

Elaphe taeniura friesei (WERNER, 1926), parasitised by the hard tick
Amblyomma cordiferum
NEUMANN, 1899

Ectoparasites, especially mites and ticks, are often seen on snakes in the wild (ERNST & ZUG 1996). But like other forms of parasitism in reptiles, their infection rates and the affects they have on their hosts appear to be poorly studied (ZUG et al. 2001). Although ticks rarely occur in large enough numbers to cause serious blood loss to reptilian hosts (LANE & MADER 1999), and thus seem to cause no serious problems (RUNDQUIST 1995), it must be remembered that in addition to irritating the host, ticks can also be carriers of blood-borne diseases (KLINGENBERG 1993; LANE & MADER 1999), which can sometimes be transmitted to other animals – including humans (PIETZSCH et al. 2006). It is thus important to report the parasites, hosts, and other field data as accurate

and in detail as possible to ensure an interdisciplinary improvement of an understanding of the ecology of both the parasites and their hosts. Here we report on the tick *Amblyomma cordiferum* NEUMANN, 1899 parasitising a Taiwanese Rat Snake *Elaphe taeniura friesei* (WERNER, 1926).

In the morning of April 14, 2005, an adult female (190 cm total length) *E. taeniura friesei* was collected from under the Wu-Xi Bridge (24°00'21"N, 120°41'41"E), in Wu-Fong District, Taichung County, Taiwan, R.O.C. The surrounding habitat of the capture area consisted of rice-paddies. Inspection of the snake revealed that two hard ticks were imbedded between the scales in the dorsolateral mid-body region of the snake (Fig. 1). Since the ticks were

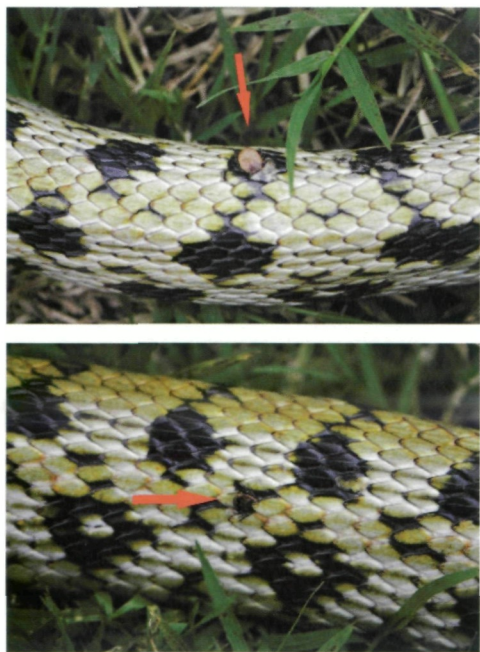


Fig. 1: Dorsolateral mid-body region of *Elaphe taeniura friesei* (WERNER, 1926), showing two specimens of the hard tick *Amblyomma cordiferum* NEUMANN, 1899 (arrows) imbedded between the scales.

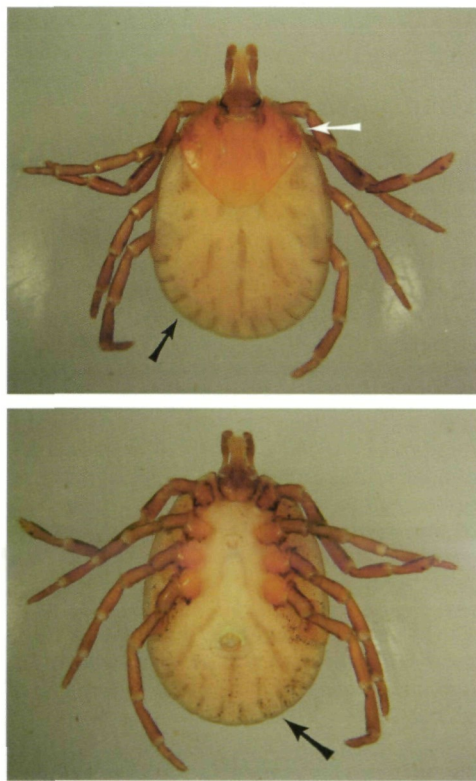


Fig. 2: Dorsal (top) and ventral (bottom) aspect of the hard tick *Amblyomma cordiferum* NEUMANN, 1899, illustrating diagnostic features such as the regular festoon (black arrows), inornate scutum and presence of eyes (white arrow). Length of the specimen is 6 mm.

imbedded in such a manner that the scutum was only partly exposed (Fig. 1), we believe they were imbedded fairly deeply and able to feed on the host. The ticks were removed and based on the inornate scutum, regular festoon, the presence of eyes (Fig. 2), the sharp strong spurs on the inside of the coxae, and the 4/4 series of denticles of the hypostome (Fig. 3), they were classified as adult *A. cordiferum* females (ANASTOS 1950; BARNARD & DURDEN 2000). *Amblyomma cordiferum* (Family: Ixodidae; no synonyms established for Taiwanese populations – ROBBINS 2005), occurs naturally in Indonesia, Malaysia, Taiwan, Thailand, and Western Samoa (BARNARD & DURDEN 2000; VOLTZIT & KEIRANS 2002), and is an interesting tick species, since it reproduces parthenogenetically (HO & ISMAIL 1984; OLIVER 1989; VOLTZIT & KEIRANS 2002; KOLONIN 2004). *Amblyomma cordiferum* adults appear to prefer ophidian hosts and have been reported from *Ophiophagus hannah* (CANTOR, 1836), *Python reticulatus* (SCHNEIDER, 1801) (BARNARD & DURDEN 2000), *Python curtus* SCHLEGEL, 1872 (HO & ISMAIL 1984) and *Ptyas mucosus* (LINNAEUS, 1758) (NORVAL et. al. 2005), while immature stages of this tick species apparently feed on rodents (HO & ISMAIL 1984; OLIVER 1989; BARNARD & DURDEN 2000). Under laboratory conditions, it has been determined that these ticks complete their life cycle in 168-209 days. VOLTZIT & KEIRANS (2002) stated that *A. cordiferum* is a rare tick species, and we tend to agree because we very rarely find these ticks on wild-caught snakes in Taiwan, and in our literature review we found no reference to a systematic study of the effects of these parasites on their ophidian hosts in Taiwan. Although *E. taeniura friesei* is a fairly common Taiwanese snake species, that can be found all over the island (KUNTZ 1963), to our knowledge, this appears to be the first recorded case from Taiwan of *E. taeniura friesei* being a host for this tick species.

ACKNOWLEDGMENTS: The authors would like to express their gratitude to Shao-Chang HUANG (Department of Life Science, Tunghai University, Taichung City, Taiwan, ROC) for his kind assistance with preparing the stereomicroscope images of the ticks, and Pi-Hwa SU (National Chiayi University, Chiayi City, Taiwan, ROC) for preparing the electron microscope images. We would also like to thank R. G. ROBBINS (Walter Reed Army Medical Center, Washington, DC,

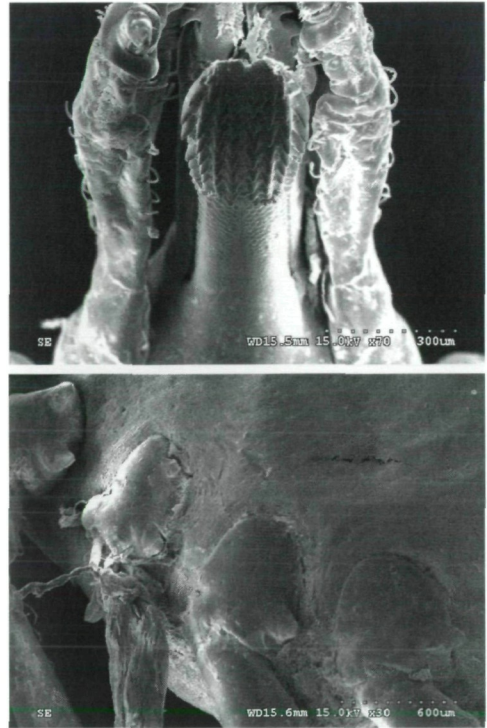


Fig. 3: Scanning electron micrographs of the hard tick *Amblyomma cordiferum* NEUMANN, 1899. The hypostome (top) is characterised by 4/4 series of denticles and the coxae (bottom) by strong sharp spurs. Note that the internal spur on the 3rd coxa is absent, which may be a distinct feature of individuals from Taiwan.

USA) for his kind assistance with obtaining some of the reference literature.

REFERENCES: ANASTOS, G. (1950): The scutate ticks, or Ixodidae, of Indonesia.- *Entomologica Americana*, New York; 30: 1-144. BARNARD, S. M. & DURDEN, L. A. (2000): A veterinary guide to the parasites of reptiles. Vol. 2. Melbourne, Florida (Krieger), pp. 288. ERNST, C. H. & ZUG, G. R. (1996): Snakes in question: the Smithsonian answer book. Washington (Smithsonian Institution Press), pp. 203. HO, T. M. & ISMAIL, S. (1984): Life cycle of the tick *Amblyomma cordiferum* NEUMANN under laboratory conditions.- *Malayan Nature Journal*, Kuala Lumpur; 38: 73-77. KLINGENBERG, R. J. (1993): Understanding reptile parasites: a basic manual for herpetoculturists and veterinarians. Lakeside, California (Advanced Vivarium Systems), pp. 83. KOLONIN, G. V. (2004): Reptiles as hosts of ticks.- *Russian Journal of Herpetology*, Moskva; 11(3): 177-180. KUNTZ, R. E. (1963): Snakes of Taiwan.- *Quarterly Journal of the Taiwan Museum*, Taipei; 16: 1-79. LANE, T. J. & MADER, D. R. (1999): Parasitology, pp. 185-203. In: MADER, D. R. (ed.): Reptile medicine and surgery. Philadelphia (Saunders).

NORVAL, G. C. & CHEN, C. & HSIAO, W. F. & YU, H. J. & MAO, J. J. (2005): *Ptyas mucosus* (Oriental Rat Snake). Ectoparasite.- Herpetological Review, New York; 36 (4): 459–460. OLIVER, J. H. (1989): Biology and systematics of ticks (Acari: Ixodida).- Annual Review of Ecology and Systematics, Palo Alto; 20: 397–430. PIETZSCH, M. & QUEST, R. & HILLYARD, P. D. & MEDLOCK, J. M. & LEACH, S. (2006): Importation of exotic ticks into the United Kingdom via the international trade in reptiles.- Experimental and Applied Acarology, Dordrecht; 38: 59–65. ROBBINS, R. G. (2005): The ticks (Acari: Ixodida: Argasidae, Ixodidae) of Taiwan: a synonymic checklist.- Proceedings of the Entomological Society of Washington, Lawrence; 107 (2): 245–253. RUNDQUIST, E. M. (1995): Reptile and amphibian parasites. Neptune City, New Jersey (T.F.H. Publications, Inc.), pp. 65. VOLTZIT, O. V. & KEIRANS, J. E. (2002): A review of Asian *Amblyomma* species (Acari, Ixodida, Ixodidae).- Acarina, Acarina : russkij akarologiceskij zurnal, Moskva; 10 (2): 95–136. ZUG G. R. & VITT, L. J. & CALDWELL, J. P. (2001): Herpetology. An introductory biology of amphibians and reptiles (2nd edition). San Diego (Academic Press), pp. 630.

KEY WORDS: Reptilia: Squamata: Serpentes: Colubridae: *Elaphe taeniura friesei*, snake; Arachnida: Acarina: Ixodidae: *Amblyomma cordiferum*, tick, host, parasite, ectoparasite, parasitism, Taiwan (ROC), Formosa

SUBMITTED: March 16, 2007

AUTHORS: Gerrut NORVAL, Applied Behavioural Ecology & Ecosystem Research Unit, Department of Nature Conservation, UNISA, Private Bag X6, Florida, 1710, Republic of South Africa <gerrutnorval507@yahoo.com>; Gennady KOLONIN, Ministry of Natural Resources of the Russian Federation, B. Gruzinskaya Str., 4/6, Moscow 123995, Russia; Jean-Jay MAO, Department of Natural Resources, National I-Lan University, No. 1, Shen-Lung Rd., Sec. 1, I-Lan City 260, Taiwan, Republic of China; Wen-Loung LIN, Minshiang Environmental & Ecological Research CO., Ltd., No. 18, Lane 129, Ren-He Rd., South District, Taichung City 402, Taiwan, Republic of China

ZOBODAT - www.zobodat.at

Zoologisch-Botanische Datenbank/Zoological-Botanical Database

Digitale Literatur/Digital Literature

Zeitschrift/Journal: [Herpetozoa](#)

Jahr/Year: 2008

Band/Volume: [20_3_4](#)

Autor(en)/Author(s): Norval Gerrut, Kolonin Gennady, Mao Jean-Jay, Lin Wen-Loung

Artikel/Article: [Elaphe taeniura friesei \(Werner, 1926\), parasitised by the hard tick Amblyomma cordiferum Neumann, 1899 193-195](#)