

Some notes on the occurrence of the Australian beetle *Rhipicera femorata* (Kirby) (Coleoptera: Rhipiceridae)

With 1 Figure

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Abstract: Some field observations on the habitat and occurrence of adults of the Australian beetle *Rhipicera femorata* (Kirby) (Coleoptera: Rhipiceridae) are provided and literature on the species reviewed. The habitat of the species is mostly sandy swamplands and immediate environs, with sedges, grasses and other swampy land trees, e.g. *Melaleuca quinquenervia* S. T. Blake (Myrtaceae). Males outnumber females within any population with ratios varying from 5:1 to 8:1. The species is probably a parasite of larval Cicadidae (Homoptera). Adults of *R. femorata* emerge during spring in north-eastern New South Wales, but the duration of the adult life-span is short, with more or less synchronous emergences occurring over a period of one or two weeks.

Zusammenfassung: Bemerkungen zum Vorkommen des australischen Käfers *Rhipicera femorata* (Kirby) (Coleoptera: Rhipiceridae).– Freilandbeobachtungen zu Habitat und Vorkommen der australischen Käferart *Rhipicera femorata* (Kirby) werden mitgeteilt und anhand der Literatur diskutiert. Das Habitat der Art ist zumeist sandiges Feuchtgelände mit Seggen, Gräsern und Gehölzen feuchter Standorte, z. B. *Melaleuca quinquenervia* S.T. Blake (Myrtaceae). Die Männchen dominieren die Weibchen in jeder Population im Verhältnis 5 : 1 bis 8 : 1. Die Art ist wahrscheinlich Parasit an Zikaden-Larven (Cicadidae, Homoptera). Adulte von *R. femorata* erscheinen im nordöstlichen Neusüdwesten im Frühjahr, und die Dauer ihrer Lebenszeit ist kurz: bei mehr oder weniger synchronem Auftreten kommen sie in einer Periode von ein oder zwei Wochen vor.

Introduction

Most members of the small family Rhipiceridae are extremely rare and consequently little or nothing is known about their biology and habits (HAWKESWOOD 1987). The adults are easily recognized by the large, fan-shaped antennae composed of many long segments, and the presence of membranous lobes on the tarsal segments (HAWKESWOOD 1987). The claws have a group of hairs known as an empodium, which is unusual for beetles (HAWKESWOOD 1987). Adults of Rhipiceridae range in size from 10–25 mm long (HAWKESWOOD 1987). The Feather-horned Beetle, *Rhipicera femorata* (Kirby) (Coleoptera: Rhipiceridae) (Figure 1) is one of approximately 13 species known to occur within Australia (LAWRENCE & BRITTON 1994) and is the only one of the genus known to occur in all of the eastern States (HAWKESWOOD 1987; MOORE 1987). KRAKE (1992) added some general observations on the species from the Shepparton area of northern Victoria, which are reviewed later in this present article.

Observations

The following is a brief account of my own personal observations on *R. femorata*. During August 1991 and 1992, I observed a number of adults of *R. femorata* flying slowly and erratically upwards from the ground beneath a large *Melaleuca quinquenervia* S. T. Blake (Myrtaceae) growing in sandy soil near a small creek at one side of the North Star Caravan Resort, Hastings Point, north-eastern New South Wales (28° 20' S, 153° 35' E). Several of the specimens were



Fig. 1. Adult male of *Rhipicera femorata* (Kirby) (Coleoptera: Rhipiceridae) on foliage of *Acacia* sp. (Mimosaceae) in the Dalby district, Queensland. (Size of specimen is about 15 mm long). (Photo. D. G. Knowles, from HAWKESWOOD, 1987)

collected. The species was present for a week and other examples were observed during sunny periods at and near the site. During September 1992, I observed further specimens of *R. femorata* resting on foliage and trunks of small trees of *M. quinquenervia* as well as on the foliage of sedges (Cyperaceae) and grasses (Poaceae) at the edge of a swamp north of Cabarita Beach (Bogangar), about 2–3 km north of the Hastings Point site. A total of 15 beetles were collected during the two seasons of observations, of which only 3 were females (i.e. ratio of 5 males to one female). The species had not been observed during previous years despite much field work in the north-eastern New South Wales region from Ballina to the Queensland border since 1985.

Discussion

KRAKE (1992) observed *R. femorata* (Kirby) on 22 March 1992 in the Shepparton area of northern Victoria during the time of 0800–0900 hrs (Eastern Australian Summer Time) where beetles were observed on grasses, sedges and rushes. The location of Krake's observations was an area of typical river woodland lying between the Goulburn River and nearby swamp; the trees present were *Eucalyptus camaldulensis* Denhn and *E. microcarpa* (Maiden) Maiden (Myrtaceae), together with stands of *Acacia dealbata* Link (Mimosaceae); the specific collection site was an area of about 250 square metres, which was densely covered with common Wallaby Grass (*Danthonia* sp., Poaceae), Thread Rush (*Juncus flavidus* L., Juncaceae) and common Tussock Grass (*Poa labillardierei* Steudel, Poaceae). The beetles were observed clinging to the higher stalks of the sedges, grasses and rushes; they had been sheltering there from the previous night or had recently emerged from their pupal sites. KRAKE (1992) collected more than 60 specimens of *R. femorata* and found a male: female ratio of 8 : 1, which had supported previous collection data in that few females had been collected (MOORE 1987). The size of the males varied from 13.0–19.0 mm in length, while the females measured between 12.5–17.0 mm (KRAKE 1992).

My own observations were undertaken at sites which contain moist ground, i.e. in the *Melaleuca* swampland below the bases and leaf litter of *Melaleuca quinquenervia*, the common *Melaleuca* species of the region. [This species is a tree to 10–15 metres high with papery bark; it is common

in coastal swamps and lake systems from Sydney to north Queensland (ROBINSON 1991)]. *Rhipicerca femorata* appears to emerge synchronously within a week or so during August to September in the Hastings Point-Cabarita Beach area of north-eastern New South Wales and appears to emerge from soft, moist (but not too wet), sandy soil (some individual beetles have been observed on this substrate before they took flight). Larval Rhipiceridae are ectoparasites of cicadas in North America (MOORE 1987; LAWRENCE & BRITTON 1994). MOULDS (1990) illustrated a probable larval *Rhipicerca* species attached to *Cycochila australasiae* (Donovan) (Cicadidae). It is probable that *R. femorata* is also a parasite of cicadas and that the adult beetles emerge from their hosts (i.e. larval cicadas) in the ground during spring when warmer weather conditions trigger their emergence from the ground surface. The adults of *R. femorata* appear to prefer mating on the foliage of the swamp plants. How cicadas are parasitised in the first place is not known with any certainty, but perhaps eggs are laid in the moist soil, later hatch and the young larvae make their way towards the cicada nymphs in the ground, which they attach themselves to the cicada bodies for further development. Loose sandy soil would be an important factor for small beetle larvae requiring burrowing for some distance in order to successfully locate their cicada hosts. Further research is definitely required on these beetles before we have an adequate understanding of their biology but due to the scarcity and seasonality of *Rhipicerca*, observations will have to be opportunistic.

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