

A note on the larval host plant of a *Cnemoplites* species (Coleoptera: Cerambycidae: Prioninae) from Australia

With 1 Figure and 1 Table

JAMES R. TURNER & TREVOR J. HAWKESWOOD

Abstract: *Banksia marginata* Cav. (Proteaceae) is recorded as a larval host plant for an unidentified species of *Cnemoplites* (Cerambycidae: Prioninae) from New South Wales, Australia. This is the first record of *Banksia* as a larval host for *Cnemoplites*, a genus previously known to develop only in the wood of *Eucalyptus* (Myrtaceae) and *Acacia* (Mimosaceae). Details on the larval chambers of the *Cnemoplites* species are provided. Previous biological data for *Cnemoplites* are reviewed.

Zusammenfassung: *Banksia marginata* Cav. (Proteaceae) ist als Wirtspflanze der Larven einer unbestimmten Käferart der Gattung *Cnemoplites* (Cerambycidae: Prioninae) aus Neusüdwesten, Australien, registriert worden. Das ist die erste Feststellung von *Banksia* als Larven-Wirt für *Cnemoplites*, eine Käfergattung, von der bisher bekannt war, daß sie sich nur im Holz von *Eucalyptus* (Myrtaceae) und *Acacia* (Mimosaceae) entwickelt. Details der Puppenwiegen der *Cnemoplites*-Arten werden mitgeteilt und bisherige biologische Daten von *Cnemoplites* besprochen.

Introduction

The genus *Cnemoplites* consists of at least 12 described species of large, dark brown to blackish cerambycid beetles occurring throughout Australia but found mostly in the arid and semi-arid areas of the southern half of the continent (McKEOWN 1947). The genus is poorly known both taxonomically and biologically (HAWKESWOOD 1992). However, an examination of the *Cnemoplites* species housed in the Australian Museum (AMSA) in Sydney, New South Wales, by one of us (JRT) suggests that the various species can be easily distinguished by the shape, size and arrangement of the spines on the pronotum and possibly the antennae. The biological data presently available indicates that the larvae of *Cnemoplites* develop in hard wood trees such as species of *Acacia* (Mimosaceae) and *Eucalyptus* (Myrtaceae) (see review in HAWKESWOOD 1992).

The genus appears to be closely related to *Paroplites* and *Eurynassa*, species of which are also known to be breeders in hardwood timbers. Since data on the biology and hosts of *Cnemoplites* are rather limited and the beetles appear to be rarely collected, the following data on an unidentified species (Fig. 1a–e) was considered of sufficient interest to report at this stage. An adult specimen from the series that was bred out of the host wood has been deposited in the collection of the Australian Museum in Sydney, for further study.

Observations

On 13 November 1994, one of us (JRT) was taking part in a National Parks Association Biodiversity study in the Charleyong area near the junction of the Mongarlowe and Shoalhaven Rivers, New South Wales (c. 35° 15' S, 149° 55' E). Much of the area supports Scribbly Gum (*Eucalyptus haemastoma* Sm.) Woodland with small areas of Ribbon Gum (*Eucalyptus viminalis* Labill.) along the river. While surveying a ridgetop, JRT noticed a 10 metre tall specimen of *Banksia marginata* Cav. (Proteaceae) which had been blown over by the wind. The plant had split open at the base to reveal several larval chambers with larvae present. The basal section of the trunk containing the

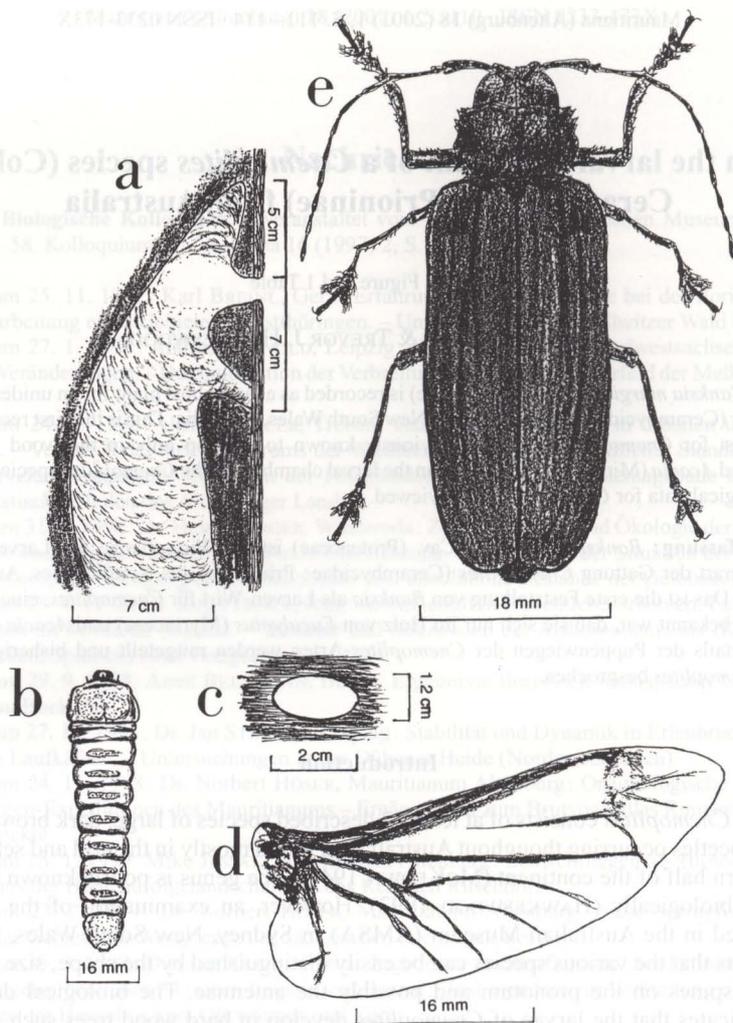


Fig. 1. *Cnemoplites* sp. (Prioninae: Cerambycidae). a: larval chamber with proper exit hole at the top and the accessory chamber terminating at the inner edge of the bark layer; b: larva; c: oval-shaped exit hole; d: right wing of adult; e: dorsal habitus of adult. (Illustrations: J. R. Turner).

larvae was cut off and collected for later examination. The two largest larvae had formed chambers measuring about 8 cm long and 3 cm in diameter within a few days before transforming into pupae over several days and before emerging as adults on 29 and 30 December 1994 and on 1 January 1995. A later examination of the billet revealed two further emergence holes, with one having a dead adult trapped by its elytra in the hole. The oval-shaped exit holes measured 2.0 cm \times 1.2 cm (Fig. 1c). During dissection of the billet in which the larvae were developing, it was found that the larval chambers were positioned parallel to each other and were separated by about 2.0 cm of wood and although four chambers were alongside each other, none of them anastomosed or amalgamated. An examination of the exit holes resulted in the discovery of an accessory minor exit chamber in each one, arising from the main chamber and which appeared to have been chewed out first, perhaps in order for the larva to determine the position or distance of the bark from the main chamber. This chamber was found to terminate at the inner edge of the bark where it meets the wood and was filled with frass. The proper exit hole, through which the adult

Table 1.
Larval hosts and references for species of *Cnemoplites* (Cerambycidae)
(summarised from HAWKESWOOD 1992)

Species	Host plant	Plant family	Reference
<i>Cnemoplites cephalotes</i> (Pascoe)	<i>Eucalyptus maculata</i> Hook.	Myrtaceae	HOCKEY & DE BAAR (1988)
<i>Cnemoplites edulis</i> (Newman)	<i>Eucalyptus</i> sp.	Myrtaceae	TEPPER (1887)
<i>Cnemoplites impar</i> (Newman)	<i>Eucalyptus bicolor</i> A. Cunn.	Myrtaceae	GOUDIE (1925)
<i>Cnemoplites</i> sp.	<i>Acacia pendula</i> A. Cunn. ex G. Don	Mimosaceae	WEBB (1987)
<i>Cnemoplites</i> sp.	<i>Banksia marginata</i> Cav.	Proteaceae	TURNER & HAWKESWOOD (this paper)

beetle emerges through the bark, was situated about 7.0 cm away from the preliminary chamber (Fig. 1a). The chamber in the centre of the tree reaches up to 7 cm × 3 cm (Fig. 1a). The final exit holes appear to be distributed randomly, most of them were separated by at least 15 cm from any other exit hole/larval chamber.

Discussion

This is the first record of a *Cnemoplites* species from *Banksia* (Proteaceae), which indicates a broader host range than previously realised, since the other known hosts, *Acacia* (Mimosaceae) and *Eucalyptus* (Myrtaceae) (Table 1) are not closely related botanically. Since these genera vary greatly in their wood chemistry, the adaptability of the larvae of *Cnemoplites* as a genus, would have had to be rather plastic. These beetles belong the primitive group Prioninae which are generally adapted for breeding in tree species, often those with ancient lineage, e.g. *Pinus* (Pinaceae) for *Brephylidia jejuna* (Pascoe) and *Cacodacnus planicollis* (Blackburn) (WEBB 1987, HAWKESWOOD 1992).

Previously nothing has been recorded on the larval/pupal chambers of *Cnemoplites*. As shown for another wood-boring family, the Buprestidae, the shape, size, nature and orientation of exit holes and ventilation chambers are often specific for genera and/or species, which can be used for taxonomic considerations (e.g. TURNER & HAWKESWOOD 1994, 1995a, b, c, 1996a, b, c). Similarly for the Cerambycidae, these attributes of the larval chambers often show characters specific to genera or species, e.g. in the Neotropical Cerambycinae (DI IORIO 1995). However, little has been described for the Australian species and some characters of pupal chambers like the uncompleted exit chamber below the proper exit hole in the larval/pupal chambers of the unidentified *Cnemoplites* species described above, may or not hold any taxonomic value. It is of interest in any case, and only further field research will fill in the glaring gaps that we have on even the most basic features of the biology of Australian Cerambycidae and beetles in general.

Acknowledgements

JRT wishes to thank Mr Roger Lembit for the identification of *Banksia marginata* and Mr M. S. Moulds of the Entomology Department, Australian Museum, Sydney, for permission to examine specimens held in the museum insect collection.

References

- DI IORIO, O. R. (1995): The genus *Deltosoma* Thomson, 1864 in Argentina: *D. lacordairei* Thomson, 1864 and *D. xerophila* n. sp.; with a revision of larval tunnels and pupal chambers in Neotropical Cerambycinae (Coleoptera: Cerambycidae). – *Giornale Italiano di Entomologia*, 7, 203–217

- GOUDIE, J. C. (1925): Notes on the Coleoptera of north-western Victoria. Part XIII. – *Victorian Naturalist*, **42**, 92–98
- HAWKESWOOD, T. J. (1992): Review of the biology, host plants and immature stages of the Australian Cerambycidae (Coleoptera) Part I. Parandrinae and Prioninae. – *Giornale Italiano di Entomologia*, **6**, 207–224
- HOCKEY, M. J. & DE BAAR, M. (1988): New larval food plants and notes for some Australian Cerambycidae (Coleoptera). – *Australian Entomological Magazine*, **15**, 59–66
- MCKEOWN, K. C. (1947): A catalogue of the Cerambycidae (Coleoptera) of Australia. – *Memoirs of the Australian Museum*, **10**, 1–190
- TEPPER, J. G. O. (1887): Common native insects of South Australia. A popular Guide to South Australian Entomology. Part 1. Coleoptera or beetles. – E. S. Wigg & Co., Adelaide
- TURNER, J. R. & HAWKESWOOD, T. J. (1994): A note on the larval host plant and biology of *Melobasis apicalis* Macleay (Coleoptera: Buprestidae) from Australia. – *Giornale Italiano di Entomologia*, **7**, 97–102
- TURNER, J. R. & HAWKESWOOD, T. J. (1995a): A note on the biology and host plant of *Cisseis* sp. near *C. nitidiventris* Carter (Coleoptera: Buprestidae) from Australia. – *Mauritiana*, **15**, 313–316
- TURNER, J. R. & HAWKESWOOD, T. J. (1995b): A new larval host plant for the Australian jewel beetle *Ethon fissiceps* (Kirby) (Coleoptera: Buprestidae). – *Mauritiana*, **15**, 317–319
- TURNER, J. R. & HAWKESWOOD, T. J. (1995c): A note on *Nascio vetusta* (Boisduval) (Coleoptera: Buprestidae) from Australia. – *Mauritiana*, **15**, 321–325
- TURNER, J. R. & HAWKESWOOD, T. J. (1995d): A new larval host plant and other biological data for the Australian jewel beetle *Cisseis acuducta* (Kirby) (Coleoptera: Buprestidae). – *Giornale Italiano di Entomologia*, **7**, 273–277
- TURNER, J. R. & HAWKESWOOD, T. J. (1996a): A note on the larval host plant and biology of the Australian jewel beetle *Astraeus crassus* Van de Poll (Coleoptera: Buprestidae). – *Mauritiana*, **16**, 75–79
- TURNER, J. R. & HAWKESWOOD, T. J. (1996b): A note on the larval host plants and biology of *Melobasis cupriceps* (Kirby) (Coleoptera: Buprestidae) from Australia. – *Mauritiana*, **16**, 81–86
- TURNER, J. R. & HAWKESWOOD, T. J. (1996c): A new larval host plant for the Australian buprestid beetle, *Agriilus australasiae* Laporte & Gory (Coleoptera: Buprestidae). – *Mauritiana*, **16**, 95–100
- WEBB, G. A. (1987): Larval host plants of Cerambycidae (Coleoptera) held in some Australian insect collections. – *Forestry Commission of New South Wales, Technical Paper No. 38*: 1–19

Received on 8 June, 1998

JAMES R. TURNER, PO Box 371, Penrith, New South Wales, 2750, Australia

Dr. TREVOR J. HAWKESWOOD, 2/270, Terrace Road, North Richmond, New South Wales, 2754, Australia