

SHORT COMMUNICATION

Ticks parasitizing reptiles in the Bahamas

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Abstract. Two species of reptile ticks, *Amblyomma dissimile* Koch and *Amblyomma torrei* Pérez Vigueras (Acari: Ixodidae), are reported from the Bahama Islands for the first time. The widespread neotropical (including the Caribbean and southern Florida) *A. dissimile* was recovered on Andros Island from three species of reptiles all for the first time: the Andros iguana *Cyclura cychlura cychlura* Cuvier, the Andros curly tail lizard *Leiocephalus carinatus coryi* Schmidt, and the Andros boa *Epicrates striatus fowleri* Sheplan and Schwartz. The iguana tick *A. torrei*, previously known only from Cuba, Puerto Rico and the Cayman Islands, was recovered in the Exuma Islands from the Exuma iguana *Cyclura cychlura figginsi* Barbour. Mean numbers of ticks per host were as high as 36.6 on Mangrove Cay, Andros Island, and 25.8 on Pasture Cay in the Exuma Islands.

Key words. *Amblyomma dissimile*, *Amblyomma torrei*, reptiles, ticks, Bahamas.

Ixodid (hard) ticks parasitizing reptiles in the Bahamas have not previously been documented. However, there are numerous reports of ixodids parasitizing reptiles in Florida to the west and north-west, and from Cuba and some other Caribbean islands to the south and south-east. In southern Florida, a variety of reptiles are parasitized by *Amblyomma dissimile* Koch and *Amblyomma rotundatum* Koch (Oliver *et al.*, 1993; Keirans & Durden, 1998). *Amblyomma rotundatum* was apparently introduced into Florida (Oliver *et al.*, 1993). The other reptile-associated ixodid tick native to Florida (and some other south-eastern U.S. states) is *Amblyomma tuberculatum* Marx, which, as an adult, is a host-specific ectoparasite of the gopher tortoise, *Gopherus polyphemus* (Daudin). Although several additional ixodid ticks have been introduced into Florida on exotic reptiles (Burridge *et al.*, 2000; Burridge & Simmons, 2003), unlike *A. rotundatum*, none of these species has yet become established.

A relatively small number of ixodid species, all belonging to the genus *Amblyomma*, is known to parasitize Caribbean reptiles. *Amblyomma quadricavum* (Schulze) (junior synonyms: *Aponomma quadricavum* Schulze, and *Amblyomma*

ariana Keirans & Garris) is known to parasitize colubrid and boid snakes in Haiti, Cuba, Puerto Rico and Jamaica (Schulze, 1941; Keirans & Klompen, 1996). A suite of four species of ticks is known to parasitize lizards (mainly iguanas) in the Caribbean region (Keirans, 1985). These are: *Amblyomma cruciferum* Neumann known from Haiti and Puerto Rico (Robinson, 1926; Keirans & Garris, 1986); *Amblyomma torrei* Pérez Vigueras known from the Cayman Islands, Cuba and Puerto Rico (Whittick, 1939; Cerný, 1966; Maldonado Capriles & Medina Gaud, 1977; Guglielmone *et al.*, 2003); *Amblyomma antillarum* Kohls known from the British Virgin Islands, Dominica and East Caicos Island (in the Turks and Caicos group) (Kohls, 1969; Keirans, 1985; Guglielmone *et al.*, 2003); and *Amblyomma albopictum* Neumann known from Cuba, the Dominican Republic and Haiti (Robinson, 1926; Morel, 1967; Guglielmone *et al.*, 2003). In addition, both *A. dissimile* and *A. rotundatum* parasitize various reptiles in the Caribbean region (Robinson, 1926). Burridge & Simmons (2003) and Guglielmone *et al.* (2003) cite records of *A. dissimile* from the Caribbean islands of Antigua and Barbuda, Barbados, Cuba, Grenada, Guadeloupe, Hispaniola, Jamaica, St. Lucia, and Trinidad and Tobago, and of *A. rotundatum* from the islands of Antigua, Barbados, Cuba, Grenada, Guadeloupe, Jamaica, Martinique, St. Lucia, and Trinidad and Tobago.

In order to better document the tick fauna of the Bahamas, ticks were collected from reptiles in 1997 and

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2004 as part of a larger study of reptile ecology. Ticks were counted and removed from lizards while they were restrained to collect morphometric data. Ectoparasite loads from all iguanas were recorded but we did not preserve ticks from each animal in 2004. Instead we collected all ticks from a random selection of iguanas including both sexes and all age classes. We report tick loads from all 2004 recorded iguanas and from collected samples from the other reptile representatives. Ticks were collected from two main sites in the Bahamas: Andros Island and the Exuma Islands. Specific sampling localities on Andros Island were Mangrove Cay (24°09'03" N, 77°43'30" W), Sandy Cay (24°05'24" N, 77°41'44" W) and Linder Cay (24°10'14" N, 77°41'40" W). Specific localities in the Exuma Islands were White Bay Cay (23°47'00" N, 76°08'50" W), Noddy Cay (23°47'00" N, 76°08'30" W), and Pasture Cay (24°19'22" N, 76°33'53" W). Ticks were stored in labelled vials containing 70% ethanol and later identified visually at 15–45× magnification using illustrations or keys in Robinson (1926), Whittick (1939), Clifford *et al.* (1961) and Keirans & Durden (1998). Tick specimens are deposited in the U.S. National Tick Collection (housed at Georgia Southern University) under accession numbers RML 123069, and RML 123615 to RML 123620.

Table 1 lists the collected ticks recorded during this survey, their host associations, and their infestation parameters. Two species of ticks were recorded, *A. dissimile* and *A. torrei*. Both tick species are recorded from the Bahamas for the first time. Because *A. dissimile* is a widespread ectoparasite of reptiles in the Caribbean region, we were not surprised to find that it is also present in the Bahamas.

However, *A. torrei* has previously been recorded only from Cuba, Puerto Rico and the Cayman Islands.

Amblyomma dissimile was collected from one species of snake, the Andros boa, *Epicrates striatus fowleri* Sheplan and Schwartz, and from two species of lizards, the Andros iguana, *Cyclura cyclura cyclura* Cuvier, and the Andros curly tail lizard, *Leiocephalus carinatus coryi* Schmidt, all on Andros Island (Table 1). *Amblyomma torrei* was collected only from the Exuma iguana, *Cyclura cyclura figginsi* Barbour (Table 1). Previously recorded reptile host associations for these two tick species show that *A. dissimile* parasitizes a wide variety of reptiles (Clifford *et al.*, 1961; Keirans & Durden, 1998) but that *A. torrei* has previously been recorded only from the iguanas *Cyclura nubila* Gray (junior synonym, *Cyclura macleayi* Gray) on Cuba and the Cayman Islands (Whittick, 1939; Cerný, 1966) and *Cyclura cornuta stejnegeri* (Barbour & Noble) on Mona Island, Puerto Rico (Maldonado Capriles & Medina Gaud, 1977). All of the reptile–tick associations recorded here from the Bahamas represent new host–parasite records.

Although sample sizes of individual host taxa were relatively small in this survey, reptiles most intensely parasitized by ticks were *C. cyclura cyclura* from multiple locations on Andros Island (mean per host = 21.3, SE = 3.16, range = 0–90, *N* = 50; parasitized by *A. dissimile*), and *C. cyclura figginsi* on Pasture Cay, Exuma Islands (mean per host = 25.0, SE = 4.16, range = 6–46, *N* = 11; parasitized by *A. torrei*). It is not known whether relatively high tick burdens such as these can adversely affect iguanas or other reptile hosts but laboratory-reared reptiles with large infestations of *A. dissimile* (up to 1800 ticks per

Table 1. Parasitism of reptiles by ticks (*Amblyomma* spp.) in the Bahamas, 1997 and 2004.

Location	Host species	<i>N</i> (hosts)	Tick species	Mean intensity	Infestation range	Total ticks*
1997						
Exuma Islands (White Bay Cay)	<i>Cyclura cyclura figginsi</i>	'multiple hosts'	<i>A. torrei</i>	–	–	26M, 13F, 21N, 8L
Exuma Islands (Noddy Cay)	<i>Cyclura cyclura figginsi</i>	'multiple hosts'	<i>A. torrei</i>	–	–	11M, 17F, 2N
2004						
Andros Island (Mangrove Cay)	<i>Cyclura cyclura cyclura</i>	9	<i>A. dissimile</i>	36.6	11–95	264M, 31F, 34N
Andros Island (Sandy Cay)	<i>Cyclura cyclura cyclura</i>	7	<i>A. dissimile</i>	29.9	6–48	77M, 13F, 40N, 2L
Andros Island (Linder Cay)	<i>Cyclura cyclura cyclura</i>	2	<i>A. dissimile</i>	4.0	4**	7M, 1N
Andros Island (Mangrove Cay)	<i>Leiocephalus carinatus coryi</i>	1	<i>A. dissimile</i>	1.0	1**	1N
Andros Island (Mangrove Cay)	<i>Epicrates striatus fowleri</i>	2	<i>A. dissimile</i>	6.5	5–8	10N, 3L
Andros Island (Linder Cay)	<i>Epicrates striatus fowleri</i>	2	<i>A. dissimile</i>	3.5	2–5	1M, 3N, 3L
Exuma Islands (Pasture Cay)	<i>Cyclura cyclura figginsi</i>	5	<i>A. torrei</i>	25.8	12–38	62M, 28F, 37N, 2L

*M = Male(s), F = Females, N = Nymph(s), L = larvae.

**No variation in infestation numbers was recorded for these two reptile–tick associations.

host) sometimes die (Barnard & Durden, 1999). Similarly, it is not known whether iguana ticks transmit pathogens to their hosts (Barnard & Durden, 1999) but Ball *et al.* (1969) reported laboratory transmission of *Hepatozoon fusifex* Ball, Chao & Telford to the common boa, *Boa constrictor* (L.), by *A. dissimile*.

In conclusion, we have documented two species of reptile ticks from the Bahamas for the first time. The widespread neotropical tick *A. dissimile* was recorded for the first time from three reptile taxa on Andros Island, and the eastern Caribbean iguana tick *A. torrei* was recorded for the first time from one species of iguana on the Exuma Islands.

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