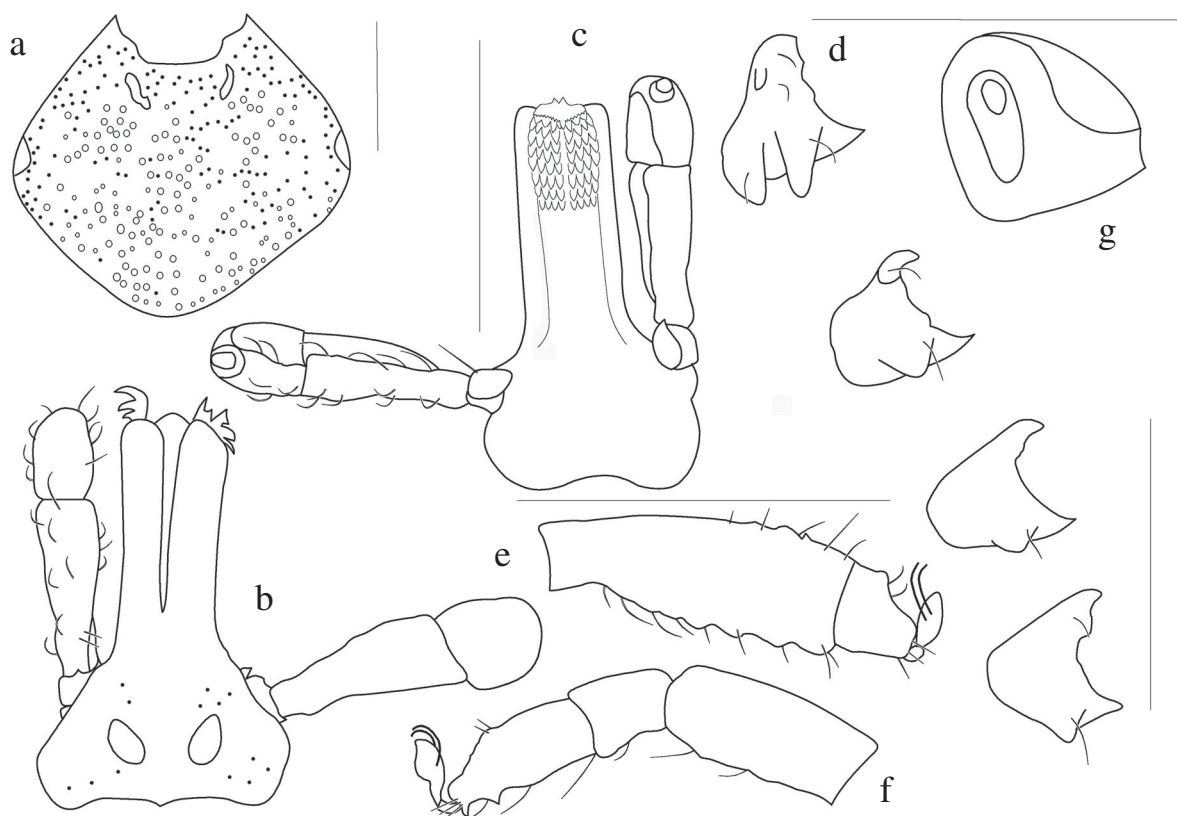


Fig. 36. *Amblyomma goeldii*, female: a — scutum; b — gnathosoma, dorsal view; c — gnathosoma, ventral view; d — coxae; e — tarsus I; f — tarsus and tibia IV; g — spiracular plate. Scale bar 1 mm.

scapulae to posterior body margin 6.75; breadth 4.5. Dorsal body setae very short and thin, straight; ventral body setae longer, very thin. Marginal groove absent. Festoons rectangular.

Scutum length 2.26, breadth 2.5; dark-brown, inornate. Posterior margin of scutum narrowly rounded, posterolateral and anterolateral margins nearly straight. Scutal punctations deep, medium in size, dense, regularly. Scapulae sharp, their medial margins with ledges. Cervical grooves very shallow, almost invisible, short, converging. Eyes large, marginal, slightly bulging.

Capitulum length from palpal apices to cornua apices 1.5; breadth 0.96; posterior margin undulated, lateral margins convex; cornua short, broadly rounded; ventrally posterior margin concave, with very short, broadly rounded cornua. Punctations of basis capituli few, small, shallow. Porose areas small, oval, deeply depressed, diameter of one area 0.11; interporose area 0.16. Palpi length 1.09; breadth 0.21. Segment II dorsally wrinkled. Segment II 2.1 times longer than segment III, length of segment II 0.67; length of segment III 0.31. Segment I ventrally with a oval paddle directed laterally, dorsally with a small, blunt spur directed ante-

riorly. Palpal setae: dorsolateral setae long, thin, curved; dorsomedial setae short, straight; ventrolateral setae long, thin, curved; ventromedial setae long, slightly curved. Palpal segments I ventrally with a single, long, almost straight seta. Hypostome length 0.93; length of toothed portion 0.5; apex notched, with a corona of fine denticles, first row directed anteriorly; each half of the apex concave, with a triangular projection near the median axis; dental formula 4/4.

Legs. Coxa I with 2 subequal, long, narrow, triangular spurs. Coxa I with a small, sharp, spur-like callosity anteriorly. Coxae II–IV each with a single short, triangular, broadly rounded spur more narrow on IV. Trochanters lack spurs. Tarsus I length 1.17; width 0.36; with some bluntly rounded, ventral humps and sharp dorsal hump. Tarsus IV length 0.97, breadth 0.27, with a pointed, ventroapical hook and one sharp, ventral hump. Tibia IV length 0.79, breadth 0.33.

Spiracular plate subtriangular, medial and lateral margins parallel, medial and posterior margins straight, dorsal prolongation broad, perpendicular to anterior–posterior axis of spiracular plate. Lateral margin of spiracular plate with large, chitinous

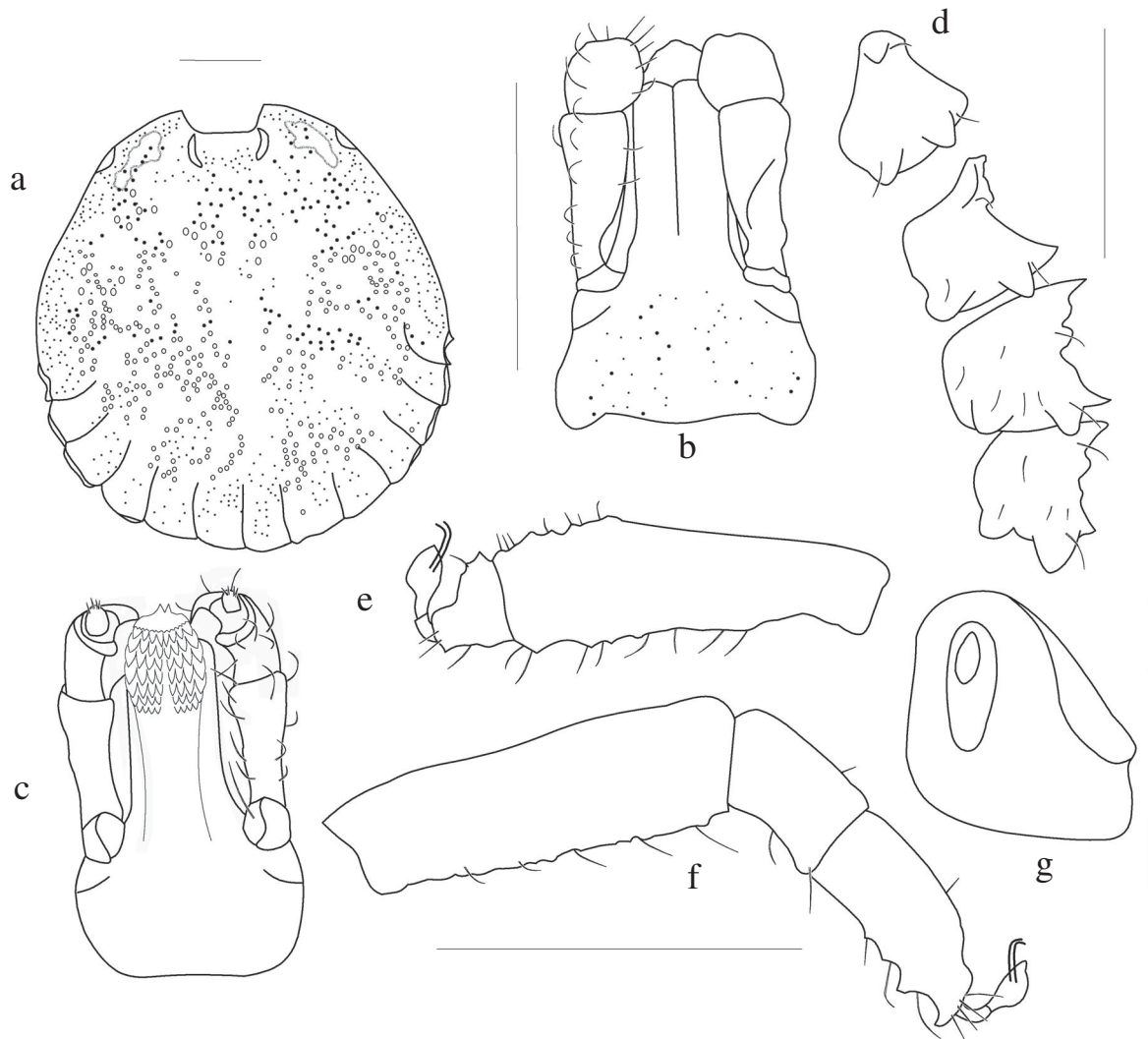


Fig. 37. *Amblyomma humerale*, male: a — scutum; b — gnathosoma, dorsal view; c — gnathosoma, ventral view; d — coxae; e — tarsus I; f — tarsus and tibia IV; g — spiracular plate. Scale bar 1 mm.

border. Genital aperture «V» shaped, situated between coxae II–III. Postanal groove with shallow, unpaired, posteriorly directed, median groove extending to the festoon.

Material: male and female (US National Tick Collection, RML 48094) Surinam, Marowijne, Paloemeu Airstrip, Tapanahoni River, May 1961, ex *Tamandua tetradactyla*, coll. H.A. Beatty.

Amblyomma humerale

Male (Fig. 37). Measurements from 2 specimens. Length from apices of scapulae to posterior scutal margin 5.45, 5.6; breadth 4.4, 4.85. Outline nearly round, broadest at level of the middle of scutum. Scutum dark-brown; ornate, two small, metallic, goldish-crimson patches in each scapular area. Scutal punctations not deep, small and large, dense excepting the narrow areas forming the symmetrical pattern. Cervical grooves short, deep,

converging. Marginal groove absent. Festoons broad, rectangular, with short, chitinous plates extending beyond the posterior margin of two lateral festoons. Eyes marginal, large, slightly bulging.

Capitulum length from palpal apices to cornua apices 1.36, 1.47; breadth 0.89, 0.93. Posterior margin of basis capituli convex, cornua short, rounded, lateral margins convex, ventrally posterior margin straight. Basis capituli with dense, small and shallow punctations. Palpi length 0.93, 0.96; breadth 0.23, 0.24. Segment II dorsally wrinkled. Segment II 1.9 times longer than segment III, length of segment II 0.56, 0.6; length of segment III 0.29, 0.31. Segment I ventrally with low, sloping ridge. Segment III ventrally with a triangular, rounded hump on anteromedial margin. Palpal setae: dorsolateral setae long, curved; dorsomedial setae short, almost straight on II and longer, straight on III; ventrolateral setae short, curved;

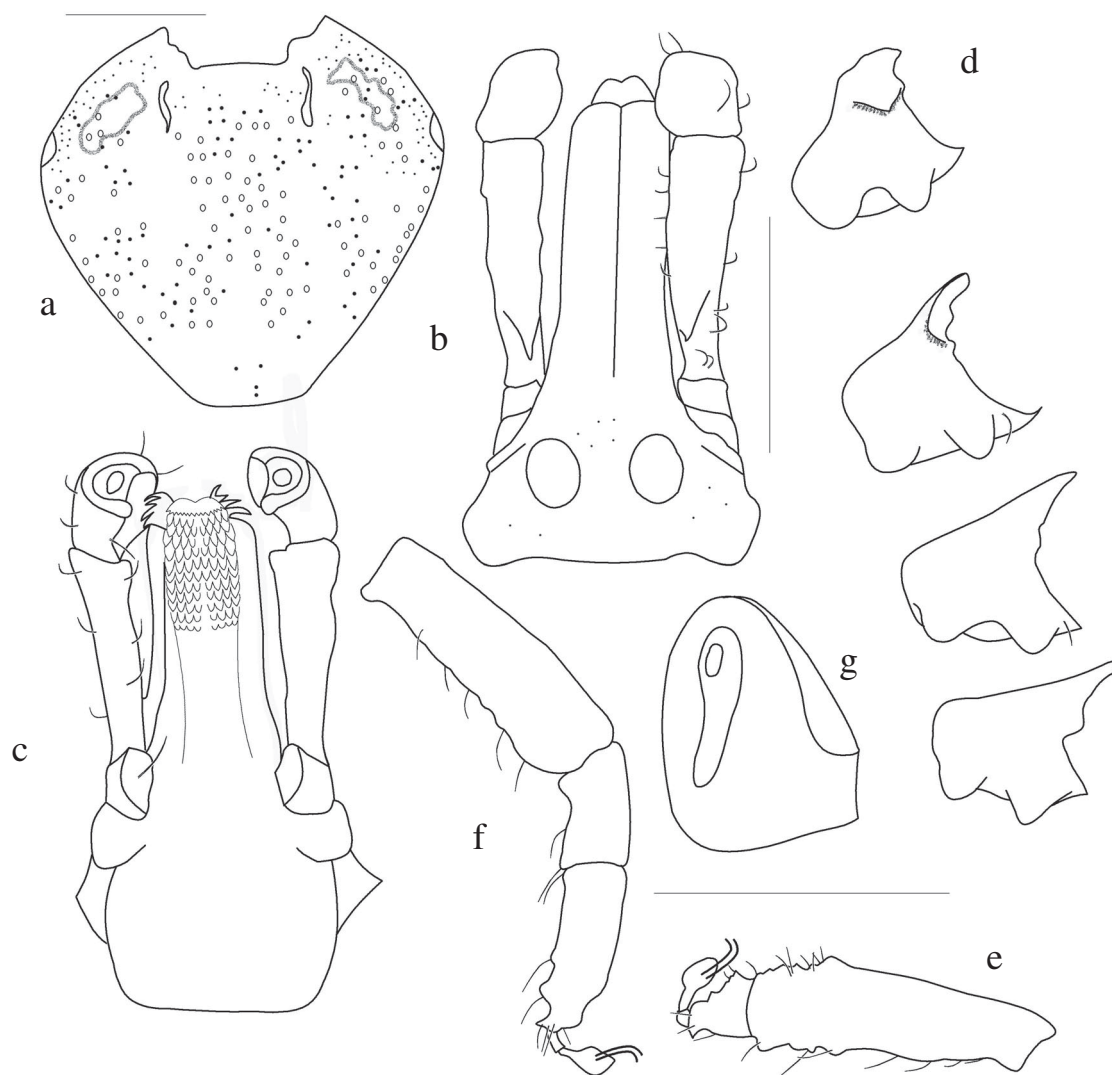


Fig. 38. *Amblyomma humerale*, female: a — scutum; b — gnathosoma, dorsal view; c — gnathosoma, ventral view; d — coxae; e — tarsus I; f — tarsus and tibia IV; g — spiracular plate. Scale bar 1 mm.

ventromedial setae slightly longer, curved. Palpal segment I ventrally with a long, almost straight seta. Hypostome length 0.8, 0.9; length of toothed portion 0.43, 0.46; apex notched, with a corona of fine denticles, first row directed anteriorly; each half of the apex straight, with a triangular projection near the median axis. Dental formula 4/4.

Legs. Coxa I with 2 subequal, short, triangular spurs, the internal spur broader. Coxa I with a low, blunt, spur-like callosity anteriorly. Coxae II–III each with 2 subequal, short, triangular spurs. Coxa IV with 2 triangular spurs, the external spur larger. Trochanters lack spurs. Tarsus I length 1.29, 1.31; width 0.31, 0.36; with a blunt, small, apical hump and with a blunt, small, ventral hump. Tarsus IV length 0.97, 1.11; breadth 0.24, 0.27; with one strong, ventroapical hook and a large, pointed ventral hook. Tibia IV length 1.14, 1.29; breadth 0.36, 0.39.

Venter with very short and thin, relatively dense setae; dorsal setae few, very short and thin. Genital aperture situated between coxae II. Spiracular plate subtriangular, its lateral and medial margins diverging, medial margin straight, posterior margin straight, dorsal prolongation very broad, perpendicular to anterior-posterior axis. Postanal groove without unpaired, posteriorly directed, median groove. Integumentary hard elements of the ventral skeleton of idiosoma consist of very small, almost invisible 2 paired postanal shields and not large festoons' shields; all ventral surface with small, round, chitinous point-plaques, slightly larger around coxae.

Female (Fig. 38). Measurements from one specimen. Length from apices of scapulae to posterior body margin 6.0; breadth 5.0. Dorsal and ventral body setae few, very short and thin. Marginal groove complete, shallow, beginning near the

posterior margin of scutum. Festoons rectangular, broad.

Scutum length 2.95; breadth 3.0; dark-brown, ornate, two goldish-crimson patches between scapulae and eyes. Posterior margin of scutum straight, posterolateral margins straight. Scutal punctations small and medium in size, deep, dense. Scapulae sharp, medial margins with ledges. Cervical grooves short, deep, converging. Eyes large, marginal, slightly bulging.

Capitulum length from palpal apices to cornua apices 2.4; breadth 1.11; posterior margin slightly convex, posterolateral margins straight; cornua very short, broadly rounded; ventrally posterior margin straight. Punctations of basis capituli few, small, shallow. Porose areas large, oval, deeply depressed, diameter of one area 0.27; interporose area 0.16. Palpi length 1.4; breadth 0.26. Segment II 2.5 times longer than segment III, length of segment II 0.94; length of segment III 0.37. Palpi slightly wrinkled. Segment I ventrally with a high, sharp ridge. Anterior margin of segment II on ventral side broader than basis of segment III and with a right anteromedial angle. Segment III ventrally with a triangular, rounded hump on anteromedial margin. Palpal setae: dorsolateral setae short, relatively thick, curved; dorsomedial setae very short, relatively thick, slightly curved; ventrolateral setae very short, curved; ventromedial setae long, slightly curved. Palpal segment I ventrally with a long, straight seta. Hypostome length 1.17; length of toothed portion 0.5; apex rounded, notched, with a corona of fine denticles, first row directed anteriorly; dental formula 4/4.

Legs. Coxae I–IV with 2 subequal, short, triangular spurs. Coxa I with a broad, spur-like callosity anteriorly. Coxa II with roller-like callosity anteriorly. Trochanters lack spurs. Tarsus I length 1.44; width 0.36; with a blunt, small, apical hump and 3 blunt, ventral humps; dorsally with a small, sharp hump. Tarsus IV length 1.07, breadth 0.21, with a pointed ventroapical hook and one small, sharp ventral hump. Tibia IV length 1.07, breadth 0.34.

Lateral and medial margins of spiracular plate diverging, medial margin straight, posterior margin almost straight, dorsal prolongation very broad, forming an acute angle with anterior-posterior axis of spiracular plate. Genital aperture «V» shaped, situated between coxae III. Postanal groove with unpaired, posteriorly directed, median groove extending to the festoon.

Material: 2 males (US National Tick Collection, RML 118042) Venezuela, T.F. Amazonas, Cerro de la Neblina, Base camp., 0°50'N, 66°10'W,

elev. 140 m, 7.02.1985, ex yellow-footed tortoise, coll. W.E. Steiner; female (US National Tick Collection, RML 116857) Guyana, Mazaruni-Potaro District, Takutu lumber Camp, Takutu Mts., 6.25 N, 59.10 W, 30.12.1982, ex yellow-footed tortoise, coll. W.E. Steiner.

Amblyomma imitator

Male (Fig. 39). Measurements from 2 specimens. Length from apices of scapulae to posterior scutal margin 2.8, 3.3; breadth 2.0, 2.2. Outline oval, broadest at level of legs IV. Scutum light-brown; ornate, ornamentation consist of some thin, long, sinuous, pale and goldish-red patches. Scutal punctations few, small, shallow; surface bright. Cervical grooves crescent, deep, pit-like, situated at a distance from anterior margin of scutum. Marginal groove complete, beginning at level of legs III. Festoons narrow, long, with large, chitinous plates extending beyond the posterior margin of the festoons. Eyes marginal, large, slightly bulging.

Capitulum length from palpal apices to cornua apices 0.83, 0.93; breadth 0.53, 0.64. Posterior margin of basis capituli straight, cornua relatively large, triangular, rounded, lateral margins straight, ventrally posterior margin straight. Basis capituli with few, small, shallow punctations. Palpi length 0.64, 0.66; breadth 0.13, 0.17. Segment II dorsally slightly wrinkled, bright. Segment II 2.6–2.8 times longer than segment III, length of segment II 0.4, 0.41; length of segment III 0.14, 0.16. Segment I ventrally with a sharp, high ridge ending posteriorly with a small spur. Palpal setae: dorsolateral setae not long, thin, curved; dorsomedial setae longer, almost straight; ventrolateral setae short, slightly curved; ventromedial setae long, thick, slightly curved. Palpal segment I ventrally with 2 long setae. Hypostome length 0.59; length of toothed portion 0.29; apex subtriangular, notched. Dental formula 3/3.

Legs. Coxae I with 2 very long, narrow, triangular spurs, both reaching the anterior margin of coxa II. Coxa I with a long, narrow, spur-like callosity anteriorly. Coxae II–III each with a single, broad, triangular spur, larger on II. Coxa IV with a single, very long, narrow, triangular spur directed posteromedially. Trochanters lack spurs. Tarsus I length 0.7, 0.79; width 0.21, 0.24; without spurs. Tarsus IV length 0.49, 0.56; breadth 0.17, 0.21; with one strong, ventroapical hook and a pointed ventral hook. Tibia IV length 0.57, 0.64; breadth 0.27, 0.31.

Venter with few, relatively long, very thin setae; dorsal setae few, very thin, short. Genital aperture situated between coxae II. Spiracular plate

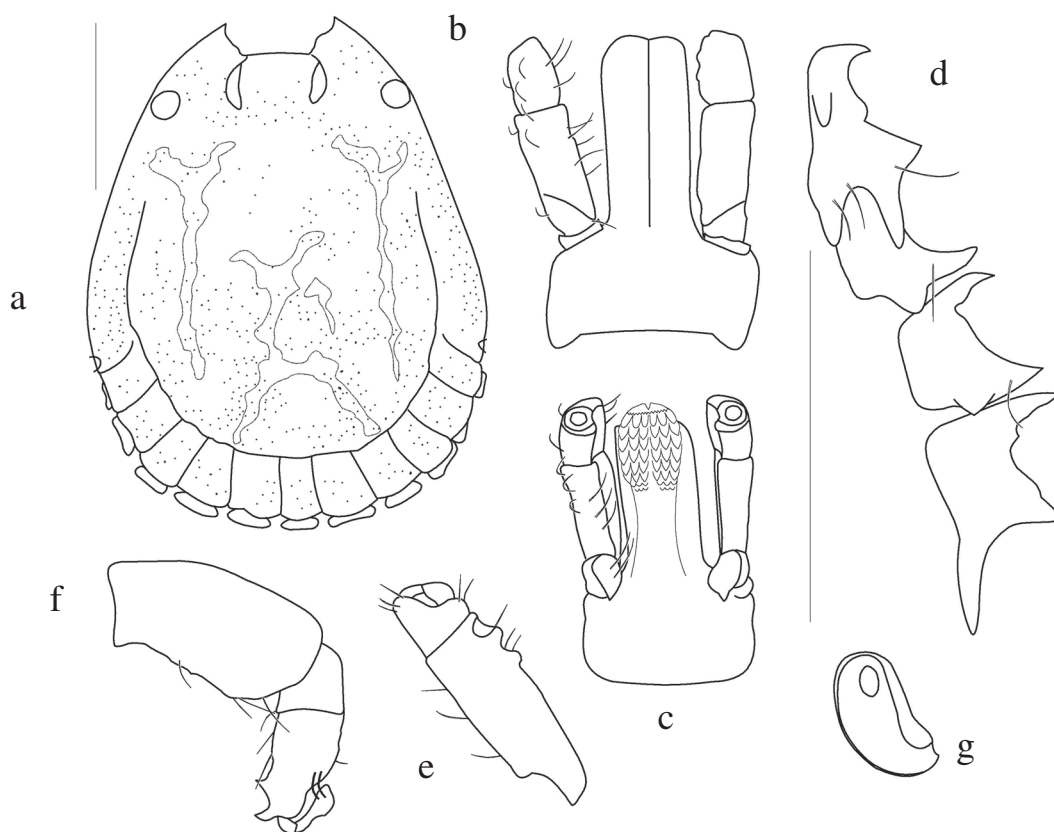


Fig. 39. *Amblyomma imitator*, male: a — scutum; b — gnathosoma, dorsal view; c — gnathosoma, ventral view; d — coxae; e — tarsus I; f — tarsus and tibia IV; g — spiracular plate. Scale bar 1 mm.

long, narrow, its lateral and medial margins almost parallel, medial and posterior margins convex, dorsal prolongation relatively long, fluently curved. Integumentary hard elements of the ventral skeleton of idiosoma consist of long, narrow unpaired anal and 2 paired, relatively large, rounded postanal shields, and large festoons' shields. Postanal groove with very short, unpaired, posteriorly directed, median groove extending to the unpaired anal shield.

Female (Fig. 40). Measurements from 2 specimens. Length from apices of scapulae to posterior body margin 3.4, 3.7; breadth 2.6, 2.7. Dorsal and ventral body setae few, very short and thin. Marginal groove complete, beginning near the posterior margin of scutum. Festoons broad.

Scutum length 1.6, 1.9; breadth 1.75, 1.8; light-brown, darker in each eyes area, ornate, three metallic, goldish-pink with green border patches covers almost the all scutum. Posterior margin of scutum narrowly rounded, posterolateral margins concave, anterolateral margins nearly straight. Scutal punctations small and medium in size, shallow. Cervical grooves deep, short, converging, then diverging as very shallow depressions. Eyes large, marginal, slightly bulging.

Capitulum length from palpal apices to cornua apices 1.0, 1.09; breadth 0.71, 0.73; posterior margin straight or slightly concave, lateral margins straight; cornua short, rounded, triangular; ventrally posterior margin convex. Punctations of basis capituli few, small, shallow. Porose areas round, not deeply depressed, diameter of one area 0.14, 0.14; interporose area 0.1, 0.1. Palpi length 0.74, 0.76; breadth 0.16, 0.17. Segment II dorsally slightly wrinkled. Segment II 2.1 times longer than segment III, length of segment II 0.47, 0.47; length of segment III 0.23, 0.23. Segment I ventrally with a high, sharp ridge. Palpal setae: dorsolateral setae short, thin, curved; dorsomedial setae very long, thin, slightly curved; ventrolateral setae short, thin, curved; ventromedial setae very long, thin, slightly curved. Palpal segments I ventrally with 2 long, almost straight setae. Hypostome length 0.69, 0.71; length of toothed portion 0.31, 0.36; apex rounded, notched; dental formula 3/3.

Legs. Coxa I with 2 narrow, triangular, sharply rounded spurs, the external spur longer. Coxa I with a long, sharp, spur-like callosity anteriorly. Coxae II–IV each with a single, short, broad, triangular spur, longer on IV. Trochanters lack

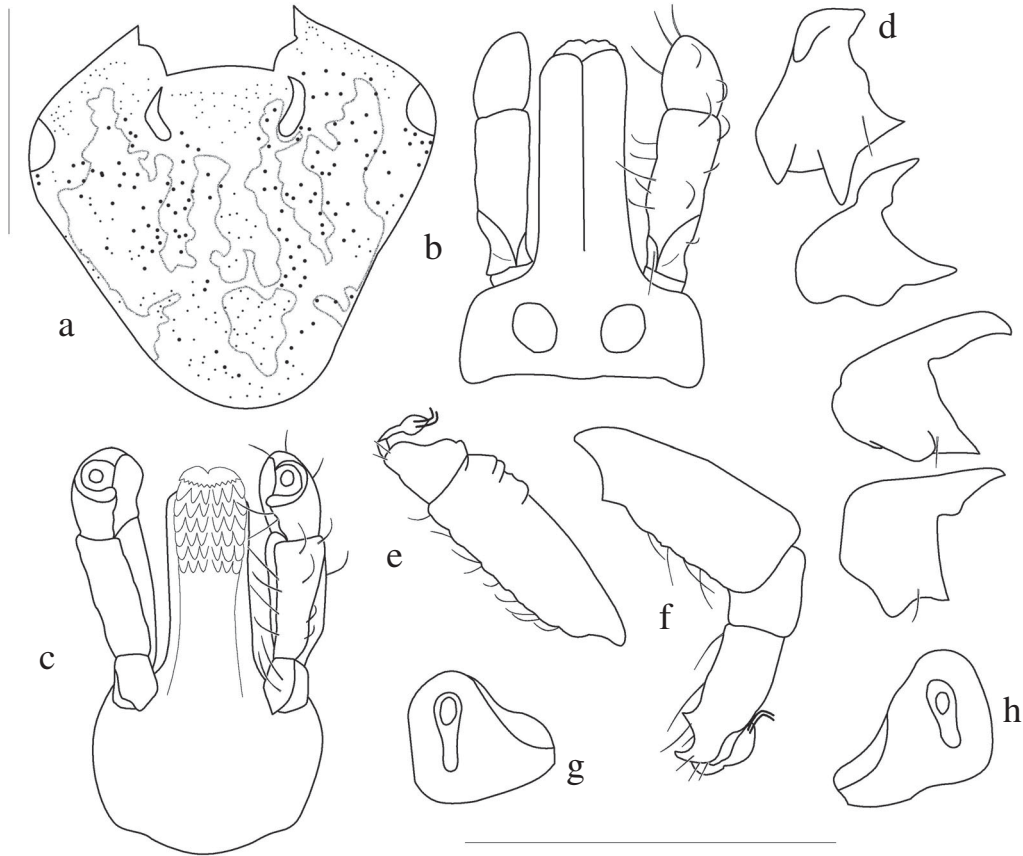


Fig. 40. *Amblyomma imitator*, female: a — scutum; b — gnathosoma, dorsal view; c — gnathosoma, ventral view; d — coxae; e — tarsus I; f — tarsus and tibia IV; g, h — spiracular plates. Scale bar 1 mm.

spurs. Tarsus I length 0.93, 0.93; width 0.24, 0.24; without spurs. Tarsus IV length 0.66, 0.69, breadth 0.19, 0.2, with a pointed, ventroapical hook and one sharp, ventral hump. Tibia IV length 0.67, 0.69, breadth 0.26, 0.29.

Spiracular plate subtriangular, medial and lateral margins diverging, medial margin straight, posterior margin nearly straight or slightly concave, dorsal prolongation narrow, perpendicular or forming an obtuse angle with anterior-posterior axis of spiracular plate. Genital aperture «V» shaped, situated between coxae II–III. Postanal groove with unpaired, posteriorly directed, median groove extending to the festoon.

Material: 2 males, 2 females (US National Tick Collection, RML 57509) Mexico, Santa Fe Crossing, 7.07.1930, ex horse, coll. N.E. Dutro.

Amblyomma incisum

Male (Fig. 41). Measurements from 2 specimens. Length from apices of scapulae to posterior scutal margin 4.13, 4.53, breadth 3.0, 3.7. Outline oval, broadest at level of legs IV. Scutum brown and yellow-brown between cervical grooves; ornate, dim, silvery-gray and goldish-red patches

forming the symmetrical pattern cover almost the all scutum. Scutal punctations large, deep, dense excepting the narrow areas forming the symmetrical pattern. Cervical grooves short, deep, crescent. Marginal groove absent. Festoons narrow, long, with bilobated, translucent chitinous plates beyond the posterior margin of the festoons. Eyes marginal, large, flat.

Capitulum length from palpal apices to cornua apices 1.14, 1.36, breadth 0.81, 0.94. Basis capituli slightly wrinkled, with small, shallow punctations. Posterior margin straight, cornua relatively large, triangular, narrowly rounded; external margins slightly convex, ventrally posterior margin convex, with very sclerotized border. Palpi length 0.86, 0.96, breadth 0.23, 0.26. Segment II 1.7 times longer than segment III, length of segment II 0.49, 0.54, length of segment III 0.29, 0.31. Palpi wrinkled. Segment I ventrally with a narrow, oval paddle directed posteriorly and ventrally. Segment III ventrally with a triangular, narrowly rounded spur on anteromedial margin. Palpal setae: dorsolateral setae very long, thin, curved, dorsomedial setae very long, thin, almost straight; ventrolateral

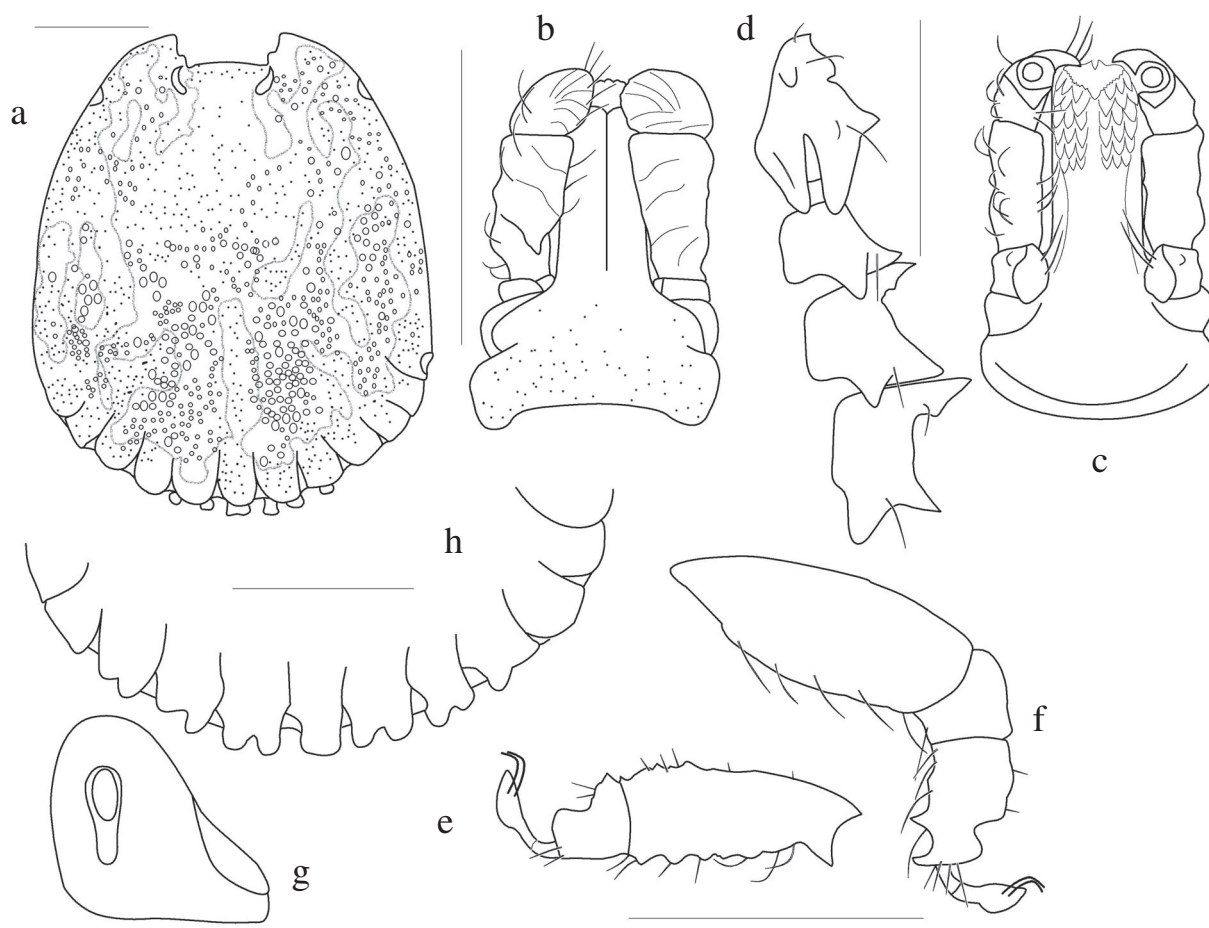


Fig. 41. *Amblyomma incisum*, male: a — scutum; b — gnathosoma, dorsal view; c — gnathosoma, ventral view; d — coxae; e — tarsus I; f — tarsus and tibia IV; g — spiracular plate, h — festoons, ventral view. Scale bar 1 mm.

setae very long, thin, curved; ventromedial setae long, almost straight. Palpal segment I ventrally with 2 very long, straight medial setae and with a single, very short, thick, curved lateral seta. Hypostome length 0.71, 0.81, length of toothed portion 0.43, 0.46; apex notched, with a large corona of fine denticles, first row of denticles directed anteriorly; each half of the apex concave, with a triangular projection near the median axis; dental formula 3/3.

Legs. Coxa I split, with 2 subequal, very long, triangular spurs, the internal spur broader, both reaching the anterior margin of coxa II. Coxa I with a sharp, spur-like callosity anteriorly. Coxae II–III each with 2 triangular spurs, the external spur larger, internal spur very short. Coxa IV with a single, long, broad, triangular spur. Trochanters lack spurs. Tarsus I length 1.04, 1.17, width 0.36, 0.36; without ventroapical hook but with 2 ventral, small, blunt humps. Tarsus IV length 0.71, 0.79, breadth 0.26, 0.29; with strong apical and subapical ventral hooks. Tibia IV length 1.14, 1.19, breadth 0.36, 0.43.

Venter with few, very short and thin setae. Genital aperture situated between coxae II. Spiracular plate subtriangular, medial and lateral margins nearly parallel, medial margin straight, posterior margin straight, dorsal prolongation narrow, perpendicular to anterior-posterior axis of spiracular plate. Postanal groove with a thin, unpaired median groove extending to the festoon. Integumentary hard elements of the ventral skeleton of idiosoma consist of a single, inconspicuous, small unpaired anal shield situated on the unpaired median groove and large festoon shields.

Female (Fig. 42). Measurements from 2 specimens. Length from apices of scapulae to posterior body margin 5.4, 6.35, breadth 4.0, 4.7. Alloscutal setae few, very short, curved, some scutal setae shorter, straight, situated in the scapular areas. Ventral body setae very few, short. Marginal groove complete, beginning near the posterior margin of scutum. Alloscutum with 3 grooves more — a central groove beginning at level of spiracular plate and extending to the central festoon and two slant-

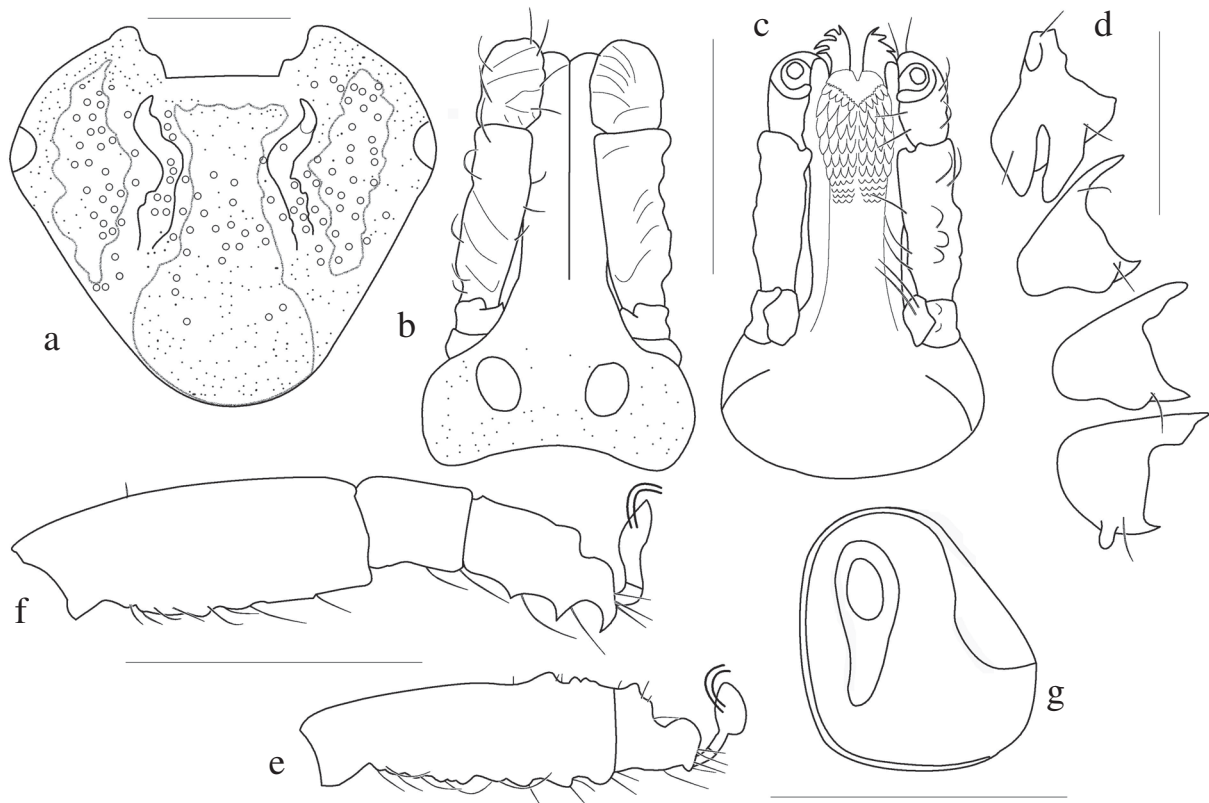


Fig. 42. *Amblyomma incisum*, female: a — scutum; b — gnathosoma, dorsal view; c — gnathosoma, ventral view; d — coxae; e — tarsus I; f — tarsus and tibia IV; g, h — spiracular plates. Scale bar 1 mm.

ing, premarginal grooves each beginning at level of spiracular plate and extending to the third festoon. Festoons long, narrow.

Scutum length 2.5, 2.9, breadth 2.8, 3.3; dark-brown and yellow-brown between cervical grooves and in each scapular area, ornate. Two silvery-white lateral patches and large, silvery-white central patch with especially bright, goldish-red, metallic posterior part cover almost the all scutum; only scapulae, cervical grooves and lateral margins of scutum lack ornamentation. Scutal punctations small and shallow in the central area and in scapular areas, with large and deep punctations laterally. Cervical grooves long, X-shaped, more deep anteriorly. Eyes large, marginal, flat.

Capitulum length from palpal apices to cornua apices 1.79, 2.0, breadth 1.11, 1.29; posterior margin concave, cornua very broad, triangular, rounded; lateral margins convex; ventrally posterior margin convex, with very sclerotized border. Porose areas oval, deeply depressed, diameter of one area 0.16, 0.17, interporose area 0.26, 0.29. Palpi length 1.21, 1.4, breadth 0.29, 0.3. Palpi wrinkled. Segment II 2.2–2.3 times longer than segment III, length of segment II 0.77, 0.87, length of segment

III 0.34, 0.4. Segment I ventrally with a long, oval paddle directed posteriorly and ventrally. Segment II ventrally with a triangular, rounded hump on anteromedial margin. Segment III ventrally with a small, rounded hump on anteromedial margin. Palpal setae: dorsolateral setae very long, thin, curved; dorsomedial setae long, thin, almost straight; ventrolateral setae long, thin, curved; ventromedial setae long, thin, almost straight. Palpal segment I ventrally with 2 long, straight setae. Hypostome length 1.09, 1.21, length of toothed portion 0.57, 0.64; apex notched, with a very large corona of fine denticles; dental formula 5/5 in the first anterior file and 4/4 in the other files.

Legs. Coxa I split, with 2 subequal, long, triangular spurs, the internal spur broader. Coxa I with a sharp, spur-like callosity anteriorly. Coxae II–III each with 2 spurs, the external spur short, broad, internal spur very short, similar to sclerotized fascia. Coxa IV with a single, narrow, triangular spur. Trochanters lack spurs. Tarsus I length 1.37, 1.5, width 0.3, 0.39; without ventroapical hook but with 2 ventral, small, blunt humps. Tarsus IV length 1.0, 1.04, breadth 0.29, 0.31, with one strong, pointed ventroapical hook and one pointed,

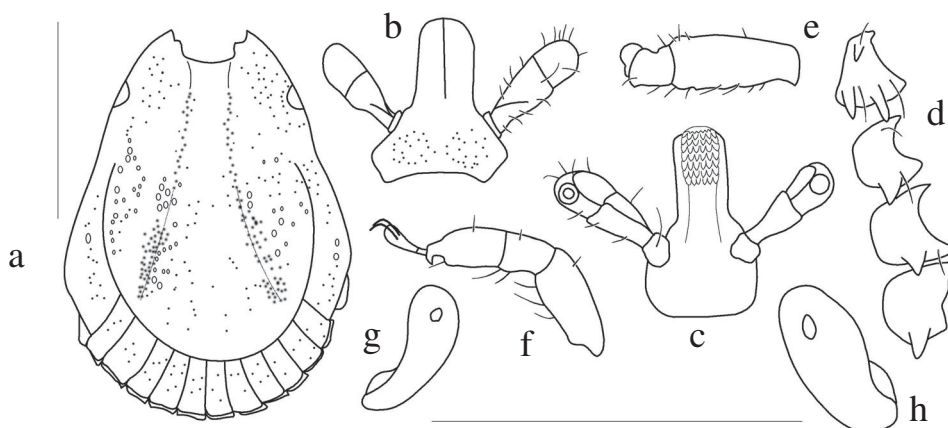


Fig. 43. *Amblyomma inornatum*, male: a — scutum; b — gnathosoma, dorsal view; c — gnathosoma, ventral view; d — coxae; e — tarsus I; f — tarsus and tibia IV; g, h — spiracular plates. Scale bar 1 mm.

triangular ventral hump. Tibia IV length 1.14, 1.19, breadth 0.41, 0.43.

Medial and lateral margins of spiracular plate parallel, medial and posterior margins straight, dorsal prolongation broad, perpendicular to anterior-posterior axis of spiracular plate. Genital aperture «U» shaped, situated between coxae II–III. Postanal groove with long, unpaired, posteriorly directed, median groove reaching the half of the festoon length.

Material: 2 males and 2 females (US National Tick Collection, RML 123500) Brazil, San Paulo, lab. colony, collected as nymph on drag, coll. M. Labruna.

Amblyomma inornatum

Male (Fig. 43). Measurements from 2 specimens. Very small ticks, length from apices of scapulae to posterior scutal margin 2.0, 2.0, breadth 1.4, 1.5. Outline oval, broadest at level of legs IV. Scutum light-brown, inornate. Scutal punctations small, shallow, dense. Cervical grooves nearly straight, deep, converging. One specimen has shallow, diverging grooves reaching the marginal groove. Marginal groove complete, beginning at level of legs III–IV. Festoons narrow, long, with short chitinous plates beyond the posterior margin of the festoons. Eyes marginal, large, slightly bulging.

Capitulum length from palpal apices to cornua apices 0.51, 0.51, breadth 0.4, 0.41. Basis capituli with small, shallow punctations. Posterior margin of basis capituli slightly concave, cornua short, triangular; external margins triangular, ventrally posterior margin convex. Palpi length 0.36, 0.39, breadth 0.1, 0.11. Segment II 1.8–1.9 times longer than segment III, length of segment II 0.21, 0.23,

length of segment III 0.11, 0.13. Palpal surface smooth, bright. Segment I ventrally without spurs. Palpal setae: dorsolateral setae very short, thin, almost straight; dorsomedial setae long, very thin, almost straight; ventrolateral setae short, straight; ventromedial setae long, straight. Palpal segment I ventrally with 1 or 2 long, thin setae. Hypostome length 0.33, 0.34, length of toothed portion 0.17, 0.17; apex rounded, with small central notch; dental formula 3/3.

Legs. Coxa I with 2 narrow, triangular spurs, the external spur longer and reaching the anterior margin of coxa II. Coxa I with a sharp, spur-like callosity anteriorly. Coxae II–IV each with a single, triangular, sharply rounded spur, smallest on IV. Trochanters I and II each with a small, ventral, triangular spur, shorter and more blunt on II. Trochanter I with broad, rounded dorsal spur. Tarsus I length 0.5, 0.5, width 0.14, 0.14; with a small, blunt ventral hump. Tarsus IV length 0.43, 0.43, breadth 0.13, 0.13; with a pointed hook. Tibia IV length 0.33, 0.36, breadth 0.14, 0.16.

Venter with longer than dorsal, very thin setae. Genital aperture situated between coxae II. Spiracular plate long, narrow, medial and lateral margins convex, dorsal prolongation broad, fluently curved. Postanal groove with a shallow, unpaired median groove extending to the festoon. Integumentary hard elements of the ventral skeleton of idiosoma absent.

Female (Fig. 44). Measurements from 2 specimens, one specimen partially engorged. Length from apices of scapulae to posterior body margin 2.5, 5.3, breadth 1.8, 4.1. Dorsal body setae few, very short and thin. Ventral body setae relatively more numerous and longer. Marginal groove com-

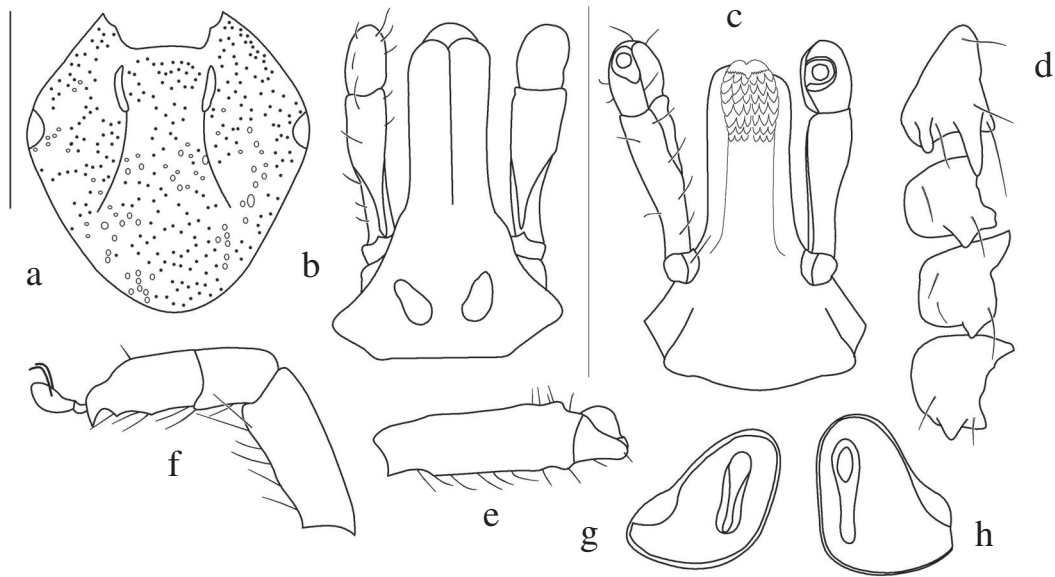


Fig. 44. *Amblyomma inornatum*, female: a — scutum; b — gnathosoma, dorsal view; c — gnathosoma, ventral view; d — coxae; e — tarsus I; f — tarsus and tibia IV; g, h — spiracular plates. Scale bar 1 mm.

plete, beginning near the posterior margin of scutum. Festoons nearly square.

Scutum length 1.5, 1.57, breadth 1.47, 1.54; brown, inornate. Scutal punctations small and medium in size, dense. Cervical grooves long, X-shaped, deep and converging anteriorly, then thin, shallow and diverging, beginning at a distance from anterior margin of scutum. Eyes large, marginal, slightly bulging.

Capitulum length from palpal apices to posterior margin of basis 1.0, 1.0, breadth 0.61, 0.67; posterior margin straight, cornua absent; lateral margins triangular; ventrally posterior margin convex. Porose areas narrow, deeply depressed, divergent, diameter of one area 0.1, 0.09, interporose area 0.08, 0.07. Palpi length 0.73, 0.74, breadth 0.13, 0.14. Palpi slightly wrinkled. Segment II 2.36 times longer than segment III, length of segment II 0.47, 0.47, length of segment III 0.2, 0.2. Segment I ventrally with a low, sloping ridge and dorsally with a small, pointed spur directed anteriorly. Palpal setae: dorsolateral setae very short, thin; dorso-medial setae short, thin; ventrolateral setae very short and thin; ventromedial setae long, thin. Palpal segment I ventrally with a single, long, thin seta. Hypostome length 0.61, 0.64, length of toothed portion 0.3, 0.31; apex rounded, with very small, central notch; dental formula 3/3.

Legs. Coxa I with 2 narrow, triangular, sharp spurs, the external spur longer and reaching the anterior margin of coxa II. Coxae II–IV each with a single, triangular, broad, sharp spur. Trochanter I with short, broad, rounded dorsal spur and with

very small, sharp, ventral spur. Tarsus I length 0.66, 0.71, width 0.17, 0.19; without ventroapical hook but with a small, sharp dorsal hump. Tarsus IV length 0.59, 0.64, breadth 0.14, 0.16, with pointed apical and subapical ventral spurs. Tibia IV length 0.53, 0.54, breadth 0.2, 0.21.

Medial and lateral margins of spiracular plate diverging, medial margin straight, posterior margin slightly convex, dorsal prolongation broad, perpendicular to anterior-posterior axis of spiracular plate. Genital aperture «U» shaped, situated between coxae II–III. Postanal groove with unpaired, posteriorly directed, median groove reaching to the festoon.

Material: male and female (US National Tick Collection, RML 21791) Texas, Duval Co., San Diego, ex dog and cat, coll. R. Albert; male (US National Tick Collection, RML 38446) Texas, Cameron Co. Boca Chica road from Brownsville, 16.11.1962, ex *Deococcyx californianus*, coll. R.B. Eads; female (US National Tick Collection, RML 115651) Texas, Mirando, ex lion, 23.08.1932, coll. B. Johnson.

Amblyomma latepunctatum

Male (Fig. 45). Measurements from one specimen. Length from apices of scapulae to posterior scutal margin 4.75; breadth 3.63. Outline oval, broadest at level of the middle of scutum. Scutum dark-brown, posterior margins of festoons light yellow; ornate, dim, lilac-gray pigment covers smooth areas without punctations; in each scapular area ornamentation pink, metallic; festoons without ornamentation. Scutal punctations large, deep,

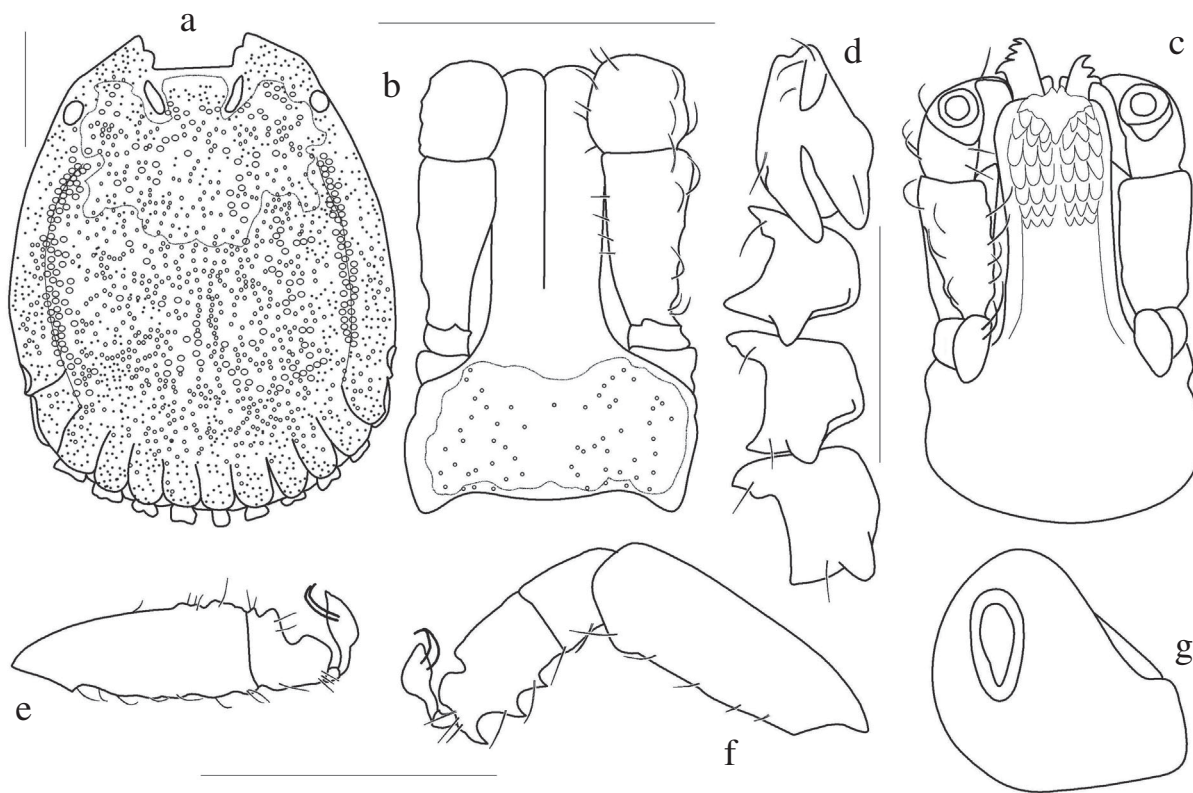


Fig. 45. *Amblyomma latepunctatum*, male: a — scutum; b — gnathosoma, dorsal view; c — gnathosoma, ventral view; d — coxae; e — tarsus I; f — tarsus and tibia IV; g — spiracular plate. Scale bar 1 mm.

very dense, many very small areas without punctations. Cervical grooves very deep, pit-like, oval. Marginal groove incomplete, beginning at level of legs II and embracing first festoon, relatively broad, with very dense punctations. Festoons narrow, long, with long, transparent chitinous plates extending beyond the posterior margin of the festoons. Eyes marginal, large, slightly bulging.

Capitulum length from palpal apices to cornua apices 1.39; breadth 0.9. Posterior margin of basis capituli convex, cornua large, triangular, narrowly rounded, lateral margins slightly convex, ventrally posterior margin convex, with very sclerotized border. Basis capituli with small, dense punctations and covering with dim, gray pigment the same on scutum. Palpi length 0.91; breadth 0.29. Segment II dorsally slightly wrinkled. Segment II 1.8 times longer than segment III, length of segment II 0.53; length of segment III 0.3. Segment I dorsally with a small, rounded spur directed anteriorly, ventrally with a long, oval paddle directed posteriorly and ventrally. Anterior margin of segment III ventrally with broad, sharp border, forming the large, triangular spur directed posteriorly and ventrally. Palpal setae: dorsolateral setae very long, curved; dorsomedial setae shorter, very thin, straight; ventrolateral setae very long, curved; ventromedial setae long,

slightly curved. Palpal segment I ventrally with 2 very long, straight setae. Hypostome length 0.76; length of toothed portion 0.43; apex with a very large corona of fine denticles, first row directed anteriorly; notched, each half of the apex with a triangular projection near the median axis. Dental formula 3/3.

Legs. Coxa I split, with 2 very long, triangular, equal spurs, the internal spur broader. Coxa I with a long, narrowly rounded, spur-like callosity anteriorly. Coxae II–III each with 2 spurs, the external spur broad, triangular, narrowly rounded, internal spur very short, rounded paddle-shaped with sclerotized border. Coxa IV with a single, broad, triangular, narrowly rounded spur. Trochanter I with broad, rounded, dorsal spur. Tarsus I length 1.17; width 0.36; without spurs. Tarsus IV length 0.87; breadth 0.29; with one strong, ventroapical hook and 2 large, pointed, ventral hook. Tibia IV length 1.16; breadth 0.33.

Venter with thin, more dense and longer setae than dorsum. Genital aperture situated between coxae II. Spiracular plate very large, its lateral and medial margins diverging, medial margin convex, posterior margin almost straight, dorsal prolongation very broad, perpendicular to anterior-posterior axis of spiracular plate. Integumentary hard elements of the ventral skeleton of idiosoma consist of

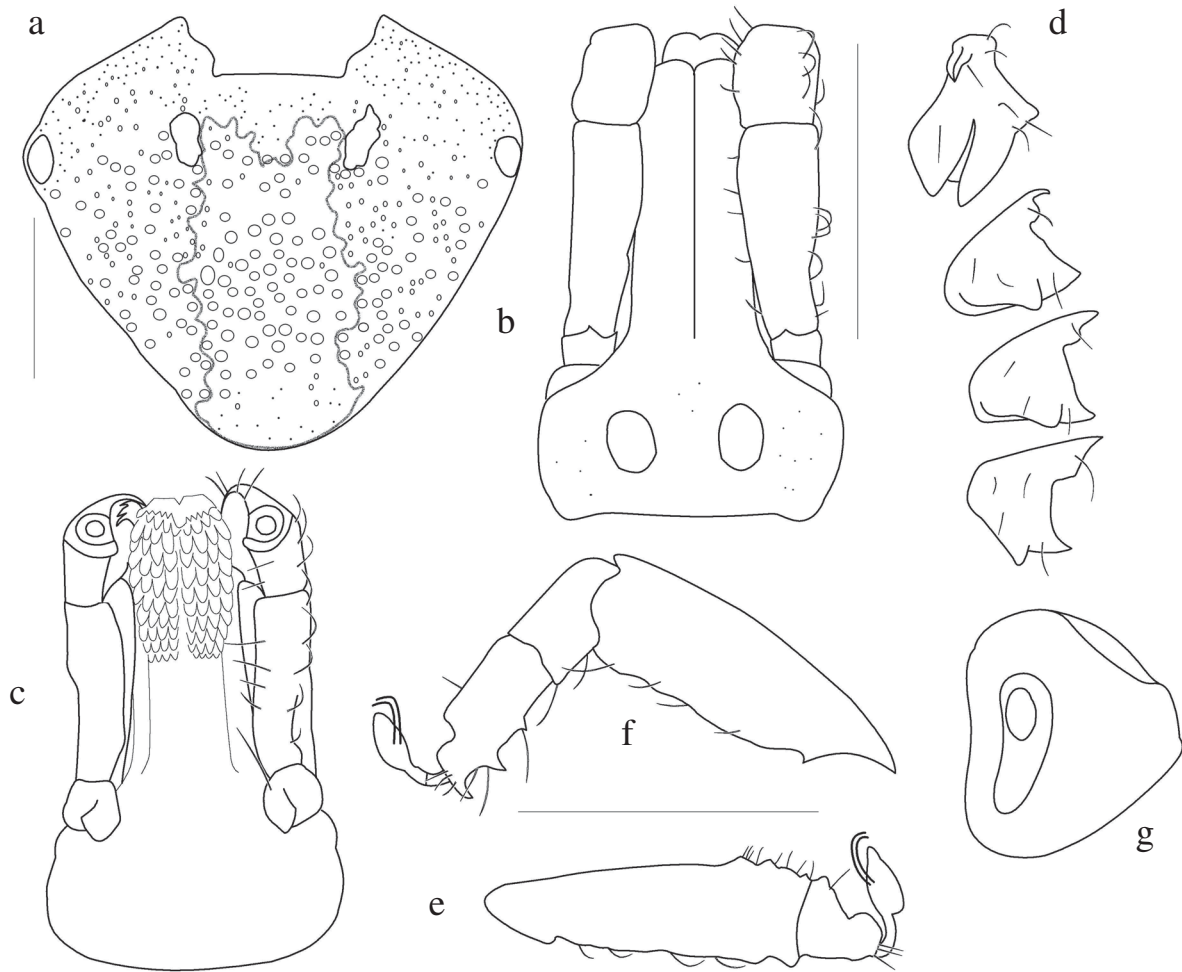


Fig. 46. *Amblyomma latepunctatum*, female: a — scutum; b — gnathosoma, dorsal view; c — gnathosoma, ventral view; d — coxae; e — tarsus I; f — tarsus and tibia IV; g — spiracular plate. Scale bar 1 mm.

very small, oval unpaired anal shield situated in the middle of unpaired median groove, and with very large festoons' shields. Postanal groove with shallow, unpaired, posteriorly directed, median groove extending to the festoon.

Female (Fig. 46). Measurements from one specimen. Length from apices of scapulae to posterior body margin 6.1; breadth 4.65. Dorsal and ventral body setae few, very short and thin. Marginal groove complete, beginning near the posterior margin of scutum. Alloscutum with deep, large, very dense punctations, and with 3 grooves more — a central groove beginning near the posterior margin of scutum and extending to the central festoon and two slanting, premarginal grooves each beginning at level of spiracular plate and extending to the third festoon. Festoons broad, rectangular, with elongated, sclerotized medial angles.

Scutum length 2.68; breadth 3.05; dark-brown, ornate, metallic, goldish-red with green border, subrectangular patch covers the central area of the

scutum. Posterior margin of scutum narrowly rounded, posterolateral and anterolateral margins nearly straight. Scutal punctations very dense, large, deep. Scapulae sharp, their medial margins with ledges. Cervical grooves very deep, large, oval, pit-like anteriorly and shallow, diverging posteriorly. Eyes large, marginal, slightly bulging.

Capitulum length from palpal apices to cornua apices 1.86; breadth 1.14; posterior margin slightly undulated, lateral margins convex; cornua very short, narrowly rounded; ventrally posterior margin convex, with sclerotized, sharp border. Punctations of basis capituli very few, small, shallow. Porose areas narrow, oval, not deeply depressed, diameter of one area 0.16; interporose area 0.27. Palpi length 1.29; breadth 0.31. Segment II dorsally slightly wrinkled. Segment II 2.1 times longer than segment III, length of segment II 0.79; length of segment III 0.37. Segment I ventrally with a long, oval paddle directed posteriorly and ventrally, dorsally with a small, rounded spur directed ante-

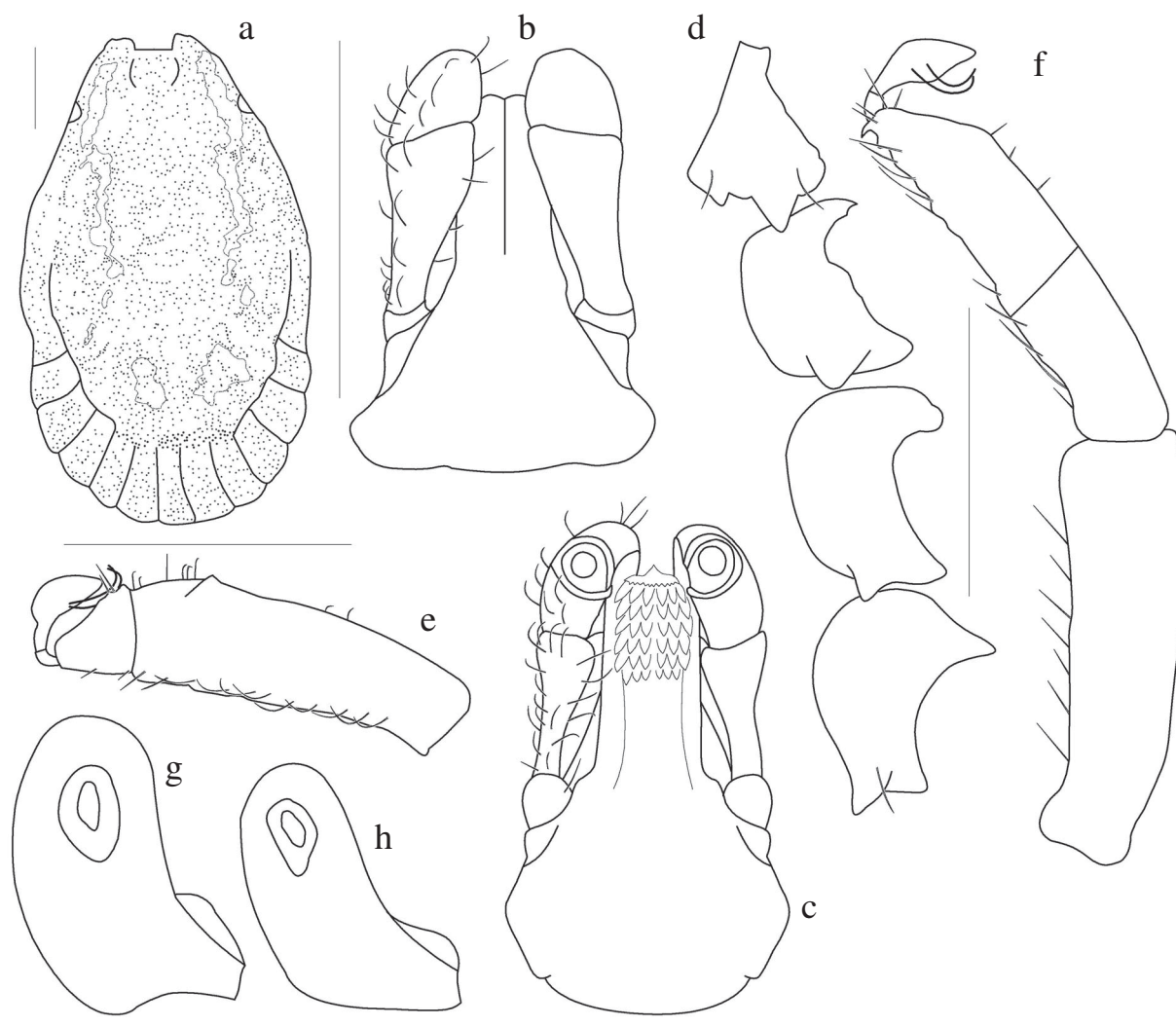


Fig. 47. *Amblyomma longirostre*, male: a — scutum; b — gnathosoma, dorsal view; c — gnathosoma, ventral view; d — coxae; e — tarsus I; f — tarsus and tibia IV; g, h — spiracular plates. Scale bar 1 mm.

riorly. Anterior margin of segment III ventrally with broad, sharp border, forming the large, triangular spur directed posteriorly and ventrally. Palpal setae: dorsolateral setae very long, thin, curved; dorsomedial setae short, thin, straight; ventrolateral setae very long, thin, curved; ventromedial setae very long, thin, straight. Palpal segments I ventrally with a single, long, straight seta. Hypostome length 1.14; length of toothed portion 0.64; apex spatulate, with a small central notch and with a large corona of fine denticles, first row directed anteriorly; dental formula 4/4.

Legs. Coxa I split, with 2 subequal, very long, triangular spurs, the internal spur broader. Coxa I with a long, sharp, spur-like callosity anteriorly. Coxae II–III each with 2 spurs, the external spur broad, triangular, narrowly rounded, internal spur very short, rounded paddle with sclerotized border. Coxa IV with a single broad, triangular, sharp spur. Trochanters lack spurs. Tarsus I length 1.47; width

0.36; with 2 bluntly rounded, ventral humps and with a sharp dorsal ridge. Tarsus IV length 1.0, breadth 0.29, with a pointed, strong, ventroapical hook and one sharp, ventral hump. Tibia IV length 1.14, breadth 0.39.

Spiracular plate very large, medial and lateral margins diverging, medial margin concave, posterior margin almost straight, dorsal prolongation very broad, forming an acute angle with anterior-posterior axis of spiracular plate. Genital aperture «U» shaped, situated between coxae II–III. Postanal groove with shallow, unpaired, posteriorly directed, median groove extending to the festoon.

Material: male and female (US National Tick Collection, RML 51685) Venezuela, T.F. Amazonas, Casiquiare Canal, Capibara 130 m., 29.05.1967, ex *Tapirus terrestris*, coll. M.D. Tuttle, F.L. Harder.

Amblyomma longirostre

Male (Fig. 47). Measurements from 2 specimens. Length from apices of scapulae to posterior

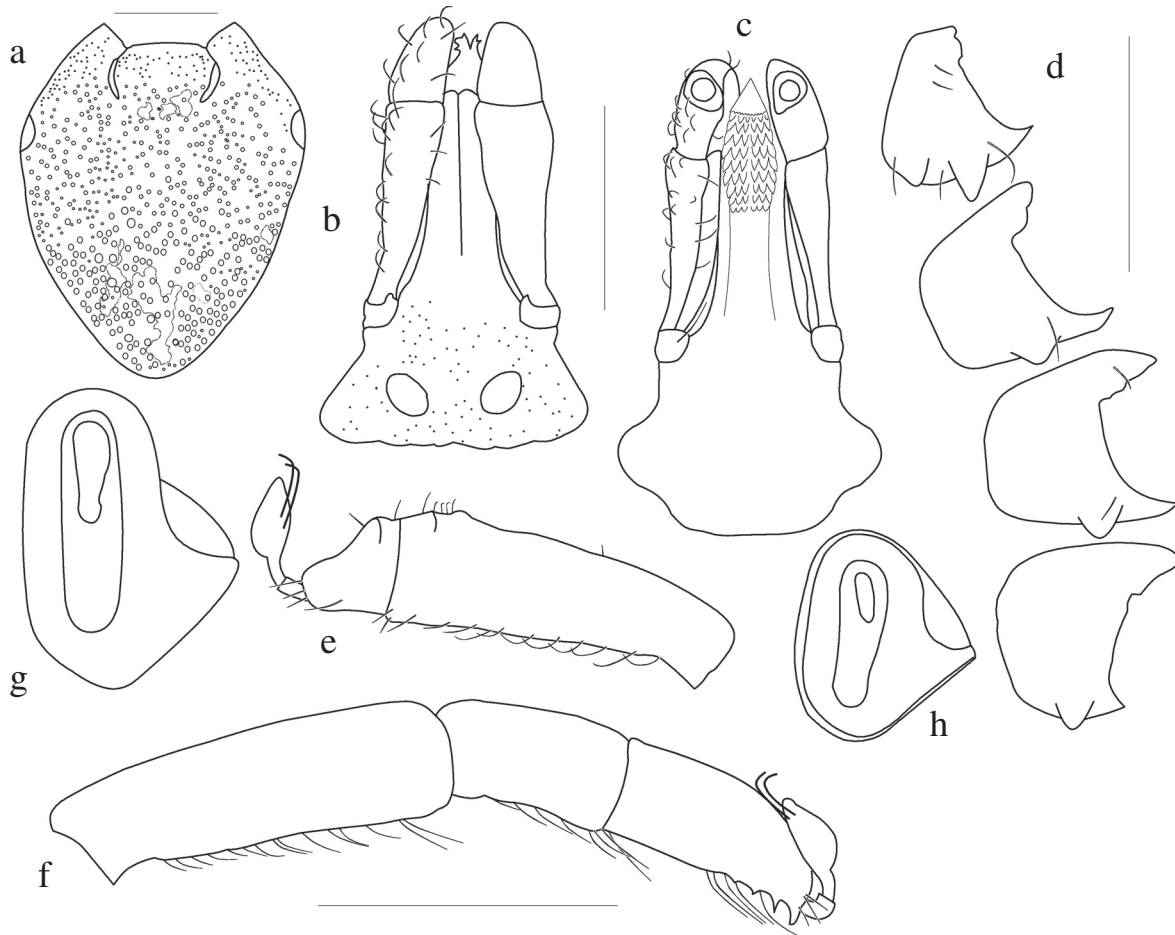


Fig. 48. *Amblyomma longirostre*, female: a — scutum; b — gnathosoma, dorsal view; c — gnathosoma, ventral view; d — coxae; e — tarsus I; f — tarsus and tibia IV; g, h — spiracular plates. Scale bar 1 mm.

scutal margin 6.0, 6.15, breadth 3.65, 3.8. Outline oval, broadest at level of the middle of scutum, more narrow at the level of spiracular plate, and broad at the level of first festoons. Scutum dark-brown, ornate; metallic, goldish-crimson, narrow, longitudinal patches in the lateral areas and small patches in the posterior area. Scutal punctations very dense, not deep, small. Cervical grooves very short and narrow, pit-like. Marginal groove incomplete, beginning at level of legs III and embracing third festoon, along the five central festoons shallow depression with dense punctations. Festoons long, the central festoons very narrow, without chitinous plates beyond the posterior margin of the festoons. Eyes large, flat, situated on lateral surface of the scutum.

Capitulum length from palpal apices to posterior margin of basis 1.29, 1.43, breadth 0.91, 0.93. Basis capituli slightly wrinkled, with very small, dense punctations. Posterior margin of basis capituli straight or slightly convex, cornua absent or almost unnoticeable; lateral margins triangular, narrowly rounded, ventrally posterior margin near-

ly straight with very short, ridge-like, rounded cornua. Palpi length 0.87, 0.94, breadth 0.3, 0.31. Segment II 2–2.1 times longer than segment III, length of segment II 0.54, 0.57, length of segment III 0.26, 0.29. Palpi slightly wrinkled. Segment I ventrally with a low, slope ridge. Palpal setae: dorsolateral setae very thin, slightly curved, relatively long; dorsomedial setae short, very thin, almost straight; ventrolateral setae very thin, slightly curved, relatively long, shorter on III; ventromedial setae relatively long, very thin. Palpal segment I ventrally with a single, long, thin seta. Hypostome length 0.64, 0.64, length of toothed portion 0.37, 0.39; apex with pointed, triangular, central projection; dental formula 3/3.

Legs. Coxa I with 2 triangular spurs, the external spur larger, internal spur very short, sharp. Coxae II–IV each with a single, short, triangular spur, slightly longer, more narrow, directed posteromedially on IV. Trochanters lack spurs. Tarsus I length 1.47, 1.53, width 0.36, 0.4; without spurs. Tarsus IV length 1.57, 1.67, breadth 0.31, 0.36; with a small, pointed apical hook and very

small, sharp ventral hump. Tibia IV length 1.4, 1.6, breadth 0.4, 0.46.

Genital aperture situated between coxae II. Spiracular plate long, medial and lateral margins parallel, medial and posterior margins nearly straight, dorsal prolongation narrow, perpendicular or forming the acute angle with anterior-posterior axis of spiracular plate. Integumentary hard elements of the ventral skeleton of idiosoma consist of large unpaired anal and 2 paired postanal shields, and festoons' shields. Postanal groove with a thin, unpaired median groove extending to the unpaired shield.

Female (Fig. 48). Measurements from one specimen. Length from apices of scapulae to posterior body margin 6.5, breadth 4.15. Dorsal and ventral body setae few, very short and thin. Marginal groove complete, beginning near the posterior margin of scutum. Festoons broad, nearly square.

Scutum length 3.6, breadth 2.75; brown and yellow-brown between cervical grooves, ornate; metallic, goldish-red, irregular-shaped patch in the posterior part of the scutum. Scutal punctations medium in size, very dense. Cervical grooves deep, narrow, crescent, pit-like, situated at a distance from anterior margin of scutum. Eyes large, marginal, slightly bulging.

Capitulum length from palpal apices to posterior margin of basis 2.14, breadth 1.24; posterior margin undulated, cornua absent; lateral margins triangular; ventrally posterior margin slightly convex. Punctuations of basis capituli smaller than scutal, dense. Porose areas small, round, not deeply depressed, diameter of one area 0.17, interporose area 0.24. Palpi length 1.43, breadth 0.36. Palpi slightly wrinkled. Segment II 2.3 times longer than segment III, length of segment II 0.9, length of segment III 0.39. Segment I ventrally with a low, sloping ridge and dorsally with a small, pointed spur directed anteriorly. Palpal setae: dorsolateral setae long, thin, curved; dorsomedial setae long, thin, slightly curved; ventrolateral setae long, very thin, curved; ventromedial setae long, thin, slightly curved and straight. Palpal segment I ventrally with a single, long, thin seta. Hypostome length 1.16, length of toothed portion 0.64; apex long, triangular, sharp; dental formula 3/3.

Legs. Coxa I with 2 triangular spurs, the external spur larger, internal spur sharply rounded. Coxae II–IV each with a single, short, triangular spur. Trochanters lack spurs. Tarsus I length 1.64, width 0.3; without ventroapical spurs. Tarsus IV length 1.63, breadth 0.36, with pointed

apical and subapical ventral spurs. Tibia IV length 1.54, breadth 0.46.

Spiracular plate long, medial and lateral margins almost parallel, medial and posterior margins straight, dorsal prolongation short, triangular, forming the acute angle with anterior-posterior axis of spiracular plate. Genital aperture «U» shaped, situated between coxae II–III. Postanal groove with unpaired, posteriorly directed, median groove reaching to the festoon.

Material: 2 males (US National Tick Collection, RML 33987) Trinidad, Sangre Grande, Long Stretch, 14.11.1955, ex *Coendou prehensilis* (Lm.), coll. T.H.G. Aitken; female (US National Tick Collection, RML 35124) Trinidad, Sangre Grande, 5.12.1958, ex *Turdus nudigenis*, coll. T.H.G. Aitken.

Amblyomma macfarlandi

Male (Fig. 49). Measurements from 2 specimens. Length from apices of scapulae to posterior scutal margin 2.6, 2.6, breadth 2.6, 2.8. Outline rounded, broadest at level of the legs IV. Scutum dark-brown, ornate; some dim, pale, in some places with goldish glance patches in the anterior area of scutum. Scutal surface with minute punctations in the anterior third; central and posterior area with some depressions with very dense, large punctations inside; between the depressions smooth and bright areas forming the symmetrical pattern looks like maple leaf. Dorsum with long, straight, white setae situated abreast along the margin of scutum and in blocks of 2–3 between the festoons; dorsal surface of scutum with relatively dense, very short and thin setae. Cervical grooves very deep, crescent, pit-like, situated at a distance from anterior margin of scutum. Marginal groove inconspicuous, the narrow depression with very dense punctations beginning at level of legs IV and embracing the festoons. Festoons rectangular, broadest in the middle, with dense, large punctations, and without chitinous plates beyond the posterior margin of the festoons. Eyes marginal, small, slightly bulging.

Capitulum length from palpal apices to cornua apices 0.76, 0.77, breadth 0.50, 0.57. Basis capituli wrinkled, with small, shallow punctations and with few, short and relatively thick setae. Posterior margin of basis capituli straight or slightly concave, cornua large, triangular, narrowly rounded; lateral margins straight, ventrally posterior margin slightly convex. Palpi length 0.5, 0.5, breadth 0.11, 0.14. Segment II 2.2–2.3 times longer than segment III, length of segment II 0.31, 0.33, length of segment III 0.14, 0.14. Palpi slightly wrinkled. Segment I ventrally with a very low, almost unnoticeable

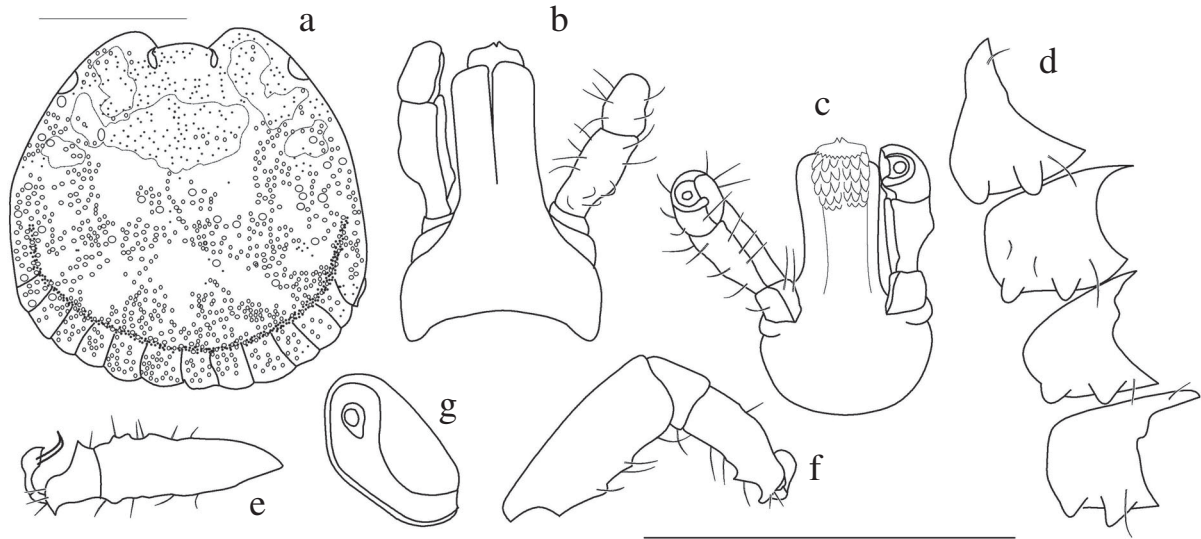


Fig. 49. *Amblyomma macfarlandi*, male: a — scutum; b — gnathosoma, dorsal view; c — gnathosoma, ventral view; d — coxae; e — tarsus I; f — tarsus and tibia IV; g — spiracular plate. Scale bar 1 mm.

ridge ending posteriorly with small spur. Segment III ventrally with a rounded hump on anteromedial margin. Palpal setae: dorsolateral setae relatively long and thick, almost straight; dorsomedial setae long, straight; ventrolateral setae relatively short and thick; ventromedial setae long, straight. Palpal segment I ventrally with two long, thin setae. Hypostome length 0.47, 0.49, length of toothed portion 0.21, 0.21; apex notched, with a corona of fine denticles, each half of the apex straight, with a small, triangular projection near the median axis; dental formula 3/3.

Legs. Coxa I with 2 short, equal, rounded spurs, the internal spur broader. Coxae II–IV each with two short, equal, triangular spurs, slightly longer on IV. Trochanters lack spurs. Tarsus I length 0.64, 0.71, width 0.19, 0.2; with small apical spur. Tarsus IV length 0.53, 0.57, breadth 0.14, 0.14; with a pointed apical hook and small, sharp ventral hump. Tibia IV length 0.54, 0.6, breadth 0.2, 0.23.

Venter with white, straight, relatively dense setae slightly shorter than dorsal. Genital aperture situated between coxae II. Spiracular plate small, oval, with very long, fluently rounded dorsal prolongation; lateral margin of spiracular plate with very large, chitinous border. Integumentary hard elements of the ventral skeleton of idiosoma consist of unpaired anal and one paired postanal shields, and festoons' shields. Postanal groove with short, unpaired median groove extending to the unpaired shield.

Female (Fig. 50). Measurements from 2 specimens. Length from apices of scapulae to posterior

body margin 4.0, 4.0, breadth 3.45, 3.5. Alloscutum with dense, long, thick, flat setae longer along the body border, between the festoons per 2–3 setae. Ventral body setae dense, long, needle-shaped. Marginal groove unnoticeable, in some places presented of deep punctations. Festoons rectangular.

Scutum length 2.0, 2.2, breadth 2.2, 2.4; dark-brown, ornate; metallic, goldish-crimson, with green or red border patch covers almost the all scutum. Scapulae sharp, their medial margins with large ledges directed anteriorly. Scutal punctations not deep, dense, small and medium in size. Scutum with relatively dense, short, needle-shaped setae. Cervical grooves long, very deep and converging anteriorly, then more shallow and diverging. Eyes large, marginal, slightly bulging.

Capitulum length from palpal apices to cornua apices 1.21, 1.37, breadth 0.74, 0.86; posterior margin straight, cornua short, triangular, narrowly rounded; lateral margins triangular; ventrally posterior margin straight. Punctations of basis capituli few, small, shallow; surface slightly wrinkled. Porose areas narrow, oval, deeply depressed, diameter of one area 0.14, 0.16, interporose area 0.1, 0.13. Palpi length 0.86, 0.93, breadth 0.16, 0.17. Palpi slightly wrinkled. Segment II 2.5 times longer than segment III, length of segment II 0.5, 0.6, length of segment III 0.2, 0.24. Segment I ventrally with interrupted, almost unnoticeable ridge ending posteriorly with small spur. Anterior margin of segment II ventrally broader than basis of segment III and with a triangular, sharp hump on anteromedial margin. Segment III ventrally with a rounded hump on anteromedial margin. Palpal setae: dorsolateral

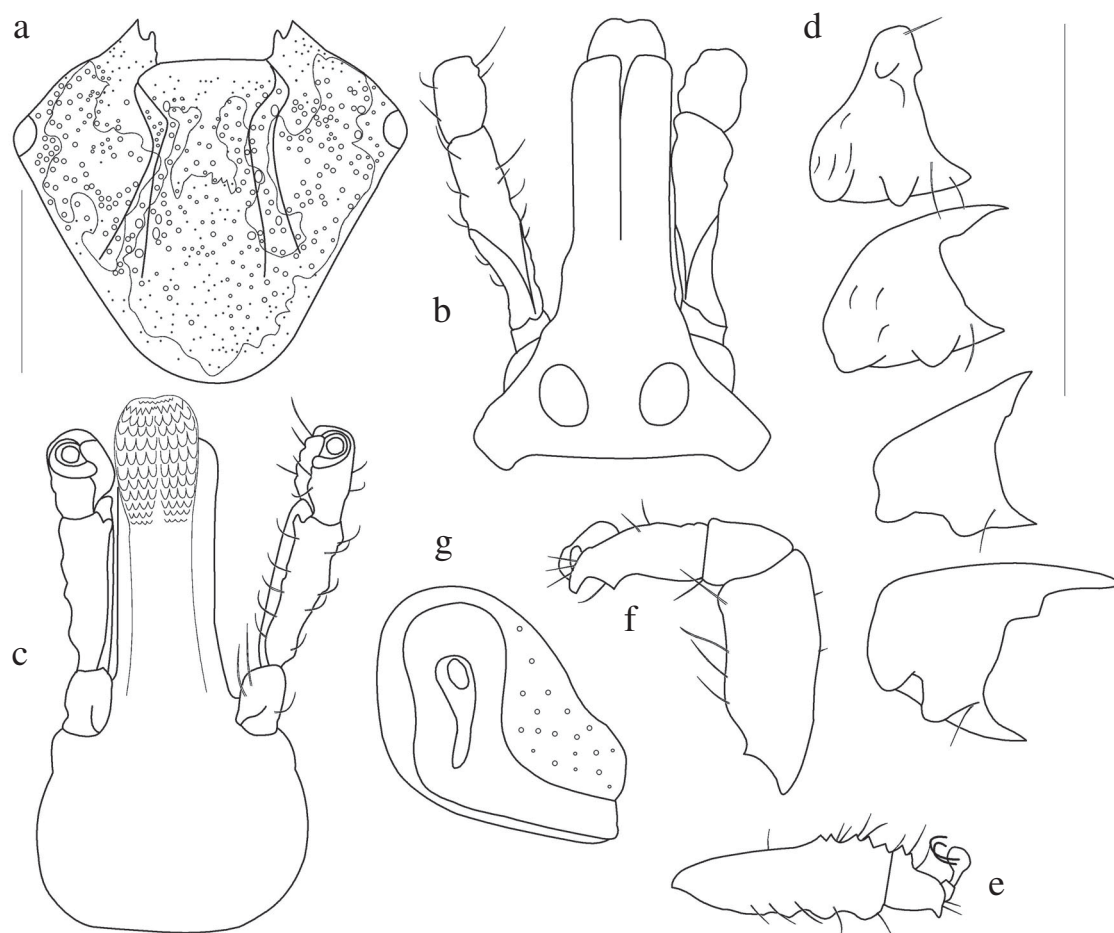


Fig. 50. *Amblyomma macfarlandi*, female: a — scutum; b — gnathosoma, dorsal view; c — gnathosoma, ventral view; d — coxae; e — tarsus I; f — tarsus and tibia IV; g — spiracular plate. Scale bar 1 mm.

setae long, relatively thick, slightly curved; dorso-medial setae long and short, relatively thick, slightly curved; ventrolateral setae short, thick, curved; ventromedial setae longer, thick, slightly curved. Palpal segment I ventrally with 2 long, almost straight setae. Hypostome length 0.81, 0.86, length of toothed portion 0.29, 0.36; apex rounded, with very small central notch; dental formula 4/4.

Legs. Coxa I with 2 equal, triangular, rounded spurs, the internal spur broader. Coxae II–IV each with 2 short, equal, triangular, broadly rounded spurs, larger on IV. Trochanters lack spurs. Tarsus I length 0.79, 0.88, width 0.2, 0.21; ventrally with small, pointed apical spur and 2 blunt, ventral humps; dorsally with some, small, pointed humps. Tarsus IV length 0.61, 0.64, breadth 0.17, 0.17, with strong apical hook and triangular ventral hump. Tibia IV length 0.6, 0.71, breadth 0.23, 0.27.

Spiracular plate large, medial and lateral margins almost parallel, medial margin concave, posterior margin straight, dorsal prolongation very long, forming the obtuse angle with anterior-posterior axis of spiracular plate; lateral margin of spiracular

plate with very large, chitinous border. Genital aperture «V» shaped, situated between coxae II–III. Postanal groove with unpaired, posteriorly directed, median groove reaching to the festoon.

Material: 2 males and 2 females (US National Tick Collection, RML 64598) Galapagos Islands, Santa Cruz Island, Tortoise reserve, 12.08.1974, ex *Geochelone elephantopus*, coll. R.C.A. Rice.

Amblyomma maculatum

Male (Fig. 51). Measurements from 2 specimens. Length from apices of scapulae to posterior scutal margin 3.63, 3.7, breadth 2.35, 2.5. Outline oval, broadest at level of the legs IV. Scutum brown; ornate; thin, pale pink strips forming the symmetrical pattern. Scutal punctations shallow, medium in size, situated mainly along the margins of color strips. Alloscutal setae very short and thin, numerous along the margins of body and absent on the dorsal surface. Cervical grooves deep, short, almost straight, beginning at a distance from the anterior margin of scutum. Marginal groove complete, beginning at level of legs II. Festoons rectan-

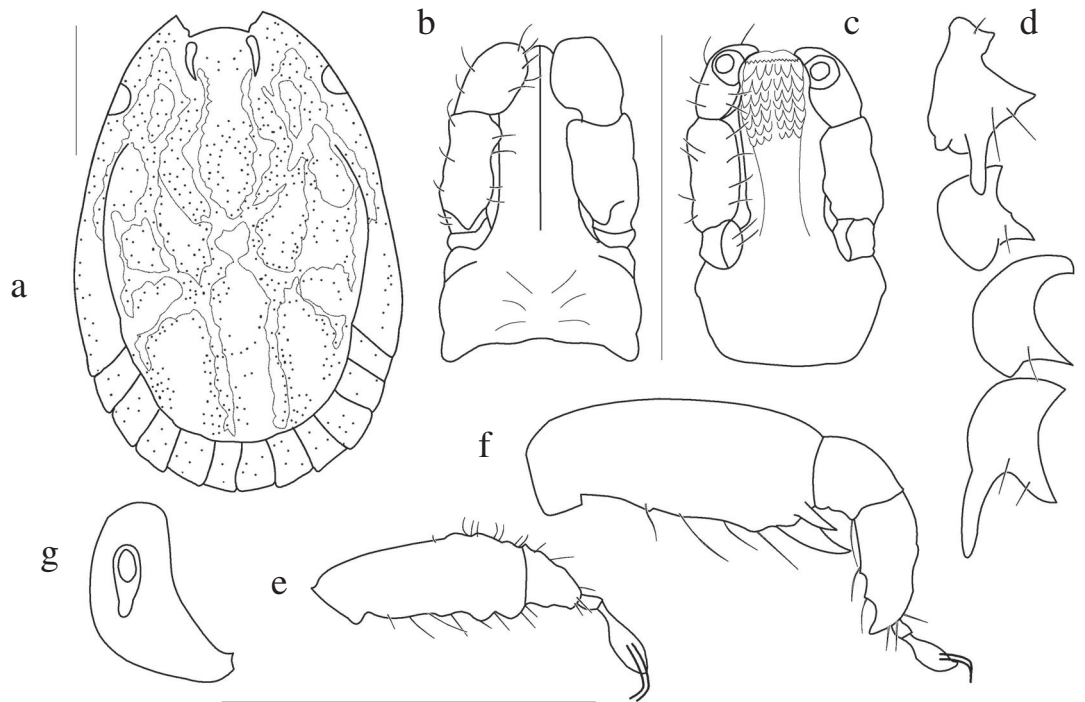


Fig. 51. *Amblyomma maculatum*, male: a — scutum; b — gnathosoma, dorsal view; c — gnathosoma, ventral view; d — coxae; e — tarsus I; f — tarsus and tibia IV; g — spiracular plate. Scale bar 1 mm.

gular, without chitinous plates beyond the posterior margin of the festoons but their ventromedial edges elongated and slightly evident from the dorsum. Eyes marginal, large, slightly bulging.

Capitulum length from palpal apices to cornua apices 1.0, 1.04, breadth 0.57, 0.6. Basis capituli slightly wrinkled, with few, small, shallow punctations. Posterior margin of basis capituli straight, cornua short, triangular, narrowly rounded; lateral margins straight, ventrally posterior margin slightly convex. Palpi length 0.67, 0.68, breadth 0.17, 0.18. Segment II 1.5–1.6 times longer than segment III, length of segment II 0.37, 0.37, length of segment III 0.23, 0.24. Palpi slightly wrinkled. Segment I ventrally with a low, sloping, interrupted ridge. Palpal setae: dorsolateral setae short, thin, slightly curved; dorsomedial setae short, thin, straight; ventrolateral setae short, thin, almost straight; ventromedial setae long, straight, thin. Palpal segment I ventrally with 2 long, thin setae. Hypostome length 0.61, 0.66, length of toothed portion 0.34, 0.36; apex notched, with a corona of fine denticles, each half of the apex straight, with a small, triangular projection near the median axis; dental formula 3/3.

Legs. Coxa I with 2 spurs, the external spur very long and reaching the anterior margin of coxa II, narrow, sharp; internal spur very short, narrowly rounded. Coxae II–III each with a single, short,

triangular, rounded spur, more narrow on III. Coxa IV with a single, very long, narrow, sharp spur directed posteromedially. Trochanters lack spurs. Tarsus I length 0.76, 0.79, width 0.24, 0.24; with very small apical hump and 2 blunt, ventral humps. Tarsus IV length 0.6, 0.64, breadth 0.19, 0.2; with a thick, strong, almost straight apical spur. Tibia IV length 0.9, 0.93, breadth 0.36, 0.37. Tibia II–IV each with 2 very large, thick apical spurs, the dorsal spur large.

Venter with relatively long, thin, straight setae more dense between coxae. Genital aperture situated between coxae II. Lateral and medial margins of spiracular plate almost parallel, medial margin nearly straight, dorsal prolongation relatively broad, forming the obtuse angle with anterior-posterior axis of spiracular plate. Integumentary hard elements of the ventral skeleton of idiosoma absent. Postanal groove with unpaired median groove extending to the festoon.

Female (Fig. 52). Measurements from 2 specimens. Length from apices of scapulae to posterior body margin 3.6, 3.7, breadth 2.15, 2.6. Dorsal body setae very short, thin, relatively dense along the body border. Ventral body setae very short, thin, relatively dense. Marginal groove complete, beginning near the posterior margin of scutum. Festoons rectangular, their ventromedial margins with more or less noticeable sclerotized tubercles.

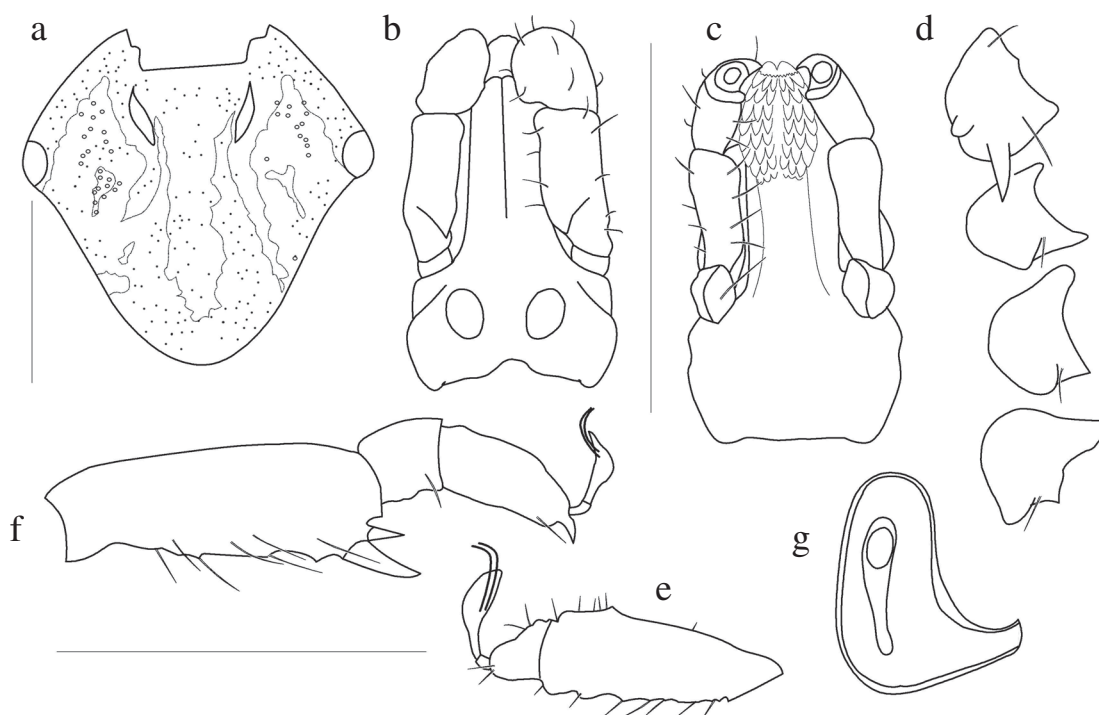


Fig. 52. *Amblyomma maculatum*, female: a — scutum; b — gnathosoma, dorsal view; c — gnathosoma, ventral view; d — coxae; e — tarsus I; f — tarsus and tibia IV; g — spiracular plate. Scale bar 1 mm.

Scutum length 1.8, 2.0, breadth 1.8, 1.85; light-brown, ornate; metallic, goldish-pink with green border patches: one large, horseshoe-shaped patch with long, narrow branches extending to the cervical grooves, and 2 rhombic, lateral patches. Scapulae sharp, their medial margins with ledges. Scutal punctations shallow, minute, more numerous in the anterior part of scutum, larger and more deep in each lateral area. Cervical grooves deep, nearly straight, pit-like anteriorly, then more shallow and diverging. Eyes large, marginal, slightly bulging.

Capitulum length from palpal apices to cornua apices 1.14, 1.16, breadth 0.67, 0.69; posterior margin concave or nearly straight, cornua short, narrowly rounded; lateral margins convex; ventrally posterior margin slightly convex. Basis capituli slightly wrinkled. Porose areas narrow, oval, deeply depressed, diameter of one area 0.14, 0.16, interporose area 0.11, 0.13. Palpi length 0.79, 0.79, breadth 0.27, 0.27. Palpi slightly wrinkled. Segment II 1.6 times longer than segment III, length of segment II 0.43, 0.44, length of segment III 0.26, 0.27. Segment I ventrally with interrupted, low, sloping ridge ending posteriorly with small spur. Segment III ventrally with a small, rounded hump on anteromedial margin. Palpal setae: dorsolateral setae short, relatively thick, slightly curved; dorso-medial setae short, almost straight; ventrolateral

setae very short, thin, slightly curved; ventromedial setae relatively long, thin, straight. Palpal segment I ventrally with 2 long, almost straight setae in one specimen and with a single seta in second specimen. Hypostome length 0.71, 0.71, length of toothed portion 0.39, 0.39; apex rounded, with central notch; dental formula 3/3.

Legs. Coxa I with 2 spurs, the external spur very long and reaching the anterior margin of coxa II, narrow, pointed; internal spur very short, narrowly rounded. Coxae II–IV each with a single, short, triangular spur, more narrow on IV. Trochanters lack spurs. Tarsus I length 0.87, 0.88, width 0.27, 0.28; with 2 blunt, small, ventral humps. Tarsus IV length 0.7, 0.71, breadth 0.19, 0.21, with strong, nearly straight apical spur. Tibia IV length 0.89, 1.0, breadth 0.31, 0.36. Tibia II–IV with 2 very large, thick apical spurs, the dorsal spur large.

Medial and lateral margins of spiracular plate slightly diverging, medial margin straight, posterior margin slightly convex, dorsal prolongation narrow, forming an acute angle with anterior-posterior axis of spiracular plate. Genital aperture «U» shaped, situated between coxae II–III. Postanal groove with unpaired, posteriorly directed, median groove extending to the festoon.

Material: 2 males, 2 females (US National Tick Collection, RML 17153) U.S.A., Georgia, 29.07.1940, ex sheep, coll. Van Wheelless.

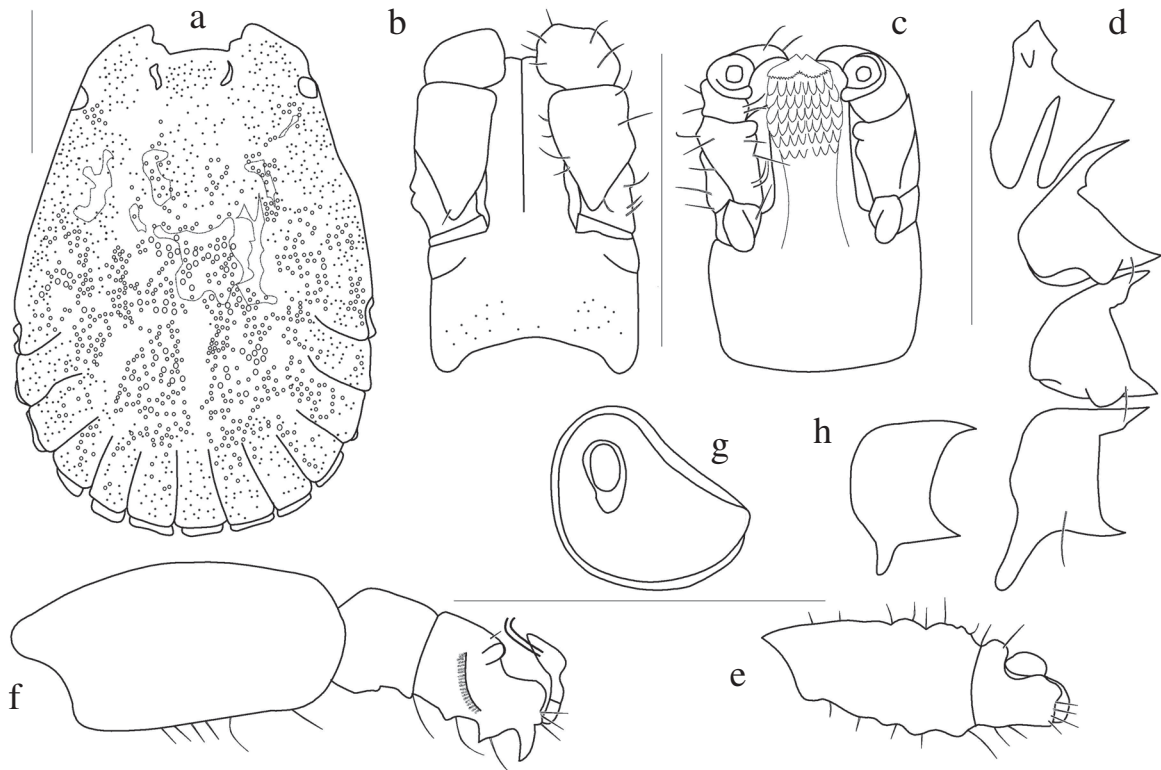


Fig. 53. *Amblyomma multipunctum*, male: a — scutum; b — gnathosoma, dorsal view; c — gnathosoma, ventral view; d — coxae; e — tarsus I; f — tarsus and tibia IV; g — spiracular plate, h — variant of coxa IV. Scale bar 1 mm.

Amblyomma multipunctum

Male (Fig. 53). Measurements from 2 specimens. Length from apices of scapulae to posterior scutal margin 3.7, 4.9, breadth 2.8, 3.3. Outline oval, broadest at level of first festoons. Scutum dark-brown; ornate, dim, goldish-pink with green, thin patches forming the reticulation pattern. Scutal punctations small and large, relatively deep, dense excepting the areas forming the symmetrical pattern. Cervical grooves narrow, deep, crescent, pit-like situated at a distance from the anterior margin of scutum. Marginal groove absent. Festoons narrow, long, with short chitinous plates beyond the posterior margin of the festoons. Eyes marginal, small, slightly bulging.

Capitulum length from palpal apices to cornua apices 1.03, 1.26, breadth 0.64, 0.8. Basis capituli with small, deep, relatively dense punctations. Posterior margin of basis almost straight, cornua relatively large, triangular, broadly rounded; external margins straight, ventrally posterior margin slightly convex. Palpi length 0.57, 0.8, breadth 0.26, 0.31. Segment II 1.7–2.0 times longer than segment III, length of segment II 0.39, 0.5, length of segment III 0.23, 0.24. Palpi with small punctations. Segment I ventrally with a large, oval paddle directed posteriorly; dorsally with small, pyramidal spur

directed posteromedially. Segment II dorsally with large, triangular, narrowly rounded spur directed posteriorly; ventrally with rounded, pyramidal spur on anteromedial margin. Segment III ventrally with a rounded hump on anteromedial margin. Palpal setae: dorsolateral and dorsomedial setae relatively long, thin, almost straight; ventrolateral and ventromedial setae long, thin, almost straight. Palpal segment I ventrally with a single, not long, medial seta. Hypostome length 0.57, 0.69, length of toothed portion 0.34, 0.37; apex notched, with a large corona of fine denticles, first row of denticles directed anteriorly; each half of the apex triangular; dental formula 4/4.

Legs. Coxa I split, with 2 triangular, subequal spurs or the internal spur slightly longer. Coxa I with a small, sharp, spur-like callosity anteriorly. Coxae II–III each with 2 spurs, the external spur broad, triangular, internal spur very short, rounded. Coxa IV with a single, triangular, sharp spur directed posteromedially; in large males spurs very long and in small males spurs greatly shorter. Trochanters lack spurs. Tarsus I length 0.81, 0.93, width 0.29, 0.34; with 2 blunt, rounded ventral humps and with 2 large, rounded, dorsal humps. Tarsus IV length 0.61, 0.71, breadth 0.2, 0.27; with strong, slightly curved apical hook and large, pointed ven-

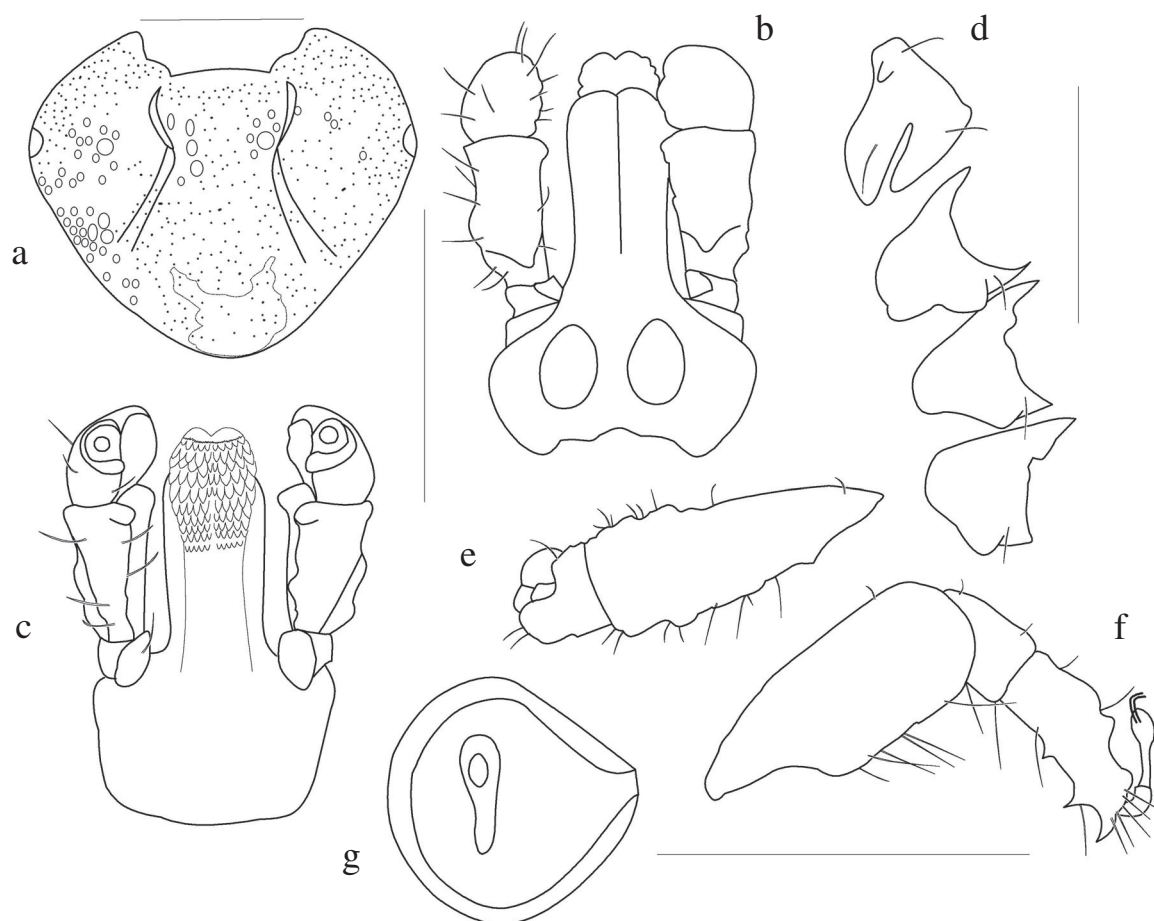


Fig. 54. *Amblyomma multipunctum*, female: a — scutum; b — gnathosoma, dorsal view; c — gnathosoma, ventral view; d — coxae; e — tarsus I; f — tarsus and tibia IV; g — spiracular plate. Scale bar 1 mm.

tral spur. Tarsus IV with high, sharp ridge dorsally and with evident, sharp ridge on the lateral surface. Tibia IV length 0.64, 0.93, breadth 0.3, 0.48.

Venter with few, very short and thin setae. Genital aperture situated between coxae II. Spiracular plate nearly oval, medial and lateral margins diverging, medial and posterior margins convex, dorsal prolongation very short and broad, perpendicular to anterior-posterior axis of spiracular plate. Postanal groove with a very short, unpaired median groove extending to the festoon. Integumentary hard elements of the ventral skeleton of idiosoma consist of small, unpaired, anal shield situated nearly central festoon and 1 paired postanal shields situated nearly festoons but not along the genital groove, festoon shields very large. All ventral surface with dense, small, round, sclerotized plaques.

Female (Fig. 54). Measurements from 4 specimens, one partially engorged. Length from apices of scapulae to posterior body margin 4.55, 4.7, 4.7, 5.9, breadth 3.3, 3.35, 3.35, 4.4. Dorsal and ventral body setae few, very short and thin. Marginal groove incomplete, beginning near the posterior

margin of scutum and embracing second or third festoons. Festoons rectangular.

Scutum length 1.75–2.25, breadth 2.25–2.58; brown, more dark in each lateral area; ornate, small, horseshoe-shaped or trapezoid, dim, goldish-pink patch in the posterior part of the scutum. Scutal punctations dense, small, shallow, but larger and deeper near the lateral margins and cervical grooves. Scapulae with ledge on medial margins. Cervical grooves long, X-shaped, deep, converging anteriorly, then more shallow, diverging. Eyes large, marginal, slightly bulging.

Capitulum length from palpal apices to cornua apices 1.29–1.5, breadth 0.86–1.0; posterior margin concave, undulated, cornua short, triangular, narrowly rounded; lateral margins convex; ventrally posterior margin slightly convex. Porose areas oval, deeply depressed, diameter of one area 0.17–0.21, interporose area 0.11–0.16. Palpi length 0.86–0.97, breadth 0.29–0.36. Palpi slightly wrinkled. Segment II 1.9–2.1 times longer than segment III, length of segment II 0.5–0.59, length of segment III 0.26–0.29. Segment I ventrally with a large, oval

paddle directed posteriorly and ventrally. Segment II dorsally with large, triangular spur directed posteriorly and with triangular, rounded hump on anteromedial margin; ventrally with a large, pyramidal hump on anteromedial margin. Segment III ventrally with a triangular, rounded hump on anteromedial margin. Palpal setae: dorsolateral and dorsomedial setae long, thin, almost straight; ventrolateral setae long, thin, straight; ventromedial setae shorter, thin, almost straight. Palpal segment I ventrally with a single, relatively short, straight seta. Hypostome length 0.71–0.9, length of toothed portion 0.4–0.5; apex notched, rounded; dental formula 5/5 in the first anterior file and 4/4 in the other files or 5/5 in all files.

Legs. Coxa I split, with 2 long, triangular spurs, the internal spur broader and slightly longer. Coxa I with a sharp, spur-like callosity anteriorly. Coxae II–III each with 2 spurs, the external spur short, broadly rounded, internal spur very short, almost invisible. Coxa IV with a single, relatively large, triangular, rounded spur. Trochanters lack spurs. Tarsus I length 1.06–1.14, width 0.33–0.37; without ventroapical hook but with 2 ventral, small, blunt humps; dorsally with 3 rounded humps. Tarsus IV length 0.77–0.86, breadth 0.21–0.24, with one strong, pointed ventroapical hook and one pointed, triangular ventral hump. Tibia IV length 0.86–1.0, breadth 0.33–0.36.

Spiracular plate rounded, with very short, narrow dorsal prolongation forming an acute angle with anterior-posterior axis of spiracular plate. Genital aperture «U» shaped, situated between coxae II–III. Postanal groove with unpaired, posteriorly directed, median groove extending almost to the festoon.

Material: 2 males and 2 females (US National Tick Collection, RML 49127) Colombia, «Paramo» (+300 meter) of Rio Lorado — on border of the departments Huila, Meta and Caqueta, November 1967, ex *Tapirus pinchaque*; 2 females (US National Tick Collection, RML 34068) Ecuador, Cayambe, provincia del Pichincha, 1954–1956, ex *Tapirus roulini*, sent in by Dr. Luis A. Leon.

Amblyomma naponense

Male (Fig. 55). Measurements from 2 specimens. Length from apices of scapulae to posterior scutal margin 3.5, 3.6; breadth 2.7, 2.7. Outline oval, broadest in the middle of scutum. Scutum light-brown; ornate, small, metallic, goldish-pink patches between eyes and scapulae, and close to festoons. Scutal punctations few, small and shallow. Cervical grooves very small, oval, pit-like,

situated at the distance from the anterior margin of scutum. Marginal groove absent. Festoons rectangular, dorsally without chitinous plates extending beyond the posterior margin of the festoons, ventrally 2–5th festoons with triangular spurs longer and more sharp on 4–5th festoons. Eyes marginal, large, flat.

Capitulum length from palpal apices to cornua apices 0.9, 0.9; breadth 0.54, 0.54. Posterior margin of basis capituli straight, cornua triangular, narrowly rounded, lateral margins straight, ventrally posterior margin straight. Basis capituli with very few and shallow punctations. Palpi length 0.57, 0.61; breadth 0.2, 0.22. Segment II dorsally with few, small, shallow punctations. Segment II 1.2–1.4 times longer than segment III, length of segment II 0.3, 0.3; length of segment III 0.21, 0.24. Segment I ventrally with long, narrow, oval paddle directed posteriorly and ventrally. Palpal setae: dorsolateral setae relatively short, thin, curved; dorsomedial setae short, thin, straight; ventrolateral setae short, thin, curved; ventromedial setae long, thick, almost straight. Palpal segment I ventrally with 2 long, almost straight setae. Hypostome length 0.51, 0.53; length of toothed portion 0.29, 0.29; apex notched, with a corona of fine denticles, first row directed anteriorly; each half of the apex straight, with a triangular projection near the median axis. Dental formula 3/3.

Legs. Coxa I with 2 spurs, the external spur longer and reaching the anterior margin of coxa II, narrow, sharp, triangular; internal spur broad, triangular. Coxa I with a sharp, spur-like callosity anteriorly. Coxae II–IV each with a single, triangular spur, more narrow on II. Trochanters lack ventral spurs, trochanter I dorsally with a triangular, broadly rounded spur, directed posteriorly. Tarsus I length 0.99, 1.03; width 0.31, 0.31; with two blunt, ventral humps. Tarsus IV length 0.83, 0.86; breadth 0.21, 0.23; with one strong, ventroapical hook and a pointed ventral hook. Tibia IV length 0.86, 0.96; breadth 0.29, 0.3.

Venter with very few, short and thin setae. Genital aperture situated between coxae II. Lateral and medial margins of spiracular plate nearly parallel, medial margin almost straight, dorsal prolongation broad, forming an obtuse angle with anterior-posterior axis of spiracular plate. Integumentary hard elements of the ventral skeleton of idiosoma absent. Postanal groove with very thin, unpaired, posteriorly directed, median groove extending to the festoon.

Female (Fig. 56). Measurements from 2 specimens. Length from apices of scapulae to posterior

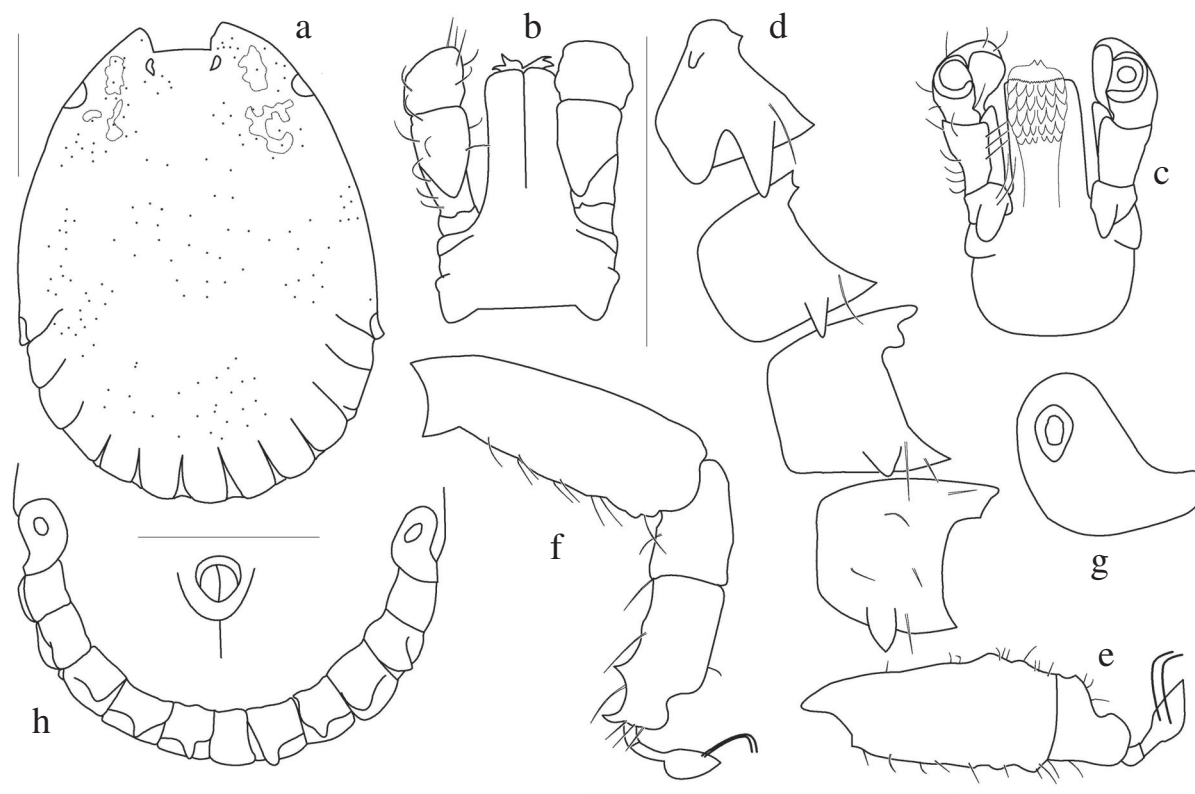


Fig. 55. *Amblyomma naponense*, male: a — scutum; b — gnathosoma, dorsal view; c — gnathosoma, ventral view; d — coxae; e — tarsus I; f — tarsus and tibia IV; g — spiracular plate, h — posterior part of idiosoma, ventral view. Scale bar 1 mm.

body margin 3.7, 4.3; breadth 3.0, 3.5. Dorsal body setae very few, short and thin, ventral body setae very short and thin, only on festoons. Marginal groove complete, beginning near the posterior margin of scutum. Festoons rectangular.

Scutum length 1.88, 1.9; breadth 2.2, 2.3; dark-brown, lighter between cervical grooves, ornate, a large, bright, metallic, goldish-pink patch covers almost the all scutum. Posterior margin of scutum narrowly rounded, posterolateral margins nearly straight, anterolateral margins slightly convex. Scutal punctations small, shallow and large, deep, more dense in the central scutal area. Cervical grooves deep, roundly pit, almost indistinguishable from the large punctations, situated at the distance from the anterior margin of scutum. Eyes large, marginal, slightly bulging.

Capitulum length from palpal apices to cornua apices 1.31, 1.46; breadth 0.84, 0.89; posterior margin straight, lateral margins rounded; cornua very short, triangular, rounded; ventrally posterior margin convex. Porose areas small, not deeply depressed, diameter of one area 0.11, 0.14; interporose area 0.17, 0.2. Punctations of basis capituli very few, small, shallow. Palpi length 0.93, 1.03; breadth 0.2, 0.23. Segment II dorsally slightly wrinkled, with triangular, sharp projec-

tion directed posteriorly. Segment II 1.9 times longer than segment III, length of segment II 0.56, 0.6; length of segment III 0.29, 0.31. Segment I dorsally with small, rounded spur directed anteriorly; ventrally with long, oval paddle directed posteriorly and ventrally. Palpal setae: dorsolateral setae long, thin, curved; dorsomedial setae shorter, thin, almost straight; ventrolateral setae long, thin, curved; ventromedial setae long, relatively thick, slightly curved. Palpal segment I ventrally with 2 long, relatively thick setae. Hypostome length 0.93; length of toothed portion 0.3; apex notched, with a corona of fine denticles, first row directed anteriorly; each half of the apex straight; dental formula 3/3.

Legs. Coxa I with 2 spurs, the external spur longer and reaching the anterior margin of coxa II, sharp, triangular; internal spur broad, triangular. Coxa I with a small, sharp, spur-like callosity anteriorly. Coxae II–IV each with a single, short, triangular spur, broadest on II. Trochanters lack spurs. Tarsus I length 1.14, 1.29; width 0.29, 0.31; without apical spurs; dorsally with a small, sharp humps. Tarsus IV length 0.9, 0.96, breadth 0.21, 0.23, with very sharp ventroapical hook and one pointed ventral hump. Tibia IV length 1.01, 1.14, breadth 0.29, 0.34.

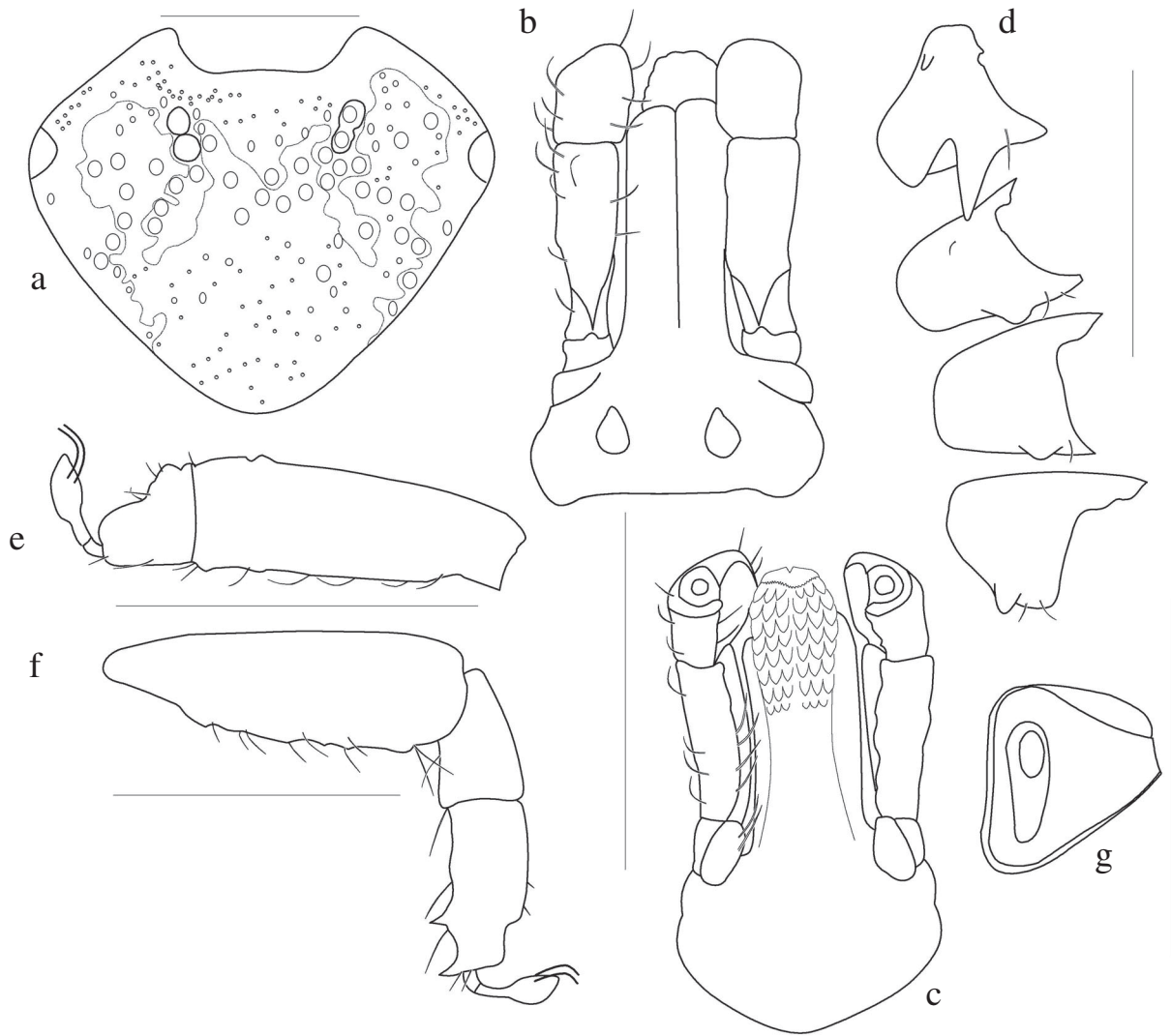


Fig. 56. *Amblyomma naponense*, female: a — scutum; b — gnathosoma, dorsal view; c — gnathosoma, ventral view; d — coxae; e — tarsus I; f — tarsus and tibia IV; g — spiracular plate. Scale bar 1 mm.

Spiracular plate subtriangular, medial and lateral margins diverging, medial margin straight, posterior margin straight, dorsal prolongation broad, forming an acute angle with anterior-posterior axis. Genital aperture «V» shaped, situated between coxae II–III. Postanal groove without unpaired, posteriorly directed, median groove.

Material: 2 males, 2 females (US National Tick Collection, RML 51874) Venezuela, San Juan, T.F. Amazonas Tamanaco (settlement) ca. 4 km. N.E., 155 m alt., Rio Manapiare, July 1967, ex *Tayassu tajacu*, coll. M.D. Tuttle and F. Harder.

Amblyomma neumanni

Male (Fig. 57). Measurements from 2 specimens. Length from apices of scapulae to posterior scutal margin 4.18, 4.43, breadth 2.95, 3.13. Outline oval, broadest in the middle of scutum. Scutum yellow-brown; ornate, some metallic, goldish-pink patches situated on the lateral and posterior areas of

scutum and on the festoons, in the central area one more pale patch. Scutal punctations small, shallow, fairly numerous especially near margins, with a few punctations centrally, only on metallic patch. Cervical grooves short, deep, almost parallel. Marginal groove very shallow, incomplete, beginning at level of legs II and embracing 2 or 4 festoons. Festoons narrow, without chitinous plates beyond the posterior margin of the festoons. Eyes marginal, small, slightly bulging.

Capitulum length from palpal apices to cornua apices 0.86, 0.97, breadth 0.66, 0.6. Basis capituli dorsally with very few, small and shallow punctations; surface shagreened, with few short, thick setae; ventrally with some short, thick, straight setae situated laterally. Posterior margin straight or slightly undulated, cornua short, triangular, narrowly rounded; external margins convex, ventrally posterior margin slightly convex. Palpi length 0.53,

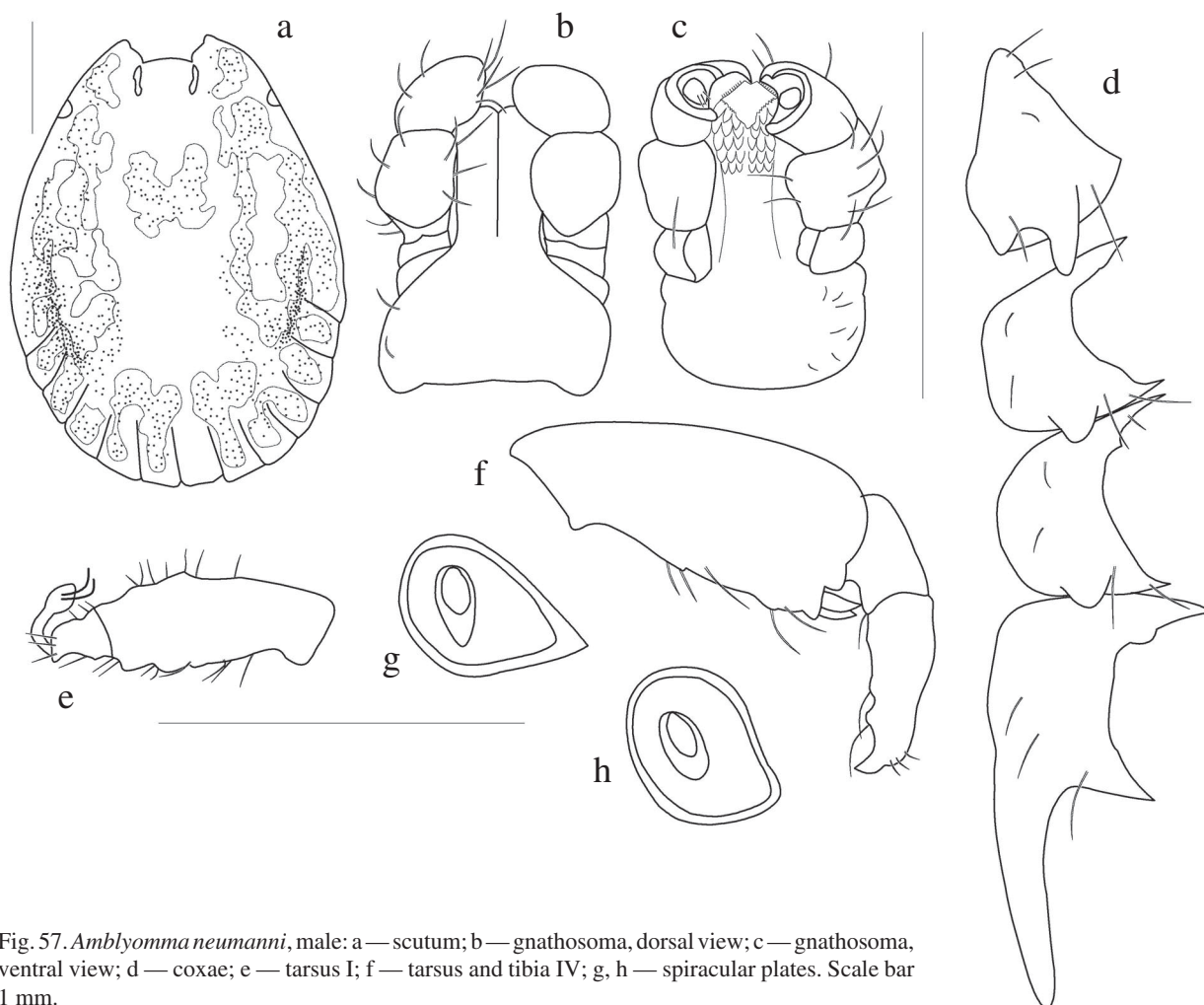


Fig. 57. *Amblyomma neumanni*, male: a — scutum; b — gnathosoma, dorsal view; c — gnathosoma, ventral view; d — coxae; e — tarsus I; f — tarsus and tibia IV; g, h — spiracular plates. Scale bar 1 mm.

0.61, breadth 0.2, 0.21. Segment II 1.5–1.7 times longer than segment III, length of segment II 0.31, 0.33, length of segment III 0.19, 0.21. Surface of segment II shagreened, with few, small, shallow punctations dorsally, ventrally wrinkled. Segment I ventrally with a sloping ridge ending posteriorly with a small, blunt spur. Segment III ventrally with a rounded paddle on anteromedial margin. Palpal setae: dorsolateral setae long, relatively thick, slightly curved; dorsomedial setae long, relatively thick, slightly curved and straight; ventrolateral setae long, relatively thick, almost straight; ventromedial setae shorter, thin, straight. Palpal segment I ventrally with a single, long, thick lateral seta. Hypostome length 0.53, 0.54, length of toothed portion 0.26, 0.29; apex notched, each half of the apex triangular, with a very large corona of fine denticles, first row directed anteriorly; dental formula 3/3.

Legs. Coxa I with 2 narrow, triangular spurs, the external spur longer and reaching the anterior margin of coxa II. Coxae II–III each with a single,

triangular, rounded spur. Coxa IV with a single, very long, narrow, sharp spur directed posteriorly. Trochanters lack spurs. Tarsus I length 0.79, 0.86, width 0.29, 0.29; with blunt ventroapical spur and with 2 ventral, large humps. Tarsus IV length 0.79, 0.79, breadth 0.19, 0.21; with a large ventroapical hook and triangular, blunt ventral hump. Tibia IV length 0.97, 1.1, breadth 0.46, 0.46. Tibia II–IV with very large, thick apical spurs.

Venter with dense, relatively long and slightly curved setae. Genital aperture situated between coxae II. Spiracular plate small, oval, medial margin convex, dorsal prolongation very short, triangular. Postanal groove with a shallow, unpaired median groove extending to the festoon. Integumentary hard elements of the ventral skeleton of idiosoma poor developed, with small festoons shields.

Female (Fig. 58). Measurements from 2 partially engorged specimens. Length from apices of scapulae to posterior body margin 4.45, 4.73, breadth 3.4, 3.43. Dorsal body setae dense, very short on the

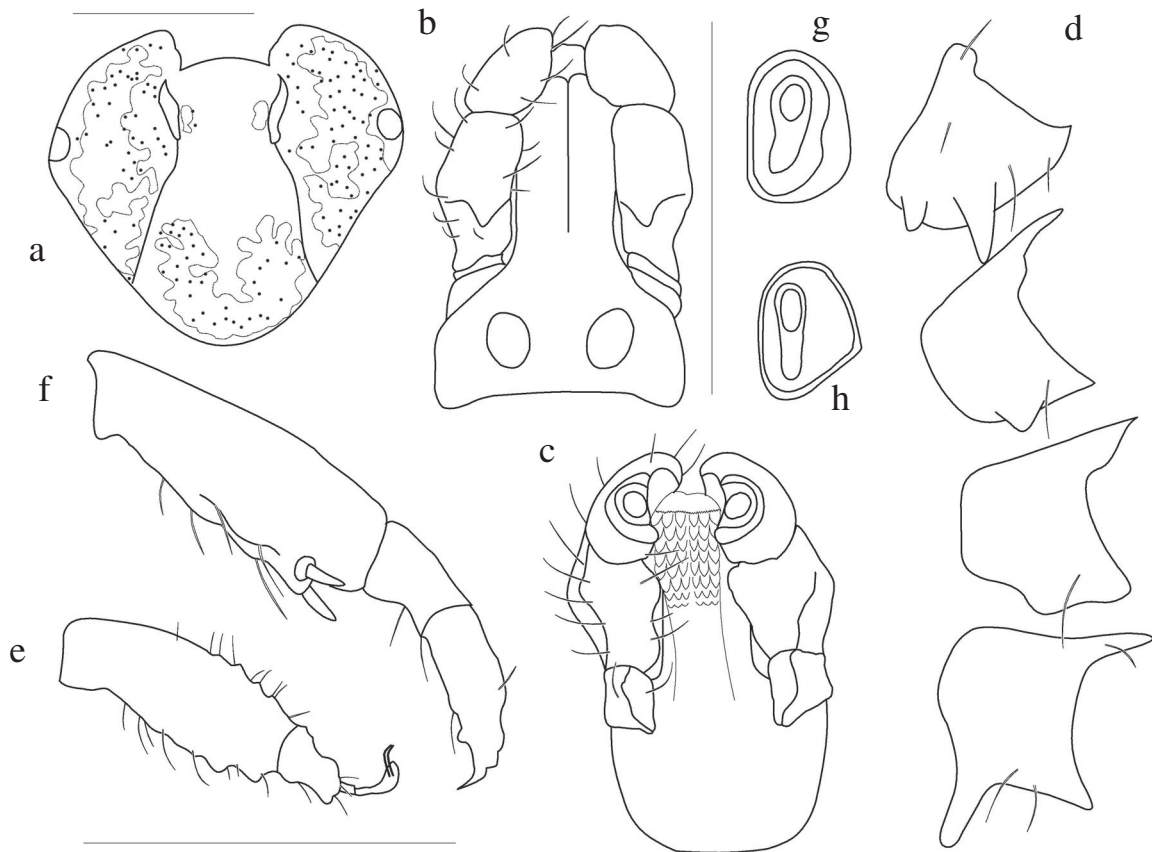


Fig. 58. *Amblyomma neumanni*, female: a — scutum; b — gnathosoma, dorsal view; c — gnathosoma, ventral view; d — coxae; e — tarsus I; f — tarsus and tibia IV; g, h — spiracular plates. Scale bar 1 mm.

dorsal surface centrally, relatively long, slightly curved along the posterior margin of scutum and on the anterolateral margins of body, few, very short on the lateral margins of body. Scutal setae very short, only on the scapular area. Ventral body setae dense, short, straight between coxae and in the posterior part of idiosoma, and dense, very long laterally from coxae. Marginal groove absent. Fes-toons broad.

Scutum length 1.89, 1.9, breadth 2.17, 2.19; brown, ornate; two large metallic, goldish-crimson patches in the lateral areas and one horseshoe-shaped patch in the posterior part of the scutum. Punctations small, shallow, mainly on the metallic patches. Cervical grooves long, X-shaped, very deep anteriorly and more shallow posteriorly, beginning at the distance from the anterior margin of scutum. Eyes relatively small, marginal, slightly bulging.

Capitulum length from palpal apices to cornua apices 1.17, 1.17, breadth 0.79, 0.83; cornua very short, rounded; posterior margin straight, lateral margins nearly straight; ventrally posterior margin convex. Porose areas narrow, oval, deeply de-

pressed, diameter of one area 0.14, 0.14, interporose area 0.17, 0.2. Palpi length 0.81, 0.83, breadth 0.21, 0.23. Length of segment II 0.44, 0.46, length of segment III 0.27, 0.29. Palpi shagreened. Segment I ventrally with a sloping ridge ending posteriorly with a blunt spur directed posteromedially. Palpal setae: dorsolateral setae long, relatively thick, slightly curved; dorsomedial setae long, more thin, slightly curved; ventrolateral setae very long, relatively thick; ventromedial setae long, thin. Palpal segment I ventrally with a single, long seta. Hypostome length 0.71, 0.73, length of toothed portion 0.36, 0.37; rounded apically, with a large corona of fine denticles and small central notch; dental formula 3/3.

Legs. Coxa I with 2 narrow, triangular, sharply rounded spurs, the external spur longer. Coxae II–III each with a single, short, triangular, narrowly rounded spur. Coxa IV with a single, long, narrow spur directed posteromedially. Trochanters lack spurs. Tarsus I length 0.97, 1.0, width 0.31, 0.33; with small, rounded apical spur and with 2 large, ventral humps. Tarsus IV length 0.87, 0.89, breadth 0.19, 0.2, with one very long, pointed apical hook

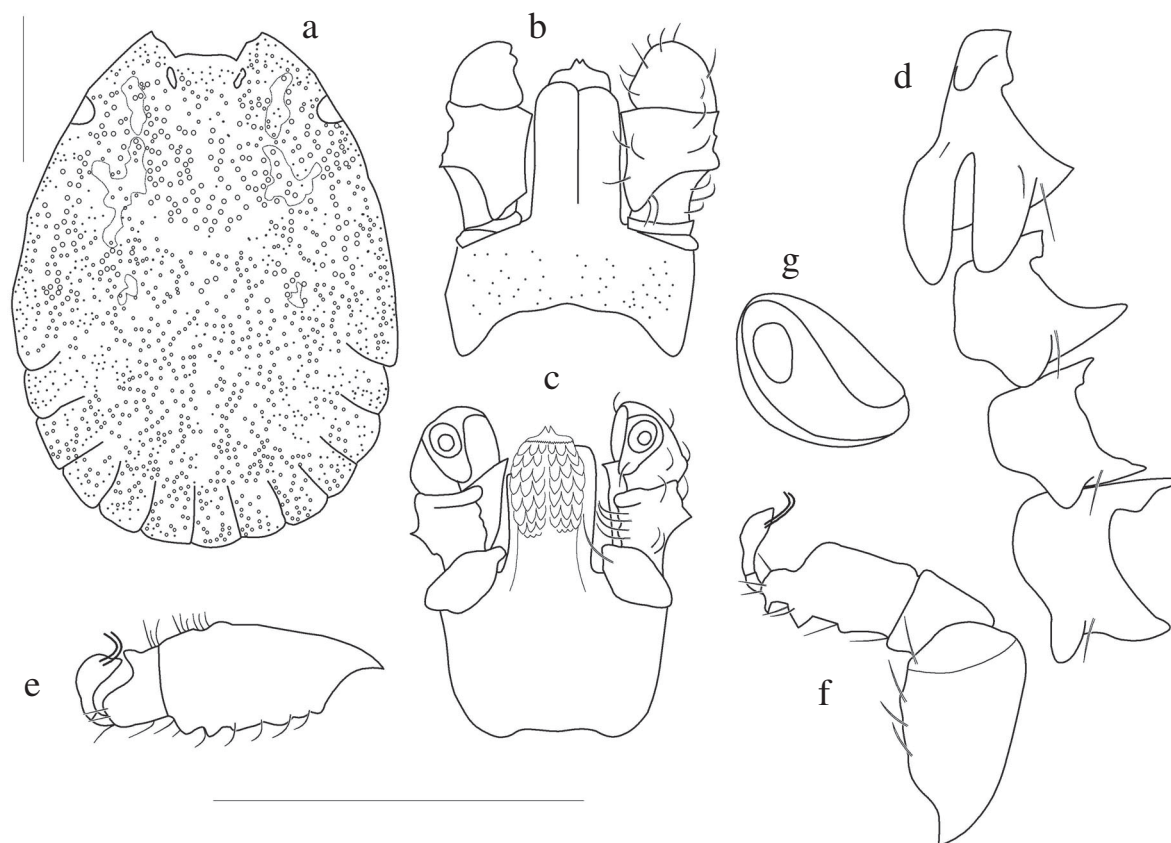


Fig. 59. *Amblyomma nodosum*, male: a — scutum; b — gnathosoma, dorsal view; c — gnathosoma, ventral view; d — coxae; e — tarsus I; f — tarsus and tibia IV; g — spiracular plate. Scale bar 1 mm.

and one small, pointed, triangular ventral hump. Tibia IV length 1.0, 1.1, breadth 0.4, 0.41. Tibia II–IV with 2 very large, thick, apical spurs.

Spiracular plate oval, with very short, almost inconspicuous, triangular dorsal prolongation. Genital aperture «U» shaped, situated between coxae II–III. Postanal groove with thin, unpaired, posteriorly directed, median groove extending to the festoon.

Material: 2 males and 2 females (US National Tick Collection, RML 120472) Argentina, San Juan, San Guillermo, Sector A, 25.02.1981, ex *Lama guanicoe*.

Amblyomma nodosum

Male (Fig. 59). Measurements from 2 specimens. Length from apices of scapulae to posterior scutal margin 3.8, 3.9, breadth 2.85, 2.9. Outline oval, broadest at the level of legs IV. Scutum brown, lighter in the central area; ornate, some metallic, goldish-crimson patches forming two longitudinal rows between scapulae and festoons. Scutal punctations dense, regularly, moderate in size. Cervical grooves very deep, small, bone-like pits situated at the distance from the anterior margin of scutum. Marginal groove absent. Festoons nar-

row, without chitinous plates beyond the posterior margin of the festoons. Eyes marginal, large, flat.

Capitulum length from palpal apices to cornua apices 0.99, 1.04, breadth 0.74, 0.76. Basis capituli with small, shallow, relatively dense punctations. Posterior margin slightly undulated, cornua very large, triangular, sharply rounded; external margins convex, ventrally posterior margin straight. Palpi length 0.59, 0.64, breadth 0.29, 0.29. Segment II 1.4–1.6 times longer than segment III, length of segment II 0.33, 0.36, length of segment III 0.21, 0.23. Surface of segment II slightly wrinkled, with punctations. Segment II dorsally with large, triangular spur directed posteriorly, posterolateral margin of this spur with sharp ridge deflected dorsally, lateral margin of segment II with triangular projection. Segment II dorsally broader than segment III. Posterior margin of segment III with sharp ridge. Segment I ventrally propeller-like, internal paddle of it directed anteromedially and the other directed posterolaterally. Segment II ventrally with triangular, rounded hump on anteromedial margin and with sharp ridge from this hump to lateral margin of segment. Segment III ventrally with a triangular,

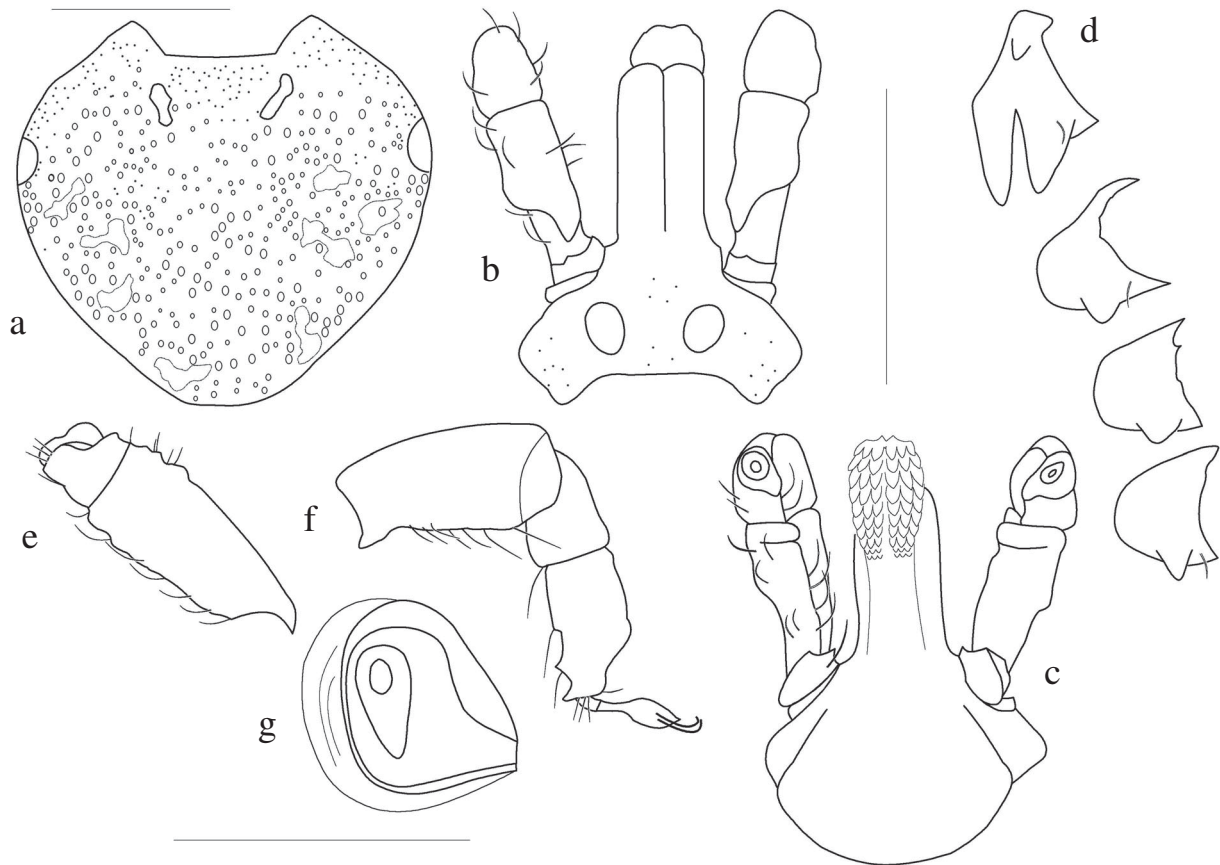


Fig. 60. *Amblyomma nodosum*, female: a — scutum; b — gnathosoma, dorsal view; c — gnathosoma, ventral view; d — coxae; e — tarsus I; f — tarsus and tibia IV; g — spiracular plate. Scale bar 1 mm.

rounded paddle on anteromedial margin. Palpal setae: dorsolateral setae not long, slightly curved, posterior setae more thick; dorsomedial setae shorter, thin, straight; ventrolateral setae not long, thin, curved; ventromedial setae long, thick, slightly curved. Palpal segment I ventrally with a single, long, thick, curved seta. Hypostome length 0.53, 0.54, length of toothed portion 0.31, 0.33; apex notched, with a corona of fine denticles, first row directed anteriorly; each half of the apex slightly concave, with a small, triangular projection near the median axis; dental formula 3/3.

Legs. Coxa I split, with 2 equal in length, very large, broad, triangular spurs. Coxa I with a large, spur-like callosity anteriorly. Coxae II–III each with a single, triangular, rounded spur, broader on II. Coxa IV with a single, triangular, narrow spur longer than on II and III. Trochanters lack ventral spurs, trochanter I dorsally with a broadly rounded spur, directed posteriorly. Tarsus I length 0.84, 0.89, width 0.31, 0.34; with 3 blunt ventral humps. Tarsus IV length 0.71, 0.76, breadth 0.26, 0.27; with not large ventroapical hook and triangular, sharp ventral hump. Tibia IV length 0.71, 0.74, breadth 0.34, 0.36. Femora I–IV each with spheri-

cal enlarged, basal ending outlined by thin groove. All leg segments with dense punctations.

Venter with dense punctations, ventral setae few, very short and thin. Genital aperture situated between coxae II. Spiracular plate long, narrow, medial and lateral margins almost parallel, medial margin convex, posterior margin convex, dorsal prolongation long, fluently curved, lateral margin of spiracular plate with large, chitinous border. Postanal groove with a thin, unpaired median groove extending to the festoon. Integumentary hard elements of the ventral skeleton of idiosoma consist of festoons shields and in one male poor developed, unpaired shield.

Female (Fig. 60). Measurements from 2 partially engorged specimens. Length from apices of scapulae to posterior body margin 4.75, 6.2, breadth 3.5, 4.4. Dorsal body setae and scutal setae very short and thin. Ventral body setae very few, short and thin. Marginal groove complete, beginning near the posterior margin of scutum. Festoons rectangular.

Scutum length 2.33, 2.38, breadth 2.5, 2.58; dark-brown, ornate; some metallic, goldish-crimson patches of different sizes in the lateral and

posterior areas. Punctations moderate in size, dense. Cervical grooves very deep and short, converging, beginning at the distance from the anterior margin of scutum. Eyes very large, marginal, flat.

Capitulum length from palpal apices to cornua apices 1.43, 1.44, breadth 1.03, 1.06. Posterior margin of basis capituli straight, cornua large, triangular, rounded; lateral margins triangular, narrowly rounded; basis capituli ventrally subhexagonal, posterior margin convex. Punctations of basis capituli few, small, shallow. Porose areas narrow, oval, deeply depressed, diameter of one area 0.14, 0.16, interporose area 0.21, 0.23. Palpi length 0.99, 1.0, breadth 0.26, 0.27. Segment II 1.8 times longer than segment III, length of segment II 0.56, 0.57, length of segment III 0.3, 0.31. Palpi dorsally slightly wrinkled, with dense punctations, ventrally wrinkled. Segment II dorsally with sharp, triangular spur directed posteriorly, posterolateral margin of this spur with sharp ridge. Segment II dorsally broader than segment III. Posterior margin of segment III with sharp ridge deflected dorsally. Segment I ventrally with elongated paddle, anterior ending of which directed dorsomedially and posterior ending directed ventrolaterally. Segment II ventrally with triangular, rounded hump on anteromedial margin and thick roller on anterior margin. Segment III ventrally with a triangular, rounded paddle on anteromedial margin. Palpal setae: dorsolateral setae long, thin, curved; dorsomedial setae shorter, thin, almost straight; ventrolateral setae long, thin, curved; ventromedial setae very long, relatively thick, curved. Palpal segment I ventrally with a single, very long, straight seta. Hypostome length 0.86, 0.91, length of toothed portion 0.5, 0.53; apex notched, with a corona of fine denticles, first row directed anteriorly; each half of the apex slightly concave; dental formula 3/3.

Legs. Coxa I split, with 2 equal in length, long, triangular, narrow rounded spurs. Coxa I with a large, spur-like callosity anteriorly. Coxae II–IV each with a single, triangular spur, more narrow on IV. Trochanters lack ventral spurs, trochanter I dorsally with a broadly rounded spur, directed posteriorly. Tarsus I length 1.14, width 0.37; with small, blunt, ventral humps and small, sharp dorsal hump. Tarsus IV length 0.89, breadth 0.29, with one not long, pointed apical hook and one small, triangular ventral hump. Tibia IV length 0.86, breadth 0.54. Femora with spherical enlarged basal ending outlined by thin groove. All leg segments with dense punctations.

Medial and lateral margins of spiracular plate diverging, medial and posterior margins almost straight, dorsal prolongation broad, forming an acute angle with anterior-posterior axis of spiracular plate, lateral and anterior margins with large, chitinous border. Genital aperture «V» shaped, situated between coxae II–III. Postanal groove with shallow, unpaired, posteriorly directed, median groove extending to the festoon.

Material: 2 males and 2 females (US National Tick Collection, RML 37495) Panama, Curundu, Canal Zone, 15.03.1961, ex *Tamandua tetradactyla*, coll. Maj. Varnon J. Tipton.

Amblyomma oblongoguttatum

Male (Fig. 61). Measurements from 2 specimens. Length from apices of scapulae to posterior scutal margin 2.75, 3.1, breadth 2.3, 2.45. Outline oval, broadest at level of spiracular plate. Scutum yellow-brown; ornate; thin, pale patches forming the symmetrical pattern, goldish-pink with green border anteriorly and grayish posteriorly. Scutal punctations small, relatively numerous on ornamentation, the other surface smooth, bright. Cervical grooves deep, short, converging, beginning at a distance from the anterior margin of scutum. Marginal groove complete, beginning at level of legs III. Festoons narrow, with rectangular chitinous plates beyond the posterior margin of the festoons. Eyes marginal, large, flat.

Capitulum length from palpal apices to cornua apices 0.96, 1.0, breadth 0.57, 0.61. Basis capituli with few, shallow punctations. Posterior margin of basis capituli straight, cornua triangular, narrowly rounded; lateral margins slightly convex, ventrally posterior margin convex. Palpi length 0.64, 0.7, breadth 0.14, 0.14. Segment II 2 times longer than segment III, length of segment II 0.4, 0.46, length of segment III 0.2, 0.23. Palpal surface smooth, bright. Segment II dorsally with rounded spur directed posteriorly. Segment I ventrally with a high, sharp ridge ending posteriorly with a small spur. Palpal setae: dorsolateral setae long, thin, slightly curved; dorsomedial setae long, thin, straight; ventrolateral setae short and long, thin, slightly curved; ventromedial setae not long, thin, straight. Palpal segment I ventrally with 1 or 2 long, straight setae. Hypostome length 0.64, 0.67, length of toothed portion 0.33, 0.33; apex notched, with a corona of fine denticles, first row directed anteriorly, each half of the apex straight; dental formula 3/3.

Legs. Coxa I with 2 equal, triangular, sharp spurs, the external spur reaching the anterior mar-

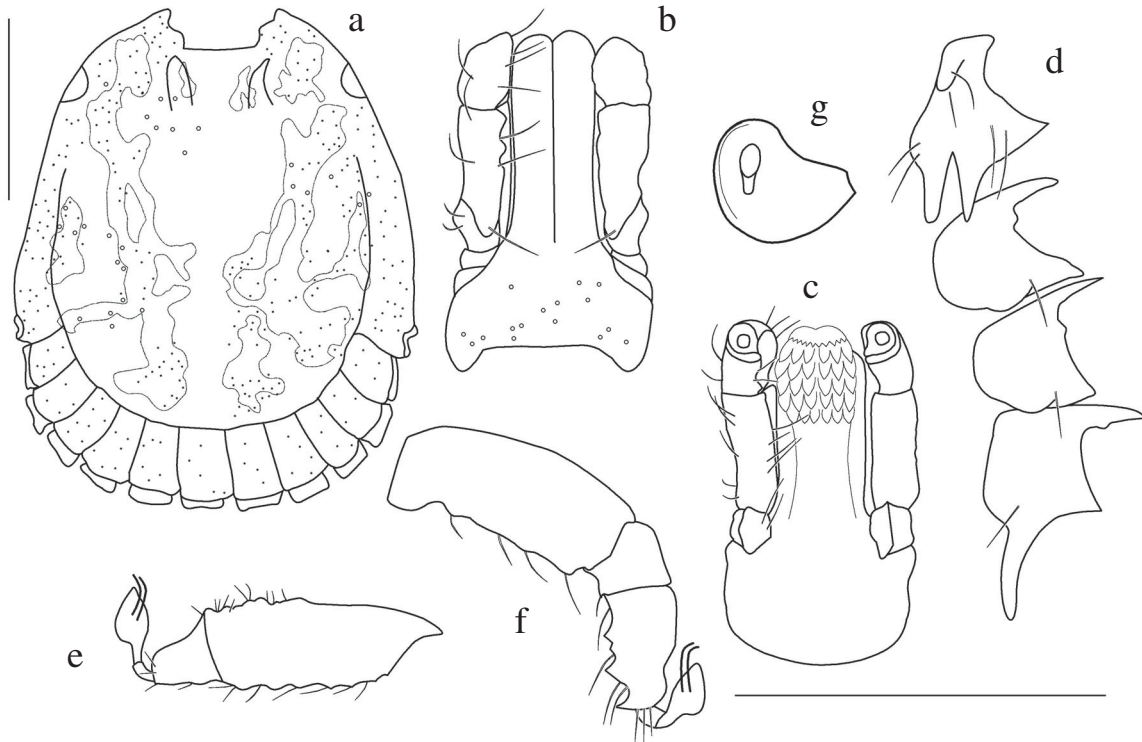


Fig. 61. *Amblyomma oblongoguttatum*, male: a — scutum; b — gnathosoma, dorsal view; c — gnathosoma, ventral view; d — coxae; e — tarsus I; f — tarsus and tibia IV; g — spiracular plate. Scale bar 1 mm.

gin of coxa II. Coxa I with a large, spur-like callosity anteriorly. Coxae II–III each with a single, very short, broadly rounded spur. Coxa IV with a single, very long, narrow, sharp spur directed posteriorly. Trochanters lack spurs. Tarsus I length 0.81, 0.84, width 0.24, 0.26; without apical spurs. Tarsus IV length 0.57, 0.6, breadth 0.21, 0.21; with a strong, pointed apical hook and triangular, pointed ventral hump. Tibia IV length 0.71, 0.76, breadth 0.29, 0.29.

Venter with relatively long, thin setae, more numerous in the posterior area. Genital aperture situated between coxae II. Lateral and medial margins of spiracular plate diverging, medial and posterior margins convex, dorsal prolongation relatively long, broad, forming an acute angle with anterior-posterior axis of spiracular plate. Integumentary hard elements of the ventral skeleton of idiosoma consist of festoons shields. Postanal groove with very short, shallow unpaired median groove.

Female (Fig. 62). Measurements from 2 specimens, one partially engorged. Length from apices of scapulae to posterior body margin 4.1, 4.9, breadth 3.2, 4.9. Dorsal body setae short, thin, more numerous on festoons. Ventral body setae few, short, thin. Marginal groove complete, beginning near the posterior margin of scutum. Festoons rectangular.

Scutum length 1.89, 2.01, breadth 2.14, 2.31; yellow-brown, ornate; metallic, goldish-pink with green border patches: one subtriangular in the posterior part of the scutum and 2 long, thin, lateral patches. Scapulae sharp, their medial margins with ledges. Scutal punctations of different sizes, fairly numerous in the anterior and lateral parts of the scutum but absent centrally. Cervical grooves deep, short, converging, beginning at a distance from the anterior margin of scutum. Eyes large, marginal, slightly bulging.

Capitulum length from palpal apices to cornua apices 1.31, 1.5, breadth 0.81, 0.89; posterior margin straight, cornua triangular, narrowly rounded; lateral margins convex; ventrally posterior margin convex. Basis capituli bright with very few punctations. Porose areas narrow, oval, deeply depressed, diameter of one area 0.14, 0.14, interporose area 0.17, 0.17. Palpi length 0.94, 1.0, breadth 0.2, 0.23. Palpal surface bright. Segment II 2 times longer than segment III, length of segment II 0.59, 0.64, length of segment III 0.29, 0.33. Segment I ventrally with narrow, sharp paddle directed ventrolaterally. Palpal setae: dorsolateral setae long, thin, curved; dorsomedial setae long, thin, straight; ventrolateral setae long, thin, curved; ventromedial setae long, thin, straight. Palpal segment I ventrally with 1 or 2 long, almost straight setae. Hypostome length

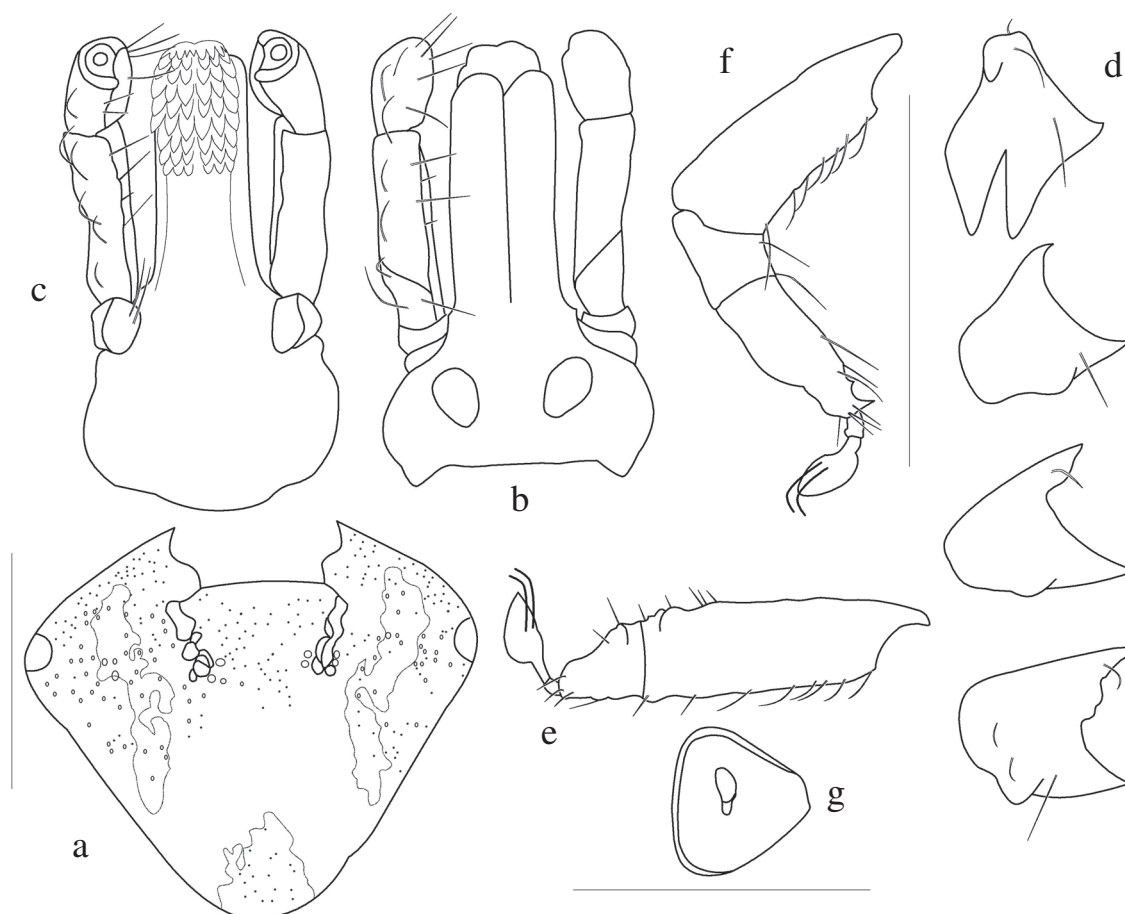


Fig. 62. *Amblyomma oblongoguttatum*, female: a — scutum; b — gnathosoma, dorsal view; c — gnathosoma, ventral view; d — coxae; e — tarsus I; f — tarsus and tibia IV; g — spiracular plate. Scale bar 1 mm.

0.83, 0.89, length of toothed portion 0.43, 0.47; apex nearly straight, with small central notch; dental formula 3/3.

Legs. Coxa I with 2 equal, narrow, triangular, sharp spurs, the internal spur slightly broader. Coxae II–III each with a single, very short, broadly rounded spur. Coxa IV with a single, triangular, rounded spur. Trochanters lack spurs. Tarsus I length 1.13, 1.21, width 0.27, 0.27; without spurs. Tarsus IV length 0.83, 0.86, breadth 0.21, 0.23, with strong, pointed apical spur and triangular, sharp ventral hump. Tibia IV length 0.87, 0.97, breadth 0.29, 0.29.

Medial and lateral margins of spiracular plate diverging, medial margin straight or slightly concave, posterior margin straight, dorsal prolongation short, broad, forming an acute angle with anterior-posterior axis of spiracular plate. Genital aperture «U» shaped, situated between coxae II–III. Postanal groove with shallow, unpaired, posteriorly directed, median groove extending to the festoon.

Material: 2 males and 2 females (US National Tick Collection, No. 14058) Venezuela, Gran Sabana, Selva, 14.02.1938, ex tapir, coll. Charles H. Ballou.

Amblyomma ovale

Male (Fig. 63). Measurements from 2 specimens. Length from apices of scapulae to posterior scutal margin 3.7, 4.1, breadth 2.3, 2.6. Outline oval, broadest at the level of spiracular plate. Scutum brown; ornate; some metallic, goldish-pink patches forming two longitudinal, converging rows beginning behind the eyes. Scutal punctations of different sizes, dense, regularly; surface bright. Cervical grooves deep, short, converging. Marginal groove incomplete, beginning at level of legs III and embracing first festoons. Festoons long, narrow, with chitinous plates beyond the posterior margin of the festoons. Eyes marginal, large, flat.

Capitulum length from palpal apices to cornua apices 1.19, 1.26, breadth 0.77, 0.81. Basis capituli with relatively deep, dense punctations of different sizes. Posterior margin straight, cornua large, trian-

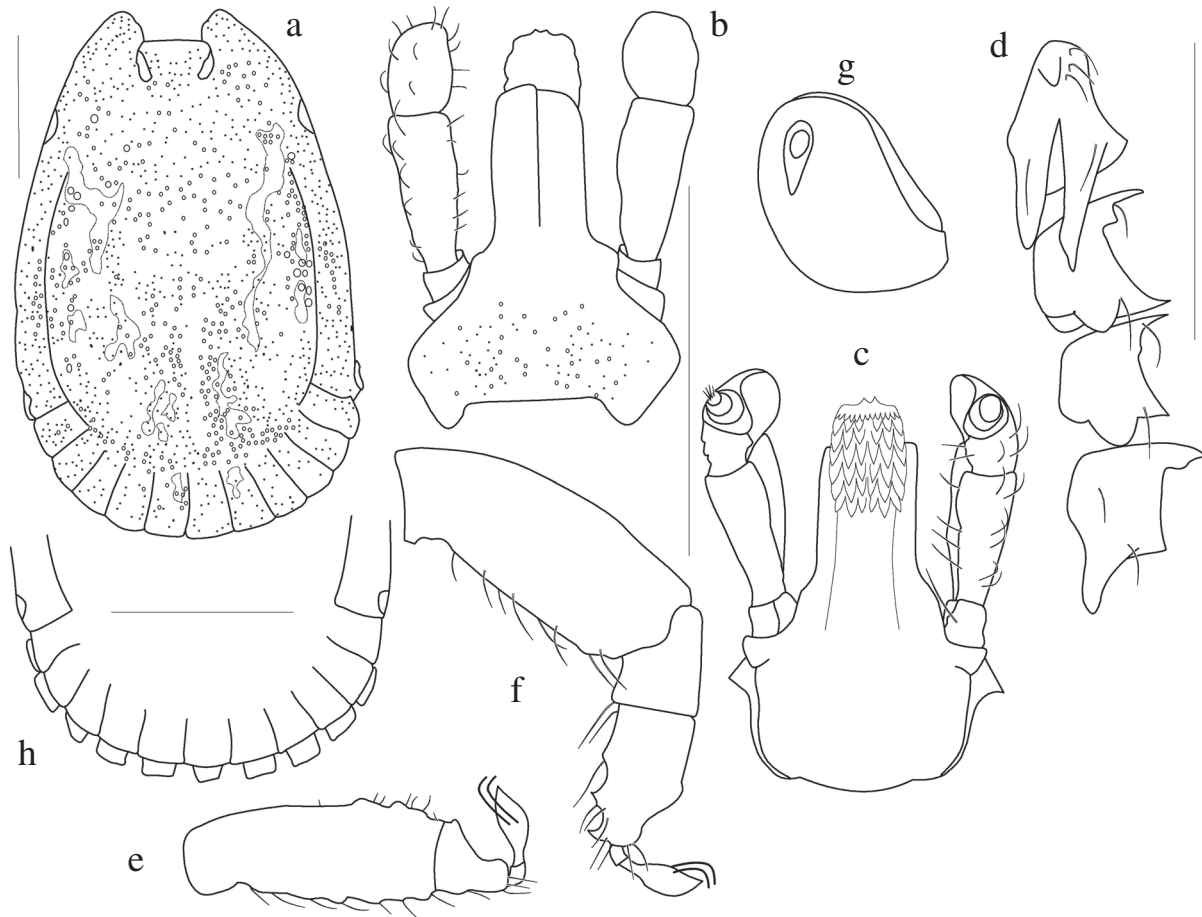


Fig. 63. *Amblyomma ovale*, male: a — scutum; b — gnathosoma, dorsal view; c — gnathosoma, ventral view; d — coxae; e — tarsus I; f — tarsus and tibia IV; g — spiracular plate, h — posterior part of idiosoma, ventral view. Scale bar 1 mm.

gular, narrowly rounded; external margins of basis triangular, ventrally posterior margin convex, with very sclerotized border. Palpi length 0.79, 0.8, breadth 0.19, 0.19. Segment II 1.7 times longer than segment III, length of segment II 0.49, 0.49, length of segment III 0.27, 0.29. Palpi bright, with small, shallow punctations. Segment I ventrally with a sharp ridge. Palpal setae: dorsolateral setae long, thin, curved; dorsomedial setae short, thin, straight; ventrolateral setae long, thin, curved; ventromedial setae long, thin, slightly curved. Palpal segment I ventrally with a single, long, thin seta. Hypostome length 0.71, 0.72, length of toothed portion 0.38, 0.38; apex notched, with a corona of fine denticles, first row directed anteriorly; each half of the apex straight, with a small, triangular projection near the median axis; dental formula 3/3.

Legs. Coxa I split, with 2 very long, sharp spurs, the external spur slightly longer and reaching the middle of coxa II. Coxa I with a large, spur-like callosity anteriorly. Coxae II–III each with 2 short, triangular, broadly rounded spurs, the external spur larger. Coxa IV with a single, long, triangular,

slightly curved spur. Trochanters lack spurs. Tarsus I length 0.94, 0.97, width 0.29, 0.3; without spur. Tarsus IV length 0.71, 0.74, breadth 0.21, 0.24; with pointed ventroapical hook and triangular, pointed ventral hump. Tibia IV length 0.9, 0.91, breadth 0.34, 0.36.

Venter with relatively long, dense, thin, straight setae. Genital aperture situated between coxae II. Spiracular plate nearly oval, medial and lateral margins almost parallel, medial margin convex, posterior margin convex, dorsal prolongation broad, fluently curved. Postanal groove with a thin, unpaired median groove not extending to the festoon. Integumentary hard elements of the ventral skeleton of idiosoma absent.

Female (Fig. 64). Measurements from 2 specimens. Length from apices of scapulae to posterior body margin 4.6, 4.8, breadth 3.3, 3.5. Dorsal and ventral body setae few, very short and thin. Marginal groove complete, beginning near the posterior margin of scutum. Festoons rectangular.

Scutum length 2.29, 2.5, breadth 2.3, 2.5; dark-brown, ornate; large metallic, goldish-pink patch in

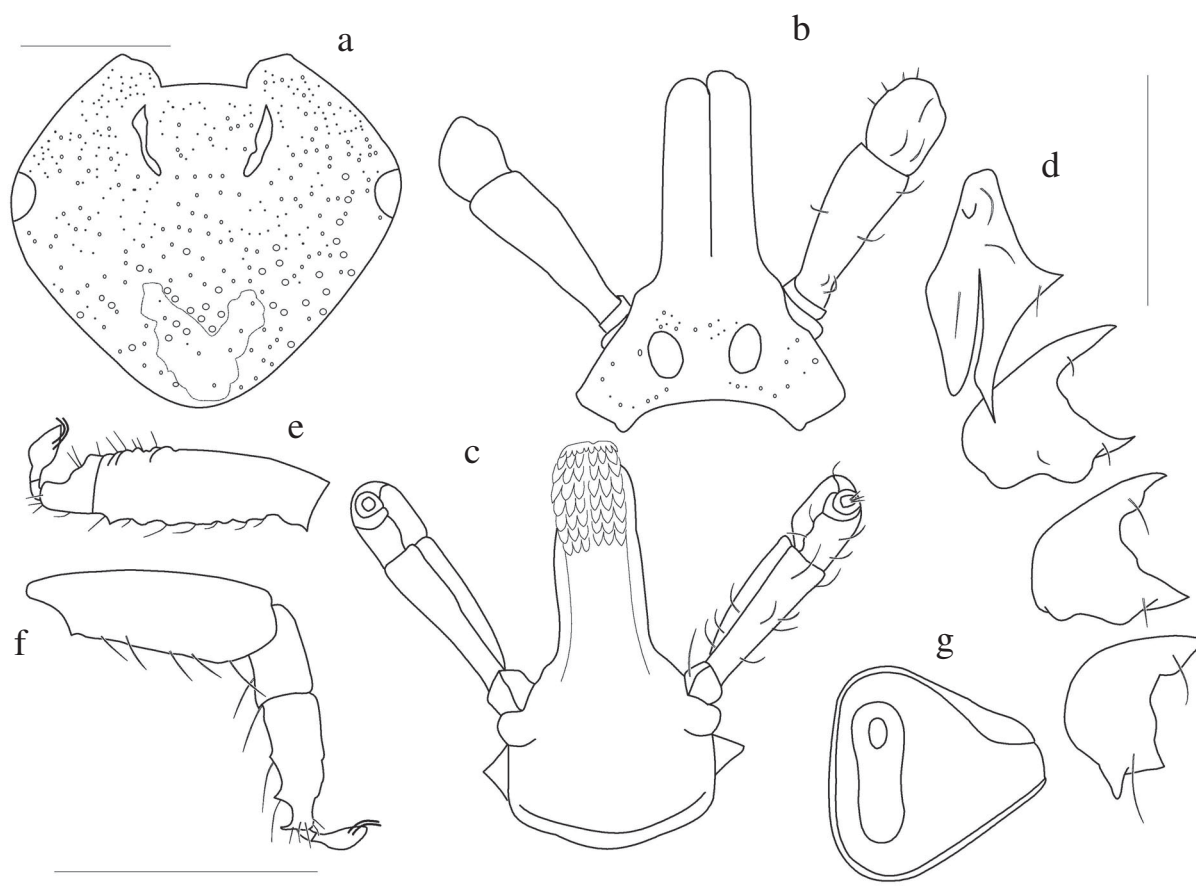


Fig. 64. *Amblyomma ovale*, female: a — scutum; b — gnathosoma, dorsal view; c — gnathosoma, ventral view; d — coxae; e — tarsus I; f — tarsus and tibia IV; g — spiracular plate. Scale bar 1 mm.

the posterior area and some small patches. Punctations deep, small and large, dense. Cervical grooves deep, relatively long, converging, beginning at the distance from the anterior margin of scutum. Eyes large, marginal, flat.

Capitulum length from palpal apices to cornua apices 1.43, 1.76, breadth 1.0, 1.14. Posterior margin of basis capituli concave, cornua short, triangular, narrowly rounded; lateral margins triangular; ventrally posterior margin convex, with broad, sharp sclerotized border. Punctations of basis capituli small, shallow, relatively dense. Porose areas narrow, oval, deeply depressed, diameter of one area 0.14, 0.16, interporose area 0.19, 0.21. Palpi length 1.07, 1.21, breadth 0.27, 0.27. Segment II 1.9 times longer than segment III, length of segment II 0.64, 0.71, length of segment III 0.33, 0.39. Palpi slightly wrinkled. Segment I ventrally with sharp ridge. Palpal setae: dorsolateral setae short, thin, curved; dorsomedial setae shorter, thin, curved; ventrolateral and ventromedial setae long, thin, curved. Palpal segment I ventrally with a single, long, thin, straight seta. Hypostome length 0.9, 1.03, length of toothed portion 0.5, 0.57; apex

spatulate, with very small central notch; dental formula 3/3.

Legs. Coxa I split, with 2 very long spurs, the external spur slightly longer and reaching the middle of coxa II, with pointed tip directed laterally; internal spur slightly broader, sharply rounded. Coxa I with a small, spur-like callosity anteriorly. Coxae II–III each with 2 short, triangular, broadly rounded spurs. Coxa IV with a single, triangular, sharp spur, longer than on II and III. Trochanters lack spurs. Tarsus I length 1.14, 1.21, width 0.29, 0.31; without spur. Tarsus IV length 0.86, 0.89, breadth 0.24, 0.24, with pointed apical hook and pointed, triangular ventral hump. Tibia IV length 0.96, 1.07, breadth 0.31, 0.34. All leg segments with dense punctations.

Medial and lateral margins of spiracular plate diverging, medial and posterior margins straight, dorsal prolongation broad, forming an acute angle with anterior-posterior axis of spiracular plate. Genital aperture «V» shaped, situated between coxae II–III. Postanal groove with unpaired, posteriorly directed, median groove extending to the festoon.

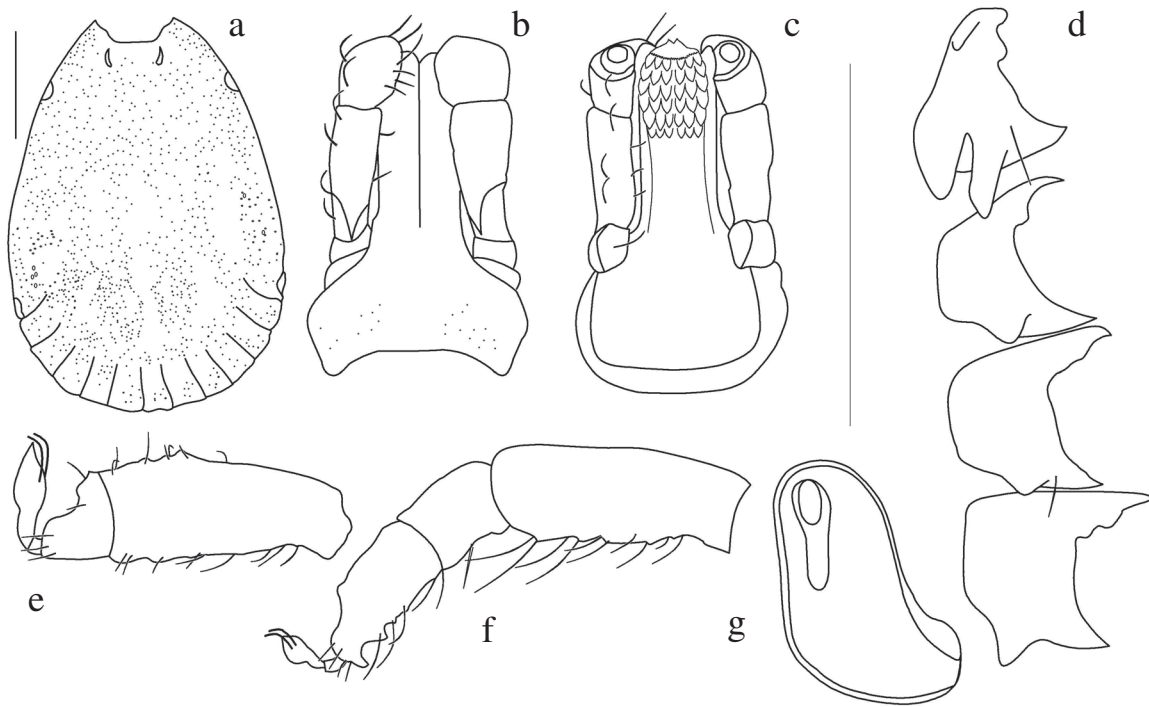


Fig. 65. *Amblyomma pacae*, male: a — scutum; b — gnathosoma, dorsal view; c — gnathosoma, ventral view; d — coxae; e — tarsus I; f — tarsus and tibia IV; g — spiracular plate. Scale bar 1 mm.

Material: 2 males and 2 females (US National Tick Collection, RML 37275) Panama, Pacora, 18.11.1960, ex *Nasua narica*, coll. Vernon J. Tipton.

Amblyomma pacae

Male (Fig. 65). Measurements from one specimen. Length from apices of scapulae to posterior scutal margin 3.75; breadth 2.6. Outline oval, broadest at level of legs IV. Scutum yellow in the posterior and central areas with small and narrow brown spots, and brown in the scapular and eyes area; inornate. Scutal punctations small, shallow, dense. Cervical grooves deep, very short, converging, situated at the distance from the anterior margin of scutum. Marginal groove absent. Fестоons narrow, without chitinous plates extending beyond the posterior margin of the festoons. Eyes marginal, large, flat.

Capitulum length from palpal apices to cornua apices 1.04; breadth 0.64. Posterior margin of basis capituli slightly concave, cornua short, triangular, narrowly rounded, lateral margins convex, ventrally posterior margin convex with sharp, sclerotized border. Basis capituli with small and shallow punctations. Palpi length 0.71; breadth 0.23. Palpi slightly wrinkled. Segment II 1.9 times longer than segment III, length of segment II 0.41; length of segment III 0.21. Segment II dorsally with large, triangular spur directed posteriorly. Segment I ventrally with

low but sharp ridge. Palpal setae: dorsolateral setae relatively long and thick, curved; dorsomedial setae relatively long and thick, straight; ventrolateral setae short, thin, curved; ventromedial setae short, thin, almost straight. Palpal segment I ventrally with a single, long, thin seta. Hypostome length 0.61; length of toothed portion 0.36; apex with a large corona of fine denticles, first row directed anteriorly, apex notched, each half of the apex with a triangular projection near the median axis. Dental formula 3/3.

Legs. Coxa I with 2 narrow, triangular spurs, the external spur slightly longer and reaching the anterior margin of coxa II. Coxa I with a spur-like callosity anteriorly. Coxae II–IV each with a single, short, triangular, narrowly rounded spur, longest on IV. Trochanters lack spurs. Tarsus I length 0.94; width 0.27; with a blunt, small ventral hump. Tarsus IV length 0.69; breadth 0.23; with one short, ventroapical hook and a small, triangular ventral hook. Tibia IV length 0.79; breadth 0.29.

Venter with few, very short and thin setae. Genital aperture situated between coxae II. Lateral and medial margins of spiracular plate nearly parallel, medial margin concave, posterior margin convex, dorsal prolongation broad, forming an obtuse angle with anterior-posterior axis of spiracular plate. Postanal groove with a shallow, unpaired, posteriorly directed, median groove ex-

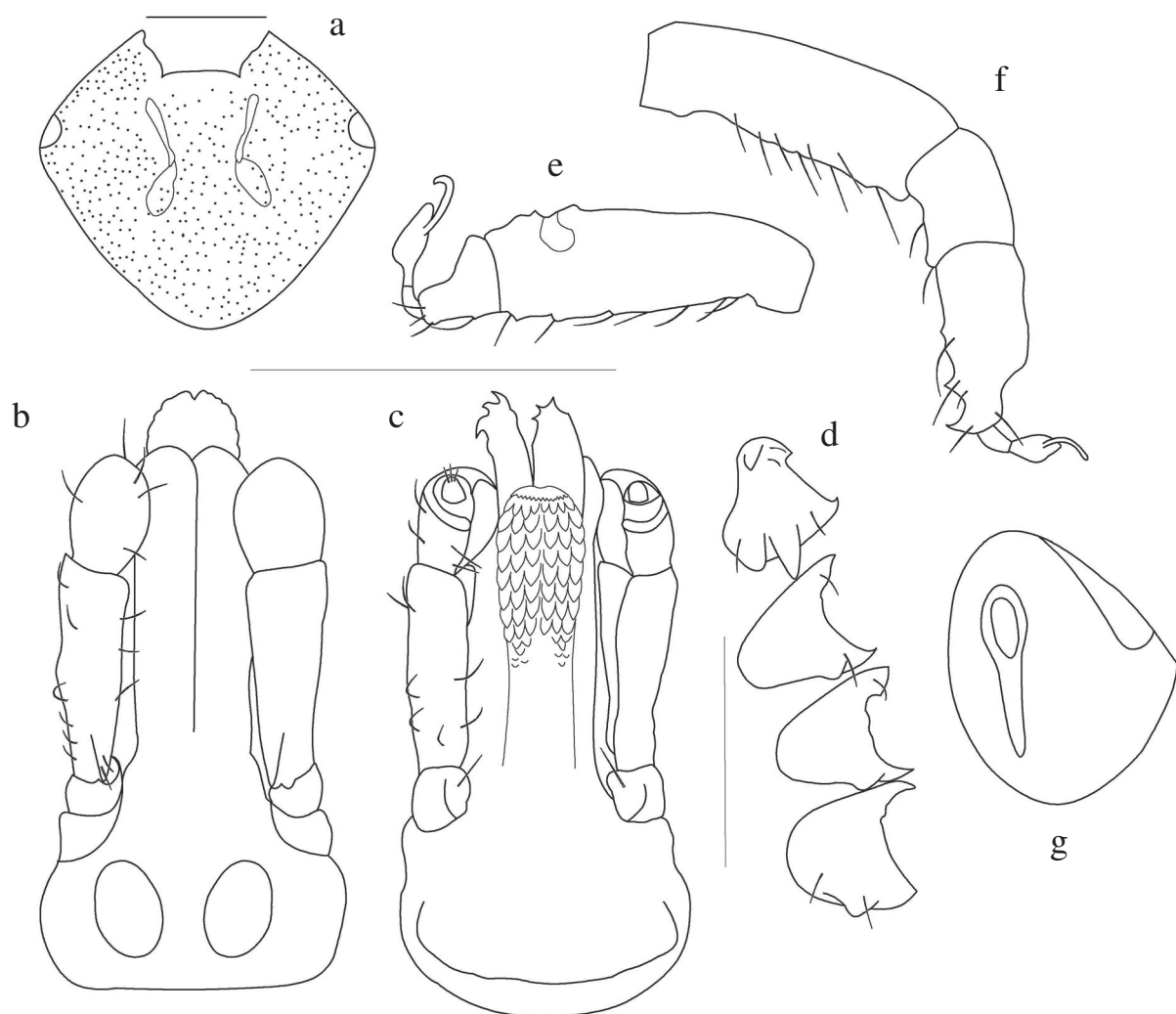


Fig. 66. *Amblyomma pacae*, female: a — scutum; b — gnathosoma, dorsal view; c — gnathosoma, ventral view; d — coxae; e — tarsus I; f — tarsus and tibia IV; g — spiracular plate. Scale bar 1 mm.

tending to the festoon. Integumentary hard elements of the ventral skeleton of idiosoma absent.

Female (Fig. 66). Measurements from one specimen. Length from apices of scapulae to posterior body margin 4.4; breadth 3.5. Dorsal body setae few, very short and thin; ventral setae few, very short and thin. Marginal groove incomplete, beginning near the posterior margin of scutum and embracing three festoons. Festoons broad, almost square.

Scutum length 2.5; breadth 2.3; yellow, brown around the eyes, inornate. Posterior margin of scutum narrowly rounded, posterolateral margins almost straight. Scutal punctations dense, regularly, medium in size, not deep. Scapulae sharp, medial margins with ledges. Cervical grooves long, straight and converging anteriorly, then diverging as shallow depressions, beginning at a distance from anterior margin of scutum. Eyes large, marginal, flat.

Capitulum length from palpal apices to posterior margin of basis 1.4; breadth 0.94; posterior margin straight, very sclerotized, lateral margins slightly convex; cornua absent; ventrally posterior margin convex, with very sclerotized border. Punctations of basis capituli absent. Porose areas oval, deeply depressed, diameter of one area 0.16; interporose area 0.14. Palpi length 1.04; breadth 0.2. Segment II 2.4 times longer than segment III, length of segment II 0.69; length of segment III 0.29. Palpi slightly wrinkled. Segment II dorsally with triangular, narrow spur directed posteriorly. Segment I dorsally with small, pyramidal spur directed anteriorly, ventrally with a slope, thick ridge. Segment III ventrally with a thick roller on anterior margin. Palpal setae: lateral setae not long, cone-like, curved; dorsomedial setae thin, needle-shaped, straight; ventromedial setae longer, slightly curved. Palpal segment I ventrally with not long, needle-shaped seta. Hypostome length

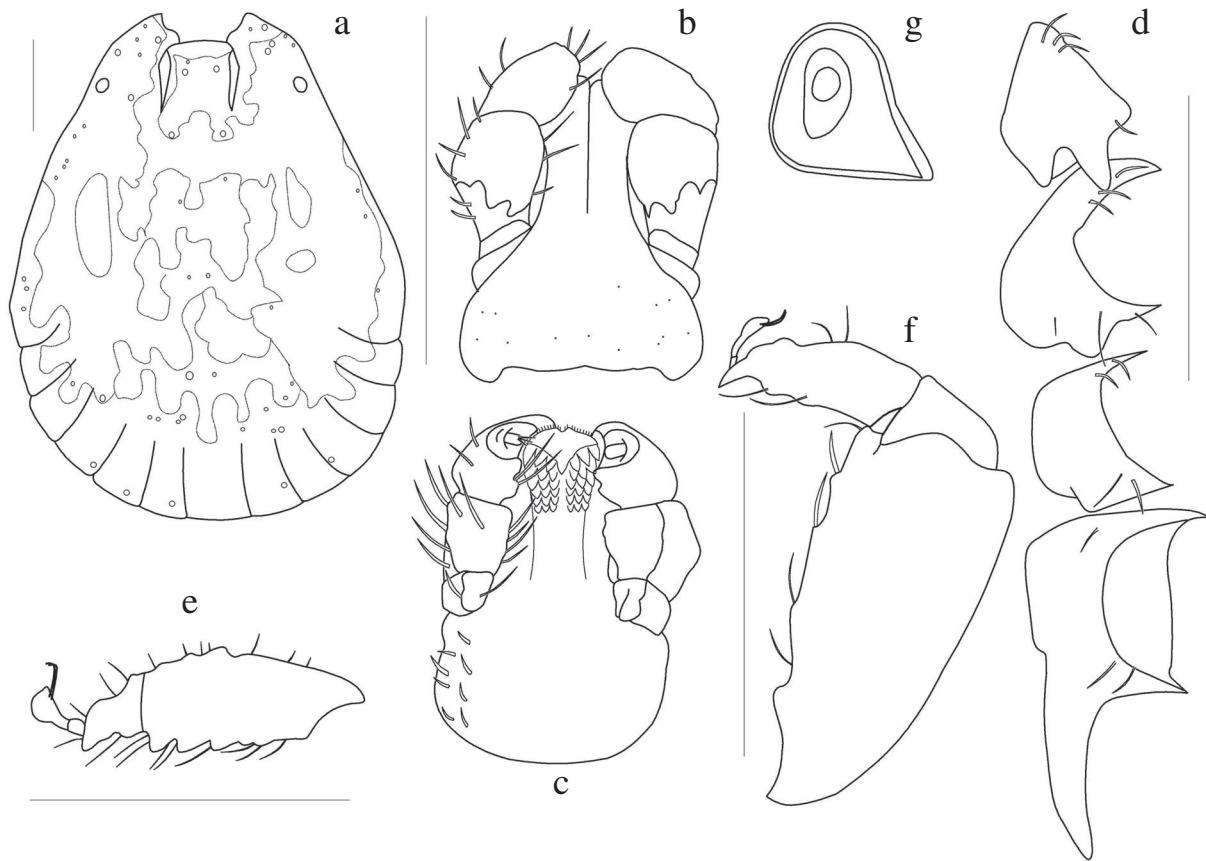


Fig. 67. *Amblyomma parvitarsum*, male: a — scutum; b — gnathosoma, dorsal view; c — gnathosoma, ventral view; d — coxae; e — tarsus I; f — tarsus and tibia IV; g — spiracular plate. Scale bar 1 mm.

0.96; length of toothed portion 0.51; with a large corona of fine denticles apically, apex bluntly rounded, with small central notch; dental formula 3/3.

Legs. Coxa I with 2 triangular, sharply rounded spurs, the external spur longer, more narrow. Coxa I with a sharp, spur-like callosity anteriorly. Coxae II–IV each with a single, short, triangular, rounded spur. Trochanters lack spurs. Tarsus I length 1.1; width 0.27; without ventroapical spur. Tarsus IV length 0.86, breadth 0.19, with a strong ventroapical hook and one pointed, triangular ventral hump. Tibia IV length 0.93, breadth 0.33.

Spiracular plate large, oval, with very short dorsal prolongation, forming an acute angle with anterior-posterior axis. Genital aperture «V» shaped, situated between coxae II–III. Postanal groove with thin, unpaired, posteriorly directed, median groove extending to the festoon.

Material: male (US National Tick Collection, RML 47340) British Gonduras, Orange Walk District, 11.07.1966, ex Gibnut, coll. C.W.B. Hatherill; female (US National Tick Collection, RML 35443) Santa Clara Volcan, Chiriqui, Republic of Panama; ex *Dasyprocta* sp.; 15 June 1959; coll. R. Hartmann.

Amblyomma parvitarsum

Male (Fig. 67). Measurements from 2 specimens. Length from apices of scapulae to posterior scutal margin 5.1, 5.3, breadth 3.8, 4.0. Outline pear-shaped, broadest at level of legs IV. Scutum light-brown, ornate; pale, goldish-crimson or silvery-gray pigment covers almost the all scutum, patches lack pigment situated in the central area. Scutal punctations very few, large on a background of numerous evenly scattered, small, shallow punctations. Cervical grooves relatively long, almost parallel, their anterior third less deep. Marginal groove absent; scutum with not deep depression in the posterior area, anteriorly of festoons. Festoons narrow, long. Eyes small, orbital, slightly bulging.

Capitulum length from palpal apices to cornua apices 1.1, 1.1, breadth 0.73, 0.77. Basis capituli swollen dorsally and ventrally, with very few, shallow punctations. Posterior margin of basis capituli slightly undulated, cornua short, rounded; external margins convex, ventrally posterior margin convex. Basis capituli ventrally with some short, cone-like, thick setae. Palpi length 0.67, 0.69, breadth 0.26, 0.27. Segment II 1.3 times

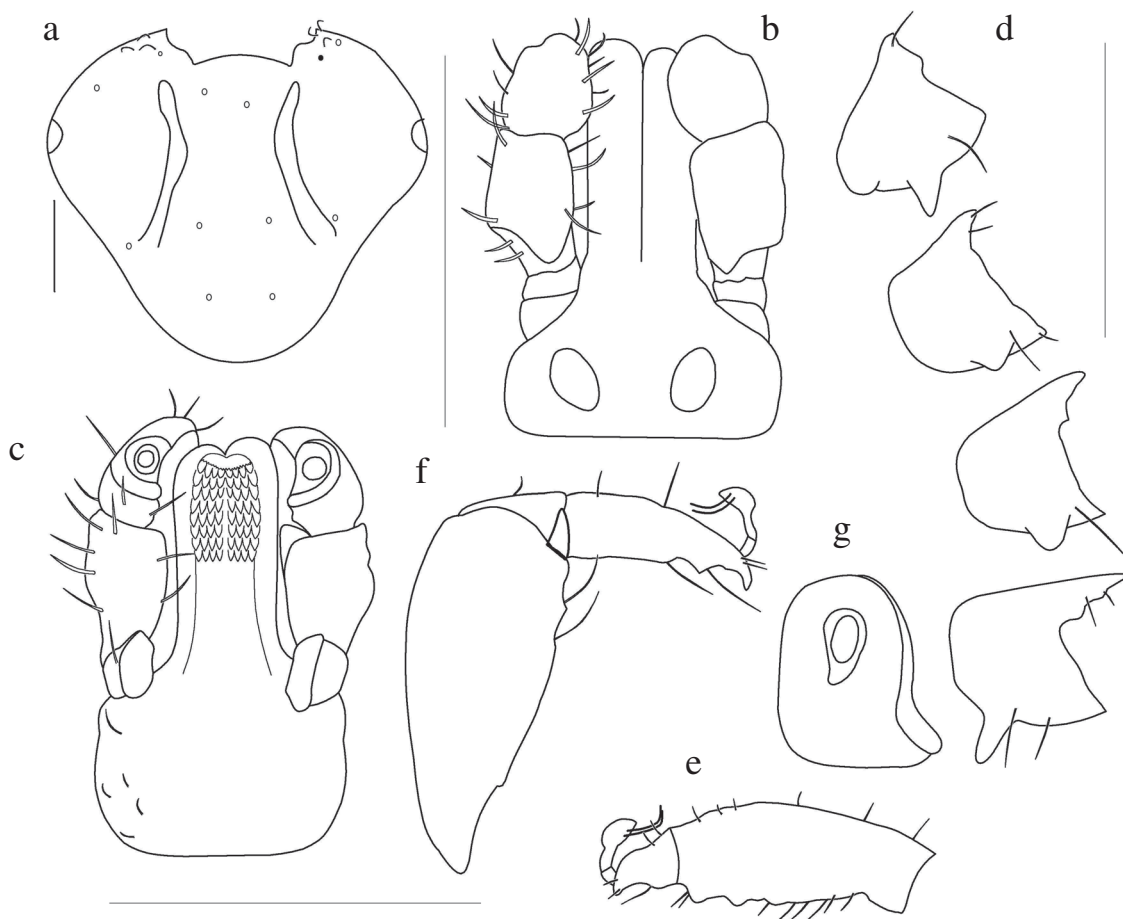


Fig. 68. *Amblyomma parvitarsum*, female: a — scutum; b — gnathosoma, dorsal view; c — gnathosoma, ventral view; d — coxae; e — tarsus I; f — tarsus and tibia IV; g — spiracular plate. Scale bar 1 mm.

longer than segment III, length of segment II 0.36, 0.36, length of segment III 0.27, 0.27. Palpi short, swollen, posterior margin of segment II undulated, overhang upon more narrow «handle». Segment I ventrally with low, sloping ridge ending with rounded hump. Palpal setae: dorsolateral setae long, thick, cone-like; dorsomedial setae longer, thick, cone-like; ventrolateral setae very long and thick; ventromedial setae long, cone-like. Palpal segment I ventrally with one relatively short, cone-like ventromedial seta and one short, thick ventrolateral seta. Hypostome length 0.59, 0.61, length of toothed portion 0.33, 0.36; apex spatulate, with very large, subtriangular corona of fine denticles; dental formula 3/3.

Legs. Coxa I prominent above the ventral surface, with 2 narrow, triangular spurs, the external spur longer and reaching the anterior margin of coxa II. Coxae II–III each with a single, short, triangular, broadly rounded spur. Coxa IV with a single, very long, triangular, narrow spur slightly curved laterally. Trochanters without ventral spurs, trochanter I with a broadly rounded, paddle-shaped

spur dorsally. Tarsus I length 0.93, 0.96, width 0.33, 0.34; with a blunt apical spur and with 3 large, blunt ventral humps. Tarsus IV length 0.89, 0.93, breadth 0.21, 0.21; with a long, thick, slightly curved apical hook. Tibia IV length 1.14, 1.16, breadth 0.53, 0.57. Tibia II–IV each with 2 very large, thick, apical spurs.

Venter with short, cone-like setae more numerous between coxae. Genital aperture situated between coxae II. Spiracular plate subtriangular, medial and lateral margins diverging, dorsal prolongation very short, triangular, pointed. Postanal groove with very short, unpaired median groove. Integumentary hard elements of the ventral skeleton of idiosoma consist of the festoons shields only.

Female (Fig. 68). Measurements from one partially engorged specimen. Length from apices of scapulae to posterior body margin 5.25, breadth 4.0. Alloscutal setae short, cone-like, more numerous along the margins; scutal setae short, cone-like, situated in three on each scapula. Ventral body setae very short between coxae, longer and more numerous on the posterior margin and behind the

spiracular plate. Marginal groove absent. Fестоons rectangular.

Scutum length 3.5, breadth 4.1; yellow-brown, ornate; pale, grayish pigment covers almost the all scutum. Scutal punctations very few, large on a background of numerous evenly scattered, small, shallow punctations. Cervical grooves long, deep and slightly converging anteriorly, then shallow and diverging posteriorly. Eyes large, marginal, bulging.

Capitulum length from palpal apices to posterior margin of basis 1.2, breadth 0.81; posterior margin straight; lateral margins nearly straight; dorsal surface shagreened. Basis capituli swollen ventrally, with convex posterior margin; on the lateral margins some short, cone-like setae. Porose areas oval, narrow, deeply depressed, diameter of one area 0.14, interporose area 0.19. Palpi length 0.81, breadth 0.29. Palpi slightly wrinkled, with shagreened surface. Segment II swollen, with narrow «handle» and with blunt, triangular spur directed posteriorly. Segment II 1.4 times longer than segment III, length of segment II 0.43, length of segment III 0.31. Segment I ventrally with a low, sloping ridge ending with small, rounded spur. Palpal setae long, cone-like. Palpal segment I with a short, cone-like ventrolateral seta. Hypostome length 0.69, length of toothed portion 0.39; apex rounded, with small central notch and very large corona of fine denticles; dental formula 4/4.

Legs. Coxa I prominent above the ventral surface, with 2 spurs, the external spur larger, narrow, triangular; internal spur very short, rounded. Coxae II–III each with a single, short, triangular, rounded spur. Coxa IV with a single, longer and more narrow triangular spur. Trochanters without ventral spurs, trochanter I with a broad, blunt spur dorsally. Tarsus I length 0.9, width 0.23; with small, blunt apical spur. Tarsus IV length 0.9, breadth 0.21, with a long, thick, slightly curved apical hook. Tibia IV length 1.11, breadth 0.43. Tibia II–IV with 2 very large, thick apical spurs.

Medial and lateral margins of spiracular plate parallel, medial and posterior margins straight, dorsal prolongation very short, triangular. Genital aperture «U» shaped, situated between coxae II–III. Postanal groove with shallow, unpaired, posteriorly directed, median groove extending to the festoon.

Material: 2 males and female (US National Tick Collection, RML 123122, HH39683) Peru, Ayacucho, Lucanas, Pampa Galeras, 18.01.1978, ex *Lama glama*, coll. R. Roeben.

Amblyomma parvum

Male (Fig. 69). Measurements from 2 specimens. Length from apices of scapulae to posterior scutal margin 2.1, 2.3, breadth 1.54, 1.74. Outline oval, broadest at level of legs IV. Scutum light-brown; inornate, with numerous, small, shallow punctations. Cervical grooves bean-like, deep, pit-like. Marginal groove complete, beginning at level of legs III. Fестоons narrow, with long chitinous plates beyond the posterior margin of the festoons. Eyes marginal, flat, inconspicuous.

Capitulum length from palpal apices to cornua apices 0.51, 0.53, breadth 0.36, 0.43. Basis capituli with few, very small and shallow punctations. Posterior margin of basis capituli slightly concave, cornua large, triangular; lateral margins slightly convex, ventrally posterior margin slightly convex, with very sclerotized border. Palpi length 0.3, 0.36, breadth 0.13, 0.13. Segment II 1.4 times longer than segment III, length of segment II 0.157, 0.186, length of segment III 0.11, 0.13. Segment II dorsally with large, rounded spur directed posteriorly and with rounded, triangular projection on lateral margin. Segment I ventrally with a long, triangular spur directed posteriorly and ventrally. Segment III ventrally with sharp, sclerotized border on anterior margin. Palpal setae: dorsolateral setae long, thin, slightly curved; dorsomedial setae long, thin, straight; ventrolateral setae long, thin, straight; ventromedial setae very long, thin, straight. Palpal segment I ventrally with 2 very long, more thick setae. Hypostome length 0.31, 0.36, length of toothed portion 0.17, 0.19; apex notched, with a large corona of fine denticles, first row directed anteriorly, each half of the apex straight; dental formula 3/3.

Legs. Coxa I with 2 narrow, triangular spurs, the external spur longer and reaching the anterior margin of coxa II. Coxa I with a sharp, spur-like callosity anteriorly. Coxae II–IV each with a single, relatively long, triangular spur, largest on II. Coxae and trochanters with relatively numerous, very long, thin setae. Trochanters I–IV each with a small, triangular, ventral spur more noticeable on I. Trochanter I dorsally with a broad, triangular spur. Tarsus I length 0.57, 0.63, width 0.19, 0.2; without apical spurs. Tarsus IV length 0.47, 0.5, breadth 0.14, 0.16; with a strong, pointed apical hook and triangular, pointed ventral hump. Tibia IV length 0.43, 0.49, breadth 0.17, 0.21.

Venter with relatively dense, long, thin setae. Genital aperture situated between coxae II. Spiracular plate long, oval, with slightly curved dorsal

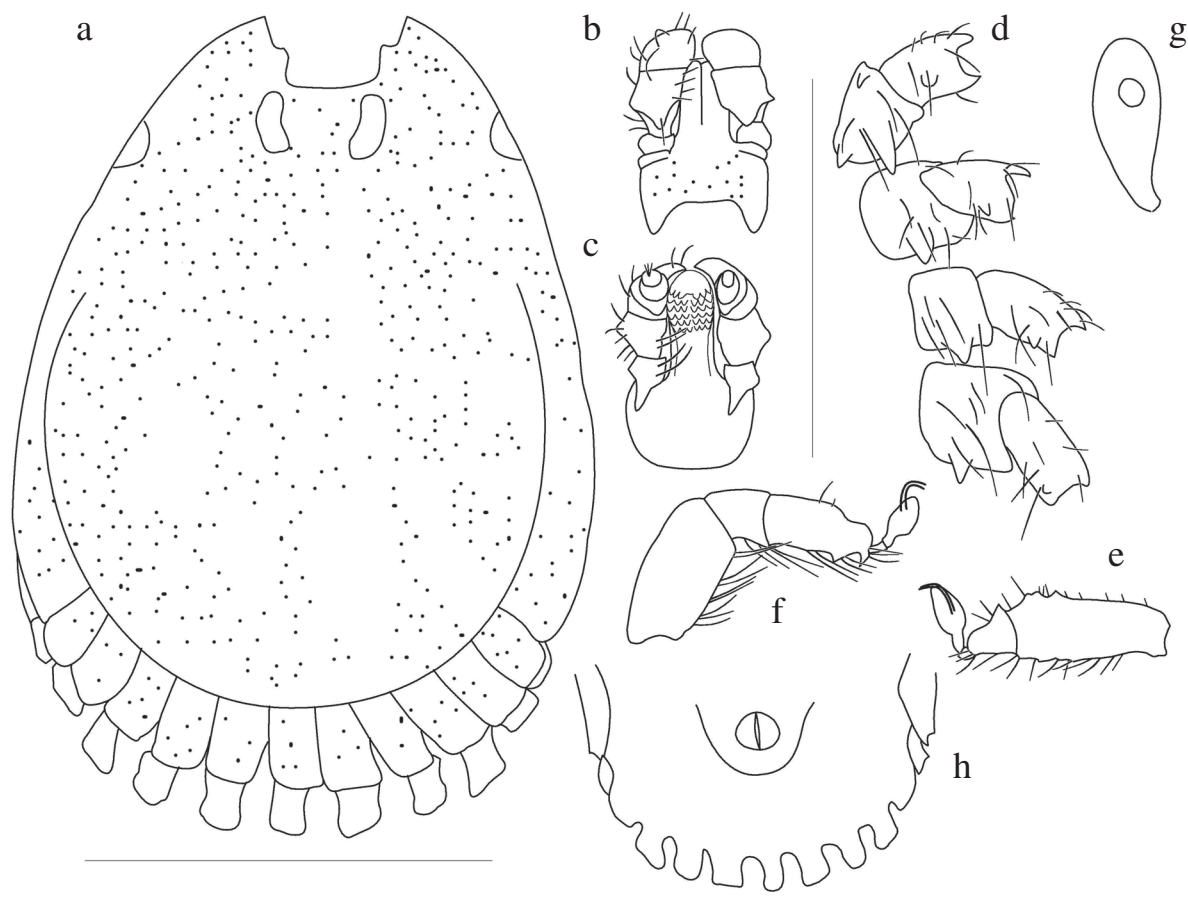


Fig. 69. *Amblyomma parvum*, male: a — scutum; b — gnathosoma, dorsal view; c — gnathosoma, ventral view; d — coxae; e — tarsus I; f — tarsus and tibia IV; g — spiracular plate, h — posterior part of idiosoma, ventral view. Scale bar 1 mm.

prolongation. Integumentary hard elements of the ventral skeleton of idiosoma consist of festoons shields. Postanal groove with thin, unpaired median groove extending to the festoon.

Female (Fig. 70). Measurements from 2 specimens. Length from apices of scapulae to posterior body margin 2.9, 3.0, breadth 2.2, 2.2. Dorsal body setae short, relatively thick, curved. Ventral body setae longer, thin, more numerous in the posterior part of idiosoma. Marginal groove complete, beginning near the posterior margin of scutum. Festoons rectangular.

Scutum length 1.49, 1.57, breadth 1.5, 1.57; yellow-brown, more darker around the eyes and along the posterolateral margins, inornate. Scutal punctations of different sizes, dense. Cervical grooves deep, short, pit-like, beginning at a distance from the anterior margin of scutum. Eyes very large, marginal, slightly bulging.

Capitulum length from palpal apices to cornua apices 1.0, 1.0, breadth 0.63, 0.63; posterior margin straight, cornua short, triangular, narrowly rounded; lateral margins convex; ventrally posterior

margin convex, with sharp, sclerotized border. Basis capituli bright with few, very small punctations. Porose areas narrow, oval, not deeply depressed, diameter of one area 0.1, 0.1, interporose area 0.11, 0.13. Palpi length 0.71, 0.73, breadth 0.19, 0.21. Palpal surface bright. Segment II 1.8–1.9 times longer than segment III, length of segment II 0.4, 0.43, length of segment III 0.21, 0.24. Segment I ventrally with high, sharp ridge ending posteriorly with narrow paddle. Palpal setae: dorsolateral and dorsomedial setae short, very thin, straight; ventrolateral setae very short and thin, straight; ventromedial setae longer, thin, straight. Palpal segment I ventrally with 2 long, straight setae. Hypostome length 0.66, 0.67, length of toothed portion 0.36, 0.36; apex rounded, with small central notch; dental formula 3/3.

Legs. Coxa I with 2 narrow, triangular spurs, the external spur much more long. Coxae II–IV each with a single, short, triangular, rounded spur slightly longer and more narrow on IV. Trochanters each with a triangular, sharp spur more noticeable on I and almost absent on IV. Trochanter I dorsally

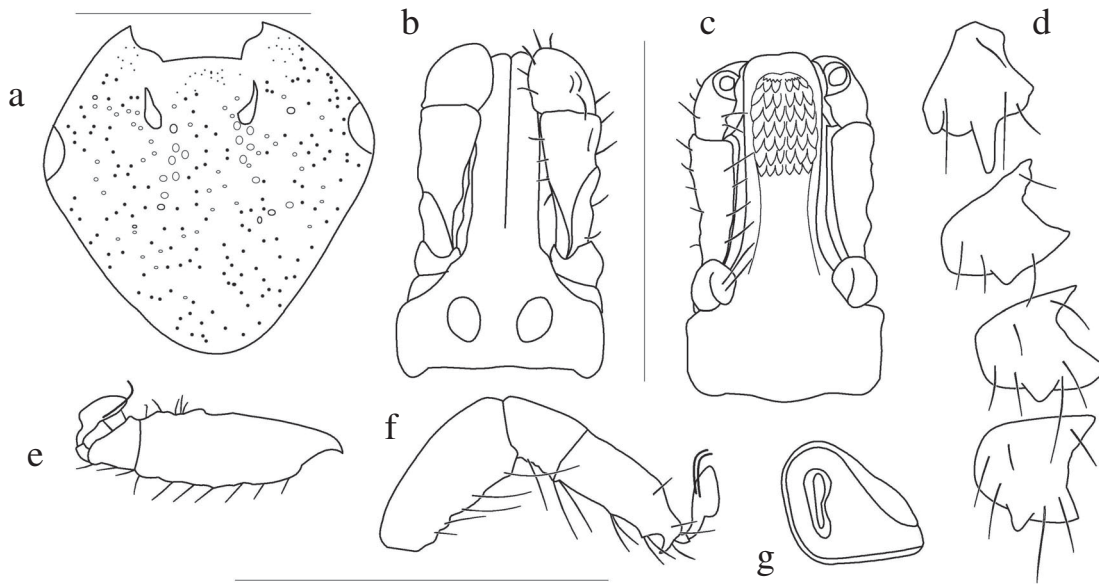


Fig. 70. *Amblyomma parvum*, female: a — scutum; b — gnathosoma, dorsal view; c — gnathosoma, ventral view; d — coxae; e — tarsus I; f — tarsus and tibia IV; g — spiracular plate. Scale bar 1 mm.

with a broad, triangular spur. Tarsus I length 0.79, 0.79, width 0.2, 0.21; without spurs. Tarsus IV length 0.63, 0.67, breadth 0.16, 0.17, with strong, pointed apical spur and triangular, small ventral hump. Tibia IV length 0.5, 0.54, breadth 0.23, 0.23.

Medial and lateral margins of spiracular plate diverging, medial and posterior margins straight, dorsal prolongation perpendicular to anterior-posterior axis of spiracular plate. Genital aperture «V» shaped, situated between coxae II–III. Postanal groove with shallow, unpaired, posteriorly directed, median groove extending to the festoon.

Material: 2 females (US National Tick Collection, RML 117854) Argentina, Salta, Est. San Francisco, 1.11.1978, «bovino» (cattle), coll. INTA, Salta; 2 males (US National Tick Collection, RML 117853) Argentina, Cria Conejo, 1982–1984, lab. reared, coll. URISA, INTA, Salta.

Amblyomma pecarium

Male (Fig. 71). Measurements from 2 specimens. Length from apices of scapulae to posterior scutal margin 3.1, 3.5, breadth 2.7, 3.0. Outline rounded, broadest at level of legs IV. Scutum grayish-yellow and brown in each scapular area and along the cervical grooves; ornate, pale, goldish-green patches in each scapular area and pale, goldish-pink patches of different sizes in each lateral area. Scutal surface bright, smooth, with very small and shallow punctations noticeable on metallic patches only. Cervical grooves deep, short, converging, situated at the distance from the anterior margin of scutum. Scapulae pointed, with evident ledge on

medial margin. Marginal groove complete, beginning at level of legs II. The posterior area of scutum in front of festoons with longitudinal, convergent posteriorly, brown prominence. Festoons rectangular, with chitinous plates beyond the posterior margin of the festoons. Eyes marginal, large, flat.

Capitulum length from palpal apices to cornua apices 1.19, 1.3, breadth 0.64, 0.71. Basis capituli with very small and shallow punctations. Posterior margin concave, cornua short, triangular, rounded; external margins convex, ventrally posterior margin slightly convex. Palpi length 0.91, 1.0, breadth 0.16, 0.17. Segment II 2.3–2.4 times longer than segment III, length of segment II 0.59, 0.64, length of segment III 0.24, 0.29. Palpi bright and slightly wrinkled. Segment I ventrally with a sloping ridge ending posteriorly with a small, blunt spur. Palpal setae: dorsolateral setae not long, cone-like, slightly curved; dorsomedial setae long, thin, slightly curved; ventrolateral setae not long, thin, slightly curved; ventromedial setae not long, very thin. Palpal segment I ventrally with a single, short, very thin seta. Hypostome length 0.83, 0.9, length of toothed portion 0.46, 0.5; apex notched, with a large corona of fine denticles; dental formula 3/3.

Legs. Coxa I with 2 narrow, triangular spurs, the external spur slightly longer. Coxa I with a sharp, spur-like callosity anteriorly. Coxae II–III each with a single, very short, rounded paddle on the posterior margin. Coxa IV with a single, long, narrow, triangular spur directed posteriorly. Trochanters lack spurs. Tarsus I length 0.94, 1.0, width

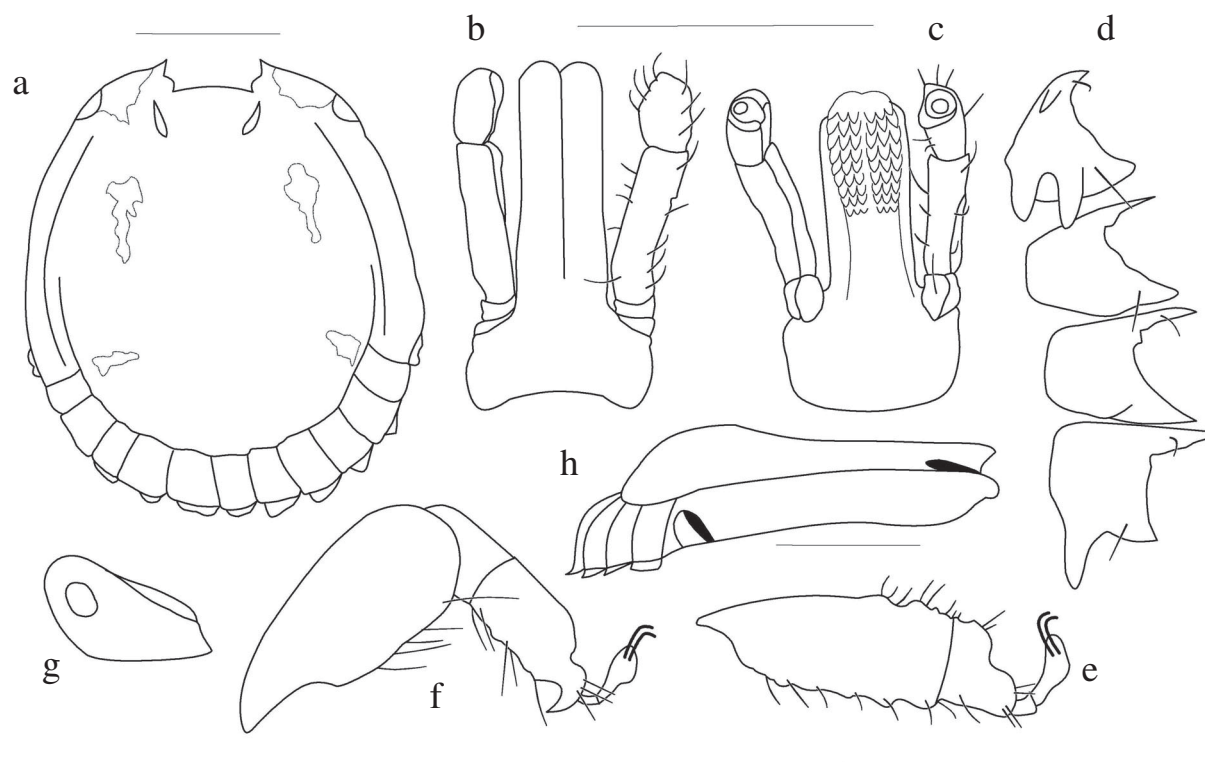


Fig. 71. *Amblyomma pecarium*, male: a — scutum; b — gnathosoma, dorsal view; c — gnathosoma, ventral view; d — coxae; e — tarsus I; f — tarsus and tibia IV; g — spiracular plate, h — lateral view of idiosoma. Scale bar 1 mm.

0.31, 0.31; with 3 blunt, ventral humps. Tarsus IV length 0.66, 0.71, breadth 0.19, 0.23; with a large, strong ventroapical hook and triangular, ventral hump. Tibia IV length 0.71, 0.8, breadth 0.31, 0.36.

Genital aperture situated between coxae II. Spiracular plate long, medial and lateral margins diverging, medial margin almost straight, dorsal prolongation very broad, forming an obtuse angle with anterior-posterior axis of spiracular plate. Postanal groove with a very short, unpaired median groove. Integumentary hard elements of the ventral skeleton of idiosoma absent, venter bright, very sclerotized.

Female (Fig. 72). Measurements from 2 partially engorged specimens. Length from apices of scapulae to posterior body margin 5.25, 5.65, breadth 4.9, 5.1. Alloscutum with very large, shallow punctations, in the posterior area punctations situated very closely so that form a pattern like honeycomb. Alloscutal setae few, very short and thin. Ventral body setae few, very short and thin, ventral surface in the posterior part of idiosoma with very large, shallow punctations, in the posterior area punctations situated very closely so that form a pattern like honeycomb. Marginal groove complete, beginning near the posterior margin of scutum. Festoons rectangular, their ventromedial margins with pyramidal, sclerotized tubercles visible from dorsal side.

Scutum length 2.2, 2.25, breadth 2.75, 2.75; brown, ornate; two large metallic, goldish-red patches between scapulae and eyes, one bright, large patch in the posterior part of the scutum and some small patches in the lateral areas. Punctations small, shallow, more numerous in each scapular area and around the eyes. Scapulae pointed, with noticeable ledges. Cervical grooves long, deep and converging anteriorly then more shallow and diverging, beginning at the distance from the anterior margin of scutum. Eyes very large, marginal, flat.

Capitulum length from palpal apices to cornua apices 1.7, breadth 0.9, 0.91; cornua short, rounded; posterior margin straight, lateral margins slightly convex; ventrally posterior margin convex. Surface of basis bright, with very few, small, shallow punctations. Porose areas small, deeply depressed, diameter of one area 0.17, 0.17, interporose area 0.2, 0.21. Palpi length 1.29, breadth 0.17. Segment II 2.1 times longer than segment III, length of segment II 0.84, length of segment III 0.4. Palpi bright with relatively large, shallow punctations. Segment I ventrally with a sloping ridge ending posteriorly with a small, sharp spur directed posteromedially. Palpal setae: dorsolateral setae long, thin, slightly curved; dorsomedial setae very short, thin on II and long, thin on III; ventrolateral setae short and long, thin, slightly curved; ventromedial

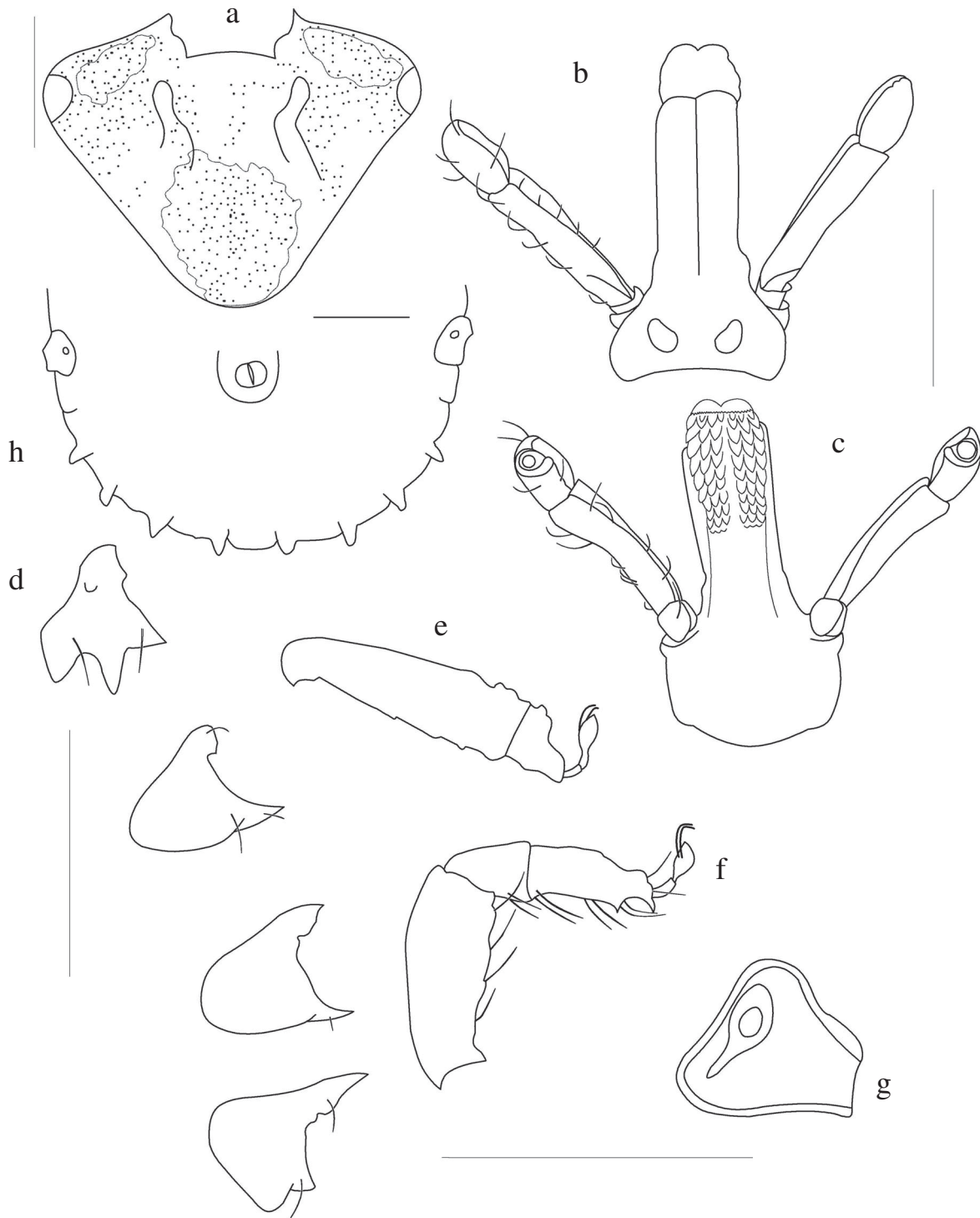


Fig. 72. *Amblyomma pecarium*, female: a — scutum; b — gnathosoma, dorsal view; c — gnathosoma, ventral view; d — coxae; e — tarsus I; f — tarsus and tibia IV; g — spiracular plate, h — posterior part of idiosoma, ventral view. Scale bar 1 mm

setae short, thin. Palpal segment I ventrally with a single, not long, thin seta. Hypostome length 1.17, length of toothed portion 0.69; rounded and notched apically, with a large corona of fine denticles; dental formula 3/3.

Legs. Coxa I with 2 triangular; relatively short, nearly equal spurs. Coxa I with a small, almost inconspicuous spur-like callosity anteriorly. Coxae

II–III each with a single, very short, rounded paddle on the posterior margin. Coxa IV with a single, triangular, broad, rounded spur. Trochanters lack spurs. Tarsus I length 1.36, width 0.34; with 2 small, rounded ventral humps. Tarsus IV length 0.97, breadth 0.24, with one strong, pointed apical hook and one pointed, triangular ventral hump. Tibia IV length 1.1, breadth 0.39.

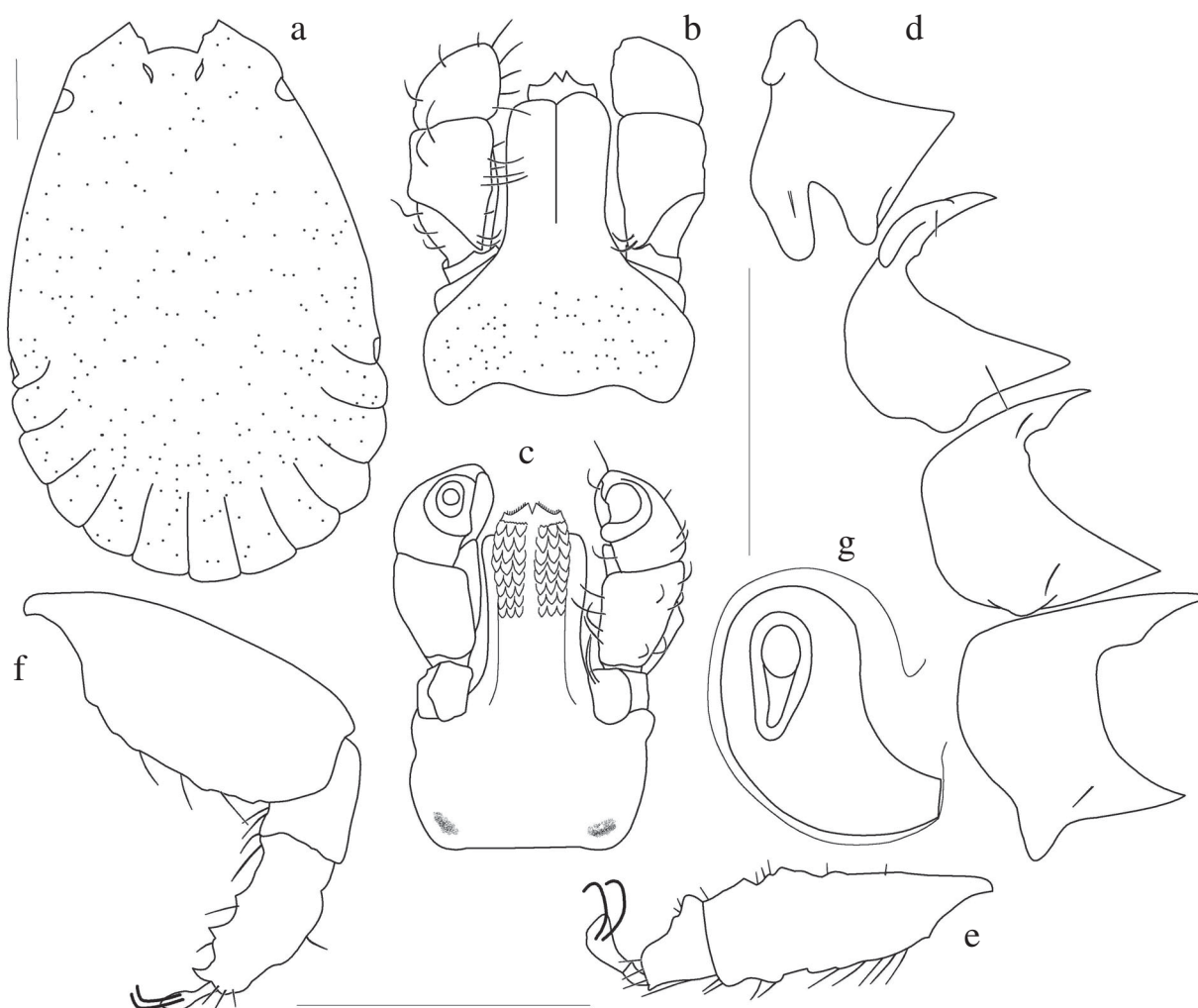


Fig. 73. *Amblyomma pictum*, male: a — scutum; b — gnathosoma, dorsal view; c — gnathosoma, ventral view; d — coxae; e — tarsus I; f — tarsus and tibia IV; g — spiracular plate. Scale bar 1 mm.

Spiracular plate very large, medial and lateral margins diverging, medial and posterior margins concave, dorsal prolongation very broad, forming an acute angle with anterior-posterior axis of spiracular plate. Genital aperture «U» shaped, situated between coxae II–III. Postanal groove with unpaired, posteriorly directed, median groove extending to the festoon.

Material: 2 males (US National Tick Collection, RML 22383) Mexica, Chispas, Ocozocoautla, Jungles of El Ocote, 4.05.1946, ex *Dicotyles labiatus* (black peccary), coll. M.A. del Toro; 2 females (US National Tick Collection, RML 28216) Mexica, Chispas, Ocozocoautla, Selvas de el Ocote, 25.05.1950. ex *Mazama satorii*, coll. M.A. del Toro.

Amblyomma pictum

Male (Fig. 73). Measurements from one specimen. Length from apices of scapulae to posterior

scutal margin 7.25, breadth 4.7. Outline oval, broadest at level of festoons II. Scutum red-brown, more yellowish in the central area; inornate, but with pale, whitish-gray pigment. Scutal surface with small, shallow punctations. Cervical grooves deep, oval, pit-like, situated at the distance from the anterior margin of scutum. Scapulae pointed, with evident ledge on medial margin. Marginal groove absent. Festoons very long, without chitinous plates beyond the posterior margin of the festoons. Eyes marginal, large, flat.

Capitulum length from palpal apices to cornua apices 1.46, breadth 0.99. Basis capituli with numerous, very small, shallow punctations. Posterior margin undulated, cornua broadly rounded; external margins convex, ventrally posterior margin almost straight with sharp, sclerotized border and very short, rounded ventral cornua. Basis capituli ventrally with 2 small depressions situated in front

of ventral cornua. Palpi length 0.93, breadth 0.31. Segment II 1.6 times longer than segment III, length of segment II 0.54, length of segment III 0.33. Palpi slightly wrinkled. Segment I ventrally with a sloping ridge ending posteriorly with a rounded paddle. Segment III ventrally with a rounded hump on anteromedial margin. Palpal setae: dorsolateral setae long, relatively thick, curved; dorsomedial setae long, slightly curved and straight; ventrolateral setae shorter, thin, curved; ventromedial setae very long, curved. Palpal segment I ventrally with a single, very long, relatively thick seta. Hypostome length 0.74, length of toothed portion 0.43; apex with a small corona of fine denticles, first row of long denticles directed anteriorly, apex notched, each half of the apex concave, with a pointed projection near the median axis and pointed anterolateral angles; dental formula 3/3.

Legs. Coxa I with 2 equal in length, relatively long, widely separated, rounded spurs. Coxa I with a rounded, spur-like callosity anteriorly. Coxae II–III each with a single, very short, broad, triangular, rounded spur. Coxa IV with a single, longer, triangular, narrowly rounded spur. Trochanters lack spurs. Tarsus I length 1.36, width 0.4; with a small, pointed apical spur and 3 blunt, ventral humps. Tarsus IV length 1.04, breadth 0.29; with a large, strong ventroapical hook and triangular, pointed, ventral hump. Tibia IV length 1.17, breadth 0.54.

Genital aperture situated between coxae II. Spiracular plate large, medial and lateral margins nearly parallel, medial and posterior margins convex, dorsal prolongation broad, forming an obtuse angle with anterior-posterior axis of spiracular plate. Postanal groove with a deep, unpaired median groove extending to the festoon. Integumentary hard elements of the ventral skeleton of idiosoma consist of small sclerotized point-plaques in place of paired postanal shields and along the genital and unpaired median grooves.

Material: male (US National Tick Collection, RML 32205) upper New River (Tributary of Courentyne), southern British Guiana; ex *Giant anteater*; September 1938; coll. E.R. Blake.

Amblyomma pilosum

Male (Fig. 74). Measurements from 2 specimens. Length from apices of scapulae to posterior scutal margin 2.36, 2.46, breadth 2.2, 2.6. Outline nearly rounded, broadest at level of spiracular plates. Scutum brown; ornate, irregular-shaped, pale, metallic, goldish-pink or grayish central patch and small, goldish-pink patches behind the eyes. Scutum distinctive with symmetrical pattern of depres-

sions; punctations very large and deep, situated only inside the depressions and disposed very closely so that form a pattern like honeycomb. Scutal setae long, thin, needle-shaped, numerous in each scapular area, between the cervical grooves and along the margin of body. Cervical grooves deep, narrow, very short, converging. Marginal groove almost inconspicuous, incomplete, beginning at level of legs II and extending to the festoons II. Festoons broad, without chitinous plates beyond the posterior margin of the festoons. Eyes small, orbital, bulging.

Capitulum length from palpal apices to cornua apices 0.73, 0.74, breadth 0.47, 0.5. Basis capituli wrinkled, with some short, stick-like setae. Posterior margin of basis capituli slightly concave, cornua relatively large, triangular, rounded; lateral margins subtriangular, ventrally posterior margin slightly convex. Palpi length 0.43, 0.46, breadth 0.14, 0.14. Segment II 1.7–1.8 times longer than segment III, length of segment II 0.24, 0.26, length of segment III 0.14, 0.14. Palpi slightly wrinkled. Segment II dorsally with large, pointed spur directed posteriorly. Segment III ventrally with rounded paddle on anteromedial margin. Palpal setae: dorsolateral setae short, thick, stick-like; dorsomedial setae long, needle-shaped, slightly curved; ventrolateral setae short, thick, stick-like; ventromedial setae long, straight. Palpal segment I ventrally with 2 short, thick, curved lateral setae and 2 very long, straight ventromedial setae. Hypostome length 0.41, 0.43, length of toothed portion 0.2, 0.2; apex notched, each half of the apex concave, with a pointed projection near the median axis; the first row of fine denticles directed anteriorly; dental formula 3/3.

Legs yellow, with dark-brown patches on ventral surface of all segments, more noticeable on legs I. Coxa I with 2 subequal, short, triangular spurs, the internal spur broader. Coxae II–IV each with 2 short, triangular, rounded spurs; spurs on II and III situated separately but on IV they disposed closely. Trochanters lack spurs. Tarsus I length 0.6, 0.63, width 0.19, 0.2; with small apical spur. Tarsus IV length 0.47, 0.47, breadth 0.13, 0.14; with a strong, pointed apical hook and triangular, pointed ventral hump. Tibia IV length 0.54, 0.57, breadth 0.2, 0.21. Legs with very numerous, stick-like, white setae.

Venter with long, needle-shaped setae more numerous and longer in the posterior part of idiosoma. Genital aperture situated between coxae II. Spiracular plate small, oval, with very long and narrow dorsal prolongation forming an obtuse an-

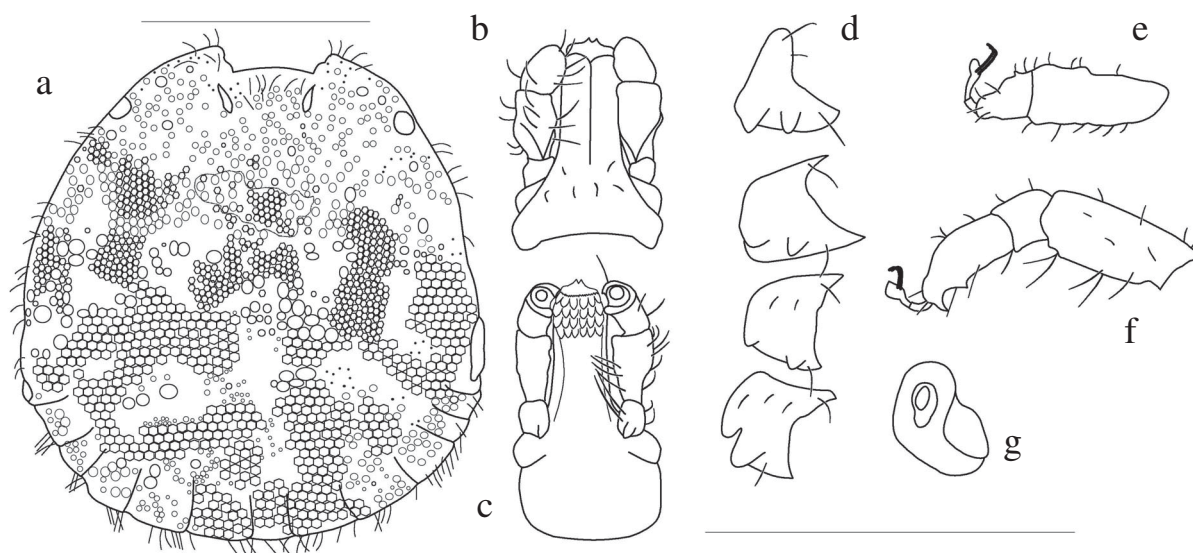


Fig. 74. *Amblyomma pilosum*, male: a — scutum; b — gnathosoma, dorsal view; c — gnathosoma, ventral view; d — coxae; e — tarsus I; f — tarsus and tibia IV; g — spiracular plate. Scale bar 1 mm.

gle to anterior-posterior axis of spiracular plate. Integumentary hard elements of the ventral skeleton of idiosoma consist of unpaired anal and 2 paired postanal shields and festoons' shields. Postanal groove with very short, unpaired median groove extending to the festoon.

Female (Fig. 75). Measurements from 2 specimens. Length from apices of scapulae to posterior body margin 2.95, 2.95, breadth 2.85, 3.0. Alloscutal setae very numerous, long, thick, stick-like; setae on the festoons situated in blocks on medial margins. Scutal setae long, needle-shaped, situated in each scapular area and between cervical grooves. Alloscutal surface distinctive with symmetrical pattern of depressions. Ventral body setae short between coxae and long in the posterior part of idiosoma, needle-shaped, very numerous. Marginal groove absent. Festoons broad, rectangular.

Scutum length 2.75, 2.8, breadth 3.25, 3.25; yellow-brown in the central and anterior areas and dark-brown behind the eyes and along the posterolateral margins, ornate; large, metallic, lilac with goldish-red-green border patch in the posterior part of the scutum and two same patches between eyes and cervical grooves. Scutal punctations numerous, large and very deep, scutal surface between cervical grooves and inside them wrinkled. Scapulae blunt, with noticeable ledges on medial margins. Cervical grooves long, deep, converging anteriorly then diverging and reaching the posterior margin of body; numerous punctations inside the grooves disposed very closely so that form a pattern like honeycomb. Eyes very large, marginal, bulging.

Capitulum length from palpal apices to cornua apices 0.96, 1.04, breadth 0.63, 0.64; posterior margin straight or slightly undulated, cornua very short, rounded, in one specimen slightly deflected dorsally; lateral margins convex; ventrally posterior margin slightly convex. Basis capituli with few, shallow punctations or with thin, transversal wrinkles. Porose areas oval, not deeply depressed, diameter of one area 0.11, 0.11, interporose area 0.17, 0.17. Setae on the basis capituli few, short, stick-like. Palpi length 0.69, 0.71, breadth 0.13, 0.14. Palpi slightly wrinkled. Segment II 2.0 times longer than segment III, length of segment II 0.41, 0.43, length of segment III 0.2, 0.21. Segment I ventrally with sloping ridge ending posteriorly with small spur. Palpal setae: dorsolateral setae long, relatively thick, needle-shaped; dorsomedial setae longer, needle-shaped; ventrolateral setae short, stick-like; ventromedial setae long, relatively thick, needle-shaped. Palpal segment I ventrally with 3 very long, relatively thick, straight setae. Hypostome length 0.6, 0.67, length of toothed portion 0.29, 0.33; apex rounded, with small central notch; dental formula 4/4 in the two anterior rows and 3/3 in the other rows.

Legs yellow, with dark-brown patches on ventral surface of all segments and with very numerous, stick-like, white setae. Coxa I with 2 short, triangular, equal in length spurs, the internal spur slightly broader. Coxae II–IV each with 2, short, triangular, rounded spurs, the external spur slightly larger. Trochanters lack spurs. Tarsus I length 0.76, 0.8, width 0.21, 0.23; with small, pointed, apical spur. Tarsus IV length 0.57, 0.57, breadth 0.14,

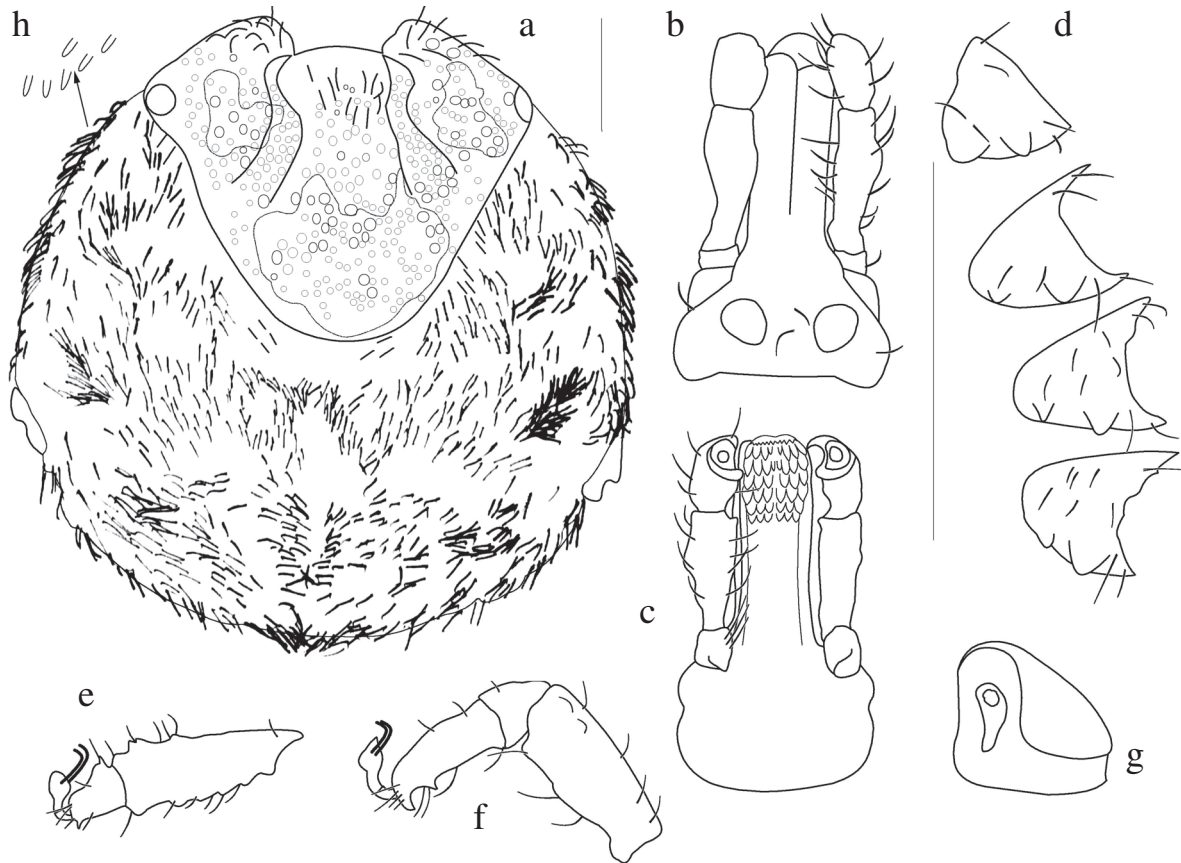


Fig. 75. *Amblyomma pilosum*, female: a — idiosoma, dorsal view; b — gnathosoma, dorsal view; c — gnathosoma, ventral view; d — coxae; e — tarsus I; f — tarsus and tibia IV; g — spiracular plate; h — idiosomal setae. Scale bar 1 mm.

0.14, with strong, pointed apical spur and triangular, pointed ventral hump. Tibia IV length 0.57, 0.59, breadth 0.23, 0.24.

Spiracular plate subtriangular, its medial and lateral margins parallel, medial and posterior margins straight, dorsal prolongation very long, broad, perpendicular to anterior-posterior axis of spiracular plate; lateral margin with very large chitinous border. Genital aperture «U» shaped, situated between coxae II–III. Postanal groove with shallow, unpaired, posteriorly directed, median groove extending to the festoon.

Material: 2 males, 2 females (US National Tick Collection, RML 58467) Galapagos, Duncan (Pinzan), 31.07.1964, ex Tortoise, coll. N. Castro.

Amblyomma pseudoconcolor

Male (Fig. 76). Measurements from 2 specimens. Length from apices of scapulae to posterior scutal margin 3.0, 3.1, breadth 2.6, 2.75. Outline pear-shaped, broadest at level of legs IV. Scutum brown; ornate, some small, goldish-crimson, irregular-shaped patches situated on festoons and along the marginal groove. Scutal punctations small, shallow, few in each scapular area and on festoons.

Cervical grooves very deep, short, parallel, situated at the distance from the anterior margin of scutum. Scapulae pointed, with evident ledge on medial margin. Marginal groove complete, beginning at level of legs II. Festoons narrow, without chitinous plates beyond the posterior margin of the festoons. Eyes inconspicuous.

Capitulum length from palpal apices to posterior margin of basis 0.79, 0.83, breadth 0.54, 0.59. Basis capituli slightly wrinkled. Posterior margin straight, cornua absent; external margins straight, ventrally posterior margin slightly convex. Palpi length 0.51, 0.53, breadth 0.23, 0.24. Segment II 1.3 times longer than segment III, length of segment II 0.26, 0.27, length of segment III 0.2, 0.21. Palpi shagreened. Segment I ventrally with a narrow, oval paddle directed posterolaterally and ventrally. Palpal setae: dorsolateral setae short, relatively thick, slightly curved; dorsomedial setae short, relatively thick, cone-like; ventrolateral setae short, thick, slightly curved; ventromedial setae longer, slightly curved. Palpal segment I ventrally with a single, short, thick, curved, ventrolateral seta and 2 long, slightly curved, ventro-

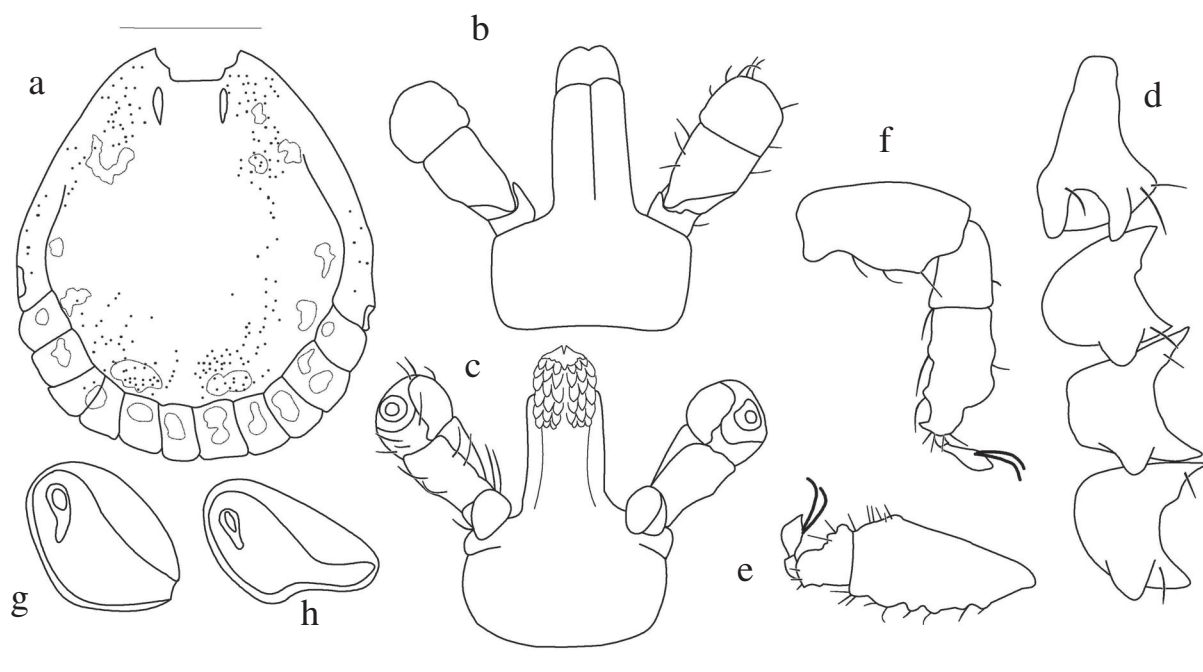


Fig. 76. *Amblyomma pseudoconcolor*, male: a — scutum; b — gnathosoma, dorsal view; c — gnathosoma, ventral view; d — coxae; e — tarsus I; f — tarsus and tibia IV; g, h — spiracular plates. Scale bar 1 mm.

medial setae. Hypostome length 0.44, 0.46, length of toothed portion 0.27, 0.29; apex with a large corona of fine denticles, first row directed anteriorly, apex notched, each half of the apex with a rounded, triangular projection near the median axis; dental formula 3/3.

Legs. Coxa I with 2 equal in length, short, triangular spurs, the external spur curved. Coxae II–IV each with a single, triangular, broad, rounded spur largest on IV. Trochanters I–IV with triangular, ventral spurs largest on I and II; trochanter I with large, rounded, dorsal spur. Tarsus I length 0.69, 0.73, width 0.24, 0.27; with small, sharp, apical spur and high, triangular dorsal hump. Tarsus IV length 0.61, 0.64, breadth 0.19, 0.21; with a pointed, ventroapical hook and small, triangular, ventral hump. Tibia IV length 0.49, 0.51, breadth 0.21, 0.26.

Genital aperture situated between coxae II. Spiracular plate narrow, medial and lateral margins diverging, medial margin almost straight, posterior margin almost straight or concave; dorsal prolongation forming an obtuse angle with anterior-posterior axis of spiracular plate, lateral margin with large, chitinous border. Postanal groove with unpaired median groove extending to the festoon. Integumentary hard elements of the ventral skeleton of idiosoma consist of small sclerotized point-plaques along the genital groove and around the anal valves.

Female (Fig. 77). Measurements from 2 semi-engorged specimens. Length from apices of scapulae to posterior body margin 6.35, 7.65, breadth 5.3, 6.15. Alloscutal setae short, thick, curved. Ventral body setae short, thick, stick-like. Festoons rectangular.

Scutum length 2.0, 2.1, breadth 2.31, 2.39; brown, more darker in each lateral area, ornate; some pale, almost inconspicuous, goldish-crimson, irregular-shaped patches in each posterolateral area. Posterior margin of scutum undulating. Punctations relatively dense, small, shallow, more large between eyes and cervical grooves. Scapulae blunt, with noticeable ledges. Cervical grooves deep, short, narrow, converging, situated at the distance from the anterior margin of scutum. Eyes large, marginal, slightly bulging.

Capitulum length from palpal apices to posterior margin of basis 1.21, 1.23, breadth 0.83, 0.86; cornua absent; posterior margin straight or slightly concave, lateral margins convex; ventrally posterior margin slightly concave. Punctations of basis very few, small, shallow. Porose areas narrow, oval, deeply depressed, diameter of one area 0.1, 0.1, interporose area 0.21, 0.21. Palpi length 0.8, 0.86, breadth 0.27, 0.29. Segment II 1.8–1.9 times longer than segment III, length of segment II 0.47, 0.5, length of segment III 0.24, 0.27. Segment II dorsally with triangular, pointed spur directed posteriorly. Segment I ventrally with a narrow, oval

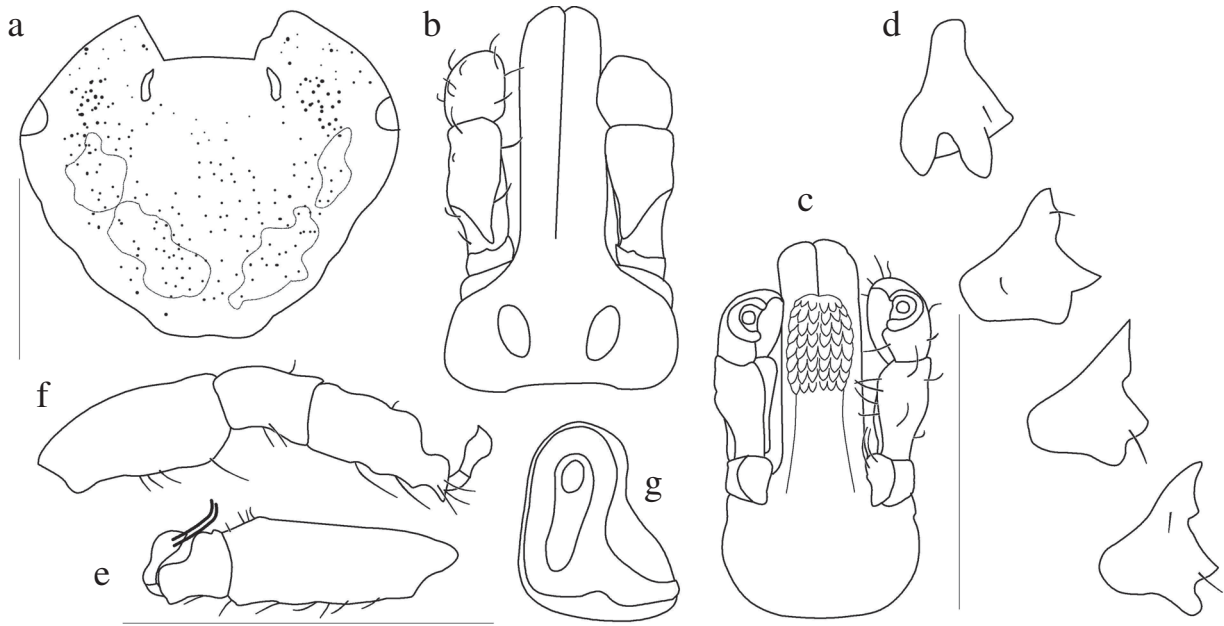


Fig. 77. *Amblyomma pseudoconcolor*, female: a — scutum; b — gnathosoma, dorsal view; c — gnathosoma, ventral view; d — coxae; e — tarsus I; f — tarsus and tibia IV; g — spiracular plate. Scale bar 1 mm.

paddle directed posteromedially and ventrally. Palpal setae: dorsolateral setae short, stick-like; dorso-medial setae short, stick-like, slightly curved; ventrolateral setae short, stick-like, slightly curved; ventromedial setae long, straight. Palpal segment I ventrally with 2 long, slightly curved setae. Hypostome length 0.74, 0.81, length of toothed portion 0.43, 0.47; rounded and notched apically, with a large corona of fine denticles, the first row of denticles directed anteriorly; dental formula 3/3.

Legs. Coxa I with 2 short, triangular spurs, the external spur slightly longer. Coxae II–III each with a single, triangular, broad, rounded spur. Coxa IV with a single, triangular spur, longer and more narrow than on III. Trochanters each with a single ventral spur very noticeable on I but almost absent on III and IV. Tarsus I length 0.86, 0.9, width 0.27, 0.27; with a small, rounded apical hump. Tarsus IV length 0.79, 0.79, breadth 0.21, 0.21, with one small, pointed apical hook and one small, triangular ventral hump. Tibia IV length 0.59, 0.64, breadth 0.26, 0.29.

Spiracular plate subtriangular, medial and lateral margins parallel, medial margin almost straight, posterior margin concave, dorsal prolongation very narrow, perpendicular to anterior-posterior axis of spiracular plate, lateral and posterior margins each with broad, sclerotized border. Genital aperture «U» shaped, situated between coxae II–III. Postanal groove with unpaired, posteriorly directed, median groove extending to the festoon.

Material: 2 males and 2 females (US National Tick Collection, No. 20050) Brazil, Goiás, Anápolis, Faz. Morro Limpo, 23.01.1937, ex (tatu peba) (*Euphractus*) armadillo with a smooth tail, coll. F. L. Soper.

Amblyomma pseudoparvum

Male (Fig. 78). Measurements from 2 specimens. Length from apices of scapulae to posterior scutal margin 1.86, 1.86, breadth 1.14, 1.19. Outline elongate-oval, broadest at level of legs IV. Scutum yellow-brown; inornate, with few, very shallow and small punctations. Cervical grooves deep, very short, straight, slightly diverging. Marginal groove complete, beginning at level of legs II. Festoons long, narrow, without chitinous plates beyond the posterior margin of the festoons. Eyes large, orbital, slightly bulging.

Capitulum length from palpal apices to cornua apices 0.43, 0.44, breadth 0.3, 0.31. Basis capituli shagreened. Posterior margin of basis slightly concave and undulated, cornua short, triangular, narrowly rounded; lateral margins nearly straight, ventrally posterior margin convex. Palpi length 0.26, 0.29, breadth 0.09, 0.1. Segment II 1.8–2 times longer than segment III, length of segment II 0.14, 0.16, length of segment III 0.07, 0.08. Segment II dorsally with large, broadly rounded spur directed posteriorly. Segment I ventrally with a long, triangular spur directed posterolaterally and ventrally. Segment III ventrally with sharp, sclerotized border on anterior margin. Palpal setae: dorsolateral

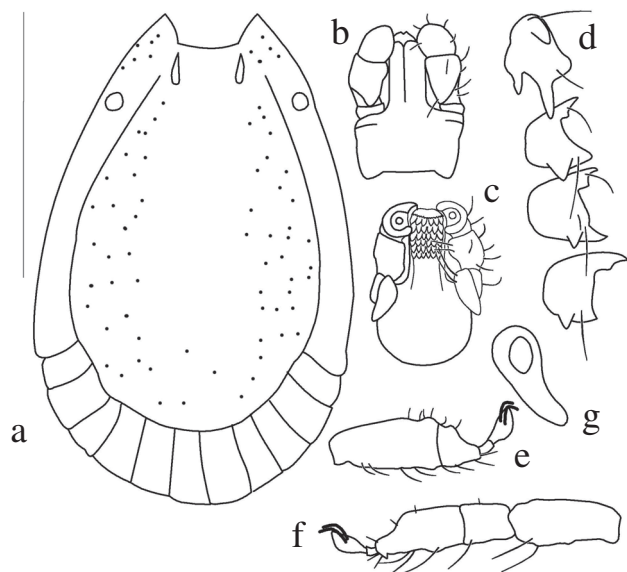


Fig. 78. *Amblyomma pseudoparvum*, male: a — scutum; b — gnathosoma, dorsal view; c — gnathosoma, ventral view; d — coxae; e — tarsus I; f — tarsus and tibia IV; g — spiracular plate. Scale bar 1 mm.

and dorsomedial setae short, thin; ventrolateral setae relatively long, thin, straight; ventromedial setae long, straight. Palpal segment I ventrally with a short, thin, ventrolateral seta and 2 long, thick, slightly curved, ventromedial setae. Hypostome length 0.186, 0.186, length of toothed portion 0.11, 0.11; apex notched, with a large corona of fine denticles, first row directed anteriorly; dental formula 3/3.

Legs yellow, with brown strips on ventral surface of all segments. Coxa I with 2 narrow, triangular spurs, the external spur longer and reaching the anterior margin of coxa II. Coxa I with a sharp, spur-like callosity anteriorly. Coxae II–IV each with a single, short, triangular spur, largest on II. Trochanters I–II each with a large, triangular, ventral spur, spur on trochanters III and IV small, rounded, almost inconspicuous. Trochanter I dorsally with a large, rounded spur. Tarsus I length 0.43, 0.43, width 0.16, 0.16; without apical spurs. Tarsus IV length 0.41, 0.44, breadth 0.11, 0.11; with a small, pointed apical spur. Tibia IV length 0.3, 0.3, breadth 0.14, 0.16.

Venter with few, short and thin setae. Genital aperture situated between coxae II. Spiracular plate long, oval, with long, slightly curved dorsal prolongation. Integumentary hard elements of the ventral skeleton of idiosoma absent. Postanal groove with unpaired median groove extending to the festoon.

Female (Fig. 79). Measurements from 2 specimens. Length from apices of scapulae to posterior

body margin 2.26, 2.47, breadth 1.5, 1.7. Alloscutal setae numerous, long, stick-like, scutal setae few, very short and thin. Venter with long, thin, needle-shaped setae more numerous in the posterior part of the body. Setae on festoons more thick and long, stick-like. Coxal setae very long, thin, straight. Marginal groove complete, beginning near the posterior margin of scutum. Festoons rectangular.

Scutum length 1.19, 1.21, breadth 1.14, 1.14; yellow and brown along the lateral margins, inornate. Scutal punctations moderate in size, numerous, forming two longitudinal depressions on each lateral area; lateral fields behind the eyes without punctations. Cervical grooves deep, almost straight, converging, beginning at a distance from the anterior margin of scutum then diverging as shallow depressions. Eyes very large, marginal, slightly bulging.

Capitulum length from palpal apices to cornua apices 0.86, 0.86, breadth 0.51, 0.53; posterior margin concave, cornua broad, triangular, narrowly rounded; lateral margins subtriangular; ventrally posterior margin convex, with sharp, sclerotized border and short, rounded cornua. Basis capituli smooth, bright. Porose areas narrow, oval, deeply depressed, diameter of one area 0.086, 0.086, interporose area 0.09, 0.11. Palpi length 0.59, 0.64, breadth 0.14, 0.14. Palpi slightly wrinkled. Segment II 2.9–3 times longer than segment III, length of segment II 0.39, 0.4, length of segment III 0.13, 0.14. Segment I ventrally with large, oval paddle directed ventrally. Segment III ventrally with sharp, sclerotized border on anterior margin. Palpal setae: dorsolateral setae short, thin, almost straight; dorsomedial setae longer, thin, almost straight; ventrolateral setae short, thin; ventromedial setae long, thin, almost straight. Palpal segment I ventrally with 2 very long, straight ventromedial setae. Hypostome length 0.54, 0.57, length of toothed portion 0.29, 0.3; apex rounded, with small central notch; dental formula 3/3.

Legs yellow, with brown strips on ventral surface of all segments. Coxa I with 2 narrow, triangular spurs, the external spur larger and reaching the anterior margin of coxa II. Coxae II–IV each with a single, short, triangular spur largest on II. Trochanters each with a short, rounded ventral spurs more noticeable on I and almost absent on IV. Trochanter I dorsally with a broad, narrowly rounded spur. Tarsus I length 0.61, 0.69, width 0.17, 0.19; without spurs. Tarsus IV length 0.66, 0.67, breadth 0.13, 0.14, with small, pointed

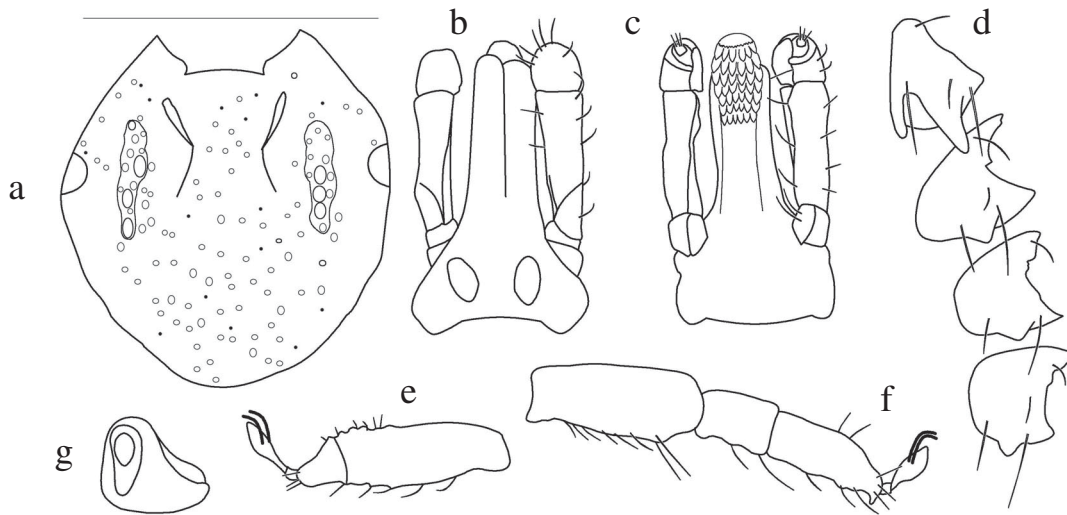


Fig. 79. *Amblyomma pseudoparvum*, female: a — scutum; b — gnathosoma, dorsal view; c — gnathosoma, ventral view; d — coxae; e — tarsus I; f — tarsus and tibia IV; g — spiracular plate. Scale bar 1 mm.

apical spur. Tibia IV length 0.5, 0.5, breadth 0.19, 0.2.

Medial and lateral margins of spiracular plate diverging, medial and posterior margins nearly straight, dorsal prolongation perpendicular to anterior-posterior axis of spiracular plate. Genital aperture «U» shaped, situated between coxae II–III. Postanal groove with unpaired, posteriorly directed, median groove extending to the festoon.

Material: 2 females, 2 males (US National Tick Collection, RML 117856) Argentina, Salta, Conejo del Palo, Pto. La Paz, 12.11.1978, coll. INTA, Salta.

Amblyomma quadricavum

Male (Fig. 80). Measurements from 2 specimens. Length from apices of scapulae to posterior scutal margin 2.31, 2.36, breadth 2.14, 2.19. Outline roundish, broadest at level of middle of scutum, scapulae broad, straight. Scutum yellow, inornate. Scutal surface smooth, bright, with very few, small punctations. Cervical grooves very small, pit-like, situated at the distance from the anterior margin of scutum. Marginal groove absent. Festoons short, narrow, without chitinous plates beyond the posterior margin of the festoons. Eyes very flat, almost inconspicuous.

Capitulum length from palpal apices to posterior margin of basis 0.64, 0.66, breadth 0.44, 0.46. Surface of basis capituli shagreened. Posterior margin straight, cornua absent; external margins straight, ventrally posterior margin convex. Palpi length 0.47, 0.47, breadth 0.1, 0.1. Segment II 2 times longer than segment III, length of segment II

0.3, 0.3, length of segment III 0.14, 0.15. Palpi shagreened. Palpal setae short, slightly curved. Palpal segment I ventrally with a single, long, thin seta. Hypostome length 0.43, length of toothed portion 0.26; apex narrowly rounded with a small corona of fine denticles; dental formula 3/3.

Legs. Coxa I with 2 triangular spurs, the external spur narrow, relatively long, internal spur very short. Coxa I anteriorly with a small, roller-like callosity ending with a small, sharp spur. Coxae II–IV each with a single, triangular spur broadest on II and longest on IV. Trochanters lack spurs. Tarsus I length 0.49, 0.5, width 0.14, 0.15; without apical spur. Tarsus IV length 0.33, 0.36, breadth 0.11, 0.11; with small, blunt apical spur. Tibia IV length 0.3, 0.3, breadth 0.16, 0.17.

Genital aperture situated between coxae II. Spiracular plate long, oval, with dorsal prolongation as broad as spiracular plate and fluently curved. Postanal groove with shallow, thin unpaired median groove extending to the festoon. Integumentary hard elements of the ventral skeleton of idiosoma consist of unpaired anal and 2 paired postanal shields composed of some small, round plaques; festoons without plaques.

Female (Fig. 81). Measurements from 2 specimens. Length from apices of scapulae to posterior body margin 2.6, 2.9; breadth 2.8, 3.1. Dorsal body setae very short and thin, relatively dense on the body margin; ventral body setae short, thick, slightly curved. Outline rounded, marginal groove absent. Festoons broad, rectangular.

Scutum length 1.25, 1.6; breadth 2.0, 2.1; yellow-brown, inornate. Posterior margin of scu-

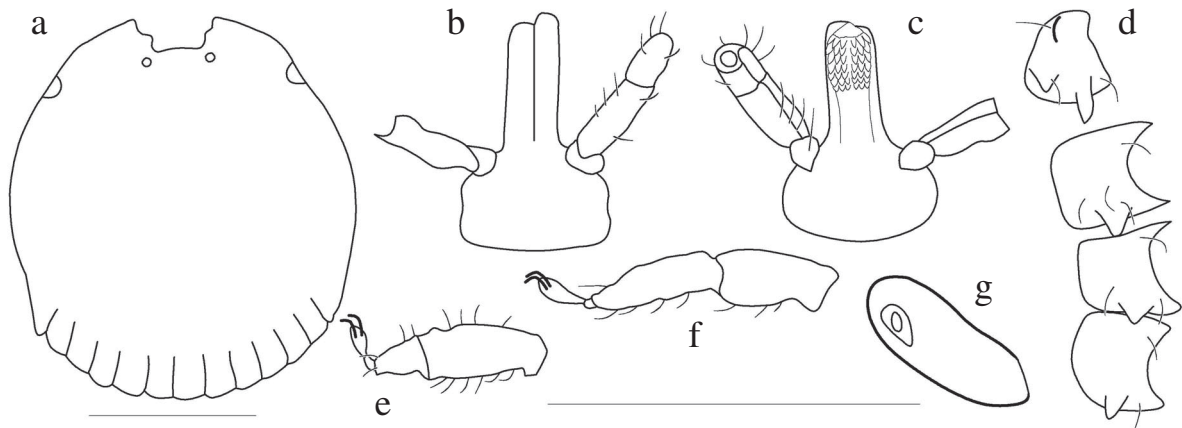


Fig. 80. *Amblyomma quadricavum*, male: a — scutum; b — gnathosoma, dorsal view; c — gnathosoma, ventral view; d — coxae; e — tarsus I; f — tarsus and tibia IV; g — spiracular plate. Scale bar 1 mm.

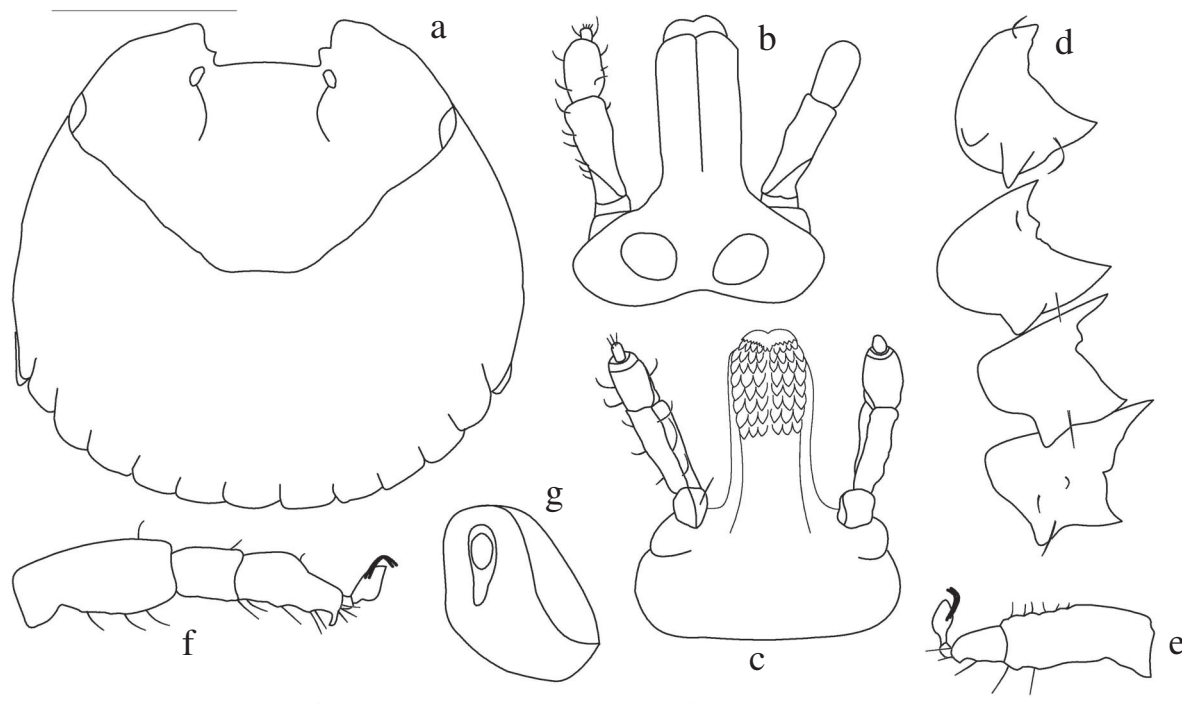


Fig. 81. *Amblyomma quadricavum*, female: a — idiosoma, dorsal view; b — gnathosoma, dorsal view; c — gnathosoma, ventral view; d — coxae; e — tarsus I; f — tarsus and tibia IV; g — spiracular plate. Scale bar 1 mm.

tum straight or slightly concave, posterolateral margins slightly concave. Scutum smooth, bright, with very few, shallow punctations. Scapulae rounded, medial margins with ledges. Cervical grooves small, pit-like, not deeply depressed anteriorly, then diverging as very shallow depressions. Eyes large, marginal, flat.

Capitulum length from palpal apices to posterior margin of basis 0.79, 0.89; breadth 0.71, 0.76; posterior margin concave, lateral margins convex; cornua absent; ventrally posterior margin straight. Basis capituli smooth, bright, with very few punctations. Porose areas round, deeply depressed, diameter of one area 0.16, 0.16; interporose area 0.11, 0.11.

Palpi length 0.56, 0.57; breadth 0.1, 0.11. Segment II 1.5 times longer than segment III, length of segment II 0.29, 0.31; length of segment III 0.19, 0.21. Palpi smooth. Palpal setae: dorsolateral and dorsomedial setae short, thin, slightly curved; ventrolateral setae short, thin, slightly curved; ventromedial setae shorter, thin, slightly curved. Palpal segment I ventrally with a relatively long, cone-like seta. Hypostome length 0.54, 0.57; length of toothed portion 0.36, 0.37; with a large corona of fine denticles apically, apex rounded, with small central notch; dental formula 4/4 in the 1–2 anterior rows then 3/3.

Legs. Coxa I with 2 triangular spurs, the external spur larger, sharp, internal spur very short.

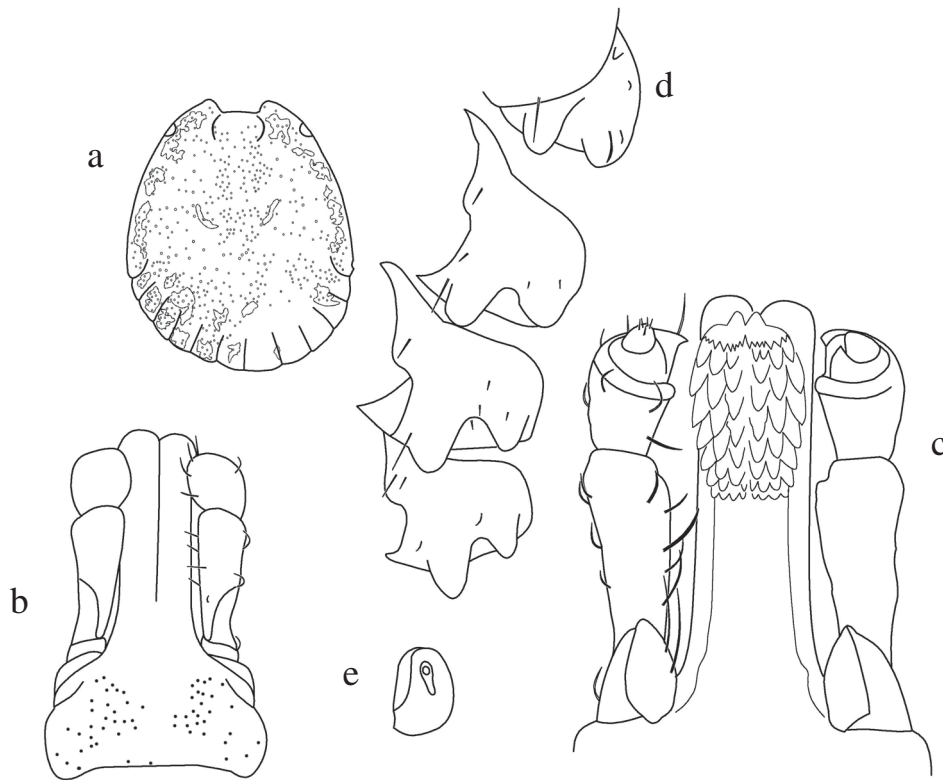


Fig. 82. *Amblyomma rotundatum*, male: a — scutum; b — gnathosoma, dorsal view; c — gnathosoma, ventral view; d — coxae; e — spiracular plate. After Keirans and Oliver (1993).

Coxae II–IV each with a single, triangular, broad spur. Trochanters lack spurs. Tarsus I length 0.54, 0.57; width 0.17, 0.17; without spur. Tarsus IV length 0.46, 0.5, breadth 0.14, 0.17, with a pointed ventroapical hook and one small, triangular ventral hump. Tibia IV length 0.44, 0.49, breadth 0.21, 0.21.

Spiracular plate oval, medial and lateral margins parallel, medial margin slightly concave, posterior margin convex, dorsal prolongation pointed, forming an obtuse angle with anterior-posterior axis of spiracular plate, lateral margin with large sclerotized border. Genital aperture «U» shaped, situated between coxae II. Postanal groove with shallow, unpaired, posteriorly directed, median groove extending to the festoon.

Material: 2 males (US National Tick Collection, RML 115846) Puerto Rico, Municipio of Vega Baja, Barrio Puynado Adentro, Road 643, km.5; 21.05.1981, ex snake, *Alsophis portoricensis* (Colubridae), coll. Delfin Olmo; 2 females (US National Tick Collection, RML 101848, HH 62246) Jamaica (specimen was removed in Canada), ex *Episcartes subfavis*.

Amblyomma rotundatum

Male (Fig. 82). Because a male of this species was available for study, we quote the description

and drawing figures by Keirans and Oliver (1993). Measurements from 2 specimens. Length from apices of scapulae to posterior scutal margin 3.84, breadth 3.14. Outline oval, broadest at level of spiracular plates. Scutum ornate; some small, pale iridescent, orange (peach color) patches situated along the body margin. The specimen drawn in Fig. 82a is partially teratological or gynandromorphic, the lower right quadrant is missing the chitinous scutal covering. Scutal punctations larger peripherally on a background of numerous evenly scattered, small, shallow punctations. Cervical grooves short, deep, comma-shaped. Marginal groove absent. Festoons long, without chitinous plates beyond the posterior margin of the festoons. Eyes small, flat, marginal.

Capitulum length from palpal apices to posterior margin of basis 1.15, breadth 0.74. Basis capituli dorsally with a few minute white setae, ventrally with about 6 minute setae at each posterolateral angle. Posterior margin of basis capituli straight, cornua very short, bluntly rounded; lateral margins slightly convex, ventrally posterior margin nearly straight. Palpi length 0.73, breadth 0.29. Segment II 1.6 times longer than segment III, length of segment II 0.38, length of segment III 0.24. Palpi slightly wrinkled. Segment I ventrally with a high,

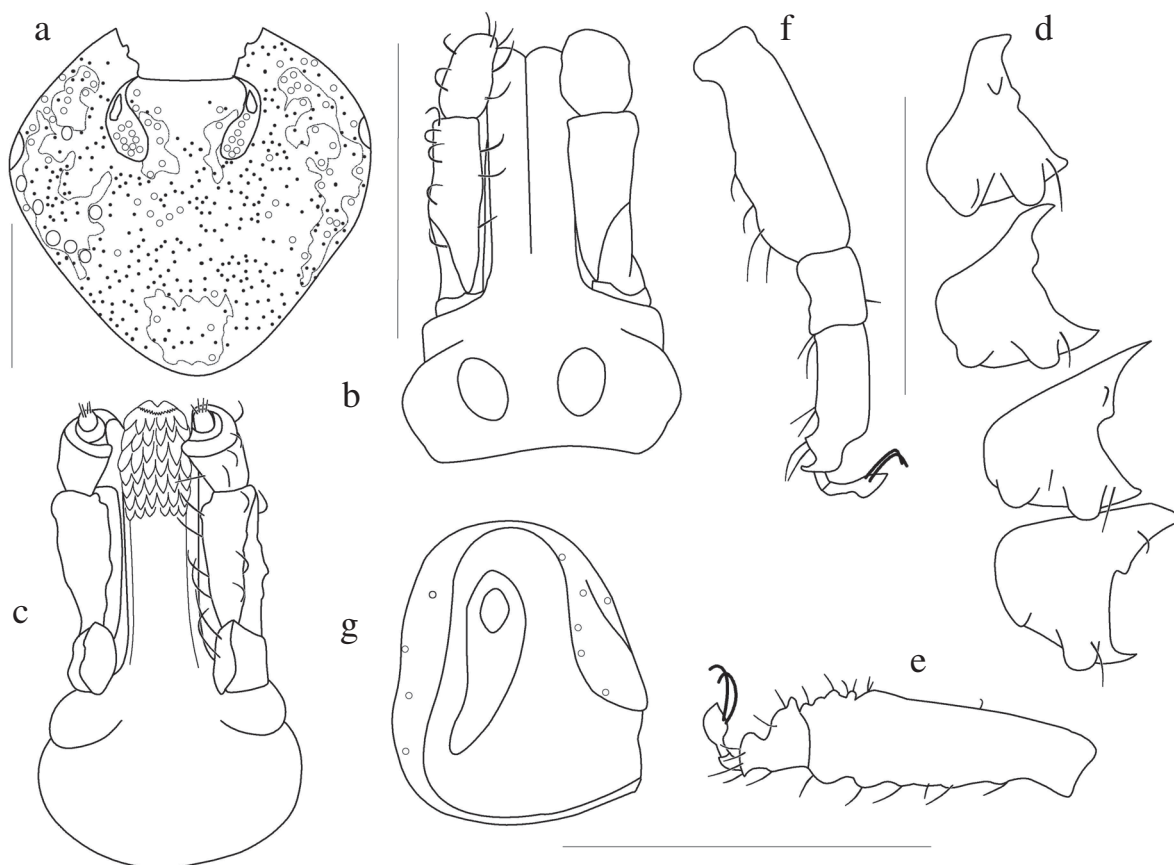


Fig. 83. *Amblyomma rotundatum*, female: a — scutum; b — gnathosoma, dorsal view; c — gnathosoma, ventral view; d — coxae; e — tarsus I; f — tarsus and tibia IV; g — spiracular plate. Scale bar 1 mm.

slope ridge ending anteriorly and posteriorly with triangular spurs. Palpal setae: dorsolateral setae short, slightly curved; dorsomedial setae short, almost straight; ventrolateral setae short, curved; ventromedial setae relatively long, thick, slightly curved. Palpal segment I ventrally with 2 long, thick setae. Hypostome length 0.64; apex with a large corona of fine denticles, spatulate, notched, each half of the apex with long, triangular projection; dental formula 3/3.

Legs. Coxae I–IV each with 2 short, bluntly rounded spurs; those on coxa I subequal; on II–IV the external spur longer. Trochanters lack spurs. Tarsus I length 0.81, width 0.26. Tarsus IV length 0.67, breadth 0.22.

Genital aperture situated between coxae II. Spiracular plate large, medial and lateral margins diverging, medial and posterior margins nearly straight, dorsal prolongation broad, perpendicular to anterior-posterior axis of spiracular plate. Integumentary hard elements of the ventral skeleton of idiosoma absent. Postanal groove with a unpaired median groove extending to the festoon.

Female (Fig. 83). Measurements from 3 specimens, one engorged. Length from apices of scap-

ulae to posterior body margin 4.9, 5.2; breadth 4.0, 4.3. Dorsal and ventral body setae few, very short and thin. Marginal groove complete, beginning near the posterior margin of scutum. Festoons broad, rectangular.

Scutum length 2.4, 2.7, 2.75; breadth 2.6, 2.8, 3.0; brown, ornate, one rounded, metallic, crimson patch in the posterior part of scutum, two longitudinal, irregular-shaped patches in each lateral area, and two narrow, long patches between cervical grooves. Posterior margin of scutum narrowly rounded, posterolateral margins nearly straight, anterolateral margins convex. Scapulae with evident ledges on medial margins. Scutal punctations numerous, of different sizes. Cervical grooves relatively long, deep, crescent anteriorly, then diverging as shallow depressions. Eyes small, marginal, slightly bulging.

Capitulum length from palpal apices to cornua apices 1.5, 1.64, 1.64; breadth 0.86, 1.0, 1.07; posterior margin straight, lateral margins rounded; cornua very short, rounded; ventrally posterior margin convex. Porose areas narrow, oval, deeply depressed, diameter of one area 0.17, 0.19, 0.19; interporose area 0.19, 0.2, 0.21. Palpi length 1.0,

1.07, 1.11; breadth 0.19, 0.19, 0.2. Segment II dorsally with long, triangular spur directed posteriorly. Segment II 1.8–2.0 times longer than segment III, length of segment II 0.64, 0.66, 0.66; length of segment III 0.33, 0.34, 0.38. Segment I ventrally with a high, sharp ridge ending posteriorly with a oval paddle. Palpal setae: dorsolateral setae relatively long and thick, curved; dorsomedial setae long, thin, slightly curved; ventrolateral setae short, relatively thick, curved; ventromedial setae long, thick, slightly curved. Palpal segments I ventrally with 2 long, thick, almost straight setae. Hypostome length 1.0, 1.1; length of toothed portion 0.46, 0.53; apex narrowly rounded, with small central notch; dental formula 3/3.

Legs. Coxa I with 2 equal, short, broadly rounded spurs. Coxa I with a sharp, spur-like callosity anteriorly. Coxae II–IV each with 2, short, broadly rounded spurs, the external spur slightly longer. Trochanters lack spurs. Tarsus I length 1.07, 1.14; width 0.27, 0.29; with small, pointed apical spur and with high, sharp dorsal hump. Tarsus IV length 0.71, 0.89, 0.93, breadth 0.21, 0.21, 0.21, with a pointed, ventroapical hook and one sharp, ventral hump. Tibia IV length 0.74, 0.89, 0.93, breadth 0.3, 0.3, 0.31.

Spiracular plate very large, medial and lateral margins parallel, medial margin concave, posterior margin slightly convex, dorsal prolongation very broad, forming a acute angle with anterior-posterior axis of spiracular plate; medial and lateral margins each with broad sclerotized border. Genital aperture «U» shaped, situated between coxae II–III. Postanal groove with deep, unpaired, posteriorly directed, median groove extending to the festoon.

Material: 2 females (US National Tick Collection, No. 19240) Mexico, 1000', Michoacan, Apatzingan, 1.08.1941, ex horned toad (*Phrynosoma* sp.), coll. R. Haag and R. Traub; female (engorged) (ZMMU, Tdi 1738) ex *Bufo marinus* from Suriname, found in Moscow Zoo, May 1999.

Amblyomma sabanerae

Male (Fig. 84). Measurements from 2 specimens. Length from apices of scapulae to posterior scutal margin 5.2, 5.3, breadth 4.6, 4.7. Outline rounded, broadest at level of the middle of scutum. Scutum red-brown; ornate, metallic, greenish-pink patches between eyes and scapulae, small patches on some festoons, and thin, arcuate stripe in the central area. Scutal punctations of different sizes, relatively deep, numerous; the smooth areas with-

out punctations forming the symmetrical pattern. Cervical grooves deep, short, crescent. Marginal groove absent. Festoons rectangular, without chitinous plates beyond the posterior margin of the festoons. Eyes small, orbital, slightly bulging.

Capitulum length from palpal apices to cornua apices 1.5, 1.6, breadth 0.93, 0.97. Basis capituli slightly wrinkled, with small, shallow punctations. Posterior margin of basis straight, cornua short, triangular, narrowly rounded; lateral margins nearly straight, ventrally posterior margin almost straight. Palpi length 0.97, 1.0, breadth 0.24, 0.26. Segment II 2.5–2.6 times longer than segment III, length of segment II 0.63, 0.64, length of segment III 0.24, 0.26. Segment II dorsally with pointed spur directed posteriorly similar to high, sharp ridge. Segment I ventrally with a low, sloping ridge ending posteriorly with small spur directed posteromedially. Segment III ventrally with a thick roller on anterior margin. Palpal setae: dorsolateral setae long, curved, stick-like; dorsomedial setae long and short, stick-like, almost straight; ventrolateral setae short, curved, stick-like; ventromedial setae longer, curved. Palpal segment I ventrally with a long, almost straight, needle-shaped seta. Hypostome length 0.83, 0.9, length of toothed portion 0.46, 0.5; apex notched, with a large corona of fine denticles, first row directed anteriorly; each half of the apex concave, with a triangular projection near the median axis; dental formula 4/4.

Legs. Coxa I with 2 short, rounded, equal in length spurs. Coxa I with a rounded, spur-like callosity anteriorly, coxa II with a roller-shape callosity in the anterior part. Coxae II–IV each with 2 short, triangular, broad spurs, largest on II. Trochanters lack spurs. Tarsus I length 1.21, 1.29, width 0.36, 0.36; with small, blunt apical spur and 2 sharp ventral humps. Tarsus IV length 1.03, 1.06, breadth 0.21, 0.26; with a strong, pointed apical spur and large, triangular ventral spur. Tibia IV length 1.07, 1.14, breadth 0.33, 0.36.

Venter with sparse, very short and thin setae. Genital aperture situated between coxae II. Spiracular plate long, oval, with very broad dorsal prolongation forming an obtuse angle with anterior-posterior axis of spiracular plate; lateral margins with broad, sclerotized border. Integumentary hard elements of the ventral skeleton of idiosoma consist of small unpaired anal and 2 paired postanal shields, and small festoons' shields; all ventral surface with small, round, chitinous point-plaques. Postanal groove with unpaired median groove extending to the festoon.

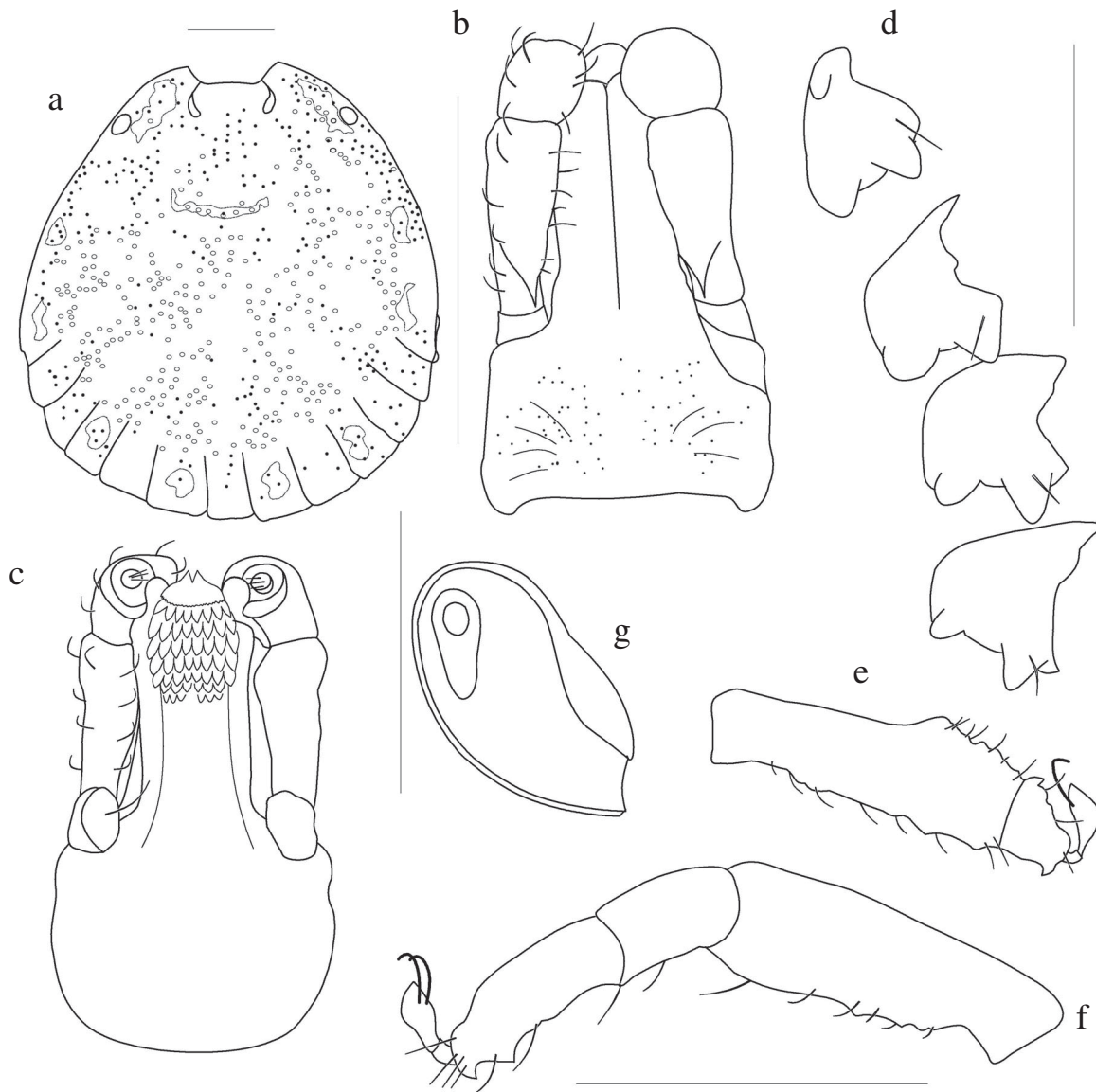


Fig. 84. *Amblyomma sabanerae*, male: a — scutum; b — gnathosoma, dorsal view; c — gnathosoma, ventral view; d — coxae; e — tarsus I; f — tarsus and tibia IV; g — spiracular plate. Scale bar 1 mm.

Female (Fig. 85). Measurements from 2 specimens, one partially engorged. Length from apices of scapulae to posterior body margin 5.7, 6.5, breadth 4.65, 5.6. Dorsal and ventral body setae few, very short and thin. Marginal groove complete, beginning near the posterior margin of scutum. Fестоons broad, rectangular.

Scutum length 2.75, 3.1, breadth 2.88, 3.18; dark-brown, lighter in the central area, ornate, metallic, goldish-crimson patches between scapulae and eyes, a pale, almost inconspicuous, crimson patch in the center. Scapulae pointed, with ledge on the median groove. Scutal punctations of different sizes, numerous, deep. Cervical grooves relatively long and broad, deep, converging. Eyes large, marginal, slightly bulging.

Capitulum length from palpal apices to cornua apices 1.86, 2.29, breadth 1.04, 1.21; posterior margin straight, cornua short, broad, rounded; posterolateral margins rounded, anterolateral margins straight; ventrally posterior margin straight. Basis capituli with small, shallow punctations. Porose areas narrow, oval, deeply depressed, diameter of one area 0.17, 0.17, interporose area 0.2, 0.24. Palpi length 1.36, 1.51, breadth 0.24, 0.29. Palpi bright. Segment II dorsally more narrow at the bottom, with high, sharp ridge on the basal part. Segment II 2.4–2.5 times longer than segment III, length of segment II 0.86, 1.0, length of segment III 0.36, 0.4. Segment I ventrally with low ridge ending with the small spur directed posteromedially. Segment III ventrally with a thick roller on anterior margin.

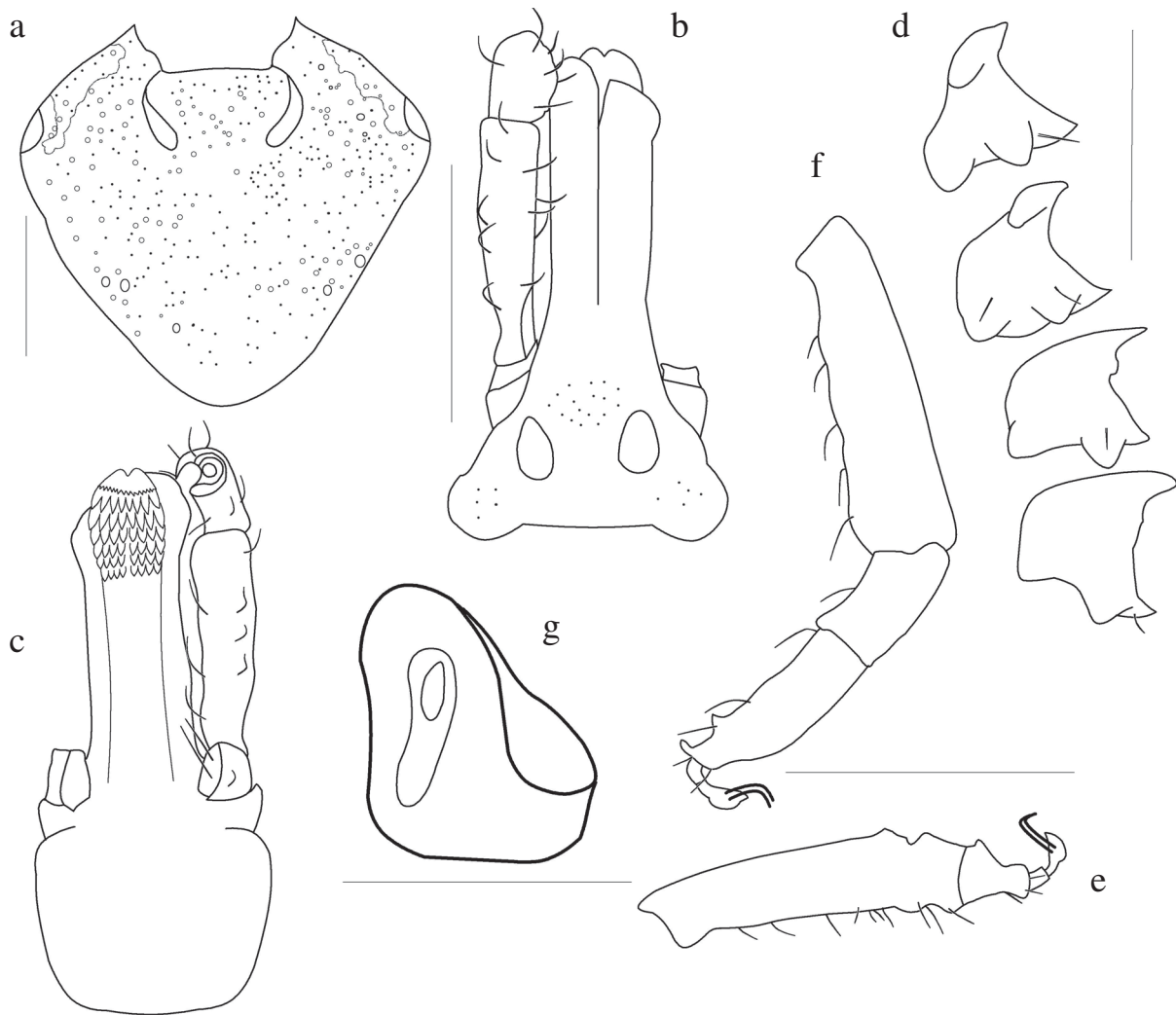


Fig. 85. *Amblyomma sabanerae*, female: a — scutum; b — gnathosoma, dorsal view; c — gnathosoma, ventral view; d — coxae; e — tarsus I; f — tarsus and tibia IV; g — spiracular plate. Scale bar 1 mm.

Palpal setae: dorsolateral setae long, curved; dorso-medial setae long, almost straight; ventrolateral setae short, curved; ventromedial setae longer, curved. Palpal segment I ventrally with a long, needle-shaped seta. Hypostome length 1.01, 1.18, length of toothed portion 0.5, 0.57; apex narrowly rounded, with small central notch; dental formula 4/4.

Legs. Coxa I with 2 equal, short, broadly rounded spurs. Coxa I with a large, spur-like callosity anteriorly, coxa II with a large, roller-shape callosity in the anterior part. Coxae II–IV each with 2 short, triangular, rounded spurs. Trochanters lack spurs. Tarsus I length 1.29, 1.4, width 0.3, 0.31; with small, blunt, apical spur and high, sharp dorsal hump. Tarsus IV length 1.0, 1.21, breadth 0.2, 0.21, with large, pointed apical spur and sharp, triangular ventral hump. Tibia IV length 1.03, 1.19, breadth 0.31, 0.38.

Medial and lateral margins of spiracular plate diverging, medial margin concave, posterior margin straight, dorsal prolongation very broad, perpendicular to anterior-posterior axis of spiracular plate, lateral margin with very broad, bulging, sclerotized border. Genital aperture «V» shaped, situated between coxae II–III. Postanal groove with unpaired, posteriorly directed, median groove extending to the festoon.

Material: 2 males (US National Tick Collection, RML 36740) Panama, Canal Zone, France Field, 9.05.1960, ex iguana, coll. V.J. Tipton; 2 females (US National Tick Collection, RML 57117) Panama, Canal Zone, Barro Colorado Island, January 1945, ex turtle (*Geomyda annulata*), coll. J. Zetek.

Amblyomma scalpturatum

Male (Fig. 86). Measurements from 2 specimens. Length from apices of scapulae to posterior

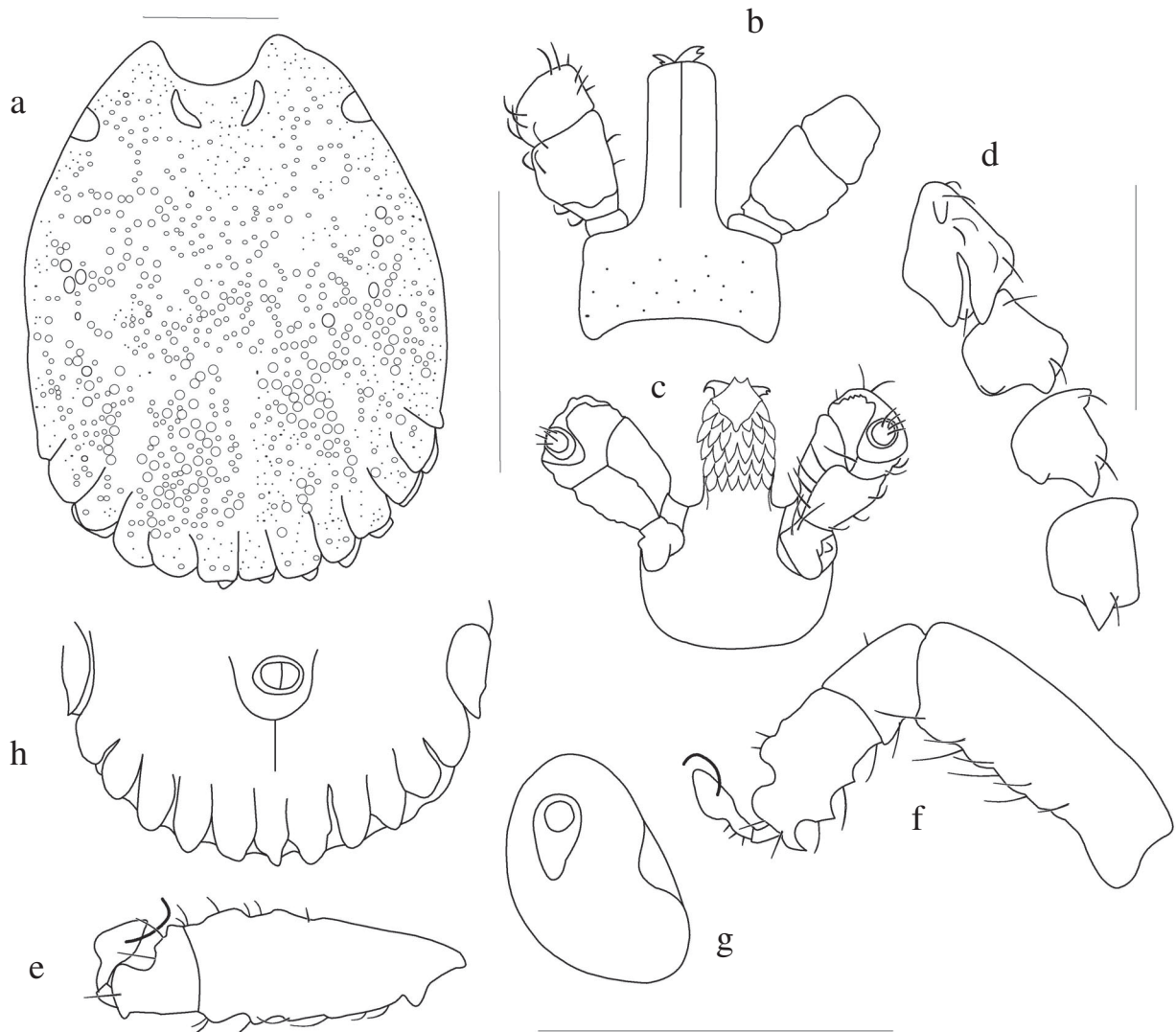


Fig. 86. *Amblyomma scalpturatum*, male: a — scutum; b — gnathosoma, dorsal view; c — gnathosoma, ventral view; d — coxae; e — tarsus I; f — tarsus and tibia IV; g — spiracular plate, h — posterior part of idiosoma, ventral view. Scale bar 1 mm.

scutal margin 3.88, 4.43, breadth 3.0, 3.28. Outline oval, broadest in the middle of scutum. Scutum brown; ornate, some dim, almost inconspicuous, grayish-crimson patches. Scutal punctations large, deep, numerous excepting the smooth areas forming the symmetrical pattern. Cervical grooves very deep, narrow, crescent, converging, situated at the distance from the anterior margin of scutum. Marginal groove absent. Fестоons long, narrow, with chitinous plates beyond the posterior margin of the festoons. Eyes large, orbital, slightly bulging.

Capitulum length from palpal apices to cornua apices 1.01, 1.07, breadth 0.71, 0.79. Basis capituli with few, small, shallow punctations. Posterior margin straight, cornua large, triangular, narrowly rounded; external margins straight, ventrally posterior margin convex, with very sclerotized border. Palpi length 0.64, 0.66, breadth 0.27, 0.31. Seg-

ment II 1.6 times longer than segment III, length of segment II 0.36, 0.37, length of segment III 0.21, 0.23. Palpi bright. Dorsally posterior margin of segment II with sharp ridge overhang upon more narrow «handle». Segment I ventrally with a long, narrow, oval paddle directed posteriorly and ventrally. Segment II ventrally with sharp, pyramidal spur on anteromedial margin. Anterior margin of segment III ventrally with sharp, sclerotized border prominent medially. Palpal setae: dorsolateral setae long, thin, curved; dorsomedial setae shorter, thin, slightly curved; ventrolateral setae long, curved; ventromedial setae long, more tick, straight. Palpal segment I ventrally with a short, thick, curved lateral seta and 2 long, thick, slightly curved medial setae. Hypostome length 0.51, 0.59, length of toothed portion 0.37, 0.39; apex notched, with a very large corona of fine denticles, first row direct-

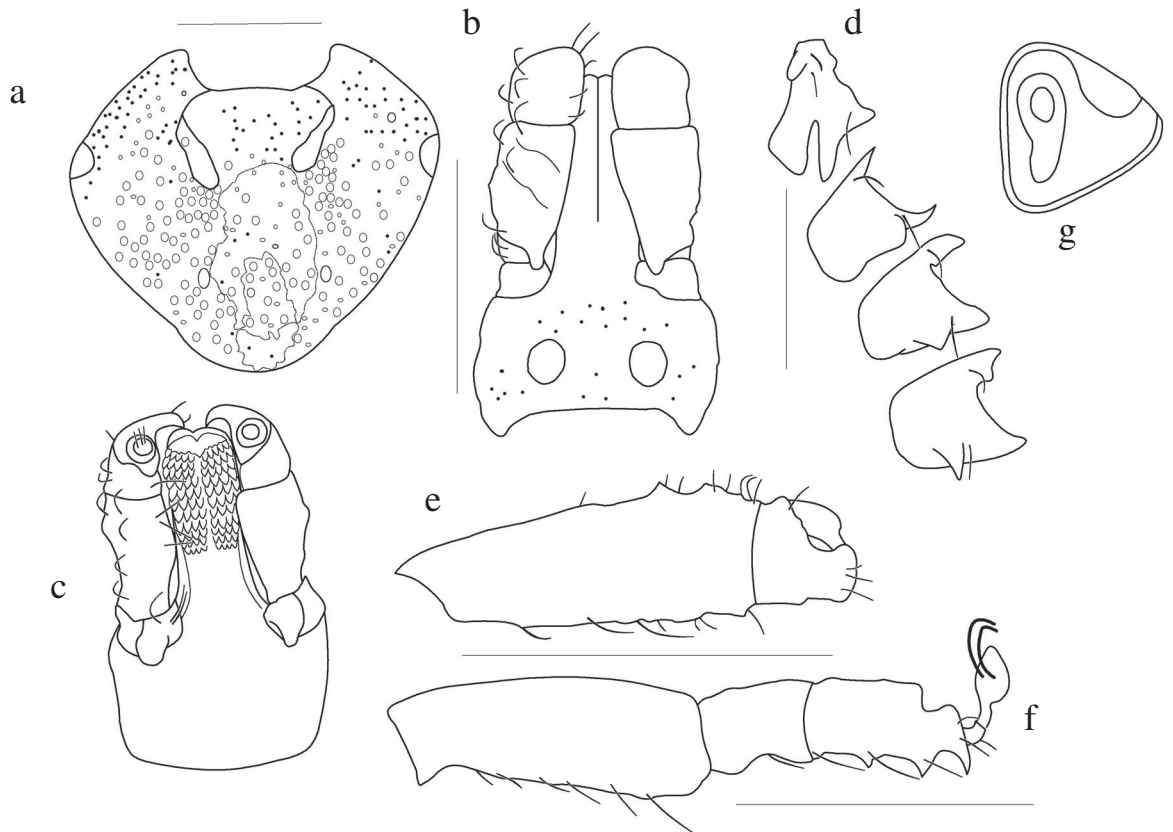


Fig. 87. *Amblyomma scalpturatum*, female: a — scutum; b — gnathosoma, dorsal view; c — gnathosoma, ventral view; d — coxae; e — tarsus I; f — tarsus and tibia IV; g — spiracular plate. Scale bar 1 mm.

ed anteriorly; each half of the triangular; dental formula 3/3.

Legs. Coxa I split, with 2 equal in length, large, triangular spurs, the internal spur broader. Coxa I with a sharp, spur-like callosity anteriorly. Coxae II–III each with 2 spurs, the external spur triangular, sharp, internal spur very short, narrowly rounded. Coxa IV with a single, triangular, sharp spur. Trochanters lack spurs. Tarsus I length 1.04, 1.07, width 0.37, 0.37; with very small, apical spur and 2 blunt, ventral humps. Tarsus IV length 0.76, 0.79, breadth 0.26, 0.26; with a large, strong ventroapical hook and 2 pointed, triangular, ventral humps. Tibia IV length 0.9, 1.0, breadth 0.33, 0.34.

Genital aperture situated between coxae II. Spiracular plate bean-shaped, with very broad dorsal prolongation perpendicular to anterior-posterior axis of spiracular plate. Postanal groove with a unpaired median groove extending to the festoon. Integumentary hard elements of the ventral skeleton of idiosoma absent, festoons with narrow chitinous plates.

Female (Fig. 87). Measurements from 2 specimens. Length from apices of scapulae to posterior body margin 4.85, 5.25, breadth 3.65, 3.8. Dorsal and ventral body setae short, stick-like, relatively

numerous on festoons. Marginal groove complete, beginning near the posterior margin of scutum. Festoons rectangular, swollen, their ventromedial margins with bluntly rounded chitinous plates visible from dorsal side.

Scutum length 2.18, 2.58, breadth 2.7, 3.0; dark-brown along the posterolateral margins and lighter in the central and anterior part, ornate; not large metallic, goldish-crimson patch in the posterior part of the scutum. Punctations small and shallow in each scapular area and between the anterior parts of the cervical grooves, deep and large in the other part of the scutum. Cervical grooves long, deep and converging anteriorly, then diverging as very shallow depressions. Eyes large, marginal, slightly bulging.

Capitulum length from palpal apices to cornua apices 1.6, 1.67, breadth 1.04, 1.13; cornua large, triangular, narrowly rounded; posterior margin straight, lateral margins convex; ventrally posterior margin convex, with very sclerotized border. Basis capituli with few, shallow punctations. Porose areas round, not deeply depressed, diameter of one area 0.14, 0.17, interporose area 0.17, 0.24. Palpi length 1.04, 1.16, breadth 0.36, 0.37. Segment II 2.2 times longer than segment III, length of seg-

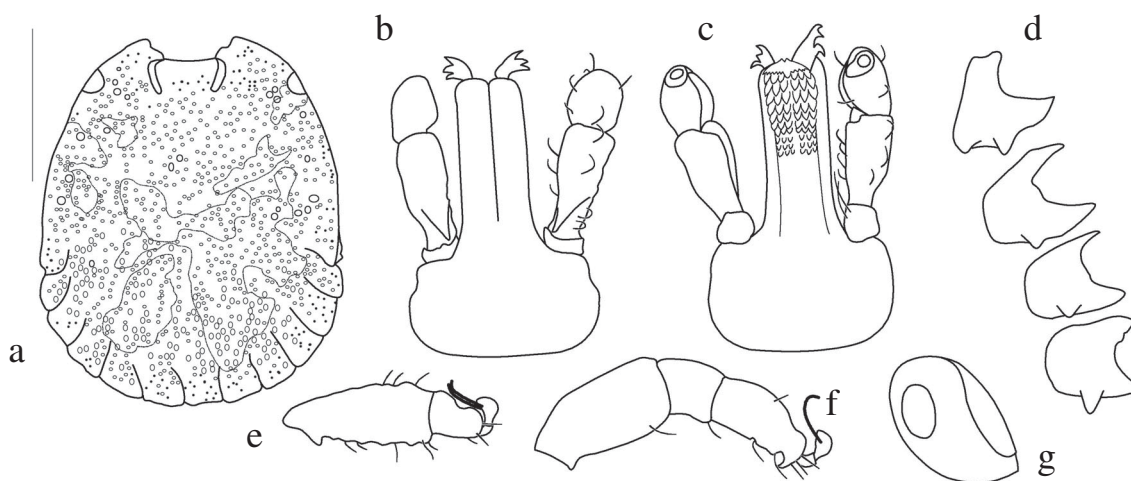


Fig. 88. *Amblyomma scutatum*, male: a — scutum; b — gnathosoma, dorsal view; c — gnathosoma, ventral view; d — coxae; e — tarsus I; f — tarsus and tibia IV; g — spiracular plate. Scale bar 1 mm.

ment II 0.66, 0.71, length of segment III 0.3, 0.33. Palpi slightly wrinkled. Segment I ventrally with a long, narrow, oval paddle directed posteriorly and ventrally. Anterior margin of segment III ventrally with sharp, sclerotized border prominent medially. Palpal setae: dorsolateral setae long, curved; dorsomedial setae short, straight; ventrolateral setae long, curved; ventromedial setae long, straight or slightly curved. Palpal segment I ventrally with 2 long setae. Hypostome length 0.9, 1.06, length of toothed portion 0.5, 0.57; rounded and notched apically, with a large corona of fine denticles; dental formula 5/5 in the 2 anterior rows and 4/4 posteriorly.

Legs. Coxa I split, with 2 spurs, the external spur slightly longer, narrow, triangular; internal spur broader. Coxa I with a sharp spur-like callosity anteriorly. Coxae II–III each with 2 spurs, the external spur short, broad, triangular, internal spur very short, rounded. Coxa IV with a single, triangular, pointed spur. Trochanters lack spurs. Tarsus I length 1.31, 1.36, width 0.37, 0.39; with a small, rounded, apical spur and 2 blunt, ventral humps. Tarsus IV length 0.96, 1.1, breadth 0.27, 0.31, with a strong, pointed, apical hook and 2 pointed, triangular, ventral humps. Tibia IV length 1.11, 1.2, breadth 0.36, 0.43.

Spiracular plate subtriangular, medial and lateral margins diverging, medial and posterior margins straight, dorsal prolongation broad, forming an acute angle with anterior-posterior axis of spiracular plate. Genital aperture «U» shaped, situated between coxae II–III. Postanal groove with deep, unpaired, posteriorly directed, median groove extending to the festoon.

Material: 2 males and 2 females (US National Tick Collection, RML 51915) Venezuela, T.F.

Amazonas Prov., 15 km SSE Puerto Ayacucho, 25.09.1967, ex *Tapirus terrestris*.

Amblyomma scutatum

Male (Fig. 88). Measurements from 2 specimens. Length from apices of scapulae to posterior scutal margin 2.8, 3.1, breadth 2.3, 2.5. Outline oval, broadest at level of spiracular plate. Scutum brown; ornate, some small, dim, goldish-beige patches along the scutal margins. Scutal punctations moderate in size, not deep, very dense. Cervical grooves deep, short, converging. Marginal groove absent. Festoons rectangular, without chitinous plates beyond the posterior margin of the festoons. Eyes large, marginal, slightly bulging.

Capitulum length from palpal apices to posterior margin of basis 0.9, 0.93, breadth 0.57, 0.63. Posterior margin slightly convex, cornua absent; external margins convex, ventrally posterior margin straight. Palpi length 0.56, 0.63, breadth 0.1, 0.1. Segment II 1.7 times longer than segment III, length of segment II 0.31, 0.36, length of segment III 0.19, 0.21. Palpi slightly wrinkled. Segment I ventrally with a low, sloping ridge ending posteriorly with a small, blunt spur. Palpal setae: dorsolateral and dorsomedial setae short, relatively thick, slightly curved; ventrolateral setae short, relatively thick, slightly curved; ventromedial setae long, thick, slightly curved. Palpal segment I ventrally with 2 long, straight setae. Hypostome length 0.51, 0.57, length of toothed portion 0.26, 0.29; apex notched, each half of the apex with a pointed, triangular projection near the median axis; dental formula 3/3.

Legs. Coxa I with 2 short spurs, the external spur slightly longer and more narrow. Coxae II–IV each with a single, short, triangular spur longest on

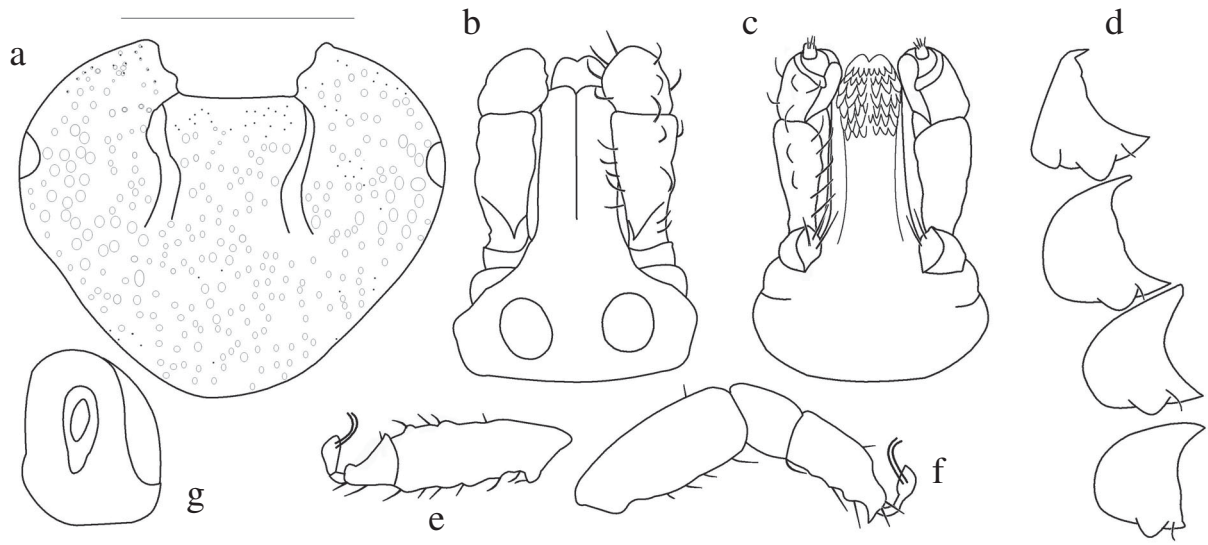


Fig. 89. *Amblyomma scutatatum*, female: a — scutum; b — gnathosoma, dorsal view; c — gnathosoma, ventral view; d — coxae; e — tarsus I; f — tarsus and tibia IV; g — spiracular plate. Scale bar 1 mm.

IV. Trochanters lack spurs. Tarsus I length 0.56, 0.64, width 0.19, 0.21; with a small, blunt, apical spur. Tarsus IV length 0.5, 0.51, breadth 0.14, 0.16; with a strong, apical hook. Tibia IV length 0.46, 0.49, breadth 0.21, 0.24.

Genital aperture situated between coxae II. Spiracular plate narrow, oval, with dorsal prolongation forming an obtuse angle with anterior-posterior axis of spiracular plate, lateral margin with narrow, chitinous border. Postanal groove with unpaired median groove extending to the anal shield. Integumentary hard elements of the ventral skeleton of idiosoma consist of small, unpaired, anal shield situated nearly central festoon and 1 small, rounded, paired postanal shield, festoon shields large.

Female (Fig. 89). Measurements from two specimens. Length from apices of scapulae to posterior body margin 3.8, 3.2, breadth 3.0, 2.5. Dorsal and ventral body setae few, very short. Marginal groove incomplete, beginning near the posterior margin of scutum and embracing 2–3 festoons. Festoons broad, rectangular.

Scutum length 1.71, 1.6, breadth 2.17, 2.03; brown, inornate. Posterior margin of scutum rounded, anterolateral margins convex, posterolateral margins slightly concave. Punctations numerous, large, deep. Scapulae blunt, with noticeable ledges. Cervical grooves crescent and deep in the anterior part then diverging as shallow depressions. Eyes large, marginal, flat.

Capitulum length from palpal apices to posterior margin of basis 1.01, 0.93, breadth 0.71, 0.71; cornua absent; posterior margin straight, lateral

margins convex; ventrally posterior margin straight. Punctations of basis few, small, shallow. Porose areas small, oval, not deeply depressed, diameter of one area 0.1, 0.14, interporose area 0.19, 0.15. Palpi length 0.71, 0.64, breadth 0.19, 0.21. Segment II 2.5–2.8 times longer than segment III, length of segment II 0.44, 0.43, length of segment III 0.16, 0.17. Palpal surface shagreened, slightly wrinkled. Segment I ventrally with a low ridge ending posteriorly with a very small, pointed spur. Palpal setae: dorsolateral and dorsomedial setae short, slightly curved; ventrolateral setae short, curved; ventromedial setae longer, thick, slightly curved. Palpal segment I ventrally with a long, straight seta. Hypostome length 0.57, 0.57, length of toothed portion 0.29, 0.33; apex rounded, with small central notch; dental formula 4/4.

Legs. Coxa I with 2 very short, rounded spurs. Coxae II–IV each with a single, short, rounded spur more narrow on IV. Trochanters lack spurs. Tarsus I length 0.79, 0.67, width 0.2, 0.19; with 2 blunt, rounded ventral humps. Tarsus IV length 0.6, 0.59, breadth 0.16, 0.17, with a pointed apical hook. Tibia IV length 0.51, 0.56, breadth 0.21, 0.26.

Medial and lateral margins of spiracular plate slightly diverging, medial and posterior margins slightly concave, dorsal prolongation broad, perpendicular to anterior-posterior axis of spiracular plate, lateral margin with a broad, sclerotized border. Genital aperture «V» shaped, situated between coxae II–III. Postanal groove with a shallow, unpaired, posteriorly directed, median groove extending to the festoon.

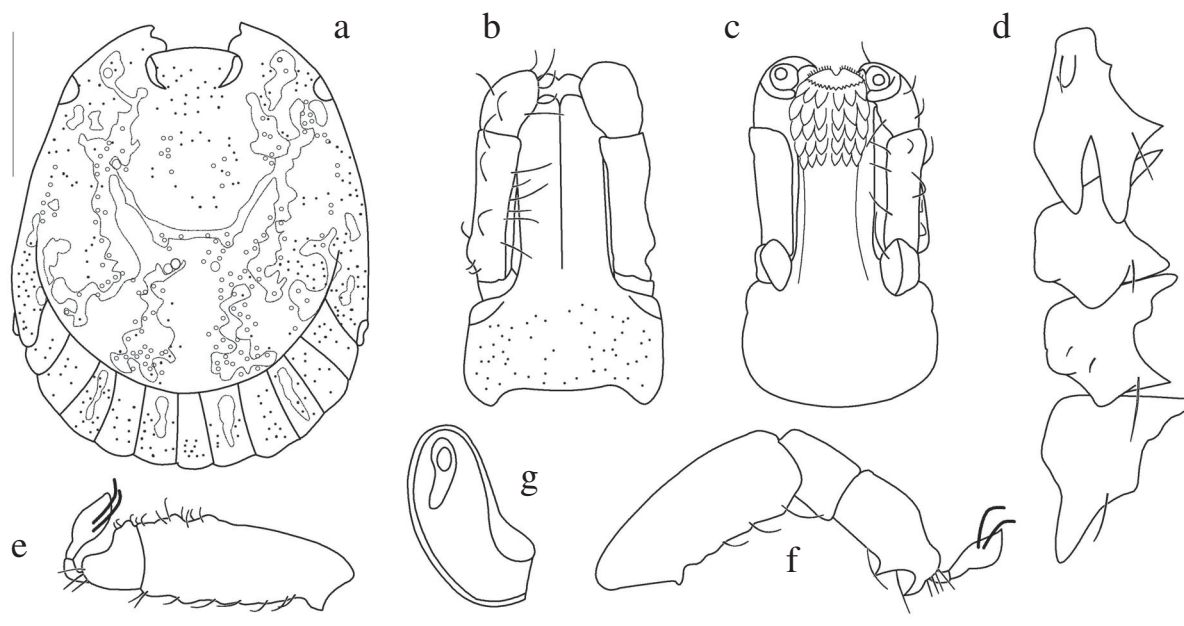


Fig. 90. *Amblyomma tapirellum*, male: a — scutum; b — gnathosoma, dorsal view; c — gnathosoma, ventral view; d — coxae; e — tarsus I; f — tarsus and tibia IV; g — spiracular plate. Scale bar 1 mm.

Material: 2 males (US National Tick Collection, RML 119286) Honduras, 26.01.1988, ex *Ctenosaura similis*, sent by C. Stanvall; female (US National Tick Collection, RML 119299) Honduras, 26.01.1988, ex *Ctenosaura similis*, sent by C. Stanvall.

Amblyomma tapirellum

Male (Fig. 90). Measurements from 2 specimens. Length from apices of scapulae to posterior scutal margin 3.1, 3.6; breadth 2.4, 2.8. Outline oval, broadest at level of spiracular plate. Scutum yellow-brown, festoons yellow with brown, longitudinal strip; with symmetrical goldish-crimson, ornamentation. Scutal punctations very small and shallow along the body margin and on festoons, larger on metallic patch, excepting the smooth, bright areas forming the symmetrical pattern. Cervical grooves deep, short, converging. Marginal groove complete, beginning at level of legs III. Festoons long, narrow, ventrally with sharp chitinous plates slightly extending beyond the posterior margin of the festoons, dorsally this plates invisible. Eyes large, marginal, slightly bulging.

Capitulum length from palpal apices to cornua apices 1.0, 1.16; breadth 0.59, 0.7. Posterior margin of basis capituli straight, cornua triangular, broadly rounded, lateral margins straight, ventrally posterior margin straight. Basis capituli with small and shallow, relatively numerous punctations. Palpi length 0.17, 0.8; breadth 0.13, 0.14. Palpi smooth, bright. Segment II 2.0 times longer than segment

III, length of segment II 0.44, 0.5; length of segment III 0.21, 0.24. Segment I ventrally with a high, sharp ridge ending posteriorly with a small spur. Palpal setae: dorsolateral setae short and long, curved; dorsomedial setae long, almost straight; ventrolateral setae short, curved; ventromedial setae short, curved. Palpal segment I ventrally with a long, straight seta. Hypostome length 0.66, 0.76; length of toothed portion 0.33, 0.39; apex notched, with a corona of fine denticles, first row directed anteriorly; each half of the apex straight; dental formula 3/3.

Legs. Coxa I split, with 2 narrow, triangular spurs, the external spur slightly longer, both reaching the anterior margin of coxa II. Coxa I with a sharp, long spur-like callosity anteriorly. Coxae II–III each with 2 spurs, the external spur short, triangular, broadly rounded, internal spur very short, similar to sclerotized fascia. Coxa IV with a single, long, narrow, triangular spur directed posteromedially. Trochanters lack spurs. Tarsus I length 0.83, 0.96; width 0.24, 0.29; without spurs. Tarsus IV length 0.61, 0.66; breadth 0.21, 0.21; with one strong, pointed, apical hook and a pointed ventral spur. Tibia IV length 0.67, 0.79; breadth 0.24, 0.29.

Venter with few, very short and thin setae. Genital aperture situated between coxae II. Spiracular plate long, narrow, with broad dorsal prolongation forming an obtuse angle with anterior-posterior axis of spiracular plate. Integumentary hard elements of the ventral skeleton of idiosoma consist

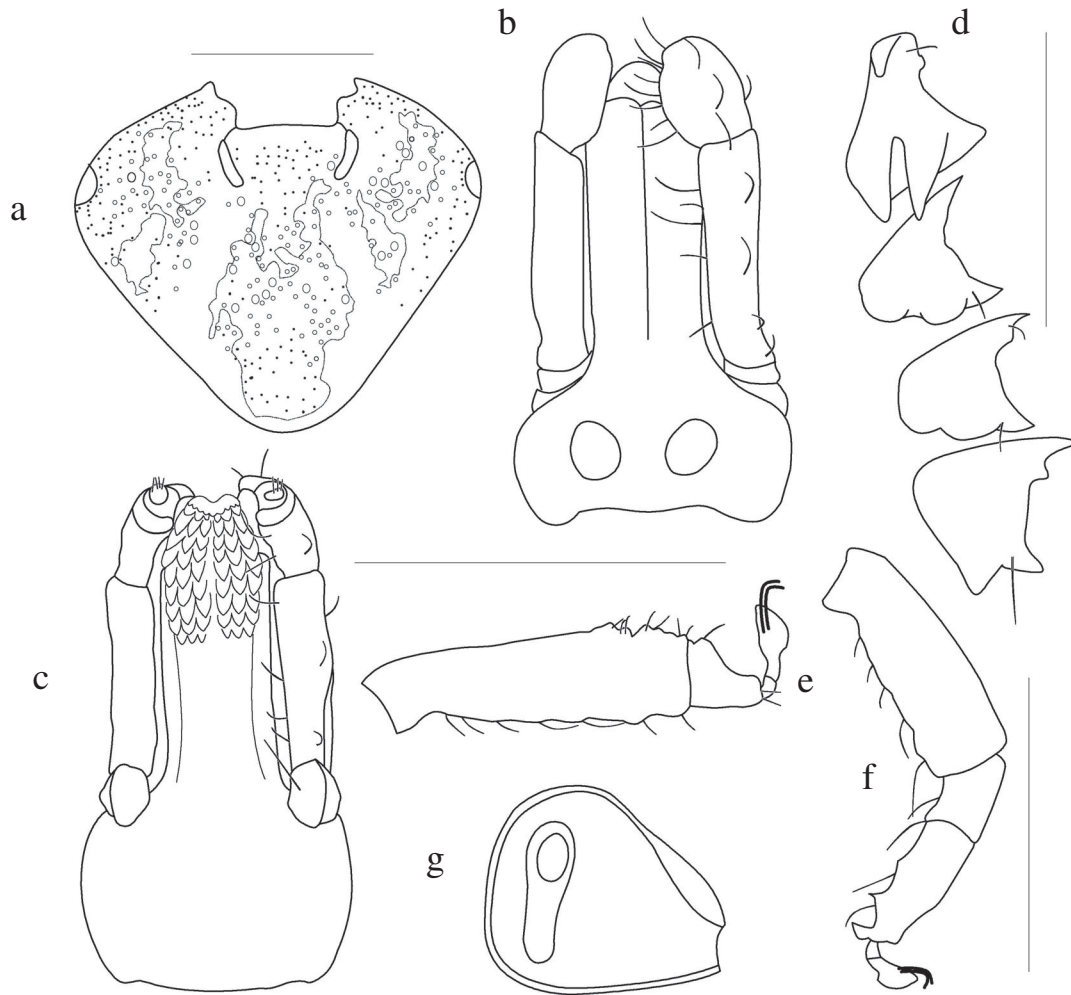


Fig. 91. *Amblyomma tapirellum*, female: a — scutum; b — gnathosoma, dorsal view; c — gnathosoma, ventral view; d — coxae; e — tarsus I; f — tarsus and tibia IV; g — spiracular plate. Scale bar 1 mm.

of very narrow festoons shields. Postanal groove with very short, unpaired, posteriorly directed, median groove.

Female (Fig. 91). Measurements from 2 specimens. Length from apices of scapulae to posterior body margin 3.0, 4.1; breadth 2.75, 3.3. Alloscutal setae few, very short, thick, scutal setae few, very short, straight, situated only on scapulae; ventral body setae few, very short. Marginal groove complete, beginning near the posterior margin of scutum. Festoons broad, rectangular.

Scutum length 1.6, 2.17; breadth 1.93, 2.47; brown in lateral and posterior areas and yellow between cervical grooves, ornate, bright, metallic, goldish-pink and goldish-green patches, one large in the posterior part of the scutum and 2 narrow, in the lateral areas. Posterior margin of scutum narrowly rounded, posterolateral margins nearly straight, anterolateral margins slightly convex. Scapulae pointed, with large ledge on the medial margins. Scutal punctations of different sizes, relative-

ly numerous, excepting 2 large, smooth fields between metallic patches. Cervical grooves short, deep, converging, situated at the distance from the anterior margin of scutum. Eyes large, marginal, slightly bulging.

Capitulum length from palpal apices to cornua apices 1.07, 1.36; breadth 0.69, 0.86; posterior margin straight, cornua broadly rounded, lateral margins slightly convex; ventrally posterior margin slightly convex, with sclerotized border. Porose areas small, round, not deeply depressed, diameter of one area 0.1, 0.13; interporose area 0.17, 0.19. Punctations of basis capituli few, small, shallow. Palpi length 0.79, 1.0; breadth 0.18, 0.2. Palpi slightly wrinkled. Segment II 2.4 times longer than segment III, length of segment II 0.51, 0.67; length of segment III 0.21, 0.29. Segment I ventrally with high, sharp ridge. Palpal setae: dorsolateral and dorsomedial setae long, thin, slightly curved; ventrolateral setae short, slightly curved; ventromedial setae long, thin, straight. Palpal segment I ventrally

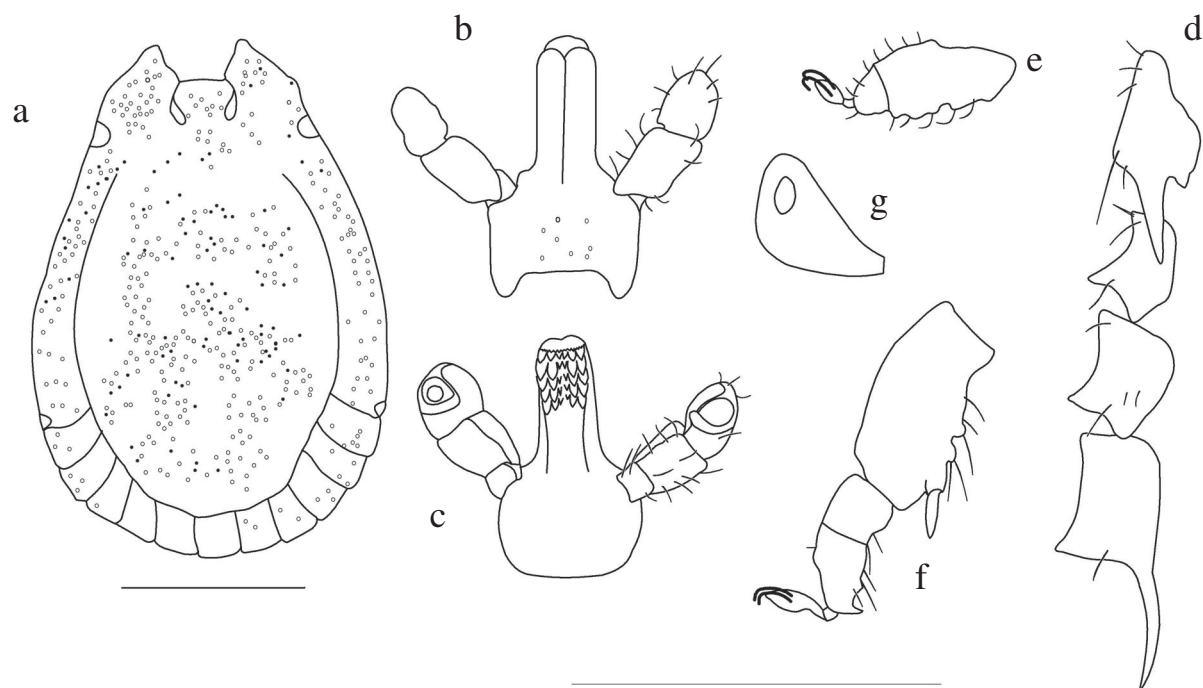


Fig. 92. *Amblyomma tigrinum*, male: a — scutum; b — gnathosoma, dorsal view; c — gnathosoma, ventral view; d — coxae; e — tarsus I; f — tarsus and tibia IV; g — spiracular plate. Scale bar 1 mm.

with a long, straight seta. Hypostome length 0.71, 0.93; length of toothed portion 0.36, 0.47; apex narrowly rounded, notched; dental formula 3/3.

Legs. Coxa I split, with 2 narrow, triangular spurs, the external spur longer and reaching the anterior margin of coxa II. Coxa I with a large, sharp, spur-like callosity anteriorly. Coxae II–III each with 2 spurs, the external spur short, broadly rounded, internal spur very short, similar to sclerotized fascia. Coxa IV with a single, triangular, sharp spur. Trochanters lack spurs. Tarsus I length 1.0, 1.21; width 0.24, 0.3; without spurs. Tarsus IV length 0.71, 0.81, breadth 0.17, 0.19, with strong, pointed, apical hook and one pointed ventral hump. Tibia IV length 0.74, 0.92, breadth 0.23, 0.31.

Spiracular plate large, medial and lateral margins diverging, medial and posterior margins straight, dorsal prolongation broad, nearly perpendicular to anterior-posterior axis. Genital aperture «U» shaped, situated between coxae II–III. Postanal groove with deep, unpaired, posteriorly directed, median groove.

Material: 2 males, 2 females (US National Tick Collection, No. 13711) Panama, Canal Zone, Barro Colorado Island, March 1937, coll. R.W. Dawson.

Amblyomma tigrinum

Male (Fig. 92). Measurements from 2 specimens. Length from apices of scapulae to posterior

scutal margin 3.0, 3.1, breadth 2.0, 2.2. Outline pear-shaped, broadest at level of legs IV. Scutum yellow-brown; inornate or with very dim, goldish-yellow ornamentation. Scutal punctations small, shallow, numerous excepting some smooth areas forming a symmetrical pattern. Cervical grooves deep, short, converging anteriorly, then more shallow and diverging. Marginal groove complete, beginning at level of legs II. Fестоons narrow, ventrally with sharp chitinous plates slightly extending beyond the posterior margin of the festoons, this plates in one specimen dorsally visible, in the other invisible. Eyes small, orbital, slightly bulging.

Capitulum length from palpal apices to cornua apices 0.71, 0.76, breadth 0.43, 0.44. Basis capituli with few, large, shallow punctations. Posterior margin of basis capituli straight, cornua large, triangular, narrowly rounded; external margins straight, ventrally posterior margin straight. Palpi length 0.49, 0.49, breadth 0.16, 0.16. Segment II 1.4 times longer than segment III, length of segment II 0.24, 0.27, length of segment III 0.17, 0.2. Segment II dorsally with blunt, triangular spur. Segment I ventrally with high, sloping ridge. Palpal setae: dorsolateral setae short, relatively thick, stick-like; dorsomedial setae long, needle-shaped, straight; ventrolateral and ventromedial setae long, needle-shaped, straight. Palpal segment I ventrally with a long, straight lateral seta and 2 long, slightly

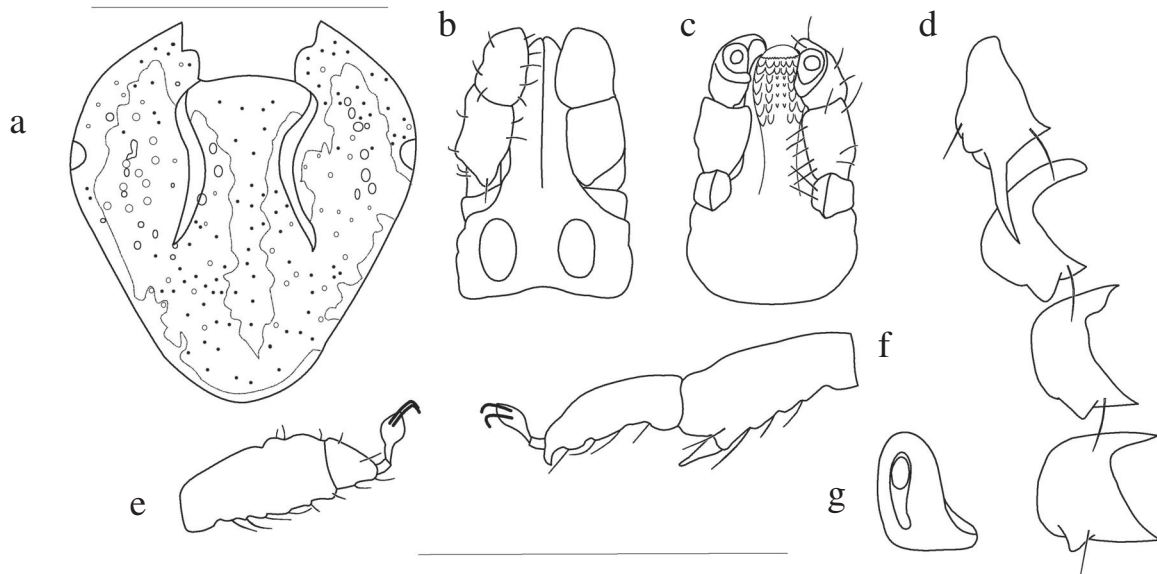


Fig. 93. *Amblyomma tigrinum*, female: a — scutum; b — gnathosoma, dorsal view; c — gnathosoma, ventral view; d — coxae; e — tarsus I; f — tarsus and tibia IV; g — spiracular plate. Scale bar 1 mm.

curved medial setae. Hypostome length 0.41, 0.43, length of toothed portion 0.26, 0.27; apex spatulate, with a small central notch; dental formula 3/3.

Legs. Coxa I with 2 spurs, the external spur sharp, very long and reaching the middle of coxa II, internal spur very short, narrowly rounded. Coxae II–III each with a single, triangular, broadly rounded spur. Coxa IV with a single, very long, sharp spur curved laterally. Trochanters without ventral spurs, trochanter I with a broadly rounded spur dorsally. Tarsus I length 0.53, 0.53, width 0.21, 0.21; without spur. Tarsus IV length 0.39, 0.43, breadth 0.17, 0.17; with a pointed apical hook and sharp, triangular ventral hump. Tibia IV length 0.57, 0.57, breadth 0.29, 0.33. Tibia II–IV each with a very large, thick, apical spur on the hind side of the segment. Genua, femora and tibia II–IV each with very large, cone-like, ventral setae largest on legs IV.

Genital aperture situated between coxae II. Spiracular plate subtriangular, with long, narrow dorsal prolongation forming an obtuse angle with anterior-posterior axis of spiracular plate. Postanal groove with unpaired, posteriorly directed, median groove extending to the festoon. Integumentary hard elements of the ventral skeleton of idiosoma consist of the festoons shields only.

Female (Fig. 93). Measurements from 2 specimens. Length from apices of scapulae to posterior body margin 3.0, 3.2, breadth 2.1, 2.2. Dorsal and ventral body setae few, very short. Marginal groove complete, beginning near the posterior margin of scutum. Festoons broad, rectangular.

Scutum length 1.43, 1.56, breadth 1.3, 1.4; yellow-brown, ornate; goldish pigment with lilac, pink and green metallic shimmer covers most of the scutum forming the symmetrical pattern. Scapulae pointed with large ledge on medial margins. Scutal punctations of different sizes, more numerous in each lateral area. Cervical grooves long, deep, X-shaped. Eyes large, marginal, bulging.

Capitulum length from palpal apices to posterior margin of basis 0.74, 0.83, breadth 0.53, 0.57; posterior margin concave; lateral margins nearly straight; ventrally posterior margin convex. Porose areas narrow, oval, deeply depressed, with sharp borders, diameter of one area 0.13, 0.14, interporose area 0.1, 0.1. Palpi length 0.51, 0.54, breadth 0.14, 0.17. Segment II dorsally with blunt, triangular spur directed posteriorly and overhang upon more narrow «handle». Segment II 1.3 times longer than segment III, length of segment II 0.27, 0.29, length of segment III 0.2, 0.21. Segment I ventrally with a low, sloping, almost inconspicuous ridge. Segment III ventrally with a thick roller on anterior margin. Palpal setae: dorsolateral and dorsomedial setae short, relatively thick, slightly curved; ventrolateral and ventromedial setae longer, straight. Palpal segment I with 2 long, straight setae. Hypostome length 0.41, 0.43, length of toothed portion 0.29, 0.3; apex rounded, with large corona of fine denticles; dental formula 3/3, teeth of central files very small.

Legs yellow, with dark-brown patches on ventral surface of all segments. Coxa I with 2 spurs, the external spur extremely long and reaching the mid-

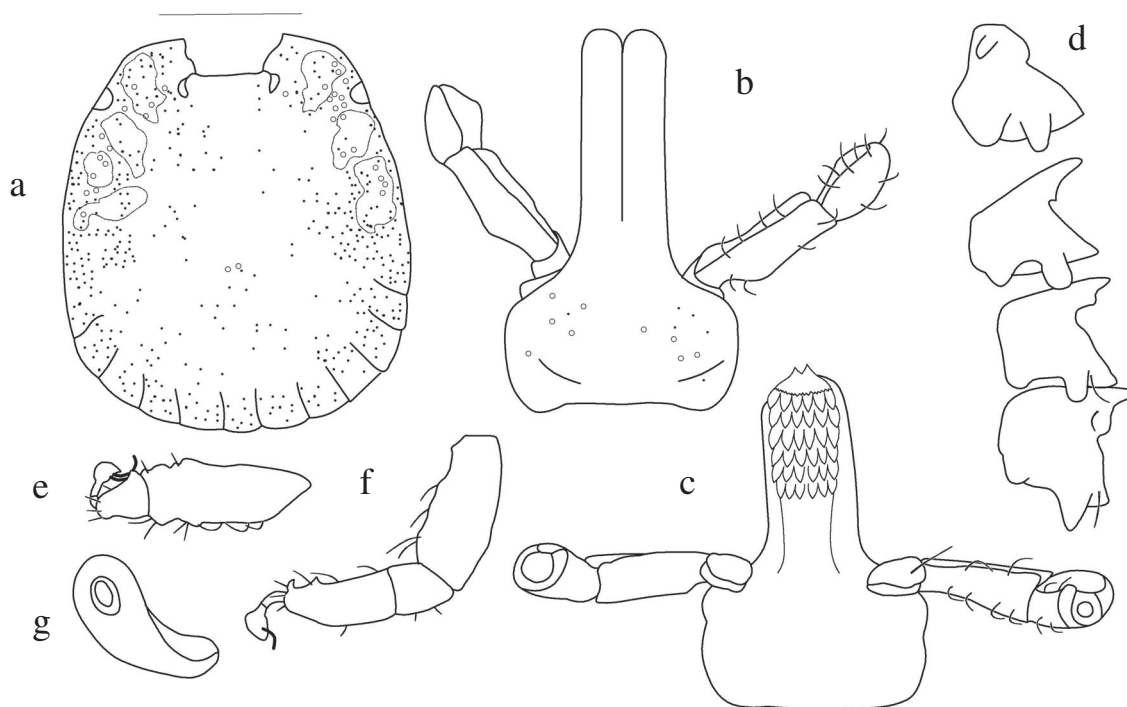


Fig. 94. *Amblyomma torrei*, male: a — scutum; b — gnathosoma, dorsal view; c — gnathosoma, ventral view; d — coxae; e — tarsus I; f — tarsus and tibia IV; g — spiracular plate. Scale bar 1 mm.

dle of coxa II, narrow, pointed; internal spur very short, rounded. Coxae II–IV each with a single, triangular, broad spur. Trochanters without ventral spurs, trochanter I with a broad, rounded dorsal spur. Tarsus I length 0.57, 0.61, width 0.21, 0.21; without spur. Tarsus IV length 0.47, 0.47, breadth 0.14, 0.14, with a strong, apical hook. Tibia IV length 0.57, 0.59, breadth 0.26, 0.29. Tibia II–IV each with a very large, thick, apical spur on the hind side of the segment.

Medial and lateral margins of spiracular plate parallel, medial and posterior margins straight, dorsal prolongation perpendicular to anterior-posterior axis of spiracular plate. Genital aperture «V» shaped, situated between coxae II–III. Postanal groove with unpaired, posteriorly directed, median groove extending to the festoon.

Material: 2 males (US National Tick Collection, RML 37875) Argentina, Algarrobo, Buenos Aires, 17.02.1962, ex dogs, coll. V. Moya and Wm. L. Jellison; 2 females (US National Tick Collection, RML 38344) Argentina, Algarrobo, Pampa, 18.02.1962, ex cavy wild — adults reared, coll. Wm. L. Jellison.

Amblyomma torrei

Male (Fig. 94). Measurements from 2 specimens. Length from apices of scapulae to posterior scutal margin 2.7, 3.0, breadth 2.5, 2.7. Outline

roundish, broadest at level of the middle of scutum. Scutum brown; ornate, small, dim, lilac with bronze border patches in lateral areas. Scutal punctations small, shallow, numerous in lateral areas; the central area smooth with extremely sparse, larger punctations. Cervical grooves very deep, small, pit-like. Marginal groove absent. Festoons broad, rectangular, without chitinous plates beyond the posterior margin of the festoons. Eyes small, marginal, flat.

Capitulum length from palpal apices to cornua apices 0.89, 0.9, breadth 0.64, 0.7. Basis capituli with few, small, shallow punctations. Posterior margin of basis straight, cornua very short, broadly rounded; lateral margins convex, ventrally posterior margin straight. Palpi length 0.6, 0.66, breadth 0.14, 0.14. Segment II 2.6–2.7 times longer than segment III, length of segment II 0.37, 0.43, length of segment III 0.14, 0.16. Segment II dorsally with small punctations. Segment I ventrally with a low, sloping, almost inconspicuous ridge. Segment III ventrally with a rounded hump on anteromedial margin. Palpal setae: dorsolateral setae short, thick, curved; dorsomedial setae longer, slightly curved; ventrolateral setae short, thick, curved; ventromedial setae short, almost straight. Palpal segment I ventrally with a long, straight seta. Hypostome length 0.61, 0.64, length of toothed portion 0.36, 0.39; apex notched, with a large corona of fine denticles; each half of the apex concave, with a

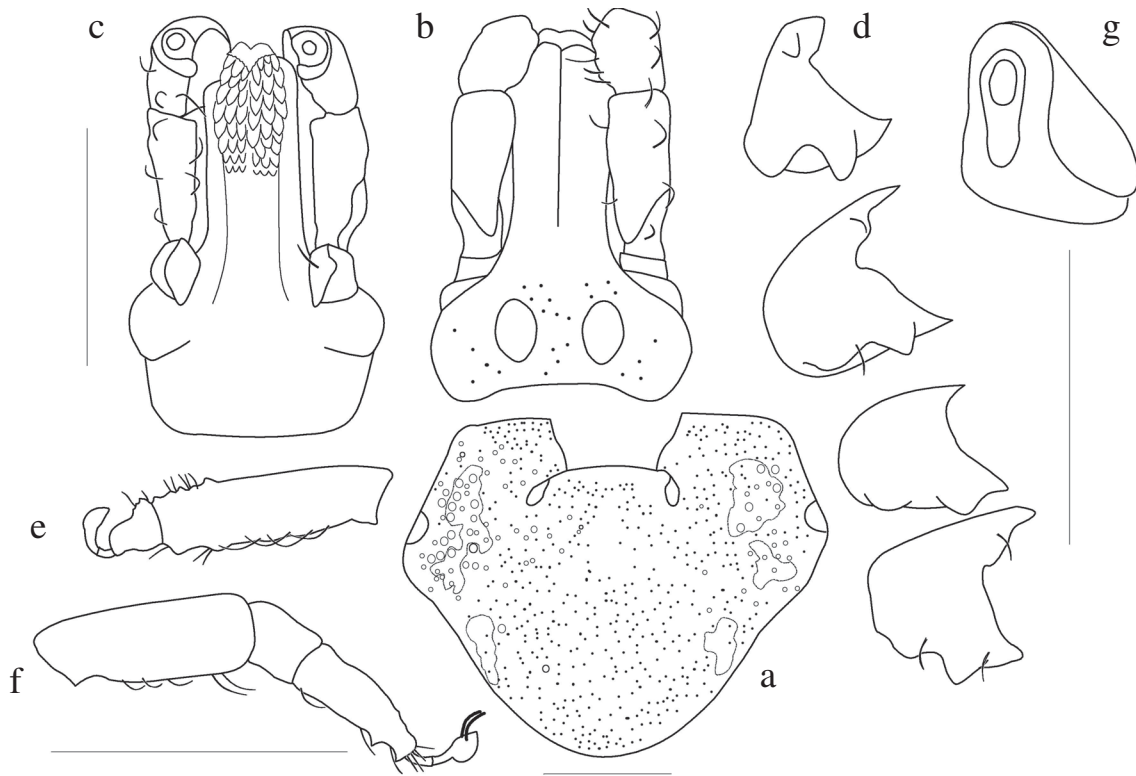


Fig. 95. *Amblyomma torrei*, female: a — scutum; b — gnathosoma, dorsal view; c — gnathosoma, ventral view; d — coxae; e — tarsus I; f — tarsus and tibia IV; g — spiracular plate. Scale bar 1 mm.

triangular projection near the median axis; dental formula 3/3.

Legs yellow, with dark-brown patches on ventral surface of all segments. Coxa I with 2 short, triangular spurs, the external spur slightly longer and more narrow. Coxa I with a narrow, high, spur-like callosity anteriorly. Coxae II–IV each with 2 spurs, the external spur triangular, narrowly rounded, internal spur very short. Trochanters lack spurs. Tarsus I length 0.57, 0.64, width 0.16, 0.19; without spur. Tarsus IV length 0.46, 0.51, breadth 0.13, 0.14; with a strong, pointed apical spur. Tibia IV length 0.4, 0.47, breadth 0.19, 0.21.

Venter with very short, thick, cone-like setae. Genital aperture situated between coxae II. Spiracular plate long, narrow, with long and very narrow dorsal prolongation forming an obtuse angle with anterior-posterior axis of spiracular plate. Integumentary hard elements of the ventral skeleton of idiosoma consist of 2 small, rounded, paired postanal shields and large festoons' shields. Postanal groove with very short, unpaired median groove.

Female (Fig. 95). Measurements from one specimen. Length from apices of scapulae to posterior body margin 5.1, breadth 4.2. Alloscutal setae dense, relatively long, thick, stick-like, slightly curved; scutal setae very short, thin, only on scap-

ulae. Ventral body setae few, shorter and more thin, stick-like, slightly curved. Marginal groove absent. Festoons broad, rectangular.

Scutum length 2.75, breadth 3.15; dark-brown, yellow near anterolateral margins and lighter in the central area, ornate, enameled, goldish-pink patches along the lateral margins. Anterior scutal margins straight. Scutal punctations deep and large peripherally on a background of numerous small, shallow punctations. Cervical grooves very deep, small, oval, pit-like. Eyes small, marginal, flat.

Capitulum length from palpal apices to cornua apices 1.57, breadth 0.91; posterior margin slightly concave, cornua very short, rounded; lateral margins convex; ventrally posterior margin straight. Basis capituli with small, shallow punctations. Porose areas oval, not deeply depressed, diameter of one area 0.14, interporose area 0.17. Palpi length 1.07, breadth 0.29. Palpi slightly wrinkled. Segment II dorsally more narrow at the bottom, with triangular, rounded spur directed posteriorly. Segment II 2 times longer than segment III, length of segment II 0.66, length of segment III 0.33. Segment I ventrally with low, sloping ridge ending with the sharp spur directed posteromedially. Segment III ventrally with a thick roller on anterior margin. Palpal setae: dorsolateral setae short, thick,

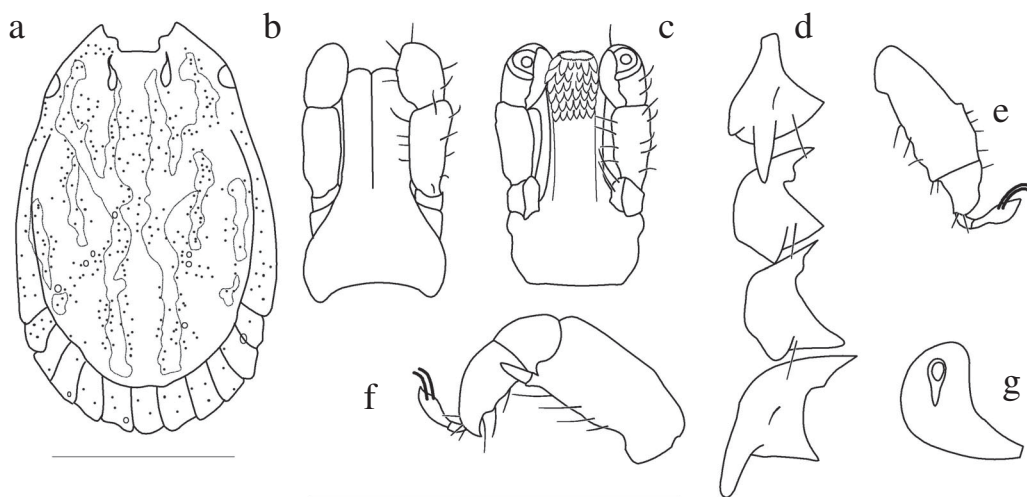


Fig. 96. *Amblyomma triste*, male: a — scutum; b — gnathosoma, dorsal view; c — gnathosoma, ventral view; d — coxae; e — tarsus I; f — tarsus and tibia IV; g — spiracular plate. Scale bar 1 mm.

curved; dorsomedial setae short, almost straight; ventrolateral setae short, thick, curved; ventromedial setae long, thick. Palpal segment I ventrally with a long seta. Hypostome length 1.0, length of toothed portion 0.54; apex narrowly rounded, with small central notch; dental formula 3/3.

Legs. Coxa I with 2 subequal, broadly rounded spurs, the internal spur broader. Coxa I with a sharp, spur-like callosity anteriorly. Coxae II–IV each with 2 spurs, the external spur triangular, internal spur very short, broadly rounded. Trochanters lack spurs. Tarsus I length 1.0, width 0.26; without spur. Tarsus IV length 0.83, breadth 0.21, with sharp apical spur and sharp, triangular ventral hump. Tibia IV length 0.81, breadth 0.29.

Medial and lateral margins of spiracular plate parallel, medial margin slightly concave, posterior margin straight, dorsal prolongation long, narrow, perpendicular to anterior-posterior axis of spiracular plate, lateral margin with very broad, sclerotized border. Genital aperture «U» shaped, situated between coxae II–III. Postanal groove with shallow, unpaired, posteriorly directed, median groove not extending to the festoon.

Material: 2 males (US National Tick Collection, RML 57490) Puerto Rico, Greater Antilles, Mono Island off the western coast of Puerto Rico, ex *Cyclura stejnegeri* (iguanas were collected in the late 1800's), coll. unknown (sent in by W. M. Carey); female (US National Tick Collection, RML 50390) Cuba, Prov. Of Pinar del Rio, Guanahacabibes, El Fraile, 25.11.1967, ex *Cyclura macleayi*, coll. M. Jaume and I. Garcia.

Amblyomma triste

Male (Fig. 96). Measurements from 2 specimens. Length from apices of scapulae to posterior scutal margin 2.46, 2.5, breadth 1.61, 1.64. Outline elongate-oval, broadest at level of legs IV. Scutum light-brown; ornate, dim, silver-pink and greenish, thin strips forming the symmetrical pattern. Scutal punctations small, shallow, numerous excepting the smooth areas forming the symmetrical pattern. Cervical grooves relatively long, X-shaped, deeper anteriorly. Marginal groove complete, beginning at level of legs III. Festoons long, narrow, without chitinous plates beyond the posterior margin of the festoons. Eyes large, marginal, slightly bulging.

Capitulum length from palpal apices to cornua apices 0.79, 0.8, breadth 0.43, 0.44. Basis capituli with few, very shallow. Posterior margin concave, cornua triangular, narrowly rounded; external margins convex, ventrally posterior margin straight. Palpi length 0.5, 0.51, breadth 0.11, 0.13. Segment II 1.4 times longer than segment III, length of segment II 0.26, 0.27, length of segment III 0.19, 0.2. Segment II dorsally with more narrow «handle». Segment I ventrally with a high, sloping ridge ending posteriorly with small spur. Palpal setae: dorsolateral setae short, thin, straight; dorsomedial setae longer, thin, straight; ventrolateral setae short, thin, straight; ventromedial setae long, straight. Palpal segment I ventrally with 2 long, straight ventromedial setae. Hypostome length 0.44, 0.46, length of toothed portion 0.26, 0.27; apex straight, with a corona of fine denticles, first row directed anteriorly; dental formula 3/3.

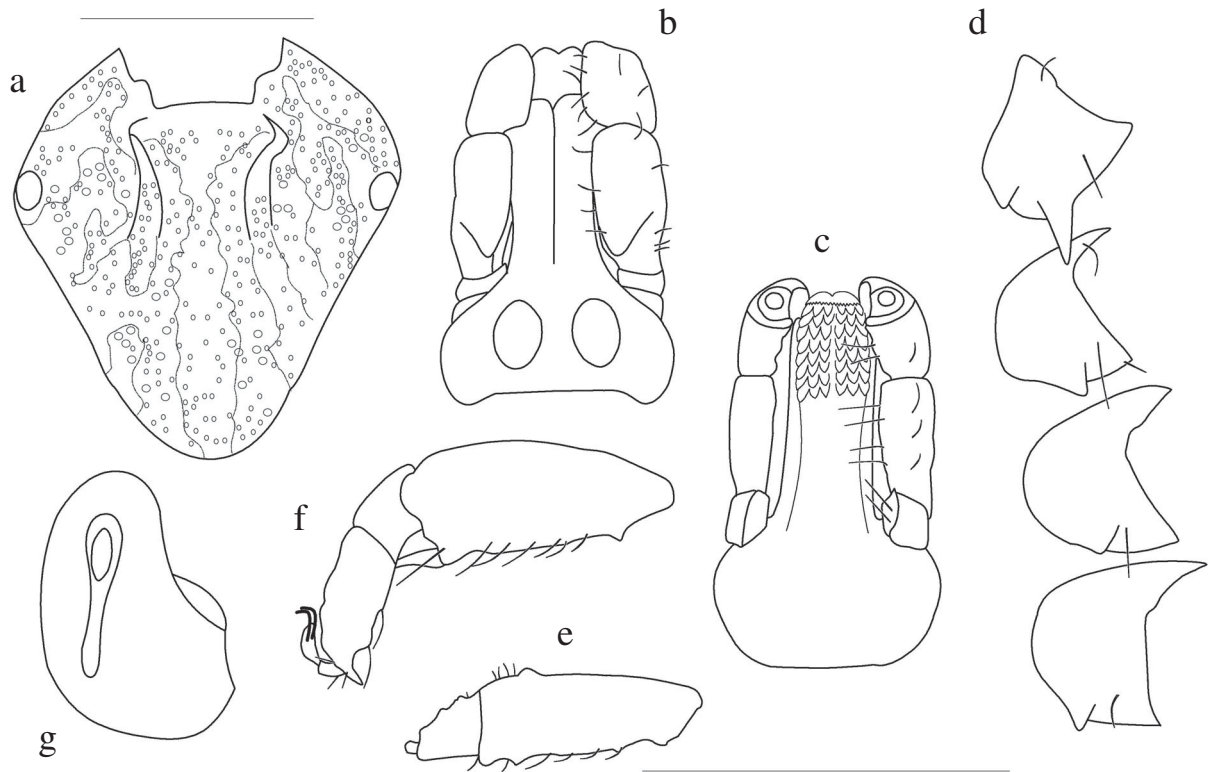


Fig. 97. *Amblyomma triste*, female: a — scutum; b — gnathosoma, dorsal view; c — gnathosoma, ventral view; d — coxae; e — tarsus I; f — tarsus and tibia IV; g — spiracular plate. Scale bar 1 mm.

Legs. Coxa I with 2 spurs, the external spur very long and reaching the anterior margin of coxa II, narrow, sharp, the internal spur short, narrowly rounded. Coxae II–III each with a single, very broad, triangular spur. Coxa IV with a single, very long, narrow spur slightly curved laterally. Trochanters lack spurs. Tarsus I length 0.53, 0.57, width 0.19, 0.2; without spur. Tarsus IV length 0.43, 0.44, breadth 0.13, 0.14; with a thick, pointed apical hook. Tibia IV length 0.5, 0.56, breadth 0.24, 0.26. Tibia II–IV each with a very large, thick, apical spur on the hind side of the segment.

Genital aperture situated between coxae II. Spiracular plate large, its medial and lateral margins diverging, medial margin convex, posterior margin almost straight, dorsal prolongation narrow, long, perpendicular to anterior-posterior axis of spiracular plate. Postanal groove with a unpaired median groove extending to the festoon. Integumentary hard elements of the ventral skeleton of idiosoma consist of festoons shields.

Female (Fig. 97). Measurements from 2 specimens. Length from apices of scapulae to posterior body margin 3.4, 3.9, breadth 2.3, 2.5. Dorsal and ventral body setae few, very short and thin. Marginal groove complete, beginning near the posterior margin of scutum. Festoons broad, rectangular,

their ventromedial margins excepting central festoon with rounded, whitish, sclerotized tubercles.

Scutum length 1.7, 2.0, breadth 1.7, 1.75; brown and yellow in the anterior part, ornate; silvery-pink, longitudinal strips forming the symmetrical pattern. Scapulae pointed, with large ledge on medial margin. Punctations small, shallow, regularly. Cervical grooves long, X-shaped, very deep anteriorly. Eyes small, marginal, bulging.

Capitulum length from palpal apices to cornua apices 1.04, 1.07, breadth 0.64, 0.71; cornua short, triangular, narrowly rounded; posterior margin straight, lateral margins convex; ventrally posterior margin convex. Porose areas large, oval, deeply depressed, diameter of one area 0.1, 0.13, interporose area 0.14, 0.16. Palpi length 0.74, 0.77, breadth 0.14, 0.16. Segment II 1.5 times longer than segment III, length of segment II 0.41, 0.43, length of segment III 0.27, 0.29. Palpi slightly wrinkled. Segment I ventrally with a sloping ridge ending posteriorly with a small spur. Segment III ventrally with thick roller on anterior margin. Palpal setae: dorsolateral setae III short, thick, stick-like; dorso-medial setae slightly longer, needle-shaped; ventrolateral setae very short; ventromedial setae long, straight. Palpal segment I ventrally with 2 long, thick setae. Hypostome length 0.6, 0.61, length of

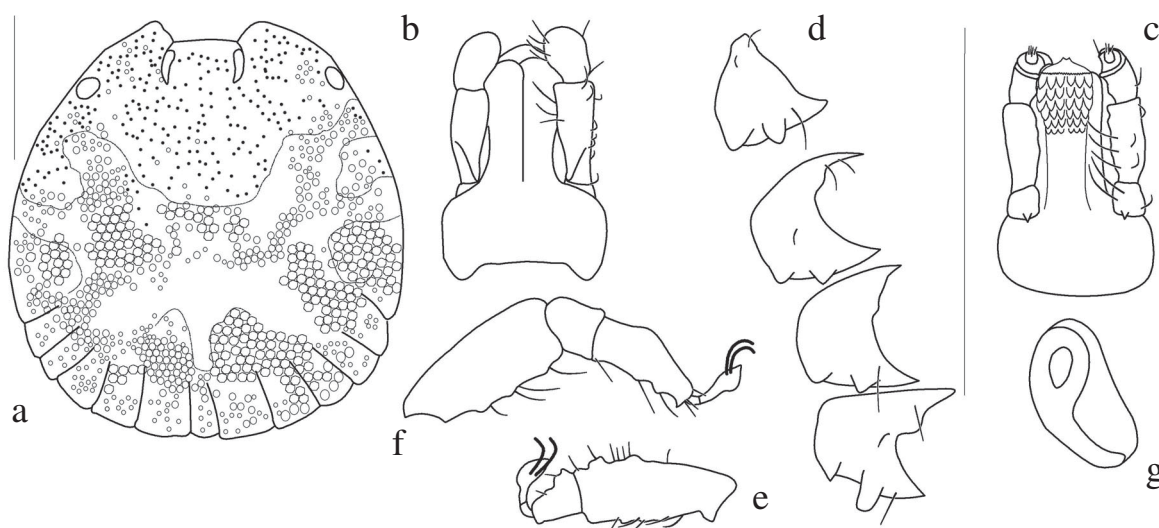


Fig. 98. *Amblyomma usingeri*, male: a — scutum; b — gnathosoma, dorsal view; c — gnathosoma, ventral view; d — coxae; e — tarsus I; f — tarsus and tibia IV; g — spiracular plate. Scale bar 1 mm.

toothed portion 0.36, 0.36; apex spatulate, with small central notch; dental formula 3/3.

Legs. Coxa I with 2 triangular spurs, the external spur very long and reaching the anterior margin of coxa II, narrow, sharp, the internal spur short, narrowly rounded. Coxae II–III each with a single, triangular, narrowly rounded spur. Coxa IV with a single, triangular, sharp spur. Trochanters lack spurs. Tarsus I length 0.74, width 0.24; with a small, rounded apical spur and 2 blunt, ventral humps. Tarsus IV length 0.64, 0.67, breadth 0.17, 0.19, with a pointed apical hook. Tibia IV length 0.79, 0.81, breadth 0.29, 0.33. Tibia II–IV each with a very large, thick, transparent, apical spur on the hind side of the segment. The spurs situated on cylindrical tubercles, subequal in length with the spurs.

Spiracular plate very large, medial and lateral margins slightly diverging, medial and posterior margins convex, dorsal prolongation very broad, perpendicular to anterior-posterior axis of spiracular plate. Genital aperture «U» shaped, situated between coxae II–III. Postanal groove with unpaired, posteriorly directed, median groove extending to the festoon.

Material: 2 males (US National Tick Collection, RML 57556) Ecuador, Machala, 27.09.1944, ex horse, coll. E.J. Hambleton; 2 females (US National Tick Collection, RML 57662) Uruguay, Montevideo, January 1943, host unknown, coll. Silveira Parker.

Amblyomma usingeri

Male (Fig. 98). Measurements from 2 specimens. Length from apices of scapulae to posterior

scutal margin 2.6, 2.8, breadth 2.4, 2.5. Outline rounded, broadest at level of the middle of scutum. Scutum brown; ornate, dim, silvery-gray or bronze with pink border, large patch like the scutum of female and some patches in the posterior area of the scutum. The posterior half of the scutum with depressions of different sizes, situated symmetrically, scutal punctations deep, large, very dense inside the depressions; areas between depressions smooth, bright. Scutum with very short, stick-like setae, extremely sparse in the central area and more numerous in each scapular area and in the center of scutum; setae on the festoons long, stick-like, situated in blocks of 3–4 on medial margins. Cervical grooves deep, short, nearly parallel. Marginal groove absent. Festoons narrow excepting the very broad fourth and fifth festoons, ventrally posterior festoon margin with sharp, chitinous border. Eyes large, orbital, slightly bulging.

Capitulum length from palpal apices to cornua apices 0.8, 0.86, breadth 0.5, 0.56. Basis capituli with small, very shallow punctations and with some short, stick-like setae. Posterior margin of basis straight, cornua triangular, narrowly rounded; lateral margins convex, ventrally posterior margin straight. Palpi length 0.51, 0.56, breadth 0.13, 0.14. Segment II 1.6–1.8 times longer than segment III, length of segment II 0.31, 0.33, length of segment III 0.17, 0.2. Palpi slightly wrinkled. Segment I ventrally with small spur directed posteriorly. Segment III ventrally with sharp, sclerotized border on anterior margin elongated medially. Palpal setae: dorsolateral setae short, thick, stick-like; dorsomedial setae long, thick, stick-like; ventrolateral setae

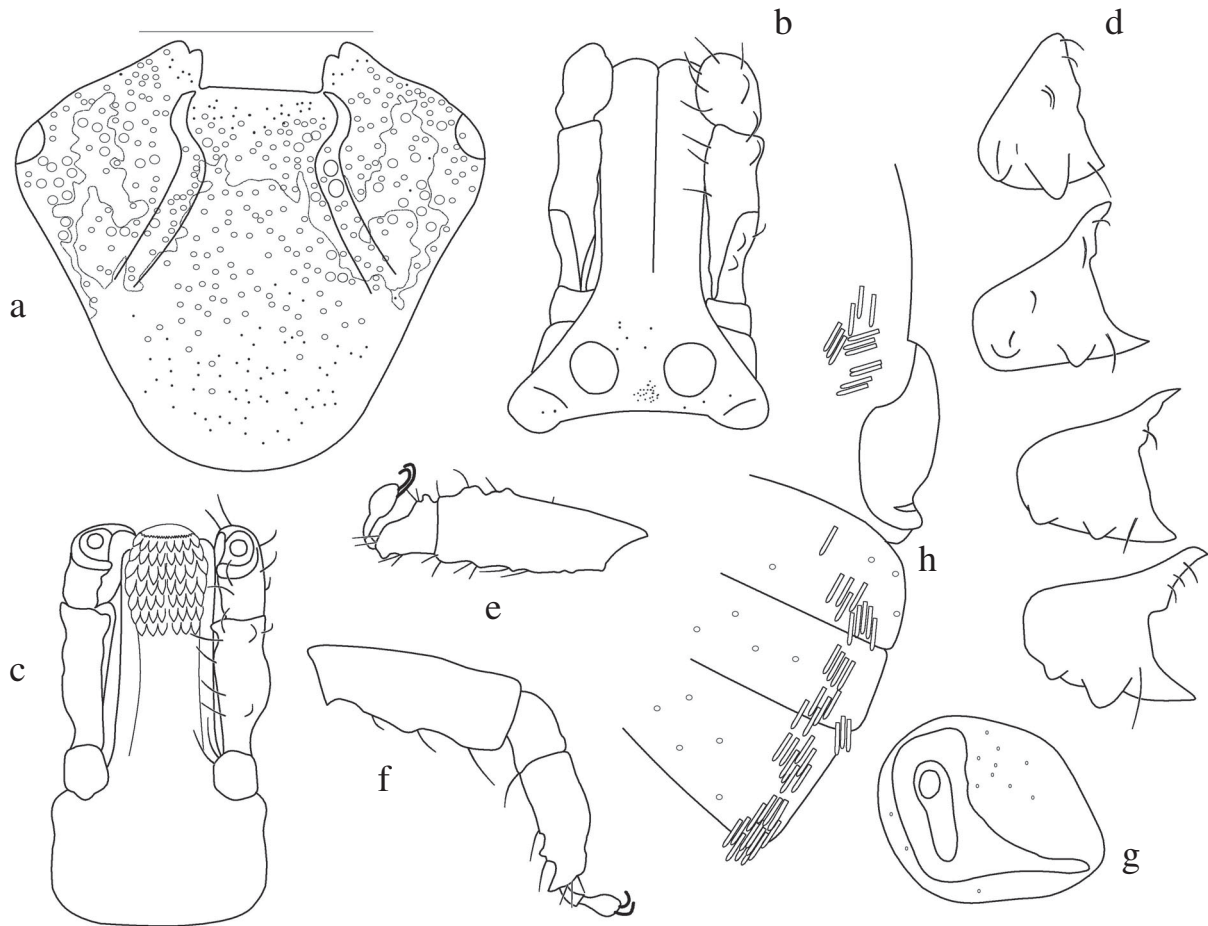


Fig. 99. *Amblyomma usingeri*, female: a — scutum; b — gnathosoma, dorsal view; c — gnathosoma, ventral view; d — coxae; e — tarsus I; f — tarsus and tibia IV; g — spiracular plate, h — lateral festoons of idiosoma with setae, ventral view. Scale bar 1 mm.

short, thick, stick-like; ventromedial setae long, straight. Palpal segment I ventrally with a short, stick-like, lateral seta and 2 very long, thick, ventromedial setae. Hypostome length 0.46, 0.51, length of toothed portion 0.21, 0.21; apex notched, with a very large corona of fine denticles; each half of the apex concave, with a triangular projection near the median axis; dental formula 3/3.

Legs yellow, with dark-brown ventral surface of all segments. Coxa I with 2 short, triangular, equal in length spurs, the internal spur broader. Coxae II–III each with 2 very short, triangular, narrowly rounded spurs. Coxa IV with 2 triangular spurs, longer than on III, the internal spur shorter and more narrow. Trochanters lack spurs. Tarsus I length 0.64, 0.66, width 0.2, 0.2; with very small, apical spur. Tarsus IV length 0.5, 0.5, breadth 0.13, 0.13; with a pointed apical spur. Tibia IV length 0.53, 0.59, breadth 0.2, 0.21.

Venter with long, thick, stick-like setae more numerous in the posterior part. Genital aperture situated between coxae II. Spiracular plate oval,

narrow, with very long and narrow dorsal prolongation forming an obtuse angle with anterior-posterior axis of spiracular plate; lateral margin with very large, bulging, chitinous border. Integumentary hard elements of the ventral skeleton of idiosoma consist of small, round, unpaired anal shield, small, oval, paired lateral shields, the largest, rounded, paired medial shields, and small festoons' shields. All ventral surface with dense, small, round, sclerotized plaques. Postanal groove with very short, unpaired median groove.

Female (Fig. 99). Measurements from 2 specimens. Length from apices of scapulae to posterior body margin 3.1, 3.7, breadth 2.9, 3.5. Scutal setae very short, stick-like, curved, situated only on scapulae. Alloscutal setae white, short, thick, stick-like, regularly excepting the posterior area, where there are 2 symmetrical blocks of closely spaced setae; lateral margins of body with long, thick, stick-like, red with brown apices setae situated in two blocks anteriorly from the spiracular plates; festoons with yellow-brown, closely spaced setae.

Ventral body setae white, short, stick-like, more numerous in the posterior area. Marginal groove complete, very shallow. Fестоons narrow excepting the very broad fourth and fifth festoons.

Scutum length 1.86, 2.07, breadth 2.0, 2.26; dark-brown, with yellow-brown scapulae, ornate, large, lilac with goldish-red-green border patch covers the central and posterior parts of the scutum; 2 long, irregular-shaped, goldish-red with green border patches situated between eyes and cervical grooves. Scapulae with large, pyramidal ledges on medial grooves. Scutal punctations deep and large peripherally on a background of numerous small, shallow punctations. Cervical grooves long, deep, X-shaped. Eyes large, marginal, slightly bulging.

Capitulum length from palpal apices to cornua apices 1.03, 1.24, breadth 0.69, 0.76. Basis triangular, with short, broadly rounded cornua; punctations of basis few, small, shallow; surface slightly wrinkled. Porose areas oval, not deeply depressed, diameter of one area 0.14, 0.14, interporose area 0.14, 0.14. Palpi length 0.71, 0.83, breadth 0.13, 0.14. Palpi wrinkled. Segment II dorsally with triangular, narrow spur directed posteriorly. Segment II 2.1–2.2 times longer than segment III, length of segment II 0.46, 0.53, length of segment III 0.21, 0.24. Segment I ventrally with very small spur directed posteriorly. Segment II ventrally with rounded hump on anteromedial margin. Segment III ventrally with a thick roller on anterior margin elongated medially. Palpal setae: dorsolateral setae short, stick-like, slightly curved; dorsomedial setae short, stick-like, straight; ventrolateral setae short, stick-like, straight; ventromedial setae long, straight. Palpal segment I ventrally with 2 long setae. Hypostome length 0.71, 0.81, length of toothed portion 0.3, 0.36; apex rounded, with small central notch and large corona of fine denticles; dental formula 4/4.

Legs. Coxa I with 2 subequal, short, triangular spurs. Coxae II–IV each with 2, short, triangular spurs, the external spur larger. Trochanters lack spurs. Tarsus I length 0.76, 0.83, width 0.21, 0.21; with small, pointed, apical spur and small, sharp hump dorsally. Tarsus IV length 0.57, 0.57, breadth 0.14, 0.16, with sharp apical spur and sharp, triangular ventral hump. Tibia IV length 0.61, 0.66, breadth 0.24, 0.24.

Medial and lateral margins of spiracular plate parallel, medial margin slightly concave, posterior margin straight, dorsal prolongation very long and narrow, perpendicular to anterior-posterior axis of spiracular plate. Lateral margin of spiracular plate

with very large, bulging, bright, chitinous border visible from above. Genital aperture «U» shaped, situated between coxae II–III. Postanal groove with deep, unpaired, posteriorly directed, median groove extending to the festoon.

Material: 2 males, 2 females (US National Tick Collection, RML 58376) Galapagos, V. Wolf, Albemarle (Island Isabela), 8.09.1971, ex *Geochelone elephantopus*, coll. C. MacFarland.

Amblyomma variegatum

Male (Fig. 100). Measurements from 12 specimens (2 males from Kenya are the smallest). Length from apices of scapulae to posterior scutal margin 5.2 (4.0–5.8), breadth 4.13 (3.2–4.65). Outline oval broadest at level of the middle of scutum. Scutum dark-brown, ornate, very large, almost symmetrical, multiblade, metallic, gold-crimson with greenish border patch. Scapulae very sharp, directed anteriorly and ventrally, their pointed tips invisible dorsally. Scutal punctations small, shallow, more numerous in each scapular area and around the lateral and posterior margins, deeper along the marginal grooves. Cervical grooves crescent, deep, pit-like. Marginal groove complete, beginning at level of legs II. Fестоons with rectangular chitinous plates extending posterior margin of the festoons. Eyes orbital, small, round, bulging, situated at a distance from scutal margin.

Capitulum length from palpal apices to cornua apices 1.71 (1.37–2.1), breadth 0.93 (0.83–1.18); punctations few, very small, shallow; posterior margin concave, cornua short, rounded; external margins slightly convex or straight; ventrally posterior margin almost straight. Palpi length 1.29 (1.0–1.43), breadth 0.32 (0.19–0.5), slightly wrinkled. Segment II 2 times longer than segment III, length of segment II 0.8 (0.64–0.93), length of segment III 0.4 (0.29–0.45). Segment II dorsally with a high, sharp ridge ending posteriorly with a sharp spur. Segment I ventrally with a high, sharp, curved ridge ending anteriorly with a small, pointed spur. Hypostome length 1.2 (1.14–1.33), length of toothed portion 0.65 (0.57–0.71), with a relatively large corona of fine denticles apically, apex slightly notched, rounded; dental formula 3/3 in the 5 anterior rows and 4/4 posteriorly.

All segments of legs with broad, yellow annular wheels at distal ends. Coxa I with 2 triangular, narrowly rounded spurs, the external spur larger and reaching the anterior margin of coxa II, internal spur broader. Coxa I with a small, triangular, spur-like callosity anteriorly. Coxae II–III with a single,

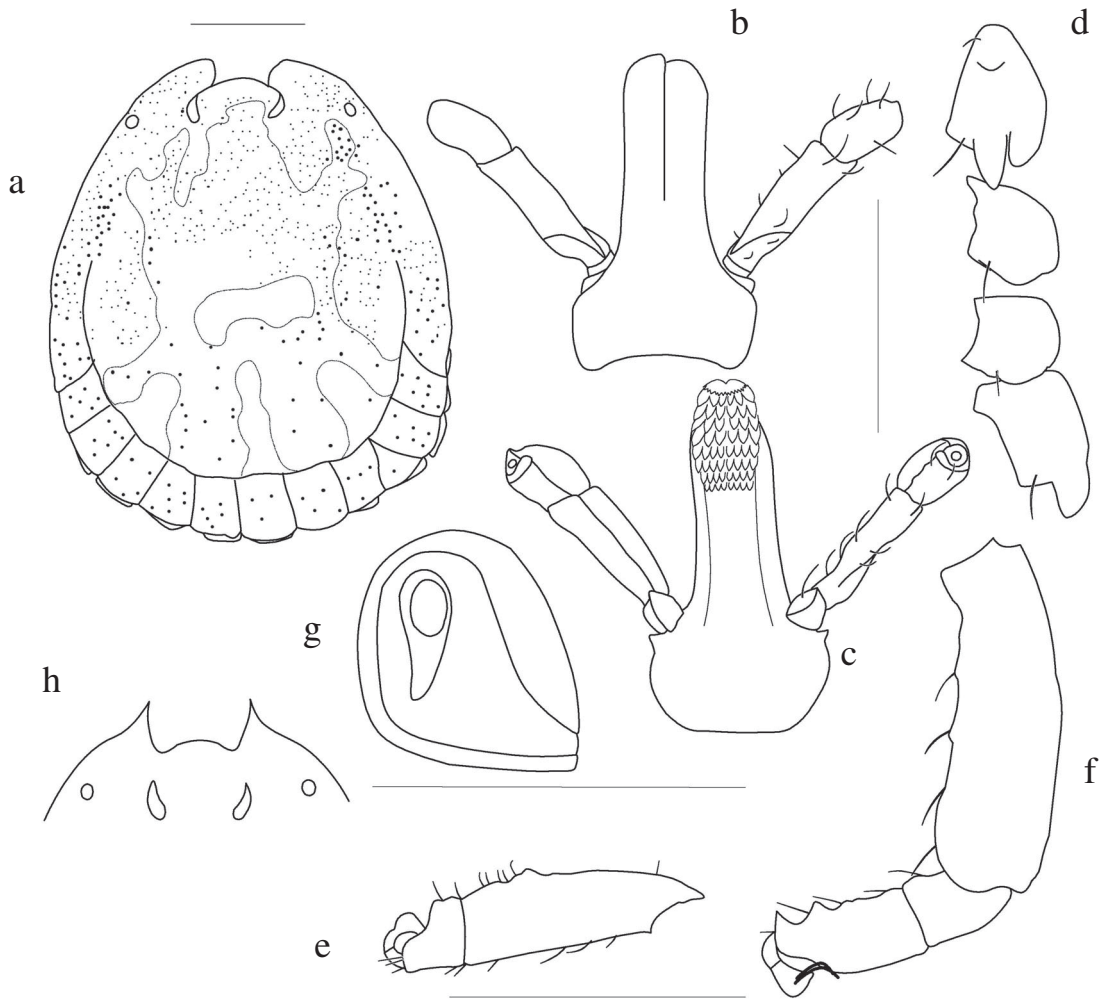


Fig. 100. *Amblyomma variegatum*, male: a — scutum; b — gnathosoma, dorsal view; c — gnathosoma, ventral view; d — coxae; e — tarsus I; f — tarsus and tibia IV; g — spiracular plate, h — scapulae, frontal view. Scale bar 1 mm.

short, broadly rounded, paddle-shaped spur with sharp, sclerotized border. Coxa II with a roller-like callosity anteriorly. Coxa IV with a single, long, triangular spur directed posterolaterally. Trochanters lack spurs. Tarsus II length 1.1 (1.0–1.36), breadth 0.35 (0.31–0.39); without apical spur. Tarsus IV length 0.95 (0.86–1.03), breadth 0.29 (0.24–0.36); with a strong apical hook and a triangular, pointed ventral hook. Tibia IV length 1.48 (1.1–1.67), breadth 0.47 (0.36–0.57).

Venter with short, relatively thick, straight, cone-like setae. Genital aperture situated between coxae II–III. Medial and lateral margins of spiracular plate diverging, medial and posterior margins straight, dorsal prolongation narrow, perpendicular to anterior-posterior axis of spiracular plate. Postanal groove without unpaired median groove. Integumentary hard elements of the ventral skeleton of idiosoma consist of small, unpaired anal and 2 paired postanal shields, and large festoons' shields.

Female (Fig. 101). Measurements from 12 specimens. Length from apices of scapulae to posterior body margin 5.47 (5.18–6.4), breadth 4.4 (3.9–5.05). Dorsal body setae short, relatively thick, curved, cone-like. Ventral body setae more thin, short, cone-like. Marginal groove complete, beginning near the posterior margin of scutum. Festoons rectangular.

Scutum length 2.7 (2.4–3.1), breadth 2.95 (2.7–3.1); dark-brown, ornate, large, horseshoe-shaped, metallic, crimson patch in the posterior area and some small patches may be located in lateral area and between cervical grooves. Scutal punctations dense, deep, smaller anteriorly. Cervical grooves long, X-shaped, very deep anteriorly, then more shallow. Eyes orbital, small, round, bulging.

Capitulum length from palpal apices to cornua apices 2.06 (1.9–2.33), breadth 1.08 (1.04–1.17); cornua very short, rounded; posterior margin concave, lateral margins straight, ventrally posterior

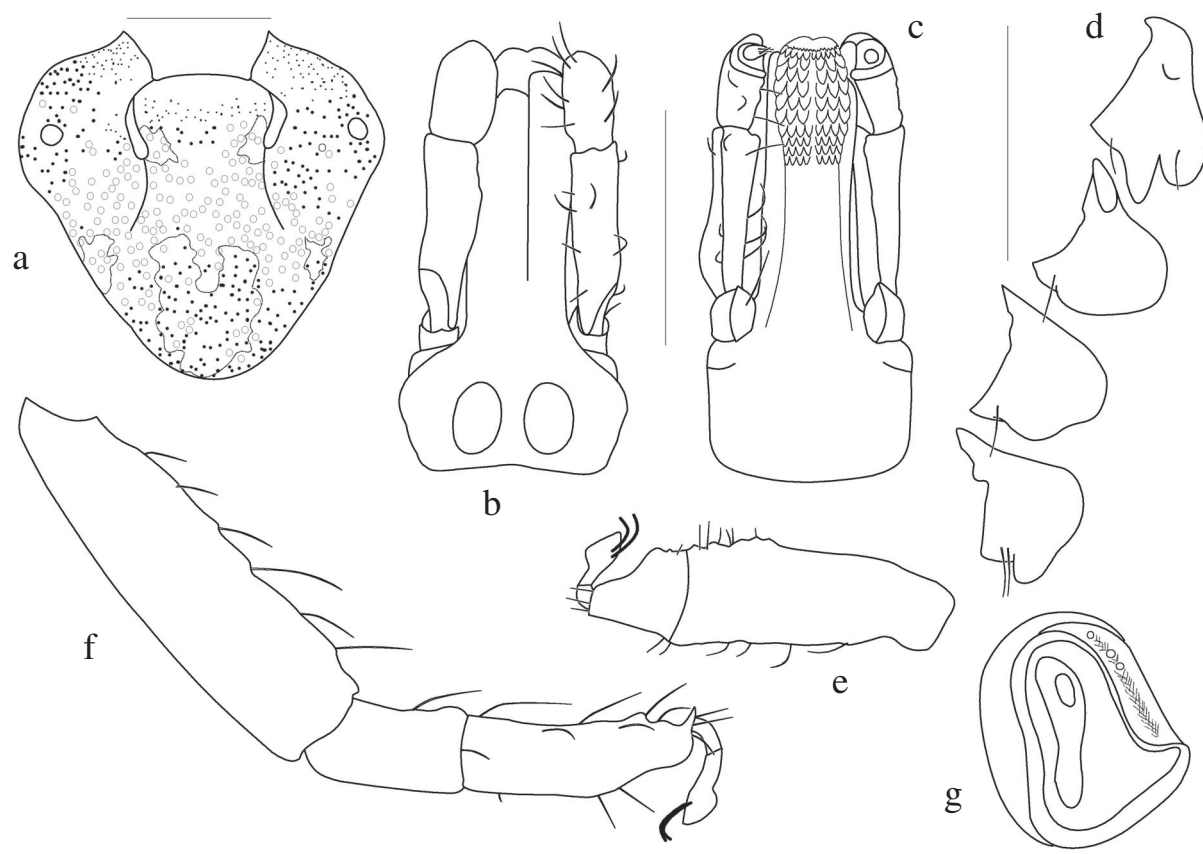


Fig. 101. *Amblyomma variegatum*, female: a—scutum; b—gnathosoma, dorsal view; c—gnathosoma, ventral view; d—coxae; e—tarsus I; f—tarsus and tibia IV; g—spiracular plate. Scale bar 1 mm.

margin convex. Punctations of basis very few, small, shallow. Porose areas oval, diameter of one area 0.21 (0.21–0.23), interporose area 0.14 (0.11–0.17). Palpi length 1.48 (1.36–1.66), breadth 0.33 (0.29–0.4); wrinkled. Segment II 2 times longer than segment III, length of segment II 0.93 (0.86–1.04), length of segment III 0.43 (0.37–0.51). Segment I ventrally with a high, sharp ridge ending anteriorly with a small, pointed spur. Hypostome length 1.41 (1.33–1.51), length of toothed portion 0.71 (0.66–0.78); with a small corona of fine denticles apically, apex slightly notched, rounded; dental formula 3/3 in the anterior rows and 4/4 posteriorly.

All segments of legs with broad, yellow annular wheels at distal ends. Coxa I with 2 spurs, the external spur longer, narrowly rounded, internal spur broadly rounded. Coxa I with a small, spur-like callosity anteriorly. Coxa II with a single, very short, broadly rounded, paddle-shaped spur. Coxa II with a large, roller-like callosity ending postero-medially with a sharp spur. Coxa III with a single, short, broadly rounded, triangular spur. Coxa IV with a single, triangular spur directed posteriorly. Trochanters lack spurs. Tarsus I length 1.45 (1.3–

1.64), width 0.36 (0.31–0.43); without apical hump. Tarsus IV length 1.29 (1.2–1.46), breadth 0.28 (0.26–0.33); with a very strong apical hook and a triangular, pointed ventral hump. Tibia IV length 1.48 (1.36–1.79), breadth 0.4 (0.39–0.47).

Medial and lateral margins of spiracular plate diverging, medial margin and posterior margins nearly straight, dorsal prolongation triangular, narrow, forming an acute angle with anterior-posterior axis of spiracular plate. Genital aperture «U» shaped, situated between coxae II–III. Postanal groove with unpaired, posteriorly directed, median groove extending to the festoon.

Material: 5 males and 5 females (ZMMU, Tdi464) Nigeria, from H. Hoogstraal (HH34 230); 5 males (ZMMU, Tdi1918) South Africa, ex *Dicercos bicornis*, winter 2002, from taxidermy workshop; 5 females (ZMMU, Tdi1919) South Africa, ex *Dicercos bicornis*, winter 2002, from taxidermy workshop; 2 males (US National Tick Collection, RML 90270) Kenya, Meru, Mikinduri, alt. 4300 ft., 25.07.—, from cattle, coll. M.N. Kaiser; 2 females (US National Tick Collection, RML 99760) Cameroun, Yaounde, 19.09.1973, from cattle, coll. J. Bafort.

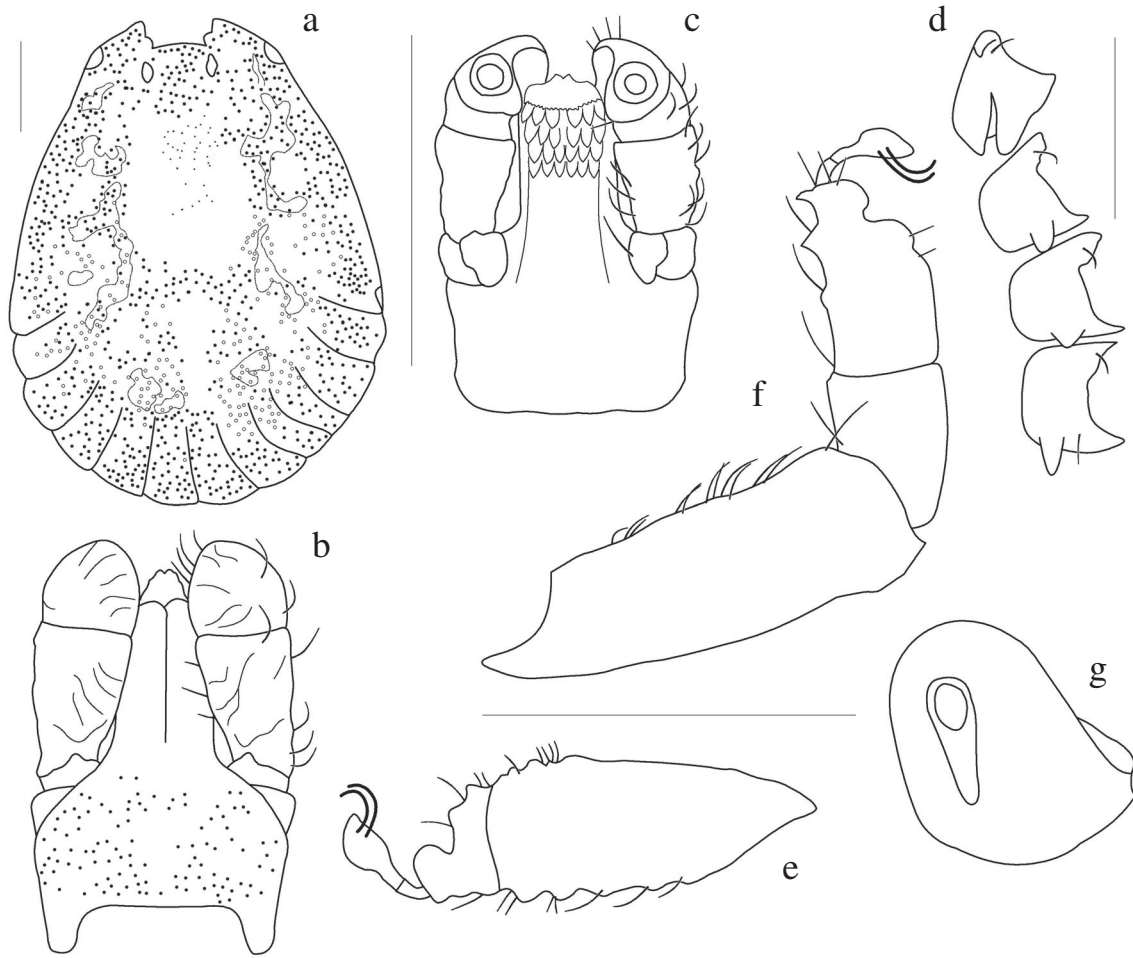


Fig. 102. *Amblyomma varium*, male: a — scutum; b — gnathosoma, dorsal view; c — gnathosoma, ventral view; d — coxae; e — tarsus I; f — tarsus and tibia IV; g — spiracular plate. Scale bar 1 mm.

Amblyomma varium

Male (Fig. 102). Measurements from 2 specimens. Length from apices of scapulae to posterior scutal margin 5.1, 5.5, breadth 3.7, 4.0. Outline oval, broadest at level of first festoon. Scutum red-brown; ornate, some small, goldish-green patches along the scutal margins. Scutal punctations of different sizes, not deep, the central field of the scutum with indistinct, minute punctations. Cervical grooves very deep, short, oval, pit-like. Marginal groove absent. Festoons long, narrow, without chitinous plates beyond the posterior margin of the festoons. Eyes large, marginal, flat.

Capitulum length from palpal apices to cornua apices 1.23, 1.26, breadth 0.77, 0.83. Posterior margin straight, cornua long, triangular, narrow; external margins straight, ventrally posterior margin straight, with sharp, sclerotized border. Basis capituli with small, numerous punctations. Palpi length 0.76, 0.77, breadth 0.29, 0.31. Segment II 1.5–1.6 times longer than segment III, length of

segment II 0.41, 0.41, length of segment III 0.26, 0.27. Palpi wrinkled. Segment I dorsally with small, rounded spur; ventrally with a sharp, undulated ridge ending posteriorly with a rounded spur. Segment II ventrally with triangular spur on anteromedial margin. Segment III ventrally with a sharp, broad border on anterior margin elongated posteromedially. Palpal setae: dorsolateral setae very long, thin, curved; dorsomedial setae short, thin, straight; ventrolateral and ventromedial setae very long, thin, curved. Palpal segment I ventrally with a very long, straight seta. Hypostome length 0.57, 0.63, length of toothed portion 0.33, 0.37; with a very large corona of fine denticles, apex notched, each half of the apex concave, with a pointed, triangular projection near the median axis; dental formula 3/3.

Legs. Coxa I split, with 2 triangular, subequal spurs, the internal spur slightly broader. Coxae II–IV each with a single, triangular, narrowly rounded spur longest on IV. Trochanters lack spurs. Tarsus I

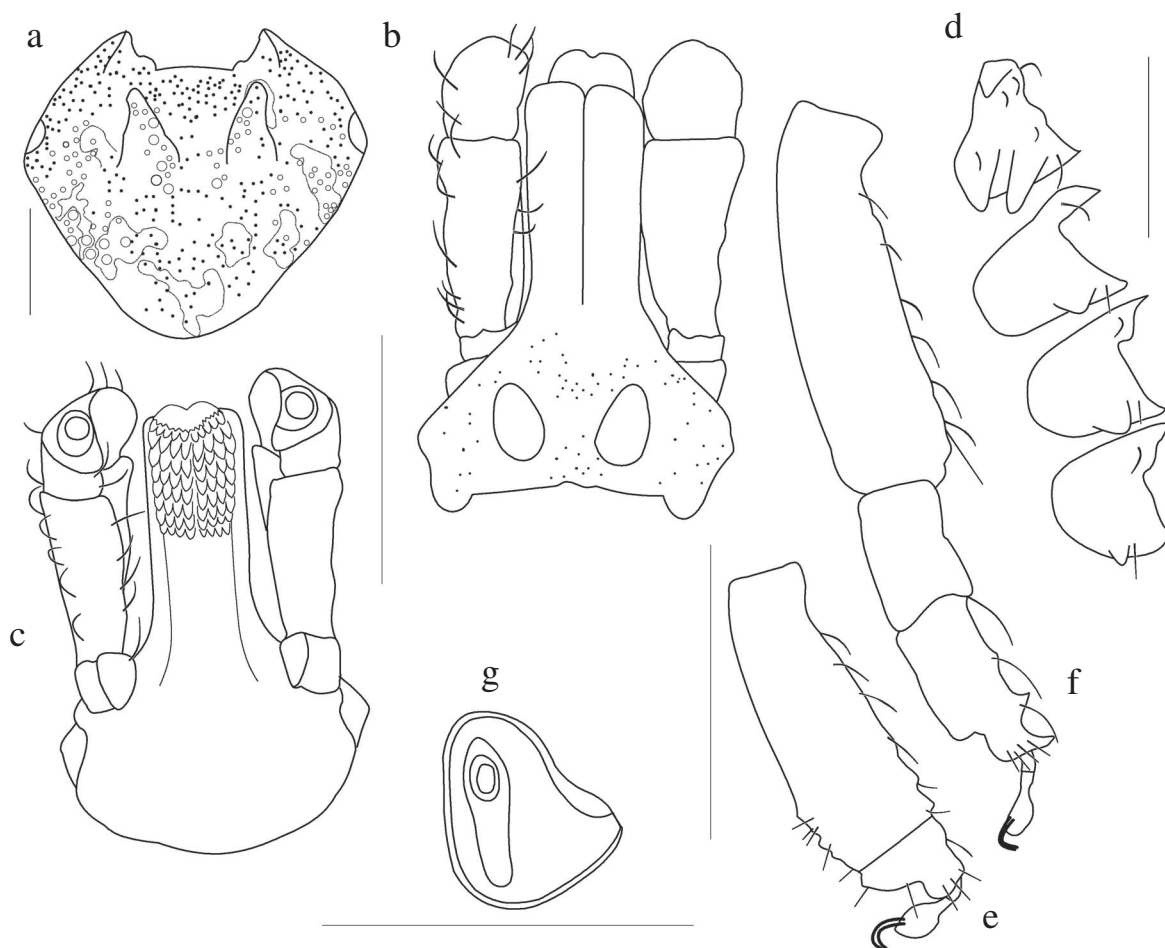


Fig. 103. *Amblyomma varium*, female: a — scutum; b — gnathosoma, dorsal view; c — gnathosoma, ventral view; d — coxae; e — tarsus I; f — tarsus and tibia IV; g — spiracular plate. Scale bar 1 mm.

length 1.1, 1.16, width 0.37, 0.39; without apical spur. Tarsus IV length 0.93, 1.07, breadth 0.29, 0.31; with a strong, apical hook and large, pointed ventral spur. Tibia IV length 1.17, 1.23, breadth 0.36, 0.41.

Venter with very short and thin setae relatively numerous in the posterior area. Genital aperture situated between coxae II. Spiracular plate large, broad, oval, with very short, narrow dorsal prolongation forming an acute angle with anterior-posterior axis of spiracular plate. Postanal groove with unpaired median groove extending to the festoon. Integumentary hard elements of the ventral skeleton of idiosoma consist of long, very narrow, unpaired, anal shield and 2 small, narrow, paired postanal shields, festoon shields small, larger on central festoons. All ventral surface with dense, small, round, sclerotized plaques.

Female (Fig. 103). Measurements from one specimen. Length from apices of scapulae to posterior body margin 6.3, breadth 4.4. Dorsal and ventral body setae few, very short. Marginal groove complete, beginning near the posterior margin of scutum. Festoons broad, rectangular.

Scutum length 2.9, breadth 3.3; red-brown, ornate, some small, metallic, green patches in the posterior half of the scutum. Posterior margin of scutum narrowly rounded, anterolateral margins convex, posterolateral margins nearly straight. Punctations numerous, of different sizes. Scapulae sharp, pyramidal, with ridges dorsally and with noticeable ledges. Cervical grooves relatively long, not deep, dilative, beginning at the distance from the anterior margin of scutum. Eyes large, marginal, flat.

Capitulum length from palpal apices to cornua apices 1.9, breadth 1.26; cornua large, rounded; posterior margin concave, lateral margins triangular, rounded; ventrally posterior margin convex, with very sclerotized border. Punctations of basis small, shallow. Porose areas oval, narrow, deeply depressed, diameter of one area 0.21, interporose area 0.21. Palpi length 1.21, breadth 0.33. Segment II 2 times longer than segment III, length of segment II 0.81, length of segment III 0.4. Palpi wrinkled. Segment I dorsally with a small, pyramidal spur and ventrally with a high, sharp ridge. Segment III ventrally with a broad roller on anterior

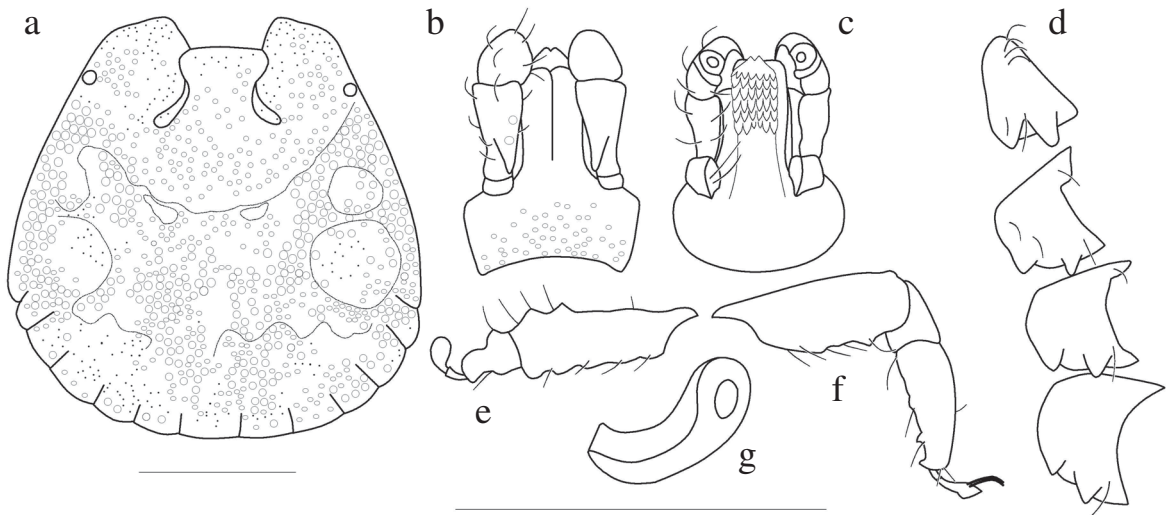


Fig. 104. *Amblyomma williamsi*, male: a — scutum; b — gnathosoma, dorsal view; c — gnathosoma, ventral view; d — coxae; e — tarsus I; f — tarsus and tibia IV; g — spiracular plate. Scale bar 1 mm.

margin elongated posteromedially. Palpal setae: dorsolateral setae very long, thin, curved; dorsomedial setae shorter and more tick; ventrolateral setae very long, thin, curved; ventromedial setae shorter and more tick, almost straight. Palpal segment I ventrally with a long, straight seta. Hypostome length 1.13, length of toothed portion 0.57; apex rounded, notched, with a large corona of fine denticles; dental formula 5/5 in the first apical row, then 4/4.

Legs. Coxa I split, with 2 triangular, equal spurs, the internal spur broader. Coxa I with a sharp, spur-like callosity anteriorly. Coxae II–IV each with a single, short, triangular spur more narrow on IV. Trochanters lack spurs. Tarsus I length 1.4, width 0.4; without spur. Tarsus IV length 1.14, breadth 0.29, with a strong, pointed apical hook and large, pointed ventral spur. Tibia IV length 1.4, breadth 0.43.

Spiracular plate large, medial and lateral margins diverging, medial and posterior margins straight, dorsal prolongation narrow, forming an acute angle with anterior-posterior axis of spiracular plate. Genital aperture «U» shaped, situated between coxae II–III. Postanal groove with shallow, unpaired, posteriorly directed, median groove extending to the festoon.

Material: 2 males and female (US National Tick Collection, RML 40173) Panama, Canal Zone, Ft. Kobbe, 29.12.1960, ex *Bradypus griseus*, coll. M. Keenan.

Amblyomma williamsi

Male (Fig. 104). Measurements from one specimen. Length from apices of scapulae to posterior

scutal margin 2.6, breadth 2.6. Outline nearly round, broadest at level of spiracular plate; scapulae rectangular. Scutum light-brown; ornate, very dim, bronze pigment covering almost the all scutum and some very small, goldish-green, metallic patches. Scutum with some deep, long depressions, situated symmetrically, scutal punctations large, very dense inside the depressions; areas between depressions with large and medium in size, numerous punctations or smooth and bright. Dorsal setae short, thick, stick-like, situated only on border. Cervical grooves X-shaped, deep, with dense punctations. Marginal groove absent. Festoons very broad, without chitinous plates extending beyond the posterior margin of the festoons. Eyes small, round, marginal.

Capitulum length from palpal apices to cornua apices 0.69, breadth 0.5. Basis capituli with relatively large, deep, dense punctations. Posterior margin of basis concave, cornua very short; lateral margins straight, ventrally posterior margin convex. Palpi length 0.44, breadth 0.14. Segment II 2.6 times longer than segment III, length of segment II 0.29, length of segment III 0.11. Palpi bright with some deep punctations. Segment I ventrally with a sloping ridge ending posteriorly with a small spur. Segment III ventrally with a thick roller on anterior margin elongated medially. Palpal setae long, thick, slightly curved. Palpal segment I ventrally with 2 thick, long setae. Hypostome length 0.4, length of toothed portion 0.26; apex notched, with a large corona of fine denticles; dental formula 3/3.

Legs yellow, with relatively thick, stick-like, straight or slightly curved setae. Coxa I with 2 short spurs, the external spur slightly longer, narrow, internal spur triangular, broad. Coxae II–IV each

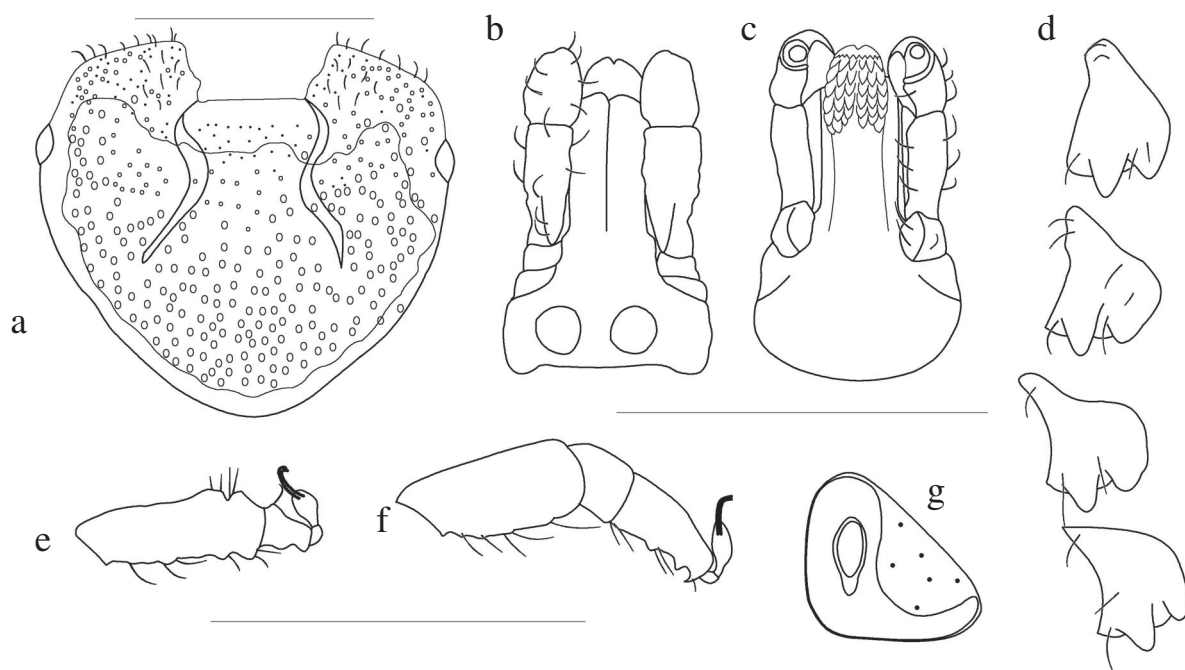


Fig. 105. *Amblyomma williamsi*, female: a — scutum; b — gnathosoma, dorsal view; c — gnathosoma, ventral view; d — coxae; e — tarsus I; f — tarsus and tibia IV; g — spiracular plate. Scale bar 1 mm.

with 2 very short, triangular spurs, the external spur larger. Trochanters lack ventral spurs; I trochanter with rounded, dorsal spur. Tarsus I length 0.76, width 0.2; with a small, apical spur and 2 large, rounded, ventral humps. Tarsus IV length 0.6, breadth 0.17; with a small, sharp apical spur and sharp, triangular ventral hump. Tibia IV length 0.6, breadth 0.21.

Venter with relatively long, thick, stick-like setae. Genital aperture situated between coxae I–II. Spiracular plate very long, narrow, with very narrow, fluently curved dorsal prolongation. Integumentary hard elements of the ventral skeleton of idiosoma consist of relatively large, rectangular, paired medial shields and festoons' shields. All ventral surface with dense, small, round, sclerotized plaques. Its central area edged with a deep marginal groove with a flat surface from the outside. Postanal groove with unpaired median groove extending to the festoon.

Female (Fig. 105). Measurements from one specimen. Length from apices of scapulae to posterior body margin 3.35, breadth 3.0. Scutal setae very short, thick, cone-like, situated only on scapulae. Alloscutal setae translucent, long, thick, stick-like; yellowish, longer and very dense in the anterior part of alloscutum. Ventral body setae long, thick, stick-like on the lateral margins of body and very short, thick, cone-like in the posterior area. Marginal groove absent. Festoons very broad.

Scutum length 1.63, breadth 1.93; dark-brown, ornate, dim, metallic, goldish-crimson patch covers the central and posterior parts of the scutum. Scutal punctations deep, dense, regularly. Cervical grooves long, deep, X-shaped. Eyes large, marginal, slightly bulging.

Capitulum length from palpal apices to cornua apices 0.94, breadth 0.64. Basis subrectangular, with short, rounded cornua. Porose areas rounded, not deeply depressed, diameter of one area 0.11, interporose area 0.1. Palpi length 0.64, breadth 0.14. Palpi wrinkled. Segment II dorsally with triangular, narrow spur directed posteriorly. Segment II 1.3 times longer than segment III, length of segment II 0.31, length of segment III 0.24. Segment I ventrally with low, slope ridge ending posteriorly with a very small spur. Segment III ventrally with a thick roller on anterior margin. Palpal setae: lateral setae short, relatively thick, curved; medial setae relatively thick, almost straight. Palpal segment I ventrally with 2 not long, relatively thick, medial setae and a short, thick, curved, lateral seta. Hypostome length 0.64, length of toothed portion 0.31; apex rounded, with small central notch and large corona of fine denticles; dental formula 3/3.

Legs. Coxa I with 2 not long, triangular spurs, the external spur slightly longer. Coxae II–IV each with 2 triangular, rounded spurs, the external spur slightly longer. The external spur on coxa IV flat.

Trochanters lack spurs. Tarsus I length 0.71, width 0.21; without apical spur. Tarsus IV length 0.57, breadth 0.17, with sharp apical spur. Tibia IV length 0.57, breadth 0.2. Legs with numerous, stick-like, straight setae. All trochanters, femora and tibia slightly wrinkled, with regularly punctations.

Spiracular plate subtriangular, with very long, narrow, dorsal prolongation, perpendicular to anterior-posterior axis of spiracular plate. Lateral margin of spiracular plate with very large, bulging, bright, chitinous border. Genital aperture «V» shaped, situated between coxae II–III. Postanal groove with unpaired, posteriorly directed, median groove extending to the festoon.

Material: male and female (US National Tick Collection, RML 64609) Isabela Island, Punta Garcia, 13.08.1974, ex *Conolophus subcritatus*, coll. R.C.A. Rice.

**KEY TO MALES OF NEOTROPICAL
AMBLYOMMA**

- 1 All coxae with 2 spurs. 2
— Coxa IV with a single spur. 13
- 2 Spiracular plate with scalloped chitinous border. Scutum with two lateral X-shaped wrinkles. Fig. 28. *A. extraoculatum*
— Spiracular plate with even chitinous border. 3
- 3 Scutum with symmetrical pattern of depressions, scutal punctations deep, large, very dense inside the depressions. 4
— Scutal surface without depressions. 6
- 4 Scutal setae long, numerous in each scapular area, between the cervical grooves and along the margin of body. Venter with unpaired anal and 2 paired postanal shields and festoons' shields. Fig. 74. *A. pilosum*
— Scutum with short, almost inconspicuous setae situated only on border. All ventral surface besides unpaired anal or/and 2 paired postanal shields with dense, small, round, sclerotized plaques. 5
- 5 Scutum broadest at level of spiracular plate, scapulae rectangular, cervical grooves relatively long, X-shaped. All festoons very broad, short; central festoon the broadest. The central area of venter edged with a deep marginal groove with a flat surface from the outside. Fig. 104. *A. williamsi*
— Scutum broadest at level of the middle, scapulae rounded, cervical grooves short, nearly parallel. Festoons narrow excepting the very broad fourth and fifth festoons, central festoon the most narrow. Ventral surface slightly swollen. Fig. 98. *A. usingeri*

- 6 Ventral skeleton of idiosoma absent. 7
— Ventral skeleton of idiosoma consists of different number of shields or sclerotized plaques. 8
- 7 External spur of coxa IV much more larger than internal spur. All coxal spurs triangular, sharply rounded. Coxa I with an evident, sharp, spur-like callosity anteriorly. Spiracular plate with very long, fluently curved dorsal prolongation. Fig. 24. *A. dissimile*
— External spur of coxa IV slightly longer than internal spur. All coxal spurs broadly rounded. Coxa I without spur-like callosity anteriorly. Spiracular plate with broad dorsal prolongation perpendicular to anterior-posterior axis. Fig. 82. *A. rotundatum*
- 8 Dental formula 4/4 9
— Dental formula 3/3 10
- 9 Festoons with short, chitinous plates extending beyond the posterior margin of two lateral festoons. Spiracular plate with very broad dorsal prolongation perpendicular to anterior-posterior axis. Postanal groove without unpaired, median groove. Ventral skeleton of idiosoma consists of very small, almost invisible 2 paired postanal shields and not large festoons' shields; all ventral surface with small, round, chitinous point-plaques, slightly larger around coxae. Fig. 37. *A. humerale*
— Festoons without chitinous plates beyond the posterior margin of the festoons. Spiracular plate with very broad dorsal prolongation forming an obtuse angle with anterior-posterior axis. Postanal groove with unpaired, median groove extending to the festoon. Ventral skeleton of idiosoma consists of small unpaired anal and 2 paired postanal shields, and small festoons' shields; all ventral surface with small, round, chitinous point-plaques. Fig. 84. *A. sabanerae*
- 10 Ventral skeleton of idiosoma consists of unpaired anal and one paired postanal shields, and festoons' shields. 11
— Ventral skeleton of idiosoma consists of two paired postanal shields only. 12
- 11 Scutum inornate, without marginal groove. Spiracular plate with narrow dorsal prolongation perpendicular to anterior-posterior axis. Coxa I with a low, roller-like callosity anteriorly. Fig. 20. *A. cruciferum*
— Scutum ornate, with goldish patches in the anterior area. Marginal groove inconspicuous, the narrow depression with very dense punctations beginning at level of legs IV and embracing the festoons. Spiracular plate with very long, fluently rounded dorsal prolongation; lateral margin of

- spiracular plate with very large, chitinous border. Coxa I without callosity anteriorly. Fig. 49. *A. macfarlandi*
- 12** Scutum with bronze patches in the anterior part, along the lateral margins, and on the all festoons. Scapulae sharp with pyramidal ledges on the medial margins. Palpal segment II ventrally with a sharp, pyramidal projection on anteromedial margin. Hypostomal apex rounded, slightly notched. Fig. 5. *A. argentinae*
- Scutum with bronze patches in each lateral area, festoons without patches. Scapulae nearly rectangular. Palpal segment II ventrally without projection on anteromedial margin. Hypostomal apex notched, each half of the apex concave, with a triangular projection near the median axis. Fig. 94. *A. torrei*
- 13** Coxae II–III each with two spurs. 14
— Coxae II–III each with a single spur. 22
- 14** Marginal groove absent. 15
— Marginal groove present. 17
- 15** Festoons with bilobated chitinous plates beyond the their posterior margin. Spiracular plate with narrow dorsal prolongation, posterior margin of spiracular plate straight. Fig. 41. *A. incisum*
- Festoons with rectangular or triangular (not bilobated) chitinous plates beyond the their posterior margin. Spiracular plate with broad dorsal prolongation, posterior margin of spiracular plate convex. 16
- 16** Dental formula 4/4. Palpal segment I ventrally with a single, not long, medial seta. Tarsus IV with high, sharp ridge dorsally and with evident, sharp ridge on the lateral surface. Ventral skeleton of idiosoma consists of small, unpaired, anal shield and 1 paired postanal shields. Fig. 53. *A. multipunctum*
- Dental formula 3/3. Palpal segment I ventrally with a short, curved, lateral seta and 2 long, medial setae. Tarsus IV without ridges. Ventral skeleton of idiosoma absent. Fig. 86. *A. scalpturatum*
- 17** Marginal groove complete. 18
— Marginal groove incomplete. 19
- 18** Scutal punctations dense, regularly, small and large. Palpal segment I ventrally with a large, rounded paddle directed posteriorly. Ventral skeleton of idiosoma consists of long, narrow, unpaired anal and 2 paired postanal shields (lateral shields long, narrow, medial shields small, oval, composed of very small, chitinous point-plaques), and festoons' shields. Medial and posterior margins of spiracular plate straight. Fig. 17. *A. coelebs*
- Scutal punctations very small and shallow along the body margin and on festoons, larger on metallic patches, excepting the smooth, bright areas forming the symmetrical pattern. Palpal segment I ventrally with a high, sharp ridge ending posteriorly with a small spur. Ventral skeleton of idiosoma consists of only festoons shields. Medial and posterior margins of spiracular plate convex. Fig. 90. *A. tapirellum*
- 19** Coxa I with 2 long, triangular spurs, the external spur reaching the anterior margin of coxa II. Palpal segment I ventrally with 2 very long, thin setae. ... 20
— Coxa I with 2 extremely long, narrow spurs, both or one of them reaching the middle of coxa II. Palpal segment I ventrally with a single long seta. 21
- 20** Scutal punctations small, almost lacking in the central area. Spur on coxa IV very long, narrow. Palpi short. Fig. 11. *A. brasiliense*
- Scutal punctations large, deep, very dense. Spur on coxa IV short, broad, triangular. Palpi long. Fig. 45. *A. latepunctatum*
- 21** Spurs of coxa I equiform and equal in length, coxa I without spur-like callosity anteriorly. Fig. 7. *A. aureolatum*
- External spur of coxa I longer than internal, with oblique, pointed tip; coxa I with a large, spur-like callosity anteriorly. Fig. 63. *A. ovale*
- 22** Marginal groove present. 23
— Marginal groove absent. 39
- 23** Marginal groove incomplete. 24
— Marginal groove complete. 25
- 24** Scutum narrow, broadest at level of the its middle, more narrow at the level of spiracular plate, and broad at the level of first festoons; scutal punctations very dense, regularly. Basis capituli subtriangular, palpi long, palpal segment II 2–2.1 times longer than segment III. Coxa IV with short, triangular spur. Fig. 47. *A. longirostre*
- Scutum oval, broadest at level of the its middle; scutal punctations fairly numerous especially near margins, with a few punctations centrally, only on metallic patch. Basis capituli rectangular, palpi short, palpal segment II 1.5–1.7 times longer than segment III. Coxa IV with extremely long spur. Fig. 57. *A. neumanni*
- 25** Festoons without chitinous plates beyond the posterior margin of the festoons but their ventromedial edges can be elongated and slightly evident from the dorsum. 26
— Festoons with chitinous plates beyond the posterior margin of the festoons. 31

- 26** Tibia II–IV with 1 or 2 very large, thick apical spurs. 27
 — Tibia II–IV without large apical spurs. 28
- 27** Tibia II–IV each with a single apical spur. Ventral skeleton of idiosoma consists of festoons shields. Fig. 96. *A. triste*
 — Tibia II–IV each with 2 apical spurs, the dorsal spur larger. Ventral skeleton of idiosoma absent. Fig. 51. *A. maculatum*
- 28** Trochanters I–IV with ventral spurs; trochanter I with dorsal spur. 29
 — Trochanters lack spurs. 30
- 29** Larger ticks (3.0–3.1 mm). Scutum pear-shaped, ornate. Eyes inconspicuous. Palpal segment I ventrally with a short, narrow, oval paddle. Coxa I with 2 equal in length, short spurs. Fig. 76.
 *A. pseudoconcolor*
 — Very small (1.86 mm), inornate ticks. Eyes orbital, slightly bulging. Palpal segment I ventrally with a long, triangular spur directed posterolaterally and ventrally. Coxa I with 2 narrow, triangular spurs, the external spur longer and reaching the anterior margin of coxa II. Fig. 78.
 *A. pseudoparvum*
- 30** Larger ticks (7.0–7.1 mm). Basis capituli subtriangular, without cornua. Posterior margin of spiracular plate concave, dorsal prolongation very narrow, long, perpendicular to anterior-posterior axis. Fig. 33. *A. geayi*
 — Smaller ticks (3.1–3.3 mm). Basis capituli rectangular, with cornua. Spiracular plate long, relatively broad, lateral and medial margins parallel, dorsal prolongation very broad, fluently curved. Fig. 13. *A. cajennense*
- 31** Trochanter I with a ventral and/or dorsal spur. ... 32
 — Trochanter I lack spurs. 35
- 32** Tibia II–IV each with a very large, thick, apical spur on the hind side of the segment. Spur on coxa IV extremely long, pointed and slightly curved laterally. Fig. 92. *A. tigrinum*
 — Tibia II–IV lack apical spurs. Spur on coxa IV short, triangular. 33
- 33** Chitinous plates beyond the posterior margin of the festoons very long. All leg segments with relatively numerous, very long, thin setae. Basis capituli with very large, triangular cornua. Palpal segment II dorsally with a rounded, triangular projection on lateral margin. Fig. 69. *A. parvum*
 — Chitinous plates beyond the posterior margin of the festoons short, rectangular. All leg segments with some, ordinary setae. Cornua absent or short. Lateral margin of palpal segment II dorsally without projection. 34
- 34** Lateral margins of basis capituli straight. Palpal segment I ventrally with a long, triangular, rounded spur directed posteriorly and ventrally. Ventral skeleton of idiosoma consists of small chitinous point-plaques along the unpaired median groove and along the genital groove. Fig. 9.
 *A. auricularium*
 — Lateral margins of basis capituli triangular. Palpal segment I ventrally without spurs. Ventral skeleton of idiosoma absent. Fig. 43.
 *A. inornatum*
- 35** Scutum in its posterior area in front of festoons with longitudinal, convergent posteriorly prominence. Ventral skeleton of idiosoma absent. Fig. 71. *A. pecarium*
 — Scutum without prominence. Ventral skeleton of idiosoma present. 36
- 36** Spur on coxa IV not longer than spur on coxa I. Dental formula 3/3 in the anterior rows and 4/4 posteriorly. Fig. 100. *A. variegatum*
 — Spur on coxa IV the longest. Dental formula 3/3. 37
- 37** Scutal punctations relatively large, dense but absent on small, symmetrical, bright areas without the metallic pigment. Basis capituli ornate, with metallic, goldish-pink patch. Spiracular plate very large, oval, with very broad and short dorsal prolongation. Fig. 26. *A. dubitatum*
 — Scutal punctations few, small; large areas of scutum without punctations, smooth and bright. Basis capituli inornate. Spiracular plate with relatively long, fluently curved dorsal prolongation. 38
- 38** Large, irregular-shaped, metallic patches on scutum forming the symmetrical pattern, the central longitudinal axis of scutum without ornamentation. Ventral skeleton of idiosoma consists of only festoons shields. Fig. 61. *A. oblongoguttatum*
 — Long, thin, metallic patches on scutum situated symmetrically but one of them situated on the central longitudinal axis of scutum. Ventral skeleton of idiosoma consists of long unpaired anal and 2 relatively large, paired postanal shields, and large festoons' shields. Fig. 39. *A. imitator*
- 39** All coxae with a translucent, very large bubble situated in front and laterally of external spur. 40
 — Coxae without bubbles. 41
- 40** Ornamentation covers almost all of the scutum; but narrow, brown areas without pigment situated

- symmetrically on this patch. Spiracular plate with very long and narrow dorsal prolongation forming an obtuse angle with anterior-posterior axis of spiracular plate. Fig. 1. *A. albopictum*
 — Large patches of pigment forming the symmetrical pattern: four large patches in each lateral area, two very large patches in the posterior area, and three in the central area. Spiracular plate with triangular dorsal prolongation perpendicular to anterior-posterior axis of spiracular plate. Fig. 3. *A. antillorum*
- 41** Scutum with some deep depressions, situated symmetrically, scutal punctations inside the depressions very dense. Fig. 22. *A. darwini*
 — Scutum without depressions. 42
- 42** Spur on coxa IV very long, sharp. 43
 — Spur on coxa IV short, triangular. 44
- 43** Tibia II–IV each with 2 very large, thick, apical spurs. Posterior margin of palpal segment II undulated, external margins of basis capituli convex, basis ventrally with some short setae. Spiracular plate with very short, triangular, pointed dorsal prolongation. Fig. 67. *A. parvitarsum*
 — Tibia II–IV without spurs. Palpal segment II dorsally with a triangular, rounded spur directed posteriorly; on the tip of this spur 2 long, slightly curved setae directed posteriorly too. Lateral margins of basis capituli subtriangular, basis without setae. Spiracular plate with long, broad dorsal prolongation forming an obtuse angle with anterior-posterior axis of spiracular plate. Fig. 15. *A. calcaratum*
- 44** Ventrally each festoon, excluding the central, bearing a posterointernal tubercle or spur. 45
 — Festoons without posterointernal tubercles. 46
- 45** Ornate ticks. The external spur of coxa I longer than internal and reaching the anterior margin of coxa II. Trochanter I dorsally with a triangular, broadly rounded spur. Palpal segment I ventrally with a long, narrow, oval paddle directed posteriorly and ventrally. Fig. 55. *A. naponense*
 — Inornate ticks. Coxa I with 2 subequal spurs. Trochanters lack spurs. Palpal segment I ventrally without paddle or spur. Fig. 30. *A. fulvum*
- 46** Palpal segment II dorsally broader than segment III, its lateral margin with triangular projection. Palpal segment I ventrally propeller-like with internal and posterolateral paddles. Femora I–IV each with spherical enlarged, basal ending outlined by thin groove. Fig. 59. *A. nodosum*
 — Palpal segment II dorsally not broader than segment III and without lateral projection. Palpal segment I ventrally cylindrical or with rounded spur but not propeller-like. Femora without spherical enlarged, basal ending. 47
- 47** Ventral skeleton of idiosoma consists of unpaired anal and 1 or 2 paired postanal shields, and festoons' shields. 48
 — Ventral skeleton of idiosoma absent or consists of festoons' shields only. 50
- 48** Relatively large (5–5.5 mm), ornate ticks. Basis capituli with large, triangular cornua. Spiracular plate large, broad, oval, with very short, narrow dorsal prolongation. Fig. 102. *A. varium*
 — Smaller ticks (2.3–3 mm). Basis capituli without cornua. Spiracular plate of another form. 49
- 49** Inornate ticks, rounded in shape, scutum with very few, small punctations. Cervical grooves very small, pit-like. Spiracular plate long, oval, with dorsal prolongation as broad as spiracular plate and fluently curved. Fig. 80. *A. quadricavum*
 — Ornate ticks, scutum oval, scutum with very dense punctations. Cervical grooves deep, short, converging. Spiracular plate oval, with narrow dorsal prolongation forming an obtuse angle with anterior-posterior axis of spiracular plate, lateral margin with narrow, chitinous border. Fig. 88. *A. scutatum*
- 50** Large ticks (7.3 mm). Posterior margin of basis capituli undulated, with broadly rounded cornua. Basis capituli ventrally with 2 small depressions in its posterior area. Spurs on coxa I widely separated. Fig. 73. *A. pictum*
 — Smaller ticks (3.5–4.8 mm). Posterior margin of basis capituli nearly straight, without or with very short or triangular, narrow cornua. Ventral surface of basis smooth. Spurs on coxa I not separated. 51
- 51** Dental formula 3/3. Dorsal cornua large, triangular. Spurs of coxa I long and relatively narrow (Fig. 65). Ventral skeleton of idiosoma absent. Fig. 65. *A. pacae*
 — Dental formula 4/4. Dorsal cornua very short or absent. Spurs on coxa I broad, equal or the external spur slightly longer. Ventral skeleton of idiosoma consists of festoons' shields. 52
- 52** Scutal punctations concentrated in the lateral area and absent in the central area of scutum. Coxa I with 2 broad, rounded spurs, the external spur slightly longer, internal spur broader; the spur-like callosity in the anterior part of coxa I large and strong. Fig. 31. *A. fuscum*
 — Scutum with regularly spaced punctations. Coxa I with 2 equal, large, narrow, triangular spurs and with a small spur-like callosity anteriorly. Fig. 35. *A. goeldii*

**KEY TO FEMALES OF NEOTROPICAL
AMBLYOMMA**

- 1** All coxae with 2 spurs. 2
— Coxa IV with a single spur. 14
- 2** Alloscutum with dense setation. 3
— Alloscutum with few, very short setae or lack setae. 9
- 3** Spiracular plate with scalloped chitinous border. Marginal groove incomplete, beginning at level of legs III and ending before the first festoon. Dental formula 5/5. Fig. 29. *A. extraoculatum*
— Spiracular plate with even chitinous border. Marginal groove absent or complete. Dental formula 3/3 or 4/4. 4
- 4** Dental formula 4/4. 5
— Dental formula 3/3 or 4/4 in the two anterior rows and 3/3 in the other rows. 6
- 5** Alloscutal setae white, short, thick, stick-like, regularly excepting the posterior area, where there are 2 symmetrical blocks of closely spaced setae; lateral margins of body with long, thick, stick-like, red with brown apexes setae situated in two blocks anteriorly from the spiracular plates; festoons with yellow-brown, closely spaced setae. Ventral body setae white, short, stick-like, more numerous in the posterior area. Marginal groove complete. Fig. 99. *A. usingeri*
— Alloscutum with dense, long, thick, flat setae longer along the body border, between the festoons per 2–3 setae. Ventral body setae dense, long, needle-shaped. Marginal groove absent or unnoticeable, in some places presented of deep punctations. Fig. 50. *A. macfarlandi*
- 6** Scutum inornate, without setae. Dorsal prolongation of spiracular plate short, pointed. Fig. 21. *A. cruciferum*
— Scutum ornate, with setae situated at least on scapulae. Dorsal prolongation of spiracular plate long, relatively broad. 7
- 7** Dental formula 4/4 in the two anterior rows and 3/3 in the other rows. Scutal setae long, needle-shaped, situated in each scapular area and between cervical grooves. Fig. 75. *A. pilosum*
— Dental formula 3/3. Scutal setae short, situated only on scapulae. 8
- 8** Cervical grooves small, oval, pit-like. Leg segments smooth, with ordinary setae. Fig. 95. *A. torrei*
— Cervical grooves long, X-shaped. Legs with numerous, stick-like, straight setae. All trochanters, femora and tibia slightly wrinkled, with regularly punctations. Fig. 105. *A. williamsi*
- 9** Dental formula 4/4 or 5/5 in the anterior rows then 4/4. 10
— Dental formula 3/3. 12
- 10** Dental formula 5/5 in the anterior rows then 4/4. Large ticks (8 mm) with long capitulum (palpi length 1.98, hypostome length 1.7 mm). Fig. 19. *A. crassum*
— Dental formula 4/4. Smaller ticks (5.5–6.0 mm) with relatively shorter capitulum (palpi length 1.3–1.5, hypostome length 1.0–1.2 mm). 11
- 11** Posterior margin of scutum straight. Dorsal prolongation forming an acute angle with anterior-posterior axis of spiracular plate. Fig. 38. *A. humerale*
— Posterior margin of scutum rounded. Dorsal prolongation perpendicular to anterior-posterior axis of spiracular plate. Fig. 85. *A. sabanerae*
- 12** Spiracular plate with very broad dorsal prolongation forming an acute angle with anterior-posterior axis. Fig. 83. *A. rotundatum*
— Spiracular plate with narrow dorsal prolongation perpendicular to anterior-posterior axis. 13
- 13** Palpal segment I ventrally with a sharp, sinuous ridge ending posteriorly with a small, pointed spur. The external spur of coxa I slightly longer than internal spur. Coxa I with an evident, sharp, spur-like callosity anteriorly. Fig. 25. *A. dissimile*
— Palpal segment I ventrally with a high, sloping ridge ending posteriorly with a long, narrowly rounded spur directed posteromedially. Coxa I with 2 equal in length spurs and without spur-like callosity anteriorly. Fig. 6. *A. argentinae*
- 14** Coxae II–III each with 2 spurs. 15
— Coxae II–III each with a single spur. 23
- 15** Marginal groove complete. 16
— Marginal groove incomplete. 22
- 16** Festoons each with a pyramidal, chitinous hump or their ventromedial margins with bluntly rounded chitinous plates visible from dorsal side or at least with elongated, sclerotized medial angles. 17
— Festoons without hump, tubercles or elongated angles. 19
- 17** Palpal segment I ventrally with a sharp ridge forming a narrowing paddle directed posteriorly. Spur on coxae II–III equal in length. Spur on coxa IV triangular, rounded. Festoons each with a pyramidal, chitinous hump visible from the dorsum. Fig. 12. *A. brasiliense*
— Palpal segment I ventrally with a long, oval paddle directed posteriorly and ventrally. The internal spur of coxae II–III very short, like a rounded paddle with sclerotized border. Spur on coxa IV sharp. 18

- 18** Alloscutum with deep, large, very dense punctations, and with 3 grooves in addition to marginal groove. Fестоons rectangular, with elongated, sclerotized medial angles. Dorsal and ventral body setae few in number. Fig. 46. *A. latepunctatum*
 — Alloscutum with marginal groove only. Fестоons rectangular, swollen, their ventromedial margins with bluntly rounded chitinous plates visible from dorsal side. Dorsal and ventral body setae relatively numerous on festoons. Fig. 87. *A. scalpturatum*
- 19** Dental formula 5/5 in the anterior rows then 4/4. Alloscutum with 3 grooves in addition to marginal groove. Fig. 42. *A. incisum*
 — Dental formula 3/3. Alloscutum with marginal groove only. 20
- 20** Lateral margins of basis capituli triangular. Coxa I with 2 very long spurs, the external spur with pointed tip directed laterally. Fig. 64. *A. ovale*
 — Lateral margins of basis capituli slightly convex or almost straight. Coxa I with 2 triangular, sharply rounded spurs. 21
- 21** Palpal segment I dorsally with small, triangular spur directed anteriorly; ventrally with a large, oval paddle directed posteriorly and ventrally. Dorsal prolongation of spiracular plate forming an acute angle with anterior-posterior axis. Fig. 18. *A. coelebs*
 — Palpal segment I dorsally without spur; ventrally with a high, sharp ridge. Dorsal prolongation of spiracular plate nearly perpendicular to anterior-posterior axis. Fig. 91. *A. tapirellum*
- 22** Lateral margins of basis capituli dorsally triangular, ventrally with rounded, very sclerotized, short auriculae-like projections. Scutum as broad as length. Coxa I split, with 2 extremely large, equal spurs. Dorsal prolongation of spiracular plate relatively broad, nearly perpendicular to anterior-posterior axis. Fig. 8. *A. aureolatum*
 — Lateral margins of basis capituli dorsally convex, ventrally straight. Scutum broader than length. Coxa I split, with 2 long, triangular spurs, the internal spur broader and slightly longer. Very short, narrow dorsal prolongation forming an acute angle with anterior-posterior axis of spiracular plate. Fig. 54. *A. multipunctum*
- 23** Marginal groove absent. 24
 — Marginal groove complete or incomplete. 30
- 24** All coxae each with a translucent, large bubble situated in front and laterally of external spur. ... 25
 — All coxae without translucent bubble. 26
- 25** Scutum as broad as length. Ticks with relatively larger capitulum (length of capitulum 1.2, palpi length 0.8 mm). Palpal segment I ventrally smooth. Spiracular plate with very long dorsal prolongation, perpendicular to anterior-posterior axis. Genital aperture «U» shaped. Fig. 2. *A. albopictum*
 — Scutum broader than length. Ticks with relatively shorter capitulum (length of capitulum 0.8–0.9, palpi length 0.6 mm). Palpal segment I ventrally with a sharp ridge. Spiracular plate with not long dorsal prolongation, nearly perpendicular to anterior-posterior axis. Genital aperture «V» shaped. Fig. 4. *A. antillorum*
- 26** Scutum inornate. 27
 — Scutum ornate. 28
- 27** Very small, rounded ticks. Scutum length 1.2–1.6 mm. Length of capitulum 0.8–0.9 mm. Basis capituli as in Fig. 81. Hypostomal apex rounded, with small central notch. Palpal segment I ventrally with a slope ridge. The internal spur of coxa I very short. Spiracular plate with pointed dorsal prolongation forming an obtuse angle with anterior-posterior axis. Fig. 81. *A. quadricavum*
 — Relatively larger, elongated ticks. Scutum length 2.3 mm. Length of capitulum 1.5 mm. Basis capituli as in Fig. 36. Hypostomal apex notched, each half of the apex concave, with a triangular projection near the median axis. Palpal segment I ventrally with a oval paddle directed laterally, dorsally with a small, blunt spur directed anteriorly. Coxa I with 2 subequal, long, narrow, triangular spurs. Spiracular plate with broad dorsal prolongation perpendicular to anterior-posterior axis. Fig. 36. *A. goeldii*
- 28** Tibia II–IV without apical spurs. Scutum with 2 paired, deep depressions with small and numerous punctations inside. Dorsal body setae long, wide, stick-like, situated in blocks forming the symmetrical pattern. Coxa IV with a short spur. Lateral margin of spiracular plate with very large and bulging, bright, chitinous border visible from above. Fig. 23. *A. darwini*
 — Tibia II–IV with 2 very large, thick apical spurs. Scutum without depressions. Coxa IV with a relatively longer spur. 29
- 29** Dorsal body setae dense, very short on the dorsal surface centrally; relatively long, slightly curved along the posterior margin of scutum and on the anterolateral margins of body; few, very short on the lateral margins of body. Basis capituli with short, rounded cornua. Spiracular plate oval, with very short, almost inconspicuous, triangular dorsal

- prolongation. Small ticks, scutum length 1.9 mm. Fig. 58. *A. neumanni*
 — Alloscutal setae short, cone-like, more numerous along the margins. Dorsal cornua absent. Spiracular plate with short dorsal prolongation perpendicular to anterior-posterior axis. Relatively larger ticks, scutum length 3.5 mm. Fig. 68.
 *A. parvitarsum*
30 Marginal groove incomplete. 31
 — Marginal groove complete. 33
31 Scutum as broad as length. Cervical grooves long, straight and converging anteriorly, then diverging as shallow depressions. Dental formula 3/3. Coxa I with 2 triangular, sharply rounded spurs, the external spur longer, more narrow. Fig. 66.
 *A. pacae*
 — Scutum broader than length. Cervical grooves pit-like or crescent. Dental formula 4/4. Coxa I with 2 broad, rounded spurs. 32
32 Scutal punctations very dense. Cervical grooves crescent and deep in the anterior part then diverging as shallow depressions. Coxa I without spur-like callosity anteriorly. Spiracular plate with broad dorsal prolongation perpendicular to anterior-posterior axis. Fig. 89.
 *A. scutatatum*
 — Scutal punctations numerous in each lateral area and absent in the central area. Cervical grooves pit-like. Coxa I with a large spur-like callosity in the anterior part. Spiracular plate with broad dorsal prolongation, forming an acute angle with anterior-posterior axis. Fig. 32.
 *A. fuscum*
33 Trochanters or at least trochanter I with ventral spur. 34
 — Trochanters lack spurs. 38
34 Scutum ornate. Coxa IV with 2 relatively broad spurs. Posterior margin of spiracular plate concave, lateral and posterior margins each with broad, sclerotized border. Relatively larger ticks (scutum length 2.0–2.1, length of capitulum 1.2 mm). Fig. 77.
 *A. pseudoconcolor*
 — Scutum inornate. Coxa IV with 2 narrow spurs. Posterior margin of spiracular plate straight or convex, lateral margin with narrow, sclerotized border and posterior margin without ones. Very small ticks (scutum length 1.2–1.8, length of capitulum 0.9–1.0 mm). 35
35 Lateral margins of basis capituli subtriangular. Cervical grooves relatively long, X-shaped. 36
 — Lateral margins of basis capituli straight or slightly convex. Cervical grooves short, pit-like. 37
36 Alloscutal setae numerous, long, stick-like, scutal setae few, very short and thin. Setae on festoons more thick and long, stick-like. Scutal punctations moderate in size, numerous, forming two longitudinal depressions on each lateral area; lateral fields behind the eyes without punctations. Basis capituli with short dorsal and ventral cornua. Fig. 79.
 *A. pseudoparvum*
 — Dorsal body setae few, very short and thin. Scutal punctations small and medium in size, dense. Basis capituli without cornua. Fig. 44.
 *A. inornatum*
37 Lateral margins of basis capituli convex. Palpal segment I ventrally with a high, pyramidal spur directed ventrally. The external spur of coxa I slightly longer than internal spur, both relatively broad. Genital aperture «U» shaped. Fig. 10.
 *A. auricularium*
 — Lateral margins of basis capituli straight. Palpal segment I ventrally with high, sharp ridge ending posteriorly with narrow paddle. The external spur of coxa I much more long than internal spur, both narrow. Genital aperture «V» shaped. Fig. 70.
 *A. parvum*
38 Ventromedial margins of the festoons with pyramidal, sclerotized tubercles more or less noticeable from the dorsum. 39
 — Festoons without tubercles. 42
39 Coxa I with 2 triangular, relatively short, nearly equal spurs. Coxae II–III each with a single, very short, rounded paddle on the posterior margin. Scutum more broader than length. Spiracular plate as figured. Fig. 72.
 *A. pecarium*
 — Coxa I with 2 long, triangular spurs, the external spur very long and reaching the anterior margin of coxa II or at least longer than internal spur. Coxae II–III each with a single, triangular spur. Scutum as broad as length. Spiracular plate of another form. 40
40 Tibia II–IV without spurs. Coxa I with a sharp, spur-like callosity anteriorly. Spiracular plate as figured. Fig. 14.
 *A. cajennense*
 — Tibia II–IV with one or two apical spurs. Coxa I without spur-like callosity. Spiracular plate of another form. 41
41 Tibia II–IV with 2 very large, thick apical spurs, the dorsal spur larger. Dorsal body setae very short, thin, relatively dense along the body border. Dorsal prolongation of spiracular plate narrow, forming an acute angle with anterior-posterior axis. Fig. 52.
 *A. maculatum*
 — Tibia II–IV each with a very large, thick, transparent, apical spur on the hind side of the segment. Dorsal body setae few, very short and thin. Dorsal prolongation of spiracular plate very broad, per-

- pendicular to anterior-posterior axis. Fig. 97.
 *A. triste*
- 42** Lateral margins of basis capituli triangular, i.e. basis capituli subtriangular or subhexagonal in shape. 43
 — Lateral margins of basis capituli straight or convex, basis capituli subrectangular or trapezoid in shape. 47
- 43** Posterior margin of basis capituli straight, without cornua. Coxa I with 2 short, triangular spurs. Spiracular plate with short and very narrow dorsal prolongation. 44
 — Posterior margin of basis capituli concave, with relatively large cornua. Coxa I with 2 long, triangular spurs. Spiracular plate with relatively broad dorsal prolongation. 45
- 44** Scutum more longer than wide. Basis capituli subtriangular dorsally; ventrally lateral margins of basis as figured. Hypostomal apex long, triangular, pointed. Fig. 48. *A. longirostre*
 — Scutum slightly wider than long. Basis capituli subhexagonal dorsally; ventrally lateral margins of basis as figured. Hypostomal apex narrowly rounded. Fig. 34. *A. geayi*
- 45** Cervical grooves relatively long, not deep, dilative. Dental formula 5/5 in the anterior rows then 4/4. Basis capituli as figured. Fig. 103. *A. varium*
 — Cervical grooves relatively short, very deep, pit-like. Dental formula 3/3. Basis capituli of another form. 46
- 46** Scutum ornatum. Posterior margin of palpal segment III with sharp ridge deflected dorsally. Palpal segment I ventrally with elongated paddle, anterior ending of which directed dorsomedially and posterior ending directed ventrolaterally. Coxa I with a large, spur-like callosity anteriorly. Femora with spherical enlarged basal ending outlined by thin groove. All leg segments with dense punctations. Fig. 60. *A. nodosum*
 — Scutum inornatum. Posterior margin of palpal segment III without ridge. Palpal segment I ventrally with a slope ridge. Coxa I lack spur-like callosity anteriorly. Femora of regular form. All leg segments with few, shallow punctations. Fig. 16. *A. calcaratum*
- 47** Tibia II–IV each with a very large, thick, apical spur on the hind side of the segment. Coxa I with 2 spurs, the external spur extremely long and reaching the middle of coxa II, narrow, pointed; internal spur very short, rounded. Fig. 93. *A. tigrinum*
 — Tibia II–IV each without spur. Coxa I with 2 equal in length spurs or the external spur slightly longer, both relatively broad. 48
- 48** Cervical grooves long, X-shaped, very deep anteriorly, then more shallow. Dental formula 3/3 in the anterior rows and 4/4 posteriorly. 49
 — Cervical grooves short, converging or pit-like. Dental formula 3/3. 50
- 49** Basis capituli subrectangular dorsally, broadest in its posterior part. Coxa I with 2 subequal, triangular, broad spurs. Palpal segment I ventrally with a large, oval paddle directed posteriorly and ventrally. Spiracular plate as figured. Scutal ornamentation whity-gray, dim. Fig. 27. *A. dubitatum*
 — Basis capituli trapezoid dorsally, broadest in its anterior part. Coxa I with 2 spurs, the external spur longer, narrowly rounded, internal spur broadly rounded. Segment I ventrally with a high, sharp ridge ending anteriorly with a small, pointed spur. Spiracular plate as figured. Scutal ornamentation bright, metallic. Fig. 101. *A. variegatum*
- 50** Coxa I with 2 equal in length spurs. Basis capituli with triangular, narrowly rounded cornua. Scutal punctations of different sizes, fairly numerous in the anterior and lateral parts of the scutum but absent centrally. Fig. 62. *A. oblongoguttatum*
 — The external spur of coxa I longer than internal spur. Basis capituli with very short, rounded cornua. Scutal punctations regularly or more dense in the central area. 51
- 51** Scutum broader than length. Cervical grooves deep, roundly pit, almost indistinguishable from the large punctations. The internal spur of coxa I more broader than external spur. Postanal groove without unpaired, posteriorly directed, median groove. Fig. 56. *A. naponense*
 — Scutum as broad as length. Cervical grooves deep, short, converging, then diverging as very shallow depressions. The internal spur of coxa I not broader than external spur. Postanal groove with unpaired, posteriorly directed, median groove extending to the festoon. Fig. 40. *A. imitator*

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REFERENCES

- Aragão, H.B. and da Fonseca, F. 1961a. Notas de Ixodologia. VIII. Lista e chave para os representantes da fauna ixodológica brasileira. *Memórias do Instituto Oswaldo Cruz*, 59: 115–129.
- Aragão, H.B. and da Fonseca, F. 1961b. Notas de Ixodologia. IX. O complexo *ovale* do género *Amblyomma*. *Memórias do Instituto Oswaldo Cruz*, 59: 131–148.
- Arzua, M., Navarro da Silva, M.A., Famadas, K.M., Beati, L., Barros-Battesti, D.M. 2003. *Amblyomma aureolatum* and *Ixodes auritulus* (Acari: Ixodidae) on birds in southern Brazil, with notes on their ecology. *Experimental & Applied Acarology*, 31: 283–296.
- Barros-Battesti, D.M., Onofrio, V.C., Labruna, M.B., Martins, J.R., and Guglielmone, A.A. 2005. Redescription of *Amblyomma fuscum* Neumann, 1907 (Acari: Ixodidae), a rare South America tick confirmed in Brazil. *Systematic Parasitology*, 61:85–92.
- Barros-Battesti, D.M., Arzua, M., and Bechara, G.H. 2006. *Carrapatos de importância médico-veterinária da região Neotropical. Um guia ilustrado para identificação de espécies*. Vox/ICTTD-3/Bu-tantan, São Paulo, 223 pp.
- Bequaert, J.C. 1932. On the ornate nymphs of the genus *Amblyomma*. *Zeitschrift für Parasitenkunde*, 4: 776–783.
- Blair, P.J., Jiang, J., Schoeler, G.B., Moron, C., Anaya, E., Cespedes, M., Cruz, C., Felices, V., Guevara, C., Mendoza, L., Villaseca, P., Sumner, J.W., Richards, A.L., and Olson, J.G. 2004. Characterization of spotted fever group rickettsiae in flea and tick specimens from Northern Peru. *Journal of Clinical Microbiology*, 42: 4961–4967.
- Bloemer, S.R., Russell, C.L., and Keirans, J.E. 1987. *Amblyomma calcaratum* (Acari: Ixodidae), a Central and South American tick, found in Kentucky, USA. *Journal of Medical Entomology*, 24: 117.
- Boero, J.J. 1957. *Las garrapatas de la república Argentina (Acarina — Ixodoidea)*. Departamento Editorial — Universidad de Buenos Aires, Buenos Aires, 113 pp.
- Burridge, M.J., Simmons, L.A., Allan, S.A. 2000. Introduction of potential heartwater vectors and other exotic ticks into Florida on imported reptiles. *Journal of Parasitology*, 86: 700–704.
- Caceres, A. G., Beati, L., and Keirans, J.E. 2002. First evidence of the occurrence of *Amblyomma calcaratum* Neumann, 1899 in Peru. *Revista peruana de biología*, 9: 116–117.
- Cerny, V. 1966. Nuevas garrapatas (Ixodoidea) en aves y reptiles de Cuba. *Poeyana, Serie A*, 26:1–10.
- Cerny, V. 1969. Nuevos conocimientos sobre la ixodofauna cubana. *Torreia*, 21:1–12.
- Clifford, C.M., and Kohls, G.M. 1961. Description of the female of *Dermacentor latus* Cooley and of *Amblyomma albopictum* Neumann (Acarina — Ixodidae). *The Journal of Parasitology*, 48: 486–489.
- Cooley, R.A., and Kohls, G.M. 1944. The genus *Amblyomma* in the United States. *The Journal of Parasitology*, 30: 77–111.
- Dunn, L.H. 1933. Two new species of ticks from Panama (*Amblyomma tapirellum* and *A. pecarium*). *Parasitology*, 25:353–358.
- Durden, L.A., and Keirans, J.E. 1996. Host-parasite coextinction and the plight of tick conservation. *American Entomologist*, 42: 87–91.
- Durden, L.A., and Knapp, C.R. 2005. Tick parasitizing reptiles in the Bahamas. *Medical and Veterinary Entomology*, 19:326.
- Estrada-Peña, A., Guglielmone, A. A., Mangold, A. J. 2004. The distribution and ecological «preferences» of the tick *Amblyomma cajennense* (Acari: Ixodidae), an ectoparasite of humans and other mammals in the Americas. *Annals of Tropical Medicine and Parasitology*, 98:283–292.
- Fairchild, G.B., Kohls, G.M., and Tipton, V.J. 1966. The ticks of Panama (Acarina: Ixodoidea). In: W.R. Wenzel and V.J. Tipton (Eds.). *Ectoparasites of Panama*, Field Museum of Natural History, Chicago, pp. 167–219.
- Forlano, M., Scofield, A., Elisei, C., Fernandes, K.R., Ewing, S.A., and Massard, C.L. 2005. Diagnosis of *Hepatozoon* spp. in *Amblyomma ovale* and its experimental transmission in domestic dogs in Barzil. *Veterinary Parasitology*, 134: 1–7.
- González-Acuña, D., Venzal, J., Keirans, J.E., Guglielmone, A.A. 2003. The genus *Amblyomma* Koch, 1844 (Acari: Ixodidae) in Chile, with new records of *A. argentinae* Neumann, 1904 and *A. tigrinum* Koch, 1844. *Systematic & Applied Acarology*, 8: 85–88.
- González-Acuña, D., Venzal, J., Skewes-Ramm, O., Rubilar-Contreras, L., Dausgschies, A., and Guglielmone, A.A. 2004. First record of immature stages of *Amblyomma tigrinum* (Acari: Ixodidae) on wild birds in Chile. *Experimental & Applied Acarology*, 33: 153–156.
- Guglielmone, A.A., Beati, L., Barros-Battesti, D.M., Labruna, M.B., Nava, S., Venzal, J.M., Mangold, A.J., Szabó, M.P.J., Martins, J.R., González-Acuña, D., and Estrada-Peña, A. 2006. Ticks (Ixodidae) on humans in South America. *Experimental & Applied Acarology*, 40: 83–100.
- Guglielmone, A.A., Estrada-Peña, A., Keirans, J.E., and Robbins, R.G. 2003a. *Ticks (Acari: Ixodida) of the Neotropical Zoogeographic Region*. Atalanta, Houten, 173 pp.
- Guglielmone, A.A., Estrada-Peña, A., Luciani, C.A., Mangold, A.J., and Keirans, J.E. 2003b. Hosts and distribution of *Amblyomma auricularium* (Conil 1878) and *Amblyomma pseudoconcolor* Aragão, 1908 (Acari: Ixodidae). *Experimental & Applied Acarology* 29: 131–139.

- Guglielmone, A.A., Estrada-Peña, A., Mangold, A.J., Barros-Battesti, D.M., Labruna, M.B., Martins, J.R., Venzal, J.M., Arzua, M., and Keirans, J.E. 2003c. *Amblyomma aureolatum* (Pallas, 1772) and *Amblyomma ovale* Koch, 1844 (Acari: Ixodidae): hosts, distribution, and 16S rDNA sequences. *Veterinary Parasitology*, 113: 273–288.
- Guglielmone, A.A., and Hadani, A. 1985. *Amblyomma neumanni* Ribaga, 1902: su nomenclatura y taxonomia. *Veterinaria Argentina*, 2: 721–728.
- Guglielmone, A.A., Luciani, C.A., and Mangold, A.J. 2001. Aspects of the ecology of *Amblyomma argentiniae* Neumann, 1904 [= *Amblyomma testudinis* (Conil, 1877)] (Acari: Ixodidae). *Systematic & Applied Acarology, Special Publications*, 8:1–12.
- Guglielmone, A.A., Mangold, A.J., and Keirans, J.E. 1990. Redescription of the male and female of *Amblyomma parvum* Aragão, 1908, and description of the nymph and larva, and description of all stages of *Amblyomma pseudoparvum* sp. n. (Acari: Ixodida: Ixodidae). *Acarologia*, 31: 143–159.
- Guzmán-Cornejo, C., Pérez, T.M., Nava, S., and Guglielmone, A.A. 2006. Confirmation of the presence of *Amblyomma triste* Koch, 1844 (Acari: Ixodidae) in Mexico. *Systematic & Applied Acarology*, 11: 47–50.
- Hilburn, L.R., Gunn, S.J., and Castillo, C. 1989. Comparison of isozyme phenotypes of the morphologically similar ticks *Amblyomma cajennense* and *A. imitator* (Acari: Ixodidae) from South Texas. *Journal of Medical Entomology*, 26: 23–29.
- Hirst, S. and Hirst, L.F. 1910. Description of five new species of ticks (Ixodidae). *Annals and Magazine of Natural History*, Ser.8, 6: 299–308.
- Hoffmann, A. M. 1946. *Amblyomma boneti* n. sp. de Mexico (Acarina: Ixodidae). *Revista del Instituto de Salubridad y Enfermedades Tropicales*, 7: 207–219.
- Horak, I.G., Camicas, J.-L., and Keirans, J.E. 2002. The Argasidae, Ixodidae, and Nuttalliellidae (Acari: Ixodida): a world list of valid tick names. *Experimental & Applied Acarology*. 28: 25–54.
- Jones, E.K., Clifford, C.M., Keirans, J.E., and Kohls, G.M. 1972. The ticks of Venezuela (Acarina: Ixodoidea) with a key to the species of *Amblyomma* in the western hemisphere. *Brigham Young University Science Bulletin, Biological. Series*, 17: 1–40.
- Keirans, J.E. 1972. Redescription of *Amblyomma fulvum* Neumann, 1899 (Acarina: Ixodidae), a parasite of the giant anaconda in Northern South America. *Journal of Medical Entomology*, 9: 138–139.
- Keirans, J.E. 1985. *Amblyomma antillarum* Kohls, 1969 (Acari: Ixodidae): description of the immature stages from the rock iguana, *Iguana pinguis* (Sauria: Iguanidae) in the British Virgin Islands. *Proceedings of the Entomological Society of Washington*, 87: 821–825.
- Keirans, J.E., Hoogstraal, H., and Clifford, C.M. 1973. *The Amblyomma* (Acarina: Ixodidae) parasitic on giant tortoises (Reptilia: Testudinidae) of the Galapagos Islands. *Annals of the Entomological Society of America*, 66: 673–688.
- Keirans, J.E., and Klompen, J.S.H. 1996. *Amblyomma quadricavum* (Schulze) (new combination), and *Amblyomma arianae* Keirans and Garris, a new junior synonym of *Amblyomma quadricavum*. *Proceedings of the Entomological Society of Washington*, 98: 164–165.
- Keirans, J.E., and Oliver J.H. Jr. 1993. First description of the male and redescription of the immature stages of *Amblyomma rotundatum* (Acari: Ixodidae), a recently discovered tick in the U.S.A. *The Journal of Parasitology*, 79: 860–865.
- Kohls, G.M. 1956. Concerning the identity of *Amblyomma maculatum*, *A. tigrinum*, *A. triste*, and *A. ovatum* of Koch, 1844. *Proceedings of the Entomological Society of Washington*, 58: 143–147.
- Kohls, G.M. 1958. *Amblyomma imitator*, a new species of tick from Texas and Mexico, and remarks on the synonymy of *A. cajennense* (Fabricius) (Acarina: Ixodidae). *The Journal of Parasitology*, 44: 430–433.
- Kohls, G.M. 1969. A new species of *Amblyomma* from iguanas in the Caribbean (Acarina: Ixodidae). *Journal of Medical Entomology*, 6: 439–442.
- Labruna, M.B., Camargo, L.M., Terrassini, F.A., Schumaker, T.T.S., and Camargo, E.P. 2002. Notes on parasitism by *Amblyomma humerale* (Acari: Ixodidae) in the State of Rondônia, Western Amazon, Brazil. *Journal of Medical Entomology*, 39: 814–817.
- Labruna, M.B., Keirans, J.E., Camargo, L.M.A., Ribeiro, A.F., Martins, R.S., and Camargo, E.P. 2005. *Amblyomma latepunctatum*, a valid tick species (Acari: Ixodidae) long misidentified with both *Amblyomma incisum* and *Amblyomma sculpturatum*. *The Journal of Parasitology*, 91: 527–541.
- Labruna, M.B., McBride J.W., Bouyer, D.H., Camargo, L.M.A., Camargo, E.P., and Walker, D.H. 2004a. Molecular evidence for a spotted fever group *Rickettsia* species in the tick *Amblyomma longirostre* in Brazil. *Journal of Medical Entomology*, 41: 533–537.
- Labruna, M.B., Whitworth, T., Horta, M.C., Bouyer, D.H., McBride, J.W., Pinter, A., Popov, V., Genari, S.M., Walker, D.H. 2004b. *Rickettsia* species infecting *Amblyomma cooperi* ticks from an area in the State of São Paulo, Brazil, where Brazilian spotted fever is endemic. *Journal of Clinical Microbiology*, 42: 90–98.
- Lampo, M., Rangel, Y., and Mata, A. 1997. Genetic markers for the identification of two tick species, *Amblyomma dissimile* and *Amblyomma rotundatum*. *Journal of Parasitology*, 83: 382–386.
- Lord, C.C., and Day, J.F. 2000. First record of *Amblyomma auricularium* (Acari: Ixodidae) in the United States. *Journal of Medical Entomology*, 37: 977–978.

- Mendoza-Uribe, L., and Chávez-Chorocco, J. 2004. Amplificación geográfica de siete especies de *Amblyomma* (Acari: Ixodidae) y primer reporte de *A. oblongoguttatum* Koch, 1844 para Perú. *Revista peruana de Entomología*, 44: 69–72.
- Morshed, M.G., Scott, J.D., Keerthi, F., Beati, L., Mazzerolle, D.F., Geddes, G. Durden, L.A. 2005. Migratory songbirds disperse ticks across Canada, and first isolation of the Lyme disease spirochete, *Borrelia burgdorferi*, from the avian tick, *Ixodes auritus*. *The Journal of Parasitology*, 91: 780–790.
- Nava, S., Mangold, A. J., and Guglielmone, A.A. 2006. The natural hosts for larvae and nymphs of *Amblyomma neumanni* and *Amblyomma parvum* (Acari: Ixodidae). *Experimental & Applied Acarology*, 40: 123–131.
- Need, J.T., Dale, W.E., Keirans, J.E., Dasch, G.A. 1991. Annotated list of ticks (Acari: Ixodidae: Argasidae) reported in Perú: distribution, hosts, and bibliography. *Journal of Medical Entomology*, 28: 590–597.
- Neumann, L.G. 1899. Révision de la famille des Ixodidés. *Mémoires de la Société de Zoologie de France*, 12: 211–217.
- Oliver, J.H., Hayes, M.P., Keirans, J.E., and Lavender, D.R. 1993. Establishment of the foreign parthenogenetic tick *Amblyomma rotundatum* (Acari: Ixodidae) in Florida. *The Journal of Parasitology*, 79: 786–790.
- Paddock, C.D., Sumner, J.W., Comer, J.A., Zaki, S.R., Goldsmith, C.S., Goddard, J., McLellan, S.L.F., Tamminga, C.L., and Ohl, C.A. 2004. *Rickettsia parkeri*: a newly recognized cause of spotted fever rickettsiosis in the United States. *Clinical Infectious Diseases*, 38: 805–811.
- Pérez Viguera, I. 1934. Description de la hembra de *Amblyomma albopictum* Neumann, 1899. *Revista de la Universidad de la Habana*, 3: 128–129.
- Pinter, A., Dias, R.A., Gennari, S.M., and Labruna M. B. 2004. Study of the seasonal dynamics, life cycle, and host specificity of *Amblyomma aureolatum* (Acari: Ixodidae). *Journal of Medical Entomology*, 41: 324–332.
- Pinter, A. and Labruna, M.B. 2006. Isolation of *Rickettsia rickettsii* and *Rickettsia bellii* in cell culture from the tick *Amblyomma aureolatum* in Brazil. *Annals of the New York Academy of Science*, 1078: 523–529.
- Robinson L.E. 1926. *Ticks. A monograph of the Ixodoidea. Part IV. The genus Amblyomma*. Cambridge University Press, London, 302 pp.
- Santos Dias, J.A.T. 1958. Notas Ixodológicas IV. Estudio de alguns espécimes — tipo de Schulze em coleção no Museu de Hamburgo. *Memorias y Estudios do Museu Zoológico, Universidad da Coimbra*, 250: 1–15.
- Schulze, P. 1936. The Norwegian zoological expedition to the Galapagos Islands 1925, conducted by Alf Wollebaek. XIII. Die Ixodoidea der Galapagos-Inseln. *Meddelelser fra det Zoologiske Museum, Oslo*, 45: 155–162.
- Schulze, P. 1941. Neues über brasilianische Amblyommen. *Zoologischer Anzeiger*, 134: 93–104.
- Scott, J.D., Fernando, K., Banerjee, S.N., Durden, L.A., Byrne, S.K., Banerjee, M., Mann, R.B., Morshed, M.G. 2001. Birds disperse ixodid (Acari: Ixodidae) and *Borrelia burgdorferi*-infected ticks. *Journal of Medical Entomology*, 38: 493–500.
- Tonelli Rondelli, M. 1937. Ixodoidea. Parte I. *Amblyomma ovale* Koch, *Amblyomma cajennense* Fabricius e le specie a loro affini nuove o poco note. *Rivista di Parassitologia*, 1: 273–300.
- Tonelli Rondelli, M. 1939. Ixodoidea. Parte II. Contributo alla conoscenza della fauna ixodologica Sud-Americana. *Rivista di Parassitologia*, 3:39–55.
- Vargas, L., and Hoffmann, A. 1952. *Amblyomma castanedai* n. sp. de Mexico (Ixodidae). *La Prensa Médica Mexicana*, 17: 128–130.
- Venzal, J.M., Castro, M., Claramunt, S., Guglielmone, A.A. 2003a. Primer registro de *Amblyomma longirostre* (Acari: Ixodidae) en Uruguay. *Parasitologia Latinoamericana*, 58: 72–74.
- Venzal, J.M., Guglielmone, A.A., Estrada-Peña, A., Cabrera, P.A., and Castro, O. 2003b. Ticks (Ixodida: Ixodidae) parasitising humans in Uruguay. *Annals of Tropical Medicine and Parasitology*, 97: 769–772.
- Venzal, J.M., Portillo, A., Estrada-Peña, A., Castro, O., Cabrera P.A., and Oteo, J.A. 2004. *Rickettsia parkeri* in *Amblyomma triste* from Uruguay. *Emerging Infectious Diseases*, 10: 1493–1495.
- Voltzit, O.V. and Keirans, J.E. 2002. A review of Asian *Amblyomma* species (Acari, Ixodida, Ixodidae). *Acarina*, 10: 95–136.
- Voltzit, O.V. and Keirans, J.E. 2003. A review of African *Amblyomma* species (Acari, Ixodida, Ixodidae). *Acarina*, 11: 135–214.
- Walker, J.B., and Olwage, A. 1987. The tick vectors of *Cowdria ruminantium* (Ixodoidea, Ixodidae, genus *Amblyomma*) and their distribution. *The Onderstepoort Journal of Veterinary Research*, 54: 353–379.