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A note on *Nascio vetusta* (Boisduval) (Coleoptera: Buprestidae) from Australia

With 1 Figure, 2 Plates and 1 Table

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Abstract: A new larval host plant, *Eucalyptus goniocalyx* F. Muell. (Myrtaceae), is recorded for the Australian buprestid beetle, *Nascio vetusta* (Boisduval). Its habitat is briefly recorded and aspects of the larval/pupal chambers described. No other buprestids have been recorded from *Eucalyptus goniocalyx*. *Nascio vetusta* has only been recorded breeding in the myrtaceous genera *Eucalyptus* and *Metrosideros*, indicating first-degree oligophagy.

Zusammenfassung: Eine neue Wirtspflanze, *Eucalyptus goniocalyx* F. Muell. (Myrtaceae), ist für die Larven des australischen Prachtkäfers *Nascio vetusa* (Boisduval) festgestellt worden. Ihr Habitat wird kurz charakterisiert und Aspekte der Puppenwiegen werden beschrieben. Andere Buprestiden konnten auf *Eucalyptus goniocalyx* nicht gefunden werden. Für *Nascio vetusa* ist nur Entwicklung in den Myrtaceen-Gattungen *Eucalyptus* und *Metrosideros* nachgewiesen worden, was auf Oligophagie hinweist.

Introduction

Nascio vetusta (Boisduval) (Fig. 1e) is a poorly known species of Buprestidae endemic to Australia. It is a cryptic, brown and orange-brown species occurring in south-eastern Australia (Carter 1929). Tillyard (1926: 218) described the species as having a "strongly ridged pronotum and brown elytra with large blackish blotches, and looks as though it were carved out of wood". Very little data have been recorded on the biology and behaviour of the species. Tepper (1887) and Hawkeswood & Peterson (1982) recorded several larval host records from the genera *Eucalyptus* and *Metrosideros* (Myrtaceae) from South Australia and New South Wales respectively. New observations on the biology of the species are provided below.

Observations

On 4 July 1994, the first author undertook a survey of an area of heathland located on a hillside on the western side of Warrys Road, Hill End, New South Wales (c. 33° 02′ S, 149° 25′ E). The area examined was situated near the top of the hill and measured approx. 80 m long by 10 m wide. A thick understorey of *Cassinia arcuata* R. Br. (Asteraceae) dominated the lower part of the hill and formed the lower boundary of the area surveyed. The area itself was dominated by *Pultenaea subternata* Williamson and *Dillwynia retorta* (Wendl.) Druce var. *phylicoides* (both Fabaceae) with an area of *Acacia buxifolia* A. Cunn. (Mimosaceae) dominating the northern section. While descending the hill after having completed the survey, the first author noted a large, dead *Eucalyptus goniocalyx* F. Muell. approx. 20 m in height and upon closer examination of the trunk and limbs, in excess of 500 exit holes were observed. Each hole measured approx. 10–11 mm wide and 6 mm high. In order to examine the larval chambers, strips of bark were removed from the trunk and during this process a number of dead adult beetles were observed, trapped in the bark of the tree. These beetles were conspecific and immediately identified as *Nascio vetusta* (Boisduval), a species previously recorded on 3 Dec. 1983 at Hill End (JRT unpub. data). Some sections of bark were removed from the trunk of the tree at heights varying from ground level to

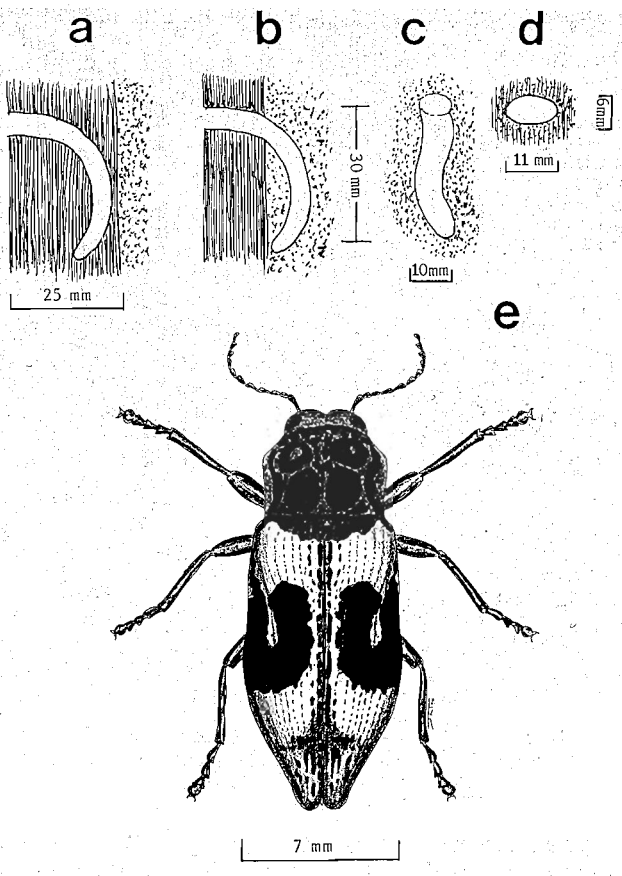

Fig. 1. *Nascio vetusta* (Boisduval). a: Larval/pupal chamber in bark of host tree; b: larval/pupal chamber in bark and sapwood (dots); c: plan view of chamber in sapwood with bark removed; d: oval-shaped exit hole; e: adult. (Drawing: J. R. TURNER).

2.5 m and it was during this process that additional adults were recorded. With the exception of one beetle, all were found trapped in the bark. That beetle was found in a pupal chamber in the tree with head positioned upwards and abdomen and legs facing outwards from the centre of the tree. An examination of the larval chambers revealed a consistent size and shape. The larval/pupal chambers were mostly of a reversed S-shape, measuring about 30 mm in length from the bottom of the chamber to the opening of the exit hole and measured approx. 10 mm in diameter at a point about midway down the chamber. The bark of the host tree varied from 1.5 cm to 3.5 cm in thickness. In the thicker bark, the larval chambers were situated within the bark only, while in the thinner bark, the exit holes passed straight through the bark and most of the associated chambers were situated in the sapwood of the tree. An illustration of the larval chambers of *N. vetusta* is provided as Figure 1. The host tree is illustrated as Plate 1 and a dead adult in the host wood as Plate 2.

Discussion

TEPPER (1887) was the first author to provide biological data on *N. vetusta* (cited incorrectly as *Nascio vetustus*), but this work has been overlooked by almost all entomologists of the 20th Century. TEPPER (1887: 16) noted that the larva of *N. vetusta* lived in the dry,

Plate 1. Dead tree of *Eucalyptus goniocalyx* F. Muell. (Myrtaceae), larval host plant for *Nascio vetusta* (Boisduval), Hill End, New South Wales. (Photo: J. R. TURNER).

corky bark of stringybark gum trees, i.e. *Eucalyptus obliqua* L'Herit. and *E. baxteri* (Benth.) Maiden et Blakely (cited incorrectly as *E. capitellata* Sm., see BLAKELY 1972), and that the adults were rarely observed on the trunks of the same tress. HAWKESWOOD & PETERSON (1982) listed a number of larval host records of *Eucalyptus* spp. and *Metrosideros* sp. (Myrtaceae) in New South Wales. The larval host records that are available at present for *N. vetusta* are reviewed in Table 1. The data available at the present time indicate that *N. vetusta* displays first order oligophagy (sensu JOLIVET 1992) on *Eucalyptus* and *Metrosideros* (Myrtaceae). In addition, the related species, *N. simillima* Van de Poll has been recorded from *Eucalyptus* (HAWKESWOOD & PETERSON 1982; HAWKESWOOD 1990). *Nascio,* an endemic Australian genus, therefore shows a very close relationship with *Eucalyptus* which is probably ancient and co-evolutionary (HAWKESWOOD & PETERSON 1982). The record of *Metrosideros* as a larval host (HAWKESWOOD & PETERSON 1982) represents a recent selection to an introduced plant growing in an urban environment since *Metrosideros* is not native to Australia. From the examination of the larval/pupal chambers, it is evident that *N. vetusta* is not a deep-boring buprestid and that if the bark is thick enough, the larvae will remain in the bark without gnawing into the underlying sapwood. Clearly the beetle is able to derive enough nutrients and moisture from the dead bark itself without resorting to feeding on the more nutritive sapwood. Intra-specific competition may be contributing to broader niche specialization in terms of larval food, i.e. sapwood and bark. It appears, like other Australian Buprestidae, e.g. *Diadoxus* (HADLINGTON & GARDNER 1959) and *Anilara* (HAWKESWOOD 1988), that *N. vetusta* is capable of forming large populations in the wood of selected trees, almost to the exclusion of other wood-boring beetles. It is probable that this species, while being widespread, displays only larval abundance and that adults (at least in the field) are uncommon, do not have a very long life-span and do not feed or rarely feed. *Nascio* (sensu stricto) has not been recorded as floral, foliage or bark feeders in the adult stage, but further observations may shed some light

Plate 2. Dead adult of *Nascio vetusta* (Boisduval) in the dead wood of *Eucalyptus goniocalyx* F. Muell., Hill End, New South Wales. (Photo: J. R. TURNER).

Table 1. Summary of the larval host records for the Australian buprestid *Nascio vetusta* (Boisduval).

Host plant species	Reference	State
Eucalyptus baxteri (Benth.) Maiden et Blakely	TEPPER (1887)	South Australia
Eucalyptus obliqua L'Herit.	TEPPER (1887)	South Australia
Eucalyptus haemastoma Sm.	HAWKESWOOD & PETERSON (1982)	New South Wales
Eucalyptus saligna Sm.	HAWKESWOOD & PETERSON (1982)	New South Wales
Metrosideros sp.	HAWKESWOOD & PETERSON (1982)	New South Wales
Eucalyptus goniocalyx F. Muell.	TURNER & HAWKESWOOD (this paper)	New South Wales

on this matter. BROOKS (1949) recorded *N. simillima* on *Eucalyptus resinifera* Sm. but did not clearly indicate whether the beetle inhabited the leaves only, the bark only, or both, while WILLIAMS & WILLIAMS (1983) briefly noted that *N. vetusta* had been found on *Eucalyptus* trunks, but also did not describe any feeding by the adults.

Eucalyptus goniocalyx, the Spotted Mountain Gum, has not been recorded previously as a larval host for an Australian buprestid. This species is a tree growing to 30 m high which prefers mostly deep, sandy soil and extends from the coast to the tablelands up to 1,000 m altitude from Victoria to New South Wales and South Australia (BLAKELY 1972). It is widespread in the Blue Mountains and associated tablelands. The beetle fauna associated with this tree is poorly known, so that any further observations are likely to substantially increase knowledge in this area.

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References

BLAKELY, W. F. (1972). A Key to the Eucalypts (with descriptions of 522 species and 150 varieties). – Forestry and Timber Bureau, Canberra, 359 pp.

BROOKS, J. G. (1949). North Queensland Coleoptera and their food plants. Part 2. – North Queensland Naturalist, **16,** 6–7.

CARTER, H. J. (1929). A check list of the Australian Buprestidae. – Australian Zoologist, **5,** 265–304.

HADLINGTON, P. and GARDNER, M. J. (1959). *Diadoxus erythrurus* (White) (Coleoptera: Buprestidae), attack of fire-damaged *Callitris* spp. – Proceedings of the Linnean Society of New South Wales, **84,** 325–332 + plate XVI.

HAWKESWOOD, T. J. (1988). A review of larval host records for twelve Australian Buprestidae (Coleoptera). – Giornale Italiano di Entomologia, **4,** 81–88.

– (1990). A survey of the jewel beetles (Coleoptera: Buprestidae) from the Townsville district, northern Queensland, Australia. – Giornale Italiano di Entomologia, **5,** 23–30.

HAWKESWOOD, T. J. and PETERSON, M. (1982). A review of larval host records for Australian jewel beetles (Coleoptera: Buprestidae). – Victorian Naturalist, **99,** 240–251.

JOLIVET, P. (1992). Insects and Plants: Parallel Evolution and Adaptations (Second Edition). Flora and Flora Handbook no. 2, Sandhill Crane Press, Inc., Florida, USA, 190 pp.

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 & Son, Adelaide, 46 pp.

TILLYARD, R. J. (1926). Insects of Australian and New Zealand. – Sydney, 560 pp.

WILLIAMS, G. A. and WILLIAMS, T. (1983). A list of the Buprestidae (Coleoptera) of the Sydney Basin, New South Wales, with adult food plant records and biological notes on food plant associations. – Australian Entomological Magazine, **9,** 81–93.

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