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Biosystematics of New Zealand Longicorn Beetle
Genera *Coptomma* Newman and *Calliprason* White
(Coleoptera: Cerambycidae: Cerambycinae)

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Abstract

A revision of the New Zealand cerambycid genera *Coptomma* Newman and *Calliprason* White is made and the scope of these genera is redefined. The genus *Navomorpha* White is synonymised with *Coptomma*. Two species, *N. textoria* and *N. philpotti*, are synonymised with *Coptomma lineata* (Fabricius). Four monotypic genera, *Stenopotes* Pascoe, *Drotus* Sharp, *Pseudocalliprason* Broun, and *Epheus* Broun, are synonymised with *Calliprason*. As a result of this revision, the present number of species in *Coptomma* and *Calliprason* has increased to five, respectively. A new species, *C. marrisi*, is described for *Coptomma*. All known species of these two genera are redescribed. A key to species for each genus is given. Terminalia of both sexes are illustrated and described.

The phylogeny of all species of these genera is analysed cladistically. The monophyly of *Coptomma* and *Calliprason* is confirmed with the former being supported by 5 good synapomorphies and the latter by 11. Subdivisions of each genus are discussed.

Biological knowledge of the two genera is summarised except *Calliprason elegans* and *C. costifer*. *Coptomma* is widely distributed in both main islands, Stewart Island and Great Island of the Three Kings Islands; *Calliprason* is widely distributed in the North Island and the Chatham Islands, rarely in the South Island. The distribution of each species is mapped and discussed.

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CHAPTER 1

GENERAL INTRODUCTION

1.1 The Project

The cerambycidae are a group of beetles whose larvae bore inside trees and other woody plants. Some species are serious pests in New Zealand, such as *Oeomona hirta* (Fabricius), attacking citrus and grape vines, and *Navomorpha lineata* (Fabricius), damaging Douglas Fir and *Cryptomeria* trees (Dumbleton, 1957; Bain, 1976). Sound systematic and distributional knowledge is needed to help design control strategies for pest species and approaches to biodiversity conservation. However, the taxonomy of New Zealand cerambycids is still very unsettled, making applied entomological research and pest control difficult.

Preliminary examination of all museum cerambycid collections in New Zealand at the beginning of this project showed that in the subfamily Cerambycinae, there were numerous monotypic genera but generic status of many seemed not justified. During the course of the preliminary study, I found that two distinct and very different groups of species, which were assigned to seven different genera, might be in fact two distantly related genera. The first group included two genera, *Coptomma* Newman with one species and *Navomorpha* White with six species, and the second consisted of five monotypic genera, *Calliprason* White, *Pseudocalliprason* Broun, *Drotus* Sharp, *Stenopotes* Pascoe and *Epheus* Broun. Obviously, these genera needed revising and species needed redescribing. In addition, the relationship between species within each group has not previously been studied from a cladistic perspective. Considering the significance of these two groups of cerambycids and the amount of time needed for their revisions, I decided to work on their systematics for my one-year masterate programme.

1.2 Historical Background to the Taxonomy of the Two Selected Groups

Fabricius (1775) described three species, *variegatum*, *sulcatum* and *lineatum* under the genus *Callidium*. In 1840, Newman erected a new genus *Coptomma* for the species *C. virgatum* [= *C. variegatum* (Fabricius)] and *C. textorium* Newman. Three years later Dieffenbach (1843) transferred *Callidium sulcatum* and *C. lineatum* to *Coptomma*.

White (1855) proposed the genus *Navomorpha* accommodating species *Coptomma lineatum* (Fabricius), *C. sulcatum* (Fabricius) and *C. acutipenne* White. The number of species in *Navomorpha* increased to six in 1926.

White (1843) described a species, *sinclairi*, under a new genus *Calliprason*, and another species, *marginatum*, under the same genus three years later (White, 1846). Broun (1880) proposed a new genus *Pseudocalliprason* based on the type species *C. marginatum*. New genera and species *Stenopotes pallidus*, *Drotus elegans* and *Epheus costifer* were described by Pascoe (1875), Sharp (1877) and Broun (1886), respectively.

The genera and species of my selected groups are listed in Table 1.1.

Table 1.1 Taxonomic framework of the selected groups of cerambycids at the commencement of the project in 1997

Genus	Species
<i>Coptomma</i>	<i>variegata</i> (Fabricius), 1775
<i>Navomorpha</i>	<i>sulcata</i> (Fabricius), 1775
	<i>lineata</i> (Fabricius), 1775
	<i>stictica</i> Broun, 1893
	<i>philpotti</i> Brookes, 1926
	<i>douei</i> Lucas, 1863
	<i>textoria</i> (Newman), 1840
<i>Calliprason</i>	<i>sinclairi</i> White, 1843
<i>Pseudocalliprason</i>	<i>marginatum</i> (White), 1846
<i>Stenopotes</i>	<i>pallidus</i> Pascoe, 1875
<i>Drotus</i>	<i>elegans</i> Sharp, 1877
<i>Epheus</i>	<i>costifer</i> Broun, 1886

1.3 Relationships

There has been almost no work on relationships between species within each group apart from fragmentary comments of the relationships between some genera made by Broun (1880, 1893). For example, Broun (1880) pointed out that *Pseudocalliprason marginatum* should be placed near *Calliprason sinclairi*. He also stated (1893) that *N. stictica* was similar to *N. lineata*. Needless to say, such relationships would be brought to light through a phylogenetic analysis of those species using modern methods and techniques.

1.4 Distribution Records

The distribution records of known species (Fabricius, 1801; D'Urville, 1835; Newman, 1840; Dieffenbach, 1843; White, 1846; White, 1855; Redtenbacher, 1868; Bates, 1874; Pascoe, 1875; Broun, 1880; Hudson, 1934; Bain, 1976; Zondag & Bain, 1976) are listed in Table 1.2. No further description of distribution based on overall consideration of recent collection has been made, an omission which needs rectifying as a basis for work in pest quarantine and management, and conservation of beneficial species.

Table 1.2 Distribution records of the species at the commencement of the project in 1997

Species	Distribution
<i>Coptomma</i>	
<i>variegata</i>	New Zealand [mis-recorded as Australia by Newman (1940)]
<i>Navomorpha</i>	
<i>sulcata</i>	New Zealand: Auckland, Christchurch, Tairua
<i>lineata</i>	New Zealand
<i>stictica</i>	New Zealand: Clevedon, Pohangina, Kaitoke, Wainui-o-mata
<i>philpotti</i>	New Zealand
<i>douei</i>	New Caledonia
<i>textoria</i>	New Zealand [mis-recorded as Australia by Newman (1940)]
<i>Calliprason</i>	
<i>sinclairi</i>	New Zealand: Tairua, Whangarei Heads, Wellington
<i>Pseudocalliprason</i>	
<i>marginatum</i>	New Zealand: Tairua, Gollan's Valley, Whangarei
<i>Stenopotes</i>	
<i>pallidus</i>	New Zealand: Waikato, Tairua, Whangarei Harbour, Wellington, Auchland, Katikati
<i>Drotus</i>	
<i>elegans</i>	New Zealand: Tairua
<i>Epheus</i>	
<i>costifer</i>	New Zealand: Wellington, Tuakau, Waikato, Kaeo

1.5 Main Aims of This Study

On the basis of the above knowledge of those longicorn beetles, the present study aims to :

- 1) Provide a thorough taxonomic revision of the above genera, evaluation of taxonomically useful characters, provision of identification keys to species, descriptions of new species and re-descriptions of known species.
- 2) Describe distribution and biology aspects of those genera.
- 3) Undertake a phylogenetic analysis of the revised genera using cladistic methods.