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**An update on the distribution of the pyrophilous beetle
Acanthocnemus nigricans (Hope, 1845) (Coleoptera: Cleroidea:
Acanthocnemidae), including new records from Laos**

by Michael Geiser

Abstract. New distributional data are presented for *Acanthocnemus nigricans*, a now widespread species of presumably Australian origin, associated with freshly burnt wood. New country records are presented for Laos, Vietnam, Nepal, Indonesia, the Philippines, Papua New Guinea, Sierra Leone, Equatorial Guinea, D.R. Congo and South Africa. Its wide distribution within Indochina suggests that this species profits from the widespread slash-and-burn agriculture practised in this region.

Keywords. Insecta – faunistics – new records – pyrophilous species – forest fires.

Introduction

Acanthocnemus nigricans (Hope, 1845) is the sole member of its family, Acanthocnemidae, as defined by CROWSON (1964). It is currently understood to be a basal member of the melyrid lineage within the superfamily Cleroidea (MAJER 1994; KOLIBÁČ 2004). The most distinctive character of this beetle are the cavities on the ventro-lateral sides of the prothorax, closed off by a tympanum-like membrane. These have been shown to be specialised sensory organs for detecting infrared radiation from forest fires over long distances (SCHMITZ *et al.* 2002). Based on these findings, along with several field observations, *A. nigricans* can be considered a specialised pyrophilous species, depending on freshly burnt wood. Adults have frequently been observed ovipositing on hot, charred pieces of wood after forest fires, and are often attracted to camp fires (KOVALENKO 2011; author's own observations in Laos). SCHMITZ *et al.* (2002) hypothesised that its larvae may be associated with certain fungi growing on burnt wood.

Although *A. nigricans* is presumed to have originated from Australia (CHAMPION 1922, LAWRENCE & LESCHEN 2010), it is now a widespread species found on several continents and biogeographic regions. CHAMPION (1922) recorded it from New Caledonia, Myanmar, Thailand, India, Madagascar, Guinea, Zambia, Algeria, France (Corsica), Italy (Sardinia, Sicily), Portugal and Cyprus. Later, ALONSO-ZARAZAGA *et al.* (2003) added a record from Spain and KOVALENKO (2011) recorded it from the western part of Russia, near the Ukrainian border. LAWRENCE & LESCHEN (2010) also noted its presence in Nigeria, Kenya and Zimbabwe. Its wide distribution is most likely due to human influence, although some of the populations outside Australia have existed at least since the 19th century, possibly earlier.

Based on the results of the “Beetles of Laos” project at the Natural History Museum Basel (NHMB), the earlier collections at NHMB, as well as the collections of the Natural History Museum London (BMNH) and the National Museum Prague (NMPC), it was now found that the species' distribution has expanded into even more areas, particularly

within tropical Asia. The aim of this short paper is to update the current knowledge on its geographic distribution and to add several new country records, as well as additional faunistic data from countries where it had been recorded previously.

Material and methods

A total of 121 voucher specimens (in addition to those already cited by CHAMPION 1922) were studied at NHMB, BMNH and NMPC. Specimens were identified using a stereoscopic microscope. Google Earth© and Fuzzy Gazetteer (<http://isodp.hof-university.de/fuzzyg/query/>) were used to locate certain places and assign them to present-day countries and sub-country divisions. Label data in quotation marks (“historic” or imprecise data) are cited verbatim; those without quotation marks (“modern” locality label) were brought into a standardised format: Locality, collecting circumstances, altitude, coordinates, date, followed by collector and name of collection (if given).

Faunistic records

Acanthocnemus nigricans (Hope, 1845)

INDIA: UTTARAKHAND: Barkot, 1100–1200, 5.–12. VI. 1981, M. Brancucci leg. 1 ex. (NHMB).
NEPAL: Centr., Narayani Zone, Chitawan Distr., Chitawan Nat.P., Sauraha-Thati-Bagh Mara, 200–500 m, 17.–21. V. 1996, P. Čechovský leg., Sammlung Karel Majer. 1 ex. (NHMB). **New country record for Nepal.**
MYANMAR: “Tenasserim, Thagatá, Fea. Apr. 1887” 1 ex. (NHMB); “Burma, Tenasserim, 1837–1840, J. V. Helfer leg.” 4 ex. (NMPC).
LAOS: HOUAPHANH: Ban Saleui → Phou Pane Mt., 1300–1900 m, 20°11–13′ N / 103°59′–104°01′ E, 9.–17. VI. 2009, Michael Geiser leg., NHMB Basel, NMPC Prague, Laos 2009 Expedition, M. Brancucci, M. Geiser, Z. Kraus, D. Hauck, V. Kubáň. 2 ex. (NHMB); Ban Saleui, Phou Pan (Mt.), 1300–1900 m, 20°12′ N / 104°01′ E, 7. IV. – 25. V. 2010, C. Holzschuh leg. 2 ex. (BMNH); Ban Saleui, Phou Pan (Mt.), 1300–1900 m, 20°12′ N / 104°01′ E, 11. IV. – 15. V. 2012, C. Holzschuh leg. 1 ex. (BMNH); Phou Pane Mt., 1480–1550 m, 20°13′09–19″N 103°59′54″–104°00′03″E, 1.–16. VI. 2009, Zdeněk Kraus leg. NHMB Basel, NMPC Prague Laos 2009 Expedition: M. Brancucci, M. Geiser, Z. Kraus, D. Hauck, V. Kubáň. 1 ex. (NHMB).
LUANGPRABANG: Muang Ngoy, 20°43′ N / 102°41′ E, 500 m, 22. IV. 1999, Vít Kubáň leg. 2 ex. (NHMB); Ban Song Cha (5 km W), 20°33–34′ N / 102°14′ E, 1200 m, 1.–16. V. 1999, Vít Kubáň leg. 3 ex. (NHMB).
BORIKHAMSAY: Nam Kading NPA, Tad Paloy campsite, 18°21–13′ N 104°09′ E, 250–400 m, 24.–28. V. 2011, NHMB Basel, Laos 2011 Expedition, M. Brancucci, M. Geiser, D. Hauck, Z. Kraus, A. Phanthala & E. Vongphachan. 1 ex. (NHMB).
KHAMMUANE: Ban Khoun Ngeun, 18°07′ N / 104°29′ E, ~200 m, 24.–29. IV. 2001, Pacholátka leg. 1 ex. (NHMB); Ban Khoun Ngeun, 18°07′ N / 104°29′ E, ~200 m, 19.–31. V. 2001, Pacholátka leg. 1 ex. (NHMB).
ATTAPU: Thong Kai Ohk, Ban Kachung (Mai) env., 15°01–02′ N 107°26–27′ E, 10.–24. vi. 2011, 1200–1450 m, NHMB Basel, Laos 2011 Expedition, M. Brancucci, M. Geiser, D. Hauck, Z. Kraus, A. Phanthala & E. Vongphachan. 12 ex. (NHMB). **New country records for Laos.**
THAILAND: Sangkhlaburi env., 8.–12. IV. 1991, Jan Farkač leg. 1 ex. (NHMB); Tak Province, Umphang District, Mae Chan / Mae Klong confluence, Thung Yai Wildlife Sanctuary, 15°30′ N / 98°48′ E, 27. IV. – 6. V. 1988, M. J. D. Brendell. 1 ex. (BMNH); Mae Hong Son, Ban Huai Po, 800–1600 m, 1.–15. V. 1991, S. Bílý leg. 2 ex. (NHMB); Mae Hong Son, Ban Huai Po, 1600–2000 m, 4. V. 1991, J. Horák leg., coll. Karel Majer. 2 ex. (NHMB); Mae Hong Son, Ban Si Lang, 1200 m, 23.–31. V. 1991, J. Horák leg., coll. Karel Majer. 1 ex. (NHMB); Chiang Mai prov., Ban San Pakia, 1700 m, 25. IV.–7. V. 1996, Sv. Bílý leg., coll. Karel Majer. 1 ex. (NHMB); Thimongta, 350 m, 15°02′ N / 98°35′ E, 9.–13. IV. 1991, Vít Kubáň leg., “Thanon Thong Chai”, D. Král & V. Kubáň. 1 ex. (NHMB); Umphang riv., 1000 m, 16°07′ N / 99°00′ E, 28. VI. – 6. V. 1991, Vít Kubáň leg., “Thanon Thong Chai”, D. Král & V. Kubáň. 3 ex. (NHMB).

VIETNAM: “Vinh-Thatom 1912, Indo Chine Coll. Dussault” 7 ex. (NHMB); “Son-La 1909, Indo Chine Coll. Dussault” 3 ex. (NHMB); Hoang Lien Son distr., Sa Pa, 1200 m, V. 1990, Duong Tat Tu leg., coll. Karel Majer. 1 ex. (NHMB). **New country records for Vietnam.**

INDONESIA: JAVA: “F. C. Drescher, G. Tangkoeban Prahoe, 4000–5000 Voet, Preanger, Java, XI. 1935, coll. W. Wittmer” 1 ex. (NHMB). SUMBA: “Lindiwatju W. Sumba, 18. 9. 1949, D. Bühler Dr. Sutter” 1 ex. (NHMB); “Lindiwatju W. Sumba, 8. 10. 1949, D. Bühler Dr. Sutter” 1 ex. (NHMB). **New country records for Indonesia.**

PHILIPPINES: MINDANAO: 30 km E of Malaybalay, Busdi, 1000 m, 5.–9. V. 1996, Bolm leg. 1 ex. (NHMB). **New country record for the Philippines.**

PAPUA NEW GUINEA: “N. Guinea mer., Bujakori, Agosto 1890, L. Loria, Museum Civico di Genova, coll. W. Wittmer” 1 ex. (NHMB); Western Province, Tanukamel Village, Middle reaches of Strickland R., 19.21. Xi. 1979, I. Redmond leg., Strickland Range expedition, Brit.Mus. 1981-138. 1 ex. (BMNH). **New country records for Papua New Guinea.**

AUSTRALIA: “Australien, coll. W. Wittmer” 3 ex. (NHMB). QUEENSLAND: Rockhampton, IX. 1965, Demarz leg. 15 ex. (NHMB); Emerald, IX. 1965, Demarz leg. 1 ex. (NHMB). NEW SOUTH WALES: “Bogan R., N.S.W., J. Armstrong, coll. W. Wittmer” 1 ex. (NHMB); “Acacia Plat., N.S.W., J. Armstrong, coll. W. Wittmer” 1 ex. (NHMB). VICTORIA: “Victoria, Alexandria, RH, coll. W. Wittmer” 1 ex. (NHMB); “Victoria, Fitzroy River. B. M. 1923-116.” 1 ex. (BMNH). SOUTH AUSTRALIA: “Gawler, Odewahn, Coll. Nickerl” 1 ex. (NMPC). NORTHERN TERRITORY: Darwin, X. 1965, Demarz leg. 1 ex. (NHMB). WEST AUSTRALIA: Perth, IX. 1953, Demarz leg. 1 ex. (NHMB); New Norcia, XII. 1953, H. Demarz leg. 3 ex. (NHMB); Pemberton, XII. 1954, H. Demarz leg. 2 ex. (NHMB); Norseman, 6. I. 1961, H. Demarz leg. 1 ex. (NHMB); 40 km S of Norseman, 14. II. 2003, S. Bílý leg. 3 ex. (NMPC); Wooramel River, 1. IV. 1961, H. Demarz leg. 1 ex. (NHMB); Coolgardie, 18. X. 2001, S. Bílý leg. 1 ex. (NMPC); Peak Charles NP, 8. XI. 2001, S. Bílý leg. 1 ex. (NMPC); Lake Cronin, 29. I. 2003, Sv. Bílý leg. 1 ex. (NMPC).

SIERRA LEONE: “Sierra Leone. 1904-171.” 1 ex. (BMNH). **New country record for Sierra Leone.**

EQUATORIAL GUINEA: “W Afrika, J Fernando-Póo, L. Conradt S.V., Sammlung Karel Majer” 4 ex. (NHMB). **New country record for Equatorial Guinea.**

NIGERIA: “Near Benin, 2-18-1958, J L Gregory, C.E. Tottenham collection, B.M. 1974-587.” 1 ex. (BMNH); “Near Benin, 1.–12. V. 1958, J. L. Gregory, C.E. Tottenham collection, B.M. 1974-587.” 2 ex. (BMNH); “Near Benin, 13.–19. V. 1958, J L Gregory, C.E. Tottenham collection, B.M. 1974-587.” 1 ex. (BMNH); “Near Benin, 19.–27. V. 1958, J L Gregory, C.E. Tottenham collection, B.M. 1974-587.” 3 ex. (BMNH); “Umudike, 10.–13.iv 1960, J. L. Gregory, C.E. Tottenham collection, B.M. 1974-587.” 1 ex. (BMNH).

D.R. CONGO: “Coll. Mus. Congo, Bas-Congo: Kimwenza”, I/IV-1956, R. P. Van Eyen, Sammlung Karel Majer” 1 ex. (NHMB). **New country record for D.R. Congo.**

SOUTH AFRICA: “Pretoria, S. Afr., 23. 3. 1949” 1 ex. (NHMB). **New country record for South Africa.**

MADAGASCAR: Ambohitantely Spec. Res., at light, 1530 m, 18°11'51" S / 47°17'03" E, 24.–20. XI. 2011, M. Trýzna leg. 5 ex. (BMNH)

FRANCE (CORSIKA): “Porto-V., Sta. Guilia, Genevriu, 4 14, coll. W. Wittmer” 1 ex. (NHMB).

Discussion

The examined material reveals that *A. nigricans* is now much more widespread than previously thought in both the Oriental and the Afrotropical region, in addition to its presumed native range in Australia (incl. Tasmania) and the previously recorded populations in the Palearctic and Madagascar. Most of the newly added localities, particularly within Indochina, are based on fairly recent records. However, two records from Vietnam date back to as early as 1909 and 1912, respectively, suggesting that the species was already established there over 100 years ago.

A. nigricans now seems to be a common and widespread beetle in Laos, found in all parts of the country. Several of the recently collected specimens (particularly in Thong Kai Ohk, Attapeu and Nam Kading National Park, Borikhamsay) were found

landing on wood of burning camp fires. In all parts of Laos, as well as its neighbouring countries, slash-and-burn agriculture is a common and widespread form of land-use, potentially threatening a large number of other insect species, but providing plenty of habitat for pyrophilous species like *A. nigricans*.

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