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THE NYMPH OF *CRYPTORHAMPHUS ORBUS* STÅL (HEMIPTERA: LYGAEIDAE: CRYPTORHAMPHINAE)

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Abstract

The fifth instar nymph of *Cryptorhamphus orbus* is described and compared with the adult of this species and with the nymphs of other lygaeids.

INTRODUCTION

Until now nothing has been known about the nymphs of Cryptorhamphinae, a subfamily of Lygaeidae recorded only from Australia and Fiji. In recent years the morphology of the nymphs has been found to be as useful as that of adults in studies of the taxonomy and phylogeny of lygaeids (e.g., Sweet and Slater 1961).

Thus, although at present the only available nymphal representative of the subfamily is a single fifth instar of *Cryptorhamphus orbus* Stål, it seems warranted to describe it and compare it with the adult of this species and the nymphs of related subfamilies of Lygaeidae.

The subfamily Cryptorhamphinae Stål, 1865, erected to include *Cryptorhamphus* Stål, 1859, had subsequently been sunk in the Cyminae until revived by Hamid (1971) to include *Cryptorhamphus* and *Gonystus* Stål, 1874. The morphology of the nymph supports his conclusions in regarding the Cryptorhamphinae as a distinct subfamily 'only remotely related to Cyminae'.

FIFTH INSTAR (in ethanol)
(Figs. 1, 2)

1 ♀, Mt. Eliza (526 ft) Victoria, 20.xii.1970, M. B. Malipatil, collected with 3 (2♀, 1♂) adults, sweeping on tall (2-3 ft) grass (Poaceae).

Body elongate, subelliptical in outline; body and mesothoracic wing pads devoid of punctures; general colouration brown: apical antennal segment, tip of labium, and apex of second tarsal segment of all legs black or piceous; second antennal segment, abdominal terga beneath and between wing pads, and median area of sterna of second and third abdominal segments yellow-brown; eyes, thoracic sterna and pleura adjoining coxae dark red; the following reddish brown: sides of dorsum of head, first antennal segment, posterior border of pronotum, calli, wing pads except laterad anteriorly, lateral margins of mesoscutellum, scent gland auricles and their surrounding oval areas, 9th abdominal segment, sides of 7th and 8th terga, spiracles, transverse broken streaks on each side of abdominal terga, labium, venter of head except gula, bases of coxae, and ovipositor: adult ocellar areas showing red through nymphal cuticle.

Tylus and juga produced anterior to antennifers; tylus pointed, much exceeding juga and not exceeding basal $\frac{3}{4}$ of first antennal segment; antennifers not acutely produced; antennae stout, first segment swollen, apical segment subfusiform and pointed at apex; labium robust, apex nearer to fore coxae than to mid coxae, basal segment reaching to more than half way along length of head, second segment slightly surpassing base of head; pronotum more than twice as wide posteriorly as long, with a median dorsal longitudinal depression, lateral margins explanate, nearly straight, anterior margin shallowly concave, nearly straight in middle, posterior margin straight; wing pads reaching caudad to anterior margin of fourth abdominal tergum; dorsal abdominal sutures fairly straight, except those between segments 7-8 and 8-9 which are slightly curved caudad at sides; margin of abdomen scalloped with lateral margins of each segment nearly straight; 8th tergum broader than long, not divided into 3 sclerites as in adult female; tergum 9 bilobed with broad U-shaped slit on fairly rounded posterior margin; posterior corners of segments 7 and 8 slightly lobed; legs stout, fore femora not swollen and unarmed below.

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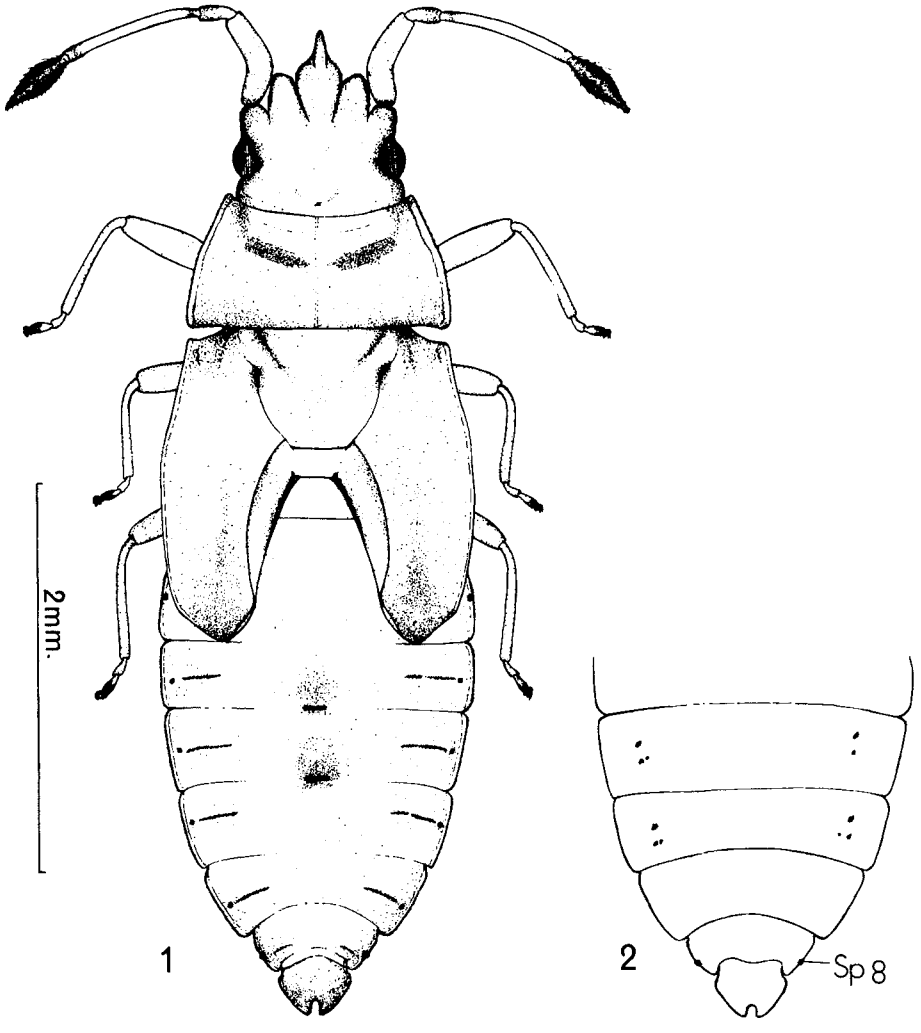
Measurements (in mm).—Total length 5·0; maximum width 1·62. Length of antennal segments I:II:III:IV, 0·52; 0·23; 0·81; 0·37. Head length (including tylus) 0·93; width across eyes 0·84; interocular space 0·56. Pronotum, width at anterior margin 0·82; width at posterior margin 1·28; median length 0·59.

Discussion

In addition to the features described above, the following, which occur also in the adult, are characteristic of the Cryptorhamphinae and distinguish these from the Cyminae (Hamid 1971):

1. Bucculae long, extending to base of head.
2. Dorsal abdominal scent gland orifices present between terga 4-5 and 5-6 only.



Figs. **1, 2.**—*Cryptorhamphus orbus* Stal, ♀, fifth instar nymph: **(1)** dorsal view; **(2)** Ventral view of terminal segments of abdomen to show trichobothrial arrangement. (Sp 8 = spiracle of 8th abdominal segment).

3. Trichobothria present (Fig. 2) only on abdominal sterna 5 and 6.
In the specimen examined, 3 on right side of sterna 5 and 6 and on left side of sternum 6 (the two posterior trichobothria widely spaced and inner one weakly developed); only 2 (one anterior and one posterior) on left side of sternum 5. Similar differences in trichobothrial number on either side of the same individual have been observed in some nymphs of *Cymus* Hahn (Ledvinka 1970).

Features by which the nymph differs from the adult include:
1. Abdominal terga 3 and 4 fused only in middle (intersegmental sutures present on each side).
2. Body and wing pads devoid of both punctures and spots of any sort which presage the punctation of the adult, such as are present in the nymphs of Cymini (Slater 1952).

The presence of nymphal punctation is not a subfamily character of the Cyminae, since in the tribe Ninini nymphs at least of *Cymoninus* Breddin and *Ninus* Stål lack punctures on the pronotum and mesothoracic wing pads (Slater 1963) and in the tribe Cymini at least some *Ontiscus* lack these punctures. However, in most of the adult characters by which Ninini and Cymini differ from each other (Barber 1956) the Cryptorhamphinae resemble the Cymini, in which they have earlier been placed. The strong punctation of adult Cyminae (and particularly Cymini) is apparently apomorphic within the Lygaeidae; such secondary acquisition is supported by the absence of nymphal punctation in both Ninini and Cryptorhamphinae. All the evidence now indicates that the characteristic adult punctation has been independently developed in the Cyminae and Cryptorhamphinae.
3. Abdominal spiracle 8 present and situated dorsally on the margin of tergum 8 and visible from both dorsal and ventral aspects. In having abdominal spiracles 7 and 8 dorsal, this nymph resembles nymphs of most Cyminae (at least *Ninus, Arphnus* Stål, and *Cymus*, whereas in *Ontiscus australis* Stål both the spiracles are ventral); Lygaeinae (at least *Lygaeus* Fabricius, *Lygaeospilus* Barber and *Oncopeltus* Stål), and Orsillinae (at least *Orsillacis* Barber, *Belonochilus* Uhler, *Nysius* Dallas and *Ortholomus* Stål (Sweet and Slater 1961; DeCoursey 1971). But it differs from nymphs of Cyminae in the characters listed above; from Lygaeinae in not possessing a distinct subcircular dark sclerotized plate surrounding each dorsal scent gland orifice, and from Orsillinae by the absence of mottles or stripes on the wing pads.

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