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Phylogeny and distribution of the Australian longicorn beetle genus *Uracanthus* Hope (Coleoptera: Cerambycidae)

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Abstract

The Australia genus *Uracanthus* consists of 39 species and its larvae are known to be borers of at least 31 genera of trees and parasitic plants in 15 families (Asteraceae, Betulaceae, Casuarinaceae, Cupressaceae, Fabaceae, Loranthaceae, Myrtaceae, Pittosporaceae, Proteaceae, Rhamnaceae, Rosaceae, Rutaceae, Sapindaceae, Sterculiaceae, and Xanthorrhoeaceae), including some economically important crops such as citrus, litchi, peach, plum, and apricot. The phylogeny and biogeographic distribution of the genus were investigated in this paper. Here, the monophylies of the genus and seven species groups are inferred based on morphological characters of 39 ingroup and four outgroup species. However, several species groups still need additional steps to become monophyletic and are currently considered paraphyletic. The *Uracanthus* fauna occur in five biogeographic subregions: the Kosciuskan, Western and Eyrean in southern and central Australia, and the Torresian and Timorian in northern Australia. The fauna are richest with highest endemism in the Kosciuskan and Western. The Kosciuskan and Western are similar in faunal composition and closely related; the Eyrean has probably acted as a faunal exchange transit area between the Kosciuskan and Western, and the two northern Australian subregions have no endemic species. When the areas of endemism of each species are attached to the proposed phylogenetic tree, a clear picture of the distribution patterns of species groups in relation to phylogeny is obtained. It is suggested that the speciation and species radiation of *Uracanthus* may have occurred first in the Kosciuskan, then in the Western, and finally in the Eyrean, Torresian, and Timorian.

Key words: Cerambycidae, Cerambycinae, *Uracanthus*, phylogeny, biogeography

Introduction

The genus *Uracanthus* was erected by Hope (1833) under the family Stenochoridae (by monotypy). It is now a large group of longicorn beetles in the Australian Region, consisting of 39 species and distributed in all states of Australia (Thongphak & Wang 2007). The larvae of this genus are borers of at least 31 genera of trees and parasitic plants, including some economically important crops such as citrus, lychee (or litchi), peach, plum, and apricot (McKeown 1947; Duffy 1963; observed by Moore 1972; Rondonuwu & Austin, 1988; Matthews 1997; Hawkeswood 2002; Thongphak & Wang 2007). Adults visit flowers of various tree species and are attracted to artificial light (Thongphak &Wang 2007). As several species are important pests of fruit trees in Australia, this genus may represent a biosecurity risk for countries that trade with Australia. However, the phylogenetic relationships and distributional patterns of *Uracanthus* species have not been investigated prior to this study, making pest risk analysis and biogeographic evaluation difficult.

A phylogenetic treatment of the genus tests its monophyly and infer species grouping, information of which can enhance our understanding of its taxonomic system, pest status and ecological roles. Equally important is the understanding of this genus distribution patterns on the Australian continent and Tasmania.

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