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Some Observations on the Host Timber Species, Biology and Habitat of *Achthosus westwoodi* Pascoe, 1863 (Coleoptera: Tenebrionidae: Ulomini) of Eastern Australia

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ABSTRACT

Biological observations and data on host timber species utilized by the Australian tenebrionid *Achthosus westwoodi* Pascoe, 1863 (Coleoptera: Tenebrionidae: Ulomini) are listed herein from the personal opportunistic observations of the author in various areas of eastern Australia from 1972-2008. The adults and larvae of *A. westwoodi* utilize a broad range of native and introduced timbers from several plant families, viz. Casuarinaceae (*Casuarina*), Fagaceae (*Nothofagus*), Myrtaceae (*Eucalyptus*), Mimosaceae (*Acacia*), Proteaceae (*Banksia*), Rhamnaceae (*Alphitonia*) and Bignoniaceae (*Jacaranda*). Most of the host records are from native Australian plants. Host wood material preferred by *A. westwoodi* is normally moist to wet, rotting branches or logs on the forest/woodland floor.

Key words: *Achthosus westwoodi*, Tenebrionidae, host timber species, habitats.

INTRODUCTION

Achthosus westwoodi Pascoe, 1863 (Coleoptera: Tenebrionidae: Ulomini) is one of the most widespread of Australian beetles, occurring down the eastern Australian coast and even has been recorded from King Island in Bass Strait (Lea, 1908). The species was described and first illustrated by Pascoe (1863) and the type is lodged in the British Museum of Natural History (BMNH). *A. westwoodi* is illustrated as a better defined black/white line drawing by Lawrence & Britton (1994). Despite the widespread distribution of the species, almost nothing has been written about any aspect of the life of this glossy-black beetle, which measures 22-25 mm in body length. The following information is provided from opportunistic observations and collections of the species by the author in various areas of eastern Australia from 1972 to 2008.

Observations

Annotated list of collections of *A. westwoodi* by the author and assistants

1. Helidon - Toowoomba district, 16 Oct. 1972, T.J. Hawkeswood & N.A. Radloff, two adults and four larvae extracted from a dead rotting fallen trunk of *Eucalyptus crebra* F. Muell. (Myrtaceae); habitat - dry sclerophyll forest.

2. New England National Park, north-eastern New South Wales, 12 Aug. 1976, T.J. Hawkeswood, two adults and one larva extracted from dead wood of fallen major branch of *Nothofagus moorei* (F. Muell.) Krasser (Fagaceae); habitat - temperate rainforest.

3. New England National Park, north-eastern New South Wales, 30 November 1976, B.J. & T.J. Hawkeswood, two adults only (no larvae) extracted from a dead fallen main trunk of *Banksia serrata* L.f. (Proteaceae); habitat - temperate rainforest.

4. Armidale, north-eastern New South Wales, 20 April 1977, T.J. Hawkeswood & C. Zucker, three adults and two larvae extracted from the dead rotting trunk of *Eucalyptus neo-anglica* Deane et Maiden (Myrtaceae); habitat - open dry sclerophyll woodland.

5. Near Port Douglas, north-eastern Queensland, 28 Dec. 1981, T.J. Hawkeswood, two adults and one larva extracted from a dead fallen rotting trunk of *Syzygium* sp. (Myrtaceae); habitat - tropical rainforest.

6. Tinaroo, north-eastern Queensland, 29 Dec. 1981, two adults extracted from dead fallen rotting trunk of *Alphitonia excelsa* (Fenzl) Reisseck ex Benth. (Rhamnaceae); habitat - tropical rainforest.

7. Mt. Glorious, south-eastern Queensland, 2 Dec. 1983, T.J. Hawkeswood, two adults extracted from a dead fallen rotting log of *Eucalyptus* sp. (Myrtaceae); habitat - subtropical rainforest.

8. Griffith University campus, Brisbane, south-eastern Queensland, 15 Nov. 1984, T.J. Hawkeswood, one adult (no larvae), extracted from a dead rotting trunk of *Casuarina littoralis* Salisb. (Casuarinaceae); dry sclerophyll woodland.

9. Bald Knob, near Nimbin, New South Wales, 16 Nov. 1994, T.J. Hawkeswood & V. Hawkeswood, two adults and one larva extracted from a dead fallen trunk of *Acacia melanoxylon* R.Br. (Mimosaceae); habitat - subtropical rainforest/wet sclerophyll forest interface.

10. Bald Knob, near Nimbin, New South Wales, 15 Oct. 1995, T.J. Hawkeswood & V. Hawkeswood, three adults and two larvae extracted from a dead fallen trunk of

Eucalyptus grandis W. Hill ex Maiden (Myrtaceae); habitat - subtropical rainforest/ wet sclerophyll forest interface.

11. Wentworth Falls, Blue Mountains, New South Wales, 20 July 2002, T.J. Hawkeswood & J.R. Turner, three adults and one larva extracted from the dead rotting main trunk of *Banksia serrata* L.f. (Proteaceae) habitat - heathland within a dry sclerophyll woodland.

12. Beecroft, Sydney, New South Wales, 28 Mar. 2008, T.J. Hawkeswood, two adults and three larvae extracted from a dead rotting fallen branch of **Jacaranda mimosaeifolia* D. Don (Bignoniaceae); habitat - remnant (highly modified and degraded) wet sclerophyll (gully) forest in a residential area. [* = introduced plant species to Australia].

Habitat and other biological data

Adults and larvae were always found in dead rotting main branches or logs (trunks) on the ground, usually occurring in moist localities. Beetles were never found in dead or live standing wood. Usually a small number of adults and larvae (mostly last instar larvae) were detected in any one piece of or branch. The wood material was usually moist and highly decayed at the time of detection, with much of the wood being destroyed by the beetles and associated cockroaches or passalid beetles. Adults are active and wary and are sensitive to light. When handled, the adults exude a defensive and highly odorous chemical which stains the human skin a deep maroon colour. This usually fades and diminishes in surface area and intensity of colour within 2-3 days, but the stains can remain up to 7 days on the skin before disappearing. The odour on the skin usually lasts 1 day, despite washing.

The species occurs in a wide variety of habitats from sea level (e.g. Port Douglas, Beecroft) to montane areas (New England National Park, Wentworth Falls (Blue Mountains), Toowoomba - Helidon area).

DISCUSSION

Achthosus westwoodi appears to be one of the most widespread Tenebrionidae species in Australia and occurs within a range of habitats (ecological communities) within coastal eastern Australia and the associated ranges (viz. Great Dividing Range). From my observations, usually small colonies/pairs of beetles occur together in the one fallen log or main branch of the host tree, and usually with a limited number of larvae (often last instar). Usually rotting wood which is moist and occurring in sheltered (shady) moist locations are preferred by *A. westwoodi*, which is an active tunneller

and decomposer of the wood material (sapwood and heartwood) in association with fungi, wood cockroaches and other beetles such as Passalidae. A broad range of native timber species are utilized by *A. westwoodi*, which is also capable of decaying introduced tree species (viz. *Jacaranda*). Although it is widespread and has a wide host range, the species appears not to be able to maintain large population sizes like other Tenebrionidae such as *Adelium* sp. [This is despite protection in the wood as well as defensive secretions]. *Adelium* sp. can be often found occurring in large numbers under, as well as in, the epidermal tissues of fallen logs/bark of *Eucalyptus moluccana* Roxb. (T.J. Hawkeswood, Sydney, 2007, personal observations).

The Tenebrionidae of Australia is vast (viz. 1200 + species) (Hawkeswood, 1987; Lawrence & Britton, 1994) but little is known of the biology and hosts of most of the species. Hopefully more data will become available on the ecology of these species and humans will realize that many Tenebrionidae, in association with other native insects, are important decomposers in the native forest ecosystems of Australia.

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