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# IXODID TICK (ACARINA : METASTIGMATA) FAUNA OF ANDAMAN AND NICOBAR ISLANDS

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ABSTRACT

Ten species of ixodid ticks belonging to six genera collected from Andaman and Nicobar Islands are reportrd here. Three genera and three species reported here are the first record from A & N Islands.

## Introduction

The ixodid ticks are very important as disease carriers in man and domesticated animals. Though the ixodid tick fauna is well represented in India by 86 species distributed over 9 genera, but the same is very poorly known from Andaman and Nicobar Islands. So far seven species belonging to four genera are reported through works of Nuttall and Warburton (1915), Sharif (1928) and Hoogstraal (1970).

The present work is based on the collections made by the survey parties from Zoological Survey of India. A total of ten species belonging to six genera are treated in this communication, of these three genera and three species are reported for the first time from Andaman and Nicobar Islands. Additional data on the measurements of different forms are given. All the measurements in the text are in millimetres. All the collections are deposited in the National Collections of Zoological Survey of India, Calcutta.

*Key to the genera from* Andaman & Nicobar Islands

| | | | |
|---|---|---|---|
| 1. | Eyes present ... ... | 2 | |
| — | Eyes absent ... ... | 5 | |
| 2. | Capitulum long with long narrow palps ; male without ventral shields ; scutum usually ornate ; eyes generally flat ... | | *Amblyomma* Koch |
| — | Capitulum short with short broad palps ; male with or without ventral shields ; scutum ornate or inornate ; eyes flat or spherical ... ... | 3 | |
| 3. | Basis—capituli dorsally rectangular, no lateral saliences ; scutum generally ornate ; male without ventral shields, coxa IV longer than others ... | | *Dermacentor* Koch |
| — | Basis—capituli dorsally hexagonal, lateral saliences present; scutum generally inornate ; male with four ventral shields... ... | 4 | |
| 4. | Spiracle oval ; festoons and anal groove faint or obsolete ; no setiferous ventral plate on palpal article I ... | | *Boophilus* Curtice |
| — | Spiracle sub-triangular or comma-shaped ; festoons and anal groove well developed ; setiferous ventral plate on palpal article I .. | | *Rhipicephalus* Koch |

| | | |
|---|---|---|
| 5. Capitulum long, no lateral salience on palpal article II ; dorsal retroverted spur absent on trochanter I ; coxa I usually bifid | ... | *Aponomma* Neumann |
| Capitulum short, with lateral salience on palpal article II ; blade-like dorsal retroverted spur on trochanter I ; coxa I never bifid | ... | *Haemaphysalis* Koch |

*Key to the species of the genus*

*AMBLYOMMA Male and Female*

| | | |
|---|---|---|
| Scutum ornamented ; coxa I with two unequal spurs ; hypostome 3/3 | ... | *helvolum* |
| Scutum not ornamented ; coxa I with two sub-equal spurs ; hypostome 4/4 | ... | *nitidum* |

### **Amblyomma helvolum** Koch

*Amblyomma helvolum* Koch, 1844, *Arch. Naturgesh* **10** : 230.

*Amblyomma helvolum*, Robinson, 1926, Cambridge Univ. Press, 216-219.

*Amblyomma helvolum*, Sharif, 1928, *Rec. Indian Mus.*, **30** : 325-326.

*Measurements* : Male—3·2×2·6–2·5×2·2, Capitlum—0·7–0·8 ; female—5·4×3·4–3·9×2·9. Capitulum—0·8–0·7 ; nymph—1·8×0·7 ; nymph—1·8×1·5–1·6×1·4, Capitulum—0·4–0·3.

*Material examined* : 7 ♂♂, 2 ♀♀, Little Andaman Isl., Ingite Kudda forest, from unknown host, 28.II.1961, coll. *A. Daniel* ; 12 ♂♂, 2 ♀♀, 6 NN, Great Nicobar Isl., Campbell bay, from unknown host, 13.III. 1966, coll. *A. Daniel.*

*Hosts* : *Python reticulatus, Zamensis mucosus, Zamensis korros, Varanus salvator, Varanus nebulosus, Coluber onicephalus, Coluber radiatus, Geomyda grandis, Triglyphedon dendrophylum,* Iguana.

*Distribution in India* : Andaman and Nicobar Islands.

*Remarks* : This species is mostly parasitic on large snakes and lizards and causing discomforts to the hosts.

### **Amblyomma nitidum** Hirst and Hirst

*Amblyomma nitidum* Hirst and Hirst, 1910, *Ann. Mag. nat. Hist.*, 8 (vi) : 304-305.

*Amblyomma nitidum*, Sharif, 1928, *Rec. Indian Mus.*, **30** : 326-328.

*Measurements* : Male—5·7×4·1–5·0×3·5. Capitulum—0·9 ; female—6·9×4·9–6·0×4·2, Capitulum—1·0 ; nymph—3·2×2·2–3·0×2·0, Capitulum—0·3 ; larva—0·6–0·4.

*Material examined* : 2♂♂, 4♀♀, 5 NN, 1 L, Andaman Isl., Port Blair, from *Laticauda laticaudatus*, 31.V.1926, coll. *Baley de Castro* (Z. S. I. Reg. No. 65/18).

*Hosts* : Sea snakes (*Laticauda colubrina, Laticauda laticaudatus, Laticauda semifasciatus*).

*Distribution in India* : Andaman Island.

*Remarks* : The sea snakes under the genus *Laticauda* are parasitized by this species of tick while resting in mangroove tree holes or in rock crevices out of water at day time.

### **Aponomma lucasi** Warburton

*Aponomma gervaisi* var. *lucasi* Warburton, 1910, *Parasitology*, **3** : 406-407.

*Aponomma gervaisi* var. *lucasi*, Sharif, 1928, *Rec. Indian Mus.*, **30** : 337-340.

*Aponomma lucasi*, Hoogstraal *et al.*, 1968, *Ann. ent. Soc. Am.*, **61** (3) : 722-729.

*Measurements* : Male—3·4×2·8–2·8×2·4, Capitulum—1·0 ; female—2·9×2·4, Capitulum—0·4.

*Material examined* : 4♂♂, Nicobar Isl., Nancowry, from *Varanus bengalensis*, November, 1921, coll. *R. B. S. Sewell* (Z. S. I. Reg. No. 20/18) ; 6♂♂, 1♀, Andaman Isl., Narcondam, from *Varanus salvator*, coll. *T. R. Mallet* (Z. S. I. Reg. No. 933/17).

*Hosts* : *Bangarus fasciatus, Gongilophis conicus, Naia bungards, Naia tripudians, Python molurus, Python reticulatus, Varanus, nebulosus, Varanus salvator, Vipera russellii, Bos frontalis, Ovis nahura.*

*Distribution in India* : Andaman and Nicobar Islands, Assam, Bihar, Madhya Pradesh, Orissa, Uttar Pradesh, West Bengal.

*Remarks* : The species is recorded for the first time from Andaman Island. The materials from Nicobar Island studied here were recorded by Sharif (1928). But he did not mention the name of the collector and Registration number which are given in the present communication.

### **Boophilus microplus** (Canestrini)

*Haemaphysalis micropla* Canestrini, 1887, *Atti Soc. veneto. trent. Sci. Nat.*, **11** : 104.

*Rhipicephalus micropla* Canestrini, 1890, *Padova*, **4** : 493.

*Boophilus australis* Sharif, 1928, *Rec. Indian Mus.*, **30** : 284-289.

*Boophilus microplus* (Canestrini), Fairchild, 1943, *Am. J. trop. Med.*, **23** (6) : 586.

*Boophilus microplus*, Hoogstraal, 1956, *African Ixodoidea*, **1** : 295-296, 317-324.

*Boophilus microplus*, Arthur, 1960, *Ticks*, V : 207-214.

*Measurements* : Female—7·5×5·2–5·0×3·3, Capitulum—0·3–0·4 ; larva—0·6×0·4–0·5×0·4.

*Material examined* : 75 LL, Car Nicobar Isl., from vegetation, 25.XII.1972, coll. *S. K. Gupta* ; 45 LL, Andaman Isl., Rangat Isl., Yerrata, from grass, 8.I.1973, coll. *S. K. Gupta* ; 13 ♀♀, North Andaman Isl., Mayabunder, from cow, 11.V. 1971, coll. *B. K. Tikader*.

*Hosts* : Chicken Pheasant, cattle, horse, sheep, camel, deer, nilgai, buffalo, dog, vegetation.

*Distribution in India* : Andaman and Nicobar Islands, Assam, Bihar, Gujarat, Maharashtra, Madhya Pradesh, Meghalaya, Orissa, Rajasthan, Tamil Nadu, Uttar Pradesh, West Bengal.

*Remarks* : *B. microplus* is reported here for the first time from Nicobar Island. This species is widely distributed throughout the country and most important pest of cattle. It has got considerable veterinary importance causing red water fever, anaplasmosis or gall sickness to cattle, Babesiosis to cattle and sheep and biliary fever to horses.

### **Dermacentor auratus** Supino

*Dermacentor auratus* Supino, 1897, *Atti. Soc. veneto-trent. Sci. Nat.*, **3** (2) : 235.

*Dermacentor auratus*, Sharif, 1928, *Rec. Indian Mus.*, **30** : 292-297.

*Measurements* : Male—6·5×4·4–3·2×2·2, Capitulum—1·0 ; female—5·5×4·1–3·5×2·5, Capitulum—0·8 ; nymph—2·6×1·1–1·8×0·9, Capitulum—0·3.

*Material examined* : 2 NN, South Andaman Isl., Wrafter's Creak, Baratang, from chital, 16.III.1964, coll. *B. S. Lamba* ; 11♂♂, 5 ♀♀, 3 NN, Baratang, from wild pig, 18.III. 1964, coll. *B. S. Lamba* ; 2 NN, Mt. Harriet range, from man, 1.IV.1964, coll. *B. S. Lamba* ; 1 N, Chiriatapu, from civet cat, 11.IV.1964, coll. *B. S. Lamba* ; 1♂, 1 ♀, Havloc Isl., from wild pig, 18.IV.1971, coll. *B. K. Tikader* ; 1 ♀, Smith Isl. (near forest

dept.), from unknown host, 27.IV.1971, coll. *B. K. Tikader*.

*Hosts* : Bear, chital, civet cat, deer, *Felis pardus*, *man*, *Melursus ursinus*, nias pig, wild boar, wild pig.

*Distribution in India* : Andaman Island, Assam, Arunachal Pradesh, Bihar, Karnataka, Orissa, Uttar Pradesh, West Bengal.

*Remarks* : This species is widely distributed throughout India, but it is recorded here for the first time from Andaman and Nicobar Islands. A single virus strain of KFD has been isolated from the species of *Dermacentor* in India (Rao, 1964).

*Key to the species of the genus HAEMAPHYSALIS Male and Female*

| | | | |
|---|---|---|---|
| 1. | Coxae I and IV each with a long spur ... | | *spinigera* |
| — | Coxae I and IV with normal and inconspicuous spur ... | ... | 2 |
| 2. | Scutum elongate oval with inconspicuous punctations ; palpal article 3 with long dorsal spur ... | | *bispinosa* |
| — | Scutum oval or wider than long with medium sized or large punctations ; palpal article 3 with short dorsal spur ... | ... | 3 |
| 3. | Palpi compact ; palpal article 2 with internodorsal protuberance | | ...*papuana kinneari* |
| — | palpi more or less salient ; palpal article 2 without any protuberance ... | | *wellingtoni* |

## **Haemaphysalis bispinosa** Neumann

*Haemaphysalis bispinosa* Neumann, 1897, *Mem. Soc. Zool. Fr.*, **10** : 341-342.

*Haemaphysalis bispinosa*, Sharif, 1928, *Rec. Indian Mus.*, **30** : 255-258.

*Haemaphysalis bispinosa*, Hoogstraal and Trapido, 1966, *J. Parasit.*, **52** : 1188-1192.

*Measurements* : Male—2·1×1·8–1·8×1·1, Capitulum—0·4–0·2 ; female—3·5×2·1–2·4×1·3, Capitulum—0·5–0·4 ; nymph—1·8–1·1, Capitulum—0·2.

*Material examined* : 1 ♀, Andaman Isl., Port Blair, Chabagicha, from rotten wood, 23.V.1971, coll. *B. S. Lamba* ; 31 ♂♂, 3 ♀♀, 11 NN, Andaman Isl., Baratang, from spotted deer and chital, 14.III.1964, coll. *B. S. Lamba* ; 4 ♀♀, Nicobar Isl,. Kamorta, from pig, 19.III.1971, coll. *B. K. Tikader* ; 7 ♂♂, 2 NN, North Andaman Isl., Diglipur, from deer, 25.IV.1971, coll. *B. K. Tikader* ; 4 ♂♂, 1 ♀, Andaman Isl., Port Blair, from deer, 23.V.1971, coll. *B. K. Tikader* ; 6 ♂♂, 7 ♀♀, Andaman Isl., Rangat ; Yerrata, from cow, 8.I.1973, coll. *S. K. Gupta* ; 1 ♂, 4 ♀♀, Andaman Isl., Mayabunder, from buffalo, 8.I.1973, coll. *S. K. Gupta*.

*Hosts* : Buffalo, cat, cattle, dog, goat, horse, monkey, pony, sheep, tiger.

*Distribution in India* : Andaman and Nicobar Islands, Arunachal Pradesh, Bihar, Karnataka, Madhya Pradesh, Maharashtra, Orissa, Punjab, Tamil Nadu, Uttar Pradesh, West Bengal.

*Remarks* : This species is widely distributed in India and is of considerable economic importance. They are responsible for transmitting the virus causing KFD in domestic animals.

## **Haemaphysalis papuana kinneari** Warburton

*Haemaphysalis kinneari* Warburton, 1913, *Parasitology*, **6** : 127-128.

*Haemaphysalis papuana kinneari* Trapido *et al.*, 1964, *J. Parasit.*, **50** : 179-188.

*Measurements* : Male—3·2×2·1, Capitulum—0·5 ; female—3·1×1·9, Capitulum—0·5.

*Material examined* : 1 ♂, 1 ♀, Great Nicobar Isl., on way to Galathea bay, from vegetation, 4. IV.1966, coll. *H. K. Bhowmick and party.*

*Hosts* : Bonnet monkey, langur, Indian wild boar (*Sus scrofa cristatus*), tiger, wild vegetation.

*Distribution in India* : Andaman and Nicobar Islands, Karnataka.

*Remarks* : This species is reported here for the first time from Andaman and Nicobar Islands. The KFD virus has been isolated from this species (Trapido *et al.*, 1959).

### **Haemaphysalis spinigera** Neumann

*Haemaphysalis spinigera* Neumann, 1897, *Mem. Soc. Zool. Fr.*, **10** : 352-354.

*Haemaphysalis spinigera*, Nuttall and Warburton, 1915, *Ticks* pt. **3** : 447-449.

*Haemaphysalis spinigera*, Sharif, 1928, *Rec. Indian Mus.*, **30** : 262-263.

*Haemaphysalis (Kaiseriana) spinigera*, Ghalsasi and Dhanda, 1974, *Oriental Ins.*, 8 (4) : 505-520.

*Measurements* : Nymph—2·7×1·9–1·5×0·7 ; larva—0·6–0·4.

*Material examined* : 5 NN, 3 LL, Andaman Isl., Mt. Harriet range, from man, 2.IV. 1964, coll. *B. S. Lamba* ; 4 LL, Andaman Isl., Ferrurgunj from vegetation, 15.I.1973, coll. *S. K. Gupta.*

*Hosts* : Panther, bear, tiger, leopard, buffalo, sheep, man, langur, gaur or Indian bison, jungle cat, small Indian civet, black-naped hare, sombar, mouse deer, wild dog, rat, porcupine, squirrel, schrew, mongoose, jungle fowl, crow, pheasant, jungle myna, jungle babbler, peacock, red vented bulbul and white throated ground thrush.

*Distribution in India* : Andaman and Nicobar Islands, Andhra Pradesh, Assam, Karnataka, Kerala, Madhya Pradesh, Maharashtra, Orissa, Tamil Nadu, West Bengal.

*Remarks* : This species is generally occurred in forested areas where the rainfall is heavy to moderate. *H. spinigera* is of great economic importance as the species is mostly parasitic on different birds and mammals. This species is also recognised as the chief vector of KFD virus for man and monkey.

### **Haemaphysalis wellingtoni** Nuttall and Warburton

*Haemaphysalis wellingtoni* Nuttall and Warburton, 1907, *Proc. Camb. phil. Soc. biol. Sci.*, **14** : 392-398.

*Haemaphysalis wellingtoni*, Sharif, 1928, *Rec. Indian Mus.*, **30** : 267-268.

*Measurements* : Male—1·9×1.4, Capitulum—0·4 ; female—5·1×3·1–3·4×2·1, Capitulum—0·5.

*Material examined* : 1 ♂, 2 ♀♀, Andaman Isl., from unknown host, coll. *G. H. F. Nuttall.*

*Hosts* : Langur, bonnet monkey, dog, buffalo, domestic fowl, wild fowl, turkey, goose, few migratory birds.

*Distribution in India* : Andaman Island, Assam, Karnataka, Orissa.

*Remarks* : Rajagopalan *et al.* (1970) isolated the ganjam virus identical to Nairobi sheep disease virus from this species.

### **Rhipicephalus sanguineus** (Latreille)

*Ixodes sanguineus* Latreille, 1806, *Genera Crustaceorum et Insectorum*, **1** : 157.

*Rhipicephalus sanguineus* (Latreille), Koch, 1844, *Arch. Naturgesch.*, **1** : 217-239.

*Rhipicephalus breviceps*, Warburton, 1910, *Parasitolog*, **3** : 398-399.

*Rhipicephalus sanguineus*, Sharif, 1928, *Rec. Indian Mus.*, **30** : 275-279.

*Rhipicephalus sanguineus*, Fairchild, 1943, *Am. J. trop. Med.*, **23** : 583.

*Measurements* : Male—2·4×1·3, Capitulum—0·3.

*Material examined* : 1 ♂, Andaman Isl., Ross Isl., from dog, 23.III.1911, coll. *C. Paiva.*

*Hosts* : Dog, cattle, horse, donkey, wild boar, bear, fox, *Felis marmorata*, *Felis viverrina*, *Canis aureus.*

*Distribution in India* : A & N Isls., Andhra Pradesh, Bihar, Gujarat, Haryana, Madhya Pradesh, Maharashtra, Orissa, Tamil Nadu, West Bengal.

*Remarks* : This species is recorded here for the first time from Andaman and Nicobar Isiands. It is known to transmit boutonneuse fever, Indian tick typhus and Rocky Mountain spotted fever in areas where these diseases occur. This species acts as a vector of Canine piroplasmosis and rickettsiosis. The relapsing fever spirochaete caused by *Borrelia theileri* is transmitted to domestic ruminants by this species. This species is widely known as a vector of *Babesia canis* causing malignant jundice of dogs.

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