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A Record of *Cryptoscenea australiensis* (Enderlein) (Neuroptera: Coniopterygidae) in New Zealand, with a Re-description of the Species

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Abstract

AN Australian Coniopterygid, *Cryptoscenea australiensis* (Enderlein), is recorded in New Zealand. Descriptions of adults and immature stages are given, with notes on the life-history.

INTRODUCTION

THE first record of a Coniopterygid Neuropteran in New Zealand was by Tillyard (1926) who recorded an undescribed species of *Helicoconis*. Dumbleton (1936) recorded the introduction and liberation of a few specimens of *Conwentzia psociformis* (Curt.) in Nelson, in 1924, as a control measure against aphids, but stated that the species was not known to have established. The present paper records the discovery in New Zealand of *Cryptoscenea australiensis* (Enderlein) a species previously only known from Australia. The species was identified and is herein re-described by Kimmins; Wise made the collections and here gives notes on the immature stages and life-history.

In October, November, 1959, three female Coniopterygids were taken in a light trap on top of a cliff, ca. 50 feet high, in the Auckland Metropolitan Drainage Board area at Mangere, Auckland. Subsequently, in March, 1960, many specimens of both sexes were swept from rushes (*Junctus acutus* L.) 200–300 yards from the foot of the cliff below the light trap. The rushes were then searched and larvae found. Collecting and observation continued into April, 1960, and

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larvae were found to be predatory on mealy-bugs which also inhabited the rushes. By the end of April there were few adults, but larvae were abundant and could easily be swept from rushes. In the laboratory larvae began to pupate or become inactive. Only one specimen was reared to the adult which emerged during the period 14–21 June. Females held in glass vials in early March readily laid eggs in crevices in the cork, and eggs laid by March 18 had all hatched by April 21.

The larva is very active. It bears an anal sucker (papilla), which assists in locomotion, and progresses by a looping movement similar to that of a looper caterpillar. Larvae typically sink their mandibles well into their prey and by this means sometimes lift a mealy-bug and hold it aloft while feeding. One larva was observed to weave a silk mat first when beginning its coccoon but, in this case, it did not complete the structure and pupated under a few loose strands of silk. The silk is an anal secretion and the larva moves the tip of the abdomen back and forth when spinning.

Mealy-bugs, on which larvae preyed, were common amongst the bases of rush clumps and also occurred in caterpillar tunnels down the centre of rush stems. Specimens have been identified by Dr D. J. Williams, Commonwealth Institute of Entomology, London, as *Trionymus* sp. (Family Pseudococcidae).

Further specimens of *Cryptoscenea australiensis* have been found by Dr Elsie Collyer, of East Malling Research Station, England, while studying phytophagous mites at the Plant Diseases Division, Mt. Albert, Auckland, during the 1959-60 and 1960-61 seasons. Dr Collyer discovered a few isolated adults, larvae, and eggs, on fruit trees and weeds at Mt Albert and also in orchards at Oratia and Huapai. One male was taken in November, 1959, and three females in March, July, and October, 1960.

Mr E. S. Gourlay, of Entomology Division, Nelson, has advised (*pers. comm.*) that he has seen Coniopterygids in one small area in Nelson from time to time over a period of thirty years. This may have been the source of the material recorded by Tillyard (1926) although no specimens have been found in collections. Mr Gourlay has sent, for examination, one of two specimens he reared from mealy-bug material in 1927 (Napier: on black passion vine, 26.4.1927 (Mrs J. I. Cato)). This is a female *Cryptoscenea australiensis.*

Cryptoscenea australiensis (Enderlein) (Fig. 1, Pl. 1f).

1906. *Helicoconis australiensis* Enderlein, *Zool. Jb.* (*Syst.*) *23*: 232 (New South Wales).
1914. *Cryptoscenea australiensis* Enderlein, *Boll. Lab. Zool. Portici, 8*: 226.
1926. ? *Helicoconis* sp., Tillyard, *Ins. Austr. N.Z.*: 320 (New Zealand).

Specimens. Australia: N. Victoria, pred. on *Pseudococcus adonidum*, 2 ♂, 1 ♀. New Zealand: Auckland, Mangere, ex light trap, 18.10.1959, 11.11.1959, 16.11.1959, 3 ♀; same locality, swept ex rushes (*Juncus*), 17.3.1960, ♂♂, ♀♀ (K. A. J. Wise)

The following is a free translation of Enderlein's description of the female: Pale brown, legs whitish. Abdomen grey. Antennae moderately stout, light brown, with twenty-seven segments; the second to fourteenth segments yellowish white; about three-quarters of the length of the wing. Membrane of the wing pale brownish, veins pale brown, those of the hind wing almost colourless. M and Cu_1 in hind wing closely approximated for their basal two-thirds, so that no membrane is visible between them; at the point of their separation there is a trace of a cross-vein. The cross-vein between Sc and R_1 in both wings is situated very near that between R_1 and R_{2+3}, but slightly nearer the wing apex. No cross-

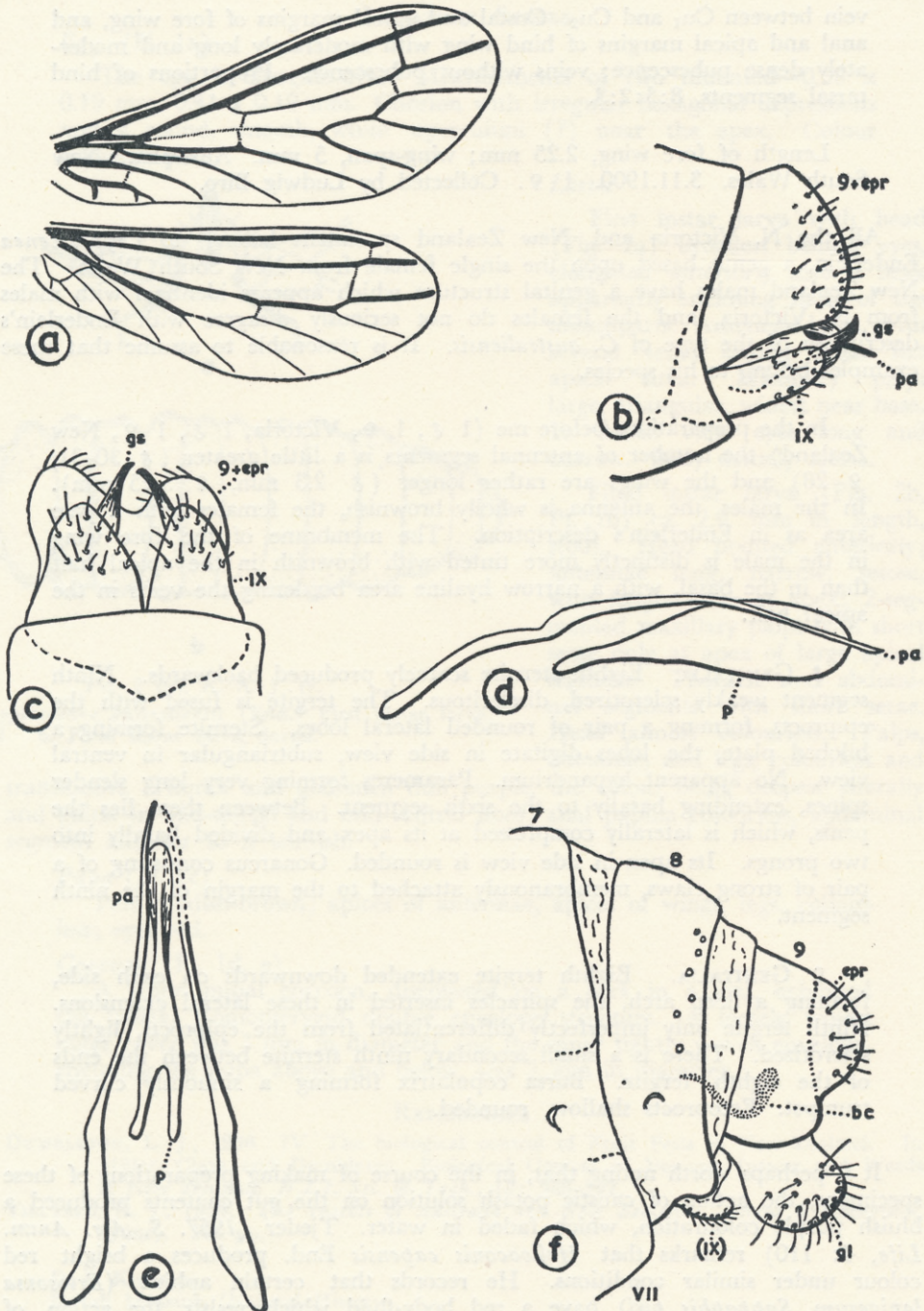


FIG. 1. del. D. E. K.

FIG. 1.—*Cryptoscenea australiensis* (End.) a. ♂ Wings. *Cryptoscenea australiensis* (Enderlein) ♂ ♀ genitalia. b, ♂ Genitalia, lateral. c, ♂ Genitalia, ventral. d, ♂ Parameres and penis, lateral. e, ♂ Parameres and penis, ventral. f, ♀ Genitalia lateral.
(bc = bursa copulatrix; epr = epiproct; gl = gonapophyses laterales; gs = gonarcus; p = penis; pa = parameres.)

vein between Cu_1 and Cu_2. Costal and apical margins of fore wing, and anal and apical margins of hind wing with moderately long and moderately dense pubescence; veins without pubescence. Proportions of hind tarsal segments, 8:3:2:3.

Length of fore wing, 2.25 mm; wing-span, 5 mm. Australia. New South Wales. 3.11.1900. 1 ♀. Collected by Ludwig Biro.

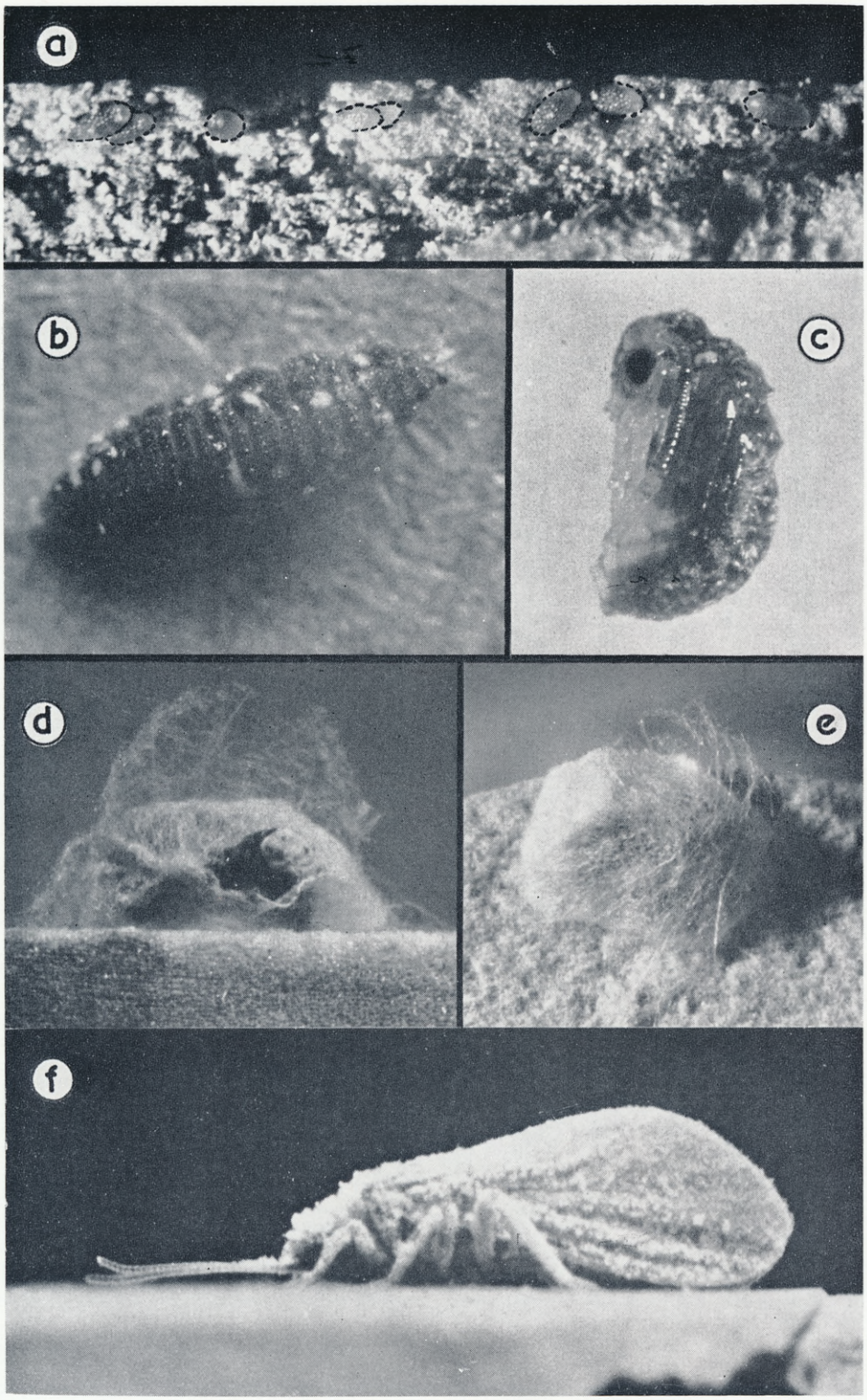
All the N. Victoria and New Zealand specimens belong to *Cryptoscenea* Enderlein, a genus based upon the single female from New South Wales. The New Zealand males have a genital structure which appears identical with males from N. Victoria, and the females do not seriously disagree with Enderlein's description of the type of *C. australiensis*. It is reasonable to assume that these examples belong to his species.

In the preparations before me (1 ♂, 1 ♀, Victoria, 1 ♂, 1 ♀, New Zealand) the number of antennal segments is a little greater (♂ 30–31, ♀ 28) and the wings are rather longer (♂ 2.3 mm, ♀ 3.25 mm). In the males, the antenna is wholly brownish, the females with a pale area as in Enderlein's description. The membrane of the fore wing in the male is distinctly more tinted with brownish in the apical half than in the basal, with a narrow hyaline area bordering the veins in the apical half.

♂ Genitalia. Eighth sternite scarcely produced backwards. Ninth segment weakly sclerotized, discleritous. The tergite is fused with the epiprocts, forming a pair of rounded lateral lobes. Sternite forming a bilobed plate, the lobes digitate in side view, subtriangular in ventral view. No apparent hypandrium. Parameres forming very long slender spines, extending basally to the sixth segment. Between them lies the penis, which is laterally compressed at its apex and divided basally into two prongs. Its apex in side view is rounded. Gonarcus consisting of a pair of strong claws, membranously attached to the margin of the ninth segment.

♀ Genitalia. Eighth tergite extended downwards on each side, forming a deep arch, the spiracles inserted in these lateral extensions. Ninth tergite only imperfectly differentiated from the epiprocts, lightly sclerotized. There is a small secondary ninth sternite between the ends of the eighth tergite. Bursa copulatrix forming a sinuously curved trumpet. Ectoprocts shallow, rounded.

It is perhaps worth noting that, in the course of making preparations of these specimens, the action of caustic potash solution on the gut contents produced a bluish purple colouration, which faded in water. Tjeder (*1957. S. Afr. Anim. Life, 4*: 110) remarks that *Helicoconis capensis* End. produces a bright red colour under similar conditions. He records that certain aphids (*Eriosoma lanigerum, Sappaphis piri*) have a red body-fluid which resists the action of caustic potash, and that in certain Pseudococcidae the body-fluid becomes red or blue when boiled in caustic potash. This suggests that the New Zealand specimens may have fed upon Pseudococcids, especially as the Victorian specimens are recorded as preying on *Pseudococcus adonidum* and New Zealand larvae were feeding on *Trionymus* sp.



Photos: S. A. Rumsey.

Cryptoscenea australiensis (End.) a. Eggs in cork. b. Final instar larva. c. Pupa. d. Coccoon, side view showing two envelopes and emergence hole. e. Coccoon, top view. f. Adult female.

IMMATURE STAGES

Egg (Pl. 1a)

The egg is elongate-oval. Measurements of two mounted—0.38 x 0.19 mm, 0.41 x 0.19 mm. Chorion with irregular hexagonal depressions and a round, smooth, white operculum (?) near the apex. Colour brownish-pink.

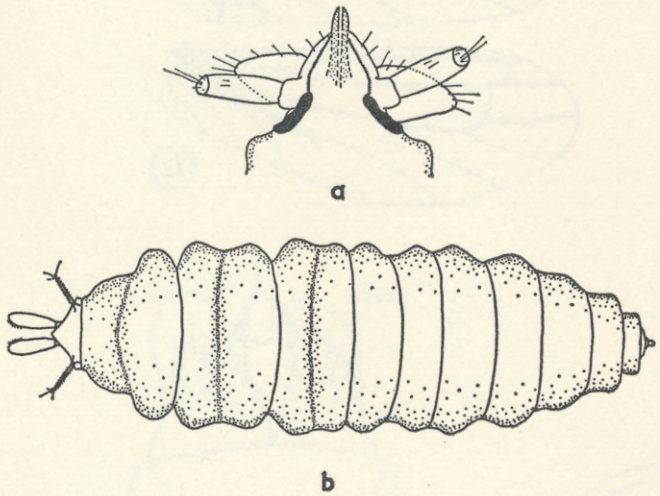


FIG. 2 del. K. A. J. W.

FIG. 2.—*Cryptoscenea australiensis* (End.) First instar larva, head, dorsal. b. Final instar larva, dorsal.

Larva

First instar larva with head (Fig. 2a) broadest behind eyes, elongated anteriorly into a beak apparently enclosing most of the mouthparts. Antennae large, with several setae arising from flat apical area. Maxillary palpi large, triangular, widest near base. In dorsal view eyes long and narrow. Body densely setose.

Final instar larva (Fig. 2b, Pl. 1b) ca. 2.5 mm in length, stout. Head pointed anteriorly; antennae long, narrow, setose, with longer setae at apex; 2-segmented maxillary palpi with short setae only at apex of large apical segment. Thoracic and abdominal segments with short setae. Head almost colourless. Palps, antennae, and legs, colourless and translucent. Thorax and abdomen dull purple, the colour being deepest laterally and palest in mid-dorsal and mid-ventral lines; anal papilla colourless, abdominal segment anterior to it whitish.

Pupa (Pl. 1c)

Pale reddish-brown; apices of antennae, apices of wings, legs, colourless; eyes red.

Coccoon (Pl. 1d, e)

A white pupal coccoon, discovered on a cork in a vial, exhibited the typical Coniopterygid double envelope structure. A loosely woven outer cover was 3 mm in diameter and the inner tightly woven envelope, enclosing the pupa above and below, was 2 mm in diameter.

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