Cryptobarsac rubriops, a new genus and species of selizine Flatidae (Hemiptera: Fulgoromorpha) from grasstrees (Xanthorrhoea preissii) in south Western Australia

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Abstract - Cryptobarsac rubriops gen. et sp. nov. (Hemiptera: Fulgoroidea: Flatidae) is described from grasstrees, Xanthorrhoea preissii, in southwestern Western Australia. The genus is placed in the Tribe Selizini. The taxonomy, zoogeography and plant associations of the Australian Selizini are discussed.

INTRODUCTION

The Australian Flatidae (Hemiptera: Fulgoromorpha) were reviewed by Fletcher (1988) who provided descriptions of 22 genera and a key for their separation. An electronic version of this key was published by Fletcher and Larivièere (2001+). More than half of the genera are endemic and associated with the sclerophyllous flora that dominates most of the continent. Work by Medler (1986, 1990, 2000) has updated the generic identities of the Flatidae of Australia and neighbouring areas, particularly New Guinea, and these changes have been incorporated into Fletcher and Larivièere (2001+).

Research by the second author has focussed on the hemipterous fauna of selected species of native sclerophyllous plants in regenerating bauxite mine pits and surrounding Jarrah (Eucalyptus marginata Smith) forest in SW Western Australia. Such intensively targeted collecting has found a number of species of unusual Hemiptera and one of these is described below as Cryptobarsac rubriops gen. and sp. nov. from Xanthorrhoea preissii Endl. (Xanthorrhoeaceae).

Abbreviations: ASCU, NSW Agricultural Scientific Collections Unit; WADA, Western Australian Department of Agriculture; WAM, Western Australian Museum.

Cryptobarsac gen. nov.

Type species: Cryptobarsac rubriops sp. nov.

Diagnosis

Habitus, from lateral aspect, as in Figure 1. Head short, with frons (Figure 2) broader than long, convex bearing median longitudinal carina and semicircular carina reaching to lower level of eyes on each side and fused to percurrent apical marginal carina over median third. Vertex (Figure 3) very short, concave behind elevated anterior marginal carina. Pronotum (Figure 3) broadly rounded anteriorly, front margin reaching to anterior margin of eyes, carinate, extending laterally to almost meet hind margin, which is strongly and evenly concave. Dorsal pronotal surface flatish behind anterior curved carina, raised along median line on posterior half. Postocular prominences reduced in height but extended dorsoventrally. Mesonotum (Figure 3) broader than long, without median carina, lateral carinae well developed, posterior ends closer together than anterior. Tegmina (Figure 1) narrow, parallel-sided, evenly rounded posteriorly, angles not distinguished, outwardly prominent along basal portion of R. One subapical line present. Costal membrane as wide as costal cell then widening beyond apex of cell. R, M and Cu originating in basal cell, Rs separating some distance from base, Cu simple or branched before midlength. Hind tibia with two spines.

Etymology

The generic name, which is feminine, reflects the cryptic microhabitat in which the type species was found and the superficial similarity of the species to members of the genus Barsac Fletcher which occurs in drier habitats of Australia.

Notes

In the key provided by Fletcher (1988) this genus keys to couplet 4 on the basis of two hind tibial spines. It can be distinguished from Mimophantia Matsumura by having the head not extended in front of the eyes to form an extensive vertex and from Anzora by the presence of a clear percurrent
carina defining the anterior margin of the vertex and separating it from the frons. The key provided by Fletcher and Larivière (2001+) has been updated to include Cryptobarsac.

The short head, brown coloration and narrow parallel-sided tegmina outwardly prominent near the base of R (Medler, 1990, uses the term “bulla” for this feature) place Cryptobarsac in the tribe Selizini of the Subfamily Flatinae as defined by Melichar (1923).

Cryptobarsac rubriops sp. nov.
(Figures 1-6)

Types

Holotype

Male, Jarrahdale, SE of Perth, WA, beating Xanthorrhoea preissii in jarrah forest, 10 December 2000, M. Fletcher and M. Moir (WAM)

Figures 1-4 Cryptobarsac rubriops gen. et sp. nov.: 1, adult, habitus; 2, adult, facial view of head; 3, adult, dorsum; 4, female genitalia, ventral view; a: anal segment, s: secretory area, ov: ovipositor valves. Scale line: 1 mm
Paratypes
5 males, 5 females, Jarrahdale, WA 32°66'49"S
116°10'12"E, tree beating, Xanthorrhoea preissii, November 2001, Melinda Moir (2 males, 2 females:
ASCU; 2 males, 2 females: WAM; 1 male, 1 female:
WADA)

Description
Small, length (in midline from apex of head to tip
tof tegmen): males (n=6) 5.12 ± 0.22 mm, females
(n=5) 5.47 ± 0.12 mm, brown, paler ventrally and on
veins of tegmen, dark brown in cells. Some
specimens pale brown on head and thorax with
base of tegmen pallid. Eyes dark red in living
specimens fading to dark reddish brown when
death. Male genitalia: pygofer (Figure 5) short,
lacking process at posterodorsal corner which bears
line of short setae. Subgenital plates (Figure 5)
convex on basal half, apically truncate with well
developed dorsal process and in line with
apical truncation of plate. Anal segment long and
broad with line of 3-4 short marginal setae slightly
beyond midlength. Aedeagus as in Figure 6, with
single pair of recurved processes on phallosoma.
Female, with ovipositor valves reduced to paired
ovate lobes. Posterodorsal section of pygofer
flattened, bearing pad of dense packed setae,
opposed to broadly expanded ninth (anal) segment
held horizontally and at least 2/3 length of
remainder of abdomen together (Figure 4).

Etymology
The specific name refers to the dark red eyes.

Notes
With other flatid genera, the male genitalia
provide the most useful attributes for
distinguishing between species. With only the
single species known, it is presumed that the
structure of the aedeagus (Figure 6) will provide
diagnostic features of this species. The lack of a
process on the posterodorsal corner of the pygofer
and the presence of a strong process on the
subgenital plates (Figure 5) may be generic features
as also may be the strongly expanded anal segment
of the female.

DISCUSSION

Taxonomy
Melichar (1923) provided keys to genera of the
world Flatidae and included a number of
Australian genera in the Tribe Selizini. These were
Massila Walker, Dascalina Melichar, Jamella Kirkaldy
and Uxantis Stål. Modifications to Melichar's (1923)
generic arrangements were made by Metcalf (1957),
who transferred Uxantis to the subfamily
Flatoidinae, and Medler (1990), who transferred
Janella, also to the Flatoidinae. New genera of
Australian Selizini were added by Fletcher (1988)
and, with the addition of the current new genus, the
Australian Selizini now includes the five genera
Massila with four species, Dascalina with four species,
Barsac Fletcher with four species and the
monotypic genera Austrodascula Fletcher and
Cryptobarsac gen. nov. All Australian Selizini are
endemic at the generic level.

Of these genera, only Barsac and Cryptobarsac have
a subapical line of crossveins. The general shape of
the head and tegmina are similar between the
species in the two genera as well. However, the four
species of Barsac have similarities in the structures
of the genitalia, which are quite different from the
genitalia structures of C. rufriaps. These include the
subgenital plate being convex with outwardly
curving dorsal process and the presence of two
pairs of aedeagal processes one of which is
mounted apically. In C. rufriaps the subgenital plate
is triangular with a straight dorsal process that does
not curve outwards and the aedeagus has a single
pair of non-apical processes.

In the key offered by Melichar (1923), Cryptobarsac
keys to Dascalina, from which it differs in the shape
of the tegmen, the apical margin being concave in
Dascalina, and in the shape of the head, which is
extended forward a short distance so that the frons
curves ventrally to become almost horizontal in

Figures 5–6 Cryptobarsac rufriaps gen. et. sp. nov.: 5, male terminalia, lateral view; 6, aedeagus,
lateral view.
Dascalina. Cryptobarsac also differs from all other Australian Selizini in having two spines rather than one on the hind tibia. In Australia, only Anzora unicolor (Walker) (Tribe Nepheshini, Subtribe Cryptoflatina) and Minophantia stictica (Melichar), which was moved from the Tribe Phyllyphantini to the Tribe Phantiini by Medler (1988), have two spines on the hind tibia.

Biology
Fletcher (1979) provided details of the ovipositor and egg laying strategies of some species of Flatidae, many of which glue rafts of eggs onto leaf surfaces while others insert them into plant tissue. Anzora unicolor has a well developed sclerotised ovipositor bearing marginal teeth which is clearly capable of penetrating plant tissue while with other species the ovipositor is reduced to small lobes used for manipulating eggs into a surface raft. The Australian species of Selizini, including C. rubriops, have the reduced type of ovipositor consisting of small rounded lobes that would be incapable of cutting plant tissue. An expanded anal segment such as is found in C. rubriops (Figure 4) is also found in Massila and Dascalina and is presumably used either to help shape the egg mass or to spread a protective covering of wax over the eggs as was described in Siphanta acuta (Walker) by Muir and Kershaw (1912). Even in old pinned specimens, the anal segment usually still carries quantities of waxy filaments. These species presumably lay an egg mass similar to those laid by Siphanta species with the wax produced from the secretory area and manipulated by the large anal lobe. The degree of expansion of the anal segment found in female C. rubriops and species of Massila is greater than that found in species in other genera.

Habitat and plant associations
The Australian Selizini are frequently distributed in the more arid areas of the continent. Barsac species are found in inland areas of Western Australia, South Australia and Queensland. Austrodascalia evansorum Fletcher was described from Einasleigh River, a remote inland town in North Queensland, which has a monsoonal climate with extended periods of drought. Dascalina is distributed in similar monsoonal areas across northern Australia from Western Australia to Queensland. Cryptobarsac is described above from the northern Jarrah forest at Jarrahdale, 50km SE of Perth in Western Australia. This is an area of highly leached, nutrient deficient lateritic soils, with rainfall (1100 – 1300 mm per annum) confined mainly in the period from May to July (Ward et al. 1996). Massila species are distributed along the eastern coastal areas of Queensland with M. sicca Walker extending into New South Wales as far south as Sydney.

Species of Massila are commonly found on exotic garden plants in coastal districts of eastern Australia but host associations are poorly known for most of the Australian Selizini. The only host records known prior to this current work is a paratype of Barsac cocoa Fletcher collected from foliage of Eucalyptus gamophylla F.Muell. (Myrtaceae) near Mt Bruce in the Pilbara district of Western Australia and the type series of Austrodascalia evansorum Fletcher collected from Melaleuca sp. (Myrtaceae) at Einasleigh River in North Queensland. E. gamophylla is a eucalypt species that grows as a mallee in deep sandy soils in arid regions of Western Australia, South Australia and the Northern Territory. Melaleuca is a genus of more than 200 species ranging from small shrubs to huge trees scattered across a wide range of habitats in Australia (Craven & Lepski 1999). The most common species of the genus found in the Einasleigh River region of Queensland is M. viridiflora Gaertner (J.F. Donaldson, pers. comm. 2002).

The known specimens of C. rubriops were all collected by beating the “skirt” of dead leaves that normally adorn the upper parts of the trunk of X. preissii. The insects hide deep inside the skirt close to the main stem. Their narrow shape presumably helps them to move within the leaves of the grasstree where the dull brown coloration may provide further protection from detection. It is unknown whether they move out onto the living leaves to feed at night or whether they gain nourishment by feeding at the bases of the leaves under the skirt.

Mallee growth habits provide a microhabitat towards the base of the multiple trunks where bark and dead leaves accumulate providing protection for insects similar to that provided by the hanging skirt of dead leaves around the stem of X. preissii. However, any generalisation about microhabitats preferred by the species of Selizini found in Australia would be speculative without considerable further host data.

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