

## THE OCCURRENCE OF *AMBLYOMMA CYPRIUM CYPRIUM* (ACARI: IXODIDAE) IN AUSTRALIA, WITH ADDITIONAL RECORDS FROM THE SOUTHWEST PACIFIC<sup>1</sup>

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*Abstract.* *Amblyomma cyprium cyprium* is recorded from Australia (northern Queensland) for the first time and additional records are given for Guam, the Solomon Is, Santa Cruz Is, and the New Hebrides. Collections from Australia, the New Hebrides, and the Solomons confirm that rodents of the genus *Rattus* are hosts for nymphs and larvae. Nymphs and/or larvae also were found on the birds *Gallus gallus*, *Halcyon chloris*, and *Chalcophaps indica* in the New Hebrides and on the marsupial *Phalanger orientalis* in the Solomons. The occurrence of immature stages on birds, rats, and a marsupial and the abundance of feral pigs could explain the widespread distribution of this tick in the SW Pacific.

*Amblyomma cyprium* Neumann is widely distributed on islands of the SW Pacific. Adults have been taken mainly from wild and feral pigs, but also from cattle, buffalo, horses, deer (= *Cervus timorensis* Blainville), and man (Anastos 1950, Kohls 1957, Egerton & Rothwell 1964). There are records of adults from vegetation and from houses (Kohls 1950, 1957). A male of *A. c. aeratipes* Schulze has been collected from a bird (Kohls 1950).<sup>4</sup> This record is less surprising, since the immature stages of *A. c. cyprium* are now known from birds in the New Hebrides.

There is very little specific information on hosts of the nymphs and larvae. Kohls (1950) listed nymphs of *Amblyomma* sp., maybe *cyprium*, from *Rattus* sp. and the Philippine Tree Shrew, *Urogale everetti* (Thomas), from Mindanao. Later he recorded (1953) and then elaborated on (1957) nymphs and larvae, probably *A. cyprium cyprium*, from the Black Rat, *Rattus rattus* (Linnaeus), and rats on Guam. Kohls (1957) referred 28 nymphs and larvae to *A. c. cyprium* from Ponape without listing a host.<sup>5</sup> These specimens may be the same material recorded by Jackson (1962) as probably a new species of *Amblyomma* from *R. rattus* on Ponape.<sup>6</sup> Wilson (1972a), without elaboration, indicated that immature stages of *A. c. cyprium* occurred on rats and small marsupials

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4. Listed as a female by Anastos (1950).
5. The Bishop Museum has a collection of 11 nymphs and 16 larvae with identical data, plus host *R. rattus*. It bears a 1961 Kohls determination label!
6. Jackson (1962) cited F. C. Bishop, USNM, as authority for the identification. He also listed undetermined ticks collected from Polynesian rats.

in New Guinea. Marshall (1976) listed larval instars (=immature specimens) of the same subspecies from the Polynesian Rat, *Rattus exulans* (Peale), Red Jungle Fowl, *Gallus gallus* (Linnaeus), Mangrove Kingfisher, *Halcyon chloris* (Boddaert), and Green-winged Ground Dove, *Chalcophaps indica* (Linnaeus) in the New Hebrides without further details. His material is listed here with the complete data. In addition we record nymphs and/or larvae from *Rattus* sp. in Australia and from *R. exulans* and the Common Phalanger, *Phalanger orientalis* (Pallas), in the Solomon Is.

*A. c. cyprium* has been found on many islands of the SW Pacific including Timor, New Guinea, and the New Hebrides (Anastos 1950, Kohls 1957, Cabrier da Silva 1960). The occurrence of immature stages on birds, rats, and a marsupial, and the abundance of feral pigs would help explain this widespread island distribution. In Australia it has been recorded only from northern Queensland. The insects of this area, particularly from Cape York Peninsula, are known to have much in common with the insect fauna of New Guinea (Taylor 1972) and this is apparently true also for ticks (Roberts 1970, Wilson 1972b). However, it seems likely that *A. c. cyprium* could survive in Australia only after the relatively recent introduction of pigs.

## RECORDS

Material is deposited in the following collections (indicated after each record): AM (The Australian Museum, Sydney); ANIC (Australian National Insect Collection, Division of Entomology, CSIRO, Canberra); BISHOP (Bishop Museum, Honolulu, Hawaii); DPI (Queensland Department of Primary Industries, Townsville); LPL (Long Pocket Laboratories, CSIRO, Indooroopilly); NW (Nixon Wilson); and UQ (University of Queensland, Entomology Department, Brisbane).

AUSTRALIA. Northern Queensland: 2N (engorged), *Rattus* sp., 21.XI.1973, J. Winter (LPL); Oliver Creek via Daintree: 1♂, on vegetation, 1.VI.1974, D. Cook (UQ); Cape York Peninsula, Bamaga, 16–19 km NE (Lockerbie): 1♀ (unfed), deserted house, 23.IV.1973, G.B. Monteith (UQ); 1♀ (engorged), pig, 28–29.X.1978, GP (=G. Phillips) (DPI); 5♀, pig, 29.XI.1978, GP (DPI); 2♂, 8♀, pig, 1.I.1979, GP (DPI).

GUAM. Mt Jumullong Manglo: 1♀, man, 15.XI.1969, D.R. Smith (NW).

NEW HEBRIDES. Aneityum I: Anelcauhat: 2♀, on plastic sheet, 21.VII.1971, G. Robinson (ANIC); 1♀, pig, 23.VII.1971, AGM (=A.G. Marshall) (ANIC); 1♀, man, 24.VII.1971, AGM (ANIC). Efate I: Narabut: 1♂, man, 3.VII.1971, AGM (ANIC); 2♀, man, 4.VII.1971, AGM (ANIC, NW); 1N, *Halcyon chloris*, 4.VII.1971, AGM (ANIC); 2N, *Gallus gallus*, 5.VII.1971, AGM (ANIC); 6N; 3N, 1L, *Rattus exulans*, 23.X.1971, AGM (ANIC, NW); Tagabe: 1♀, man, 12.VII.1971, AGM (ANIC). Erromanga I: Ipotak: 1♀, pig, 6.VIII.1971, AGM (ANIC). Espiritu Santo I: Lovethia: 1♀, on forest floor, 28.VIII.1971, AGM (ANIC). Malekula I: Amok: 3L, *Chalcophaps indica*, 14.X.1971, AGM (ANIC); 1♂, pig, 15.X.1971, AGM (ANIC).

SANTA CRUZ IS. Vanikoro Is: 1 ♂, 2 ♀, wild pig, E. Troughton & A.A. Livingstone (K. 58351).<sup>7</sup>

SOLOMON IS. Kolombangara I: Gollifer's Camp, 700-760 m: 2N, *R. exulans*, 14.I.1964, PT (=P. Temple) (BISHOP: BBM-BSIP 23349); 1L, *R. exulans*, 15.I.1964, PT (BISHOP: BBM-BSIP 23353); 2N, *R. exulans*, 25.I.1964, PT (BISHOP: BBM-BSIP 23426). Makira I: Beuru: 4 ♂, 2 ♀, pig, IV.1976, W. Kenuimenia (LPL). San Cristobal I: 1 ♀, pig, 1969, D.F. de Fredrick (NW). Vella Lavella I: Ulo Crater, 50± m: 1L, *Phalanger orientalis*, 9.XII.1963, PT (BISHOP: BBM-BSIP 23281); 1L, *R. exulans*, 13.XII.1963, PT (BISHOP: BBM-BSIP 23304).

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#### LITERATURE CITED

- Anastos, G. 1950. The scutate ticks, or Ixodidae, of Indonesia. *Entomol. Am.* (n.s.)**30**: 1-144.
- Cabrier da Silva, H. R. B. de. 1960. *Prospecção parasitológica em Timor*. Estud., Ens. Doc., No. 76. 117 p.
- Egerton, J. R. & T. L. W. Rothwell. 1964. *The distribution of infectious and parasitic diseases of animals in Papua and New Guinea*. Dep. Agric. Stock & Fisheries (Vet. Sci. Ser.) Res. Bull. No. 1. 30 p.
- Jackson, W. B. 1962. Parasites and diseases. p. 190-99. In: Storer, T. I., ed., *Pacific island rat ecology*. Bernice P. Bishop Mus. Bull. 225.
- Kohls, G. M. 1950. *Ticks (Ixodoidea) of the Philippines*. Natl. Inst. Health Bull. No. 192. 28 p.
1953. Notes on the ticks of Guam with the description of *Amblyomma squamosum* n. sp. (Acarina: Ixodidae). *J. Parasitol.* **39**: 264-67.
1957. Insects of Micronesia. Acarina: Ixodoidea. p. 85-104. *Insects of Micronesia* Vol. 3, no. 3. Bishop Museum, Honolulu, Hawaii.
- Marshall, A. G. 1976. Host-specificity amongst arthropods ectoparasitic upon mammals and birds in the New Hebrides. *Ecol. Entomol.* **1**: 189-99.
- Roberts, F. H. S. 1970. *Australian ticks*. CSIRO, Melbourne, Victoria. 267 p.
- Taylor, R. W. 1972. Biogeography of insects of New Guinea and Cape York Peninsula. p. 213-30. In: Walker, D., ed., *Bridge and barrier: The natural and cultural history of Torres Strait*. Australian National University, Canberra, ACT.
- Wilson, N. 1972a. Ticks. p. 1122-24. In: Ryan, P., ed., *Encyclopaedia of Papua and New Guinea* Vol. 2, Melbourne University Press, Carlton, Victoria.
- 1972b. Some zoogeographical relationships of New Guinea ticks, family Ixodidae. *J. Med. Entomol.* **9**: 600.

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7. These specimens and the female listed by Anastos (1950) probably belong to the same lot inasmuch as they have identical data. Neither bears a collection date; however, the specimens in the Australian Museum were registered in October 1928.