

## A FURTHER NOTE ON MORITZIELLA CORTICALIS (HOMOPTERA : PHYLLOXERIDAE)

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Recently further information on *Moritziella corticalis* specimens from New Zealand has been published (Barson and Carter, 1972). The authors state that "A British Museum specimen (of *M. corticalis*) from New Zealand was taken on oak that according to its label was *Quercus hodgkinsi*. Another specimen in the British Museum collection now recognised as *M. corticalis* was previously recorded by Dumbleton (1964) as *Phylloxera coccina* collected from *Q. robur* twigs in New Zealand."

This information came to my notice too late to be incorporated in my paper on new records of Aphidoidea from New Zealand (Sunde, 1973).

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- SUNDE, R. G., 1973: New records of Aphidoidea (Homoptera) in Zealand. *The N.Z. Entomologist* 5 (2): 127-130.

## INTRODUCED SCARABAEINAE (=COPRINAE) (COLEOPTERA) IN NEW ZEALAND

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### ABSTRACT

Two Australian species of *Onthophagus* Latreille, *O. granulatus* Boheman and *O. posticus* Erichson have long been recognised as present in New Zealand. More recently attempts were made to introduce *Copris incertus* Say from Western Samoa and reported here for the first time are records of *Epirinus aeneus* Wied., from the Cape region of South Africa, apparently established near Christchurch. A key to the New Zealand genera and introduced species of Scarabaeinae is presented.

*Onthophagus granulatus* Boheman and *O. posticus* Erichson, two Australian species, have been known in New Zealand since the 1870's at least (Anon, 1878; Thompson, 1922)<sup>1</sup>. It seems probable that they were introduced in bedding with stock in the early days of settlement. They are often associated with cow and horse dung

and both are common species in the coastal part of south eastern Australia (Matthews, 1972).

Two species of *Onthophagus* have also been described from New Zealand, *O. novaesealandiae* Balthasar, 1946 and *O. leechi* Frey, 1959. It is clear from the descriptions and lack of unassignable material in New Zealand collections that these names are synonyms of *O. granulatus* and *O. posticus* respectively and have been treated as such by recent authors (Frey, 1962; Gourlay, 1964; Matthews, 1972).

Although type material has apparently not been compared there is no reason to doubt this synonymy as material of the two species known to occur in New Zealand has been compared with Australian material in the course of this study and found to be identical.

Both species of *Onthophagus* appear to be widespread in New Zealand, though *O. posticus* seems to be mainly found in the North Island. Neither species is numerous in collections, though *O. granulatus* is much commoner than implied by Hudson (1934) when he stated, "I have not seen more than half a dozen specimens in fifty years." Both species may be locally abundant and populations appear to fluctuate wildly (Anon, 1878; Hudson, 1934).

*Copris incertus* Say, a dung burying species of Mexican origin, was introduced into New Zealand, from Western Samoa, over the period 1955 to 1958 in an effort to reduce nuisance fly populations. Releases were made at Whangarei and Nelson but there is no record of establishment (Thomas, 1960). This species was first introduced from Mexico to Hawaii in 1923, and it is from Hawaiian stock that the material for the other introductions has been taken. Large numbers of insectary-bred individuals were released in northern parts of Australia from 1968 to 1971 as part of the C.S.I.R.O. fly-control programme, and the species has been recently collected by G. F. Gross on Tanna Island, New Hebrides.

Recently (1969, 1971) two specimens of a scarabaeine beetle were collected at Waimari Beach, just north of Christchurch. It was assumed that they were unlikely to be native and efforts were made to establish their identity. They eventually proved to be specimens of a South African genus and were determined as *Epirinus aeneus* Wied., a species only known from the Cape region of South Africa, by Mr. M. Bacchus of the British Museum. The ecological distribution of this species is not known. It is the second South African scarabaeine dung beetle known to have been introduced into the Australasian region, the first being *Onthophagus*

Pascoe's (1875) record of "the Australian *O. fulvolineatus* Bl." repeated in Thompson (1922) is assumed to be a *lapsus calami* for *O. flavolineatus* Blanchard, a synonym of *O. posticus* (Matthews, 1972), since there is no record of an *O. fulvolineatus* from Australia.

*depressus* Harold, which turned up near Sydney, Australia, about 1900 (Matthews, 1972).

The finding of these beetles apparently established on sand dunes at Waimari Beach is unexpected. It can be assumed that **Epirinus aeneus** is, at least in part, an inhabitant of sea-shore environments, as is **Onthophagus depressus**. While accidental introductions of scarabaeine dung beetles are not common, nearly all of those that have occurred successfully (about seven) involve species capable of existing in the immediate environments of ports in both the country of origin and that of arrival. The exact mode of transport is not known for certain in any single instance, but it is most likely to be associated with the shipment of livestock. The relatively large size of **E. aeneus**, together with its occurrence in a settled area, suggest that it is a recent immigrant, otherwise it would have been collected earlier.

In spite of the absence of native mammals (other than bats) in New Zealand, there are two endemic scarabaeine genera and 14 described species here. It is not unknown for islands devoid of native non-flying mammals to have endemic dung beetles, often of great phylogenetic interest (for instance, Mauritius and some Caribbean islands). The beetles undoubtedly fed on the droppings of bats, birds, reptiles, and large snails, and are invariably associated with forest leaf litter. Today they are restricted to the remnants of natural forests and have not benefitted at all from the new sources of dung brought in by European man. Introduced species, on the other hand, inhabit open areas such as pastures and dunes and are of benefit to man by accelerating the re-cycling of minerals through the soil, as well as reducing the amount of breeding medium for flies.

The following key to all the known genera and the introduced species of New Zealand Scarabaeinae is based on superficial characters to enable the species to be easily recognized.

A key to the genera, and known introduced species of Scarabaeinae in New Zealand based on superficial characters.

1. Elytra with a strong dorsolateral carina, so that lateral third underlaps the abdominal sternites . . . . . 2  
    Elytra not underlapping the abdominal sternites, no more than the lateral edge turning ventrally . . . . . 3
2. Discal region of elytra flattened, only slightly convex, body length more than 7 mm.  
    . . . . . **Saphobiamorpha** Brookes  
    (Maoriana Brookes only species)  
    Discal region of elytra strongly convex, very rounded beetles, body length less than 5 mm.  
    . . . . . **Saphobius** Sharp
3. Black all over, except mouth parts; may have a slight

- purplish iridescence . . . . . 4  
 Greenish or brownish beetles . . . . . 5
4. Larger species, body length more than 12 mm. Hind tibiae strongly expanded at apex.  
 . . . . . **Copris incertus** Say  
 Smaller species, body length less than 10 mm. Hind tibiae slender throughout their length.  
 . . . . . **Epirinus aeneus** Wied.
5. Head and pronotum largely dark bronze green, elytra pale fulvous, mottled with dark brown, intervals with a row of prominent shiny granules, each with an erect bristle.  
 . . . . . **Onthophagus granulatus** Boheman  
 Head and pronotum dark green, elytra with odd intervals dark green, even intervals pale fulvous, smooth and shiny, lacking prominent bristles.  
 . . . . . **Onthophagus posticus** Erichson

#### ACKNOWLEDGEMENTS

We wish to thank Mr. P. M. Johns, University of Canterbury, for bringing the specimens of **Epirinus** to our attention, and Mr. M. Bacchus, British Museum (Natural History) for making the identifications.

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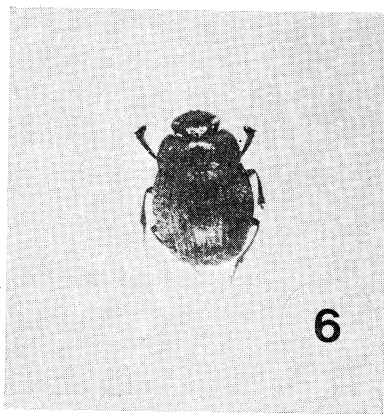
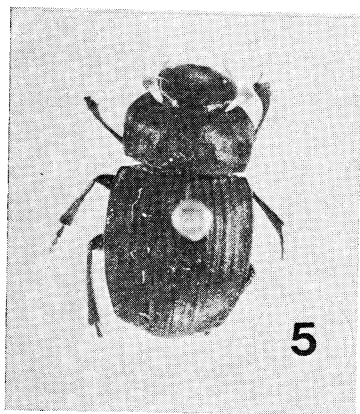
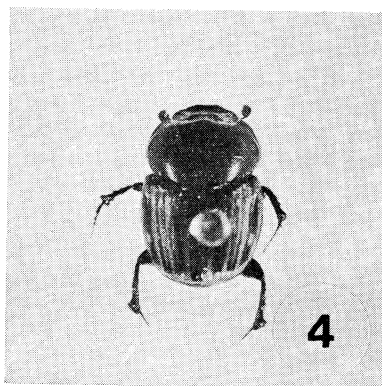
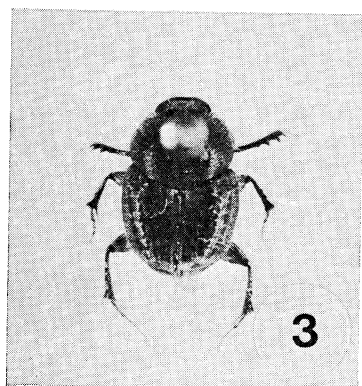
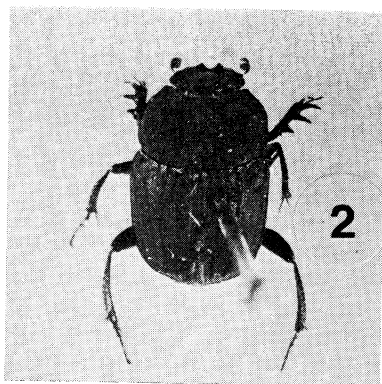
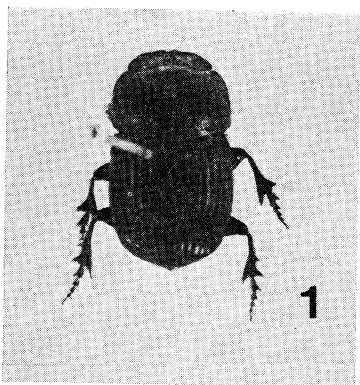


Fig. 1: *Copris incertus* (x2); Fig. 2: *Epirinus aeneus* (x4).  
 Fig. 3: *Onthophagus granulatus* (x4); Fig. 4: *O. posticus* (x4).  
 Fig. 5: *Saphobiamorpha maoriana* (x4); Fig. 6: *Saphobius* sp. (x4).