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Revision of the Australian Tephritini (Diptera : Tephritidae)

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Abstract

The Australian fauna of Tephritini, a major tribe of the subfamily Tephritinae (Tephritidae), is revised for the first time; 23 genera and 77 species are treated. A further nine species are discussed but not named. Fourteen genera are revised and the following nine new genera described: *Collessomyia, Cooronga, Hyalopeza, Liepana, Paraactinoptera, Parahyalopeza, Paraspathulina, Peneparoxyna* and *Quasicooronga*. Twenty-four species are revised and the following 53 new species described: *Campiglossa transversa, C. turneri, C. vaga, C. whitei, Collessomyia setiger, Cooronga mcalpinei, Dioxyna hyalina, Hyalopeza schneiderae, Liepana helichrysii, L. latifrons, Oedaspis apicalis, O. apiciclara, O. austrina, O. continua, O. gallicola, O. goodenia, O. mouldsi, O. olearia, O. perkinsi, O. semihyalina, O. serrata, O. trimaculata, O. whitei, Paraactinoptera collessi, Parahyalopeza bushi, Paraspathulina apicomacula, P. eremostigma, Paroxyna infrequens, Peneparoxyna minuta, Platensina trimaculata, Quasicooronga connecta, Q. disconnecta, Rhabdochaeta queenslandica, R. wedelia, Tephritis brunnea, T. bushi, T. distigmata, T. furcata, T. hesperia, T. pantosticta, T. phaeostigma, T. prolixa, T. protrusa, T. pumila, T. quasiprolixa, T. tasmaniae, T. trupanea, Trupanea bifida, T. heronensis, T. notata, T. prolata, T. pusilla* and *T. queenslandensis*. Keys to genera and species are presented. Information is given on host plants and geographic distributions. The genera *Chrysotrypanea* Malloch and *Oedaspoides* Hendel are newly synonymised with *Oedaspis* Loew.

Introduction

Australian fruit flies of the subfamily Dacinae have been studied thoroughly by a number of authors and the fauna is well known. Drew (1989) reviewed the works of previous taxonomists and published an extensive revision of the Dacinae. In the Dacinae there are 79 species of *Bactrocera* Macquart and 16 of *Dacus* Fabricius now known. The Australian species of the other subfamilies of Tephritidae are poorly known, having been studied briefly by Malloch (1926, 1939*a*), McAlpine and Schneider (1978) and Hardy (1951, 1954, 1982); no revisional studies have been undertaken. F. A. Perkins began studies of the Trypetinae and Tephritinae and obviously intended to complete these as he had sorted out many new species and designated holotype and paratype specimens which he deposited in the Natural History Museum, London. These are all manuscript names as no descriptions were published.

The Tephritinae comprise a large group of small to medium-sized flies usually with dense grey microtrichose bodies and spotted wings. Larvae develop in flowerheads or stems of Asteraceae (Compositae), Acanthaceae, Goodeniaceae, Verbenaceae and Lamiaceae. The adults are characterised by having at least some of the following characters: flattened whitish setae in the postocular row and with postvertical, outer vertical and usually upper orbital bristles flattened and white; scapular setae that are weak, scarcely differentiated from mesonotal setae, not bristlelike; anepisternum that often has a dense covering of microtrichia making the suture difficult to see; vein R_1 that is usually with a bare area opposite the end of vein Sc; vein R_{4+5} that is usually bare except for a few setae above near the base; tergum VI

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of the female that is usually longer than tergum V; the thorax and the abdomen that are usually densely grey or yellow-grey microtomentose with subrecumbent scalelike setae over the mesonotum; wings that are usually reticulated or with a dark stellate pattern in the apical portion; the lobe on cell bcu that is relatively small; dorsocentral bristles that are situated slightly or distinctly anterior to the supraalar bristles; arista that are bare or with a short pubescence; the female with 2 spermathecae; vanes of the male aedeagal apodeme that arise separately on the axis and are widely separated; and the female aculeus that has microscopic preapical sensory setae.

Very little biological information is available for most Australian Tephritinae. They breed predominantly in developing seeds but an interesting group of species forms galls in various endemic plants. The flowerhead infesters are no doubt important as pollinators and some may be useful biological agents in the control of noxious weeds.

Norrbom (1987), Hancock (1990) and Foote *et al.* (1993) included in the subfamily Tephritinae all of the flower- and stem-infesting and gall-forming taxa that breed mainly in Asteraceae, Acanthaceae, Verbenaceae and Lamiaceae (i.e. the Schistopterini, Oedaspidini, Aciurini, Terelliini, Myopitini, Tephrellini, Dithrycini, Tephritini and Platensinini) based upon having the scapular setae poorly developed or absent. In dealing with non-African genera, the Schistopterini would appear to be well defined as a tribe, including those that have a deep cleft at end of vein Sc and the distinctive wing markings. The African genera show intergradation of these characters and do not show consistent features that differentiate them from Tephritini. Also, it is still not possible to clearly define the tribes Oedaspidini and Dithrycini (Friedberg and Kaplan 1992) and we see no logic in retaining these, a tribe Spathulinini based largely upon having the abdomen shining and the wings dark brown to black with hyaline indentations, or a tribe Platensinini (see Hardy 1988: 43).

The Australian Tephritinae comprise primarily the tribe Tephritini as proposed by Hancock (1990) and defined above, plus *Sphaeniscus atilius* (Walker) (tribe Tephrellini) and two Palaearctic species of *Urophora* Robineau-Desvoidy (tribe Myopitini) that are of doubtful occurrence (Hardy and Foote 1989).

The Australian Tephritini are characterised by having two pairs of orbital bristles (except in the introduced *Procecidochares*), with the upper pair not convergent; postocular setae mostly or entirely white and flattened, scalelike; an anepisternal transverse suture usually more obscure than in other Tephritinae because of a dense covering of microtrichia; scapular setae poorly developed or absent; dc bristles in line with, or near suture; and a wing pattern varied, often reticulate.

Outside Australia, all Tephritini whose biology is known develop as larvae in the flowerheads or in stems and sometimes the roots of Asteraceae and Acanthaceae. In Australia, the species of known biology breed predominantly in flowerheads of Asteraceae and some (e.g. *Oedaspis* Loew) are stem gall formers in Asteraceae and Goodeniaceae. This is the only locality in the world where association with this plant family has been recorded. According to Heywood (1978), the Goodeniaceae and the closely related families Brunoniaceae and Stylidiaceae have one feature in common with the Asteraceae, namely the presence of inulin; the possibility that this chemical is relevant to host-plant selection by Tephritinae should be investigated. If inulin is of importance it may explain how some Australian Tephritinae have been able to switch from attacking Asteraceae to attacking Goodeniaceae.

Female heterogamety appears to be more common in the Tephritini than in other Tephritidae (Foote *et al.* 1993). Bush (1966) reported that 'an analysis of karyotypes in species representing 3 subfamilies of Tephritidae has shown that sex determination by male heterogamety is widespread in this family of flies – however 7 species of predominantly gall-forming flies of the subfamily Tephritinae and 1 species belonging to the Oedaspidinae have been found to have female heterogamety'. We are treating the latter species as a Tephritini.

The descriptive format used in this study follows that used previously by one of the authors for this subfamily (Hardy 1988*b*) with the taxon citation followed by a diagnosis giving the relationships and differentiating characteristics. We are updating the morphological terminology to correspond with that of McAlpine (1981), modified by Steyskal (1984), Norrbom and Kim (1988) and White (1988) and as agreed upon by Tephritidae taxonomists at the First International Congress of Dipterologists in Budapest, 1986.

Methods

Changes in Terminology (previously used terms given in parentheses)

Head

Frons (front).
Frontal bristles (inferior fronto-orbital bristles).
Orbital bristles (superior fronto-orbital bristles).

Thorax

Microtrichose (pollinose) for the dustlike vestiture over the body surface that is due to cuticular microtrichia at varying densities and not a covering of dust or waxy particles.
Proepimeron (Prosternum).
Proepisternum (Propleuron).
Anepisternum (Mesopleuron).
Katepisternum (Sternopleuron).
Anepimeron (Pteropleuron).
Katatergite (Hypopleuron, Meron).
Anatergite (Metapleuron, Pleurotergite).

Wing

No changes are needed for the anterior portion of the wing, but terms for the posterior portion are changed as follows.
Vein M is treated as a single vein (M_{1+2}).
Vein CuA_1 (M_{3+4}).
Vein CuA_2 (Cu_1).
Vein $A_1 + Cu_2$ (Cu + 1st A).
Cell bm (m).
Cell dm (1st M_2).
Cell m (2nd M_2).
Cell bcu (cu = 'cup' of McAlpine).
Cell cu (cell M_4).
dm-cu cross-vein (m cross-vein).
bm-cu cross-vein (base of vein M_{3+4}).
Cells and cross-veins are designated in lower case. Previously, veins and cells were capitalised, with lower case used only for cross-veins (Hardy 1988*b*).

Abdomen

Inner lobe of outer surstylus (10th sternum).
Prensisetae (strong teeth at the end of inner surstylus).
Distiphallus (glands of aedeagus).
Aculeus (piercer of ovipositor).
Eversible membrane = membranous portion of segment of female (segment VIII).
The term 'basal segment of ovipositor' is preferred for the fused tergum VII and sternum that make up the tubular protective sheath of the ovipositor rather than the term 'syntergosternite 7' proposed by Norrbom and Kim (1988) or 'oviscape' used by other authors.

Acronyms for Institutions where Collections are Located

AMS	Australian Museum, Sydney
ANIC	Australian National Insect Collection, CSIRO, Canberra
BPBM	Bernice P. Bishop Museum, Honolulu
CAS	California Academy of Sciences, San Francisco
DPIK	Department of Primary Industries, Konedobu, Papua New Guinea
MCZ	Museum of Comparative Zoology, Harvard University, Cambridge, USA
MNHP	Museum National d'Histoire Naturelle, Paris
MSNG	Museo Civico di Storia Naturale, Genoa
MSU	Michigan State University, East Lansing
NHM	Natural History Museum, London
NHMV	Naturhistorisches Museum, Vienna
NMVM	National Museum of Victoria, Melbourne
NRS	Naturhistoriska Riksmuseet, Stockholm
NSWA	New South Wales Department of Agriculture, Sydney
QDPI	Department of Primary Industries, Brisbane
QM	Queensland Museum, Brisbane

TAMU	Texas A & M University
TMB	Termeszettudomanyi Museum, Budapest
UH	University of Hawaii, Honolulu
UMO	University Museum, Oxford, England
UQM	University of Queensland Museum, St Lucia, Brisbane
USNM	National Museum of Natural History, Washington DC
USU	Utah State University, Logan.
WIA	Waite Institute, Adelaide
ZMHB	Zoologisches Museum, Humboldt Universität, Berlin
ZMUA	Zoologisch Museum, Universiteit van Amsterdam, Netherlands
ZMUC	Zoologisk Museum, Universitets Copenhagen, Denmark
ZMUH	Zoologisches Museum, Universitat von Hamburg, Hamburg
ZSIC	Zoological Survey of India, Calcutta

Taxonomic Arrangement

TRIBE TEPHRITINI

Campiglossa fuscata (Macquart)
Campiglossa transversa, sp. nov.
Campiglossa turneri, sp. nov.
Campiglossa vaga, sp. nov.
Campiglossa whitei, sp. nov.
Collessomyia setiger, sp. nov.
Cooronga mcalpinei, sp. nov.
Dioxyna brachybasis Hardy
Dioxyna hyalina, sp. nov.
Dioxyna sororcula (Wiedemann)
Euaresta aequalis (Loew)
Euaresta bullans (Wiedemann)
Hendrella australis (Malloch)
Hendrella sexincisa (Malloch)
Hyalopeza schneiderae, sp. nov.
Liepana helichrysii, sp. nov.
Liepana latifrons, sp. nov.
Liepana lugubris (Macquart)
Oedaspis apicalis, sp. nov.
Oedaspis apiciclara, sp. nov.
Oedaspis austrina, sp. nov.
Oedaspis continua, sp. nov.
Oedaspis escheri (Bezzi)
Oedaspis gallicola, sp. nov.
Oedaspis goodenia, sp. nov.
Oedaspis mouldsi, sp. nov.
Oedaspis olearia, sp. nov.
Oedaspis perkinsi, sp. nov.
Oedaspis semihyalina, sp. nov.
Oedaspis serrata, sp. nov.
Oedaspis trifasciata (Malloch), comb. nov.
Oedaspis trimaculata, sp. nov.
Oedaspis whitei, sp. nov.
Oedaspis sp. 'A'
Oedaspis sp. 'B'
Oedaspis sp. 'C'
Oedaspis sp. 'D'
Oedaspis sp. 'E'
Paraactinoptera collessi, sp. nov.
Parahyalopeza bushi, sp. nov.
Paraspathulina apicomacula, sp. nov.
Paraspathulina eremostigma, sp. nov.
Paroxyna infrequens, sp. nov.
Paroxyna orientalis (de Meijere)
Peneparoxyna minuta, sp. nov.
Platensina amplipennis (Walker)
Platensina parvipuncta Malloch
Platensina trimaculata, sp. nov.
Platensina zodiacalis (Bezzi)
Procecidochares utilus Stone
Quasicooronga connecta, sp. nov.
Quasicooronga disconnecta, sp. nov.
Rhabdochaeta cockeri Curran
Rhabdochaeta pulchella de Meijere
Rhabdochaeta queenslandica, sp. nov.
Rhabdochaeta wedelia, sp. nov.
Rhochmopterum venustum de Meijere
Spathulina acroleuca (Schiner)
Sphenella ruficeps (Macquart)
Tephritis brunnea, sp. nov.
Tephritis bushi, sp. nov.
Tephritis distigmata, sp. nov.
Tephritis furcata, sp. nov.
Tephritis hesperia, sp. nov.
Tephritis pantosticta, sp. nov.
Tephritis pelia Schiner
Tephritis phaeostigma, sp. nov.
Tephritis poenia (Walker)
Tephritis prolixa, sp. nov.
Tephritis protrusa, sp. nov.
Tephritis pumila, sp. nov.
Tephritis quasiprolixa, sp. nov.
Tephritis tasmaniae, sp. nov.
Tephritis trupanea, sp. nov.
Tephritis sp. 'A'
Trupanea amoena (Frauenfeld)
Trupanea bifida, sp. nov.
Trupanea glauca (Thomson)
Trupanea heronensis, sp. nov.
Trupanea notata, sp. nov.
Trupanea prolata, sp. nov.
Trupanea pusilla, sp. nov.
Trupanea queenslandensis, sp. nov.
Trupanea sp. 'A' nr *terryi* Hardy
Trupanea sp. 'B' nr *terryi* Hardy
Trupanea sp. 'C' nr *mutabilis* Hering

Key to Genera of Australian Tephritinae

1. Costa lacking a deep cleft at end of vein Sc and cell c not lobate at apex 2

Costal margin with deep cleft at apex of vein Sc and a prominent lobe at apex of cell c; wing markings consisting of radiating dark lines extending to costa along anterior and usually apical margins (Figs 184, 189); *Rhabdochaeta* group of genera 25

2(1). Scutellum strongly swollen, highly convex, polished black; wings with transverse dark bands (Fig. 176) 3

Scutellum flat dorsally or almost so 4

3(2). Only 1 pair of orbital bristles and 3 pairs of frontals; frons bare; transverse hyaline band distal to cross-veins and broadened posteriorly; with a complete sub-basal hyaline band and only 1 hyaline mark from posterior margin through cells cu, dm and br (Fig. 176); abdomen covered with flattened yellow-white setae; introduced ..... *Procecidochares* Hendel

Two pairs of orbital and 4 pairs of frontal bristles; with black interfrontal setae; transverse hyaline band distal to cross-veins, narrow and parallel sided; no sub-basal band and with 2 transverse hyaline bands through cu; abdomen covered with fine black setae; endemic ..... *Oedaspis* Loew (some specimens)

4(2). Abdomen shining black, finely black setose except for a few pale setae on sides in *Paraspathulina eremostigma*, sp. nov.; wing dark brown to black with hyaline indentations or spots around margins, not > 2 isolated hyaline spots in middle and no complete hyaline cross-bands (Figs 145, 150, 202); *Spathulina* group of genera 5

Abdomen usually densely microtrichose obscuring ground colour, or if subshining then either marked brown to black and yellow or predominantly yellow to rufous and yellow setose; wing usually with 1 or more hyaline cross-bands and variable dark markings 7

5(4). Four scutellar bristles; wing with 2 elongate colourless spots from costal band across cell r_1 at least as far as vein R_{2+3}, 2 elongate colourless spots from hind margin across cell m to vein M and a colourless spot across wing apex with a dark spot at apex of vein R_{4+5} within this colourless area (Figs 145, 150) ..... *Paraspathulina*, gen. nov.

Two scutellar bristles; wing without the combination of the above characters 6

6(5). Wing broad, rather *Platensina*-like, with 2 large hyaline wedges through cells r_1 and r_3, and 4 through posterior portion of wing; cell bc pale brown, wing apex and apex of cell c dark brown; basal cells not hyaline (Figs 52, 56) ..... *Hendrella* Munro

Wing normal in shape, with 3 smaller hyaline wedges through cell r_1 and 5 on posterior margin; cell bc colourless; apices of cells c, r_3 and r_5 hyaline; basal cells hyaline (Fig. 202) ..... *Spathulina* Rondani

7(4). Wing hyaline except for pale brown colouring in cell sc; only 1 orbital bristle ..... *Ensina* Robineau-Desvoidy[1]

Wing with a more extensive dark pattern; 1–2 orbital bristles 8

8(7). Wing very broad, < 2× longer than wide, mostly dark brown, marked as in Figs 167, 170; no bare area on vein R_1 ..... *Platensina* Enderlein

Wing normal in shape, ≥ 2× longer than wide; often with a bare area on vein R_1 opposite level of end of vein Sc 9

9(8). Four scutellar bristles 10

Only basal scutellar bristles present 23

10(9). Mouthparts conspicuously geniculate, long and slender, both labium and labella narrow and equal in length or longer than oral margin; head longer than high in side view, protruding on oral margin (Fig. 159), or small specimens (wing 1·75–2·4 mm) with head shorter than high 11

Mouthparts capitate, or if geniculate then the labium and labella are each shorter than the oral margin and the wing > 2·4 mm long; head shorter than high 12

11(10). Head at least as long as high in side view, longest on ventral margin, extended mouthparts at least 2× longer than height of head in side view (Fig. 32); 2 pairs orbital bristles; major head and body bristles black (aberrant specimens will run here) ..... *Dioxyna* Frey

Head slightly higher than long in side view, only slightly protruded on oral margin; mouthparts not so elongate (Fig. 159); 1 pair of orbital bristles; head and abdominal bristles pale yellow, those of thorax faintly brownish yellow to white; lower apex of cell bcu not distinctly pointed; wing markings as in Fig. 158; small species, wing 1·75–2·4 mm ..... *Peneparoxyna*, gen. nov.

[1] Has not been recorded from Australia but the widespread species *Ensina sonchi* (L.) may occur.

12(10). Wing extensively milky white, with anterobasal portion dark brown; a broad brown preapical cross-band, a large inverted 'v'-shaped brown pattern across wing formed by a band from posterior margin extending over cross-veins to costa in cell sc and recurving back to hind margin in cell a (Fig. 24) and sometimes with an oblique brown band from the basal part of the 'v' running to hind margin in cell cu (Fig. 181) 13

Wing without a preapical brown cross-band and an inverted 'v'-shaped brown band across centre (Fig. 207) 14

13(12). Apical scutellar bristles small, < 0·25 as long as basal bristles; wing with basal part of medial inverted 'v' pattern unbranched (Fig. 24); thorax with brown spots at bases of dorsocentral, prescutellar acrostichal and basal scutellar bristles; scutellum grey microtomentose; abdomen with paired submedian brown spots on terga III–V; basal segment of ovipositor only slightly longer than tergum VI; hind femur lacking preapical dorsal setae ..... *Cooronga*, gen. nov.

Apical scutellar bristles about 0·6 as long as basal bristles; wing with an oblique brown band extending from the basal part of the inverted 'v' to posterior margin in cell cu (Figs 181, 183); thorax with 3 brown longitudinal vittae and scutellum subshining dark brown, no grey microtrichia; abdomen brown across bases of terga; ovipositor base similar in length to terga IV–VI; hind femur with preapical dorsal bristlelike setae ..... *Quasicooronga*, gen. nov.

14(12). Wing mostly hyaline, with 1 complete brown cross-band at level of cross-veins (Fig. 207); lower calypter as wide as upper ..... *Sphenella* Robineau-Desvoidy

Wing without cross-bands or with > 1 cross-band usually branched (Figs 114, 115) 15

15(14). Wings with complete or nearly complete hyaline cross-bands without numerous hyaline spots within, apical and posterior margins broadly hyaline; no gap in setae on vein R_1 opposite end of vein Sc; 2–5 pairs of frontal bristles; 3rd antennal segment often pointed at upper apex ..... *Oedaspis* Loew (some specimens)

Wings with erratic cross-bands that usually have irregular hyaline spots within the dark brown coloration of the bands 16

16(15). Three or 4 pairs of frontal bristles 17

Only 2 pairs of frontal bristles 19

17(16). Wing entirely dark brown except for hyaline posterior margin and basal half of anterior margin (Fig. 61); vein Cu_2 not or only gently curved outward so cell bcu is not sharp pointed or lobate; cross-vein r-m nearly 2× its length from dm-cu ..... *Hyalopeza*, gen. nov.

Wing with hyaline patterns, 2 hyaline wedges in cell r_1 (Figs 18, 67); cell cup drawn out to a point at lower apex; cross-vein r-m removed from dm-cu by a distance approximately equal to its length 18

18(17). Base of wing discoloured with brown (Figs 67, 70, 71); cell sc brown, about 0·67 as long as cell c; abdomen dark brown to black in ground colour, mostly yellow setose; female aculeus spearhead shaped, serrated on sides preapically; distiphallus of male not extended at apex (Fig. 74); head and thoracic bristles predominantly black ..... *Liepana*, gen. nov.

Base of wing hyaline (Fig. 18); cell sc with a hyaline spot, about half as long as cell c; 3 isolated hyaline spots in middle of wing; abdomen yellow, covered with thin black setae; female aculeus tapered to slender point, not serrated (Fig. 23); male distiphallus with long setose membranous extension at apex (Fig. 22) ..... *Collessomyia*, gen. nov.

19(16). Junction of face and frons rounded, not angulate: wing with an isolated spot of brown at base of br, spreading over bm in *E. bullans*; wing evenly spotted with regular-sized round to quadrate hyaline spots; male genitalia extending beyond tergum V, conspicuously visible in dorsal view and epandrium broad with diagonal striations as seen in end view (Figs 42, 48); front femora of male swollen, nearly 2× wider than mid and hind femora; body densely golden microtrichose in ground colour; in *E. aequalis* mesonotum densely golden squamose; bristles of head and thorax yellowish. Larvae feed in seeds of burs (*Xanthium*) ..... *Euaresta* Loew

Junction of face and frons distinctly angulate; wings with a large number of unevenly sized hyaline spots; epandrium without striations 20

20(19). Wing mostly brown with pattern broken up by round, hyaline spots on anterior and posterior margins; cell sc dark brown with 1 hyaline spot (Fig. 141); vein Cu_2 straight so that cell cup is not pointed or lobate at posterior apex ..... *Parahyalopeza*, gen. nov.

Wings variously spotted (Figs 1, 2) or with a stellate pattern in apex; cell cup distinctly pointed, short lobate at posterior apex 21

21(20). Antennal bases rather widely separated by distance equal to 0·5–0·67 width of scape; parafacial and gena broad, 0·67–0·75× as wide and 1·5–2× wider than 3rd antennal segment respectively; no bare area on vein R_1 opposite end of Sc; mesonotum with longitudinal brown vittae and abdomen with paired brown spots on terga III–V .. *Campiglossa* Rondani

Antennal bases approximate or only slightly separated; parafacial and gena comparatively narrow, former just a fraction of width and latter about equal or less than width of 3rd antennal segment respectively; with a bare area on vein R_1 opposite end of Sc; mesonotum and abdomen usually lacking distinct brown markings except in *Paroxyna* 22

22(21). Mouthparts short, thick and capitate, not long, slender and geniculate; aedeagus devoid of spicules; wings as in Figs 213, 225, 229, 233, 238 ..... *Tephritis* Latreille

Proboscis geniculate, usually elongate, with labium slender, about 0·5–1× length of oral margin and labella often narrow; aedeagus with basiphallus spiculose distally (Figs 152, 156); wings of known Australian species as in Figs 151, 153 ..... *Paroxyna* Hendel

23(9). Proboscis elongate, slender, geniculate; labella equal in length to lower margin of head in side view; head longer than high in side view (Fig. 32): wing hyaline with numerous, somewhat diffused brown spots (Fig. 29) ..... *Dioxyna* Frey

Proboscis short, stout; labella fleshy, much shorter than length of head in side view; wing with brown rays extending to margin through cell m and usually r_5 (Figs 139, 281, 291) 24

24(23). With 3 pairs of frontal bristles; male distiphallus with a large, stout spinelike process (Figs 279, 288); wing rarely with a broad dark band between stigma and r-m cross-vein (Fig. 297), if such band is present then it is usually narrow (Fig. 290) ..... *Trupanea* Schrank

With 2 pairs of frontal bristles; male genitalia not studied; wing with a very broad dark band between stigma and r-m (Fig. 139) ..... *Paraactinoptera*, gen. nov.

25(1). Veins R_{4+5} and M only slightly diverging or parallel at apices; R_{2+3} ending near apical 1/4 of wing; with brown rays through apex of wing (Fig. 197); ocellar bristles situated outside ocellar triangle opposite median ocellus 26

Veins R_{4+5} and M widely diverging at apices; R_{2+3} ending at middle of wing; no brown rays in apex of wing; ocellar bristles situated in the margins of ocellar triangle posterior to median ocellus ..... *Schistopterum* Becker[2]

26(25). Vein M strongly curved just beyond dm-cu cross-vein; with a reddish bulla in cell m; veins R_{4+5} and M parallel or nearly so; no presutural dorsocentral bristles and no dorsomedial bristles on abdominal terga ..... *Rhabdochaeta* de Meijere

Last section of M nearly straight; no bulla in cell m; vein R_{4+5} curved upward at apex (Fig. 197); with presutural dorsocentral bristles and a pair of erect white dorsomedial bristles on each abdominal tergum ..... *Rhochmopterum* Speiser

Genus ***Campiglossa*** Rondani

Campiglossa Rondani, 1870: 121.

Type species: *Tephritis irrorata* Fallén, by original designation.

Diagnosis

Apparently fitting near to *Tephritis* Latreille and differentiated by having the bases of antennae rather widely separated by a space 0·5–1·0× width of scape; parafacial and gena broad, parafacial about 0·67–0·75 width of 3rd antennal segment and gena 1·5–2× wider than 3rd antennal segment; mesonotum densely grey microtrichose and brown vittate; a dark brown to blackish mark at bases of dorsocentral, prescutellar and scutellar bristles and abdomen with paired brown spots on terga beyond 2nd.

Description

Head nearly quadrate, face gently concave, protruded on oral margin. Distinctly angulate at junction of frons and face, 2 frontal and 2 orbital bristles, upper orbital and outer vertical bristles pale yellow-white. Labium rather elongate, similar to most *Paroxyna* Hendel, labium

[2] Has not been recorded from Australia but may occur.

about subequal in length to oral margin and with labellum thickened, folded back, geniculate mouthparts usually conspicuously protruded beyond oral opening. Mesonotum with 3–5 brown longitudinal vittae, paired brown spots on abdomen large, covering anterosubmedian portions of terga. Dorsocentral bristles slightly behind suture. Wing mostly dark brown with various arrangements of hyaline spots. Vein R_{4+5} bare above except for a few setae at base near node and a few scattered setae on venter before r-m cross-vein. Usually no bare area on vein R_1 opposite end of Sc but sometimes a few setae missing in this area or in some (e.g. *C. whitei*, sp. nov.) a bare area present. Cell bcu with apical lobe. Distiphallus of male heavily sclerotised, basiphallus bare. Female aculeus tapered to a sharp point at apex and spermathecae clavate, with curved necks.

In many respects species of *Campiglossa* closely resemble those of *Paroxyna* and some may be distinguishable only by the bare versus spiculated apex of male basiphallus. Five Australian species are presently placed here.

Key to Known Species of *Campiglossa* from Australia

1. With prominent hyaline mark in apex of cell r_5 and no transverse hyaline bands 2
   Apex of wing brown or with a very narrow hyaline rim at apex of r_5; with 1 or 2 preapical transverse hyaline bands 4
2. No brown spot at antennae bases; wings mostly hyaline with irregular brown markings and sc brown except for hyaline base; small species, body and wing each 3·0 mm; Qld ..... *C. vaga*, sp. nov.
   With a prominent brown spot on each side of head opposite bases of antennae; wing mostly dark brown with hyaline spots or marks and with 2 hyaline spots in cell sc 3
3. Cells bc and c with a combination of brownish and hyaline marks (Figs 1, 2), 1 or 2 large hyaline marks in c; basal portion of cell br (posterior to bc) sometimes brown (Fig. 2), but usually hyaline; cells m, cu, and dm with numerous hyaline spots, not with a transverse hyaline band (Figs 1, 2); mesonotum yellow setose ..... *C. fuscata* (Macquart)
   Cells bc and c dark brown except for a large preapical hyaline mark in c; basal portion of cell br dark brown; 2 hyaline marks across cell m, 2 large hyaline marks over cu extending into 1 large mark through cells dm and br and large hyaline marks distad of r-m and dm-cu cross-veins connected, forming a transverse band; mesonotum black setose (Fig. 15); WA and Vic. ..... *C. turneri*, sp. nov.
4. Cells bc and c mostly brown, with 1 large preapical hyaline mark in c; cell sc brown or with 1 small apical hyaline spot; 2 large hyaline marks in cell r_1; apex of r_5 brown (Fig. 8); Vic., ACT, NSW ..... *C. transversa*, sp. nov.
   Cells bc and c mostly hyaline, 2 large hyaline marks filling most of c; 2 hyaline spots in sc, 3 in r_1 and a narrow hyaline rim or tiny spot at apex of r_5 (Fig. 17); Tas. ..... *C. whitei*, sp. nov.

Campiglossa fuscata (Macquart)

(Figs 1–7)

Acinia fuscata Macquart, 1851: 266. Holotype ♀ in MNHP.

Type locality: 'Nouvelle-Hollande' (Australia).

Material Examined

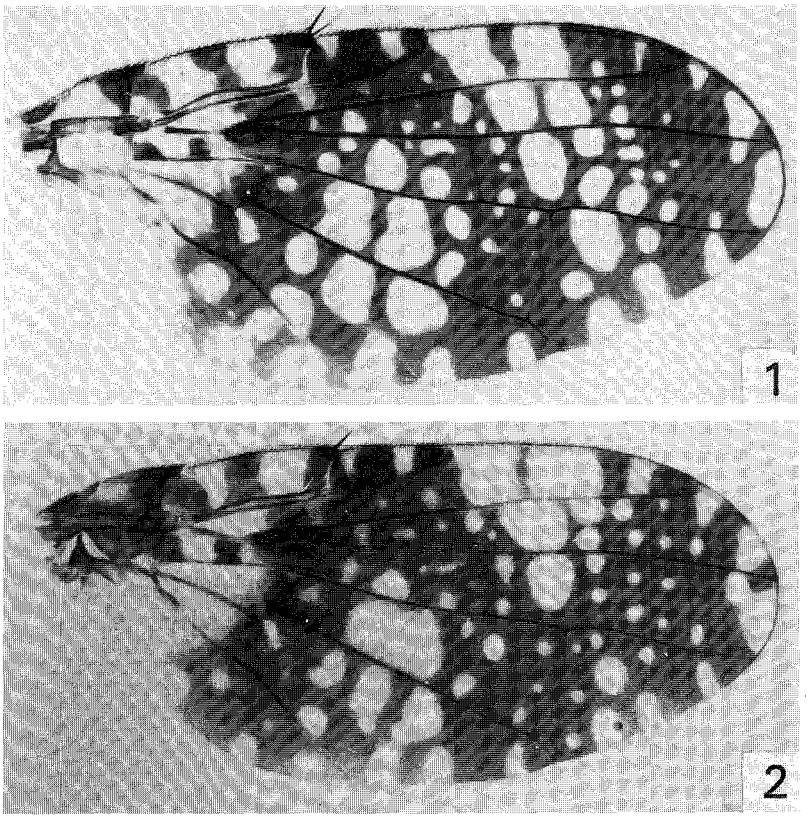
Holotype. ♀ (studied, notes and wing photograph provided by I. M. White).

Other Material Examined. Approximately 500 specimens from the following localities: **Queensland**: Leyburn, 18.x.1964, I. C. Yeo 'on I.C.Y. 43'; 8 km S Noosa, 11.xi.1965, reared from flowerheads of *Helichrysum apiculatum* (Lab.) DC, No. 6578, G. L. Bush; Tamborine Mtn, 11–17.v.1935, R. E. Turner; Tamborine Mtn, 5.xi.1965, No. 6570, G. L. Bush; Tamborine Mtn, 18.x.1990, on *Helichrysum bracteatum*, D. L. Hancock; Bunya Mtns, 24.iv.1988, ex flowers of *Helichrysum*, H. Churches and M. Elson-Harris; Jimboomba, 18.x.1990, on *Helichrysum ramosissimum*, D. L. Hancock; Lake Broadwater, nr Dalby, 19–22.xi.1985 re collector; Stanthorpe, 23–24.iii.1963, A. Macqueen. **New South Wales**: Badja State Forest, 40 km ENE of Cooma, 13.i.1961, D. S. Brown and

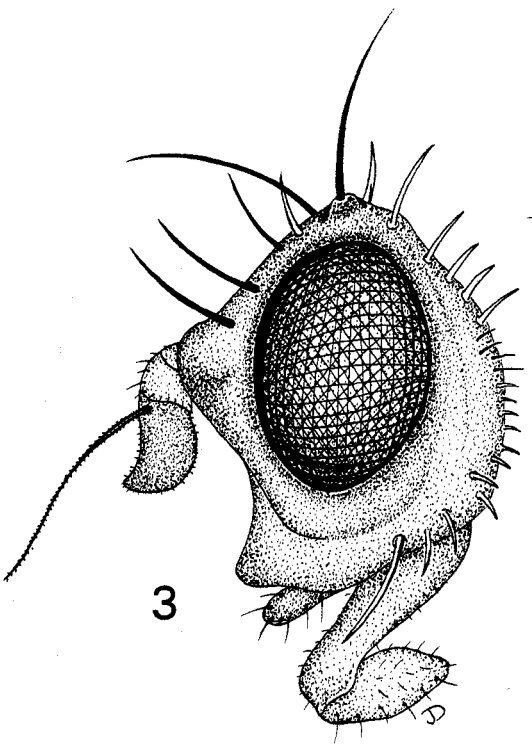
M. J. Fletcher; Manildra, 15.i.1985, ex *Helichrysum* sp., W. C. Thwaite; Cardeaux Rv., 21.xi.1959, C. E. Chadwick; Wright's Lookout, New England Nat. Pk, 1300 m, 28.x.1965, reared from flowerheads of *Helichrysum elatum* A. Cunn, No. 6559, G. L. Bush; 12 km W Yooroonah, 900 m, 27.x.1965, No. 6555, G. L. Bush; Gib Mtns, 5.iii.1960, sweeping everlasting daisy, M. I. Nikitin; Georges Rv., Kings Falls, 28.xii.1959, M. Nikitin; 5 km W Kiandra, 1400 m, 9.xii.1964, No. 139, G. L. Bush; Barrington Tops, 800 m, 24.x.1965, ex *Vittadinia triloba* (Gaud.) DC, No. 6445, G. L. Bush; Tuglo 48 km N of Singleton, 10.xii.1981, B. J. Day; Forestland State Forest, 24 km NE Deepwater, 7.i.1978, G. Daniels; Mt Tonah, Blue Mtns, 21.xii.1984, N. W. Rodd; Wilson's Valley, Snowy Mtns, 10.ii.1979, D. K. McAlpine and B. J. Day; Tuross, 17–22.i.1936, K. C. McKeown; Dead Horse Gap, 9 km from Thredbo, Snowy Mtns, 11.ii.1979, D. K. McAlpine and B. J. Day; 20 km S of Narrabri, 3.xii.1976, on *Atalaya hemiglauca,* E. M. Exley and T. Low. **Australian Capital Territory**: Mt Franklin, 1250 m, 1.ii.1965, swept from *Helichrysum scorpioides* Lab., No. 657, G. L. Bush; Mt Ginjera, 4.ii.1965, No. 658, G. L. Bush; 1 km S Bull's Head on road to Bendora Dam, 1.ii.1978, E. I. Schlinger. **Victoria**: Bogong, Howmans, 23.i.1965, N. Dobrotworsky; Mt Buffalo, 16.i.1966, T. Weir, 17.i.1966, B. Cantrell; Treasure's, 1330 m, 12.ii.1965, N. Dobrotworsky; Norinbee, 12.ix.1969, A. Neboiss; Mt Baw Baw, nr Tanjilbren, 1300 m, 30.xi.1964, No. 132, G. L. Bush; Lake Cullulleraine, ex *Senecio lautus* Forst., No. 118, G. L. Bush; nr Chiltern, 8.xii.1964, No. 137, G. L. Bush; Lake Mtn, 890 m, 21.xii.1965, N. Dobrotworsky; 5 km W Narbethong, 24.xi.1964, ex *Helichrysum bracteatum* (Vent.) Andr., No. 126, G. L. Bush. **Tasmania**: Iris Ri., 11 km from Cradle Mtn, 30.i.1965, sweeping flowering Compositae, I. C. Yeo; 6 km SW Nunamara, 25.iii.1980, G. F. Hevel and J. A. Fortin.

Diagnosis

Fitting in a complex of species that have a longitudinal brown mark near upper margin of parafacial, opposite base of antenna; wing with 2 hyaline spots in cell sc and apex of r_5 hyaline. Fitting nearest to *C. turneri*, sp. nov., and differing by having cells bc and c



Figs 1, 2. *Campiglossa fuscata* (Macquart): wings showing colour variations.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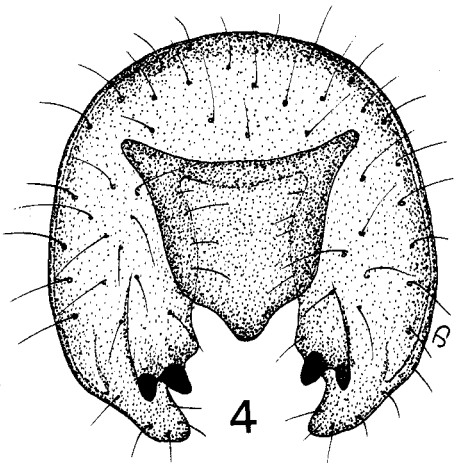
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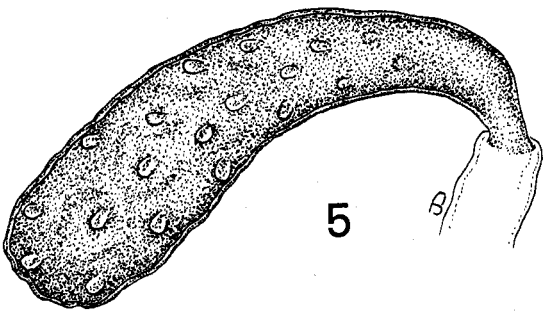
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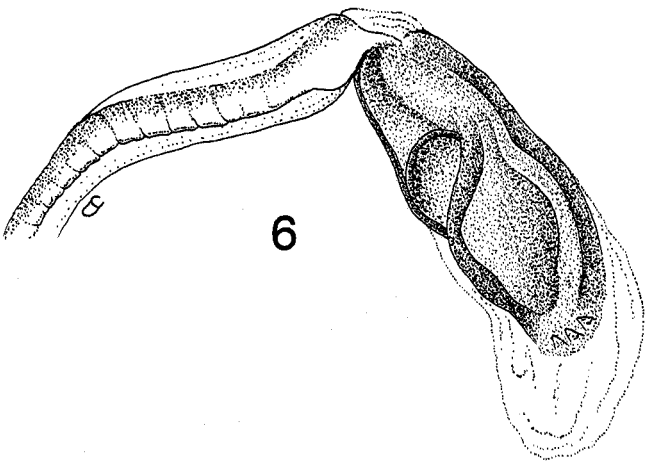
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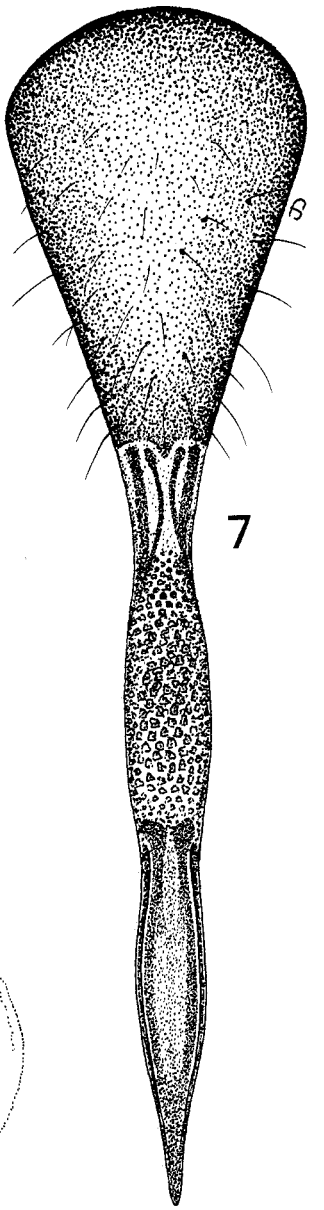

7
B

normally largely hyaline, usually 2 large hyaline marks in c; basal portion of cell br hyaline; cells m, cu and dm with numerous hyaline spots and no transverse hyaline band over wing but with 5 large hyaline marks arranged in a triangle in anteromedian portion of wing: 2 in r_1, 2 in r_3 and 1 in r_5 (Figs 1, 2). Also mesonotum yellow setose.

Description

Male

Length. Body and wing each 4·0–5·25 mm.

Head. Shaped as in other *Campiglossa*, face gently concave (Fig. 3), parafacial about 0·67× as wide as 3rd antennal segment, gena about 1·33 wider than 3rd. Labium almost as long as oral margin, labellum short and thick (Fig. 3).

Thorax. Densely grey microtrichose, 5 longitudinal brown vittae on mesonotum; a dark brown to blackish spot at base of mesonotal and scutellar bristles. Dorsocentral bristles just slightly behind level of suture.

Wings. Dark brown with variable patterns of hyaline spots (Figs 1, 2). Brown spot at apex of bc, 3 brown spots in c and 2 spots in br.

Abdomen. Densely grey microtrichose, yellow pilose and with paired brown spots on terga 3–5 in male and 3–6 in female. Male genitalia as in Fig. 4. Distiphallus heavily sclerotised (Fig. 6).

Female

As in male. Basal segment of ovipositor rather short and broad, about equal in length to terga 5+6 and yellow-orange except for narrow black apex and broad base. Spiracular openings at basal 0·33 of basal segment. Aculeus tapered to sharp point on apical 0·4–0·5 (Fig. 7). Spermathecae elongate gourd shaped, with curved necks (Fig. 5).

Remarks

Some variation in size and arrangement of wing markings and degree of infuscation of basal cells is evident over a large series of specimens. We are indebted to Dr Ian White (NHM) who studied the type of *Acinia fuscata* Macquart in MNHP and sent a photograph of the wing. It had been impossible to place this species previously.

Biology

Larvae of this species are seed feeders, breeding in flowerheads of *Atalaya hemiglauca, Helichrysum* spp., *Senecio lautus* and *Vittadinia triloba.*

Distribution

Probably widespread over much of Australia.

Campiglossa transversa, sp. nov.

(Figs 8–13)

Material Examined

Holotype. ♂, Vic., Mt Baw Baw, nr Tanjilbren, 4.iii.1965, swept from *Craspedia uniflora*, No. 6515, G. L. Bush, ANIC.

Figs 3–7. *Campiglossa fuscata* (Macquart): *3*, head; *4*, ♂ surstyli and claspers; *5*, ♀ spermatheca; *6*, ♂ distiphallus; *7*, ♀ ovipositor.

Paratypes. **Victoria**: Allotype ♀, same data as holotype, ANIC. Approximately 200 paratypes, sexes evenly distributed, from the following localities: **New South Wales**: 2♂, Charlotte Pass, Kosciusko Nat. Pk, 1841 m, 31.i.1974, K. R. Norris; 1♂, 1♀, Mt Kosciusko, 6500 ft, 8.ii.1968, M. S. Upton and L. A. Mound; 3♂, 1♀, Mt Kosciusko, 1–12.ii.1952, C. E. Chadwick; 1♂, Spencers Creek, Kosciusko Nat. Pk, 17.iii.1983, by sweeping, G. R. Brown and A. E. Westcott; 2♂, Dainiers Gap, Kosciusko Nat. Pk, 17.iii.1983, by sweeping, G. R. Brown and A. E. Westcott; 1♀, Mt Kosciusko; 21.ii.1969, Neboiss; Snowy Rv., 1900 m, 12.i.1967, D. H. Colless; Blue Lake and Charlotte Pass, Snowy Mtns, 9.ii.1979, D. K. McAlpine and B. J. Day; Mt Kosciusco, Snowy Mtns, 2100 m, 9.ii.1979, D. K. McAlpine and B. J. Day; Lake Cootapotamba, Snowy Mtns, 9.ii.1979, D. K. McAlpine and B. J. Day; Mt Kaputar Nat. Pk, 1370 m, 14.i.1978, G. Daniels. **Australian Capital Territory**: Mt Franklin, 1500 m, 1.ii.1965, No. 656, G. L. Bush; Mt Gingera, 1900 m, 4.ii.1965 and 14.ii.1968, some specimens ex *Helichrysum* sp., No. 658, G. L. Bush, D. H. Colless and M. S. Upton; Mt Gingera, 1800 m, Brindabella Rge, 21.ii.1980, M. S. and B. J. Moulds. **Victoria**: same as holotype; Treasure's, 1600 m, 13.ii.1965, N. Dobrotworsky; Mt Hotham, 6100 ft, 15.i.1966, B. Cantrell; Mt Buffalo, 1570 m, 15.ii.1965, N. Dobrotworsky, 16.i.1966, T. Weir, 17.i.1966, B. Cantrell; 1♂, Mt Buffalo, 4500 ft, 13.i.1956, A. N.; 4♂, 2♀, Mt Baw Baw, 5000 ft, 7.ii.1960, F. E. Wilson. Paratypes in AMS, ANIC, BPBM, MSU, NHM, NMVM, NSWA, UH, UQM.

Other material examined. 2♂ from Iris Ridge, 7 m from Cradle Mtn, N Tasmania, 30.i.1965, I. C. Yeo, appear to belong here but have several additional small hyaline spots in the wing pattern.

Diagnosis

Fitting in a complex of species with *C. whitei*, sp. nov., characterised by having apex of wing brown and with 1–2 preapical transverse hyaline bands. It differs from *C. whitei*, sp. nov., by having cells bc and c brown with 1 large hyaline mark in c; cell sc brown or with only 1 hyaline spot at apex; 2 large hyaline marks in r_1; apex of r_5 brown and other details as in Fig. 8.

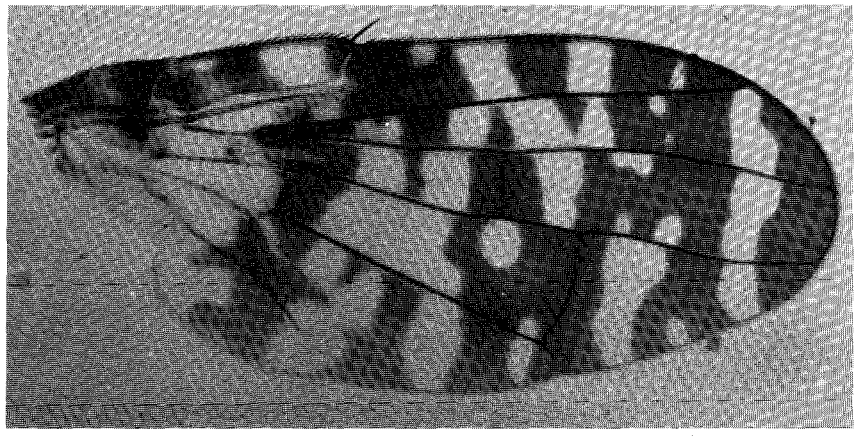


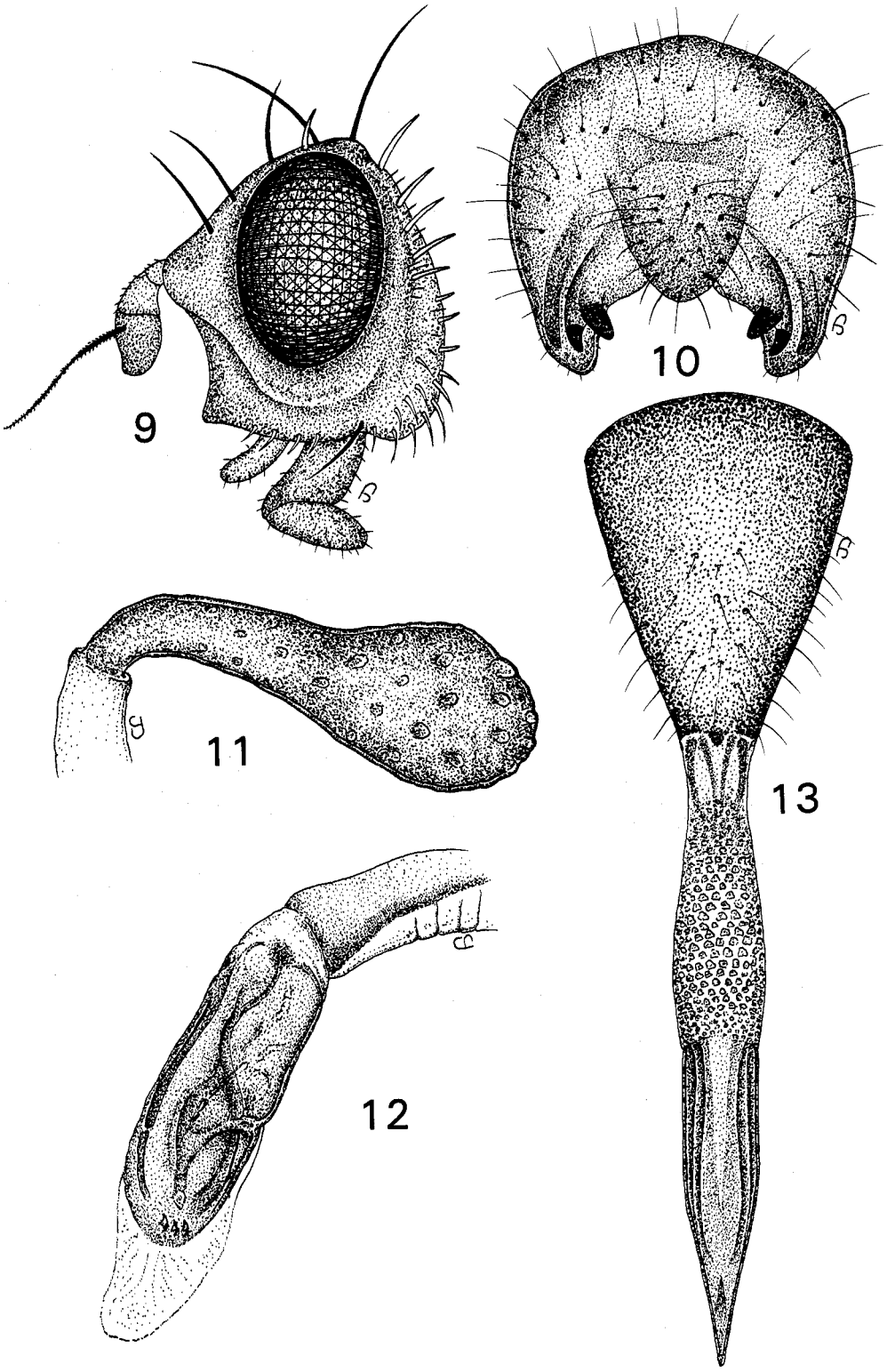
Fig. 8. *Campiglossa transversa*, sp. nov., wing.

Description

Male

Length. Body and wing each 5·25–6·0 mm.

Head. Nearly quadrate in shape (Fig. 9), frons bare and sloping, face concave and produced on oral margin. Yellow except for eye, black ocellar triangle and brown to black upper median portion of occiput, densely grey microtrichose along eye orbits, face, gena, occiput and a longitudinal grey band down middle of frons. Frons and face meeting at an



Figs 9–13. *Campiglossa transversa*, sp. nov.: *9*, head; *10*, ♂ surstyli and claspers; *11*, ♀ spermatheca; *12*, ♂ distiphallus; *13*, ♀ ovipositor.

acute angle, no brown mark opposite base of antenna. Parafacial rather broad, about 0·67× as wide as 3rd antennal segment, gena about 1·5× wider than 3rd. Antenna situated near upper 0·67 of head height, 3rd segment about 1·5× longer than wide, broadly rounded at apex.

Thorax. Ground colour black except yellow on humerus, notopleuron, margin and venter of scutellum. Densely grey microtrichose with 5 longitudinal brown vittae on mesonotum, lateral vittae extending from suture to level of dorsocentral bristles, 3 median vittae extending from anterior margin to or near dorsocentrals. A dark brown to blackish spot present at bases of dorsocentral, prescutellar and scutellar bristles. Dorsocentrals situated just behind level with suture.

Legs. Ground colour yellow to orange with 1 anterodorsal and 1 dorsal preapical bristle on hind femur.

Wings. Cells bc and c mostly dark brown with large preapical hyaline mark in c. Cell sc brown or with a small hyaline spot in apex. Cell r_1 with 2 prominent hyaline marks beyond end of vein R_1, these continuous through r_3 and most or all of cell r_5, the 2nd band continues over wing distal to cross-vein dm-cu to or near hind margin in cell m, or band may be narrowly disconnected in cell r_5. A complete preapical transverse hyaline band and apices of cells r_3 and r_5 brown. Posterobasal portion of wing hyaline except for 2 brown spots basally in br, other details of wing markings as in Fig. 8 and as under Remarks.

Abdomen. Densely grey microtrichose with large paired brown spots on terga 3–5, covered with fine recumbent yellow setae. Male genitalia as in Fig. 10. Distiphallus heavily sclerotised and with a membranous extension at apex (Fig. 12).

Female

As in male. Abdominal terga 2–6 with submedian basal brown marks. Tergum VI equal in length to tergum V. Basal segment of ovipositor black at base and at apex, otherwise reddish, about equal in length to terga V+VI and with spiracular openings at basal 0·33 of segment. Aculeus comparatively short and thick, tapered to sharp point on apical 0·33 (Fig. 13). Spermathecae clavate with curved necks (Fig. 11).

Remarks

Wing markings show considerable variation, 2nd preapical hyaline cross-band often incomplete.

Biology

Recorded from *Helichrysum* sp.

Etymology

The specific epithet is from the Latin *transversus*, crosswise, referring to the transverse preapical bands on wing.

Campiglossa turneri, sp. nov.

(Figs 14, 15)

Material Examined

Holotype. ♂, WA, Dongarra, 23.viii–5.ix.1935, R. E. Turner, NHM.

Paratypes. **Western Australia**: Allotype ♀, Yanchep, 51 km N of Perth, 24.xi–2.xii.1935, R. E. Turner, NHM; 1♂, same data as holotype; 1♂, Perth, 2–4.xi.1935, R. E. Turner; 1♀, Perth, 5–9.xi.1935, R. E. Turner. Paratypes in BPBM, NHM, UQM.

Diagnosis

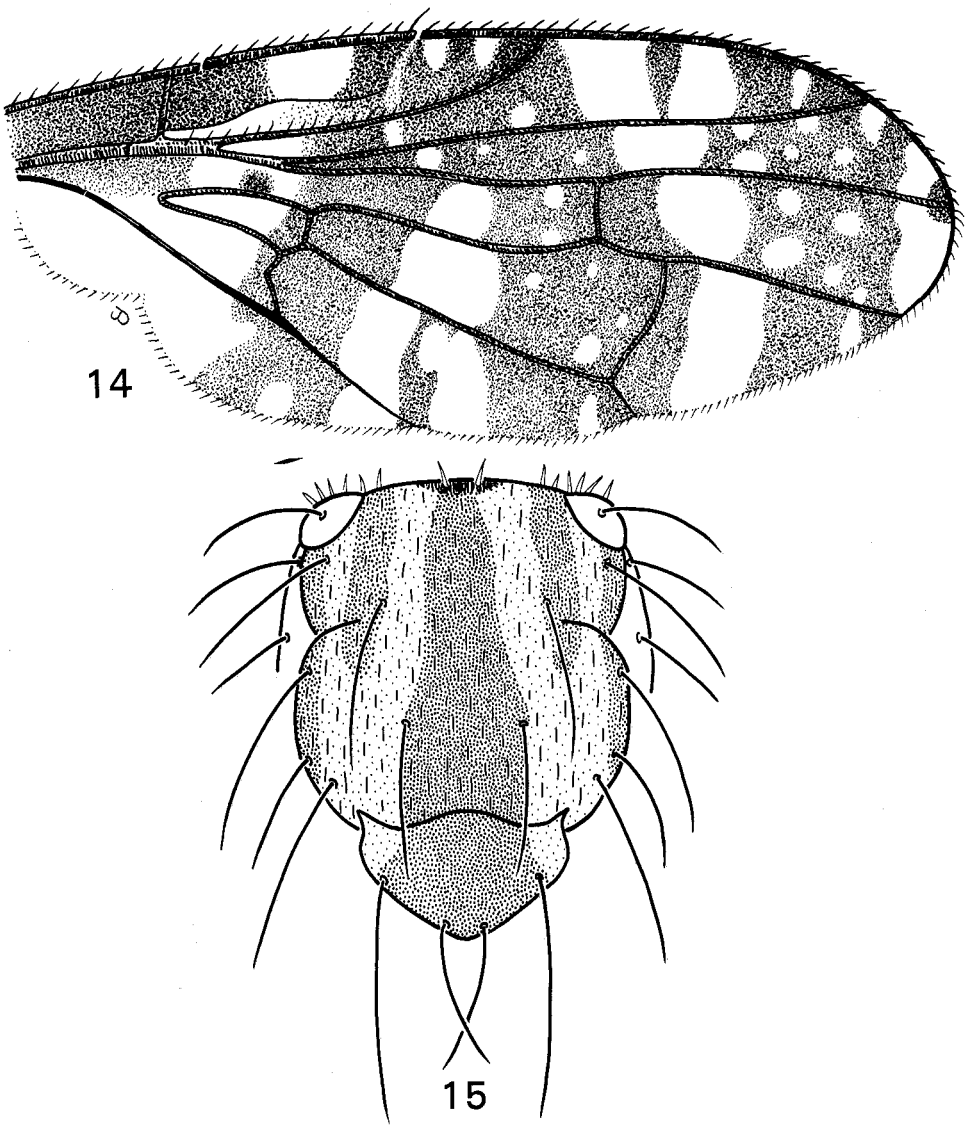
Fitting in the *C. fuscata* complex of species as discussed under that species and differs by having cells bc and c brown except for 1 large preapical hyaline mark in c; basal br dark brown; 3 hyaline marks in cell $r_{1,}$ with 2 large marks just beyond apex of vein R_1 continuous with a hyaline band extending transversely to hind margin distad of r-m and dm-cu cross-veins; 2 hyaline marks across cells m and cu, a large hyaline mark across centre of cell dm and extending across cell br (Fig. 14). Mesonotum with black setae.

Description

Male

Length. Body and wing, each 4·0–4·4 mm.

Head. As in *C. fuscata*.



Figs 14, 15. *Campiglossa turneri*, sp. nov.: *14*, wing; *15*, dorsal view of thorax.

Thorax. Mesonotum with a distinctive pattern of grey and brown longitudinal markings (Fig. 15), 5 brown vittae, the median one broad (slightly wider than distance between prescutellar bristles on posterior half of mesonotum and narrowed anteriorly), the submedian brown vittae extending from anterior margin to almost level with supraalar bristles, a broad brown vitta each side from anterior margin above humerus to above wing base; scutellum brown microtrichose except grey in middle and on anterior corners. Mesonotum with fine rather inconspicuous black setae except for white scapular setae and a few yellow-white setae along hind margin.

Legs. Yellow, with 1 preapical anterodorsal bristle and 1 dorsal bristle on hind femur.

Wings. As noted above and as in Fig. 14. Apices of cells r_3 and r_5 hyaline except for spot of brown at lower apex of r_3.

Abdomen. Grey microtomentose with large paired brown marks covering much of submedian portions of terga III and IV and basomedian portion of tergum V. Genitalia not studied.

Female

As in male. Basal segment of ovipositor broadly black at apex and at base, orange in median portion, about equal in length to terga V+VI. Not relaxed for study. Submedian brown marks on terga III–VI.

Etymology

Named after the collector R. E. Turner, this name had been chosen and a type designated by F. A. Perkins for a specimen in the NHM but the species was never described.

Campiglossa vaga, sp. nov.

(Fig. 16)

Material Examined

Holotype. ♂, Qld, 27 km NW of Tambo, 7.iv.1976, D. H. Colless, ANIC.

Diagnosis

Apparently fitting *Campiglossa* by having the antennae rather widely separated by almost the width of the scape, parafacial and gena comparatively broad. Differs from other Australian *Campiglossa* by having the wings mostly hyaline with irregular brown markings

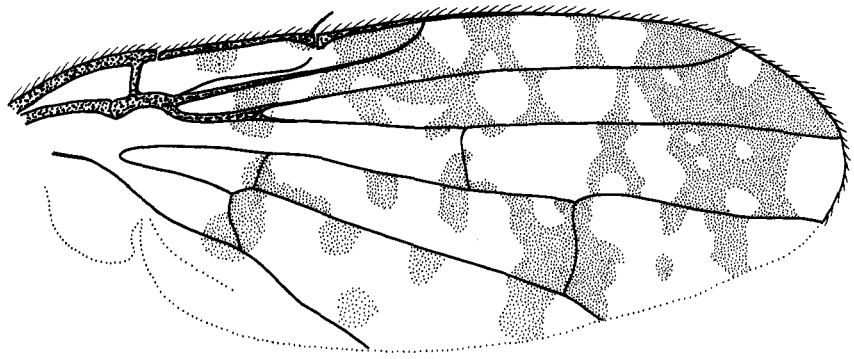


Fig. 16. *Campiglossa vaga*, sp. nov., wing.

(Fig. 16); superficially resembling *Tephritis pelia* Schiner by having no brown mark at junction of face and frons, cell sc brown except for hyaline base and frons narrow.

Description

Male

Length. Body and wing, each 3·0 mm.

Head. White except for eyes and ocellar triangle, frons golden-orange-yellow in area between frontal bristles, face tinged golden-yellow medially. Antennae red-yellow and palpi and mouthparts tinged with yellow. Frons gently sloped, meeting face at a distinct angle, face almost straight, slightly protruded at anterior oral margin. Mouthparts moderately developed, labium about equal to length of oral margin, labellum rather narrow, not expanded. Parafacial greater than half width of 3rd antennal segment and gena at bristle 1·5× width of 3rd. Genal bristle white, moderately long white cilia over gena and continuing along lower side of face to level well above oral margin. Two pairs each of frontal and orbital bristles with upper orbital white. Frons slightly less than 2× wider than eye (0·5 mm by 0·3 mm).

Thorax. Ground colour black except humerus and scutellum yellow, densely grey microtrichose and with 3 light brown vittae down middle of mesonotum; moderately covered with flattened white setae and with scutellum nearly bare except for few white setae on margin. Dorsocentral bristles just slightly behind suture.

Legs. Ground colour yellow; hind femur with 1 preapical anterodorsal and 1 dorsal bristle; anterodorsal row in middle of hind tibia rather prominent.

Wings. As noted above and in Fig. 16, with 1 brown mark in middle of cell c; a brown spot on costa at base of costal bristles; base of sc hyaline; 3 hyaline marks in r_1; 1 at upper apex of r_3 and 1 filling apex of r_5. Centre and posterior portion of wing mostly hyaline with irregular streaks and marks of brown. Vein R_1 with a bare area opposite end of sc and R_{4+5} bare except for a few setae on underside.

Abdomen. Densely grey microtrichose and white pilose, with paired submedian brown spots on terga III–V. Genitalia not studied.

Female

Unknown.

Etymology

The specific epithet is from the Latin *vagus*, wandering, unsettled, doubtful. Alluding to some question as to its generic placement.

Campiglossa whitei, sp. nov.

(Fig. 17)

Material Examined

Holotype. ♂, Tas., Bagdad, 14.xii.1912, A. White, NHM.

Paratype. **Tasmania**: Allotype ♀, same data as holotype, 2.iii.1913, NHM.

Diagnosis

Related to *C. transversa*, sp. nov., and differs by having cells bc and c hyaline except for 2 small brown marks in c; cell sc with 2 hyaline spots; 3 hyaline marks in r_1, a narrow

hyaline rim at apex of r_5 in male and a tiny narrow spot in middle of apex of r_5 in female and other wing details as in Fig. 17.

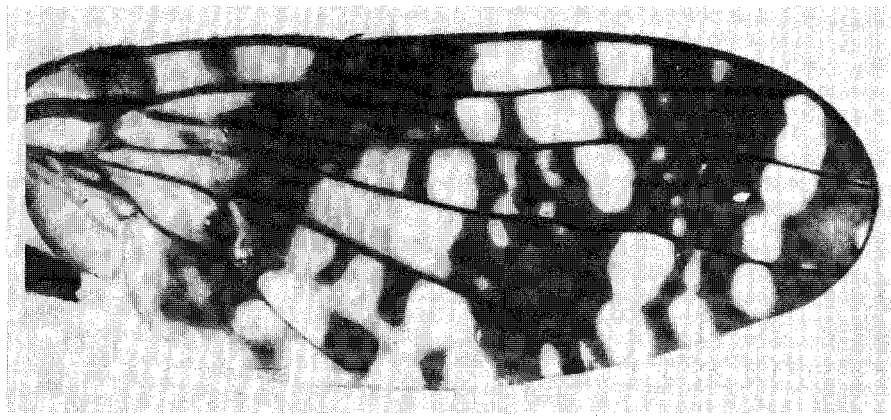


Fig. 17. *Campiglossa whitei*, sp. nov., wing.

Description

Male

Length. Body and wing each 5·0 mm.

Head. Similar to other *Campiglossa* but with parafacial comparatively narrow, about 0·5–0·67× width of 3rd antennal segment. Gena 1·5–2·0× width of 3rd antennal segment. Antennae not as widely spaced as in most congeners, the space between bases about half as wide as pedicel. Frons red except for grey orbits and a complete grey vitta down middle. No brown spot opposite base of antenna. Mouthparts withdrawn into oral cavity.

Thorax. Densely grey microtrichose with 5 complete longitudinal brown bands on mesonotum. Scutellum yellow on venter and hind margin; broadly brown microtrichose around apex.

Legs. Yellow, with 1 preapical dorsal and 1 anterodorsal bristle on hind femur.

Wings. As noted above and as in Fig. 17. With only 1 preapical transverse hyaline band and with numerous small hyaline spots in cells r_5 and r_3 distal to level with dm-cu cross-vein. With bare area on vein R_1 opposite end of Sc.

Abdomen. Grey microtrichose, yellow setose with paired brown spots on terga III–V. Genitalia not relaxed for study.

Female

Length. Body, excluding ovipositor, 5·2 mm; wing, 5·75 mm.

As in male. Abdomen with comparatively small submedian basal brown spots on terga III–V and tergum VI grey, lacking brown spots. Basal segment of ovipositor short and broad, subequal in length to terga V+VI, largely orange, broadly black at apex and discoloured with black at base. Aculeus slender needle shaped at apex, not relaxed and extended for study.

Etymology

Named after the collector A. White. These specimens had been designated as a new species by F. A. Perkins but were not described.

Genus *Collessomyia*, gen. nov.

Type species: *Collessomyia setiger,* sp. nov.

Diagnosis

Fitting near *Liepana*, gen. nov., and differing by having base of wing hyaline; cell sc about half as long as c and with a hyaline spot; 3 isolated hyaline spots in middle of wing; abdomen yellow, fine black setose; female aculeus tapered to slender point at apex and not serrated (Fig. 23); male distiphallus with an elongate, setose, membranous extension at apex (Fig. 22); hind femur with 1 preapical dorsal bristlelike seta as well as 1 preapical anterodorsal; hind tibia with a row of 5–6 erect anterodorsal bristlelike setae at middle and parafacial and gena comparatively narrow.

Description

Head nearly quadrate, not angulate where frons meet face, with frons gently sloped, face nearly straight, only slightly protruded on oral margin (Fig. 19). Antenna inserted near middle of head height, third segment rounded and extending 0·66× length of face, arista short pubescent. Occiput equals about 0·33× eye width at widest point. Parafacial less than half width of antenna and gena narrower than antenna. Three incurved frontal and 2 reclinate orbital bristles. Mouthparts capitate, labellum short and fleshy. Thorax densely yellow-grey microtrichose, pale yellow setose, setae of mesonotum recumbent, flattened but sharp pointed. Dorsocentral bristles about in line with suture. Scutellum more sparsely setose than mesonotum, apical bristles about half size of basals. Legs as noted above, with bristles and vestiture yellow-brown to brown-yellow. Wing as noted above and as in Fig. 18. Costal spines large, about 0·75× as long as cell sc. No bare area on vein R_1 opposite end of Sc and R_{4+5} with a few setae on node and scattered along dorsal side about halfway to dm-cu. Cell sc about half as long as c. Cross-vein r-m near apical 0·75 of cell dm. Cell bcu with a short point at lower apex. Base of wing hyaline. Otherwise as described under species.

Etymology

The genus is named after Dr D. H. Colless, ANIC, combining his name with the Greek *myia*, fly.

Collessomyia setiger, sp. nov.

(Figs 18–23)

Material Examined

Holotype. ♂, WA, 4 mi SSE of Minilya, 17.x.1970, D. H. Colless, ANIC.

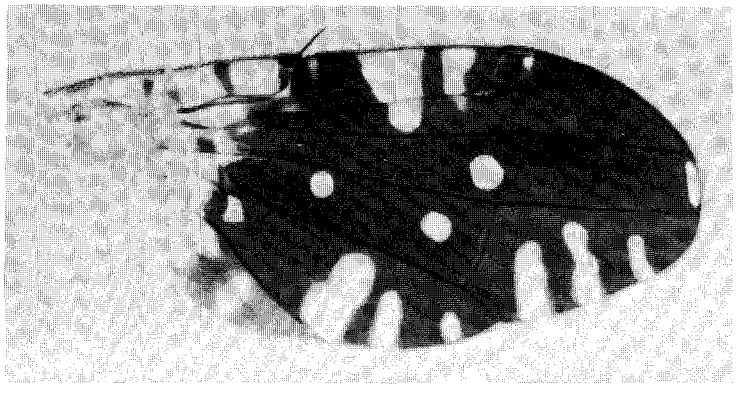
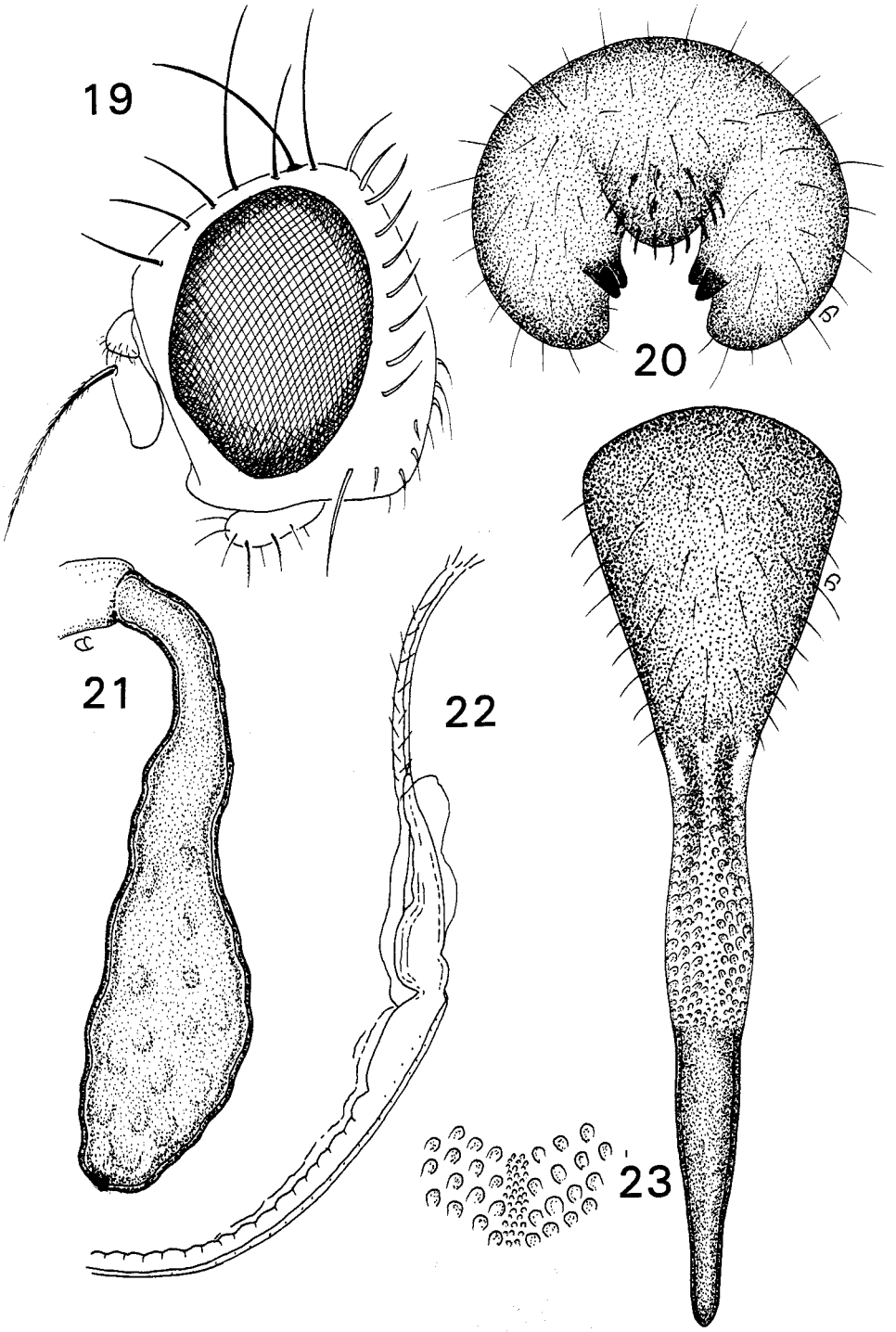


Fig. 18. *Collessomyia setiger*, sp. nov., wing.



Figs 19–23. *Collessomyia setiger*, sp. nov.: 19, head; *20*, ♂ surstyli and claspers; *21*, ♀ spermatheca; *22*, ♂ distiphallus; *23*, ♀ ovipositor and scales.

Paratypes. **Northern Territory**: Allotype ♀, 39 km E of Alice Springs, at light, 5.x.1978, D. H. Colless, ANIC. **Queensland**: 1♂, 2♀, Brigalow Development Area, Moura, F. D. Page and L. Rigby; 1♂, R2316, 18.i.1966; 1♂, R2331, 19.i.1966. **Western Australia**: 1♂, 4 mi SSE of Minilya, 17.x.1978, D. H. Colless. **Northern Territory**: 5♂, same data as allotype; 3♂, 39 km E of Alice Springs, 25.ix.1978, M. S. Upton and R. A. Barrett; 1♂, 39 km E of Alice Springs, 23°41′S, 134°15′E, 25.ix.1978, J. C. Cardale; 1♂, 32 km WNW of Alice Springs, at light, 8.x.1978, D. H. Colless; 1♂, 53 km NE of Alice Springs, at light, 6.x.1978; 1♀, 1 km E of Corroboree Rock, 23°38′S, 134°16′E, 25.v.1978, J. C. Cardale. Paratypes in ANIC, BPBM, QDPI, UH.

Diagnosis

Readily differentiated by the characters given under the genus.

Description

Male

Length. Body and wing each 3·5–3·75 mm.

Head (Fig. 19). Pale yellow to yellow-white with golden to orange tinge in middle of frons and black on upper median portion of occiput. Antennae rufous. Genal bristles yellow, tinged brown, 1–2 irregular rows of short brown setae along margin of gena continuous over lower side of face to above anterior oral margin.

Thorax. Ground colour of dorsum black, yellowish on sides, densely grey to yellow-grey microtrichose. Haltere yellow, lower calypter almost as wide as upper.

Legs. As noted above for the genus.

Wings. As noted above for the genus and in Fig. 18.

Abdomen. Yellow-rufous with tinge of black on first tergum, subshining, thinly golden microtrichose. Genitalia yellow, comparatively small, completely hidden from dorsal view. Fifth sternum with V-shaped cleft on hind margin extending about half its length. Cercus thickly setose with 2 short spinelike setae on ventral margin (Fig. 20). Outer surstylus pointed at lower apex, inner surstylus not visible from lateral view. Vanes of aedeagal apodeme slender, widely separated. Distiphallus narrow, lacking internal sclerotisation or pigmentation, with apical portion pulled out into a long slender setose extension (Fig. 22).

Female

Length. Body, excluding ovipositor, 4·0 mm; wing 3·75 mm.

As in male. Tergum VI about equal to tegum V. Basal segment of ovipositor shining black, bare of microtrichia, covered with brown to black setae, with spiracular openings on venter at basal 0·33 and about equal in length to terga V and VI. Aculeus gradually attenuated to an apical blunt point. Ventral flaps of ovipositor thin, sharp pointed, extending almost to tip of aculeus, scales of eversible membrane large and conspicuous (Fig. 23). Spermathecae elongate (Fig. 21).

Etymology

The specific epithet is from the Latin *setiger*, bearing bristles and refers to the row of bristlelike anterodorsal setae on the hind tibia and also to the strongly setose apical portion of the male distiphallus (Fig. 22).

Genus ***Cooronga***, gen. nov.

Type species: *Cooronga mcalpinei*, sp. nov.

Diagnosis

Fitting *Tephritis* in general features: head shape; short mouthparts; bristling of head and thorax, with a bare area on vein R_1 opposite end of Sc and vein R_{4+5} bare; apical scutellar bristles small; dorsocentral bristles near level with suture and male aedeagus bare, not setose before distiphallus. Along with *Quasicooronga*, gen. nov., it differs from other known Tephritinae by having the wings milky white with distinctive dark brown markings as shown in Figs 24 and 28. It differs from *Quasicooronga* by the tiny apical scutellar bristles, less than 0·25× length of basal bristles; wing with a brown arch over middle, lacking an oblique brown band through cell cu; with a brown spot at bases of dorsocentral, prescutellar and basal scutellar bristles and scutellum otherwise grey microtrichose; with paired brown spots medially on terga beyond II and hind femur lacking a preapical dorsal bristle.

Otherwise as described under species.

Biology

Breeds in flowerheads of Asteraceae.

Etymology

The generic epithet is a latinisation of Coorong, SA, where most of the type series of the type species was collected.

Cooronga mcalpinei, sp. nov.

(Figs 24–27)

Material Examined

Holotype. ♂, SA, The Coorong, 30 km S of Meningie, 8.xii.1977, D. K. McAlpine and M. A. Schneider, ANIC.

Paratypes. **South Australia**: Allotype ♀ (ANIC), 8♂, 5♀, same data as holotype; 1♂, Coorong Lagoon, S of Meningie, 30.xii.1966, Z. Liepa; 6♂, 6♀, Grange, 1.ix.1968, reared ex *Calocephalus browni*, S. S. Couche; 1♂, Venus Bay, 16.vii.1965, R. Blackith; 1♀, Long Gully, Robe district, 9.xii.1977, D. K. McAlpine and M. A. Schneider. Paratypes in AMS, ANIC, BPBM, UQM, WIA.

Diagnosis

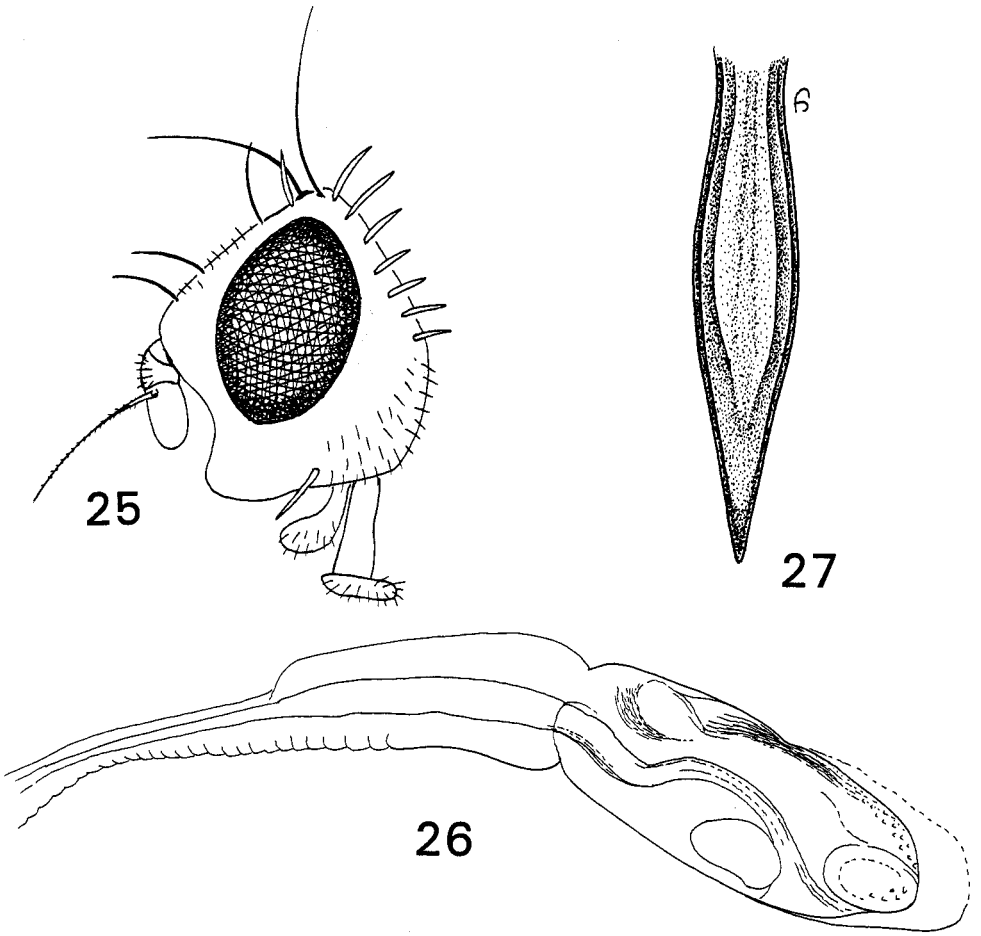
Differs from the similarly patterned *Campiglossa turneri*, sp. nov., from Western Australia, by having apex of wing all white; no brown mark in preapical white cross-band; no isolated brown mark in cell br; large hyaline wedge in posterior portion isolating 2 small spots of brown in cell cu and comparatively few tiny white spots in the brown field.

Description

Male

Length. Body 3·5–3·75 mm; wing 3·3–3·5 mm.

Fig. 24. *Cooronga mcalpinei*, sp. nov., wing.



Figs 25–27. *Cooronga mcalpinei*, sp. nov.: *25*, head; *26*, ♂ distiphallus; *27*, ♀ aculeus.

Head. Nearly quadrate, frons only slightly sloping, face gently concave, oral margin moderately protruded. Entirely grey-white except yellow tinge in middle of front and small spot of brown on orbit opposite base of antenna. Head distinctly angulate at level of antenna base. Parafacial width about equal to 4–5 rows of eye facets. Gena broad, about 0·3× height of eye (Fig. 25). Genal bristle and setae white and with fine white setae extending over lower side of face. Frons slightly wider than eye, with 2 frontal and 2 orbital bristles, the upper pair white. Interfrontalia bare. Antenna inserted at about upper 0·75 of head height, 3rd segment 1·5× longer than wide, broadly rounded. Arista microscopically pubescent.

Thorax. Ground colour black, densely grey-white microtrichose with prominent brown spot at bases of presutural, dorsocentral, prescutellar and basal scutellar bristles. Dorsocentrals at level with suture and apical scutellars small, 0·25–0·33 size of basal bristles.

Legs. Femora largely dark brown to black, front microtrichose. Bristles and setae black except white vestiture on dorsal and posterior surface of front femur. Hind femur with 1 preapical anterodorsal bristle-like seta and no preapical posterodorsals.

Wings. As noted above and with small hyaline spots scattered through the two distal transverse brown bands. Cell sc about 0·67× length of c. Cross-vein r-m in apical portion of cell dm, less than its own length from cross-vein dm-cu. Cell bcu with short point at lower apex (Fig. 24). Lower calypter almost as wide as upper.

Abdomen. Densely grey-white microtrichose with small submedian brown spots on terga III–V and thin yellow-white setose with about 6 black bristles at apex of tergum V. Outer surstylus tapered, blunt at apex. Aedeagus bare, distiphallus moderately expanded, internal sclerotisation rather extensive (Fig. 26). Aedeagal apodeme widely forked.

Female

Length. Body excluding ovipositor, and wing each 3·2–3·5 mm.

Like male except for genital characters and paired brown spots on terga III–VI. Tergum VI equal in length to tergum V. Ovipositor base shining black about equal in length to terga V and VI, less than 2× longer than wide and with spiracular openings near basal 0·33 of segment. Aculeus rather broad, gradually tapered to a sharp point on apical half (Fig. 27). Spermathecae not seen.

Biology

Reared from flowers of *Calocephalus browni* (Asteraceae).

Etymology

The species is named after Dr David McAlpine, Australian Museum, Sydney.

Genus ***Dioxyna*** Frey

Dioxyna Frey, 1945: 62.

Type species: *Trypeta sororcula* Wiedemann, by original designation.

Diagnosis

Differentiated from other Tephritinae by the conspicuously elongate geniculate mouthparts, when fully extended about 3× longer than head and head longer than high with frons and oral margin almost parallel and prominently produced on oral margin, in lateral view (Fig. 32); also usually lacking apical scutellar bristles, male basiphallus bare, not setose before the distiphallus.

The phylogenetic position of *Dioxyna* has not been clarified. Munro (1957*b*: 918) grouped this in his *Paroxyna* series on the basis of the pattern of wing marks, and development of the mouthparts. The slender, not expanded, distiphallus suggests a relationship with *Paroxyna* but the bare, non-setose apex of the basiphallus, the longer head and much more elongate mouthparts of *Dioxyna* are distinctive features. The usual absence of apical scutellar bristles would appear to be an apomorphic character that relates this to *Trupanea* Schrank and *Actinoptera* Rondani.

Description

Head with frons and oral margin almost parallel and head longest on oral margin. Labium and labellum slender, linear sided and each equal to or distinctly longer than margin. Two pairs of frontal and 2 pairs of orbital bristles. Upper orbitals and vertical bristles pale yellow-white, flattened, lanceolate. Ocellar bristles strong, black. Postocular area with short black setae interspersed in the row of flattened white setae. Thorax and abdomen densely grey microtrichose and pale yellow pilose, with paired, submedian, subshining brown spots on abdominal terga. Wing markings as in Figs 28, 31, 36. Vein R_1 with a bare area opposite end of Sc and vein R_{4+5} bare. Hind femur with 1 preapical anterodorsal and 1 dorsal bristle.

Remarks

Dioxyna species present in Australia normally have only basal scutellar bristles present but occasionally specimens have been examined that have a small pair of apical scutellars. Of several thousand specimens examined, approximately 30 *D. sororcula* and two *D. brachybasis* have the apical scutellars present.

Biology

Breed in many species of Asteraceae.

Distribution

Three species are known from the Australasian and Oriental regions (Hardy 1988: 21); two of these plus one apparently new species are recorded from Australia.

Key to Known Species of *Dioxyna* from Australia

1. Wing mostly hyaline, with 4 brown marks along anterior margin (Fig. 31); apical 0·67 of distiphallus greatly narrowed (Fig. 34); NSW, WA, Qld ..... *D. hyalina*, sp. nov.
   Wing extensively marked with brown, brown markings along anterior margin connected with brown extending over cross-veins and over posterior portion of wing; distiphallus not narrowed (Figs 29, 39) 2
2. Dark areas of wing uniformly brown; normally 2 hyaline spots in cell r_1; dark spot over cell sc broad (Fig. 28); Papua New Guinea and Irian Jaya, New Caledonia, Qld ..... *D. brachybasis* Hardy
   Brown areas of wing darker in costal half than anal half; normally 3 hyaline spots in cell r_1; dark spot over cell sc narrower (Fig. 36); widespread ..... *D. sorocula* (Wiedemann)

Dioxyna brachybasis Hardy

(Figs 28–30)

Dioxyna brachybasis Hardy, 1988*b*: 21. Holotype in BPBM.

Type locality: Saranga, Papua New Guinea.

Material Examined

Eight specimens from the following localities: **Queensland**: 1 ♀, Degilbo Rv., Biggenden, 7.v.1972, H. Frauca; 1 ♂, Miriam Vale District, Eurimbula, behind beach, 26.iii.1975, D. K. McAlpine; 1 ♀, Sue Is, Torres Strait, 17–23.v.1985, at light, J. Donaldson and E. Hamacek; 1 ♀, Upper Xing, Teviot Brook, Boonah-Killarney Rd, SE Qld, 23.iii.1975, B. K. Cantrell; 1 ♀, Bunya Mtns, SE Qld, 20–24.iv.1986, B. K. Cantrell; 1 ♀, Edge Creek, Mt Elliot Nat. Pk, S Townsville, 6.iv.1976, I. D. Galloway; 1 ♀, Little Crystal Creek, Paluma-Bruce Hwy Rd, 6.iv.1976, I. D. Galloway; 1 ♂, along creek, 2 km SE Drillham, 8.x.1974, I. D. Galloway.

Diagnosis

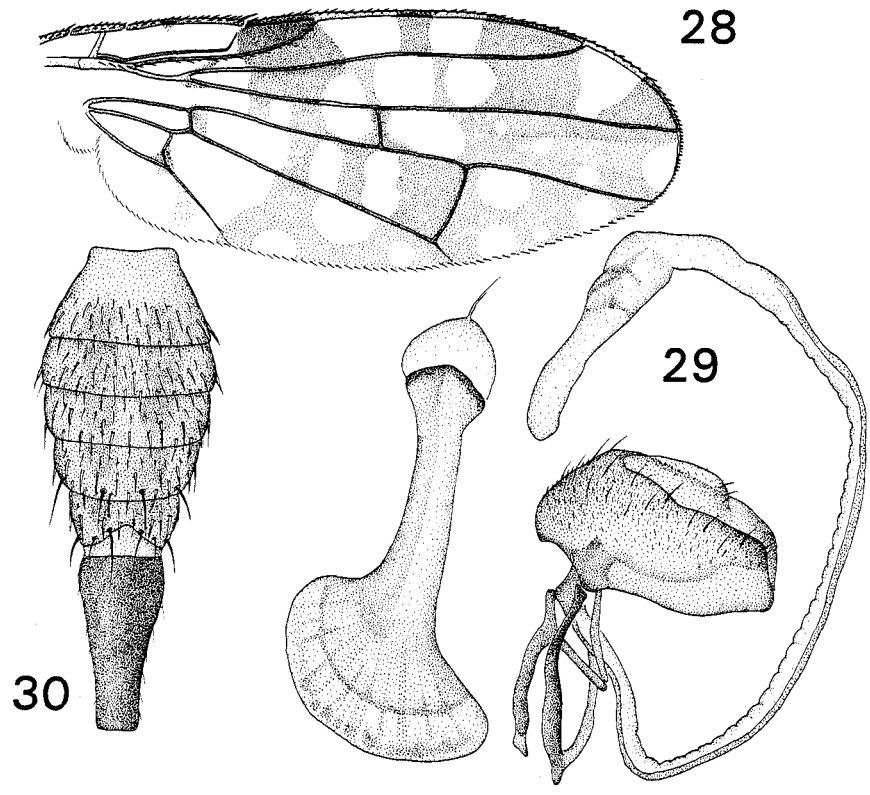
Fitting in the *D. conflicta* complex of species by having only 2 hyaline marks in cell r_1 and differing by having basal segment of female ovipositor about equal in length to abdominal segments IV–VI (Fig. 30), rather than equal in length to remainder of abdomen; distiphallus of male not strongly narrowed (Fig. 29); tergum V of male concave on posterior margin and cell m with 4 hyaline spots, rather than bisected by 2 hyaline marks; posterior margin of tergum VI of female concave, rather than straight.

Description

Male

Length. Body and wing 2·5–2·8 mm.

Fitting most of the characteristics of other *Dioxyna*, with no brown markings on mesonotum and large paired, brown, submedian spots on terga II–V in male and II–VI in female.



Figs 28–30. *Dioxyna brachybasis* Hardy: *28*, wing; *29*, ♂ genitalia; *30*, ♀ abdomen and base of ovipositor.

Legs. Yellow except brown discoloration on basal 0·67 of femora.

Wings. Two or 3 nearly quadrate marks in cell r_1 (2 specimens examined had 2 spots on one wing, 3 on the other); a large mark bisecting upper apical portion of r_3 and 3 hyaline spots in middle of r_3; cell r_5 with spot on margin not filling apex of cell and with 3 or 4 small spots distal to r-m cross-vein; cell m with 4 hyaline spots and cross-vein r-m narrowly bordered with brown (Fig. 28).

Remarks

All specimens seen from Australia have a pair of small black apical scutellar bristles. These are at least 2× longer than setae of posterior margin of mesonotum.

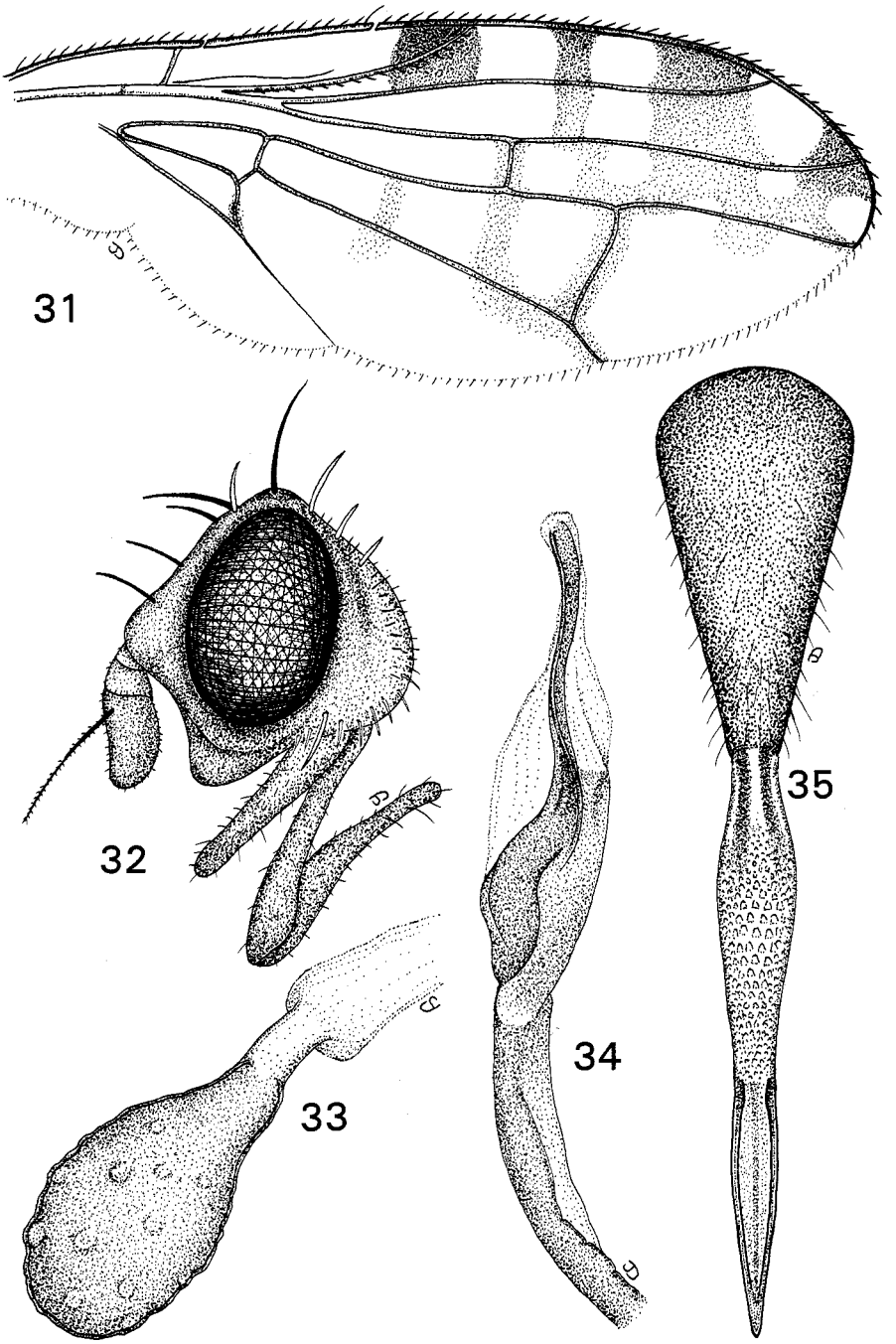
Distribution

Papua New Guinea; Irian Jaya; Queensland.

Dioxyna hyalina, sp. nov.
(Figs 31–35)

Material Examined

Holotype. ♂, NSW, Narrabri, 8.x.1963, D. H. Colless, ANIC.



Figs 31–35. *Dioxyna hyalina*, sp. nov.: *31*, wing; *32*, head; *33*, ♀ spermatheca; *34*, ♂ distiphallus; *35*, ♀ ovipositor.

Paratypes. **Western Australia**: Allotype ♀, Millstream, 12.iv.1971, D. H. Colless, ANIC. 17♂, 18♀, from the following localities: **Queensland**: 30 km N and 20 km NW of Wrotham Pk, 23 and 27.iv.1983, J. Donaldson; 20 km W of Ravenshoe, Mt Garnet Rd, 2.v.1967, D. H. Colless; Sue I., Torres Strait, 17–23.v.1985, J. Donaldson and E. Hamacek; Edward R., N Qld, 19.iv.1983, J. F. Donaldson; Elizabeth Creek Crossing, SE Wrotham Pk N Qld, 23.iv.1983, J. F. Donaldson and J. F. Grimshaw; Yeppoon, NE of Rockhampton, 7.v.1970, Z. Liepa; 64 km W Bollon, 1.viii.1963, A. L. Dyce; Moggill, 9.xi.1965, No. 6573, G. L. Bush; Brigalow Development Area, Moura, 4.v.1965, F. D. Page and L. Rigby; Mt Crosby, 9.xi.1965, No. 6575, G. L. Bush; Eungella, 25.xi.1965, No. 6589, G. L. Bush; 50 km along Dalby-Moonie Rd, 21.xi.1985. **New South Wales**: Newport, 22.xi.1972, E. A. Fonseca; Bannyabba, 2.xi.1965, ex *Coreopsis grandiflora* Hogg, No. 6567, G. L. Bush. **Victoria**: New England Nat. Pk, 1220 m, 30.x.1965, ex *Craspedia uniflora* Forst and *Brachycome* sp., No. 6562 and 3, G. L. Bush. **South Australia**: 29 km S Parachilna, 9.viii.1965, ex *Brachycome ciliaris* (Labill.), No. 6537, G. L. Bush. **Western Australia**: Millstream, 9.iv.1971, D. H. Colless; Kalbarri Nat. Pk, Murchison Gorge, 10.x.1986, swept from an area of *Centaurea melitensis*, *Arctotheca calendulae* and *Waitzia acuminata*, I. M. White. Paratypes in ANIC, BPBM, MSU, NHM, QDPI, UH.

Diagnosis

Differentiated from other *Dioxyna* by the predominantly hyaline wings with distinct brown markings only along anterior margin, no brown marks in cells c, br, dm, m, cu and bcu. The distiphallus of the male shows relationship to *D. conflicta* (Curran) by being strongly narrowed on distal 0·67 (Fig. 34).

Description

Male

Length. Body and wing each 2·4–2·6 mm.

Head. As in other *Dioxyna* and Fig. 32. Labium and labellum each equal in length to oral margin. Palpus slender, about equal in length to face.

Thorax. Densely grey microtrichose with a narrow brown longitudinal vitta in line with each dorsocentral bristle. All bristles black except yellow-white anepimeral and lower anepisternal. Only basal scutellar bristles present.

Legs. Coxae brown, femora black with yellow apices, tibiae and tarsi yellow. Hind femur with distinct preapical anterodorsal bristle and smaller, less distinct dorsal bristle.

Wings. Hyaline except for following brown markings: filling all of cell sc and extending through r_1 to vein R_{2+3}; a narrow transverse mark over middle of cell r_1, extending faintly into upper portion of cell r_5; a broad mark filling apex of r_1, extending through r_3 into upper half of r_5 and a spot in lower apex of r_3 extending a short way into upper part of r_5 (Fig. 31). With a very faint indication of brown over cross-veins r-m and dm-cu.

Abdomen. Grey with a pair of subshining brown to black vittae extending from tergum II over basal 0·67 of V. Sternum V concave on posterior margin. Surstylus blunt at apex. Distiphallus greatly narrowed apically (Fig. 34).

Female

Length. Body 2·8 mm; wing 3·2 mm.

As in male with submedian abdominal markings extending from terga II–VI. Tergum VI concave on hind margin. Basal segment of ovipositor polished black, about equal in length to segments IV–VI and with spiracular openings at basal 0·33 of segment. Aculeus slender, tapered to a sharp point (Fig. 35). Two oval spermathecae (Fig. 33).

Biology

Bred from flowers of *Brachycome ciliaris, Coreopsis grandiflora* and *Craspedia uniflora.*

Dioxyna sororcula (Wiedemann)

(Figs 36–39)

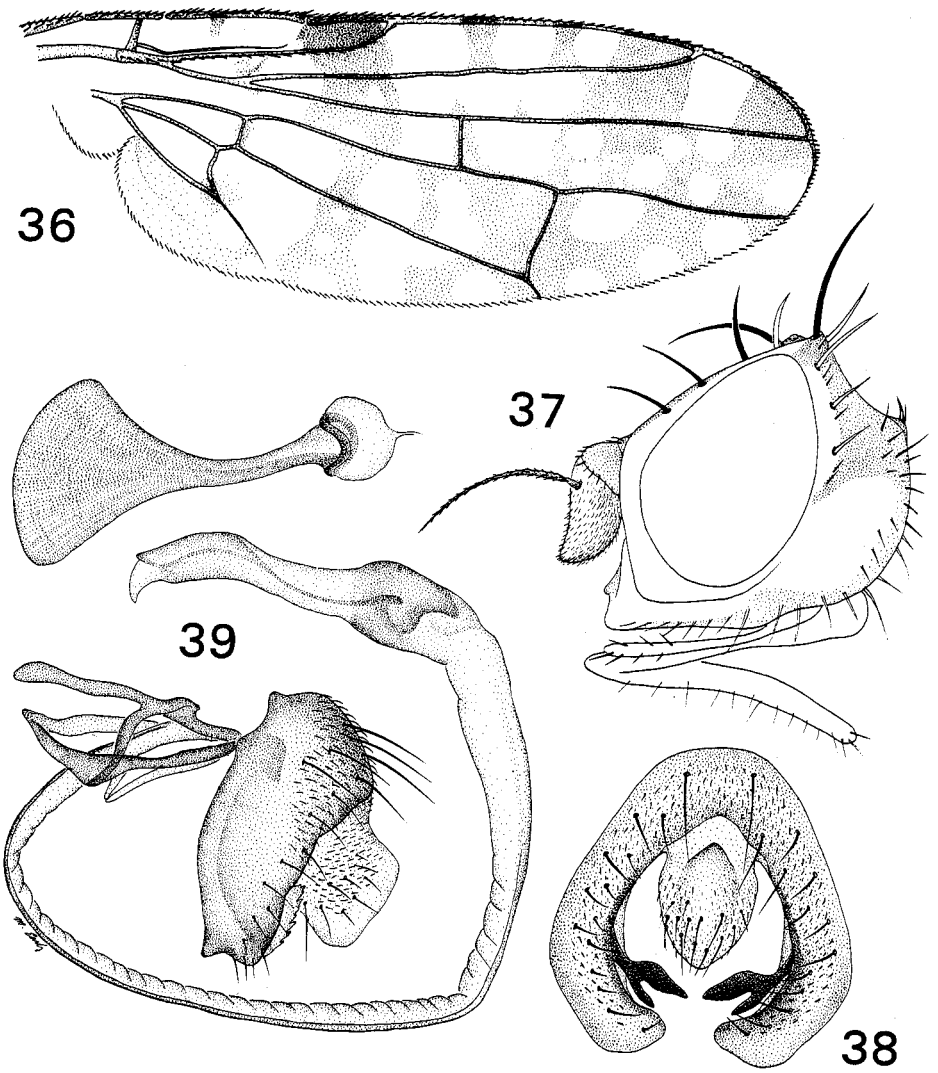
Trypeta sororcula Wiedemann, 1830: 509. Location of holotype not known, probably lost.

Type locality: Teneriffe, Canary Is.

For synonymy refer to Hardy (1988*b*).

Material Examined

Large numbers of specimens from the Australasian, Oriental and Nearctic Regions. It is a common species throughout Australia.



Figs 36–39. *Dioxyna sororcula* (Wiedemann): *36*, wing; *37*, head; *38*, ♂ surstyli and claspers; *39*, ♂ genitalia.

Diagnosis

Fitting near *D. conflicta* (Curran) and differentiated by having 3 large hyaline spots filling cell r_1 (only 2 in 1 specimen examined), 4–5 round hyaline spots in cell m and lacking

a complete transverse series of hyaline spots over wing. It closely resembles *D. thomae* (Curran) from the southern Nearctic and northern Palearctic regions, but differs in having thickened base of arista long and tapering and the male epandrium comparatively slender and gradually tapered to apex, rather than thickened base of arista short and male epandrium short and thick, as wide as long, broad, blunt, not tapered at apex.

Description

Length. Body and wings each 2·5–3·0 mm.

Fitting general characteristics of typical Tephritini with thorax densely grey microtrichose and yellow setose, with dense subrecumbent scalelike setae over mesonotum and with similar setae over abdomen. Dorsocentral bristles about halfway between supraalars and suture. Femora typically dark brown to blackish on basal 0·67 but variable and sometimes entirely yellow, probably depending on age of specimen. Abdomen predominantly grey microtrichose with paired brown submedian spots on terga IV–VI. Aculeus sharp pointed, evenly tapered to apex. Sternum V of male slightly wider than long and gently concave on hind margin. Head as in Fig. 37. Wing as in Fig. 36 and male genitalia as in Figs 38, 39, with distiphallus slender, pointed at apex. For more complete details refer to Hardy (1973: 319; 1974: 237) and Shiraki (1968: 85).

Remarks

About 36 specimens that have small black apical scutellar bristles present have been seen from a number of localities in Queensland. These aberrant specimens would run near *Paroxyna* because of the geniculate mouthparts but the head shape, slender mouthparts, wing markings and male genitalia fit clearly in *Dioxyna*.

Dioxyna sororcula has been spread widely over much of the world in flowerheads of weed and commercial Asteraceae and may possibly represent a worldwide complex of sibling species that are indistinguishable, or nearly so, by external morphological characters.

Host

Breeds in the flowerheads of a wide assortment of Asteraceae. In Australia collected on or reared from *Arctotheca* sp., *Bidens pilosa*, *Brachycome* sp., *Careopsis* sp., *Centaurea* sp., *Craspedia* sp., *Ixiolaena* sp., *Senecio* sp. and *Waitzia* sp.

Distribution

Widespread throughout the tropics and subtropics of the world; also Japan and throughout the New World from Southern Canada to Chile.

Genus ***Euaresta*** Loew

Euaresta Loew, 1873: 296.
Type species: *Trypeta festiva* Loew, subsequent designation by Coquillett (1910: 540).

Camaromyia Hendel, 1914: 95.
Type species: *Trypeta bullans* Wiedemann, by original designation.

Euaresta (Setigeresta) Benjamin, 1934: 50.
Type species: *Trypeta aequalis* Loew, by original designation.

Diagnosis

Fitting in the *Tephritis* group of genera by having upper orbital bristles pale coloured; two pairs frontal bristles, two pairs orbital bristles and four scutellars; wing with a bare area on vein R_1 opposite end of Sc and a reticulated pattern of hyaline spots (Figs 40, 46); abdomen densely microtrichose and male basiphallus not setose at apex. Differentiated by having bristles of head and thorax yellowish; mesonotum and abdomen densely golden

squamose; junction of face and frons rounded, not angulate; vein R_{4+5} setose above to level of dm-cu cross-vein; male genitalia extending beyond tergum V, conspicuously visible *in situ* and epandrium with diagonal striations as seen in end view (Figs 42, 48); front femur of male swollen, about 2× wider than other femora and wing with an isolated brown spot in base of cell br, spreading over bm in *E. bullans* (Wiedemann) (Fig. 46).

Description

Head as in Figs 44, 47 with frons broad, wider than eye and parafacial about as wide or wider than third antennal segment. Third antennal segment broadly rounded, 1·5–2× longer than wide and usually slightly pointed at upper apex. Face nearly vertical, gently concave in profile. Labellum equal or shorter than palpus. Frons with scattered, short inconspicuous setae. Dorsocentral bristles postsutural. Wing as in Figs 40 and 46. Hind femur with 1 preapical anterodorsal and 1 dorsal bristlelike setae and hind tibia with a row of weak bristlelike setae along anterodorsal surface. Male genitalia conspicuous *in situ*; exposed in dorsal view. Epandrium shining rufous, swollen almost globose, extending beyond tergum V about length of tergum IV; with oblique striations over posterior surface as seen in end view (Figs 42, 48). Surstylus abruptly tapered to a blunt apical lobe. Inner surstylus ending in 2 strong black teeth (Figs 42, 48). Female with tergum VI slightly longer than tergum V. Base of ovipositor shining black rather thickly covered with yellow-white scalelike setae and nearly equal to terga IV–VI and with spiracular openings on basal 0·4 of segment. Aculeus tapered on apical 0·33. Spermathecae sausage or pear shaped respectively (Figs 41, 49).

Ito (1984: 219) differentiated *Euaresta* from *Tephritis* by having vein R_{4+5} setose on both sides and femora moderately thickened. Ito placed *japonica* in *Euaresta* provisionally based only upon the setae on R_{4+5}, stating that the femora are only slightly swollen, not noticeably so as in *E. bullans*. We have found the setation on vein R_{4+5} variable in the species we have studied and do not consider this of generic importance. For more complete generic description refer to Quisenberry (1950) and Aczél (1952).

Biology

Breeds in seeds of *Xanthium* spp.

Distribution

A predominantly New World genus, with 11 recorded species: 7 endemic to the Nearctic region, 4 to the Neotropical region, with 2 of these widespread over the world for biological control of burs.

One species, *E. lunifrons* Bezzi (1924*a*: 530), has been described from South Africa. This is a *Migmella*, not a *Euaresta*. Three species have been described from the Palaearctic region: *E. sinensis* Hendel (1927*a*: 173) and *E. aliniana* Hering (1937: 60) from China and *E. japonica* Ito (1984: 244) from Japan. We cannot confirm that the Palaearctic species are correctly placed. Hering, in his personal card file, placed *E. aliniana* in *Paroxyna*.

Euaresta aequalis (Loew)

(Figs 40–45)

The Noogoora Burr fly

Trypeta aequalis Loew, 1862*a*: 86. Syntype ♂ in MCZ.
Type locality: Illinois.

Tephritis gemella Coquillett, 1902: 181. Holotype ♀ in USNM.

Material Examined

Thirty specimens from Canberra, ACT, 11.iv.1931 and Samford, Qld, 21.ii.1963. No collectors given.

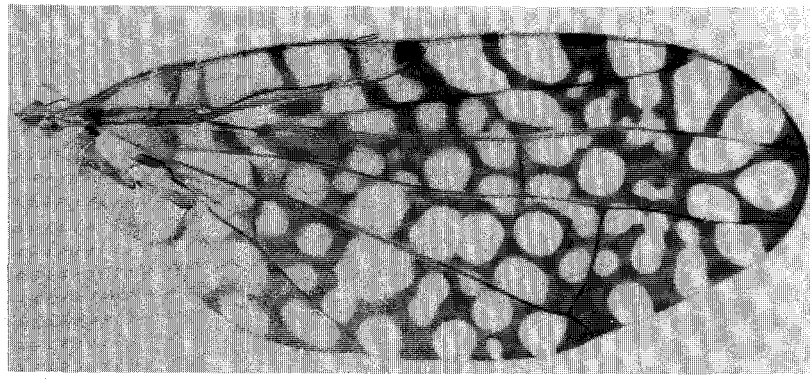


Fig. 40. *Euaresta aequalis* (Loew), wing.

Diagnosis

Readily differentiated from *bullans* by its larger size, all yellow body, short rounded 3rd antennal segment, basal 0·2 of arista thickened, wing with spot in br not extending into bm and other markings as in Fig. 40, head shape (Fig. 44) and female genital characters distinctive as described below in Figs 41, 45.

Description

Male

Length. Body and wing each 5·2–6·0 mm.

Head. Higher than long. Antenna at upper 0·33 of head, 3rd segment about 1·5× longer than wide, broadly rounded at apex. Parafacial equal to slightly wider than 3rd antennal segment. Gena broad, 2× wider than 3rd segment and occiput half as wide as eye.

Thorax. Densely grey microtrichose. Dorsocentral bristles distinctly behind suture. Apical scutellar bristles 0·75 as long as basal.

Wings. As noted above and in Fig. 40 with 2 hyaline spots on margin in cell r_3, 3 large spots in apex of r_5, and several spots before and after r-m cross-vein.

Abdomen. Subshining, more thinly grey microtrichose than thorax. Male genitalia as in Figs 42, 43.

Female

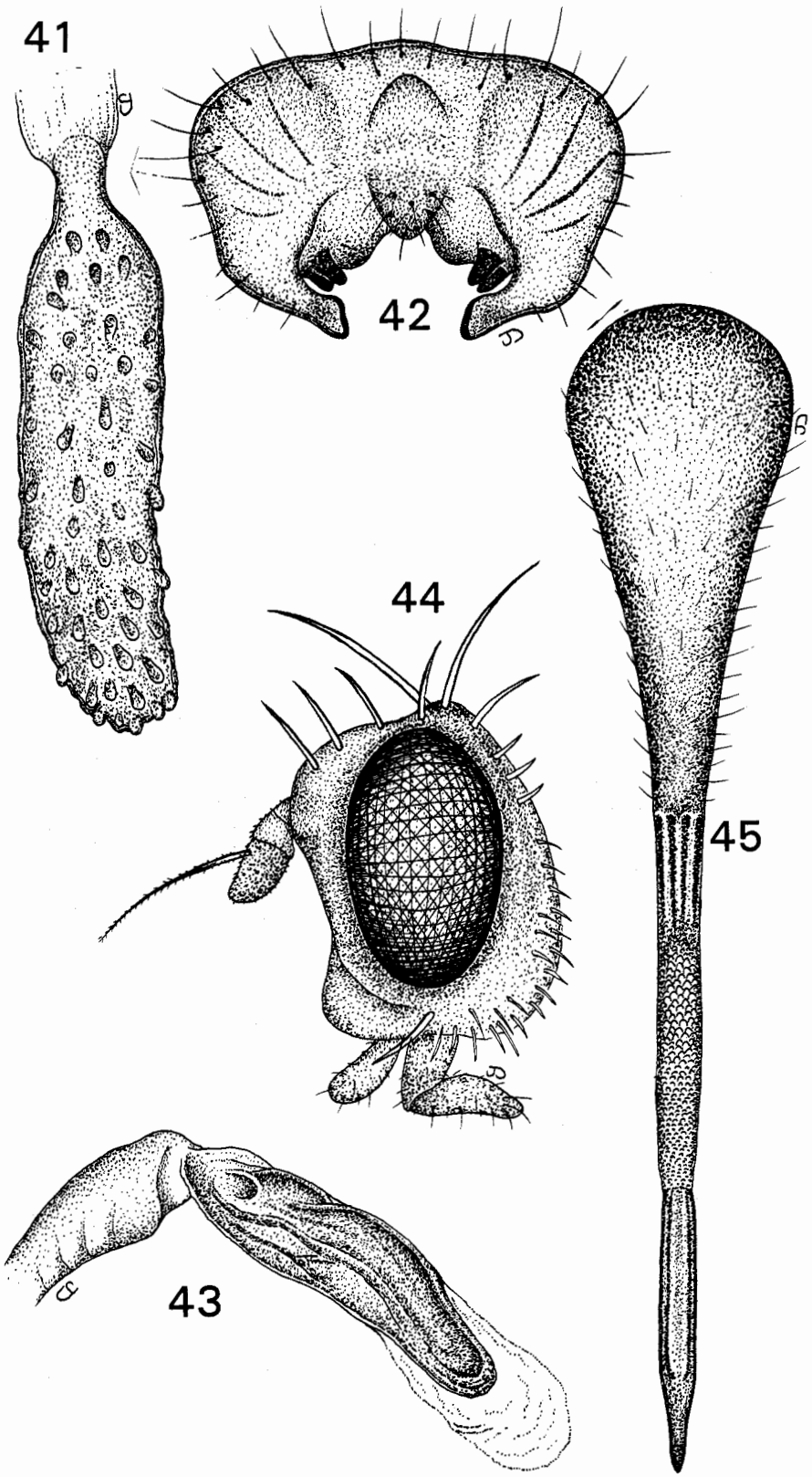
As in male. Basal segment of ovipositor comparatively long, 2·4 mm, tapered to apex. Spiracular openings at basal 3rd of segment. Aculeus slender, sharp pointed (Fig. 45). Extended ovipositor 5·0 mm. Two elongate sausage-shaped spermathecae, covered with short blunt spinules (Fig. 41).

Biology

Breeds in seeds of *Xanthium strumarium* L. (Noogoora Burr). Introduced into Queensland from North America for control of Noogoora Burr (Currie 1932: 191).

Distribution

North America and Australia (Queensland, Australian Capital Territory).



Figs 41–45. *Euaresta aequalis* (Loew): *41*, ♀ spermatheca; *42*, ♂ surstyli and claspers; *43*, ♂ distiphallus; *44*, head; *45*, ♀ ovipositor.

Euaresta bullans (Wiedemann)

(Figs 46–51)

The Bathurst Burr fly

Trypeta bullans Wiedemann, 1830: 506. Syntypes in NHMV.
Type locality: Uruguay.
Acinia rufa Macquart, 1843: 228.
Tephritis meleagris Schiner, 1868: 272.
Euaresta adspersa Coquillett, in Baker 1904: 30.
Tephritis wolffi Cresson, 1931: 5.

Material Examined

About 75 specimens from numerous localities over Queensland, New South Wales and Victoria. It is probably present wherever the Bathurst burr is found.

Diagnosis

Differentiated from *E. aequalis* by smaller size; black ground colour of mesonotum, postnotum and sternopleuron, basal segment of female ovipositor and on some abdominal terga; third antennal segment narrowed and upcurved at apex; basal half of arista thickened and white; parafacial and gena comparatively narrow, the latter scarcely wider than 3rd antennal segment (Fig. 47); base of wing mostly hyaline, with a conspicuous dark brown mark isolated in cells br and bm (Fig. 46).

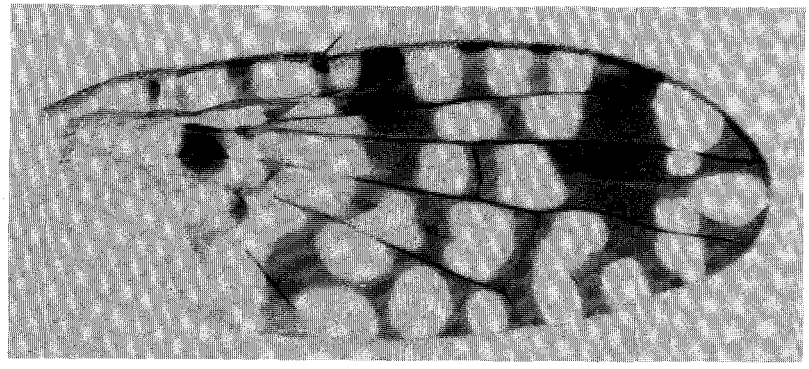


Fig. 46. *Euaresta bullans* (Wiedemann), wing.

Description

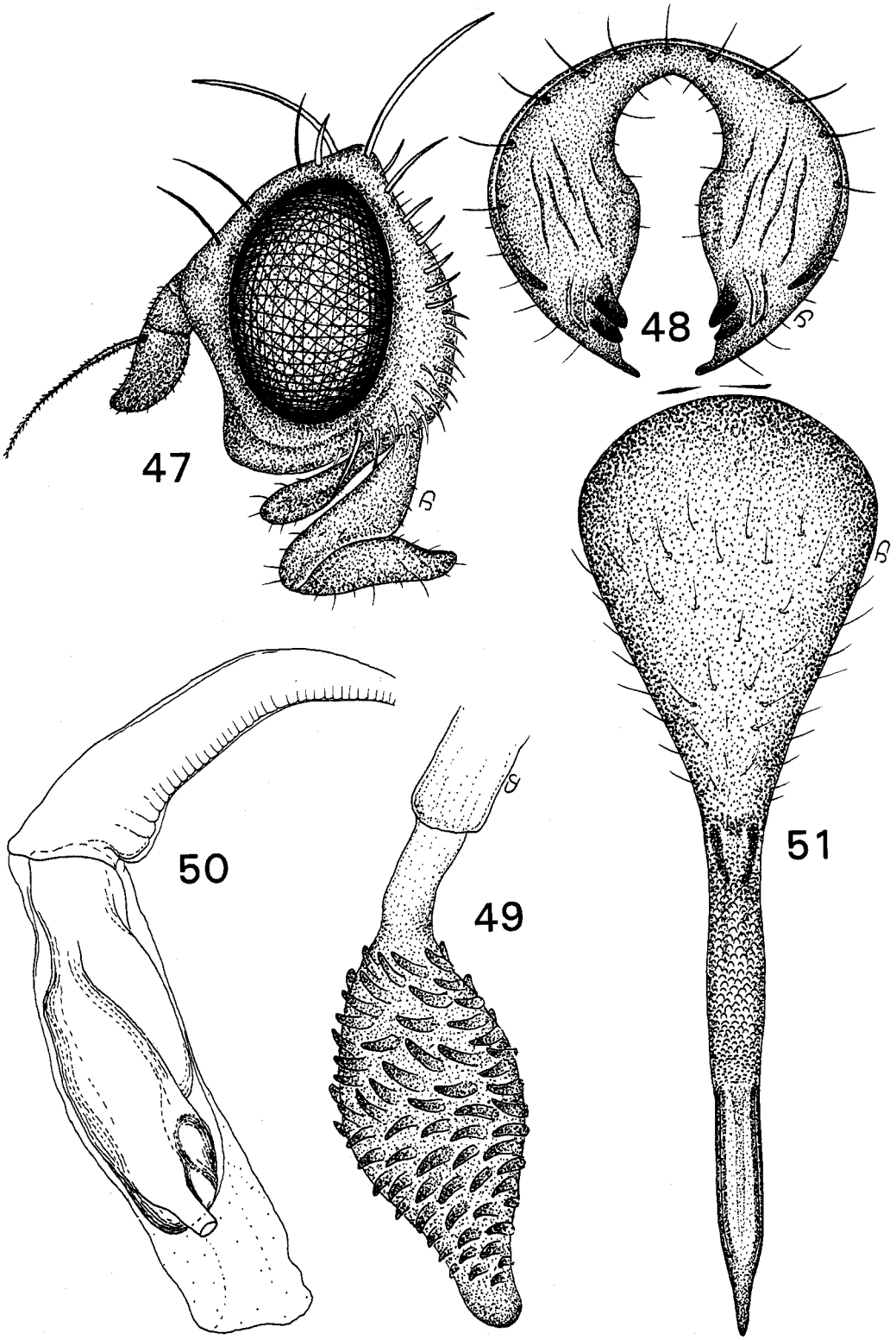
Male

Length. Body 3·0–3·6 mm; wing 3·3–4·0 mm.

Head. Frons 0·33× wider than long, measured from lunule to upper ocelli. Parafacial about equal in width to 3rd antennal segment. Gena slightly wider than 3rd antennal segment (Fig. 47). Occiput scarcely over 0·33 eye length.

Thorax. Yellow on scutellum, subscutellum, propleuron, prosternum and anterior of anepisternum. Apical scutellar bristles small, about half length of basal bristles.

Wings. As in Fig. 46, large dark brown spot in br extending through bm, 1 large spot on margin in cell r_3, 1 large hyaline spot plus 2 small spots in apex of r_5, 2 large spots either side of r-m.



Figs 47–51. *Euaresta bullans* (Wiedemann): *47*, head; *48*, ♂ surstyli and claspers; *49*, ♀ spermatheca; *50*, ♂ distiphallus; *51*, ♀ ovipositor.

Abdomen. Predominantly yellow, marked with black on anterior portions of terga IV–VI and basal segment of female ovipositor black, latter polished and densely golden squamose. Male genitalia (Fig. 48) shining yellow to rufous, extended conspicuously beyond tergum V. Epandrium broad, with a clump of short yellow setae on upper margin. Surstylus tapered at apex and prensisetae large and conspicuous (Fig. 48). Distiphallus not expanded (Fig. 50).

Female

As in male. Basal segment of female ovipositor shining black, yellow-white setose, *in situ* about equal in length to terga V+VI, with spiracular openings at basal 0·33 of segment. Aculeus sharply pointed at apex (Fig. 51). Two elongate-oval spermathecae densely covered with short blunt spines arranged in transverse rows (Fig. 49).

Remarks

According to McCarthy (1930: 379) *E. bullans* was first found by accident in burrs of *Xanthium spinosum* in New South Wales and presumed that the fly had been introduced to Australia in burrs in the tails of horses from Chile, South America.

Biology

Breeds in seeds of *Xanthium spinosum.*

Distribution

South Africa, Europe, Middle East, Australia, Nearctic and Neotropical Regions.

Genus ***Hendrella*** Munro

Hendrella Munro, 1938: 117.

Type species: *Trypeta caloptera* Loew (as '*Aciufa caloptera* Lolu': Typographical errors), by original designation.

Diagnosis

This genus shares with the unrelated *Spathulina* the absence of apical scutellar bristles. *Hendrella* differs from *Spathulina* by having 3 pairs of frontal bristles (except in *H. sexincisa*); oral margin not protruded; proboscis short, not conspicuous beyond oral margin; interfrontal area with fine, sparse, pale setae; wing broad, about 2× longer than wide and with a prominent indentation in margin at apex of vein Cu_1 (in Australian species); no hyaline mark at apex and markings very different (Figs 52, 56); cell sc short, about as long as wide; no bare area on vein R_1 opposite end of Sc; vein R_{4+5} sparsely setose and with a short acute lobe at lower apex of cell bcu. Distiphallus of male reduced to a slender, weakly sclerotised tube with 1 or 2 thin membranous extensions at apex (Figs 54, 59). *Hendrella* differs from *Tephrella* Bezzi (with which it is often associated) in having flat, scalelike, recumbent pale setae on the mesonotum and yellowish markings on the humerus and propleuron. In *Tephrella* the mesonotal setae are slender and the thorax entirely black.

Otherwise as described under species.

Distribution

Only 2 known Australian species. Members of this genus may be gall formers on Asteraceae. Refer to Hardy (1988*b*) (as *Tephrella*) for a key to species known from the Oriental and Australasian Regions.

Hendrella australis (Malloch)

(Figs 52–55)

Tephrella australis Malloch, 1939*a*: 456. Holotype ♀ in ANIC.

Type locality: Western Australia.

Material Examined

Twenty species from the following localities. **Queensland**: 50 km N Marlborough, 9.ii.1975, B. K. Cantrell; Rockhampton, 1948 (Pilcher Per Janson); Brisbane, 27.vii.1941 and 15.ii.1962, C. F. Ashby; Tinaroo Falls Dam, 27.iv.1967, open savannah, D. H. Colless; Lake Broadwater, nr Dalby, 20.xi.1985; Millstream Falls Nat. Pk, 24–25.v.1980, I. O. Naumann and J. C. Cardale; Macrossan, Burdekin R, 10.vi.1958, J. Campbell; Burnett R., Bundaberg, Jan. 1973, H. Frauca. **New South Wales**: Wedderburn, 1.vii.1961, M. I. Nikitin; Toolum Scrub, via Urbenville, 22–23.iii.1975, B. K. Cantrell; Colo Heights, Putty Rd, 6.ii.1968, D. H. Colless; Wallangarra, 11.i.1960, T. V. Bourke; Narrabri A.R.S., 22.iii.1968, W. E. Wright.

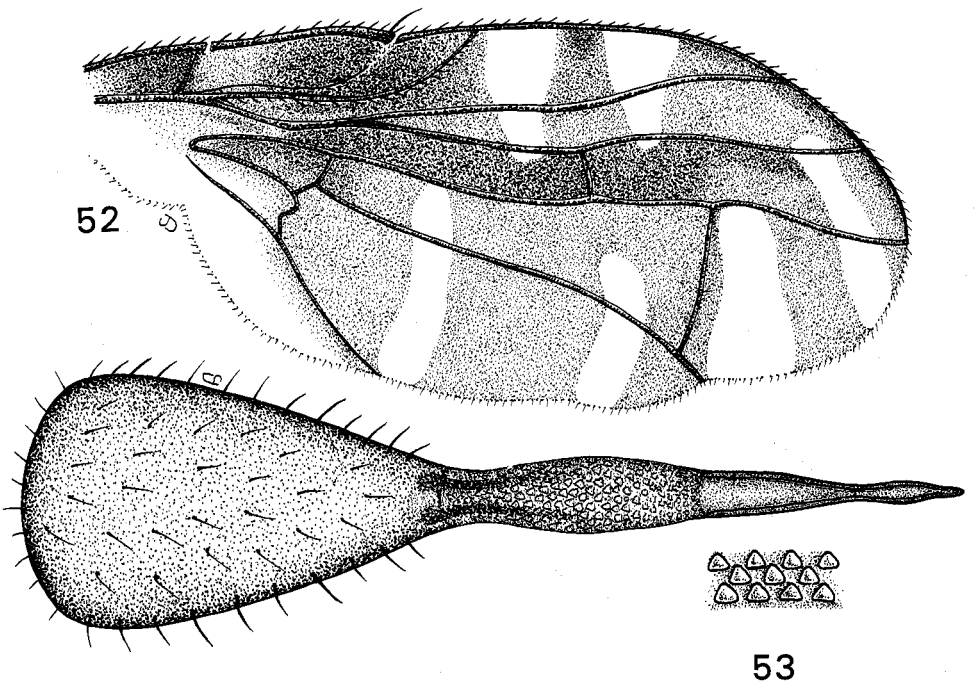
Diagnosis

Differentiated from other known species of *Hendrella* by the broader, almost oval wing with a prominent indentation in the margin at apex of vein Cu_1 and with apical hyaline mark in cell m extending into cell r_3 (Fig. 52) and basal hyaline mark in cell cu usually extending to vein M.

Description

Length. Body and wing each 4·0 mm.

Head. Slightly higher than long, frons gently sloping and face straight except for a gentle protrusion of oral margin. Lower sides of face short black setose. Frons almost as wide as eye, with sparse, short, pale hairs over central area, with 3 frontal and 2 orbital bristles, upper orbitals dark brown to black. Ocellar bristles strong, postocellars and



Figs 52, 53. *Hendrella australis* (Malloch): *52*, wing; *53*, ♀ ovipositor and scales.

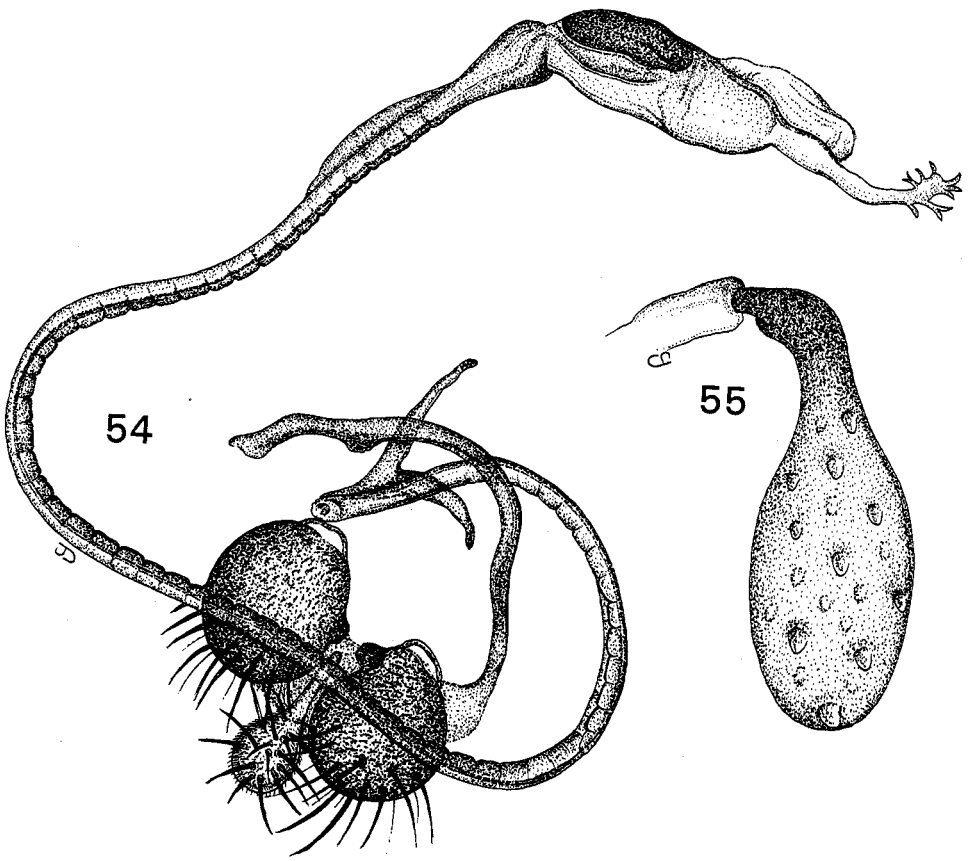
postoculars flattened and yellow-white. Antennae fulvous to rufous, 3rd segment rounded, about 1·5× longer than wide. Arista short pubescent.

Thorax. Ground colour black except yellow on humerus and propleuron, densely grey microtrichose on sides, brown over dorsum. Setae of mesonotum flat, scale-like, recumbent and arranged in rather regular, longitudinal, linear series. Dorsocentral bristles at suture. Scutellum gently convex, subshining on dorsum, brown microtrichose around margin and nearly bare of setae.

Legs. Yellow, tinged brown on mid and hind femora. Fore femur with 5 moderately developed posteroventral bristles. Hind femur with 1 short, black preapical anterodorsal and 1 posterodorsal bristle.

Wings. As noted above and as in Fig. 52. Less than 2× longer than wide, hyaline basad of about middle of cell c except for brownish yellow coloration in cell bc and base of c. Basal transverse hyaline mark extends through cell dm in most specimens but shows some variation.

Abdomen. Shining black covered with short, thin, black recumbent setae. Tergum VI of female equal in length to tergum V. Basal segment of ovipositor subequal to length of terga IV–VI as seen *in situ*. Aculeus long, slender, needlelike at apex (Fig. 53). Spermathecae gourd shaped (Fig. 55). Male genitalia pale setose, cerci yellow. Surstyli short, blunt. Vanes of aedeagal apodeme widely forked (Fig. 54). Distiphallus narrow, only weakly sclerotised,



Figs 54, 55. *Hendrella australis* (Malloch): *54*, ♂ genitalia; *55*, ♀ spermatheca.

with a membranous swelling above on apical half and a thin membranous extension from apex (Fig. 54).

Distribution

Western Australia, New South Wales, Queensland; Papua New Guinea.

Hendrella sexincisa (Malloch)

(Figs 56–60)

Tephrella sexincisa Malloch, 1939*b*: 272. Holotype ♂ in NHM.

Type locality: Russel Is, Solomon Is.

Material Examined

Seven species from the following localities. **Queensland**: 1♂, Austral Forest, Bulburin, 20.iii.1975, D. K. McAlpine; 1, Thompson R., nr Longreach, 16.vi.1976, J. F. Donaldson; 1♀, Lake Dyer, nr Laidley, 15.iii.1975, B. K. Cantrell; 1♂, Brisbane, Jun. 1978; 1♀, Tarome area, SE Qld, 16.iii.1975, B. K. Cantrell. **New South Wales**: 1♂, Tooloom Scrub via Urbanville, 22–23.iii.1975, B. K. Cantrell. **South Australia**: 1♀, Anajatra Mann Ranges, 10.v.1983, G. A. Holloway.

Diagnosis

Differs from other known *Hendrella* by having only 2 pairs of inferior fronto-orbital bristles, by having a prominent hyaline spot in cell r_5 about opposite dm-cu cross-vein and lacking faint spots in apical portion of wing opposite end of vein R_{2+3}, and by having only 2 hyaline wedges through cell cu and no hyaline spots in cell bcu (Fig. 56).

Description

Male

Length. Body 3·0–3·25 mm; wing 3·2–3·4 mm.

Fits description of most *Hendrella* except with only 2 prominent frontal bristles. Upper orbital and outer vertical bristles yellow-white. Front with a few scattered, flat, pale setae in middle. Dorsocentral bristles slightly anterior to a line drawn between supraalars, closer to supraalars than to suture.

Legs. Entirely yellow.

Wings. As noted above and as in Fig. 56. With a broad band across middle of 2nd costal cell and a prebasal transverse streak of brown from apex of cell cu through basal medial and basal radial cells connected, or nearly so, with a brown prebasal streak across 2nd costal cell. Hyaline wedges in cell r_1 extending through most of cell r_3. Cross-vein r-m situated near apical 0·2 of cell dm. Cell bcu pale brown, without hyaline spots.

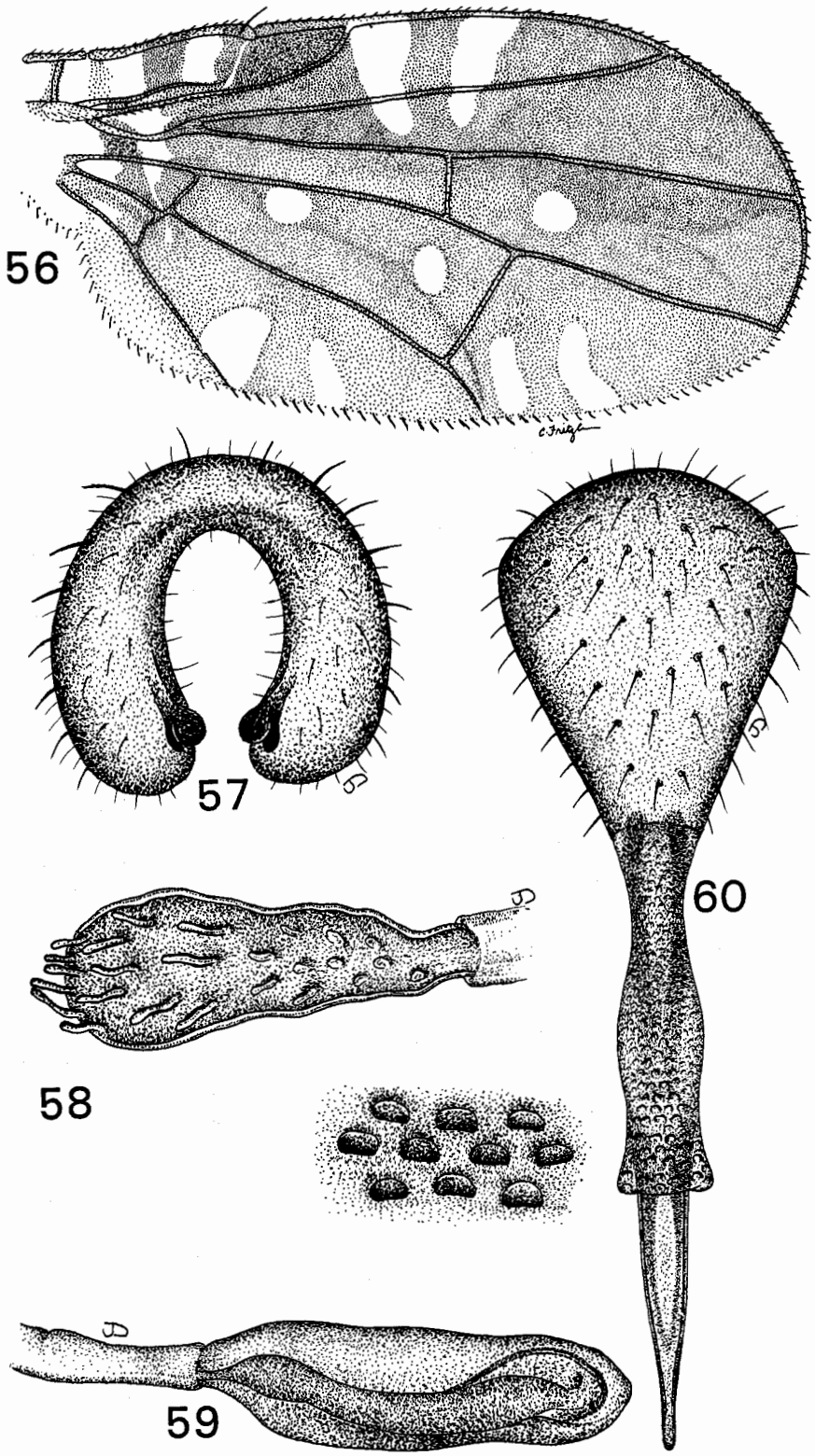
Abdomen. Shining black, lightly grey microtrichose on terga I–V and polished on tergum VI and base of female ovipositor (Fig. 60). Tergum VI about equal in length to tergum V. Male claspers and surstyli as in Fig. 57; aedaegus as in Fig. 59.

Female

As for male. Basal segment of female ovipositor comparatively short, less than 2× longer than wide (Fig. 60) and about equal in length to terga V+VI. Spermathecae as in Fig. 58.

Distribution

Queensland, New South Wales, South Australia; Solomon Islands and Sumbawa I., Indonesia.



Figs 56–60. *Hendrella sexincisa* (Malloch): *56*, wing; *57*, ♂ surstyli and claspers; *58*, ♀ spermatheca; *59*, ♂ distiphallus; *60*, ♀ ovipositor and scales.

Genus *Hyalopeza*, gen. nov.

Type species: *Hyalopeza schneiderae*, sp. nov.

Diagnosis

Fitting in a group of genera characterised by having vein Cu_2 vertical or only gently curved outward at lower apex so cell bcu is not lobate or sharp pointed. In this respect resembling members of the Myopitini. Fitting nearest to *Oedaspis* Loew and *Parahyalopeza*, gen. nov., but differing by having 3 pairs of frontal bristles, wing entirely dark brown except for hyaline posterior margin and basal half of anterior margin and r-m cross-vein nearly 2× its length from dm-cu.

Description

Head nearly quadrate (Fig. 62), frons gently sloped, face straight except oral margin slightly protruded. Junction of face and frons rounded, not sharply angulate. Gena equal in width or slightly wider than 3rd antennal segment and parafacial about half as wide as antenna. Lower edges of face short black setose, continuous over gena. Three pairs frontal bristles, upper orbital bristle usually dark brown to black but in some specimens pale yellowish. Third segment of antenna with arista very short pubescent. Thorax densely grey microtomentose, rather sparsely fine, yellow setose over mesonotum. Scutellum nearly bare, apical bristles cruciate, about 0·6 size of outer bristles. Dorsocentral bristles distinctly behind suture, just anterior to the level of supraalars. Bristles of front femur pale yellow to yellow-brown. Hind femur with 1 weak preapical anterodorsal bristle-like seta but none on posterodorsal surface. Wings as noted (Fig. 61). Costal spines short. No bare area in setae on upper side of vein R_1 and R_{4+5} bare except for few setae at base. Cell sc about 0·66× length of c. Cross-vein r-m at apical 0·66 of cell dm and veins Cu_1 and A_1+Cu_2 evanesce before reaching wing margin. Abdomen thinly grey microtomentose, subshining black except for polished black 7th segment (ovipositor base) of female. Abdomen covered with fine, thin yellow to brown setae. Tergum VI of female about equal in length to tergum V and basal segment of ovipositor about equal to terga V+VI. Female aculeus drawn out into a slender point (Fig. 66). Spermathecae conical (Fig. 64), no evidence of spicules in specimens examined. Male genitalia with vanes of aedeagal apodeme widely forked, outer surstylus drawn out into a blunt lobe at lower apex and 2 large blunt teeth visible *in situ* at apex of inner surstylus (Fig. 63). Distiphallus not expanded, sides almost straight and as in Fig. 65. This genus was referred to as New Genus B by Bush (1966).

Biology

Gall formers in stems of Asteraceae.

Etymology

The name is from the Greek *hyalos*, glassy, transparent or hyaline, combined with *peza*, edge or border. Referring to the hyaline wing margins.

Hyalopeza schneiderae, sp. nov.

(Figs 61–66)

Material Examined

Holotype. ♂, Vic., 17 km E Bendigo, 17.xi.1976, G. Daniels and M. A. Schneider, ANIC.

Paratypes. **Victoria**: Allotype ♀ (ANIC), 2♂, 5♀ same data as holotype. 11♂, 20♀, from the following localities. **Queensland**: Harlin, 7.ii.1938, A. May. **New South Wales**: Snowy Valley Lookout, 5.xi.1961, D. W. Colless; Avoca Beach, 25.xi.1984, S. Hunter; Chatswood, 17.x.1903, W. B. G.; approximately 1 km NNW Lansdowne via Taree, 10.i.1982, on *Cassinia* branch in timbered pasture,

G. and T. Williams. **Australian Capital Territory**: Black Mtns, at light trap, 9.x.1979, 3.iii.1967 and 20.xi.1962, I. F. B. Common and Z. Liepa. **Victoria**: 8 m E Noojee at Moe Junc., 14.xii.1964 and 24.viii.1965, reared from galls on *Cassinia longifolia* R. Br., G. L. Bush; 8 km NE Toolangi at M.V. light, 2.xii.1970, A. Neboiss; Bendigo, 8.i.1930, F. E. Williams. **South Australia**: Alligator Gorge, nr Wilmington, 32°39′S, 138°06′E, 28.iii.1964, No. 6412, G. L. Bush. Paratypes in AMS, ANIC, BPBM, MSU, NHM, NMVM, NSWA, QDPI, UH, UQM.

Diagnosis

Differentiated from other Tephritinae by the generic characters given above.

Description

Male

Length. Body and wing of holotype both 2·8 mm.

Head (Fig. 62). Ground colour yellow except brown to blackish on vertex, ocellar triangle, area of orbital bristles and upper 0·66 of occiput. Frons bare, slightly wider than eye.

Thorax. Densely grey microtrichose, short, yellow to brownish setose and bristles black except yellow to yellow-brown posterior notopleural, lower anepisternal and anipemeral bristles. Apical scutellar bristles 0·66× size of basal bristles.

Legs. Yellow, front femur with 5–6 posteroventral bristles and 2 rows of erect brownish yellow bristle-like setae extending over posterodorsal surface.

Wings. As noted above and as in Remarks below, with dark brown coloration filling entire median portion and extending to wing base through cells br, bm and bcu. Anterior margin hyaline through cells bc, c, sc and portion of r_1, just beyond apex of R_1 and posterior margin hyaline as in Fig. 61.

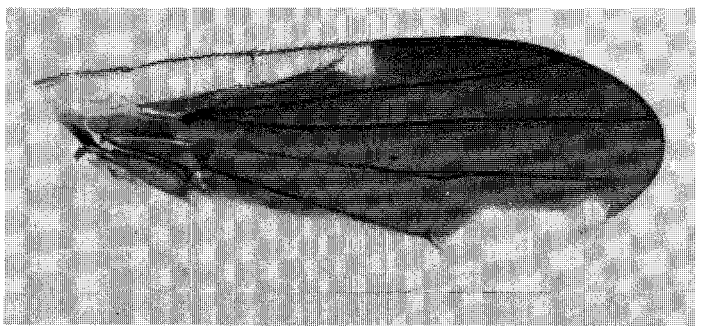
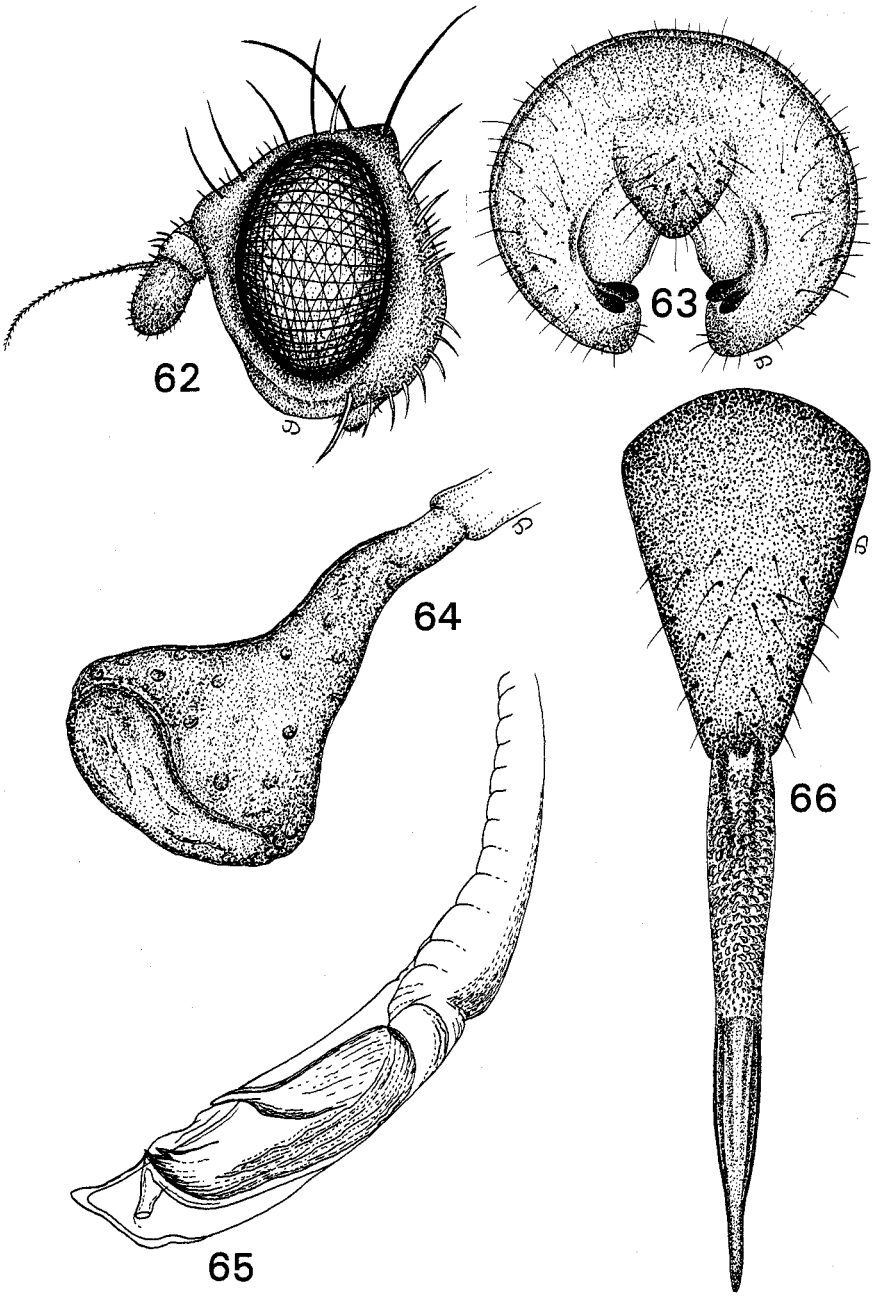


Fig. 61. *Hyalopeza schneiderae*, sp. nov., wing.

Abdomen. Subshining black, lightly grey microtrichose and predominantly brown to black setose, with yellow setae on sides and hind margins of terga. Sternum V with broadly v-shaped cleft on hind margin extending 0·75× length of sclerite. Genitalia as in Fig. 63 and distiphallus rather heavily sclerotised, not expanded (Fig. 65).

Female

As in male. Basal segment of ovipositor short brown to black setose and about equal in length to terga V+VI. Aculeus about equal in length to eversible membrane and long, slender pointed on apical 0·33 (Fig. 66). Spermathecae conical, surface smooth (Fig. 64).



Figs 62–66. *Hyalopeza schneiderae*, sp. nov.: *62*, head; *63*, ♂ surstyli and claspers; *64*, ♀ spermatheca; *65*, ♂ distiphallus; *66*, ♀ ovipositor.

Remarks

Bush (1966) referred to *H. schneiderae* as New Genus B, sp. 1. It seems apparent that considerable variation in wing pattern occurs within *Hyalopeza*. The typical form has a prominent hyaline mark in cell r_1 just beyond apex of vein R_1 and posterior margin broadly hyaline (Fig. 61); other specimens have a very small hyaline mark in r_1 and posterior margin

more narrowly hyaline, while others have posterior portion of wing brownish with scattered hyaline spots and a few round hyaline spots occur through middle of wing. Specimens vary in size, wing length 2·8–4·4 mm.

Biology

Forms stem galls on *Cassinia longifolia* R. Br. (Asteraceae).

Etymology

Named after Margaret A. Schneider, Department of Entomology, University of Queensland.

Genus ***Liepana***, gen. nov.

Type of genus: *Liepana latifrons*, sp. nov.

Diagnosis

Fitting near *Collessomyia*, gen. nov., and differing by having wing base discoloured with brown; cell sc brown, about 0·66× as long as cell c; head and body bristles predominantly black; abdomen dark brown to black in ground colour, mostly yellow setose; female aculeus spearhead shaped, serrated on sides preapically (Figs 69, 75) and male distiphallus not extended at apex (Fig. 74); no preapical dorsal bristle on hind femur; hind tibia lacking a row of anterodorsal bristle-like setae and parafacial and gena comparatively broad, former equal to 5–6 rows of eye facets and latter equal to 0·25× eye height.

Description

Head broadly rounded not distinctly angulate where frons meets face. Face concave in lateral view and oral margin distinctly protruded. Third antennal segment not much longer than wide, rounded at apex, inserted near upper 0·33 of head height and extending 0·67× length of face. Arista short pubescent, 3–4 frontal bristles. At widest point occiput nearly half eye width. Lower sides of face with several rows of short brownish yellow setae. Frons bare, slightly wider than eye. Dorsocentral bristles about halfway between suture and supraalars. Thorax densely covered with subrecumbent scalelike yellowish setae except for nearly bare scutellum. Wings with cell sc about 0·66× as long as c. Cell r_1 with 2 hyaline wedges and markings as in Figs 70, 76. Cell bcu pointed at lower apex. No gap in setae on vein R_1 opposite end of Sc and R_{4+5} with few scattered setae to beyond dm-cu.

Biology

Gall formers in Asteraceae.

Etymology

The genus is named after Z. Liepa, formerly of ANIC.

Key to Known Species of *Liepana* from Australia

1. Cell c subhyaline, lacking dark brown markings; basal portion of wing discoloured pale brown, other markings as in Figs 70, 71; Vic. ..... *L. latifrons*, sp. nov.
   Cell c dark brown with 2 hyaline spots; dark brown markings in base of wing, markings as in Figs 67, 76 2
2. Apex of wing broadly hyaline, markings as in Fig. 76; mesonotum grey microtomentose, without brown longitudinal vittae; Tas. ..... *L. lugubris* (Macquart)
   Apex brown or with only a thin hyaline mark in cell r_5, markings as in Fig. 67; 3 longitudinal brown vittae on mesonotum; NSW ..... *L. helichrysii*, sp. nov.

Liepana helichrysii, sp. nov.

(Figs 67–69)

Material Examined

Holotype. ♂, NSW, Starr's Ck picnic area, NE Sect. Lansdowne State Forest, N of Taree, 22.x.1982, on edge of subtropical rainforest, G. and T. Williams, ANIC.

Paratypes. **New South Wales**: Allotype ♀, Lane Cove Nat. Pk, collected 3.ix.1950, reared from soft gall on *Helichrysum diospyrifolium*, emerged 10.x.1950, C. E. Chadwick, AMS; 2♂, Bulli Pass, collected 29.v.1949, reared from gall, emerged 11.viii.1949, C. E. Chadwick; 1♂, in poor condition (head, abdomen and 1 wing missing), same data as holotype; 1♀, Cordeaux Rv., 21.xi.1951, C. E. Chadwick. Paratypes in AMS, ANIC, BPBM, NSWA.

Diagnosis

Fitting in the *L. lugubris* complex of species by having cell c dark brown with 2 hyaline spots and basal portion of wing marked with brown. Differs from *L. lugubris* (Macquart) by having base of wing dark brown except for a narrow hyaline line across wing from basal part of r_1 to cell bcu and without hyaline spots; hyaline mark in apex of wing small, in female filling only parts of r_5 and r_3 (Fig. 67) and in male usually with apex all brown; alula and most of cell a hyaline; with faint brown longitudinal vittae on mesonotum and upper orbital bristle brown to black.

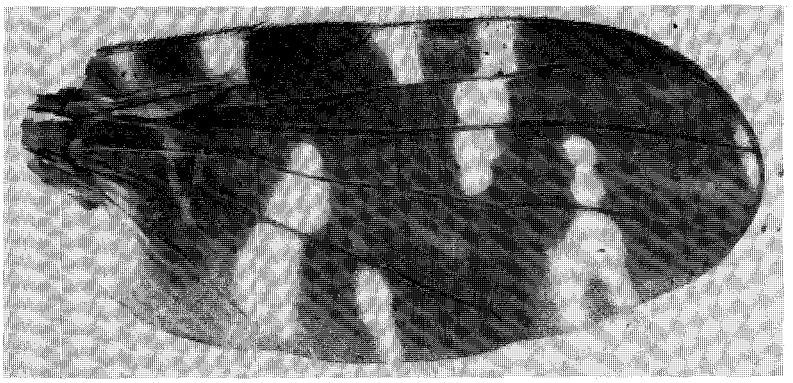


Fig. 67. *Liepana helichrysii*, sp. nov., wing.

Description

Male

Length. Body and wing, each 4·8–5·0 mm.

Head. Three rather evenly spaced bristles on lower half of frons. Upper orbital bristle dark coloured brown to black and genal bristle black. Face gently concave. Parafacial about half as wide as 3rd antennal segment and gena about 1·5× wider than 3rd. Third segment broadly rounded and about half longer than wide. Lower median portion of frons with numerous fine yellow setae. Lower sides of face and gena covered with short brown setae.

Thorax. Black in ground colour; yellow on humerus, notopleura, margin and venter of scutellum and on proepimeron and proepisternum; grey microtrichia completely obscures ground colour. Brown on posteromedian portion of mesonotum and 3 faint brown vittae medially from just basad of dorsocentral bristles to level of presuturals. Dorsocentrals at level of supraalars. Scutellum flat on disc, not convex.

Legs. Yellow, hind femur with 1–2 preapical, erect, yellow-brown anterodorsal setae.

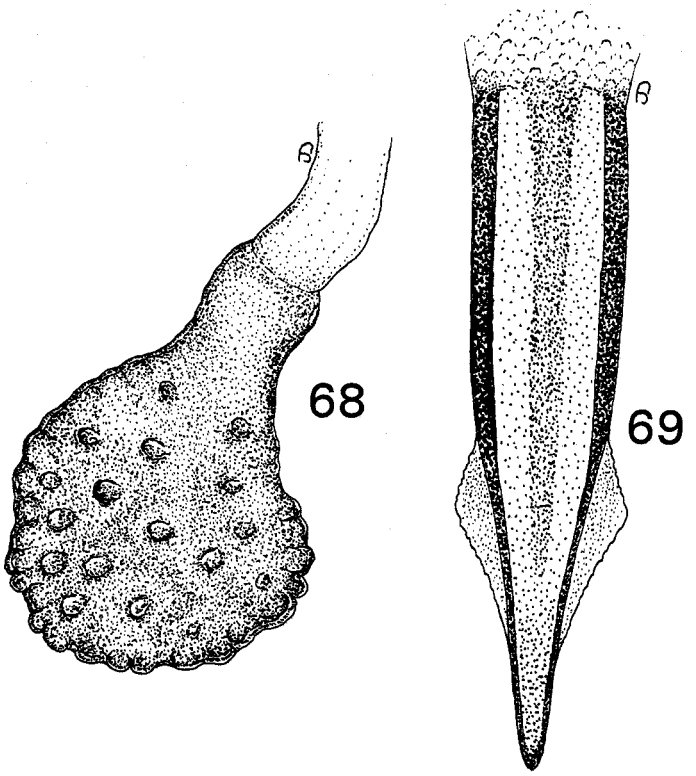
Wings. As noted above. Cell c mostly dark brown with an indistinct prebasal, subhyaline mark and a hyaline apical mark. Cell r_1 with a small hyaline wedge just beyond apex of vein R_1 and a narrow hyaline streak extending across centre of r_1, through r_3 and incompletely through r_5 just basad of level with dm-cu cross-vein. Apex of wing broadly dark brown with a tiny hyaline spot in lower apex of cell r_3 and an indistinct tiny mark in middle of apex of r_5. One hyaline streak through cell m, connected with hyaline mark extending through most of r_5. Two hyaline marks through cell cu, basal mark extending into br.

Abdomen. Subshining black, yellow to rufous on sides, narrow apex of tergum V, venter and a narrow yellow median vitta over terga II–V. Grey microtrichose over tergum I, brown over remainder of dorsum. Terga I+II equal in length to terga III+IV. Abdomen covered with fine brown to black setae, some yellow setae on sides. Genitalia yellow, not relaxed for study.

Female

Length. Wing and body, excluding ovipositor, 5·6 mm.

As in male but wing with distinct prebasal hyaline mark in cell c; 2 prominent hyaline marks in r_1, 2nd extending from margin through cells r_3 and r_5; with a small hyaline mark at apex in cells r_3 and r_5 and marks in posterior portion as in Fig. 67. Tergum VI yellow except for brown on basomedian margin. Abdomen yellow setose on posterior margins of terga. Basal segment of ovipositor cylindrical, shining black and equal in length to terga V+VI. Aculeus drawn out into a slender needlelike apex and has barely discernable serrations on sides (Fig. 69). Spermathecae nearly round, only slightly longer than wide, with straight necks (Fig. 68).



Figs 68, 69. *Liepana helichrysii*, sp. nov.: *68*, ♀ spermatheca; *69*, ♀ aculeus.

Remarks

Three paratype males have wing apex entirely brown and hyaline mark across cell m continuous with mark in r_5.

Biology

Reared from gall on stem of *Helichrysum diospyrifolium*.

Etymology

The specific epithet is the genitive form of the genus of the host plant *Helichrysum*.

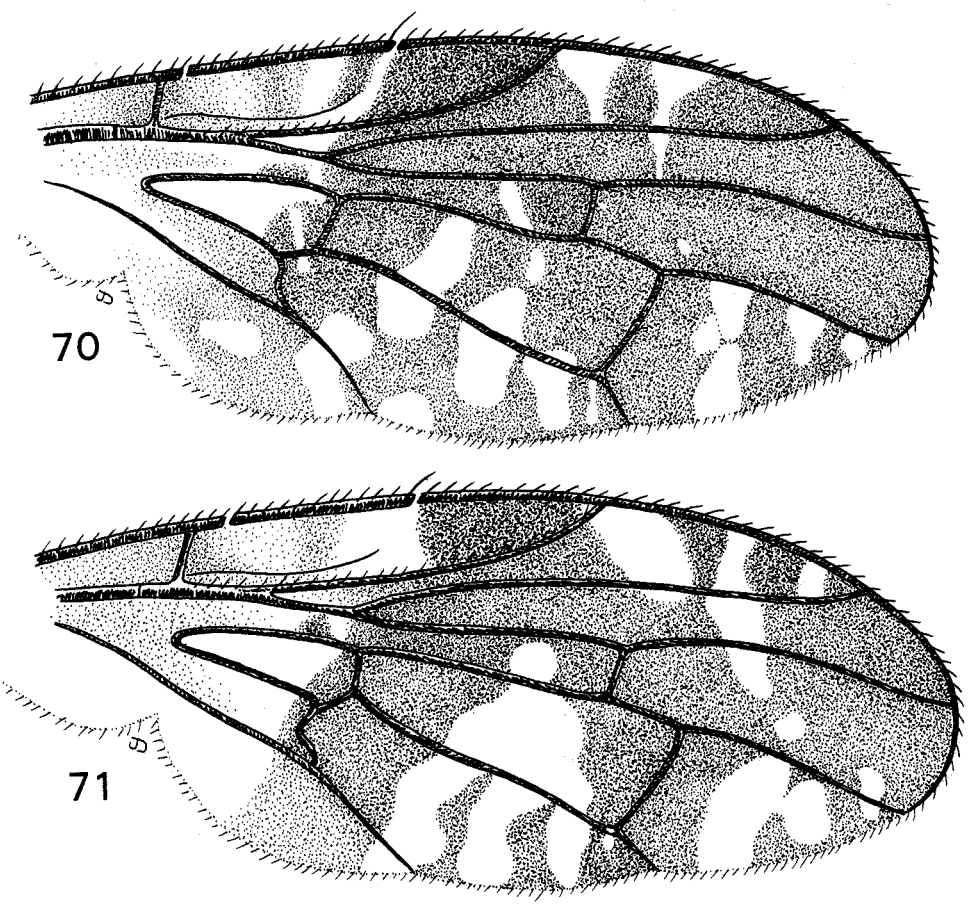
Liepana latifrons, sp. nov.

(Figs 70–75)

Material Examined

Holotype. ♂, Vic., 8 mi E Noojee at Moe Junc., 24.viii.1965, G. L. Bush, ANIC.

Paratypes. **Victoria**: Allotype ♀ (ANIC), same data as holotype; 2♂, 9♀ from the following localities: 13 km E Noojee at Moe Junc., 24.viii.1965, No. 64142, G. L. Bush; Young's Ck, 12 km N of Orbost, Bonang Hwy, 6.xi.1976, Colless and Liepa. Paratypes in ANIC, BPBM, NMVM, UH.



Figs 70, 71. *Liepana latifrons*, sp. nov.: *70*, ♂ wing; *71*, ♀ wing.

Diagnosis

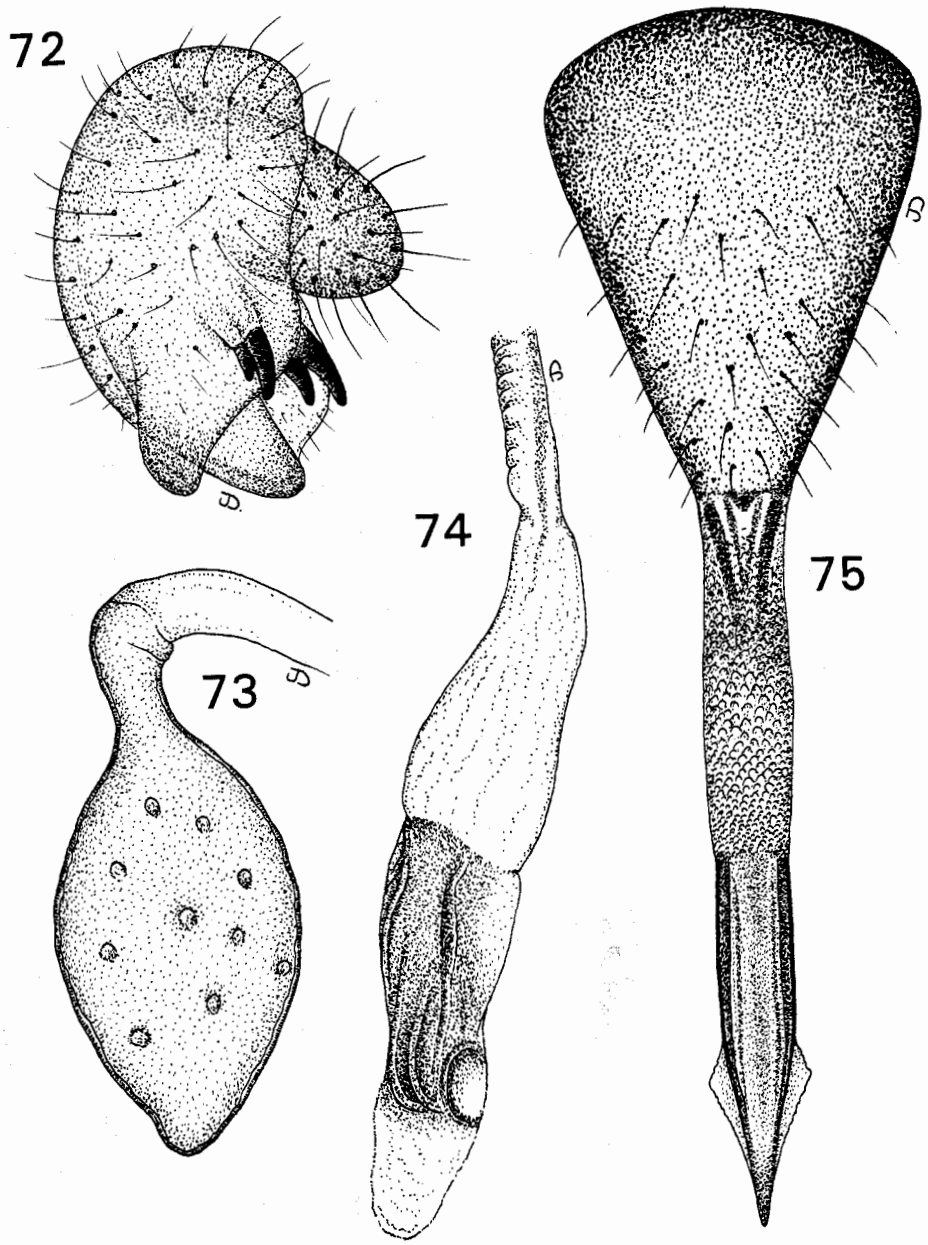
Fitting nearest to *L. helichrysii*, sp. nov., and differing by having basal area of wing paler and mesonotal vittae faint.

Description

Male

Length. Body and wing each 4·8 mm.

Head. Yellow to rufous except for black ocellar triangle and tinge of brown to black on upper median portion of occiput. Frons distinctly wider than eye. Both orbital bristles black,



Figs 72–75. *Liepana latifrons*, sp. nov.: *72*, ♂ surstyli and claspers; *73*, ♀ spermatheca; *74*, ♂ distiphallus; *75*, ♀ ovipositor.

lower frontal bristle slightly paler in colour, brown rather than black. Parafacial half as wide as 3rd antennal segment and gena slightly broader than 3rd.

Thorax. Densely grey microtrichose with 3 faint brown longitudinal vittae on mesonotum covered with flattened, subrecumbent yellow-white setae and with bristles black except for yellow-white lower anepimeral bristle and brownish yellow katepisternal bristle; upper anepimeral bristle black, tinged with brown. Scutellum black in ground colour over median portion, yellow on margin; nearly bare on disc, yellow-white setose on margin. Apical scutellars cruciate and 0·66× as large as basal bristles.

Legs. Yellow, front femur with complete row of 6–7 black posteroventral bristles and dorsal surface of femur covered with erect yellow-white bristlelike setae. Hind femur with 1 preapical anterodorsal bristlelike seta.

Wings. Basal portion subhyaline, lightly tinged with brown to level of end of cell c and basal cells. Cell sc brown, about 0·66× as long as cell c. Cell r_1 with 2 narrow hyaline streaks, the 2nd extending through cell r_3. Three subhyaline streaks through cell m and with irregular subhyaline markings in cells dm, cu and a. Cross-vein r-m slightly less than its length from dm-cu and cell bcu distinctly pointed at lower apex (Fig. 70).

Abdomen. Black in ground colour, grey microtrichose and covered with flattened, subrecumbent yellow-white setae. Genitalia yellow to rufous. Surstylus blunt at apex, 1 large and 1 small black tooth on inner surstylus (Fig. 72). Distiphallus as in Fig. 74, not expanded.

Female

Length. Body (exclusive of ovipositor) and wing each 5·3 mm.

As in male but showing dimorphism in wing markings as in Fig. 71. Markings in cell r_3 are larger. Tergum VI subequal in length to tergum V and basal segment of ovipositor subequal to terga V+VI. Spermatheca pointed apically, oblong (Fig. 73). Aculeus spearhead shaped, serrated on sides preapically (Fig. 75).

Etymology

The specific epithet is from the Latin *latus*, broad, combined with *frons*, front, referring to the broad front.

Liepana lugubris (Macquart)

(Fig. 76)

Tephritis lugubris Macquart, 1847: 93. Two syntype ♀ in UMO.

Type locality: 'Nouvelle-Hollande' (Australia).

Material Examined

One ♀, Mt Wellington, 375–675 m, S Tasmania, 15.i–6.ii.1913, R. E. Turner, NHM.

Diagnosis

Fitting in the same complex of species as *L. helichrysii*, sp. nov., by having cell c dark brown with 2 hyaline marks and basal portion of wing marked with brown. Differs by having hyaline marks in basal cell r_1, cells br, bm and bcu; a large hyaline mark in apex of wing, filling cell r_5 and most of r_3; cell a mostly brown and alula tinged with brown; mesonotum grey microtrichose, lacking brown markings and upper orbital bristle yellow.

Description

Male

Unknown.

Female

Length. Body (excluding ovipositor) 5·6 mm; wing 6·0 mm. (According to Dr I. M. White, personal communciation, the wings of the syntypes are 4·7–5·8 mm).

Head. Three frontal bristles, face slightly concave, parafacial about half as wide as 3rd antennal segment and gena about 1·5 wider than 3rd. Three frontal bristles, lower 2 closer together. Genal bristle pale yellow.

Thorax. Black in ground colour of dorsum, yellow on margin and venter of scutellum. Humerus, notopleuron and upper half of pleuron yellow to orange. Mesonotum densely grey microtrichose obscuring ground colour and with no brown markings and covered with flattened, pointed yellow-white setae. Dorsocentral bristles about halfway between suture and supraalar bristles. Scutellum subopaque grey microtrichose over flat disc, subshining on yellow-orange margin. Posterior notopleural, anipemeral and katepisternal bristles yellow.

Wings. Basal portion mostly brown with hyaline marks in basal cells r_1, br, bm and bcu. Cell c dark brown with 2 large hyaline marks. Cell sc dark brown, about 0·66× as long as c. Cell r_1 dark brown with 2 prominent hyaline marks, the 1st extending through cell r_3 to vein R_{4+5}, the 2nd extending as a transverse band through most of cell r_5, almost in line with dm-cu cross-vein. A large hyaline mark fills apex of cell r_5 and most of r_3. Two hyaline streaks in cell m and 3 hyaline marks in cu, the basal marks continuing through cells dm and br. Cell a mostly brown and alula tinged with brown (Fig. 76).

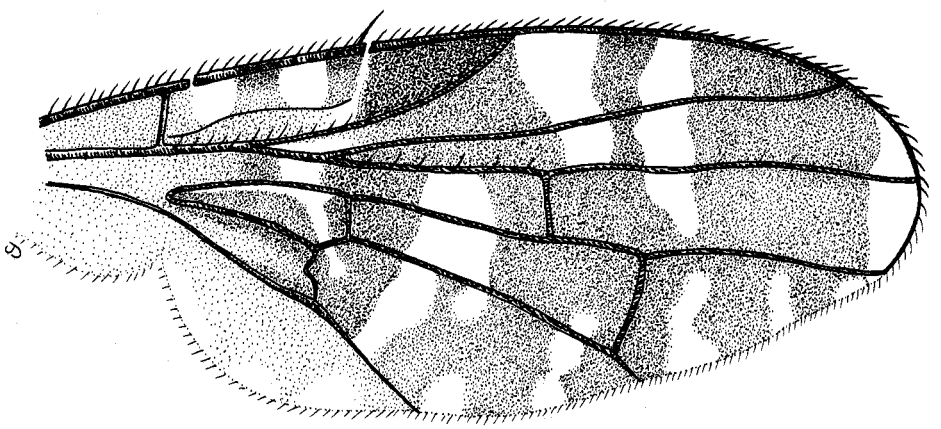


Fig. 76. *Liepana lugubris* (Macquart), wing.

Abdomen. Subshining black over dorsum, yellow-orange on lateral margins of terga and on sterna. Brown microtrichose and thin brown setose with some yellow setae on margins of terga. Basal segment of ovipositor shining black over dorso-median basal half and narrowly black at apex otherwise orange; subequal in length to terga V+VI. Ovipositor not relaxed for study.

Remarks

This species has never been correctly placed in the literature. Bezzi (1913: 75) said it seemed to be a *Rioxa*. Dr Ian White studied 2 syntypes in UMO and provided one female from Tasmania for study, which had been compared with the type. The specimen is in good condition and the above description is based upon it. Terga I+II, III, IV and V are narrowly orange on hind margins and tergum VI black centrally, yellow-orange laterally (White, personal communication).

Genus *Oedaspis* Loew

Oedaspis Loew, 1862*b*: 46.
Type species: *Trypeta multifasciata* Loew, by designation of Rondani (1870: 9).

Oedaspoides Hendel, 1927*b*: 63.
Type species: *Oedaspoides acuticornis* Hendel, by original designation. New synonym.

Chrysotrypanea Malloch, 1939*a*: 457.
Type species: *Chrysotrypanea trifasciata* Malloch, by original designation. New synonym.

Diagnosis

We agree with Freidberg and Kaplan (1992) that *Oedaspoides* Hendel and *Chrysotrypanea* Malloch should be placed in synonymy with *Oedaspis*. This genus fits into a group of Tephritini with a flat or swollen scutellum and that lack a gap in the setae on vein R_1 opposite end of Sc; abdomen subshining, rather lightly brown microtrichose; upper orbital bristles pale yellow; wings not spotted and, at least in females, with hyaline cross-bands; hind femur lacking a preapical posterodorsal bristle. *Chrysotrypanea* was differentiated from *Oedaspis* by having 3–5 pairs of frontal bristles rather than 2, 3rd antennal segment rounded on upper apex rather than angulate and dorsocentral bristles nearer supraalars than to suture. However, all these characters appear to be variable [see *O. escheri* (Bezzi) and *O.* sp. nov. 'C')]. Their known biologies are also similar. Similarly, we find no characters by which to differentiate either genus from *Oedaspis* as defined by Freidberg and Kaplan (1992).

Description

Head. Slightly higher than long, frons gently sloping and face vertical with oral margin slightly receding, not protruded. Frons broader than eye with few fine setae in middle near lower margin. Antenna situated near upper 0·67 of head. Third segment about half longer than wide and developed into a slight point at upper apex (Fig. 77). Dorsal surface of second antennal segment densely short black setose. Parafacialia rather broad, about equal to 6 rows of eye facets and half width of 3rd antennal segment. Gena broad, almost 0·33× eye length. Genal bristle yellow and front part of gena with dense, short, brown to black setae continuous over lower portion of face to just above level with lower margin of eye.

Thorax. Mostly black in ground colour, densely grey microtrichose and yellow to white setose. Bristles of dorsum yellow-brown to black, notopleurals often paler, yellow with a brown tinge. Pleural bristles pale yellow to whitish except for brown upper anepisternals. Apical scutellars well developed, 0·8 as long as basal bristles.

Legs. Yellow. Front femur with a row of brownish yellow to brown posteroventral bristles, and scattered yellowish bristlelike erect setae over posterodorsal surface. Hind femur with 1 black preapical anterodorsal bristlelike seta and no dorsal bristle.

Wings. With hyaline cross-bands or in some males with a large brown mark covering most of anterior portion. No bare area on vein R_1 opposite end of Sc. Cell sc about 0·66× as long as c. Vein R_{4+5} bare. Cross-vein r-m slightly less than its own length from dm-cu and

cell bcu distinctly pointed except in *O. semihyalina*, sp. nov., Tergum VI of female about equal in length to tergum V. Female aculeus sharp pointed, minutely serrated on sides preapically. Spiracular openings in basal third of basal segment of ovipositor. Male surstylus blackened at apex. Distiphallus not expanded, straight sided, about equal in width to basiphallus and semi-sclerotised, membranous at apex.

Remarks

About half of the recognised species exhibit remarkable sexual dimorphism. Fourteen species are presently recognised, with probably 5 or more additional species being present in the genus. The genus occurs widely over Australia, specimens having been seen from all states except Queensland but only a paucity of material is available from many regions of the country. They are poorly represented in collections and in many instances we have had so few specimens available for study that it has been difficult or impossible to assess the range of variability or the diagnostic value of various characters and in some cases, where dimorphism is evident, to associate the sexes. Most species appear very much alike except for wing markings but it is probable that good specific characters will be found in the female aculeus. Because of the paucity of material available our study has not been fully comparative.

Biology

Probably gall formers in Goodeniaceae and possibly Asteraceae.

Key to Known Species of *Oedaspis* from Australia

1. Scutellum strongly swollen, polished black ..... *O. goodenia*, sp. nov.
   Scutellum flat 2
2 (1). Medial part of cell cu hyaline, without a dark band continuous with that in cell dm; dark areas of wing not forming distinct transverse bands; males 3
   Medial part of cell cu with a dark band continuous with that in cell dm; dark areas of wing forming distinct transverse bands; both sexes 5
3 (2). At most a single small hyaline spot from costa in cell r_1 (Fig. 114) ... *O. semihyalina*, sp. nov.
   Two distinct hyaline spots from costa in cell r_1 4
4 (3). Outer hyaline spot in cell r_1 continuing at least into cell r_5 (Figs 85, 86) .. *O. continua*, sp. nov.
   Outer hyaline spot in cell r_1 not extending beyond cell r_3 (Fig. 126) ..... *O. whitei*, sp. nov.
5 (2). Cell c darkest medially; dark wing bands broken into discrete spots in cells r_3 and br (Fig. 79); 4–5 frontal bristles ..... *O. apiciclara*, sp. nov.
   Cell c palest medially; dark wing bands not broken into discrete spots; 2–3 frontal bristles ... 6
6 (5). Apex of cell r_5 brown 7
   Apex of cell r_5 hyaline 12
7 (6). Wing with hyaline transverse bands distinctly radiating from a point in cell r_1 just beyond sc .. 8
   Wing with hyaline transverse bands more or less parallel, not radiating from a single point in cell r_1 11
8 (7). Wing with 3 hyaline bands from hind margin; cell r_1 dark at apex (Fig. 120) ..... *O. trifasciata* (Malloch)
   Wing with 4 hyaline or pale bands from hind margin; cell r_3 with a hyaline or pale apical or subapical area 9
9 (8). Scutellum black, at least on disc ..... sp. 'B'
   Scutellum yellow with an apical black spot 10
10 (9). Wing with a prebasal hyaline cross-band, female with a large rounded hyaline mark at upper apex of cell r_3 (Fig. 80), male with a smaller preapical mark; female ovipositor base polished black and aculeus asymmetrical with 24–36 minute preapical serrations on sides (Fig. 84); male abdomen yellow ..... *O. austrina*, sp. nov.
   Base of wing evenly yellow-brown with no distinct hyaline cross-band; an elongate hyaline mark through apex of r_3 extends into lower apex of r_1 and male with an indistinct preapical hyaline streak (Figs 107, 108) basal segment of ovipositor broadly yellow through middle; aculeus with fewer than 12 minute serrations; terga IV–V of male mostly black ..... *O. olearia*, sp. nov.

11 (7). Wing with 3 hyaline transverse bands, the basal one continuous from costa to hind margin; no hyaline spot in cell r_1 (Fig. 95) ..... *O. gallicola*, sp. nov.
Wing with 4 hyaline transverse bands, the basal one not continuous from costa to hind margin; a hyaline spot in cell r_1 beyond sc (Fig. 91) ..... *O. escheri* (Bezzi)
12 (6). Wing with hyaline transverse bands radiating from a point in cell r_1 just beyond sc; a single hyaline spot in middle portion of cell r_1 beyond sc 13
Wing with hyaline transverse bands not radiating from a point in cell r_1 just beyond sc; 1 or 2 hyaline spots in middle portion of cell r_1 beyond sc 14
13 (12). Transverse hyaline bands through cell dm narrower than dark band between them; the basal band directed towards the hyaline spot in cell r_1 beyond sc (Fig. 102) .. *O. mouldsi*, sp. nov.
Transverse hyaline bands through cell dm broader than the dark band between them; the basal band directed towards cell sc (Fig. 133) ..... sp. 'A'
14 (12). Wing with hyaline band from outer spot in cell r_1 continuing to vein M basal to dm-cu cross-vein; 2 basal hyaline bands from hind margin directed basal to cell sc (Fig. 117) ..... *O. serrata*, sp. nov.
Wing with hyaline band from outer spot in cell r_1 (or from r_3 if this spot absent) continuing to or beyond vein M distal to dm-cu cross-vein; 2 basal hyaline bands from hind margin directed towards cell sc and cell r_1 just beyond sc 15
15 (14). Wing with a single hyaline spot in cell r_1 beyond sc (Fig. 136) ..... sp. 'E'
Wing with 2 hyaline spots in cell r_1 beyond sc 16
16 (15). Wing with hyaline transverse band distal to cross-veins broken below vein M (Fig. 135) sp. 'D'
Wing with hyaline transverse band distal to cross-veins continuous from costa to hind margin 17
17 (16). Scutellum mostly yellow, with brown spots at bases of bristles 18
Scutellum largely or entirely black 19
18 (17). Wing with apices of cells r_3 and r_5 broadly hyaline (Fig. 78) ..... *O. apicalis*, sp. nov.
Wing with apices of cells r_3 and r_5 narrowly hyaline (Fig. 125) ..... *O. trimaculata*, sp. nov.
19 (17). Wing with basal hyaline band below cell sc broader than dark bands on either side 20
Wing with basal hyaline band below cell sc narrower than dark bands on either side 22
20 (19). Wing with basal hyaline band below cell sc joined with hyaline spot in cell r_1 beyond sc (Figs 85, 86) ..... *O. continua*, sp. nov.
Wing with basal hyaline band below cell sc separated from hyaline spot in cell r_1 beyond sc, the base of cell r_3 entirely dark 21
21 (20). Wing with hyaline band basal to r-m cross-vein ending at vein R_{4+5}; 2nd hyaline mark in cell r_1 narrowed, less than half width of transverse band (Figs 126, 127) ..... *O. whitei*, sp. nov.
Wing with hyaline band basal to r-m cross-vein diffused into cell r_3; transverse band distal to dm-cu cross-vein not narrowed in cell r_1 (Fig. 115) ..... *O. semihyalina*, sp. nov.
22 (19). Apex of wing hyaline only in cells r_3 and r_5; 4 hyaline bands from hind margin, the outer hyaline area in cell m free from apical area (Fig. 113) ..... *O. perkinsi*, sp. nov.
Apex of wing broadly hyaline in cells r_3, r_4 and m; only 3 hyaline bands from hind margin, the outer hyaline area in cell m joined to the apical area (Fig. 134) ..... sp. 'C'

Oedaspis apicalis, sp. nov.

(Figs 77, 78)

Material Examined

Holotype. ♂, NSW, Clyde Mtn, 27.x.1968, J. C. Cardale, ANIC.

Paratypes. **Australian Capital Territory**: Allotype ♀(ANIC), Black Mtn, 15.xi.1967, light trap, I. F. B. Common. **New South Wales**: 1 ♀, Grose Vale, nr Richmond, 30.iii.1971, D. McAlpine and G. Holloway. Paratype in AMS.

Diagnosis

Fitting in the *O. escheri* complex of species by showing little or no sexual dimorphism and basal segment of female ovipositor comparatively short, about equal in length to terga V+VI. It is differentiated by having a large hyaline mark in apex of wing and by differences in wing markings as seen in Fig. 78.

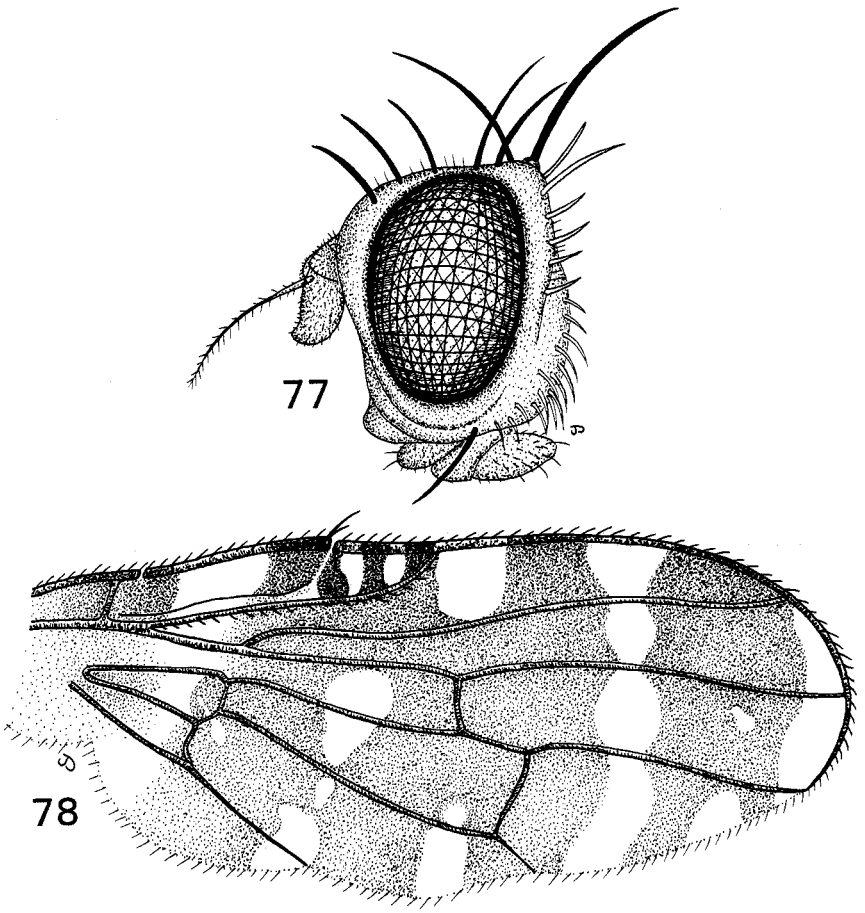
Description

Male

Length. Body and wing each 3·0–3·5 mm.

Head. As described under genus and as in Fig. 77. Fitting description of *O. escheri* in most details.

Wings. Transverse hyaline bands basal of dm-cu and distal to r-m cross-vein consisting of closely aligned or narrowly connected spots, distal band continuous to costa in cell r_1 and basal marking ends at vein R_{4+5} (Fig. 78). Cell bcu with short point at lower apex.



Figs 77, 78. *Oedaspis apicalis*, sp. nov.: *77*, head; *78*, wing.

Abdomen. Terga I and II yellow; tergum III yellow discoloured with brown over median portion; terga IV and V black in ground colour, narrowly yellow at apices. Genitalia not studied.

Female

Length. Body, excluding ovipositor, 3·5 mm; wing, 4·0 mm.

As for male but hyaline mark in m abbreviated and band basal to dm-cu interrupted.

Abdomen yellow except for broad brown bands across terga V and VI. Basal segment of ovipositor about equal in length to terga V and VI. Aculeus not extended for study.

Remarks

Only a few specimens of this taxon have been studied and its status may be questionable. The male genitalia have not been studied and the female aculeus has not been fully extruded. No biological data are available.

Etymology

The name is from the Latin *apiculus*, apex, referring to the hyaline apex of wing.

Oedaspis apiciclara, sp. nov.

(Fig. 79)

Material Examined

Holotype. ♂, NSW, Blue Lake, Snowy Mtns, 8.ii.1979, D. K. McAlpine and B. J. Day, AMS.

Paratypes. **New South Wales:** 1♂, same data as holotype; 1♂, Charlotte Pass, Snowy Mtns, 9.ii.1979, D. K. McAlpine and B. J. Day. Paratypes in AMS, ANIC.

Diagnosis

Differing from other known *Oedaspis* by having apex of wing broadly hyaline, cell r_5 hyaline beyond brown transverse band at level of dm-cu cross-vein, a complete transverse hyaline band between r-m and dm-cu cross-veins and other markings as in Fig. 79.

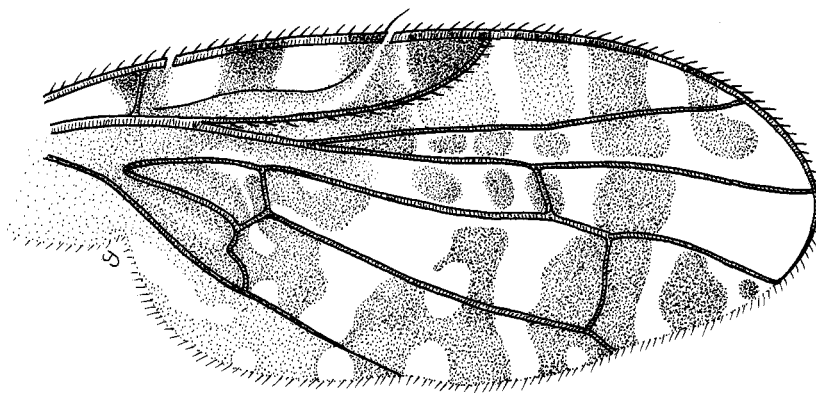


Fig. 79. *Oedaspis apiciclara*, sp. nov., wing.

Description

Male

Length. Body and wing, each 5·0 mm.

Head. Third higher than long, frons sloping and face gently covex, in lateral view. Four to five frontal bristles and frons sparsely brown setose in lower median portion. Antenna situated near upper 0·4 of head height and third segment rounded, about 1·5× longer than wide, parafacial about half as wide as 3rd segment and gena nearly 2× wider than 3rd. Lower

side of face and lower margin of gena thickly short brown setose. Genal bristle black. Palpus with black setae at apex.

Thorax. Ground colour black except yellow on margin and venter of scutellum, humerus, notopleuron and over some pleural sclerites; densely grey microtrichose and covered with flattened, pointed yellow white setae. Scutellum subopaque grey, flat on disc and bare except for a few yellow-white setae on sides. Dorsocentral bristles situated about halfway between suture and supraalar bristles.

Legs. Yellow, hind femur with 1 anterodorsal preapical bristle.

Wings. Basal portion subhyaline with a few pale brown marks. Cell c pale brown at base, with darker brown mark near middle and a narrow mark of brown at apex. Cell sc half as long as c and dark brown except for a hyaline mark through middle. Cell r_1 with 3 hyaline marks continuous with hyaline areas over wing. A small brown mark in apex of r_1 continues almost across r_3. Apex hyaline as noted above, cell m with 3 brown marks, a small round subapical spot, a large mark across cell in middle and a mark filling base of cell forming a brown band over wing from hind margin to anterior margin at level with dm-cu cross-vein. Three brown marks in basal half of cell r_1. A brown spot over r-m cross-vein and 3 spots in cell br. Other markings as in Fig. 79.

Abdomen. Subopaque black on terga and yellow to rufous on sterna, posterolateral margins of tergum II and narrow hind margin of V. Mostly fine brown to black setose with yellow setae over terga I and II and on hind margins of III–V. Genitalia not relaxed for study.

Female

Unknown.

Etymology

The specific epithet is from the Latin *apicis*, apex, combined with *clarus*, clear, referring to the hyaline wing apex.

Oedaspis austrina, sp. nov.

(Figs 80–84)

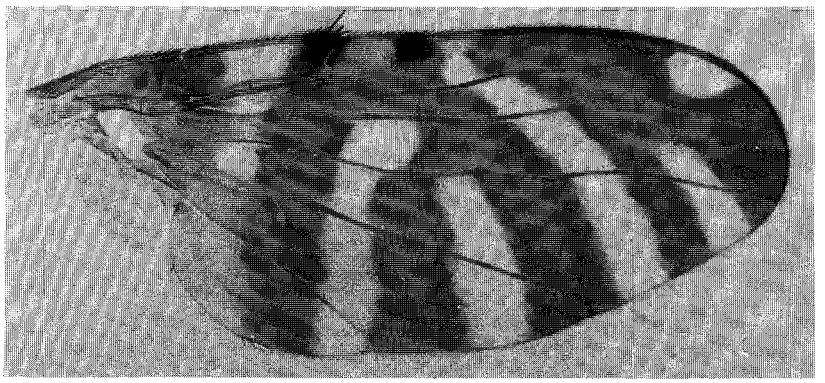


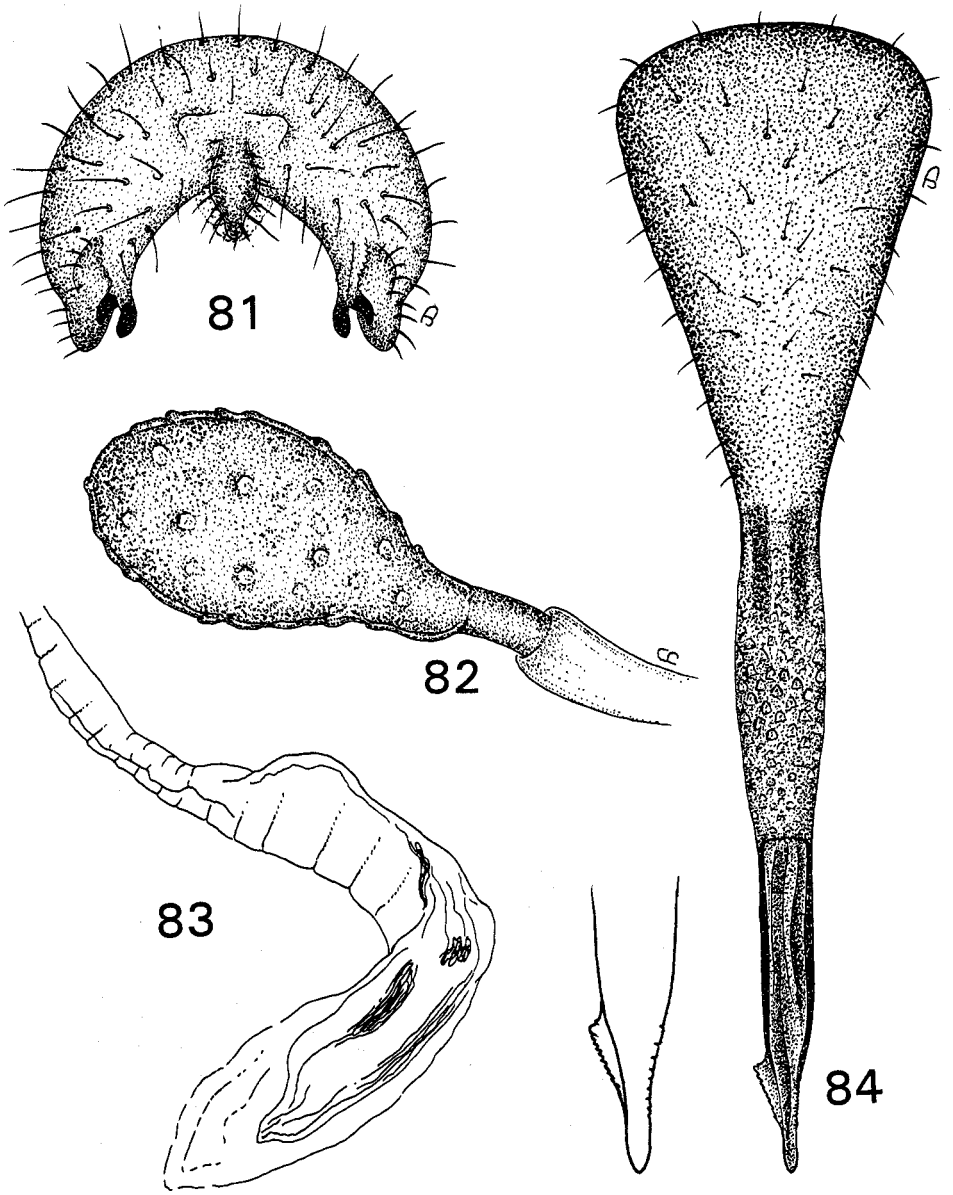
Fig. 80. *Oedaspis austrina*, sp. nov., wing.

Material Examined

Holotype. ♂, SA, 33 km NE Cowell, 7.viii.1965, reared from stem galls on *Olearia lepidophylla*, No. 6534, G. L. Bush, ANIC.

Paratypes. **South Australia**: Allotype ♀ (ANIC), 33♂, 20♀ same data as holotype; 1♂, 34 km of Cowell, 7.viii.1965, reared from gall on *Olearia pimelioides* (DC), Ben., No. 6534, G. L. Bush, appears to belong here but has only 2 pairs of frontal bristles. **Western Australia**: 1♀, Midlands, Cervantes, 7.x.1986, on *Olearia axillaris*, I. M. White. Paratypes in AMS, ANIC, BPBM, MSU, NHM, UH.

The holotype, allotype and 53 paratypes collected by G. L. Bush are those recorded (Bush 1966: 120) as 'New Genus A, sp. 2'.



Figs 81–84. *Oedaspis austrina*, sp. nov.: *81*, ♂ surstyli and claspers; *82*, ♀ spermatheca; *83*, ♂ distiphallus; *84*, ♀ ovipositor and tip of aculeus.

Diagnosis

Fitting in the *O. olearia* complex of species as noted under that species. Differing by its smaller size; wing with a prebasal hyaline transverse band from middle of cell c, continuous to hind margin except for interruption in cell bcu; female with a large rounded hyaline mark in upper apex of cell r_3 (Fig. 80) and male wing with a smaller rounded preapical mark in r_3; basal segment of ovipositor polished black and aculeus asymmetrical with numerous fine preapical serrations (Fig. 84); male abdomen all yellow to rufous and female broadly black on bases of terga II–VI, yellow on apical margins.

Description

Male

Length. Body and wing, each 4·0–4·4 mm.

Fitting description of *O. olearia* in most details with 4 frontal bristles and head and thoracic bristles of male usually yellow tinged with brown except for dark brown to black dorsocentral, prescutellar and scutellar bristles. Thorax and abdomen densely covered with subrecumbent, golden, scalelike setae. Scutellum shining, golden brown microtrichose and very gently convex over disc; bare in median portion, with flattened setae on sides. Male genitalia yellow except for black inner margins of surstylus (Fig. 81). Aedeagal distiphallus weakly sclerotised, not expanded (Fig. 83).

Female

Length. Body, excluding ovipositor, and wing each 4·5–5·0 mm.

Aculeus with 24–36 microserrations preapically on sides (Fig. 84). Spermathecae oval (Fig. 82).

Biology

A gall former in stems of *Olearia lepidophylla* and *Olearia pimelioides* (Asteraceae).

Etymology

The specific epithet is from the Latin *austrinus,* southern, and refers to its distribution in Southern Australia.

Oedaspis continua, sp. nov.

(Figs 85–89)

Material Examined

Holotype. ♂, WA, William Bay, W of Denmark, 10.x.1970, D. H. Colless, ANIC.

Paratypes. **Western Australia**: Allotype ♀ (NHM), Central Mount Adams, 9.x.1986, adjacent to *Lechenaultia linarioides*, I. M. White. 3♂, 2♀ as follows: 2 same data as holotype; 1 same data as allotype; 1 (sex unknown), Midlands, 10 km NE Cervantes, 8.x.1986, adjacent *Lechenaultia linarioides*, I. M. White; 1, Kalbarri Nat. Pk, 29.ix.1981, L. P. Kelsey. Paratypes in ANIC, BPBM, NHM, UH.

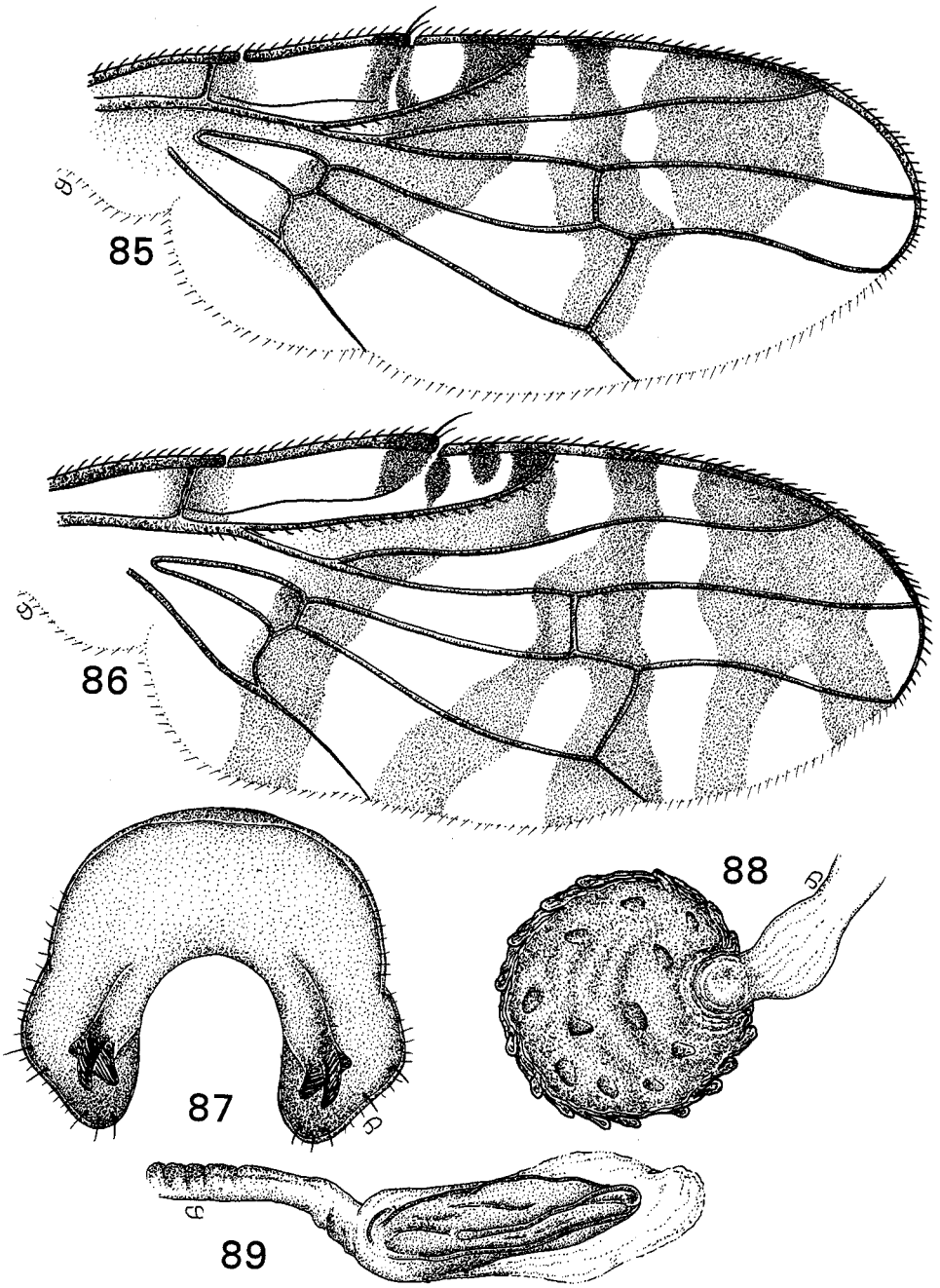
Diagnosis

Fitting in the *O. whitei* complex of species by having apical and posterior margins of male wing broadly hyaline. It differs from other known species by having a complete hyaline cross-band basal of r-m cross-vein in both sexes (Figs 85, 86), the transverse band through posterior portion continuous through cell r_3 and connected, or nearly so, with hyaline mark in r_1.

Description

Male

Length. Body and wing each 3·6 mm.



Figs 85–89. *Oedaspis continua*, sp. nov.: *85*, ♂ wing; *86*, ♀ wing; *87*, ♂ surstyli and claspers; *88*, ♀ spermatheca; *89*, ♂ distiphallus.

As in other members of genus except for wing markings as noted above and as in Fig. 85. Basal portion of wing subhyaline, faintly tinged brown in basal cells. Cell sc brown with hyaline mark at base. Brown transverse band extends from cell sc through bases of cells r_1, r_3, r_5, dm and cu ending at veins A_1 and Cu_2; posterior portion of wing otherwise hyaline

except for continuation of brown mark over dm-cu cross-vein. With 2 complete hyaline cross-bands through anterior portion, one basal to dm-cu and one distal of r-m, both reaching costa in cell r_1. Cell bcu distinctly pointed at lower apex. Abdomen yellow-brown on terga I and II, dark brown to black with yellow apices on terga III–V. Surstyli blunt, rounded at apices (Fig. 87). Distiphallus with a bulbous, membranous extention at apex (Fig. 89).

Female

Length. Body, excluding ovipositor, 3·0 mm; wing, 3·4 mm.

As in male except for wing and genitalia. Wing as in Fig. 86, three specimens possess 3 brown marks in cell sc while two specimens lack the median mark. Basal segment of ovipositor equal in length to terga III–VI. Aculeus not extruded for study. Spermathecae round (Fig. 88).

Biology

Collected adjacent to *Lechenaultia linarioides* (Goodeniaceae).

Etymology

The name is from the Latin *continuus*, 'hanging together, uninterrupted', referring to the continuous hyaline band across wing.

Oedaspis escheri (Bezzi)

(Figs 90–94)

Oedaspis escheri Bezzi, 1910: 21. Holotype male in the Bezzi collection MSNG.
Type locality: Sydney.

Oedaspoides acuticornis Hendel, 1927*b*: 63. Holotype male was in Hamburg (ZMUH) and has apparently been lost. New synonym.
Type locality: Sydney.

Material Examined

About 30 specimens from the following localities. **New South Wales**: Sydney, Botany Bay, 1900, Biro; Narrabeen, 1–6.xii.1972, E. A. Fonseca; Sassafras, 5.xi.1968, D. H. Colless and Z. Liepa; Blue Mtns, Linden, 1.xi.1964, M. I. Nikitin; Katoomba, Blue Mtns, 900–1100 m, 1.1912, C. J. Wainwright; S and W of Nowra, 11.xii.1966, G. Wellings; Port Kembla Golf Links, 4.ii.1978, V. J. Robinson; Pigeon House Mt, nr Uladulla, 13.x.1976, G. Daniels; Doyalson, 3.ii.1979, G. R. Brown at M. V. Light. **Western Australia**: Dongarra, 20–25.ix.1935, R. E. Turner; 85 km ESE of Broome, 18°22′S 122°53′E, 15.viii.1976, I. F. B. Common. **Northern Territory**: 56 km SE of Alice Springs, 24°11′S, 134°01′E, 24.ix.1978, J. C. Cardale; Berry Caves, 10.iv.1976, D. H. Colless.

Diagnosis

Fitting in the complex of species that exhibits little or no sexual dimorphism, having hyaline cross-bands in both sexes. It is nearest to *O. apicalis,* sp. nov., and differentiated by having wing apex brown or with not more than a narrow hyaline rim in cell r_3 and/or r_5.

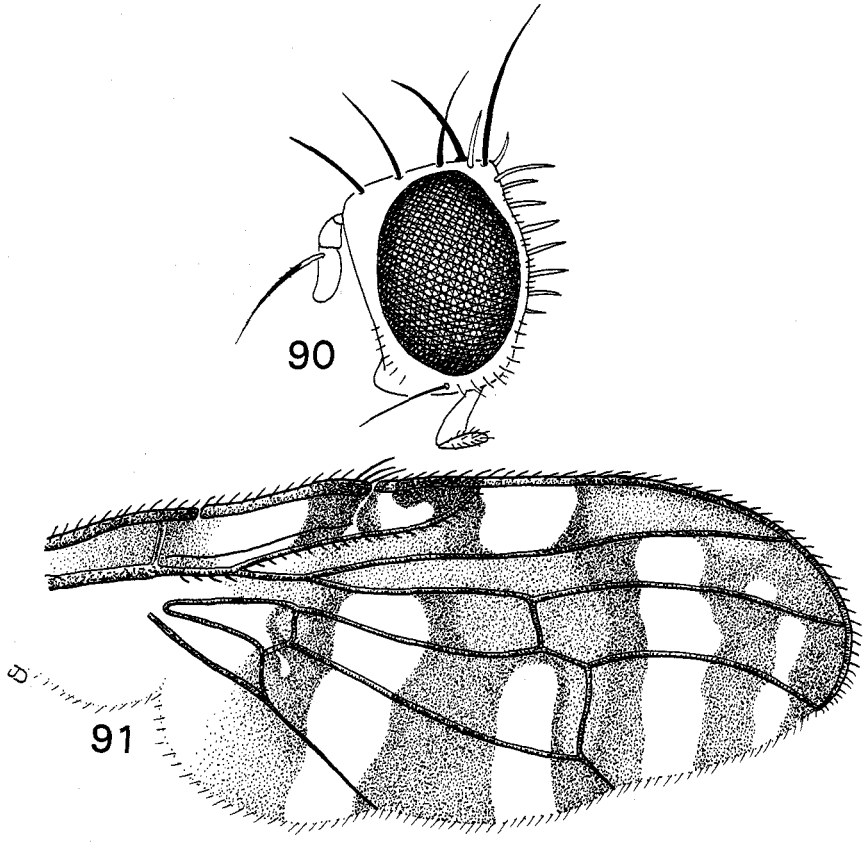
Description

Male

Length. Body and wing each 4·0–4·5 mm.

Head. Fitting characters given under genus (Fig. 90).

Thorax. Predominantly black in ground colour, densely grey microtrichose and covered with flattened white setae. Humerus, proepimeron, proepisternum, upper portion of



Figs 90, 91. *Oedaspis escheri* (Bezzi): *90*, head; *91*, wing.

anepimeron and scutellum yellow except for a brown spot at base of each apical scutellar bristle. Scutellum subshining, lightly grey microtrichose and sparsely setose. Dorsocentral bristles situated nearer suture than to supraalar bristles.

Legs. As in other members of genus.

Wings. Predominantly brown, a complete prebasal hyaline cross-band extending from middle of cell c to posterior margin in cell a and 4 hyaline cross-bands through posterior portion of wing; basal hyaline band nearly straight sided and extending to vein R_{4+5}; second band extending from margin in cu almost to vein M in dm cell, third band extending from margin in m to vein R_{2+3}, the fourth narrow and extending from margin in m through subapical portion of cell r_5 and bending anteriorly (in some specimens) to extend about halfway through cell r_3. Rarely with a narrow hyaline border in cells r_3 and r_5, this apparently is an aberration. Cell sc typically with 3 black spots but this is a variable character, as many specimens have apex and base black but lack the black spot in middle. Cell r_1 with a large hyaline mark just beyond apex of vein Sc. Cross-veins r-m and dm-cu nearly parallel (Fig. 91).

Abdomen. Subshining grey microtrichose, mostly or entirely yellow on basal 3 terga. Terga IV and V broadly brown on posterior margins, yellow apically. Male genitalia as in Fig. 93.

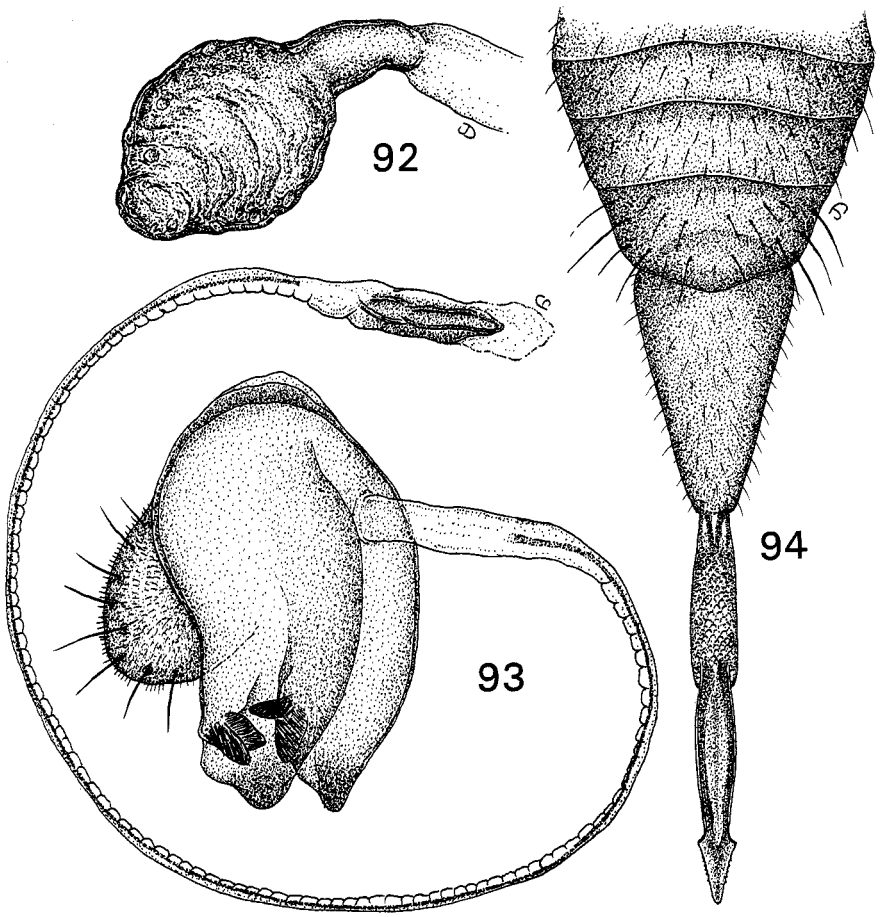
Female

As for male except terga IV–VI brown to black basally, yellow apically. Basal segment of ovipositor shining dark brown to black, sparsely setose and nearly equal to segments IV–VI. Aculeus spearhead shaped, minutely serrated on sides at apex and a sharp point on each side at apical quarter (Fig. 94). Spermathecae gourd shaped (Fig. 92).

Remarks

Bezzi's figure of the wing (1910: fig. 9) was based on an aberrant specimen, with an extra cross-vein in cell r_3 opposite r-m cross-vein and a small hyaline spot at apex of vein R_{4+5}. Hendel (1927*b*) differentiated *O. acuticornis* by lacking the extra cross-vein and the apical hyaline spot in wing, by having the hyaline cross-bands narrower than the brown bands and the r-m and dm-cu cross-veins oblique (not perpendicular). We have found no specimens that have the extra cross-vein and one specimen is at hand that has a narrow hyaline border in wing apex. The cross-veins are parallel or nearly so in all specimens studied and the width of the hyaline cross-bands appears to be a variable character; we have found no consistency in the comparative width of the bands. One specimen has 2 frontal bristles on 1 side and 3 on the other.

No biological data are available for this species.



Figs 92–94. *Oedaspis escheri* (Bezzi): *92*, ♀ spermatheca; *93*, ♂ genitalia; *94*, ♀ abdomen and ovipositor.

Distribution

New South Wales, Australian Capital Territory, Western Australia, Northern Territory.

Oedaspis gallicola, sp. nov.

(Figs 95–97)

Material Examined

Holotype. ♂, NSW, Corker Lookout, Barrington Tops, 24.x.1965, reared from gall on *Hypochoeris glabra*, No. 6547, G. L. Bush, ANIC.

Paratypes. **New South Wales**: Allotype ♀ (ANIC), 1♂, 3♀, same data as holotype. **Victoria**: 1♂, 9·6 km W Lorne, Great Ocean Road, 9.iii.1965, No. 6517, G. L. Bush; 1 ♀, Mt Buffalo, 4500 ft, 13.i.1955, A. Neboiss. Paratypes in BPBM, MSU, NMVM.

Diagnosis

Differing from known congeners by having base of wing subhyaline up to apex of cell c and showing sexual dimorphism in the wing markings; male with basal half of cell sc hyaline and 2 hyaline marks in cell r_1 continuous across wing to hind margin (Fig. 95); female with cell sc entirely dark brown, only 1 hyaline mark in r_1 continuous through r_3 and narrowly connected with transverse band from hind margin to vein R_{4+5}.

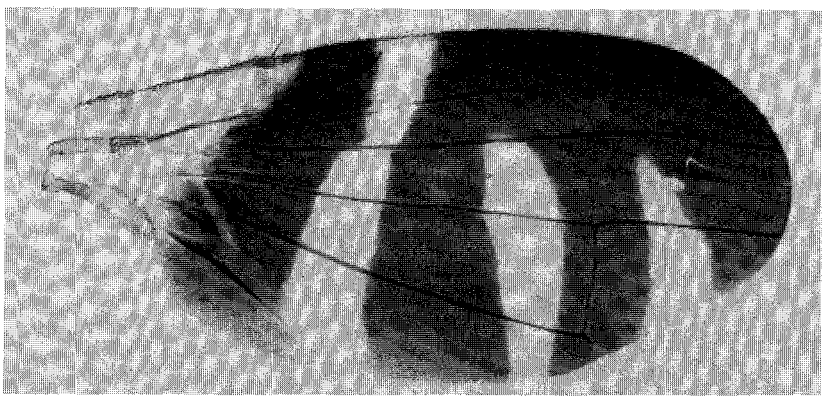


Fig. 95. *Oedaspis gallicola*, sp. nov., wing.

Description

Male

Length. Body and wing, each 4·5 mm.

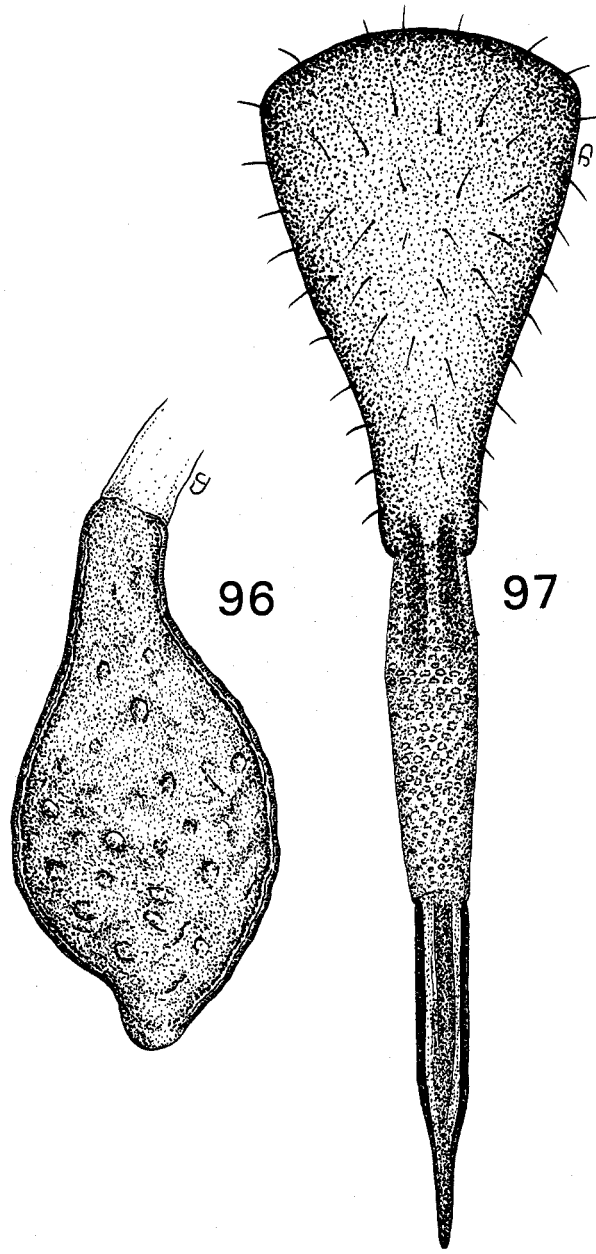
Head. Shaped as in congeners with parafacial about half as wide as 3rd antennal segment and gena slightly wider than 3rd. Three frontal bristles, lower pair rather closely placed on lower margin of frons opposite lunule and upper bristle at middle of frons. Third antennal segment about half longer than wide, rounded at apex.

Thorax. Mostly black in ground colour, rather densely grey-brown microtrichose, yellow on humerus, notopleuron, proepimeron, prosternum, anterior and dorsal margins of anepisternum, broad dorsal and posterior margins of katepisternum and katatergite. Scutellum black, subopaque, rather densely grey-brown microtrichose, slightly convex on disc. Thorax densely covered with white, recumbent, scalelike setae except scutellum bare

over dorsum with sparse scalelike setae on sides. Dorsocentral bristles just slightly in front of level with supraalars. Posterior notopleural and anepimeral bristles yellow; other thoracic bristles black. Halteres pale yellow.

Legs. Yellow, with 1 preapical anterodorsal bristlelike seta on hind femur.

Wings. As noted above, with 2 complete hyaline cross-bands, 1 basal and 1 distal of r-m cross-vein and with apex broadly brown (Fig. 95), cross-vein r-m about 0·33 from apex of cell dm.



Figs 96, 97. *Oedaspis gallicola*, sp. nov.: *96*, ♀ spermatheca; *97*, ♀ ovipositor.

Abdomen. Terga subshining black, grey-brown microtrichose, yellow on lateral margins and hind margin of tergum V and with an incomplete narrow yellow vitta down middle of terga II–V, sterna yellow. Rather densely covered with recumbent flattened yellow-white setae. Genitalia yellow, not dissected for study.

Female

Length. Body, excluding ovipositor, 4·5 mm; wing 5·2 mm.

As in male, terga black except for yellow sides of terga I and II. Basal segment of ovipositor polished black, thin black setose, about equal in length to terga V and VI. Spiracular openings at basal 0·4 of segment. Aculeus long, pointed, needle-shaped at apex and with no serrations on sides (Fig. 97). Spermathecae oval, sparsely tuberculate (Fig. 96).

Biology

A gall former on *Hypochoeris glabra* (Asteraceae).

Etymology

The specific epithet is from the latin *galla*, 'gall', combined with *cola*, 'dweller, inhabitant', referring to its gall-forming habit.

Oedaspis goodenia, sp. nov.

(Figs 98–101)

Material Examined

Holotype. ♂, Vic., Sherbrook Forest, nr Ferntree Gully, 26.xii.1964, reared from *Goodenia ovata*, No. 64144, G. L. Bush, ANIC.

Paratypes. **Victoria**: Allotype ♀ (ANIC), 1 ♀, same data as holotype. 4 ♂, 3 ♀ from the following localities. **Queensland**: Upper Mulgrave R. along Goldsborough Rd, 3.xii·65, No. 65111, G. L. Bush. **New South Wales**: Commodore Hts, 17.ix.1950, ex gall on *Goodenia ovata*, C. E. Chadwick; Mt Tomah, Blue Mtns, 10.iii.1979, N. W. Rodd. **Victoria**: Mt Baw Baw, 4.iii.1965, swept from *Goodenia ovata*, No. 6516, G. L. Bush; Gembrook, 12.xii.1901, reared from gall on 'Pultenia' (probably *Pultenaea stricta*, Papilionaceae (Leguminosae)); Jarvis, 1907, 'P2'. Paratypes in ANIC, BPBM, MSU, NSWA.

Diagnosis

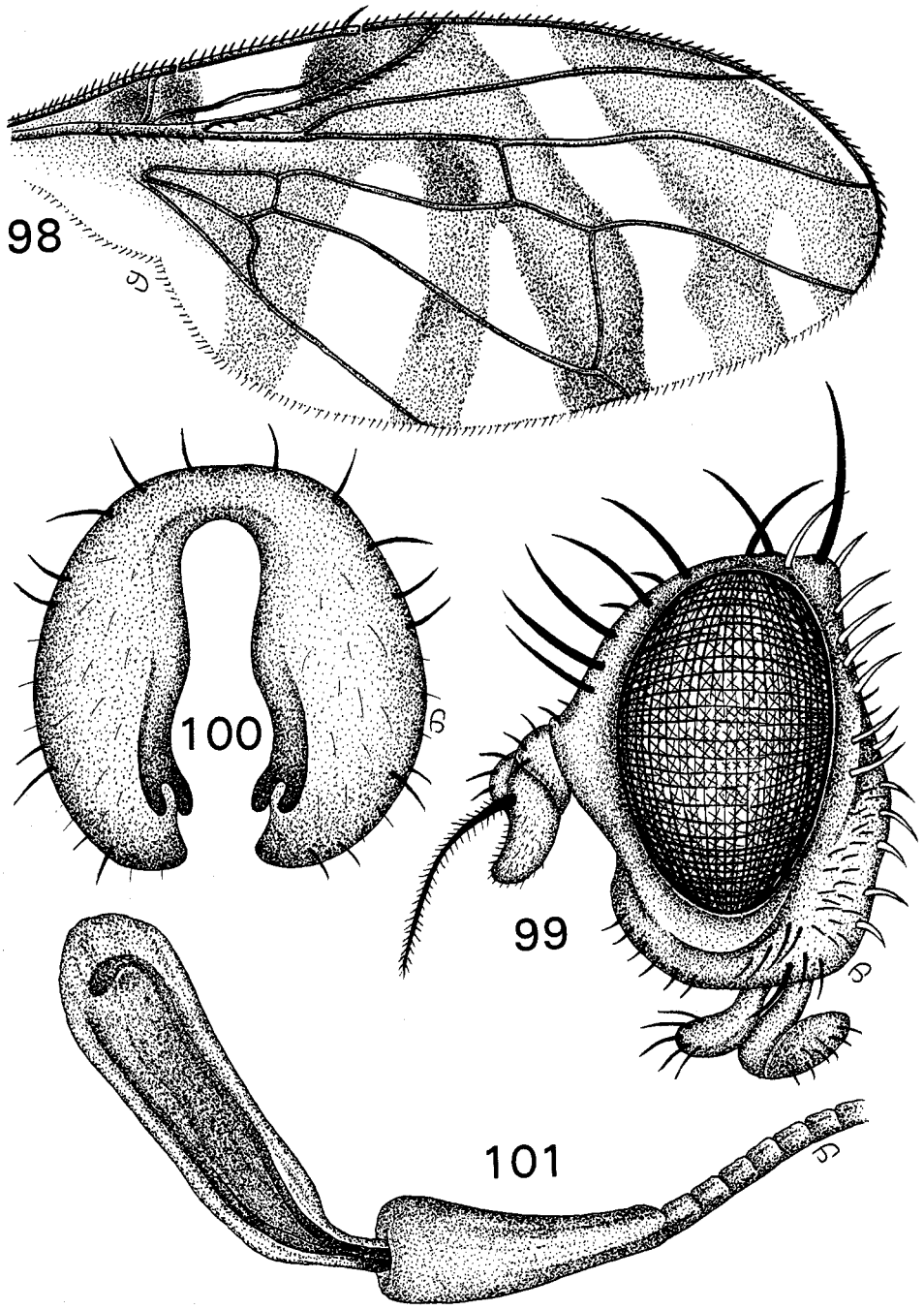
Unique and distinct from other Australian *Oedaspis* species in possessing a markedly swollen scutellum (3–4× higher than length of postscutellum).

Description

Male

Length. Body, 4·4 mm; wing 4·8 mm.

Head. Yellow to rufous except for ocellar triangle. Higher than long with antennae near upper 0·6 of eye, face slightly concave and oral margin gently protruded and rounded. Frons bare except for 2 pairs of black interfrontal bristlelike setae, 2 orbital and 4 frontal bristles, about equal to width of eye. Parafacials about equal in width to 6 rows of eye facets. Gena about 0·25× eye width and about equal to lower portion of occiput. Short black setae of gena continuing along side of face to about level of upper edge of protruded oral margin. Third antennal segment rounded, nearly 2× longer than wide and extending 0·66× length of face. Arista short pubescent. Labellum short and fleshy, short yellow-white setose. Palpus straight on top margin, gently convex below, with black bristly setae over apex and otherwise fine yellow setose (Fig. 99).



Figs 98–101. *Oedaspis goodenia*, sp. nov.: *98*, wing; *99*, head; *100*, ♂ surstyli and claspers; *101*, ♂ distiphallus.

Thorax. Black in ground colour except for yellow on lower humerus and propleuron. Halteres yellow. Mesonotum grey-brown microtrichose over dorsum, grey on sides; evenly covered with flattened suberect white scalelike setae. Pleura grey microtrichose, white

setose. Scutellum strongly swollen, polished black, bare of pollen; all bristles black; dorsocentrals almost in line with supraalars; apical scutellars large, subequal to basal bristles.

Legs. Yellow with black bristles and setae except for yellow-white dorsal setae on front femur. Hind femur with 1 anterodorsal bristlelike seta but no posterodorsal.

Wings. As in Fig. 98. Largely brown with a quadrate hyaline mark in cell c; anal cell infuscated, alula hyaline; 3 transverse hyaline marks from posterior margin extending to or beyond middle of wing, 1 subapical mark in cell m and a narrow hyaline band at apex of cell r_5 extending into lower apex of r_3.

Abdomen. Subshining black, lightly grey-brown microtrichose, yellow on lateral margins of terga, on apical margin of tergum V and on sterna and thin black setose. Genitalia as in Fig. 100, surstyli blunt at apices. Distiphallus rather heavily sclerotised, with a membranous extension from apex (Fig. 101).

Female

Length. Body, excluding ovipositor, 4·8 mm; wing 5·5 mm.

As in male. Abdominal terga all black and sterna brownish yellow. Tergum VI equal in length to tergum V. Basal segment of ovipositor about equal in length to terga V+VI, subshining black and black setose. Aculeus slender, sharp pointed, not extended for study. Spermathecae not examined.

Biology

Reared from stem galls on *Goodenia ovata* (Goodeniaceae).

Etymology

The specific epithet is from the host genus.

Oedaspis mouldsi, sp. nov.

(Figs 102–106)

Material Examined

Holotype. ♂, Qld, 25 km along Mt Lewis Road, SW of Mossman, 6.i.1977, M. S. and B. J. Moulds, AMS.

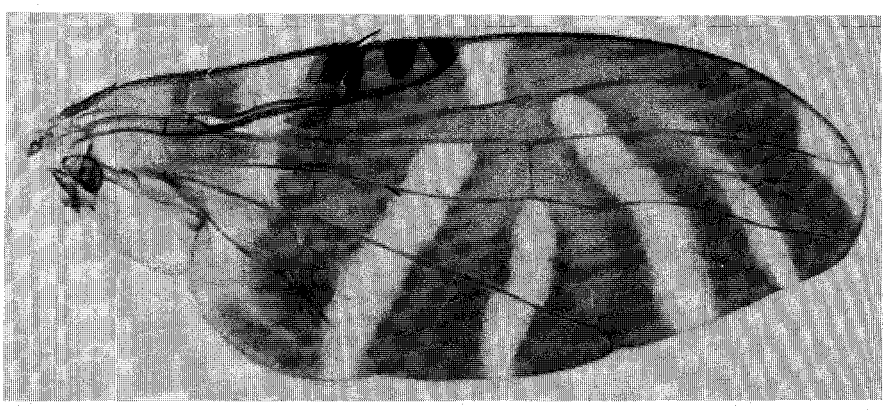


Fig. 102. *Oedaspis mouldsi*, sp. nov., wing.

Paratypes. **Queensland:** Allotype ♀ (AMS), nr Mt Lewis, SW of Mossman, 10.xii.1974, M. S. Moulds. 4♂, 2♀, from the following localities: same as holotype and allotype; 13 mi from Mt Lewis, 3400 ft, 8.xi.1975, A. and M. Walford-Huggins; Mt Misery, W of Mossman, 22.xii.1974, M. S. Moulds; Mt Lewis, nr Mossman, 19.i.1982, G. and A. Daniels. Paratypes in ANIC, AMS, BPBM.

Diagnosis

Fitting in the complex of species that has 2 hyaline spots in cell sc and abdomen fine black setose. Fits closest to *O. perkinsi*, sp. nov., and differs by having only 1 hyaline mark in cell r_1; no complete hyaline band distal to cross-vein dm-cu, lower apex of cell r_3 lacking a brown mark and thorax mostly rufous.

Description

Male

Length. Body and wing, each 6·3–6·5 mm.

Head. Higher than long with antenna situated at level of upper quarter of head (Fig. 103). Yellow to rufous except for black on ocellar triangle and upper occiput. Face gently concave, parafacial 0·4 as wide as 3rd antennal segment and gena broad, nearly 2× wider than 3rd segment. Third broadly rounded, 2× longer than wide. Three to four frontal and 2 orbital bristles, the upper pair pale yellow, others black, interfrontal area sparsely fine yellow setose. Lower sides of face and gena rather densely covered with short black setae. Genal bristle black.

Thorax. Rufous except for black discoloration over posterior median portion of mesonotum and over disc of scutellum, subopaque yellow-brown microtrichose, covered with short, thin, pointed, recumbent yellow setae. Bristles dark brown to black. Apical scutellars cruciate, about 0·75× size of basal bristles. Scutellum nearly flat, very slightly convex over disc.

Legs. Yellow; hind femur with 2 bristlelike anterodorsal setae and no dorsal setae.

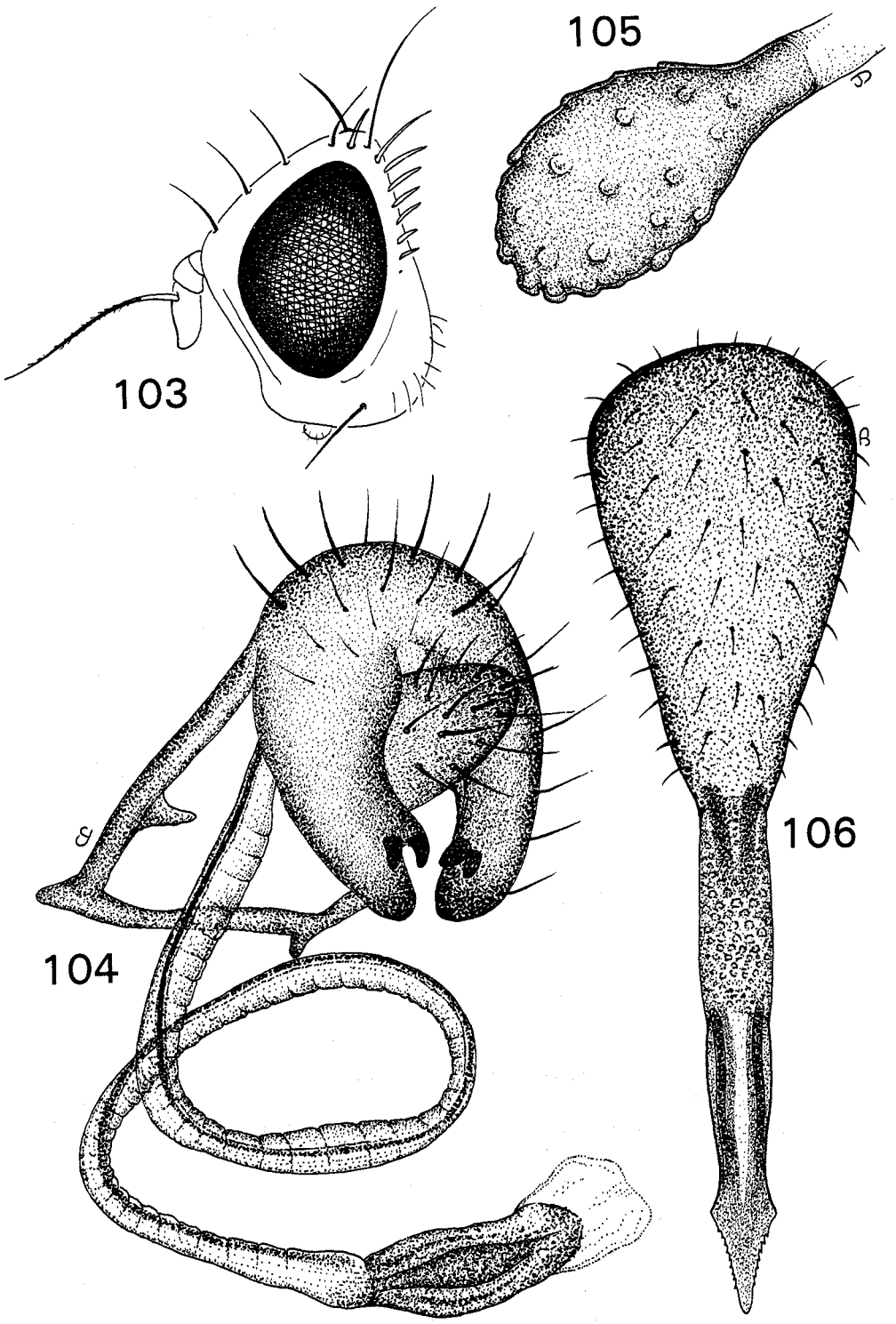
Wings. Mostly brownish yellow with the following hyaline marks: a sub-basal transverse band from costa in middle of cell c to hind margin in cell a; a rectangular mark in cell r_1 just beyond apex of R_1; a marginal band in lower apex of cell r_3 extending through most of apex of r_5 and 4 transverse vittae from posterior margin extending to or beyond middle of wing as in Fig. 102. Cell sc about 0·6× as long as c and with 3 black spots filling most of cell. Vein R_1 lacking a bare area opposite end of Sc and R_{4+5} bare except for a few scattered setae on dorsal surface. Cross-vein r-m about 0·25× length of cell m from apex of m, and more than its length from dm-cu. Cell bcu with well-developed pointed lobe at lower apex.

Abdomen. Mostly rufous, tinged brown to blackish on sides of terga and on broad bases of IV and V. Brown microtrichose and densely short, fine, black setose. Genitalia yellow, tinged brown at end of surstylus. Latter tapered, bluntly pointed at apex, teeth of inner surstylus large and prominent. Vanes of aedeagal apodeme broad, widely separated (Fig. 104). Distiphallus slightly swollen, with a membranous extension from apex (Fig. 104).

Female

Length. Body, excluding ovipositor, 7·0 mm; wing 7·2 mm.

Like male except for genital characters. Abdomen sometimes extensively discoloured with black. Tergum VI equal in length to tergum V. Basal segment of ovipositor cylindrical, about equal in length to terga V and VI, 2× longer than wide and with spiracular openings at basal 0·4 of segment. Aculeus spearhead shaped, serrated on sides before apex (Fig. 106). Spermathecae oval, densely spiculated and with rather long necks (Fig. 105).



Figs 103–106. *Oedaspis mouldsi*, sp. nov.: *103*, head; *104*, ♂ genitalia; *105*, ♀ spermatheca; *106*, ♀ ovipositor.

Etymology

The species is named after M. S. Moulds who collected most of the specimens we have studied.

Oedaspis olearia, sp. nov.

(Figs 107–112)

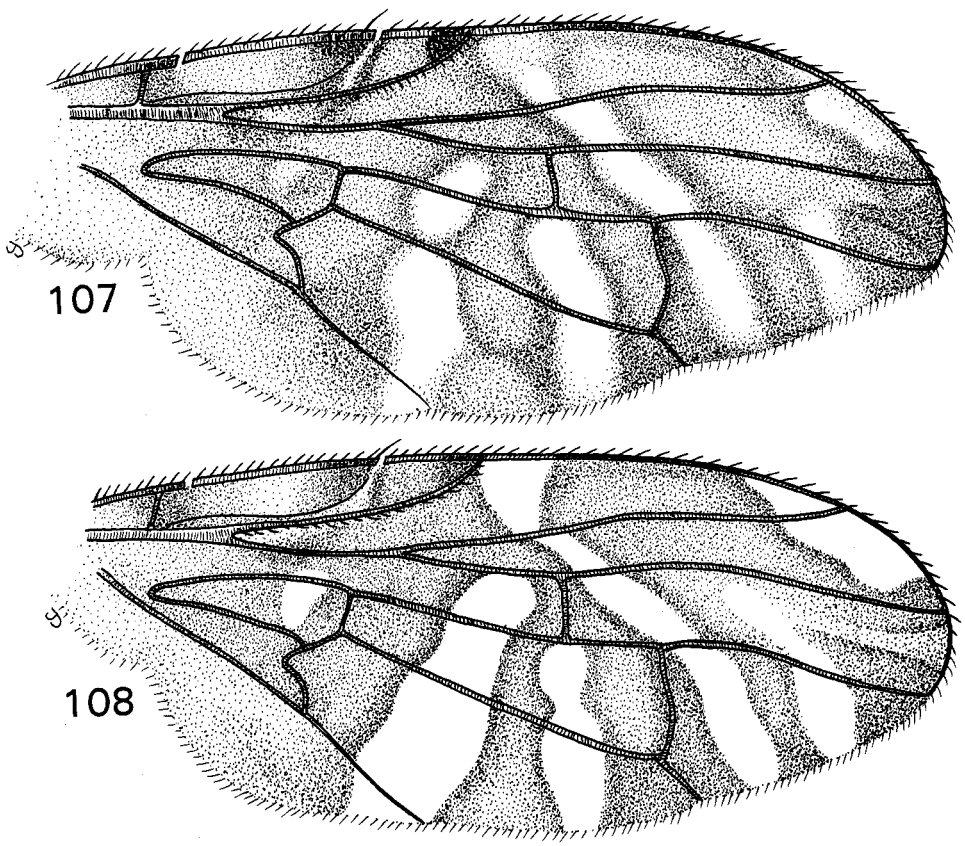
Material Examined

Holotype. ♂, Vic., Mt Baw Baw, 14.xii.1964, reared from stem galls on *Olearia phylopopappa*, No. 64142, G. L. Bush, ANIC.

Paratypes. **Victoria**: Allotype ♀ (ANIC), 9♂, 11♀, same data as holotype; 10♂, 16♀, Mt Donna Buang, 1000–1330 m, 8.i.1965, from galls on *Olearia phylopopappa*, No. 654, G. L. Bush (specimens Bush (1966: 120) reported as 'New Genus-A, sp. 1'); 2♂, 1♀, from the following localities: Mt Baw Baw, nr Tanjilbren, 1097 m, 30.xi.1964, No. 64134, G. L. Bush; 24 km N Reefton, 24.xi.1964, No. 64131, G. L. Bush. **New South Wales**: Sydney, gall on *Aster ramiflora*, 1911, W. W. F. **Tasmania**: 1♀, Mt Wellington, Feb. 1930, Irwin-Smith, appears to belong here but has only 2 pairs of frontal bristles. Paratypes in AMS, ANIC, BPBM, MSU, NHM, UH.

Diagnosis

Fitting in the complex of species with *O. austrina*, sp. nov., which differ from other



Figs 107, 108. *Oedaspis olearia*, sp. nov.: *107*, ♂ wing; *108*, ♀ wing.

Oedaspis by having scutellum yellow, with a shining black mark at apex and wing with a curved or oblique transverse hyaline band from hind margin distal to cross-vein dm-cu into cell r_1 just beyond apex of vein R_1. It differs from *O. austrina,* sp. nov., as follows: its larger size, wing with basal portion evenly yellow-brown, lacking a hyaline prebasal cross-band; female with an elongate hyaline mark in apex of cell r_3 extending into lower apex of r_1 and sometimes filling all of r_3 (Fig. 108) and male wing with an indistinct preapical elongate subhyaline spot (Fig. 107); basal segment of ovipositor broadly yellow over median portion and aculeus with much fewer microscopic serrations on subapical margins; abdomen shining black on terga IV and V in male and III–VI in female (Fig. 112).

Description

Male

Length. Body and wing each 5·2–6·0 mm.

Head. Higher than long with frons sloping and face slightly convex. Parafacial broad, 0·75× as wide as 3rd antennal segment. Gena half to two-thirds wider than 3rd. With 3–4 frontal bristles and upper orbitals yellow-white. Interfrontal area sparsely fine yellow setose. Lower sides of face and gena covered with short brown to yellowish setae. Third antennal segment rounded at apex, sometimes slightly angulate at upper apex but not pointed.

Thorax. Mesonotum black in ground colour, yellow on humerus, notopleuron, most of pleura, with katepisternum black except for dorsal margin. Yellow-grey microtrichose and densely covered with subrecumbent slightly flattened but not scalelike setae. Bristles black except for yellow-white bristles on posterior notopleuron, anatergite and katepisternum. Scutellum subshining, very gently convex over disc and usually with a single black apical spot (rarely divided into 2 spots).

Legs. Yellow, with 1 preapical anterodorsal bristlelike seta.

Wings. As noted above, mostly brownish yellow, cell sc dark brown at apex and narrowly so at base, 4 transverse hyaline bands from hind margin as in Fig. 107, cross-vein r-m at apical 0·75–0·8 of cell dm.

Abdomen. Terga I and II yellow to rufous, discoloured with brown in median portion. Terga IV and V shining black, yellow on posterior margins. Abdomen lightly yellow-grey microtrichose and densely covered with subrecumbent flattened yellow setae. Sterna and genitalia yellow, inner margins of outer surstylus and prominent teeth at apex of inner surstylus black (Fig. 109). Distiphallus not expanded, weakly sclerotised (Fig. 111).

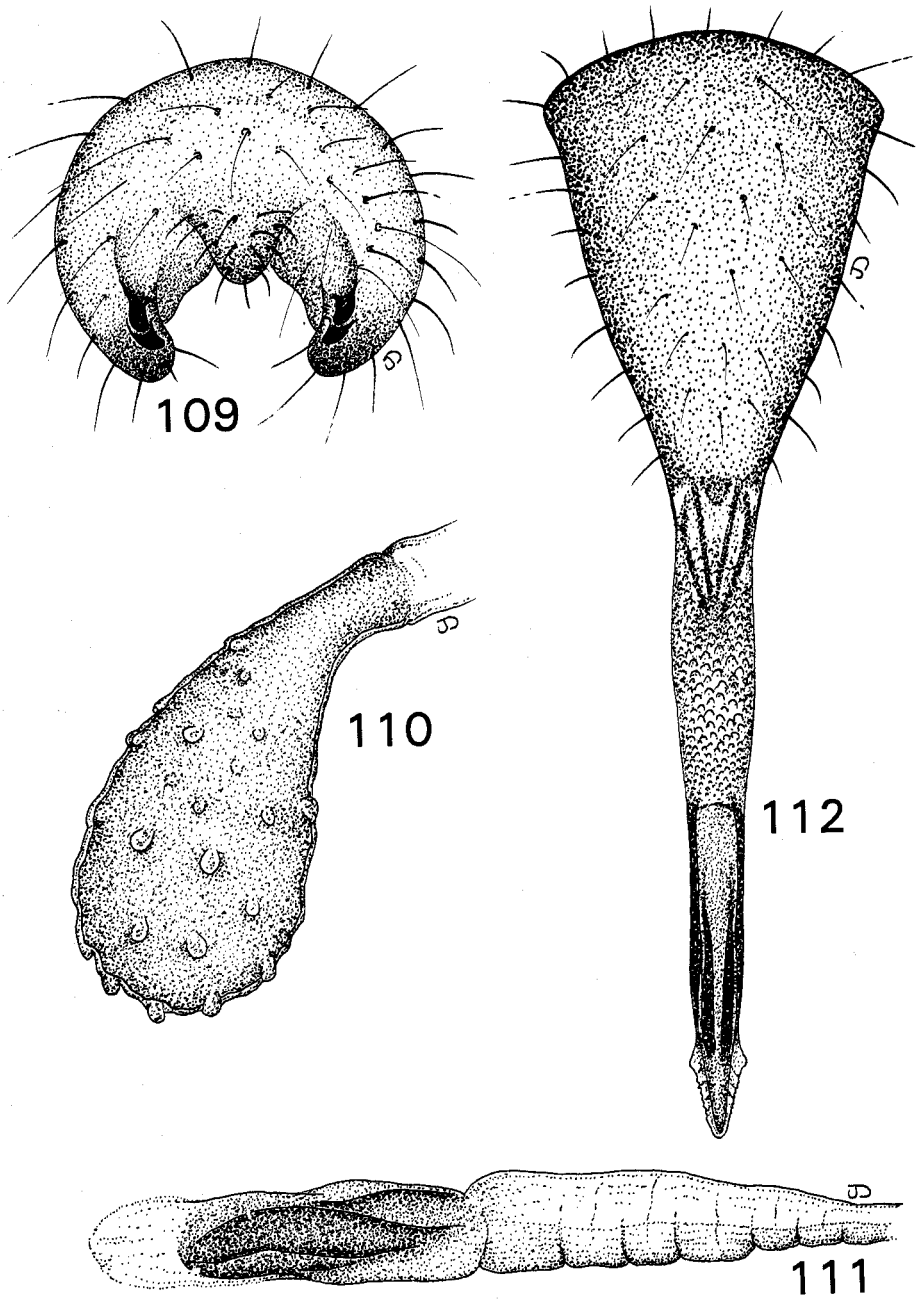
Female

Length. Body, excluding ovipositor, 5·6–6·5 mm; wing 6·0–6·5 mm.

As in male but with curved hyaline band distal to dm-cu reaching costa in cell r_1 and cell r_3 with a large hyaline mark filling all of most of apex (Fig. 108) and extending into lower apex of r_1. Terga III–VI shining black, yellow on apex of VI. Basal segment of ovipositor shining black on base and apex yellow in middle and on venter, often shining black medially, equal in length to terga V and VI. Aculeus drawn out into a slender sharp point and with fewer than 12 minute preapical serrations visible under high power (Fig. 112). Spermathecae oval with straight necks (Fig. 110).

Remarks

Variation is seen in number of frontal bristles from 3 to 6 (one specimen has 6), 4 being usual. Scutellum occasionally with a pair of black spots at apex.



Figs 109–112. *Oedaspis olearia*, sp. nov.: *109*, ♂ surstyli and claspers; *110*, ♀ spermatheca; *111*, ♂ distiphallus; *112*, ♀ ovipositor.

Biology

Reared from stem galls on *Aster ramiflora* and *Olearia phylopopappa* (Asteraceae).

Etymology

The specific epithet is from the generic name of the host plant, *Olearia*.

Oedaspis perkinsi, sp. nov.
(Fig. 113)

Material Examined

Holotype. ♂, Vic., R. Bakewill, B. M. 1859–103, NHM.

Diagnosis

Fitting in a complex of species with *O. mouldsi*, sp. nov., by having 2 hyaline spots in cell sc and abdomen fine black setose. Differs by having 2 hyaline marks in cell r_1 with second mark continuous as a narrow transverse band to hind margin of wing distal to cross-vein dm-cu and with a narrow brown mark on margin in apices of cells r_3 and r_5 (Fig. 113).

Description

Male

Length. Body and wing each 3·5 mm.

Head. As in congeners, with parafacial about half width of 3rd antennal segment and gena about half wider than 3rd. Three pairs of frontal bristles. Lower sides of face short brown setose. Genal bristles dark reddish brown.

Thorax. Black in ground colour, yellow on humerus, notopleuron and over scutellum except for black over base and with a pair of black spots at apex. Thorax densely grey microtrichose, obscuring ground colour and fine yellow setose. Scutellum subshining at apex and flat on disc. Dorsocentral bristles about halfway between level of supraalar bristles and suture.

Legs. Yellow, hind femur with 1 preapical bristlelike seta and no dorsal setae.

Wings. Largely yellow-brown, base discoloured brownish yellow with a prebasal transverse hyaline band from middle of cell c to hind margin in cell a; basal half and apex of cell c brown; cell sc 0·66× as long as c and dark brown with 2 prominent hyaline spots; 2 hyaline marks crossing cell r_1, basal spot wedge-shaped and confined to cell, second mark continuous in a straight line to dm-cu cross-vein as a narrow vitta then bending sharply and, by a narrow connection along vein M, continuous to hind margin in cell m distal to dm-cu; apices of cells r_3 and r_5 hyaline with a narrow border of brown; 4 transverse hyaline marks in posterior portion of wing: 2 in m, the basal band continuous as noted above, 2 in cu, the first extending into about middle of cell dm and the second from margin in apex of cell a, through cells cu, dm and br, to vein R_{4+5} (Fig. 113).

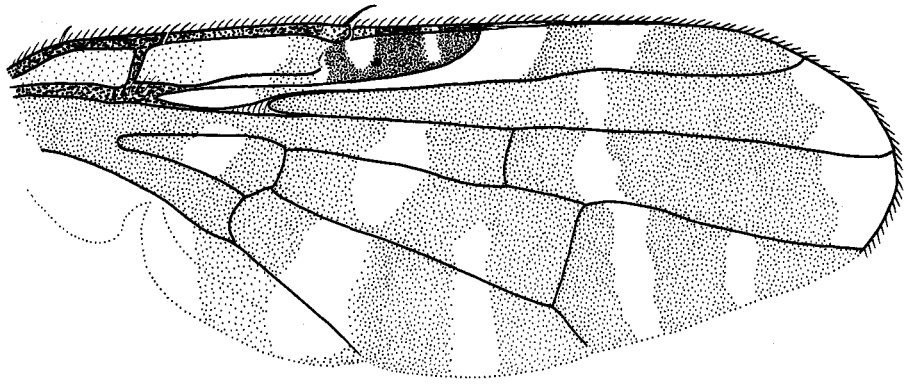


Fig. 113. *Oedaspis perkinsi*, sp. nov., wing.

Abdomen. Subshining yellow to rufous, yellow-grey microtrichose, tinged brown along base of tergum IV and a pair of large black marks on basal 0·66 of tergum V. Setae black, thin, not scalelike.

Female

Unknown.

Etymology

Named after F. A. Perkins, one of the pioneer workers on Australian Tephritidae. This specimen was designated in the NHM by Perkins as the type of a new species but was never described.

Oedaspis semihyalina, sp. nov.

(Figs 114–116)

Material Examined

Holotype. ♂, WA, 16 km E Wicherina, 25.ix.1964, No. 6476, G. L. Bush, ANIC.

Paratypes. **Western Australia**: Allotype ♀ (ANIC), 2♂, same data as holotype; 1♀, Southwest, Leeuwin Naturaliste Nat. Pk, Prevelly Pk, 18.x.1986, adjacent to *Scaevola glandulifera*, I. M. White; 1♀, Cape Le Grand, 17.x.1965, N. Dobrotworsky. Paratypes in BPBM, MSU, NHM.

Diagnosis

Very close to *O. whitei*, sp. nov., and differs as follows: male having posterior portion of wing predominantly hyaline, not with a brown band extending to posterior margin; no brown mark through middle of dm and no brown mark on A_1+Cu_2 (Fig. 114). The female fits close to *O. continua*, sp. nov., by having hyaline cross-band basal to r-m and diffusing into cell r_3 but differs by not connecting with hyaline mark in r_1 and in having cell sc brown with a hyaline mark at base.

Description

Male

Length. Body and wing each 2·8–3·0 mm.

As in other members of genus but with wing markings as noted above and in Fig. 114. Marking in cell sc variable in type and 1 paratype mostly hyaline, marked with brown at apex and base and, in 1 paratype with 3 brown marks. Following areas hyaline: apical corner of cell r_3 and apical 0·25 of cell r_5; entire apex of r_5; all of cell m except for upper basal portion; a broad longitudinal marking through lower portion of dm; all of cu except extreme base; cell a and with basal quarter of wing subhyaline. Cell bcu not pointed at lower apex.

Abdomen. Yellow, tinged with brown on sides of terga I and II and broadly brown to blackish on basal portions of terga III–V. Surstyli blunt at apices (Fig. 116). Distiphallus as in Fig. 116.

Female

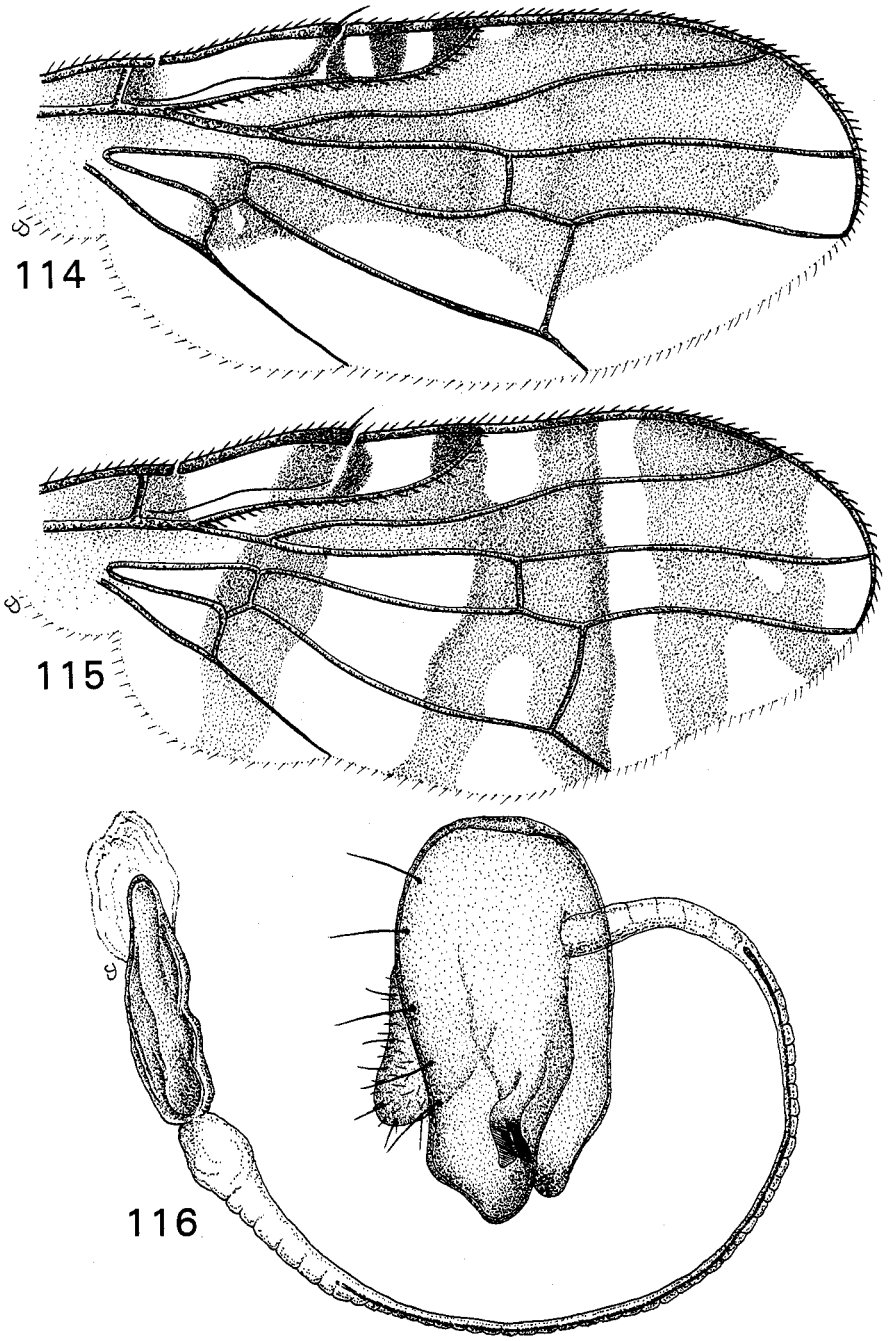
Length. Body, excluding ovipositor, 2·8 mm; wing 3·2 mm.

As in male except for wing markings (Fig. 115) and genital characters.

Wings. With complete sub-basal hyaline cross-band. Basal brown cross-vein broad, extending from costa in apex of call c to hind margin in cell a. Hyaline cross-band basal to r-m cross-vein extending into cell r_3 but not connected to hyaline mark in cell r_1 just beyond end of vein Sc and nearly equal in width to basal brown cross-band. Cell sc predominantly

dark brown, hyaline at base. With a complete hyaline transverse band distal to r-m cross-vein, preapical hyaline mark confined to cell m. Apical hyaline mark fills lower 0·67 of cell r_3 and all of r_5; cell bcu with a slight point at lower apex.

Abdomen. Subshining dark brown to black. Basal segment of ovipositor equal in length to terga III–VI. Aculeus not extended for study and spermathecae not seen.



Figs 114–116. *Oedaspis semihyalina*, sp. nov.: *114*, ♂ wing; *115*, ♀ wing; *116*, ♂ genitalia.

Etymology

The specific epithet is from the Latin *semi*, half; combined with *hyalinus*, clear; referring to the half hyaline wing of male.

Oedaspis serrata, sp. nov.

(Figs 117–119)

Material Examined

Holotype. ♀, NSW, Mt Kaputar Nat. Pk, 11–13.xi.1979, N. V. Rodd, AMS.

Paratype. **New South Wales**: 1 ♀, same data as holotype, ANIC.

Diagnosis

Fitting in the group of species with scutellum subshining black and with a complete prebasal hyaline band over wing cell c to hind margin in anal cell. Differs from other known species by having cell sc dark brown except for a small subhyaline spot at upper apex; 2 hyaline streaks across cell r_1, the first extending to vein R_{4+5} and second to vein M between r-m and dm-cu cross-veins (Fig. 117).

Fig. 117. *Oedaspis serrata*, sp. nov., wing.

Description

Male

Unknown.

Female

Length. Body, excluding ovipositor, and wing, each 5·6 mm.

Similar to other congeners.

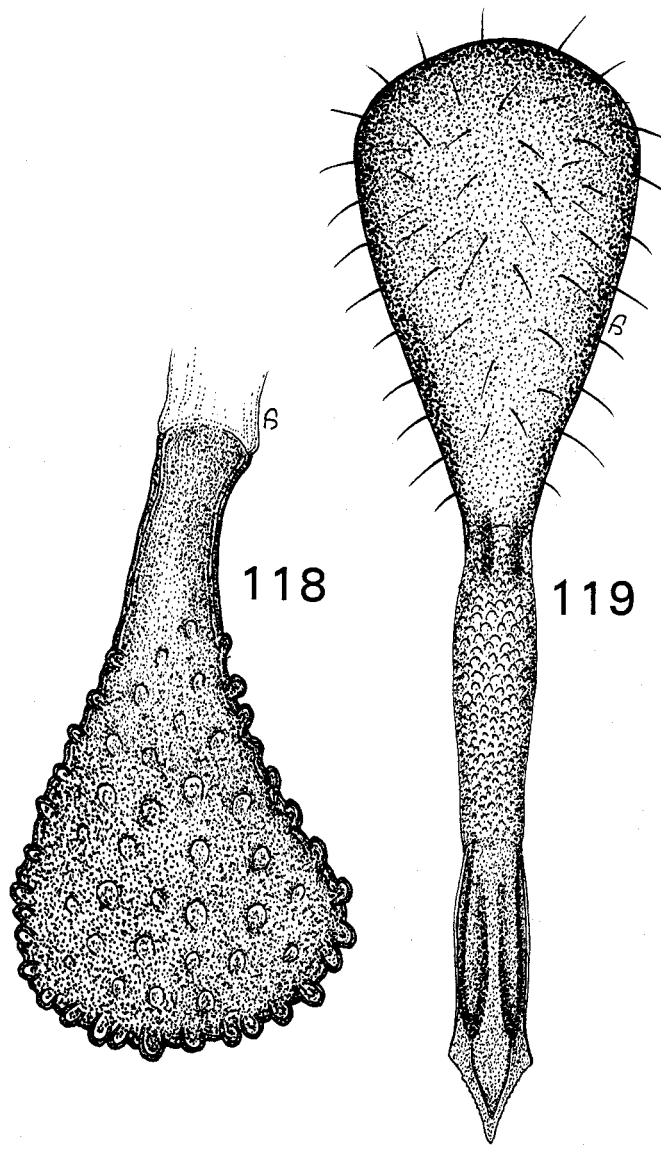
Head. Three frontal bristles, the two lower closer together than to upper. Lower sides of face and gena rather densely covered with short black setae. Parafacial 0·66× as wide as third antennal segment and gena broad, nearly 2× wider than 3rd. Third segment broadly rounded, scarcely half longer than wide.

Thorax. Black in ground colour except for yellow to rufous humerus, proepimeron and proepisternum, rather densely brownish grey microtrichose; setae yellow-white,

subrecumbent, rather flattened but not scalelike. Scutellum subshining bare in middle, sparsely setose on sides, nearly flat on disk, very gently convex. Dorsocentral bristles slightly in front of level of supraalars. All bristles black, including those on pleura and metanotum.

Legs. Yellow except for black along posterodorsal margin of front femur, posterior margin of mid pair and anterior margin of hind femur. One anterodorsal preapical bristlelike seta on hind femur. With 10–12 erect anterodorsal bristlelike setae on hind tibia.

Wings. Mostly dark brown with markings as noted above and as in Fig. 117; a narrow hyaline mark extends over apex, filling cells r_5 and most of r_3; 4 transverse hyaline marks over posterior portion of wing; cross-vein r-m near apical 0·67 of cell dm.



Figs 118, 119. *Oedaspis serrata*, sp. nov.: *118*, ♀ spermatheca; *119*, ♀ ovipositor.

Abdomen. Subopaque black, dark grey microtrichose and fine yellow setose shining on tergum VI and polished on basal segment of ovipositor. Basal segment cylindrical, equal in length to terga V and VI. Aculeus sharply tapered on apical fifth, serrated on sides (Fig. 119). Spermathacae club shaped, broad at apex tapered to base and with surface tuberculate (Fig. 118).

Etymology

The specific epithet is from the Latin *serratus*, 'toothed like a saw', referring to the serrate aculeus.

Oedaspis trifasciata (Malloch)

(Figs 120–124)

Chrysotrypanea trifasciata Malloch, 1939*a*: 457. Holotype ♀ in ANIC.

Type locality: Seaford, Victoria.

Material Examined

Victoria: 24 specimens from the following localities: Cape Otway, 29.x.1966, A. Neboiss; Black Spur, 15.x.1967, bred from stem galls on 'Dogwood' (= *Cassinia longifolia*), A. Neboiss; nr Olinda, 26.xii.1964, reared from gall on *Helichrysum dendroideum*, G. L. Bush; Mt Donna Buang, 400 m, 8.i.1965, reared from gall on *Helichrysum dendroideum*, No. 651, G. L. Bush; 12 km E Noojee, 14.xii.1964, No. 84141, G. L. Bush; Sherbrooke Forest, 26.xii.1964, reared from gall on *Helichrysum dendroideum*, No. 64144, G. L. Bush; 0·5 km W junction Apollo Bay Colac Road to Turtons Pass Road, 9.iii.1965, No. 6519, G. L. Bush.

Diagnosis

Differing from other species placed in this genus by having r-m cross-vein near middle of cell dm and wing yellow-brown except for 3 diverging hyaline bands from posterior margin almost to vein R_{2+3} (Fig. 120); with a row of scalelike yellow setae along vibrissal ridge; thorax and abdomen densely covered with golden scalelike setae and female aculeus as in Fig. 124, not serrated.

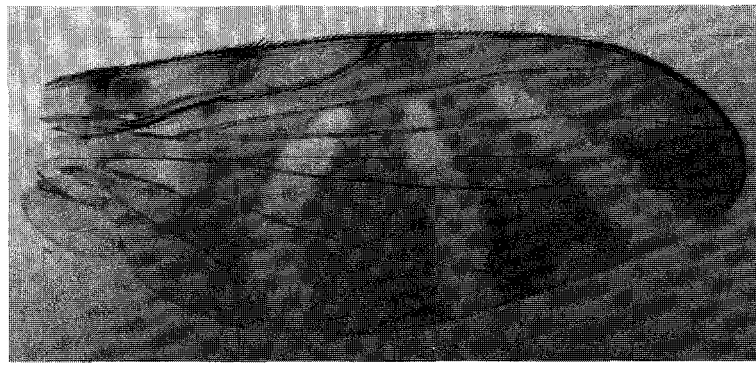


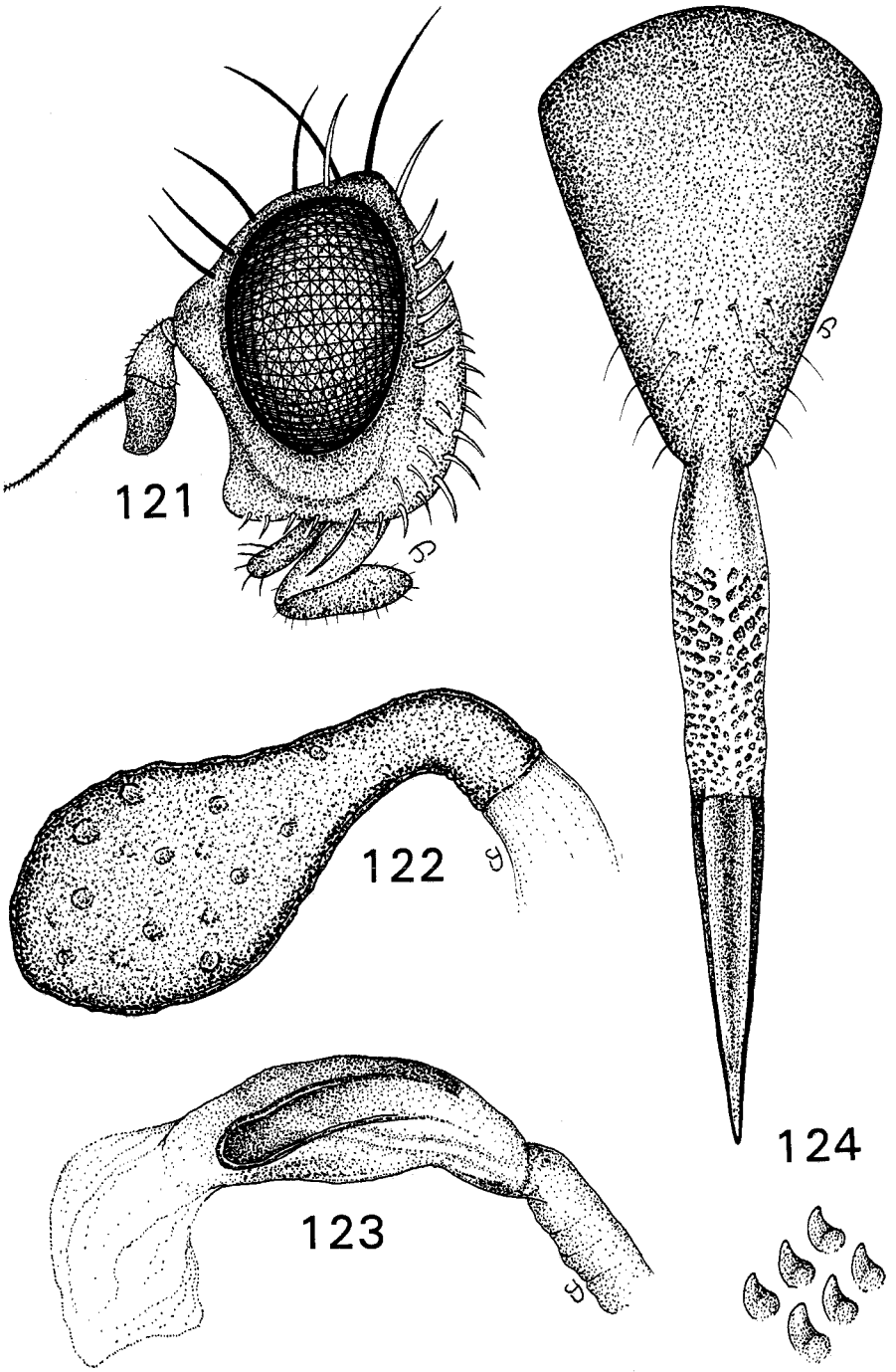
Fig. 120. *Oedaspis trifasciata* (Malloch), wing.

Description

Male

Length. Body 3·7–4·0 mm; wing 4·5 mm.

Head. Slightly higher than long with antenna near upper 0·66 of head and 3rd segment broadly rounded at apex, less than 2× longer than wide and extending about 0·66 of length of face (Fig. 121). Arista microscopically pubescent. Face nearly straight, oral margin gently protruded. Genal bristle yellow-white. Parafacial about half width of 3rd antennal segment and gena slightly broader than 3rd. Frons about as wide as eye, nearly bare, with sparse pale yellow interfrontal setae, 3 frontal and 2 orbital bristles, the upper pair yellow-white.



Figs 121–124. *Oedaspis trifasciata* (Malloch): *121*, head; *122*, ♀ spermatheca; *123*, ♂ distiphallus; *124*, ♀ ovipositor and scales.

Thorax. Shining black in ground colour, yellow on humerus, notopleuron, propleuron, anepisternum and upper margin of katepisternum; brown microtrichose over dorsum, grey on sides. Thorax and abdomen densely covered with flat scalelike golden setae except for bare median portion of scutellum. Scutellum subshining black, nearly flat, very gently convex on disc, margin yellow in some specimens. Bristles black except for yellow notopleural and anepimeral. Dorsocentrals well behind suture, near level with supraalars.

Legs. Yellow; hind femur with 1 bristlelike anterodorsal seta but none on dorsal surface.

Wings. Yellow-brown with 3 hyaline bands from posterior margin extending through cell r_3 (Fig. 120); cell sc almost as long as c; cross-vein r-m just beyond middle of cell dm and cell bcu with a short pointed lobe at lower apex; no bare area on vein R_1 opposite end of Sc and vein R_{4+5} bare of setae.

Abdomen. Shining black, yellow on tergum I and base of II and with a yellow median vitta extending over terga II–V, also sides and apex of V yellow in male. Male surstylus broadly rounded at apex. Distiphallus lightly sclerotised terminating in a membranous sac (Fig. 123).

Female

As for male except abdominal segment VI subequal to fifth. Basal segment of ovipositor polished black, sparsely short black setose, bare of scales, about half longer than wide, subequal in length to terga V–VI and with spiracular openings at about basal 0·4 of segment. Aculeus tapered on apical 0·4 into a long slender point (Fig. 124). Spermathecae oval with short necks (Fig. 122).

Biology

Gallformer on *Cassinia* and *Helichrysum* (Asteraceae). This was listed in the original description as 'from gall on dogwood'. Dr J. H. Willis, a botanist in Victoria, says (*in litt.*) the plant called 'dogwood' in the Seaford area is *Cassinia aculeata* . He said he had seen galls on the young shoots of *Cassinia.* Reared from stem galls on *Cassinia longifolia* and from *Helichrysum dendroideum* by G. L. Bush.

Distribution

Victoria.

Oedaspis trimaculata, sp. nov.

(Fig. 125)

Material Examined

Holotype. ♂, WA, Dongarra, 23.viii–5.ix.1935, R. E. Turner, NHM.

Paratypes. **Western Australia**: Allotype ♀ (NHM), 1♂, same data as holotype, 6–19.ix.1935; 1♀, Perth, 16–19.iii.1936, R. E. Turner. **Northern Territory**: 1♀, 56 km SE of Alice Springs, 24°11′S, 134°01′E, 24.ix.1978, J. C. Cardale. Paratypes in ANIC, BPBM, NHM.

Diagnosis

Fits in the *O. escheri* species complex by having 4 transverse hyaline marks over wing distal to level of apex of vein Sc, no sexual dimorphism and basal segment of female ovipositor comparatively short (about equal in length to terga IV+V). Differentiated by having transverse hyaline band distad of cross-vein dm-cu complete, ending at costa in cell r_1; subapical hyaline mark in cell m abbreviated, not extending through cell r_5 and into r_3; having a distinct but narrow hyaline mark at apex of r_5 and lower apex of r_3 (Fig. 125).

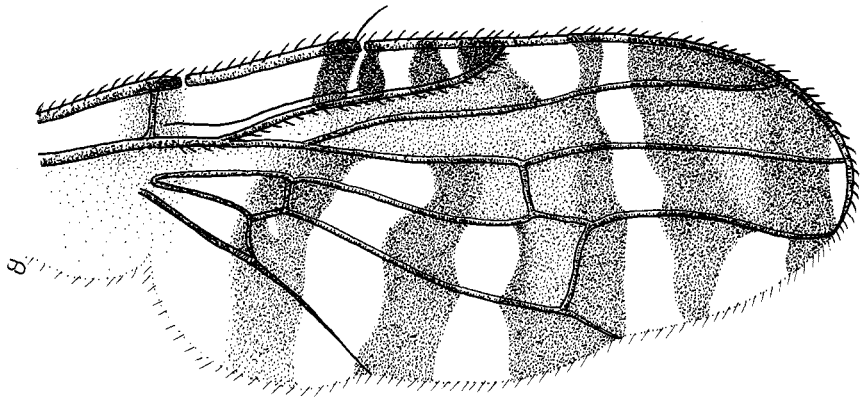


Fig. 125. *Oedaspis trimaculata*, sp. nov., wing.

Description

Male

Length. Body and wings each 3·6–4·0 mm.

Fitting characters of *O. escheri* (Bezzi) except as noted above. Terga I–III yellow, terga IV and V dark brown to black basally, broadly yellow apically. Genitalia not studied.

Female

Length. Body and wings each 3·6–4·0 mm.

Abdomen black on anterolateral margins of terga, broadly yellow over posteromedian portions of terga I–V and with hind margin of VI broadly yellow. Tergum V about equal in length to VI. Basal segment of ovipositor shining black. Aculeus not extended for study, spermathecae not studied.

Remarks

We are using a manuscript name proposed by F. A. Perkins. A male from Dongarra and a female from Perth in the NHM are both labelled 'Holotype, *Oedaspis trimaculata* F. A. Perkins'.

Etymology

The specific epithet is from the Latin *tri*, three, combined with *macula*, mark, referring to 3 transverse marks in wing.

Oedaspis whitei, sp. nov.

(Figs 126–132)

Material Examined

Holotype. ♂, WA, Southwest, Brockman Hwy, nr crossing of Donnelly Rv., 17.x.1985, adjacent to *Dampiera cuneata*, I. M. White, ANIC.

Paratypes. **Western Australia**: Allotype ♀, same data as holotype, ANIC. **Victoria**: 1♀, Mt Baw Baw, 14.xii.1964, No. 64142, G. L. Bush. **Western Australia**: 9 specimens from the following localities: same as holotype; nr Jewel Cave, nr Augusta, 30.xi.1975, on *Scaevola nitida* 'probable host', K. A. Spencer; Yanchep, 32 mi N of Perth, 13–23.ix.1935, R. E. Turner. **Northern Territory**: 1 specimen, 56 km SE of Alice Springs, 24°11′S, 134°01′E, 24.xi.1978, J. C. Cardale. Paratypes in ANIC, BPBM, NHM, UH.

Diagnosis

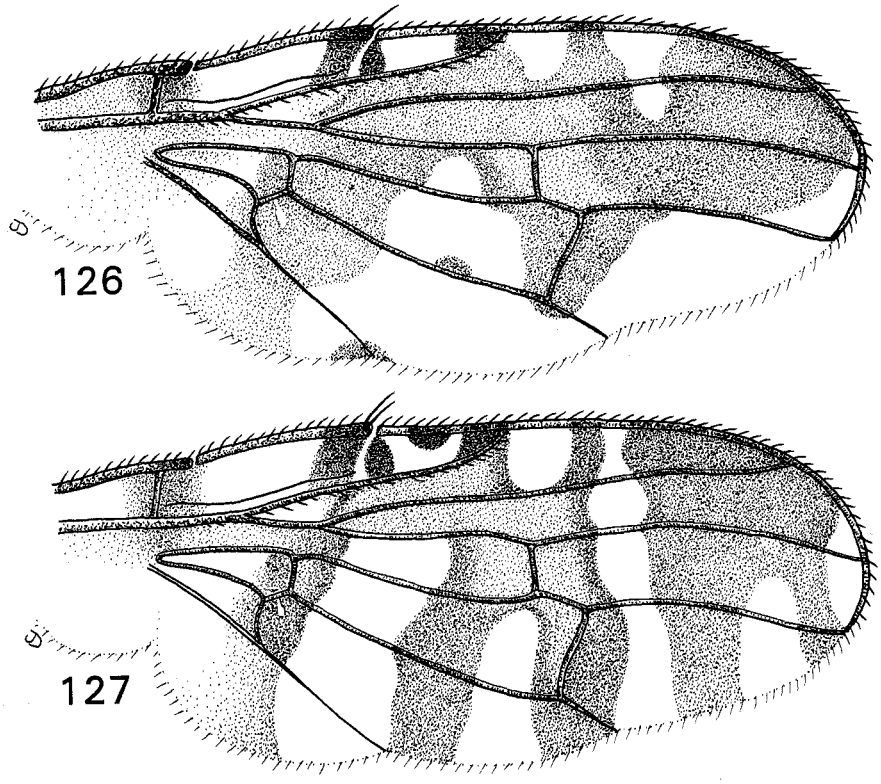
In the same complex of species with *O. semihyalina*, sp. nov., by showing striking sexual dimorphism with males having posterior portion of wing broadly hyaline (Fig. 126) and females with hyaline cross-bands (Fig. 127). Differs from *O. semihyalina*, sp. nov., by male wing having a broad band of brown extending across bases of cells br, dm and cu to hind margin in cell a; having an isolated brown mark at apex of vein A_1+Cu_2 or continuous along vein and connected with transverse brown mark; with prominent hyaline mark in cell r_1 just beyond end of vein Sc and a second wedge-shaped hyaline mark in r_1 opposite dm-cu; brown marking in middle of wing extending into middle of cell dm and covering dm-cu; cell bcu distinctly pointed at lower apex. Female wing markings similar to those of *O. semihyalina*, sp. nov., but the hyaline band basal to r-m cross-vein ends at vein R_{4+5} and the second hyaline mark in cell r_1 is narrowed, less than half width of transverse band.

Description

Male

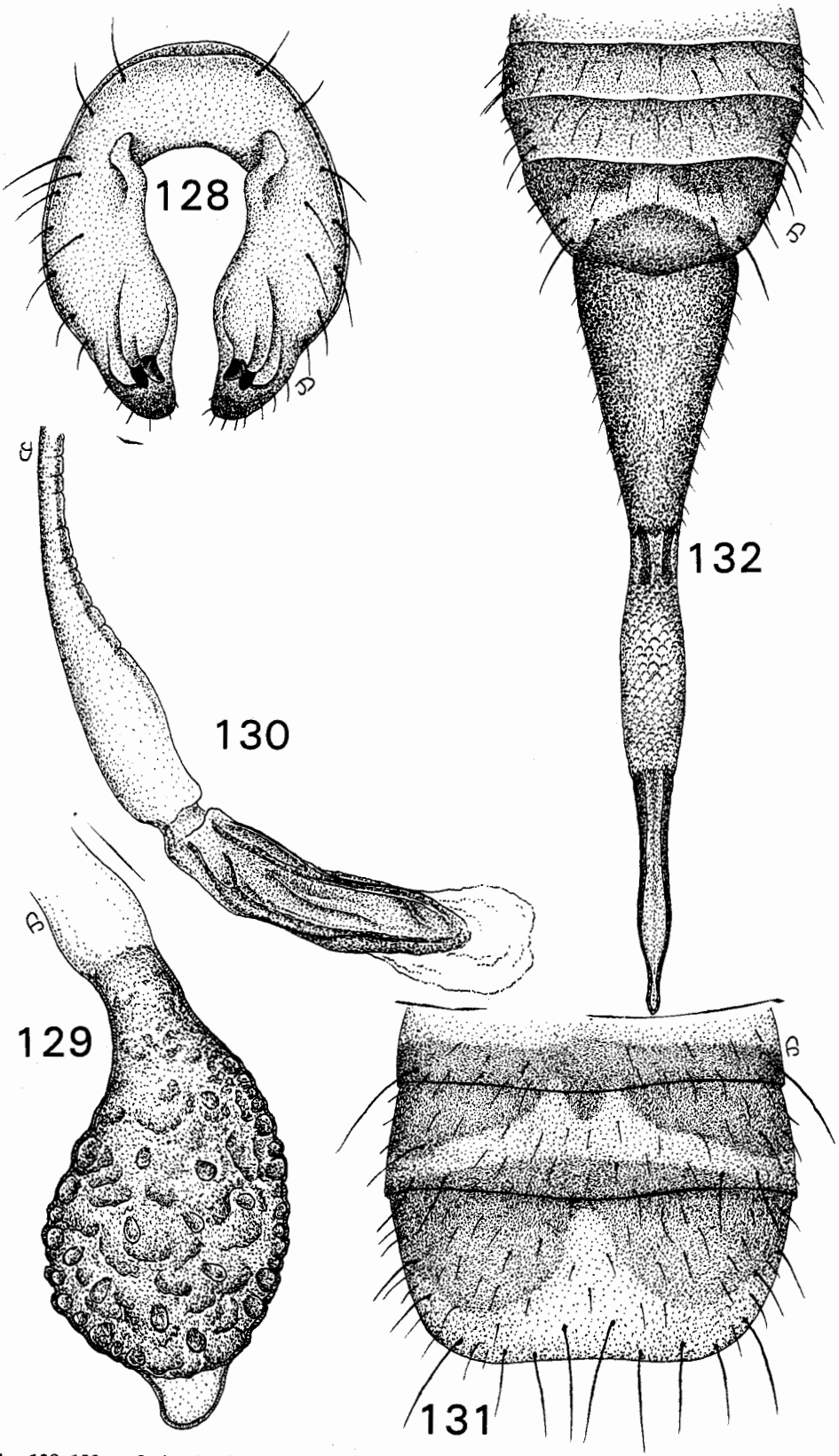
Length. Body and wing, each 3·5–4·0 mm.

Fitting characters described under genus and under *O. escheri* (Bezzi). Mesonotum with faint yellow-brown microtrichia over median portion.



Figs 126, 127. *Oedaspis whitei*, sp. nov.: *126*, ♂ wing; *127*, ♀ wing.

Wings. As noted above and as in Fig. 126, basal cells discoloured with brown and with a complete sub-basal hyaline cross-band; cell c brown at base and at apex and cell sc usually with 3 dark brown marks, sometimes median mark is missing.



Figs 128–132. *Oedaspis whitei*, sp. nov.: *128*, ♂ surstyli and claspers; *129*, ♀ spermatheca; *130*, ♂ distiphallus; *131*, last three terga of ♂ abdomen; *132*, ♀ ovipositor.

Abdomen. First 3 terga yellow to rufous except for brown on posterolateral margins of tergum III. Terga IV and V mostly black, yellow on posterior margins, with yellow colouring forming a broad V-shaped cleft into brown marking on posterior margin of tergum III (Fig. 131). Surstyli blunt, rounded at apices, genitalia as in Fig. 128. Distiphallus as in Fig. 130.

Female

Length. Body, excluding ovipositor, 4·0 mm; wing 4·4 mm.

As in male. Wing markings apparently similar to those of *O. apicalis*, sp. nov., and as in Fig. 127; with hyaline band basal to r-m cross-vein ending at vein R_{4+5} and band distal of dm-cu continuous to costal margin; preapical hyaline mark in cell m confined to cell or extending a short way into r_5. Abdomen mostly brown to black, yellow in median portion of terga I+II, narrowly yellow on apices of terga V and VI. Basal segment of ovipositor comparatively elongate, slightly longer than terga III–VI (Fig. 132). Aculeus as in Fig. 132. Spermathecae gourd shaped with a nipple at apex (Fig. 129).

Biology

May be a gall former on *Scaevola* and/or *Dampiera* (Goodeniaceae) but host behaviour unknown at present.

Etymology

Named after Dr I. M. White, International Institute of Entomology, London.

Oedaspis sp. 'A' near *mouldsi*

(Fig. 133)

Material Examined

One ♂, Mt Kaputar Nat. Pk, 500–600 m, New South Wales, 20.i.1979, E. Schlinger, cannot be placed. This specimen has been returned to CAS.

Diagnosis

Fits in the group of species that has 4 transverse hyaline marks across the posterior portion of wing. Differs from other known species of *Oedaspis* by having the scutellum and abdomen shining black except for yellow apex of tergum V.

Description

Length. Body 3·2 mm; wing 3·6 mm.

Wing. As in Fig. 133; cell sc subhyaline, dark brown at apex and at base; transverse hyaline band basal to r-m cross-vein broad, wider than brown bands and ending at vein R_{4+5}; hyaline band distal to dm-cu oblique, slanted toward hyaline mark in cell r_1 but not connected; no secondary hyaline mark in cell r_1; transverse hyaline mark in cell m narrow, continuing a short way into cell r_5 but continuing as a narrow yellow band extending diagonally to costa in middle of cell r_1; lower apex of cell r_1, all of apex of r_3 and upper 0·66 of r_5 with a narrow hyaline mark.

Oedaspis sp. 'B' near *mouldsi*

Material Examined

One ♂, Cradle Mtn, Tasmania, 10.i.1923, A. L. Tonnoir, is apparently undescribed. It runs near *O. mouldsi*, sp. nov., but differs by having wing markings pale brown, apex of cell r_3 hyaline and apex of

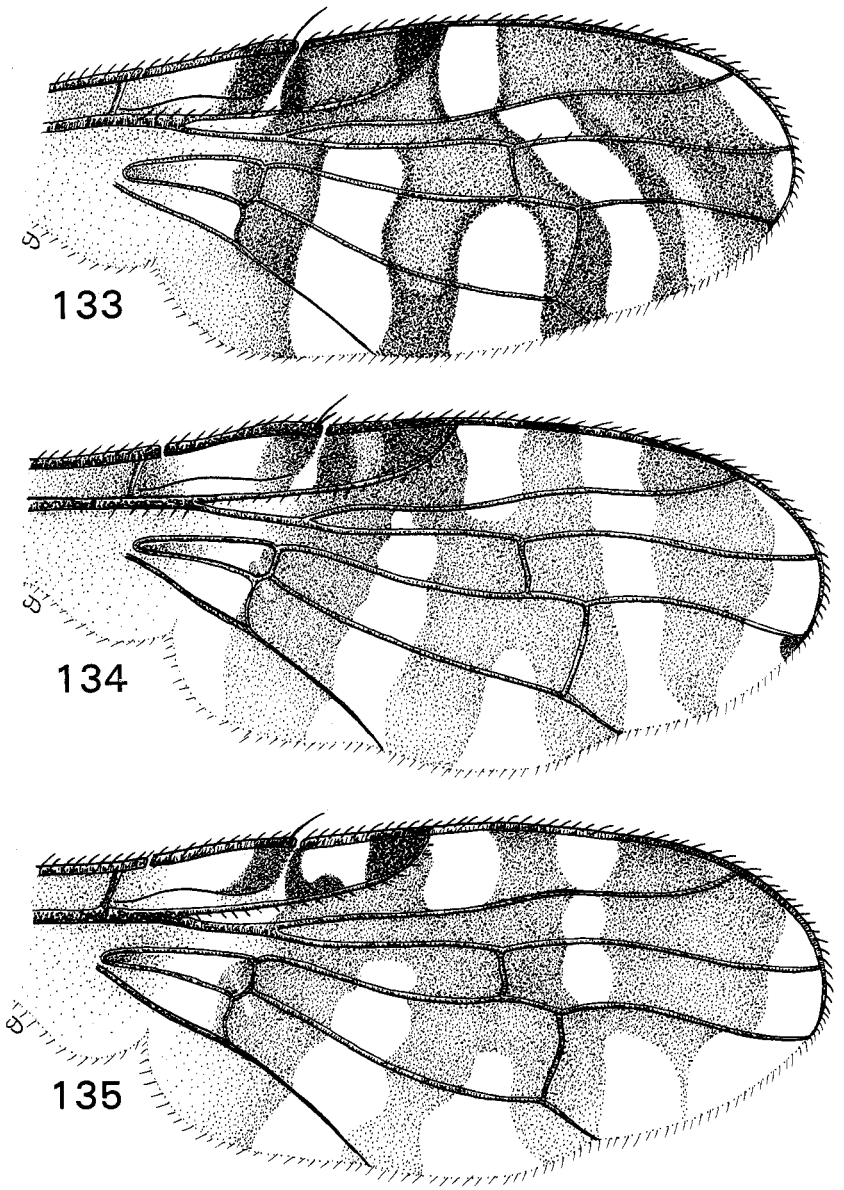
r_5 brown. Also by having femora brown to blackish and hind tibia brown medially. It resembles *O. austrina*, sp. nov., in having an isolated hyaline mark in apex of cell r_3 but the two are not related. This taxon differs by having a transverse hyaline band distal to dm-cu cross-vein and ending at vein R_{4+5}; cell sc mostly pale brown, with two hyaline spots; scutellum and abdomen black and legs mostly dark coloured as noted above.

This specimen has been returned to ANIC.

Description

Length. Body and wing, each 3·2 mm.

The species will be described when further specimens are obtained.



Figs 133–135. *133*, *Oedaspis* sp. 'A' near *mouldsi*, wing; *134*, *Oedaspis* sp. 'C', wing; *135*, *Oedaspis* sp. 'D' near *continua*, wing.

Oedaspis sp. 'C'

(Fig. 134)

Material Exmained

Two ♀, Lake Mtn, 1341 m, Victoria, 21.xii.1965, N. Dobrotworsky and Barrington Tops, New South Wales, 20.i.1979, G. R. Brown, cannot be placed and appear to represent an undescribed species.

The specimens are in the ANIC.

Diagnosis

Differing from other known *Oedaspis* by having apex of wing hyaline except for an isolated brown mark at upper apex of cell m; wing as noted above and as in Fig. 134; cell sc brown with small hyaline mark near base; transverse hyaline band basal to r-m broad, equal in width to brown bands and with a narrow extension through cell r_3; transverse hyaline band distal to dm-cu complete, extending to costa in cell r_1; apices of cells r_1, r_3, r_5 and m hyaline except for brown mark in m; abdomen subshining black except for broad yellow apex of tergum VI; ovipositor base rather elongate, about equal in length to terga III–VI. Aculeus and spermathecae not studied.

Length. Body, excluding ovipositor and wing, each 4·4 mm.

Remarks

This species is an enigma, the specimen from Victoria has a rudimentary, displaced, frontal bristle on one side but 3rd antennal segment distinctly pointed at upper apex. The specimen from NSW has 3rd segment rounded at apex but only two frontals.

Oedaspis sp. 'D' near *continua*

(Fig. 135)

Material Examined

One ♂, Weddeburn, Victoria, 18.x.1959, N. Nikitin, cannot be placed and appears to be an undescribed species.

Specimen in NHM.

Diagnosis

Apparently fitting in the group of species that has apical portion of wing broadly hyaline. Fitting nearest to *O. continua*, sp. nov., by having hyaline cross-bands through middle of wing. Differs by having a transverse hyaline band basal to r-m cross-vein ending in cell r_5 and not continuous with hyaline mark in r_1; with connected hyaline spots extending transversely over cells r_1, r_3 and r_5 distal to dm-cu; a narrow streak of brown across middle of cell m nearly reaching margin and a brown streak across middle of cell cu to hind margin of wing (Fig. 135). Genitalia not studied.

Description

Length. Body and wing each 3·4 mm.

Oedaspis sp. 'E'

(Figs 136–138)

Material Examined

Two ♀, Black Mtn, Australian Capital Territory, 13.xi.1959, in light trap, I. F. B. Common and

Broulee, New South Wales, 2.xii.1973, Z. Liepa, cannot be placed and appear to represent an undescribed species.

Both specimens in ANIC.

Diagnosis

Fitting near *O. apicalis*, sp. nov., and possibly only a variation. The only character we find for separating this taxon is the lack of a hyaline mark in cell r_1, continuous with transverse hyaline band distal to dm-cu cross-vein (Fig. 136).

Description

Length. As in *O. apicalis*.

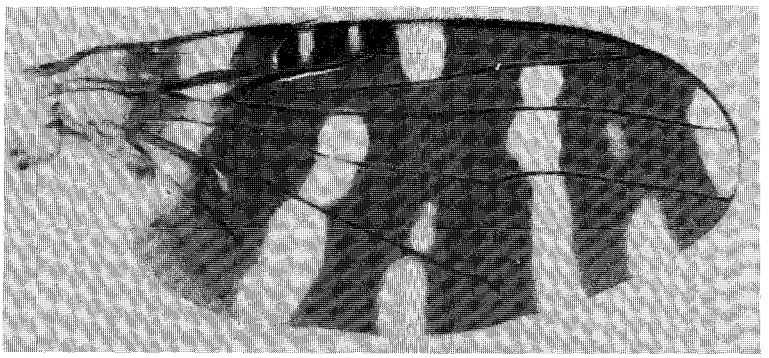


Fig. 136. *Oedaspis* sp. 'E', wing.

Abdomen. As in *O. apicalis*, largely yellow with broad brown bands across terga V and VI. Basal segment of ovipositor about equal to terga V+VI. Aculeus not fully extended for study, drawn out into slender point and minutely serrated on sides preapically (Fig. 138). Spermathecae gourd shaped (Fig. 137).

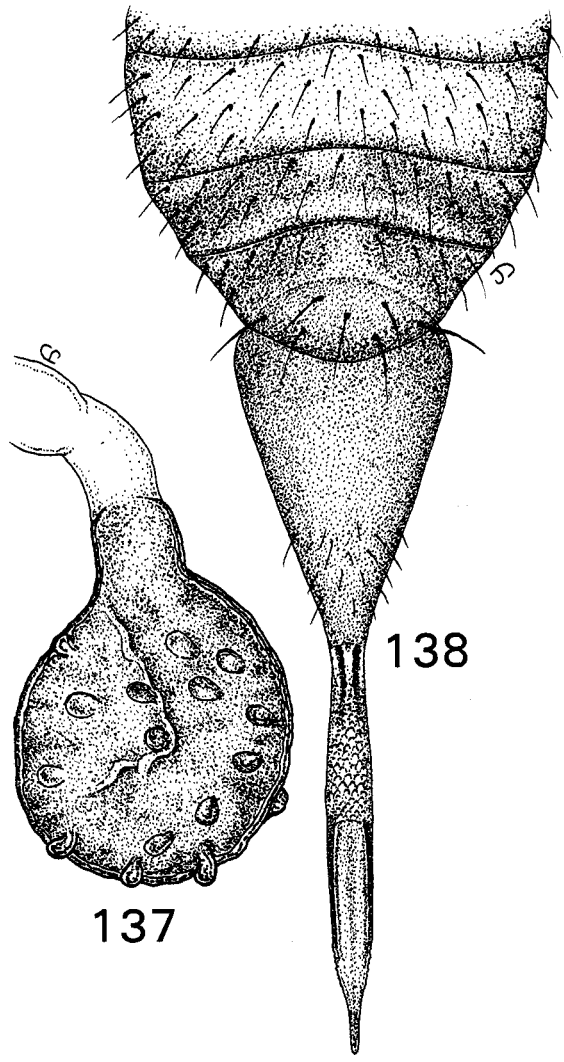
Genus ***Paraactinoptera***, gen. nov.

Type species: *Paraactinoptera collessi*, sp. nov.

Known only from type species.

Diagnosis

Fitting close to *Actinoptera* Rondani by having only 2 pairs of frontal bristles, 2 scutellar bristles and with 2 divergent brown rays in apex of cell r_5 (Fig. 139). Differs from *Actinoptera* by having 2 pairs of orbital bristles; cell sc nearly 2× longer than wide; vein R_1 ending at about middle of wing; vein Cu_2 bent outward so cell bcu ends in a short pointed lobe at lower apex; wing with prominent dark brown markings basal to r-m cross-vein and dorsocentral bristles situated distinctly before mesonotal suture. *Actinoptera* has only one pair of orbital bristles; cell sc is short, about as wide as long; vein R_1 ends considerably before middle of wing; vein Cu_2 is straight so that cell bcu is not developed into a lobe; wing subhyaline basal to r-m, no prominent brown markings and dorsocentral bristles near mesonotal suture. The stellate pattern of the wing markings, lack of apical scutellar bristles and head shape resemble *Trupanea* Schrank but *Paraactinoptera* differs by having only 2 frontal bristles, not 3.



Figs 137, 138. *Oedaspis* sp. 'E': *137*, ♀ spermatheca; *138*, ♀ abdomen and ovipositor.

Description

Head higher than long with frons sloping and gently rounded at junction of frons and face in lateral view. Face slightly concave with oral margin distinctly protruded (Fig. 140). Frons broad, about 2× wider than long measured from lower ocellus to lunule. Lunule prominent, in middle length subequal to length of second antennal segment. Antennae separated at bases by about half width of scape. Parafacial about 0·67× as wide as 3rd antennal segment, width of gena nearly 0·33× eye height. Frontal and ocellar bristles brown except for yellow-white upper superior fronto-orbitals. Other head bristles and setae yellowish to white. Thoracic bristles and setae yellow-white. Dorsocentrals anterior to suture. Mesonotum densely covered with recumbent scale-like setae. Scutellum bare on disk, sparsely setose on margin. Wings as above and as in Fig. 139.

Etymology

The name combines the Greek *para* 'near, by' with *Actinoptera*, referring to its close relationship.

Paraactinoptera collessi, sp. nov.

(Figs 139, 140)

Material Examined

Holotype. ♂, WA, 4 mi SSE of Minilya, 17.x.1970, D. H. Colless, ANIC.

Diagnosis

Differs from other known Tephritinae by the generic characters given above.

Description

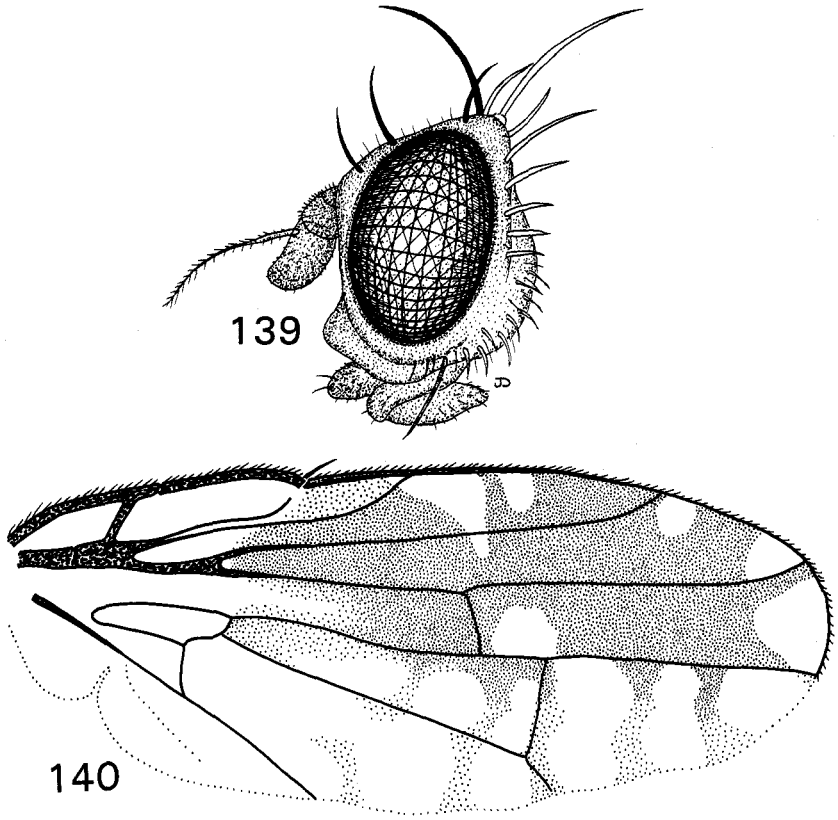
Male

Length. Body, 2·4 mm; wing, 2·5 mm.

Predominantly yellow in ground colour with tinge of brown over median portion of mesonotum and brown to black over basal portions of abdominal terga. Bristles yellow except for head as noted above, those around margin of tergum V slightly tinged with brown.

Head. As in Fig. 140. Third antennal segment half longer than wide, straight on dorsal margin, rounded at apex. Labellum fleshy, scarcely protruded beyond oral margin *in situ*.

Wings. As above and as in Fig. 139. Base hyaline to level of apex of cell bm. Largely dark brown anterior to vein M and including cell sc. With 2 hyaline marks from margin in



Figs 139, 140. *Paraactinoptera collessi*, sp. nov.: *139*, head; *140*, wing.

cell r_1 just beyond apex of vein R_1, with a round hyaline mark in upper apex of cell r_3 and a larger triangular mark in lower apex and apex of cell r_5 hyaline with 2 diverging brown rays extending to apices of veins R_{4+5} and M. A large isolated hyaline spot in base of cell r_5, with 2 narrow brown rays through middle of cell m and a brown ray to wing margin at base of m over cross-vein dm-cu. Cell dm brown along upper margin, with a brown preapical ray continuous to margin through cell cu and a faint indication of a brownish band near middle discontinuous with brownish markings in cell cu. Vein R_{4+5} bare and diverging slightly with M at apices. Cross-vein r-m separated by about its own length from cross-vein dm-cu.

Legs. Yellow, with yellow bristles and setae. No preapical bristlelike setae on hind femur.

Abdomen. Almost as wide as long, yellowish on apical portions and discoloured brown to blackish on basal 0·4 of terga. Genitalia yellow, not dissected for study.

Female

Unknown.

Etymology

The species is named after Dr D. H. Colless (ANIC).

Genus ***Parahyalopeza***, gen. nov.

Type species: *Parahyalopeza bushi*, sp. nov.

Diagnosis

Similar to *Hyalopeza*, gen. nov., by having vein Cu_2 vertical so cell bcu is not lobate or sharp pointed but fitting nearest to *Oedaspis* Hendel by having only 2 pairs of frontal bristles, r-m cross-vein about its own length from dm-cu and dark coloration of wing not continuous through basal cells. Differs by having a broad space bare of setae on upper side of vein R_1 opposite end of Sc; vein R_{4+5} setose above to just beyond r-m cross-vein; cell bcu not pointed at lower apex; wing mostly brown with pattern broken up by round hyaline spots on anterior margins and cell sc dark brown with 1 hyaline spot (Fig. 141).

Description

Head quadrate in shape, only slightly higher than long. Frons almost horizontal only gently sloping and face gently concave, slightly protruded on oral margin. Third antennal segment almost round, only 0·25–0·33× longer than wide. Gena about 0·67 as wide as 3rd antennal segment and parafacial narrow 0·25–0·2× width of 3rd. Frons about equal in width to one eye. Frontal, lower orbital and inner vertical bristles black, other head bristles and setae yellow-white except for 2 small dark coloured setae at lower edge of postorbital row and a few dark setae interspersed in postorbital row. Dorsocentral bristles just behind suture. Only 1 preapical anterodorsal bristlelike seta on hind femur and none on posterodorsal surface. Wings as in Fig. 141. Tergum VI of female slightly longer than tergum V and basal segment of ovipositor equal in length to terga V+VI. Aculeus comparatively broad, evenly tapered to point at apex (Fig. 144). Other details as described under species.

Etymology

From the Greek *para*, beside, nearby, combined with *Hyalopeza*, inferring relationship with that taxon.

Parahyalopeza bushi, sp. nov.

(Figs 141–144)

Material Examined

Holotype. ♂, Vic., Lilly Pilly Gully, Wilson's Promontory, 21.xii.1964, ex *Helichrysum dendroideum*, G. L. Bush, ANIC.

Paratypes. **Victoria**: Allotype ♀ (ANIC), 2♂, 1♀, same data as holotype; 2♂, 0·5 km W Junc., Apollo Bay, Colac Rd and Turtons Pass Rd, 9.iii.1965, No. 6519, G. L. Bush. Paratypes in ANIC, BPBM, UH.

This species was listed as 'NG. B sp. 2' by Bush (1966: 120).

Diagnosis

Differentiated from other Tephritinae by characters given above.

Description

Male

Length. Wing 3·52 mm; body 2·8 mm.

Head. Yellow, except for brown to black on ocellar triangle and upper median portion of occiput. Densely grey microtrichose on orbits and gena. Junction of frons and face forming an obtuse angle. Interfrontal area bare.

Thorax. Densely grey microtomentose and fine yellow setose, with a brown median vitta extending over mesonotum and scutellum. Bristles black except for yellow-white bristles on posterior notopleuron, lower anipisternum, anepimeron and katepisternum. Apical scutellar bristles comparatively small, less than half size of basal bristles.

Legs. Yellow, similar to other tephritines.

Wings. Rather slender, nearly 3× longer than wide. Basal costal cell hyaline. Costal cell subhyaline with 3 brown marks. Cell sc 0·67× as long as c and dark brown except for a prominent hyaline spot. Cell r_1 with 5 irregular hyaline marks along margin. Cell r_3 with 2 hyaline spots on margin and numerous tiny subhyaline spots scattered through cell. Cell r_5 dark brown except for few very faint subhyaline spots through cell. Cells m and dm brown with scattered subhyaline spots and cell cu broadly hyaline along margin and with few indistinct subhyaline spots along underside of vein Cu_1. Cross-vein r-m about its own length from dm-cu. Other details as in Fig. 141.

Abdomen. Rather densely brownish grey microtrichose and covered with subrecumbent yellow setae. Genitalia as in Fig. 142, surstylus blunt, curved inward at apex. Distiphallus rather heavily sclerotised, not expanded (Fig. 143).

Female

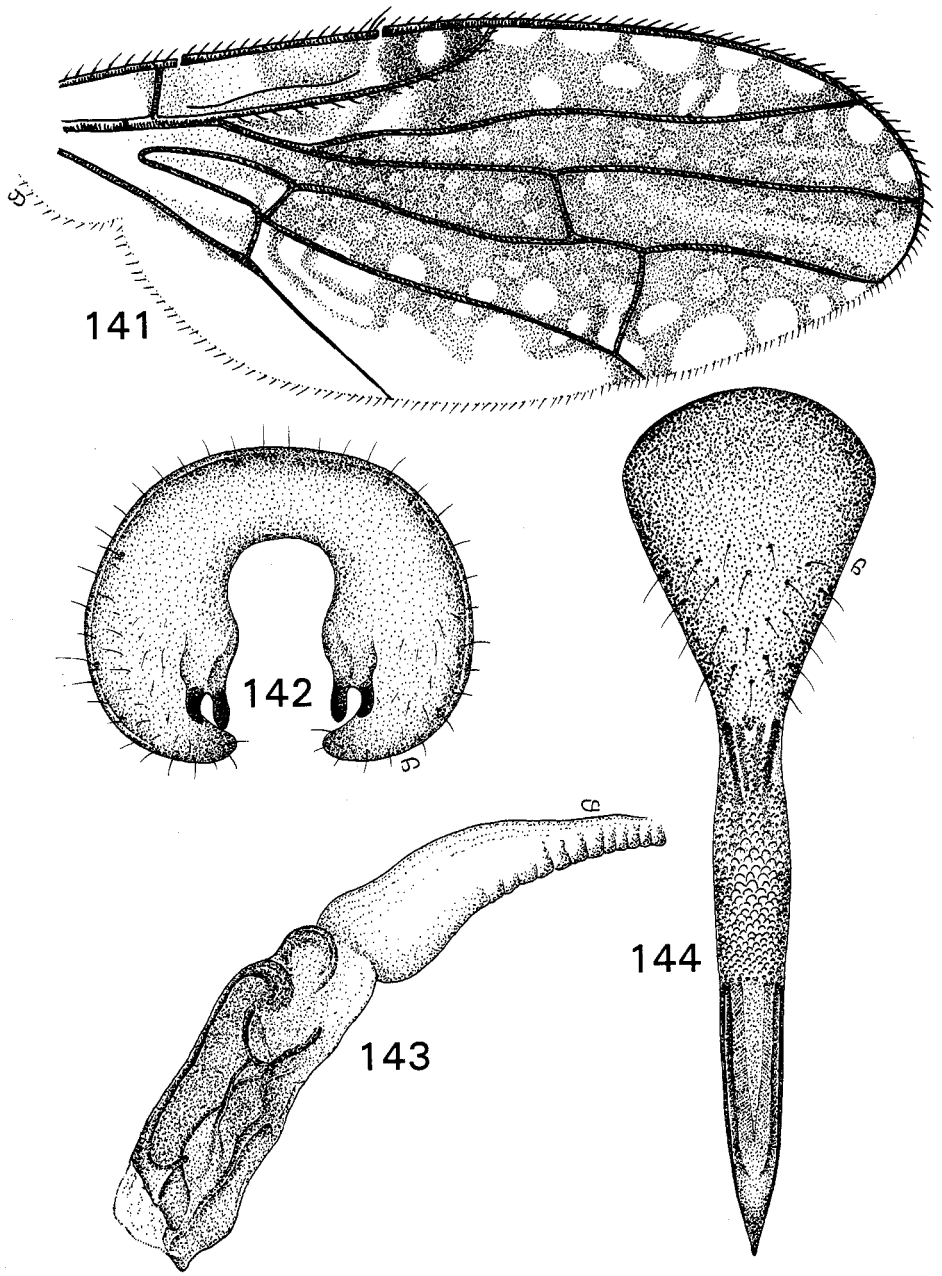
As in male and as noted under genus above and in Fig. 144, no evident preapical setae on aculeus. The spermathecae have not been studied.

Biology

'Ex' *Helichrysum dendroideum* (Asteraceae).

Etymology

The species is named after Dr G. L. Bush, University of Michigan.



Figs 141–144. *Parahyalopeza bushi*, sp. nov.: *141*, wing; *142*, ♂ surstyli and claspers; *143*, ♂ distiphallus; *144*, ♀ ovipositor.

Genus ***Paraspathulina***, gen. nov.

Type species: *Paraspathulina apicomacula,* sp. nov.

Diagnosis

Closely resembling *Spathulina* Rondani and differing by having 4, rather than 2 scutellar bristles; mesonotum rather sparsely covered with thin, sharp pointed setae, rather than

densely covered with flat, scalelike blunt setae; wing lacking an isolated hyaline mark in apex of cell c and cell r_1 with 2 hyaline marks (Fig. 145); 3rd antennal segment slightly pointed at upper apex (Fig. 146), rather than rounded and abdomen subshining, sparsely grey microtrichose.

Description

Head. Nearly quadrate with front gently sloped and face nearly straight with oral margin projected. Lower sides of face margin short setose. Proboscis capitate. Two frontal and 2 orbital bristles with upper bristle pale. Ocellars well developed, equal to or larger than orbitals. Third antennal segment about 1·5–2× longer than wide, slightly angulate at upper apex. Arista short pubescent.

Thorax. Black in ground colour except for yellow humerus and hind portion of notopleuron, densely grey microtrichose with yellow-white, thin, sharp pointed setae over mesonotum. Scutellum nearly bare, with few pale setae around apex. Dorsocentrals just slightly behind suture. Apical scutellars cruciate, scarcely over half size of basal bristles.

Wings. Broadly hyaline basad of apices of cells c, bm and bcu, with 2 large hyaline marks in cell r_1, 2 in cell m and with wing apex hyaline except for an isolated, brown spot at apex of cell r_3. Hind femur with 1 dorsal and 1 anterodorsal bristlelike preapical setae.

Abdomen. Subshining black, faintly grey dusted and with white recumbent setae over terga I and II. Tergum VI of female equal in length to tergum V. Ovipositor base and tergum VI polished black, bare of pollen. Ovipositor base thin, black setose and *in situ* nearly equal in length to terga IV–VI, with spiracular openings on venter near basal third of segment. Aculeus slender, sharp pointed (Fig. 149). Female spermathecae oval, gourd-shaped with a bent neck and covered with short spicules (Fig. 147). Male genitalia with surstylus blunt and distiphallus about 3× longer than wide and only slightly expanded (Fig. 148).

Etymology

The generic epithet is from the Greek *para*, beside or near, combined with *Spathulina* and refers to its close similarity to that genus.

Paraspathulina apicomacula, sp. nov.

(Figs 145–149)

Material Examined

Holotype. ♂, ACT, Black Mtn, 30.x.1968, light trap, I. F. B. Common, ANIC.

Paratypes. **Australian Capital Territory**: Allotype ♀ (ANIC), Black Mtn, 5.iii.1968, light trap, I. F. B. Common. Large number of specimens from the following localities: **Queensland**: Bunya Mtns Nat. Pk, 11–12.xii.1979, M. A. Schneider and G. Daniels; Inglewood, 1.ix.1925; Leslie Dam, 13 km W of Warwick, 6.i.1984, K. L. Walker; Brigalow Development Ave, Moura, 14.iii.1968, F. D. Page and L. Rigby [R 2288, 2317, 2351], 2.iii.196 and 19.ii.1966; 17 km S of Alpha, 11.xi.1974, R. Wicks and G. Waite; 50 km along Dalby-Moonie Rd, 21.xi.1985; Mt Glorious, Brisbane, 2–9.x.1986, Y. Basset; 15 km S of Charleville, 6.iv.1976, D. H. Colless; Illungnarra W/H, 90 km SSW of Urandangi, 16.x.1978, D. H. Colless. **New South Wales**: 60 km N Windsor, Putty Rd, 16.ii.1984, D. K. McAlpine, B. Day, D. Bickel; Mt Kaputar Nat. Pk, main road, 470–610 m, 20.i.1976, E. Schlinger; 5 km SW of Moonan Flat, 9.xi.1967, N. Dobrotworsky; Lachlan Rv., 15 km SW of Euabalong, 29.xii.1976, Z. Liepa; 15 km W of Lake Tandau, 10.iv.1979, B. J. Loudon; 16 km S of Tibooburra, 13.iv.1979, B. J. Loudon; 29 km NE Coonabarabran, 17.xii.1965, No. 65153, G. L. Bush; 12 km E Gol Gol, nr Mildura, 10.xi.1965, on *Solanum mauritianum* Scop., No. 65115, G. L. Bush; Wright's Lookout, New England Nat. Pk, 1250–1350 m, 20 and 29.x.1965, No. 6560, G. L. Bush; Narrabri, 17.iv.1961, M. I. Nikitin; Mootwingee Nat. Pk, 7.xi.1984, G. R. Brown and H. M. Holmes, Brewarrina, 1911, W. W. Froggatt; 10

mi W Wilcannia, 22.xi.1949, S. Paramonov; 37 km W of Condobolin, Cobar Rd, 27.xii.1976, Z. Liepa; 27 km E of Cobar, 22.ix.1975, Z. Liepa; 7 km N of Broken Hill, 30.iii.1975, Z. Liepa; 9 km and 20 km NW of Wilcannia, 23.ix.1975, Z. Liepa; 9·6 km W of Yerong Creek, Osborne Road, 11.iv.1971, Z. Liepa; Rutherford Creek, Brown Mtn, nr Nimmitabel, 14.xi.1976, M. A. Schneider and G. Daniels; Round Hill Fauna Reserve, 9.iv.1977, G. Daniels; Goonoo State Forest, 5 mi S Mendooran, 1–3.v.1970, D. K. McAlpine and G. A. Holloway. **Australian Capital Territory**: Canberra, 6.x.1936; Mt Gingera, 19.xi.1968, D. H. Colless; Black Mtn, 17.x.1960, 27.ii.1962, 14.i.1964, I. F. B. Common. **Victoria**: Mt Baw Baw, nr Tanjilbren, 1350 m, 30.xi.1964, No. 64132, G. L. Bush; Elphinstone, 1.xi.1964, No. 64108, G. L. Bush; Mt Hope, 1.ix.1946, R. T.; 38 km N Birchip, 29.x.1982, K. L. Walker; 17 km E Bendigo, 17.xi.1976, G. Daniels and M. A. Schneider; Lake Cullulleraine, W of Mildura, 26.xii.1966, Z. Liepa. **South Australia**: Antikootirrimna W/H, 36 km S of Abminga, 25.ix.1972, Z. Liepa; 91 km SE Coober Pedy, 22.xi.1977, J. A. L. Watson; 27°03′S, 134°22′E, 45 km NE of Welbourn Hill, 20.ix.1978, J. C. Cardale; 35 km N of Hawker, Flinders Ra., 1.x.1975, Z. Liepa; Wilpena Pound, Flinders Ra., 1.x.1975, Z. Liepa. **Western Australia**: 35·5 km W Coolgardie, 17.ix.1964, No. 6467, G. L. Bush; 26 km NW Norseman, 16.ix.1964, No. 6463, G. L. Bush; Kimberley Res. Stn, 5.v.1961, K. T. Richards; Millstream, 22.x.1970, D. H. Colless; 4 mi SSE of Minilya, 17.x.1970, D. H. Colless; 40 km SW of Madura, 31°59′S, 126°37′E, 11.x.1970, Upton and Feehan. **Northern Territory**: 53 km E of Alice Springs, 6.x.1978, at light, D. H. Colless; Amadeus Basin, 20.viii.1962, P. Ranford; 29 km N of Eridunda H.S., Stuart Hwy, 2.x.1972, Z. Liepa; Mt Hay Bore, Anburia HS, 23°24′S, 133°08′E, 5.xii.1968, A. O. Nicholls; 23°41′S, 134°15′E, 39 km E of Alice Springs, 25.ix.1978, J. C. Cardale; Milton Pk HS, 23°22′S, 133°00′E, 5.xii.1968, A.O. Nicholls; Entire Ck, 155 km ENE of Alice Springs, 13.x.1978, D. H. Colless; Roe Ck, 12 km WSW Alice Springs, 10.x.1978, D. H. Colless; 41 km and 56 km SE of Alice Springs, 4.x.1978, D. H. Colless; 39 km E of Alice Springs, 6.x.1978, D. H. Colless; 53 km NE of Alice Springs, 6.x.1978, D. H. Colless; 23°22′S, 133°48′E, 35 km NW Alice Springs, 2.vi.1978, J. C. Cardale. Paratypes in AMS, ANIC, BPBM, MSU, NMVM, NSWA, QDPI, UH, UQM.

Diagnosis

Differing from *P. eremostigma*, sp. nov., by having basal hyaline mark in cell r_1 confined to the cell and second hyaline mark ending in cell r_3; also with the brown transverse band through middle of cell cu continuous with the brown marking through cell dm (Fig. 145).

Description

Male

Length. Body and wing, each 2·8–3·2 mm.

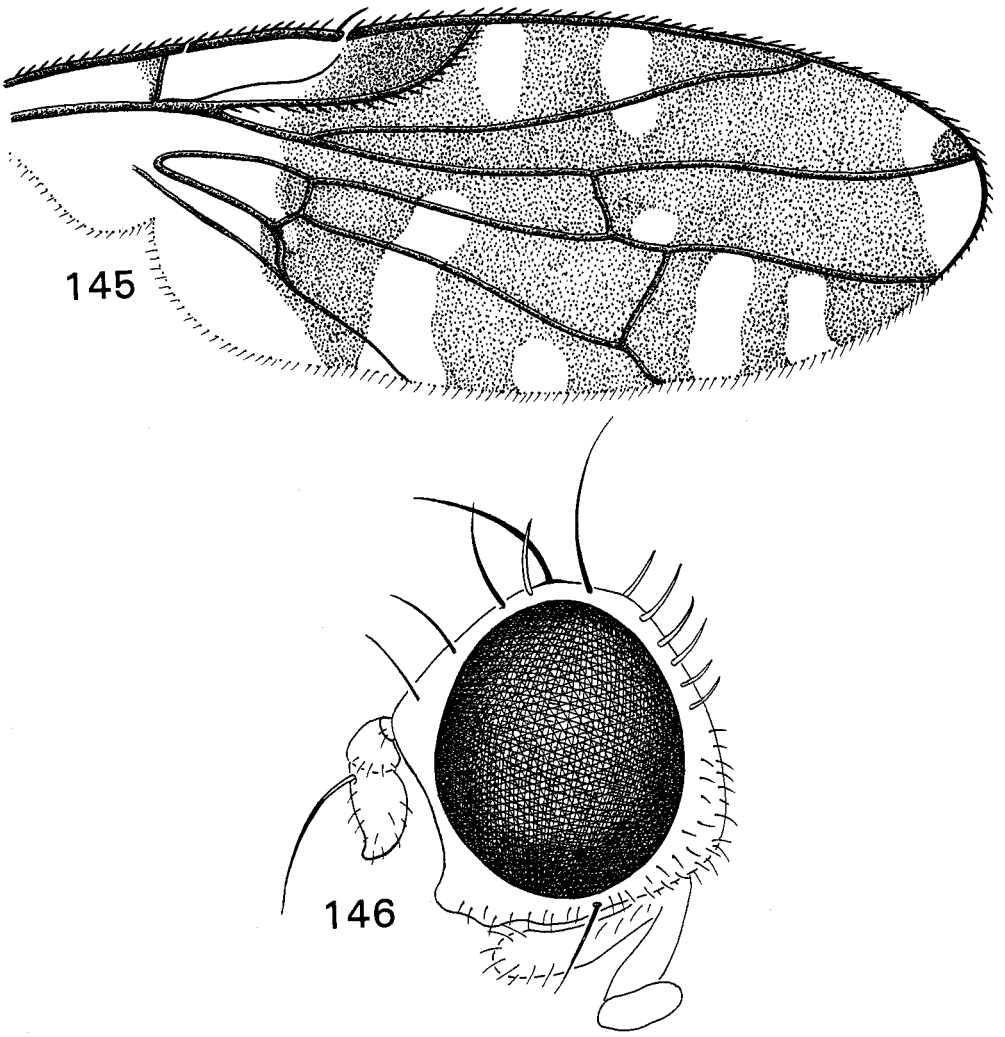
Head. Yellow except for compound eye, brown to black ocellar triangle and upper median portion of occiput and 2nd antennal segment tinged with brown. Parafacial narrow, about equal in width to 2 rows of eye facets. Gena 0·75–0·8× as wide as 3rd antennal segment (Fig. 146). Genal bristle yellow.

Thorax. Bristles dark brown to black except for white anepimeral and lower katepisternal. Scutellum yellowish on hind margin and venter.

Legs. Yellow.

Wings. As noted above and as in Fig. 145. First hyaline mark in cell r_1 confined to cell and second mark extending through most of r_3. Brown mark in apex of r_3 usually isolated, sometimes joined with brown marking in middle of wing. Hyaline marks in cell m confined to cell with a round isolated spot in r_5 beyond r-m cross-vein. Hyaline mark in cell cu confined to cell and mark from margin in apex of cell a extending transversely through cells cu, dm and br.

Abdomen. As noted above. Predominantly brown setose. Tergum V shining black, devoid of microtrichia. Sternum V about as long as wide, moderately concave on hind margin. Aedeagus bare, distiphallus comparatively large, almost equal in size to surstylus, moderately sclerotised (Fig. 148).



Figs 145, 146. *Paraspathulina apicomacula*, sp. nov.: *145*, wing; *146*, head.

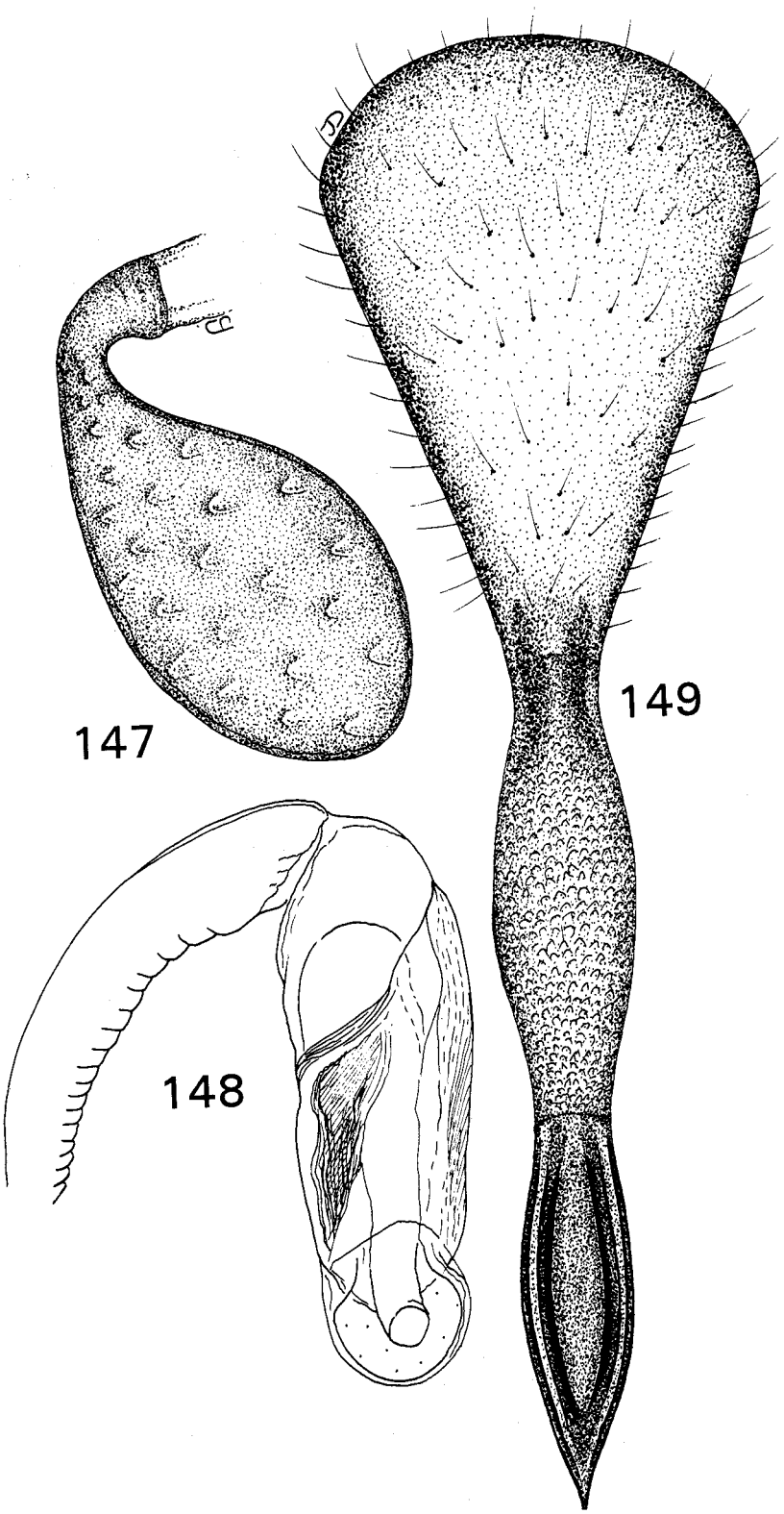
Female

Length. Body, excluding ovipositor, and wing 3·0–3·2 mm.

As in male. Tergum VI equal in length to tergum V. Basal segment of ovipositor shining black, brown setose and about equal in length to or slightly longer than terga V and VI. Apex of aculeus as in Fig. 149. Spermathecae spiculated, gourd shaped with curved necks (Fig. 147).

Etymology

The specific epithet is from the Latin *apex*, tip or top, and *macula*, spot or mark, referring to the brown spot at apex of wing.



Figs 147–149. *Paraspathulina apicomacula*, sp. nov.: *147*, ♀ spermatheca; *148*, ♂ distiphallus; *149*, ♀ ovipositor.

Paraspathulina eremostigma, sp. nov.

(Fig. 150)

Material Examined

Holotype. ♂, NSW, 40 km SE of Broken Hill, 28.ix.1975, Z. Liepa, ANIC.

Paratypes. **New South Wales**: Allotype ♀ (ANIC), same data as holotype. 92 paratypes from the following localities: **Queensland**: Cecil Plains, SE Qld, 1981–82, R. D. Rossiter; Stanthorpe, 3.x. and 10.xi.1923; 28 km S of Miles, 23.ix.1980, D. H. Colless. **New South Wales**: same data as holotype; 9 km and 20 km NW of Wilcannia, 23.ix.1975, Z. Liepa; Menindee Lakes, 26.ix.1975, Z. Liepa; 27 km E of Cobar, 22.ix.1975, Z. Liepa; Mootwingee Nat. Pk, 8.xi.1984, G. R. Brown and H. M. Holmes; 12 km E of Gol Gol, nr Mildura, 10.xi.1964, ex *Celmisia longifolia* Cass., No. 64115, G. L. Bush; 19 km W Euston, 10.xi.1964, ex *Leptorhynchos squamatus* (Lab.) Less., No. 64116B, G. L. Bush; 35 km N Bourke, 26.viii.1983, G. J. and A. Holloway. **Victoria**: Guthra, 26.ix.1964, No. 6479, G. L. Bush; 20 and 35 km W Coolgardie, 17.ix.1964, No. 6466 and 6467, G. L. Bush; nr Chiltern, 6.xii.1964, No. 64137, G. L. Bush; Mt Baw Baw, nr Tanhilbren, 1340 km, 30.xi.1964, No. 64132, G. L. Bush. **South Australia**: 29°29′S, 137°11′E, Lake Eyre South, 18.ix.1978, J. C. Cardale; 14 km W Port Augusta, 16.x.1964, No. 64105, G. L. Bush; 16 km N Peebinga, 12.xi.1964, ex *Helichrysum lacuminatum* DC, No. 64121, G. L. Bush; 29 km S Parachilna, 6.viii.1965, ex *Brachycome ciliaris* (Lab.) Less., No. 6537, G. L. Bush; 10 km SE Burra, 13.iii.1964, No. 6416, G. L. Bush; Aldinga Scrub, 3.xii.1989, R. Wharton; Adelaide, 2.xii.1989, R. Wharton; Purnong, 29.xii.1911, S. W. Fulton; Blanche Town, 26.xii.1966, Z. Liepa; Stockport, 22.ix.1950, HFL. **Western Australia**: Barrow I., 5.v.1982, C. N. Smithers; 28 km W Yalgoo, 2.ix.1981, ex malaise trap, G. A. Holloway; 5 km E Niaboolya Beach, Carnarvon, 12.ix.1981, coll. on Heath, L. P. Kelsey; 40 km SW of Madura, 31°59′S, 126°37′E, 11.x.1970, Upton and Feehan; 11 km NW Widgiemooltha, 16.x.1964, No. 6464, G. L. Bush. **Northern Territory**: 39 km E of Alice Springs, 5.x.1978, at light, D. H. Colless.

Paratypes in AMS, ANIC, BPBM, MSU, NHM, NMVM, NSWA, QDPI, TAMU, UH, UQM.

Diagnosis

Differs from *P. apicomacula*, sp. nov., by having the basal hyaline mark in cell r_1 extending to vein R_{4+5} and second hyaline mark extending to vein M; also with the transverse brown mark in middle of cell cua isolated by a large hyaline arch from hind wing margin, extending to vein R_{4+5} basal of r-m cross-vein (Fig. 150).

We find no other characters for separating these taxa.

Biology

Reared from flowers of *Brachycome ciliaris*, *Celmisia longifolia*, *Helichrysum lacuminatum* and *Leptorhynchos squamatus* (Asteraceae).

Etymology

The specific epithet is from the Greek *eremos*, solitary, combined with *stigma*, mark or spot. It refers to the isolated brown mark in cell cua.

Fig. 150. *Paraspathulina eremostigma*, sp. nov., wing.

Genus *Paroxyna* Hendel

Paroxyna Hendel, 1927*a*: 146.

Type species: *Trypeta tesselata* Loew, by original designation. Refer to White (1986: 151) for clarification of the type status.

Diagnosis

Fitting in the group of genera characterised by having 4 scutellar bristles; vein R_{4+5} bare except for a few setae at base; only 2 pairs of frontal bristles and upper orbital bristles white. Fits near *Tephritis* Latreille and some taxa may be difficult to differentiate without examining the male aedeagus. The diagnostic feature for *Paroxyna* is the presence of prominent setae or spicules at apex of the basiphallus (Fig. 152), rather than being bare. Usually the following characteristics will separate *Paroxyna* from *Tephritis*: mouthparts generally more elongate, distinctly geniculate, with labium in non-Australian species about equal in length to oral opening and labellum narrow, linear sided, usually not expanded, rather than with mouthparts comparatively short, capitate, not distinctly geniculate and labellum fleshy, scarcely extended beyond oral opening; wing predominantly dark brown with numerous round hyaline spots and non-Australian species usually with a prominent hyaline spot in cell sc, rather than with varying arrangements of hyaline marks in wing but usually with brown diverging lines through apex of r_5 forming a distinct apical fork; hind femur with 1 dorsal and 1 anterodorsal preapical bristlelike setae (Australian species), rather than usually lacking a preapical dorsal seta, and head about as high as long and with oral margin distinctly protruded in lateral view, rather than usually higher than long and oral margin gently protruded.

Description

Head. Shaped as noted above and as in Fig. 154, gently angulate at base of antenna, front sloping and face moderately concave and with antenna situated just above middle of head as seen in lateral view. Third antennal segment straight on dorsal margin, convex on ventral margin and slightly upcurved and subacutely pointed at dorsoapex. Arista short pubescent. Interfrontalia bare except for a few microscopic yellow setae. Mouthparts may be retracted into oral cavity and labium often obscured. In Australian species major thoracic bristles black except for white anepimerals. Dorsocentral bristles posterior to suture. Apical scutellars about 0·67× as long as basal bristles. Lower squama narrow, less than half as wide as upper. Wing pattern variable for known Australian species, as described under species and as in Figs 151, 153. Male aedeagus as in Fig. 152.

Biology

The larvae feed in the flowerheads of a wide assortment of Asteraceae.

Distribution

A large genus with about 150 species, widespread over much of the world. The genus is poorly developed in Australia; only two species have been seen.

Paroxyna infrequens, sp. nov.

(Figs 151–152)

Material Examined

Holotype. ♂, NSW, Branxton, 10.x.1940, on lucerne, C. R. W., NSWA.

Paratype. **Queensland**: 1♂, Brisbane, 3.x.1933, F. A. Perkins, UQM.

Diagnosis

Differentiated from the only other known *Paroxyna* from Australia by having wing mostly hyaline; with a small mark of brown in middle of cell c; 3 hyaline marks in cell r_1 approximate, evenly spaced and continuous with hyaline marks over wing to hind margin and cell m nearly all hyaline (Fig. 151).

Description

Male

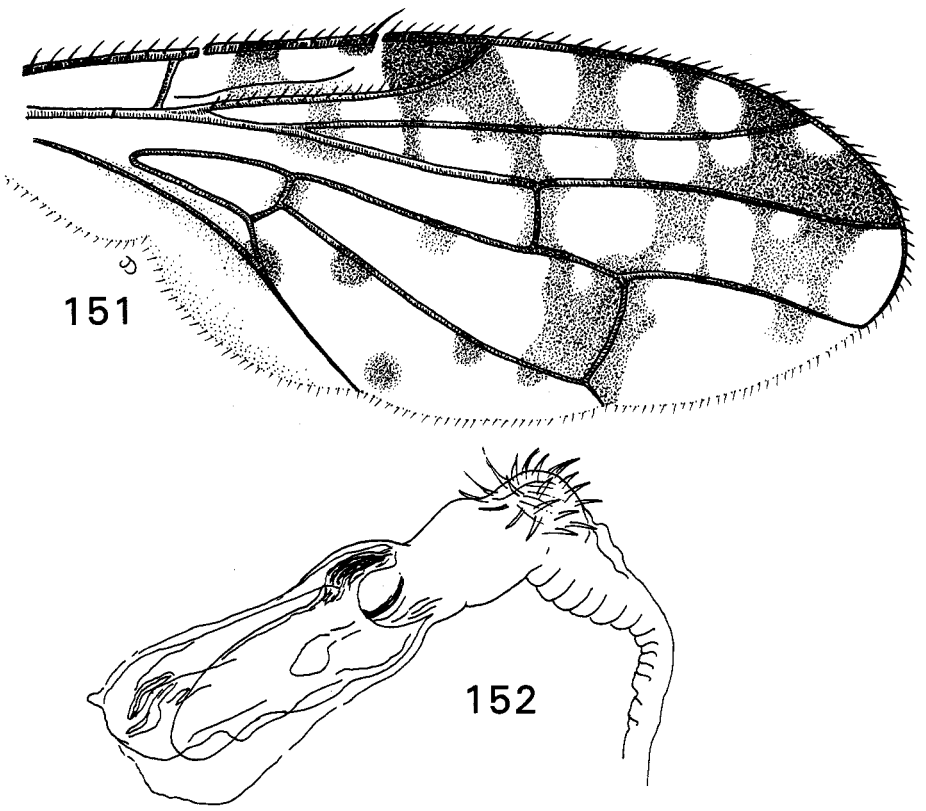
Length. Body and wing, each 3·2–3·4 mm.

Head. As in *P. orientalis*. Mouthparts not conspicuously elongate, labium about half as long as oral opening and labellum fleshy, about half as long as oral opening.

Thorax. As in *P. orientalis*, with 3 faint brown longitudinal vittae on mesonotum. Hind margin and venter of scutellum yellow, a dark brown spot surrounds each basal bristle and dorsum sparsely white pilose.

Legs. Yellow, hind femur with 1 preapical dorsal and 1 anterodorsal bristlelike seta.

Wings. As above and as in Fig. 151. Predominantly hyaline with scattered brown markings. Cell sc brown except for hyaline base. Apices of cells r_1 and r_3 brown except for isolated hyaline spot in upper apex of r_3. Cell r_5 broadly hyaline at apex continuous with hyaline area around posterior margin of wing. A narrow streak of brown over cross-vein r-m



Figs 151, 152. *Paroxyna infrequens*, sp. nov.: *151*, wing; *152*, ♂ distiphallus.

and a brown blotch extends over dm-cu. Four faint brown spots in cell cu and 1 at apex of cell bcu.

Abdomen. Densely grey microtrichose, white pilose with paired submedian basal brown spots on terga III–V. Apex of tergum V narrowly brown. Surstylus curved inward, brown to black at apex. Apex of basiphallus strongly spiculose and distiphallus heavily sclerotised (Fig. 152).

Female

Unknown.

Etymology

From the Latin *infrequens*, uncommon or infrequent.

Paroxyna orientalis (de Meijere)

(Figs 153–157)

Tephritis orientalis de Meijere, 1908: 130. Holotype ♂ in ZMUA.
Type locality: Samarang, Java.

Stylia apiciclara Hardy, 1973: 326. Holotype ♂ in BPBM.
Type locality: North of Dalat, Vietnam.

Material Examined

Queensland: 1♂, Iron Range, N Qld, 14.vi.1971, J. Feehan; 2♂, McIlwraith Range, NE of Coen, 29.vi.–5.vii.1976, J. F. Donaldson; 1♂, Coen area, 6–12.v.1975, at light, K. J. Houston; 10 specimens, Horn I., Torres Strait, 25.vii.1975, swept off herbs in woodland, H. Heatwole.

Diagnosis

Differing from other known species of *Paroxyna* by having cell sc entirely dark brown except for a narrow hyaline streak across base; hyaline spot filling apex of cell r_5; with numerous small hyaline spots through cells r_5 and r_3 and with a cluster of large confluent hyaline marks from posterior margin of wing through cells cu, dm and extending into br.

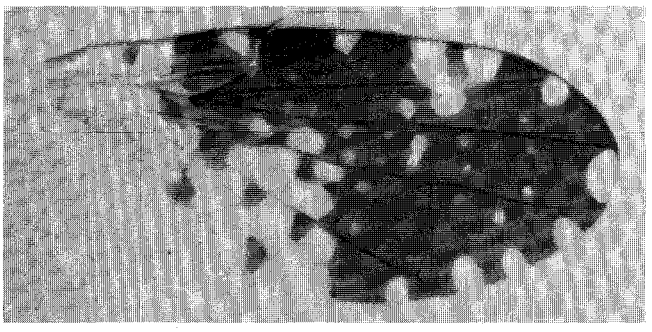


Fig. 153. *Paroxyna orientalis* (de Meijere), wing.

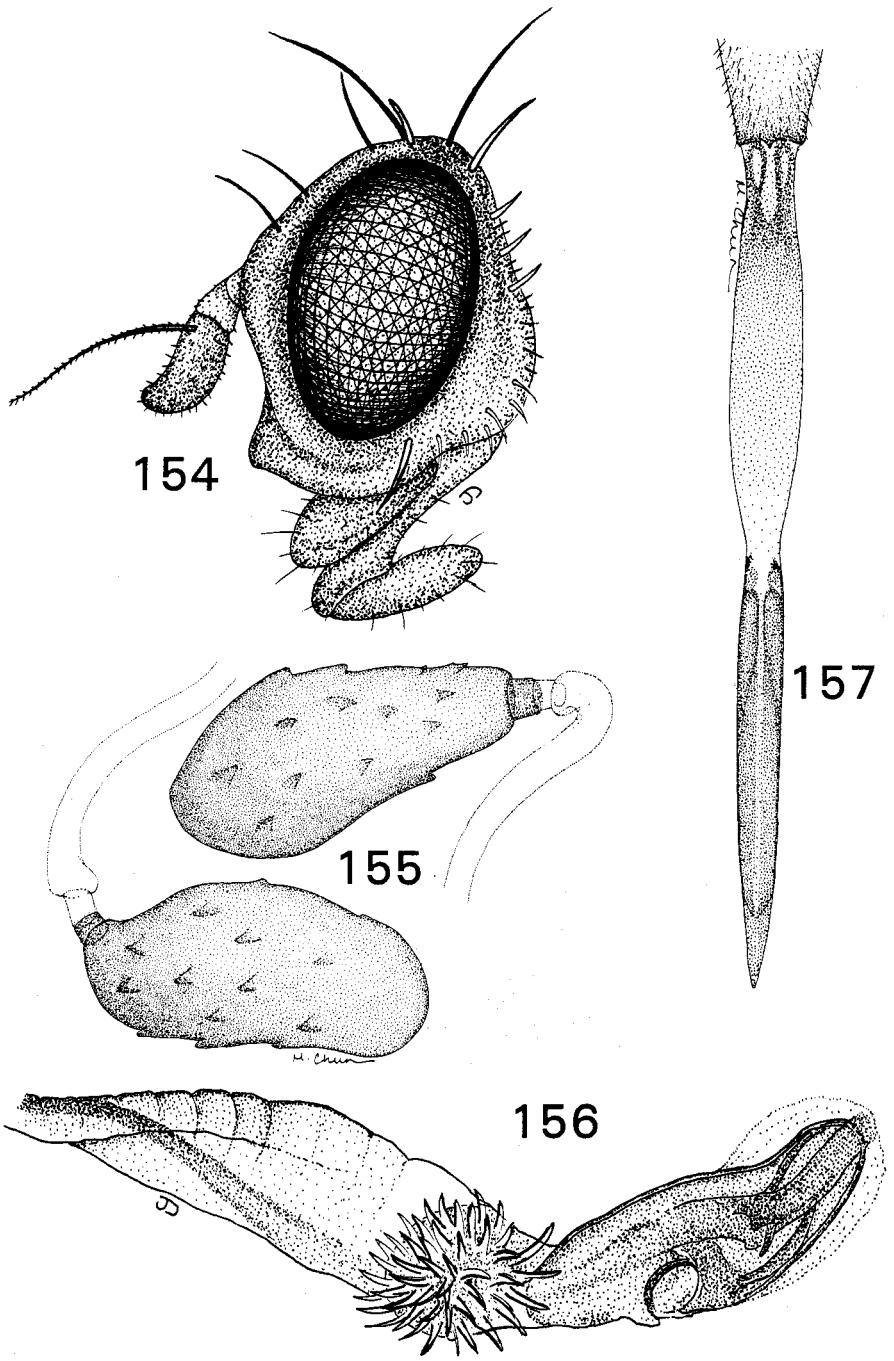
Description

Male

Length. Body and wing each 3·0–3·5 mm.

Head. Head and appendages yellow, yellow-white on sides of front, parafacials, gena and lower occiput, marked with brown to black on ocellar triangle and upper occiput.

Slightly higher than long with front gently sloping and face moderately concave with oral margin protruded. Antenna situated at upper third of head, bases approximate. Postocular area with short black setae interspersed among larger white setae. Front about as wide as long, very slightly narrowed anteriorly and with interfrontal area bare. Mouthparts distinctly geniculate (Fig. 154) with labium nearly equal in length to oral margin and labellum about 0·67× as long as oral margin.



Figs 154–157. *Paroxyna orientalis* (de Meijere): *154*, head; *155*, ♀ spermathecae; *156*, ♂ distiphallus; *157*, ♀ ovipositor.

Thorax. Mostly black in ground colour, yellow on humerus, notopleuron, broad dorsal apex of scutellum and top margin of anepisternum and anepimeron; densely grey microtrichose with 3 indistinct thin brown vittae on middle of mesonotum. Dorsocentral bristles slightly anterior to level of sa. Apical scutellar bristles 0·67 size of basal pair.

Legs. Yellow except for tinge of brown on basal 0·5–0·6 of mid and hind femora. Hind femur with 1 anterodorsal and 1 dorsal preapical bristles.

Wings. As noted above and as in Fig. 153. Predominantly brown with large brown mark in middle of cell c, occupying about 0·67 of cell, 3 hyaline marks in cell r_1, first 2 widely spaced and second and third forming a triangle with the hyaline spot in mid cell r_3, often with 2 large hyaline marks in r_3 opposite 2 marks in r_1. Cell m brown, with 3 hyaline spots on margin.

Abdomen. Yellow pilose, black in ground colour, grey microtrichose, with large paired submedian brown spots on terga III–V, tergum II narrowly yellow on sides of apex and tergum V narrowly yellow at apex. Sternum V gently concave on hind margin, about as wide as long. Surstylus tapered to sharp point at apex. Prensisetae visible from lateral view. Vanes of aedeagal apodeme widely forked. Apex of basiphallus densely setose, distiphallus as in Fig. 156.

Female

As in male. Basal segment of ovipositor mostly yellow tinged with brown at apex and at base, rather long, around equal to terga III–VI and with spiracular openings near basal third of segment. Aculeus evenly tapered to a sharp point at apex (Fig. 157). Two oblong spermathecae. (Fig. 155).

Distribution

Indonesia (Java); South-east Asia (Vietnam); Queensland, Australia. Recorded from Sri Lanka by Frey (1917: 19).

Genus ***Peneparoxyna***, gen nov.

Type species: *Peneparoxyna minuta,* sp. nov.

Description

This taxon resembles *Paroxyna* Hendel in many respects and would fit the previous concept of that genus which was based largely upon the length of the mouthparts. *Peneparoxyna* fits in the group of genera that has 4 scutellar bristles; head nearly quadrate in shape; with 2 frontal bristles; a gap in the setae on vein R_1 opposite end of Sc, vein R_{4+5} bare and mouthparts geniculate. Because of the elongate mouthparts it superficially resembles *Dioxyna* Frey and a few aberrant specimens of the latter have been seen that have rudimentary apical scutellar bristles but other characters indicate that these genera are not related. *Peneparoxyna* is differentiated from *Paroxyna* by the much more elongate mouthparts, with the labellum slender, linear sided, equal in length to oral opening (Fig. 159); having only 1 pair of orbital bristles; apex of male basiphallus bare; hind femur lacking preapical bristlelike setae; vein Cu_2 vertical, cell bcu not lobate or sharp pointed at lower apex; bristles of head and thorax yellowish or white, those of dorsum of thorax faintly tinged with brown, apical scutellars white and small, body 1·75–2·0 mm and wing 2·0–2·4 mm.

For other details refer to description of species.

Etymology

The name is from the Latin *pene*, almost or near, combined with paroxyna, referring to the similarity with that genus.

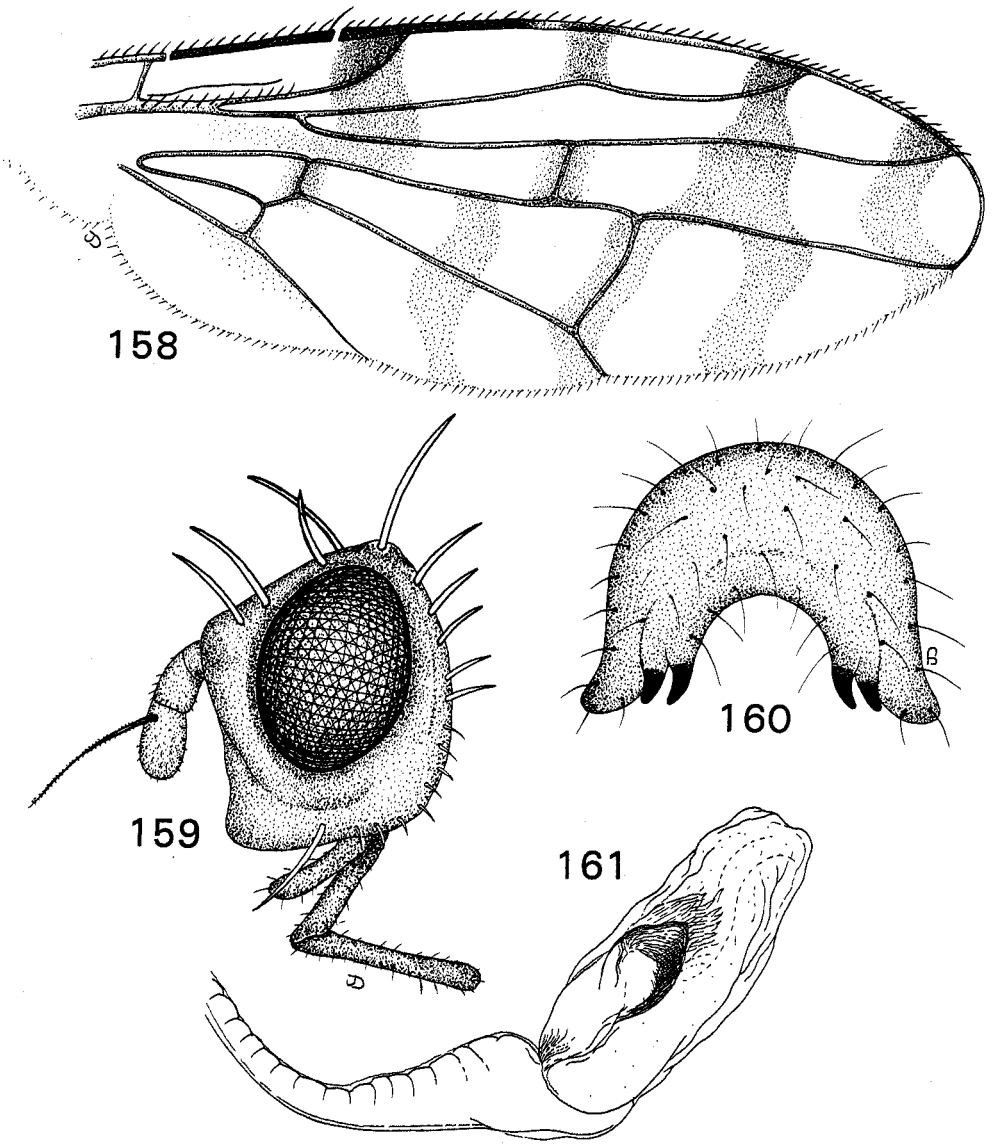
Peneparoxyna minuta, sp. nov.

(Figs 158–161)

Material Examined

Holotype. ♂, NSW, 27 km E of Cobar, 22.ix.1975, Z. Liepa, ANIC.

Paratypes. **New South Wales**: Allotype ♀ (ANIC), 1♂, Stephens Creek, 16 km N of Broken Hill, 28.iii.1975, Z. Liepa. **Northern Territory**: 2♂, Avon Downs, 10.iv.1976, on blossom, D. H. Colless. Paratypes in ANIC, BPBM.



Figs 158–161. *Peneparoxyna minuta*, sp. nov.: *158*, wing; *159*, head; *160*, ♂ surstyli and claspers; *161*, ♂ distiphallus.

Diagnosis

Differs from other known Tephritinae by the generic characters given above.

Description

Male

Length. Body 1·75–2·0 mm; wing 2·0–2·4 mm.

Head. Slightly higher than long, front gently sloping, face straight, only slightly produced on oral margin (Fig. 159). Antennal grooves shallow. Entirely pale yellow, ocellar triangle and a dark brown discoloration in upper median portion of occiput. Bristles pale yellow to white. Only 1 orbital bristle, lower orbital lacking. Interfrontal area bare. Parafacial narrow, about equal in width to 2 rows of eye facets. Gena subequal in width to third antennal segment. Third segment short and broad about half longer than wide, broadly rounded at apex.

Thorax. Black in ground colour except for yellow humerus and notopleural callus, densely grey microtrichose and covered with flattened subrecumbent white setae. Bristles of pleura, humerus, notopleuron and apical scutellars white and flattened. Bristles of dorsum of thorax, including basal scutellars, yellow with a faint tinge of brown. Dorsocentrals situated just behind suture. Apical scutellars about half as long as basal bristles.

Legs. Yellow, yellow-white setose. Front femur with a row of about 6 posteroventral bristles and with numerous erect flattened white setae over posterodorsal surface. No indication of preapical bristlelike setae on hind femur.

Wings. Predominantly hyaline with transverse brown markings as in Fig. 158. Basad of break in costa, wing hyaline except for pale brown spot covering base of vein A_1+Cu_2. With an incomplete transverse brown streak extending from cell sc through cells r_1 and r_3, evanescing in cell r_5 and continuing through cells dm and cu. One brown mark in middle of cell r_1 and 1 filling apex of cell and continuous transversely over wing to vein m, then diverging with 1 fork continuous to margin over dm-cu cross-vein; the other fork extends to margin through cell m. Apex of cell r_5 hyaline, set off by a crescent-shaped brown mark from upper apex of cell m curving across preapical portion of r_5 to margin in lower apex of r_3. A narrow brown mark extends over r-m cross-vein. Cell sc short, about 0·33× length of cell c. Vein R_1 with a gap in setae opposite end of Sc. Vein R_{4+5} bare. Cell bcu not lobate or sharp pointed at lower apex, vein Cu_2 transverse, not oblique. With black microtrichia over brown areas of wing.

Abdomen. Dark brown to black in ground colour, yellow on apical margins of terga II–V and with tergum VI and genitalia yellow. Abdomen grey microtrichose and pale yellow setose, setae flattened, sharp pointed and subrecumbent. Outer surstylus sharply pointed at lower apex (Fig. 160). Basiphallus bare, distiphallus slightly swollen with a rather large membranous area extending distally (Fig. 161).

Female

Length. Body, excluding ovipositor, 2·2 mm; wing 2·3 mm.

As in male. Tergum VI slightly longer than tergum V, apicomedian portion subshining pale yellow. Basal segment of ovipositor shining black on basal third, yellow on apical two thirds and about equal in length to terga IV–VI. Aculeus not extended for study.

Etymology

From the Latin *minutus*, little or small, referring to its small size.

Genus *Platensina* Enderlein

Platensina Enderlein, 1911: 454.
Type species: *Platensina sumbana* Enderlein, by original designation.

Tephrostola Bezzi, 1913: 153.
Type species: *Trypeta acrostacta* Wiedemann, by original designation.

Diagnosis

As previously discussed (Hardy 1988*b*: 43) we see no logical reason for retaining a tribe Platensinini; the shape of the head and wing are of only generic importance. Munro (1937: 7) and Hering used as their tribal character the downward curvature of the anterior portion of the frons, making a very obtuse angle at the junction of the face. It appears that this may be a dominant feature of species of the Afrotropical Region but is not reliable for the Oriental or Australasian fauna. Species we have examined have the frons straight or only slightly curved downward at apex as in other Tephritinae and the angle of the junction of the frons and face is subacute.

Platensina fits in a group of genera that have vein R_{4+5} setose above to beyond r-m cross-vein and wings comparatively broad, about 2× longer than wide and predominantly dark brown with comparatively few scattered hyaline spots. It is differentiated from other Australian Tephritinae by the broad rounded wings and unique wing markings (Fig. 162).

Description

Head about as high as long with frons gently sloping but level or nearly so and face vertical or nearly so, oral margin only slightly projected. Lower lateral margins of face with short, fine setae. Third antennal segment short and rounded, about half length of face and 1·5× longer than wide. Arista pubescent. With 3 frontal and 2 orbitals, with lower orbitals paler in colour than uppers and moderately well developed ocellars. Four scutellar bristles except in *P. zodiacalis* (Bezzi). Wing markings and shape distinctive as in Fig. 162. Cell sc 0·5–0·66× as long as c and cross-vein r-m beyond middle of cell dm. Cell bcu acutely pointed, developed into a short lobe. No break in the setae on vein R_1 opposite end of Sc. Vein R_{4+5} setose above over most of its length. Mesonotum densely grey microtrichose, often with a brown spot at bases of bristles and covered with pale yellow to white, flattened, recumbent setae. Scutellum sparsely setose. Dorsocentral bristles slightly in front of and level with supraalars. Abdomen mostly subshining black, lightly grey microtrichose and covered with fine dark coloured setae. Tergum VI of female equal to or slightly longer than tergum V with 2 rather elongate, usually spinose, spermathecae. Male surstylus broad and blunt and distiphallus about 2× longer than wide and only slightly expanded (Fig. 165).

Distribution

Four species presently known from Australia. According to Hancock (1986: 17), all African species of *Platensina* breed in flowers of Acanthaceae. This has not been confirmed for Oriental or Australasian species.

Key to Known Species of *Platensina* from Australia

1. Four scutellar bristles 2
   Only basal scutellars present; widespread over Oriental Region, Maluku, N Australia ..... *P. zodiacalis* (Bezzi)
2. Wing with 1 or 2 large narrow hyaline marks in cell r_1 just beyond apex of vein R_1; a small hyaline spot in apical portion of r_1; a large hyaline spot in apex of r_5 and several small hyaline spots over middle of wing (Figs 162, 168) 3
   One large broad hyaline mark in r_1; apex of wing hyaline, from lower apex of r_3 through r_5 and upper apex of m; middle of wing brown, lacking hyaline spots (Fig. 167); N Qld ..... *P. parvipuncta* Malloch

3. Basal segment of female ovipositor about equal in length to terga IV–VI; basal cells of wing extensively marked with brown; with 2 hyaline spots on margin in cells m and cu (Fig. 162); widespread over Oriental Region, New Guinea, Solomon and Admiralty Is, Qld .... *P. amplipennis* (Walker)

Basal segment of ovipositor about 1·5× longer than tergum VI; basal cells hyaline and 3 hyaline spots on margin in cells m and cu (Fig. 168); Qld ..... *P. trimaculata*, sp. nov.

Platensina amplipennis (Walker)

(Figs 162–166)

Trypeta amplipennis Walker, 1860: 159. Holotype ♀ in NHM.
Type locality: Makassar (Ujung Padang) Sulawesi, Indonesia.

Platensina platyptera Hendel, 1915: 461. Holotype ♀ in TMB.
Type locality: Taihorin, Taiwan.

Platensina malaita Curran, 1936: 29. Holotype ♀ in CAS.
Type locality: Malaita I., Solomon Is.

Platensina dubia Malloch, 1939*a*: 459. Holotype ♀ in ANIC.
Type locality: Gordonvale, N Queensland.

Platensina dilatata Hering, 1941*b*: 63. Holotype ♂ in TMB.
Type locality: Astrolabe Bay, Papua New Guinea.

Material Examined

Nine specimens from the following localities in **Queensland**: Iron Range, 14.vi.1971, J. Feehan; Gordon Creek Area, Claudie Rv. District, 24.vi.1982, G. Daniels and M. A. Schneider; Normanton, swept nr swamp, 19.v.1976, I. R. Bock; Paluma Range, 22.iv.1984, S. J. Johnson; 16°30′S, 144°55′E, Desailly Ck, 10 km NW of Mt Carbine, 19.v.1981, at light, D. H. Colless; McIlwraith Range, Coen, 29.vi.–5.vii.1976, J. F. Donaldson; 23 km N of Yeppoon, 31.x.1975, I. D. Galloway; 5 km S of Byfield, 28.i.1975, B. K. Cantrell.

Diagnosis

Closely resembling *P. zodiacalis* (Bezzi) except for having well-developed apical scutellar bristles. Appears closely related to *P. euryptera* (Bezzi) but differs by having conspicuous hyaline spots in middle of wing and in cell cu.

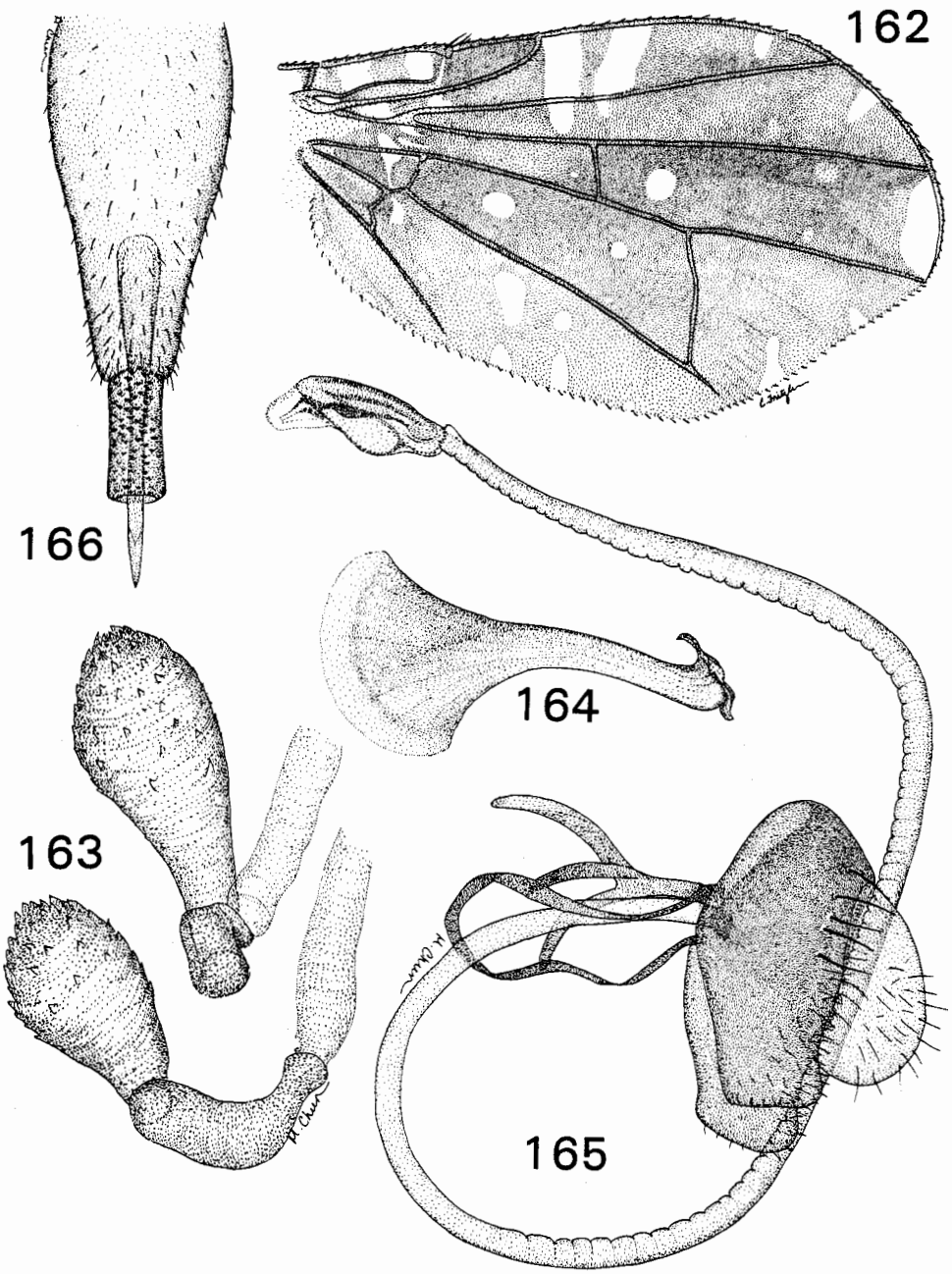
Description

Length. Body and wing each 4·0–4·5 mm; wing average 4·2 mm long by 2·7 mm wide.

Fitting characteristics of most species of *Platensina*, and as described under *P. zodiacalis*, but with apical scutellar bristles about half the size of basal bristles. Wings with 2 hyaline spots in cell c; cell sc all brown; cell r_1 with 2 hyaline wedges just beyond apex of vein R_1 and a small spot near apex; 1 or 2 large narrow spots on margin in r_3; a large spot fills most or all of apex of r_5; 2 spots on margin in m and 2 or more in cu; 3 spots in middle of wing, 1 in r_5 beyond r-m cross-vein and 2 in dm and often a tiny spot in r_5 just basal of r-m (Fig. 162). Mesonotum black in ground colour, densely grey microtrichose and usually with 3 pale brown longitudinal vittae. Abdomen subshining dark brown to black, black setose and yellow on sides of terga I and II. Male genitalia as in Figs 164, 165, cerci higher than long and surstylus blunt. Distiphallus about 2× longer than wide (Fig. 165). Basal segment of female ovipositor about equal in length to terga IV–VI. Spiracular openings at basal third of basal segment. Aculeus slender, needlelike (Fig. 166). Spermathecae tuberculate with curved necks (Fig. 163).

Remarks

Considerable variation in wing markings is apparent and what we consider to be *P. amplipennis* may be a complex of species but no reliable characters have been found to separate these. *P. euryptera* Bezzi may prove to be a synonym of *P. amplipennis*.



Figs 162–166. *Platensina amplipennis* (Walker): *162*, wing; *163*, ♀ spermathecae; *164*, ♂ ejaculatory apodeme; *165*, ♂ genitalia; *166*, ♀ ovipositor (retracted).

Distribution

Widespread over Oriental Region; Australia, Queensland; Micronesia; Northern Marianas; New Guinea and Solomon Islands.

Platensina parvipuncta Malloch

(Fig. 167)

Platensina parvipuncta Malloch, 1939*a*: 458. Holotype ♂ in ANIC.

Type locality: Cairns, N Queensland.

Diagnosis

Differing from other known species of *Platensina* by having apex of wing hyaline from lower apex of cell r_3, through r_5 into upper apex of m, and cell r_1 with only 1 large hyaline mark.

Description

Length. Length 5·0 mm.

Apparently fitting the characteristics of other *Platensina* but with legs brownish yellow rather than pale yellow. Wing as noted above and as in Fig. 167, lacking hyaline marks in middle. Thoracic bristles yellowish, apical scutellars short. Abdomen shining black, yellowish at base. For further details refer to original description.

Distribution

Known only from the type male.

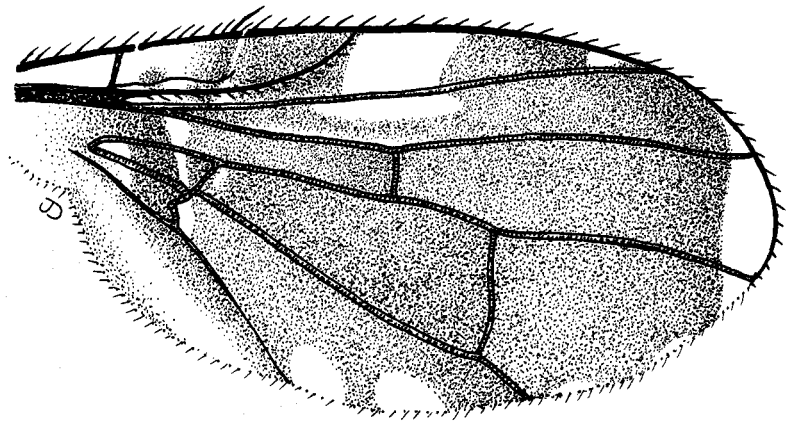


Fig. 167. *Platensina parvipuncta* Malloch, wing.

Platensina trimaculata, sp. nov.

(Figs 168, 169)

Material Examined

Holotype. ♀, Qld, 18°05′S, 144°52′E, 52 km SSW of Mt Garnet, 700m, 28.v.1977, I. F. B. Common and E. D. Edwards, ANIC.

Paratypes. **Queensland**: Allotype ♂ (AMS), Forty Mile Scrub, 64 km SW of Ravenshoe, 8.i.1976, D. K. McAlpine; 1 ♀, Townsville, date not legible and collector not given (BPBM).

Diagnosis

Differing from *P. amplipennis* (Walker) by the basal segment of the ovipositor being short, about 1·5× longer than tergum VI rather than equal in length to terga IV–VI; wing

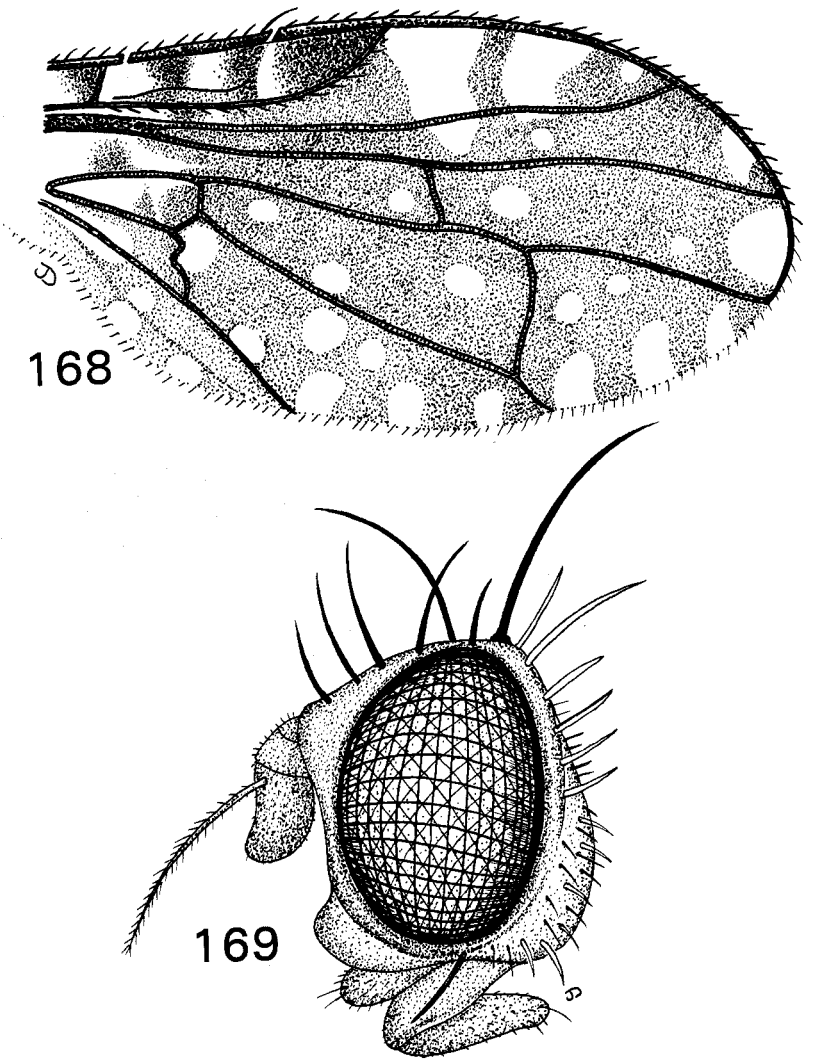
with 3 hyaline spots on margin in cells m and cu, rather than 2 spots on margin in these cells, and with basal cells hyaline, rather than mostly brown.

Description

Male

Length. Body 3·6 mm; wing 3·3 mm.

As in female but terga III and IV narrowly yellow at apices and a narrow yellow longitudinal vitta down middle. Tergum V subshining dark brown to black except for yellow apex and short wedge of yellow on apicomedian portion. Genitalia yellow, not relaxed for study.



Figs 168, 169. *Platensina trimaculata*, sp. nov.: *168*, wing; *169*, head.

Female

Length. Body 3·6 mm; wing 4·0 mm.

Head. Higher than long with frons moderately sloping, face gently concave and antennae situated near middle of head as seen in side view (Fig. 169). Occiput, at widest point, about 0·33× width of compound eye. Bristles yellow tinged with brown except for white postocellar, postocular and outer verticals. Interfrontal area with scattered fine yellow setae. With a pale brown spot on each side of upper face opposite bases of antennae.

Thorax. Ground colour black on dorsum, yellow on sides and on humeri and venter of scutellum. Bristles of dorsum yellow tinged with brown, those on pleura pale yellow. Mesonotum and scutellum densely grey microtrichose and fine yellow, subrecumbent, setose, a faint indication of brown vittae on anterior portion of mesonotum and a small black ring present at base of each mesonotal and scutellar bristle. Apical scutellars about 0·4× as long as basal bristles.

Legs. Yellow. Posteroventral bristles of front femur yellow, tinged faintly with brown. Hind coxa with moderate (equal in length to coxa) yellow-brown anteroventral bristle.

Wings. Basal cells hyaline to level of bm-cu. Cell bc hyaline, with small spot of brown on h cross-vein, second costal cell hyaline except for a narrow brown cross-band in middle. Cell sc brown with a prominent hyaline mark at base. Two hyaline wedges extend through cell r_1, continuous into r_3. Cells r_1 and r_3 with prominent hyaline preapical spots on margin. Cell r_5 with 1 hyaline spot basally close to r-m cross-vein and 2 spots distally, 1 a large mark filling apex. Cell m with 3 hyaline spots on margin and 2 in field. Cell dm with 3 hyaline spots and cell cu with 5–6 hyaline spots (Fig. 168). Vein R_{4+5} setose to level opposite apex of R_{2+3}.

Abdomen. Terga I and II yellow, terga III–V brown with a faint narrow yellow vitta down middle. Tergum VI and basal segment of ovipositor subshining dark brown. Vestiture consisting of thin, subrecumbent brown to black setae. Terga I–V thinly grey microtrichose.

Female

As for male. Tergum VI subequal in length to tergum V and basal segment of ovipositor *in situ* about 1·5× length of tergum VI. The aculeus has not been extruded and spermathecae not seen.

Platensina zodiacalis (Bezzi)

(Figs 170–175)

Tephritis zodiacalis Bezzi, 1913: 163. Holotype ♀ in ZSIC.
Type locality: Calcutta, India.

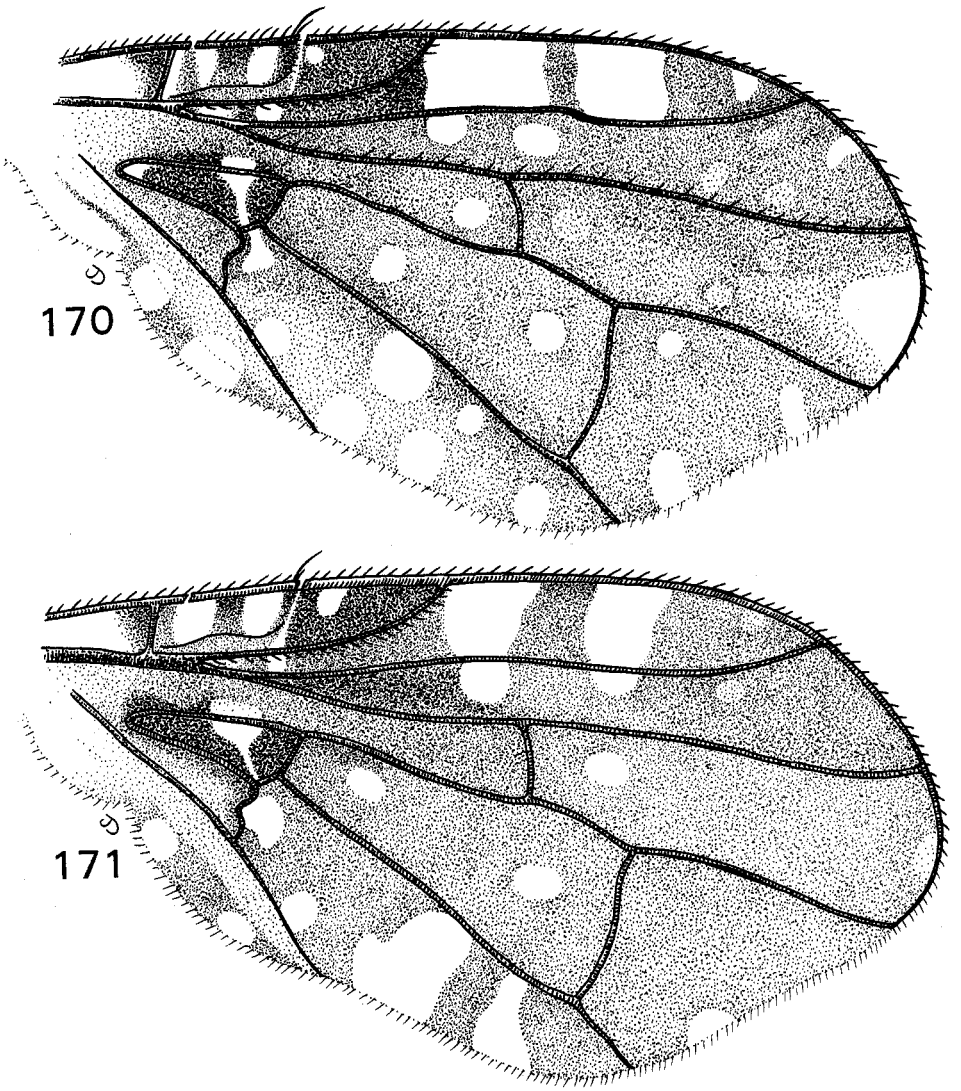
Platensina zodiakalis Hering, 1956: 69. Incorrect subsequent spelling.

Material Examined

One each from nr Deeral, Queensland, 24.vi.1949, N. L. H. Krauss; Iron Range, N Qld, 14.vi.1971, J. Feehan; Nourlangie Ck, 8 km N of Mt Cahill, Northern Territory, 17.vi.1973, D. H. Colless.

Diagnosis

Differs from all known *Platensina* by having only basal scutellar bristles, the apical pair completely lacking. Closely resembles *P. amplipennis* (Walker) and we are unable to find any diagnostic characters that will separate these taxa other than the presence or absence of apical scutellar bristles. There appear to be differences in the shapes of the male distiphallus (Fig. 174) and the female spermathecae (Fig. 173) but inadequate material has been available for study to ascertain the reliability of these features.



Figs 170, 171. *Platensina zodiacalis* (Bezzi), wings showing colour variation.

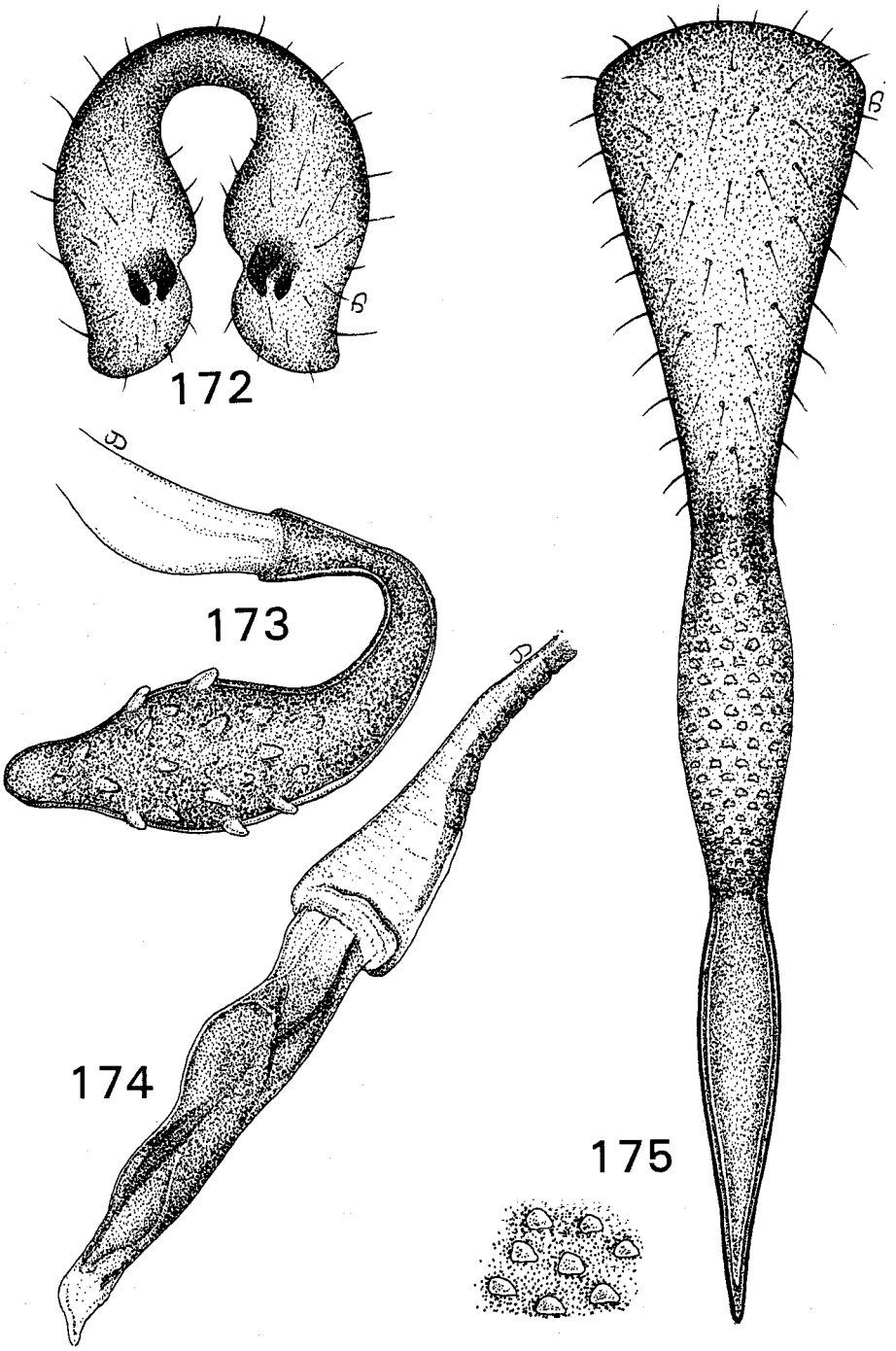
Description

Length. Body and wing 4·0–4·7 mm; width of wing 2·5 mm.

Head. Yellowish to rufous except for the compound eyes and ocellar triangle and a faint brownish discoloration in ground colour along the fronto-orbital plates. Interfrontal area with scattered, short yellow setae and with a brown spot on each side of upper frons opposite bases of antennae.

Thorax. Predominantly black in ground colour over dorsum and postnotum, yellow on pleura, margin and venter of scutellum. Densely grey microtrichose over dorsum, sometimes with faint indications of brown vittae on anterior half of mesonotum. Mesonotum rather densely covered with subrecumbent, flattened yellow to white setae. Scutellum sparsely yellow setose.

Wings. Shape and markings similar to those of *P. amplipennis*, with 2 wedge-shaped hyaline marks in cell r_1 just beyond apex of vein R_1 and a small hyaline spot near apex of r_1; with a small hyaline spot on margin in r_3 and a large spot in apex of r_5 and other markings as in Figs 170, 171.



Figs 172–175. *Platensina zodiacalis* (Bezzi): *172*, ♂ surstyli and claspers; *173*, ♀ spermatheca; *174*, ♂ distiphallus; *175*, ♀ ovipositor and scales.

Abdomen. Varying in coloration from mostly black except for yellow basal terga to yellow to rufous except for black tergum V in male and tergum VI and apex of V in female. Male surstyli broadly rounded at apices (Fig. 172). Distiphallus comparatively slender, membranous at apex (Fig. 174). Basal segment of female ovipositor shining dark reddish brown to black almost equal in length to terga IV–VI; spiracular openings situated at basal quarter of segment. Aculeus slender, sharp pointed (Fig. 175). Spermathecae spiculose, pointed at apices (Fig. 173).

Remarks

Considerable variation is apparent in wing markings as seen in Figs 170, 171.

Distribution

Widespread over Oriental Region, Maluku and northern Australia.

Genus ***Procecidochares*** Hendel

Procecidochares Hendel, 1914: 91.

Type species: *Trypeta atra* Loew, by original designation.

Description

Differentiated from other tephritines with the swollen scutellum by having only one pair of orbital and 3 pairs of frontal bristles and wing with a broad transverse hyaline band distal of cross-veins. In the latter regard it is similar to *Oedaspis goodenia* from which it differs by the transverse band broadened posteriorly, with a complete sub-basal hyaline band from posterior margin through cells cu, dm and bm and no hyaline mark through apex of cell cu (Fig. 176); frons bare, mesonotum polished black except for median longitudinal grey stripe, and abdomen subshining dark brown to black covered with flattened, rather scalelike yellow-white setae and with dense silvery grey fasciae on some of the abdominal terga. For more detailed description refer to Aldrich (1929), Foote (1980: 42) and Foote *et al.* (1993).

Distribution

Procecidochares, a New World genus represented in Australia by one species introduced for biological control of the weed *Agaratina* (= *Eupatorium*), is readily recognised by the characters given above.

Procecidochares utilis Stone

(Figs 176–180)

Croften weed fly

Procecidochares utilis Stone, 1947: 97. Holotype ♀ in USNM.

Type locality: Cuernavaca, Mexico.

Material Examined

Approximately 60, from the following localities. **Queensland**: 8 km S Canungra, 5.xi.1965, No. 6571, G. L. Bush; Sherwood, x-xi, reared from larva on *Senecio madagascariensis*, D. Sparks. **New South Wales**: Ashton Pk, nr Mosman, 16.xii.1959, sweeping in costal brush, M. Nikitin; Narrabeen, 1–6.xii.1972, E. A. Fonseca; Newport, 14.x.1972, E. A. Fonseca. **South Australia**: 14 km W Port Augusta, 16.x.1964, No. 64105, G. L. Bush.

Diagnosis

Readily differentiated from other Australian Tephritinae by the generic characters above.

Fitting in the *P. anthracina* complex of species by having 2 pairs of dc bristles. Very near *P. alani* Steyskal which breeds in *Agaratina riparia* Regel and except for rather minor differences in the postabdomen the only distinguishing character seems to be that the hyaline mark in apex of cell r_3 ends at vein R_{4+5} (Fig. 176) rather than continuous through about half of cell r_{4+5}. Steyskal (1974) describes and figures differences in the shapes of the female ovipositor, spermathecae, egg and male genitalia.

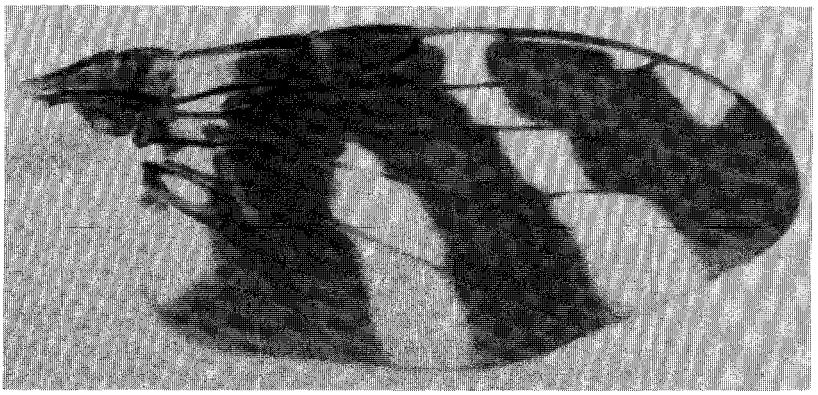


Fig. 176. *Procecidochares utilis* Stone, wing.

Description

Male

Length. Body and wing each 3·75–4·3 mm.

Head. Higher than long, frons strongly sloping and antenna near middle of head. Face nearly vertical, oral margin slightly protruded. Three pairs of frontal and only 1 pair orbital bristles. Third antennal segment broadly rounded, about half longer than wide. Parafacial about half as wide as 3rd segment and gena about equal in width to 3rd.

Thorax. Densely grey pollinose over pleura and postnotum and a broad strip down middle of mesonotum to just beyond prescutellar bristles, extending a short way along each side at suture. Grey areas of thorax covered with white scalelike setae except for postnotum. Sides of mesonotum, scutellum and subscutellum polished black, bare except for small clump of white scales near supraalar bristle and a line on each side from posterior margin of microtrichose area to posterolateral margin of mesonotum. One pair dorsocentral bristles posterior to suture, no presutural bristles.

Legs. Mostly yellow-orange with discolorations of brown to blackish on femora. Bristles of pleura white, those of dorsum black. Scutellum strongly swollen, bare, with 4 bristles.

Wings. With a complete hyaline band extending diagonally across preapical portion from margin near base of cell r_1 to posterior margin in middle of cell m. Other characters as noted above and in Fig. 176.

Abdomen. Subshining dark brown to black covered with white scalelike setae. Male surstylus blunt, curved inward at apex (Fig. 177). Distiphallus slightly enlarged (Fig. 179).

Female

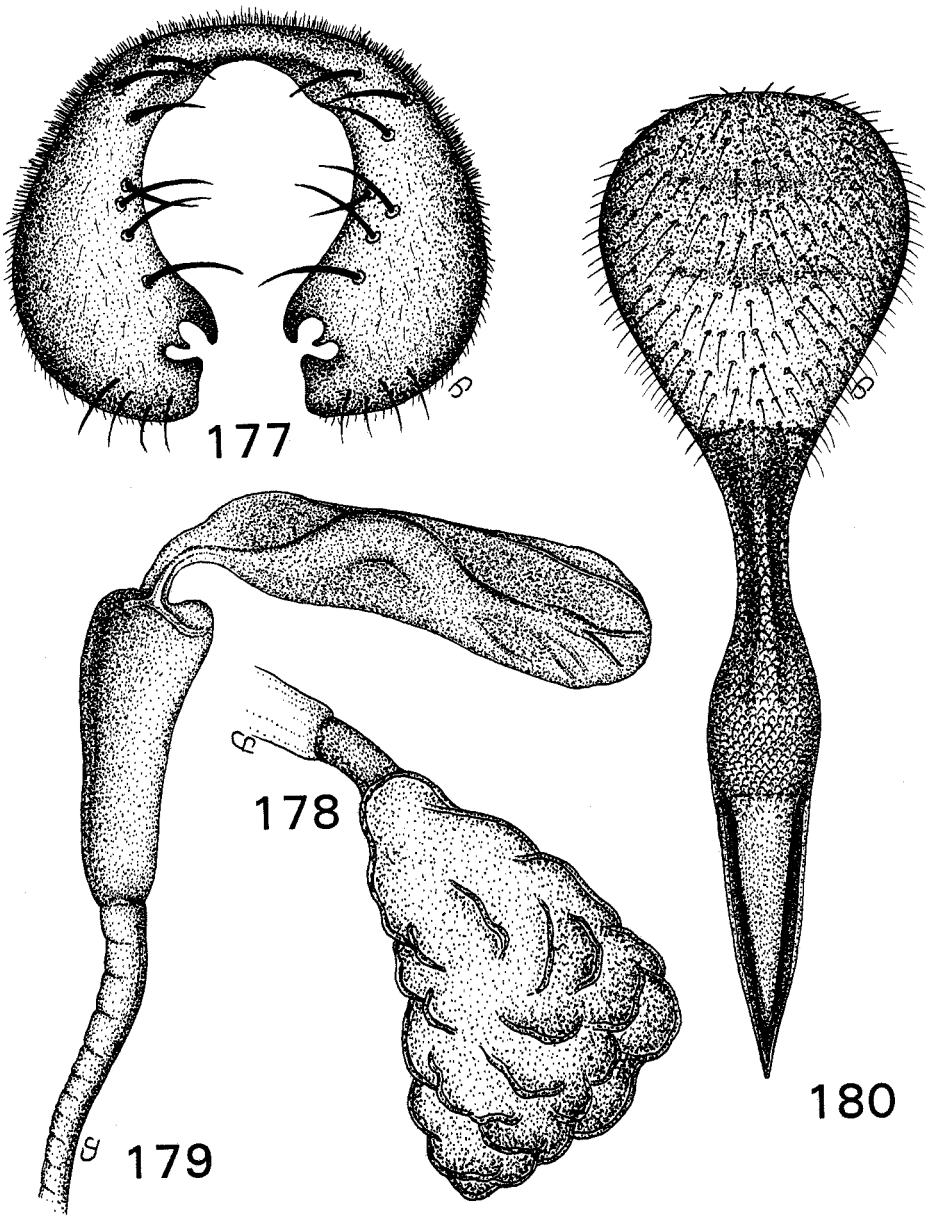
As for male. Basal segment of ovipositor about equal in length to terga V–VI as seen *in situ*, with spiracular openings at basal third of segment. Aculeus sharp pointed (Fig. 180). Two spermathecae triangular and tuberculate (Fig. 178).

Biology

Forms stem galls in *Agaratina adenophora* (Croften weed); also reared from galls on *Senecio madagascariensis*.

Distribution

Mexico, Hawaii, Australia and New Zealand.



Figs 177–180. *Procecidochares utilis* Stone: *177*, ♂ surstyli and claspers; *178*, ♀ spermatheca; *179*, ♂ distiphallus; *180*, ♀ ovipositor.

Genus *Quasicooronga*, gen. nov.

Type species: *Quasicooronga connecta*, sp. nov.

Diagnosis

Resembling *Cooronga*, gen. nov., by the milky white markings in the wing and differentiated by having comparatively large apical scutellar bristles, about 0·6× as long as basal bristles; wing with an oblique band extending from the brown transverse sub-basal band to margin through cell cu (Figs 181, 183); thorax with 3 longitudinal brown vittae and scutellum subshining dark brown, no grey microtrichia; abdomen brown on bases of terga; ovipositor base subequal in length to terga IV–VI and hind femur with a preapical dorsal bristlelike seta.

Description

Head. Bristling like *Tephritis*, with 2 frontal bristles and pale white upper orbitals. Frons gently sloping, nearly horizontal. Head nearly quadrate in shape, angulate at junction of frons and face. Antennae situated near upper quarter of head, third segment broadly rounded at apex. Frons slightly wider than eye with scattered pale setae in lower median portion. Face gently concave, protruded on oral margin. Parafacial comparatively broad, 0·5–0·67× as wide as 3rd antennal segment. Gena broad, equal to or wider than 3rd segment.

Thorax. Fine yellow setose and grey-white microtrichose except for brown longitudinal vittae extending from anterior margin almost to or slightly beyond prescutellar bristles and in male with thin line of brown extending on each side from front margin to presutural bristle. Hind femur with 1 preapical dorsal and 1 posterodorsal bristlelike seta.

Wings. Milky white with broad preapical cross-band and apex narrowly hyaline; with an oblique brown band from apex of cell cu extending over cross-veins to anterior margin in cell sc joined to transverse brown band extending to hind margin in cell a and with arm of brown extending obliquely through cell cu. Anterobasal portion of wing brown (Figs 181, 183). Cell bcu with pointed lobe at lower apex. With a gap in the setae on vein R_1 opposite end of Sc.

Abdomen. Densely grey-white microtrichose, with brown basal margins on terga, covered with thin, subrecumbent pale yellow setae. Basal segment of ovipositor shining black, yellow-brown setose and nearly equal in length to terga IV–VI. Aculeus not extended for study and spermathecae not seen. Two species fit here.

Etymology

The generic epithet is from the Latin *quasi*, 'appearing as if, simulating', combined with *cooronga*, referring to its similarity to *Cooronga*, gen. nov.

Quasicooronga connecta, sp. nov.

(Figs 181, 182)

Material Examined

Holotype. ♂, Vic., Melbourne, 17.ix.1965, G. L. Bush, ANIC.

Paratype. **Victoria**: 1♀, same data as holotype, MSU.

Diagnosis

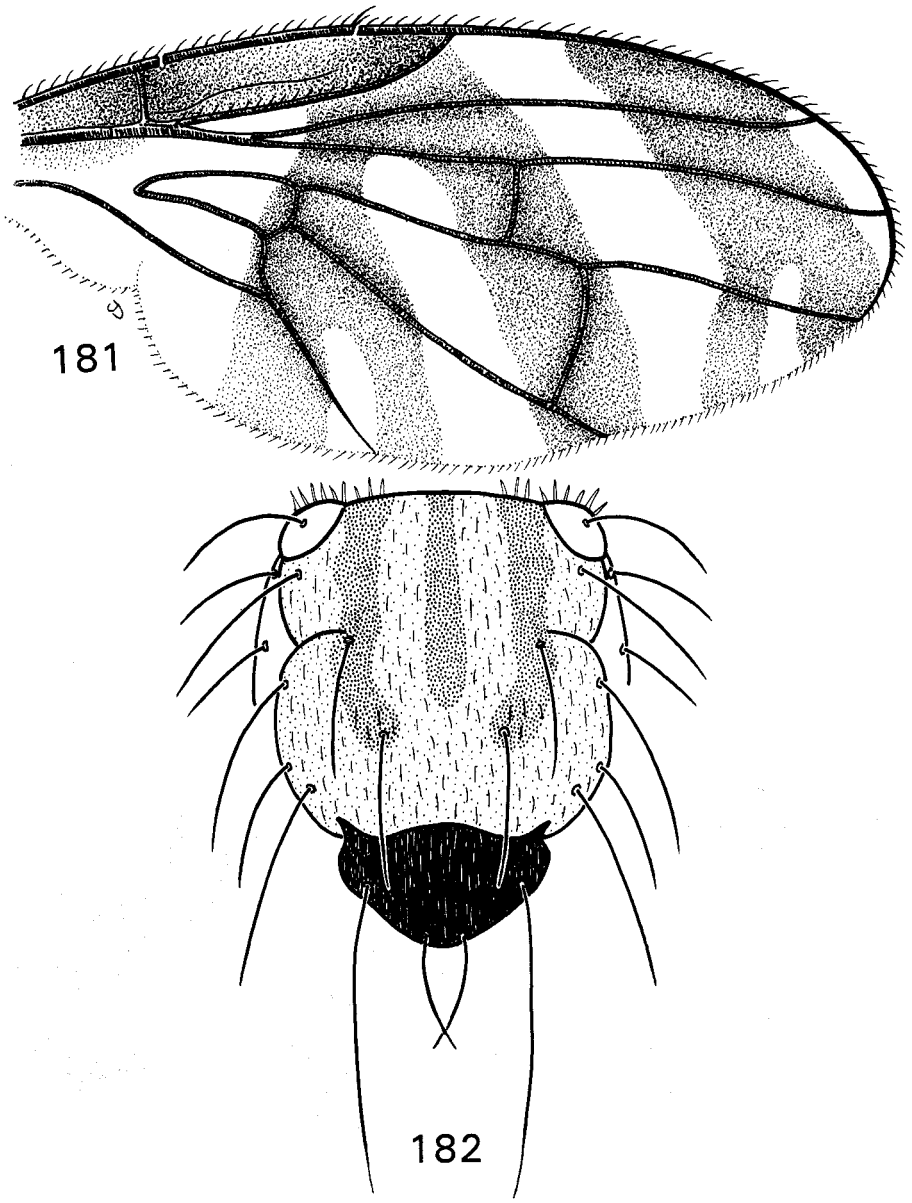
Differing from *Q. disconnecta*, sp. nov., by having brown colouring continuous through cell c and joined with marking in sc. Also by having a narrow hyaline wedge through preapical portion of cell m, continuing into cell r_5 (Fig. 181).

Description

Male

Length. Body and wing each 3·6 mm.

Head. As under genus, yellowish to white in ground colour except for brown upper median occiput. Mostly white microtrichose except for pair of broad golden yellow submedian longitudinal vittae over frons. Parafacial about half width of 3rd antennal segment and gena about equal to width of 3rd.



Figs 181, 182. *Quasicooronga connecta*, sp. nov.: *181*, wing; *182*, dorsal view of thorax.

Thorax. As under genus, densely grey microtrichose except for brown markings on dorsum. Longitudinal vittae ending slightly before or just beyond level with prescutellar bristles; dorsocentral bristles just slightly behind level of suture (Fig. 182).

Legs. Predominantly yellow to rufous, front femur brown to black over posterior surface, other femora faintly tinged brown except for yellow ventral surface.

Wings. As noted above and as in Fig. 181. With only 3 to 4 dorsal setae at base of vein R_{4+5}. Brown colouring in costal cells continuous through cell sc.

Abdomen. Grey microtrichose, broadly brown on basal margins of terga, fine yellow setose. Male genitalia not studied.

Female

Unknown.

Remarks

The genitalia of the paratype male were dissected by Dr G. L. Bush but were not present in the microvial containing the abdomen which was on the pin under the specimen. Also included is the label 'NG-D, sp. 1'; the results of his study are not available.

Etymology

The name is from the Latin *connectus*, joined, referring to the continuous brown mark through costal cells.

Quasicooronga disconnecta, sp. nov.

(Fig. 183)

Material Examined

Holotype. ♂, NSW, 1 mi W of West Wyalong, 18.xii.1965, No. 65154, G. L. Bush, ANIC.

Paratype. **New South Wales**: Allotype ♀, same data as holotype, ANIC.

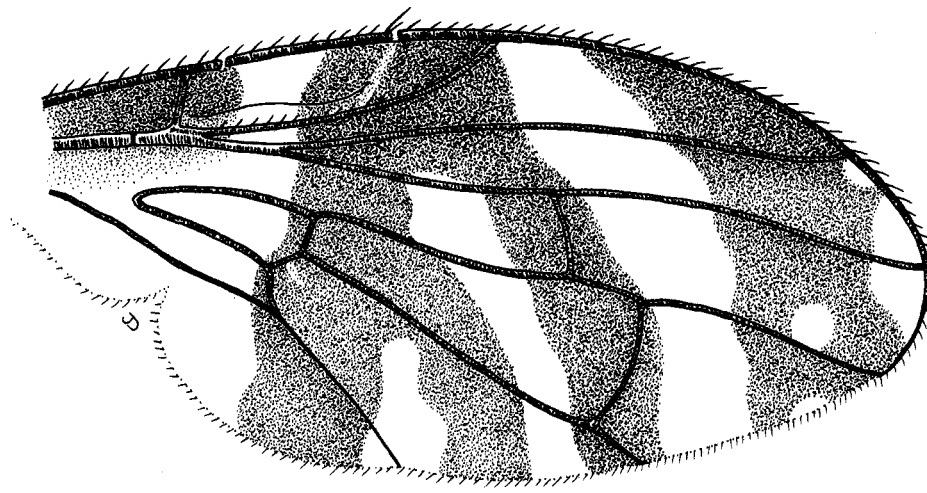


Fig. 183. *Quasicooronga disconnecta*, sp. nov., wing.

Diagnosis

Differing from *Q. connecta*, sp. nov., by having a hyaline mark through middle of cell c, continuous with hyaline marking extending to hind margin of wing and lacking a hyaline wedge from hind margin through subapical portion of cell m (Fig. 183).

Description

Male

Length. Body and wing each 3·0 mm.

Fitting description of *Q. connecta*, sp. nov., in most respects, the only differences we see are in wing markings, as in Fig. 183. Vein R_{4+5} with about 10 setae on dorsal surface near base.

Female

Length. Body (excluding ovipositor) and wing each 3·6 mm.

As in male but with mesonotal vittae ending about halfway between dorsocentral and prescutellar bristles and lacking a brown line on each side extending from submedian vitta to humerus. Tergum VI equal in length to tergum V, predominantly grey microtrichose, narrowly brown on basal margin. Aculeus not extended for study and spermathecae not seen.

Etymology

The epithet combines the Latin *dis*, in two, asunder, with *connecta*, referring to the separation of the brown marking in costal cell.

Genus ***Rhabdochaeta*** de Meijere

Rhabdochaeta de Meijere, 1904: 109.

Type species: *Rhabdochaeta pulchella* de Meijere.

Description

The *Rhabdochaeta* group of genera is readily characterised from all other Australian Tephritidae by the characters given in couplet 1 of the Key. *Rhabdochaeta* fits near *Pararhabdochaeta* Hardy and differs by having the 3rd antennal segment slender, ≥ 3× longer than wide and gradually tapered to a slender point; interfrontal bristles present; upper frontals flattened, often lanceolate; front femur without a row of posteroventral spinules. It is closest to *Rhochmopterum* Speiser and differentiated by lacking dorsomedian bristles on abdominal terga; vein M convex beyond dm-cu cross-vein; a reddish bulla present in cell m; veins R_{4+5} and M parallel or nearly so and abdomen not pale coloured except for polished last tergum. It differs from *Schistopterum* Becker by having numerous dark rays along anterior margin of wing; veins R_{4+5} and M nearly parallel; vein R_{2+3} comparatively elongate, extending beyond level of dm-cu cross-vein; head bristles mostly or entirely flattened and yellow-white with frontal and ocellar bristles strong and latter situated outside ocellar triangle; palpus slender, fringed with short black setae on margin; prescutellar bristles anterior to postalars and almost in line, longitudinally, with dorsocentrals.

For a more detailed description refer to Hardy (1985: 65) and Shiraki (1933: 483). Three species have been studied from Australia. These belong in two species-groups: the *R. pulchella* group with the radiating rays in anterior portion of wing broad, consisting of a white streak bordered by brown on each side (Fig. 189), and the *R. asteria* group having thin brown rays (Fig. 184).

Key to Australian Species of *Rhabdochaeta* and including Known Species of *Rhabdochaeta cockeri* Complex

1. Radiating rays along anterior margin consisting of narrow brown streaks 2
   Rays broad, consisting of a white streak through middle bordered by brown on each side (Fig. 189) ..... *R. pulchella* (de Meijere)
2. Only 1 complete ray to margin in cell r_1; 2 complete, plus 1 incomplete ray in r_3; 4th costal section equal or subequal in length to 5th; *R. cockeri* complex of species 3
   Two complete rays in cell r_1, 3 in r_3 and 4th costal section slightly longer than 5th (Fig. 190) ..... *R. queenslandica*, sp. nov.
3. Wings with numerous prominent hyaline spots along lower side of vein R_{2+3} in upper cell r_3, cell br, basal part of dm and through cu and a (Fig. 192) 4
   Wings faintly spotted, hyaline markings in cell r_3 not arranged in isolated spots; cells dm, cu and a faintly marked, not distinctly spotted (Fig. 184); no brown parafacial mark on each side opposite bases of antennae; Solomon and Bismarck Is; Irian Jaya and Papua New Guinea ..... *R. cockeri*, Curran[3]
4. With 8 bristles on scutellum: a pair of yellow-brown apical seta-like bristles; a pair of moderately large preapical dorsal bristles; a pair of large brownish yellow lateral bristles and a pair of white basolateral seta-like bristles and with a brown parafacial mark on each side opposite bases of antennae; Qld, Australia ..... *R. wedelia*, sp. nov.
   With 4 scutellar bristles, lacking apical and basal pairs; no brown mark on parafacial; Guam ..... *R. guamae* Malloch[4]

Rhabdochaeta cockeri Curran

(Figs 184–188)

Rhabdochaeta cockeri Curran, 1936: 28. Holotype ♀ in CAS.
Type locality: Matema I., Solomon Is.

Rhabdochaeta pluscula Hardy, 1970: 128. New synonym.
Type locality: Mussau, Bolin, Bismarck Is.

Material Examined

Numerous specimens from over range of species.

Diagnosis

Fitting near *R. wedelia*, sp. nov., and differing as follows: faint wing markings; hyaline markings in cell r_3 not arranged in isolated spots and cells dm, c and a faintly marked; without abundant prominent hyaline spots; lacking a brown parafacial mark on each side opposite bases of antennae.

Description

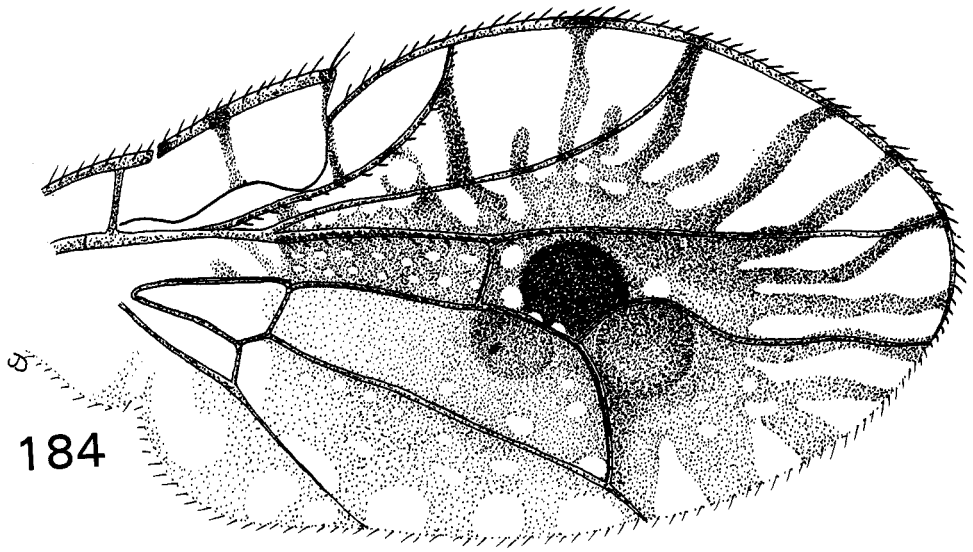
Length. Body and wings 2·25–2·50 mm.

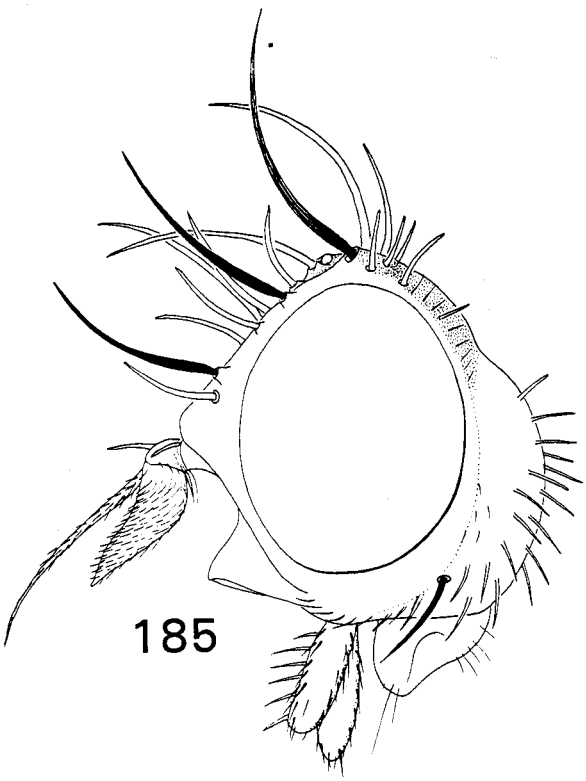
Otherwise fitting description of *R. wedelia*, sp. nov., and with 8 scutellar bristles: 1 pair small white seta-like at apex; 1 pair large white preapical dorsal bristles; 1 pair large yellow-brown lateromedian and 1 pair small white seta-like baso-lateral bristles. Other details as in Figs 184–188.

Distribution

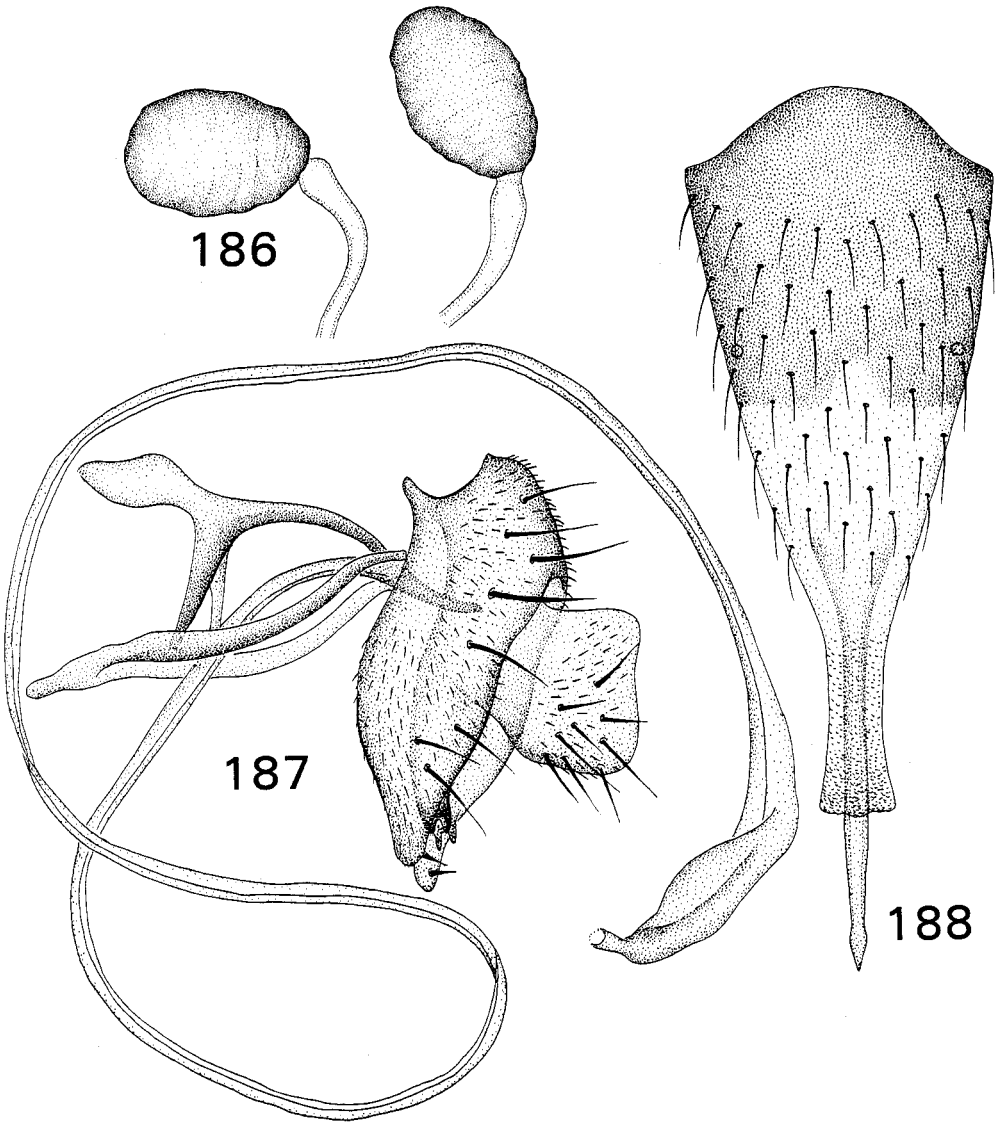
Solomon and Bismarck Islands, Irian Jaya and Papua New Guinea. Not yet recorded from the Australian mainland but may occur in North Queensland.

[3] Not recorded from Australian mainland but may occur there.
[4] Not recorded from Australia but may occur there.





Figs 184, 185. *Rhabdochaeta cockeri* Curran: *184*, wing; *185*, head.



Figs 186–188. *Rhabdochaeta cockeri* Curran: *186*, ♀ spermathecae; *187*, ♂ genitalia; *188*, ♀ ovipositor.

Rhabdochaeta pulchella de Meijere

(Fig. 189)

Rhabdochaeta pulchella de Meijere, 1904: 109. Holotype ♀ in ZMUA.
Type locality: Passuruan, Java.

Rhabdochaeta bakeri Bezzi, 1914: 328. Syntypes (♂, ♀) in USNM. New synonym.
Type locality: Los Banos, Luzon.

Rhabdochaeta mucronata Hering, 1942: 289. Holotype ♀ in ZMHB. New synonym.
Type locality: Ceylon.

Rhabdochaeta assidua Ito, 1984: 284. Holotype ♀ in Ito collection.
Type locality: Ryukyu, Japan.

Material Examined

Numerous specimens from over range of species except Japan. The following from Queensland: 1 (sex unknown), Speewah Road, 5 mi S Kuranda, 12.i.1967, D. K. McAlpine.

Diagnosis

Differing from other *Rhabdochaeta* known from the Oriental and Australasian regions by having the radiating rays along anterior margin of wing broad consisting of a white streak through middle bordered by brown on each side (Fig. 189) and upper median portion of face rather strongly carinate between antennae bases and with a brown spot in middle just below the carina. It superficially resembles *R. tribullosa* Hering (1940: 14) from Timor, Indonesia and *R. melanura* Bezzi (1926: 311) from the Philippines but these two taxa probably belong in *Rhochmopterum* Speiser by having last section of vein M straight, apex of vein R_{4+5} sharply curved upward, no bulla in cell m and last tergum of abdomen polished black. The chaetotaxy of the abdomen and thorax of these has not been checked.

Description

Male

Length. Body and wing each 2·5–3·0 mm.

Head. Shaped as in other *Rhabdochaeta* except face deeply concave between carina and oral margin (see Hardy 1974, fig. 120). Upper frontal bristle dark coloured, broad, flat lanceolate, lower frontals white. Third antennal segment elongate, tapered to a sharp point. A brown spot on parafacial opposite base of antenna. One pair of small white presutural dorsocentral bristles and 1 pair of strong yellow-brown bristles just behind suture. Prescutellar bristles yellow-white and almost in line with dorsocentrals, 2 pairs white acrostichal bristles, 1 opposite supraalars and 1 opposite postalar bristles. Strong white preapical and smaller apical scutellar bristles present and with basal scutellars brownish yellow.

Wings. With 2 rays each through middle of cells r_1 and r_3 and 1 incomplete ray through apex of r_5. Other details as in most *Rhabdochaeta* and as in Fig. 189.

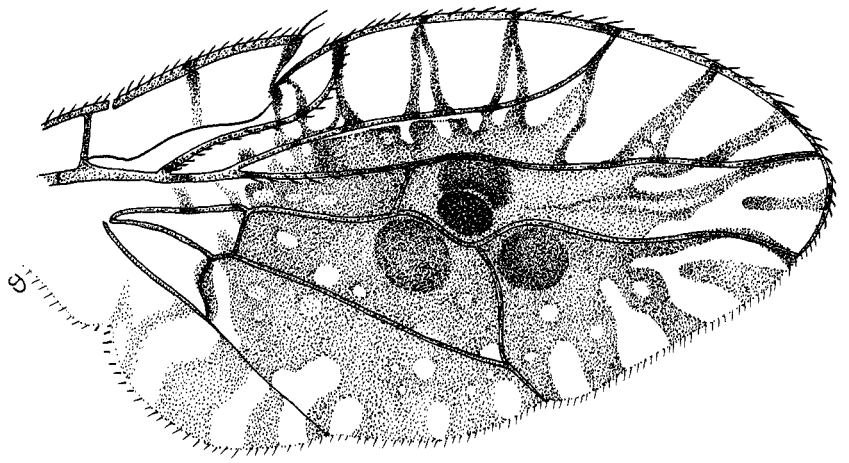


Fig. 189. *Rhabdochaeta pulchella* de Meijere, wing.

Abdomen. Variable in ground colour predominantly yellow to rufous, often with brown to black discoloration over bases or sides of terga. Male genitalia with surstylus broad and blunt and prensisetae large, blunt. Distiphallus only slightly expanded.

Female

As for male. Basal segment of ovipositor yellow to rufous, blackish on sides near base, broad, only slightly longer than wide with spiracular openings on venter near basal 0·33. Aculeus slender, sharp pointed, with no preapical setae. Spermathecae globose with short necks. Genitalia of both sexes figured by Hardy (1974, fig. 120).

Remarks

We find no reliable characters for differentiating the four taxa here placed under *R. pulchella*. The synonomies are based upon comparison of a large number of specimens from the Philippines, South-east Asia, Papua New Guinea and Queensland, Australia, and comparisons of the original descriptions. Bezzi (1926: 309) differentiated *R. pulchella* from *R. bakeri* by having only four scutellar bristles and vein R_{2+3} long with section of costa between veins R_1 and R_{2+3} twice as long as between R_{2+3} and R_{4+5}. All specimens we have seen from Indonesia have six scutellar bristles with a pair of moderately strong white flattened preapical dorsal and a pair of rather weak apical bristles. Comparing exactly with specimens examined from the Philippines and South-east Asia, we find some slight variation in the length of vein R_{2+3} but no differences that are significant. Hering (1942) stated that *R. mucronata* was easily separated from *R. bakeri* by having two brown rays through cell r_3 instead of only one. This is not correct. One of us (Hardy) has studied both types and a photographic record to confirm that these are conspecific. Hering also described the abdomen of *R. mucronata* as black. We think his type is discoloured, as we have observed considerable variation in abdomen coloration. Ito (1984: 284) related *R. assidua* to *R. mucronata* and said it differs by having ovipositor base black on basal 0·25 rather than red and face without a brown spot in middle. The basal segment of the ovipositor of *R. pulchella* is predominantly yellow to rufous with varying degrees of brown to black markings on basal 0·2–0·4. Ito's figure of *R. assidua* (fig. 415) shows the dark spot in upper middle portion of face.

Distribution

Widespread over South-east Asia from Ceylon to Vietnam, Indonesia, Papua New Guinea, Philippine Islands, Ryukyu Islands, Japan, and Queensland, Australia.

Rhabdochaeta queenslandica, sp. nov.

(Figs 190, 191)

Material Examined

Holotype. ♂, Qld, Broadbeach, 3.v.1970, Z. Liepa, ANIC.

Paratypes. **Queensland**: 1♂, Carnarvon, 29.v.1954, F. A. Perkins; 1♂, Gold Coast, 20.ii.1988, G. F. Bohart. Paratypes in BPBM, UQM.

Diagnosis

Fitting in the *R. asteria* group of species characterised by having thin brown rays extending to costal margin. Differs from other known *Rhabdochaeta* by having 2 complete rays and 2 extra incomplete marks in cell R_1, 3 complete rays in cell R_3, having the lower orbital bristle pale brown, upper frontal bristle not flattened and no preapical dorsal bristles on scutellum. The wing markings somewhat resemble those of *Rhochmopterum* Speiser and *Pararhabdochaeta* Hardy but the resemblance is superficial. These are generically distinct.

Description

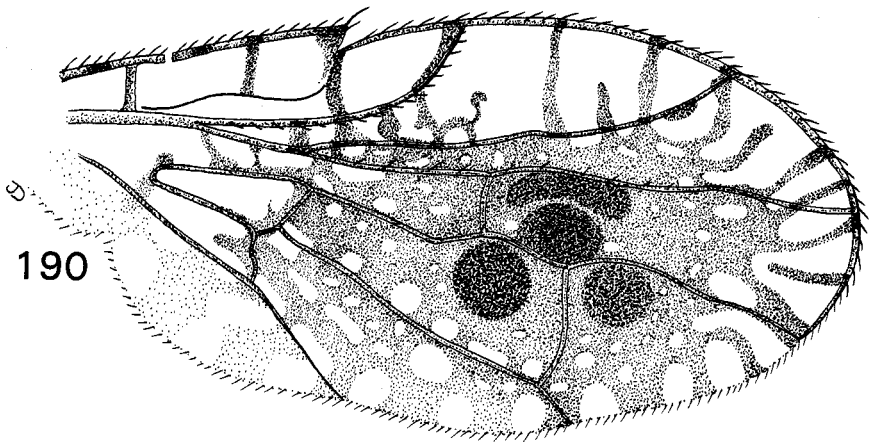
Male

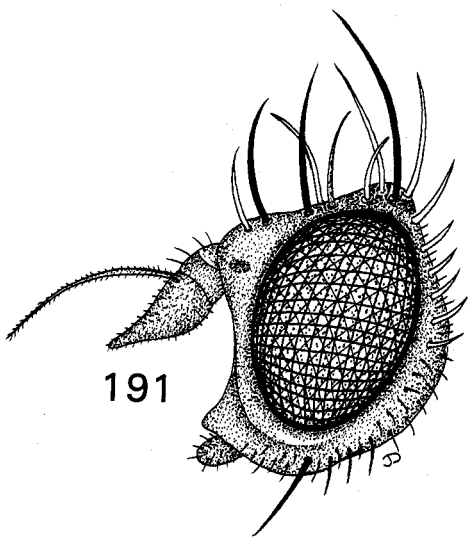
Length. Body 2·5 mm; wing 2·75 mm.

Head. Nearly quadrate in shape, frons gently sloping and face concave with oral margin protruded (Fig. 191). Antenna situated at upper 0·25–0·2 of head as seen in lateral view. Third segment nearly 3× longer than wide, sharply tapered to apex. Three frontal, 2 orbital and one pair of inner frontal bristles. Upper 2 frontals, inner vertical and genal bristles dark brown to black and lower orbitals pale brown, all other head bristles white. Upper frontals strong but not flattened and incrassate. Head and appendages yellow except for a small brown spot on parafacial opposite base of antenna. Palpi black setose on margins and with tiny black setae interspersed with postocular setae.

Thorax. Ground colour black, yellow on humerus, notopleuron and margin of scutellum. Densely grey microtrichose and white setose with a faint brownish tinge over middle of mesonotum. Bristles of dorsum yellow with brown bases except for white apical scutellars, those of pleura white. Halteres pale yellow.

Legs. Yellow, predominantly yellow setose, with scattered white setae and 4–5 white postventral bristles on front femora. Mid and hind tibiae with a faint brown pre-basal band and a faint brown ventral mark at apical 0·67 of hind femur.





Figs 190, 191. *Rhabdochaeta queenslandica*, sp. nov.: *190*, wing; *191*, head.

Wings. As noted above and as in Fig. 190, with brown ray through apex of cell R_5 complete, extending to margin. Three brown marks along margins of cells m and cu. Central area of wing containing bullae that are surrounded by a ring of numerous small hyaline spots.

Abdomen. Black in ground colour, predominantly grey-brown microtrichose and covered with white to yellow-white subrecumbent setae. Tergum V polished black except grey microtrichose along basal and basolateral margins. Genitalia yellow, not dissected for study.

Female

Unknown.

Rhabdochaeta wedelia, sp. nov.

(Figs 192–196)

Material Examined

Holotype. ♂, Qld, Marcus Beach, 4.xii.1980, bred ex *Wedelia* sp., G. Batianoff, ANIC.

Paratypes. **Queensland**: Allotype ♀ (ANIC), 11♂, 7♀, same data as holotype; 1♂, 1♀, One Tree I., Barrier Reef, Dec. 1969, H. Heathwole; 11♂, 9♀, Heron I., 18–22.xi.1965, No. 6583, G. L. Bush; 1♂, Stephen Is, Torres Strait, 21.iii.1984, J. Turner. Paratypes in AMS, ANIC, BPBM, NHM, QDPI, UH.

Diagnosis

Fitting in the *R. asteria* group of species characterised by having thin brown rays extending to costal margin and the *R. cockeri* complex of species by having only 1 complete brown ray through middle of cell r_1, 2 complete bands through r_3, a complete median band through cell r_5 (Fig. 192) and upper frontal bristles not strongly flattened. Apparently very close to *R. guamae* Malloch (1942: 204) and differs by having 8 scutellar bristles and having a brown parafacial mark on each side opposite bases of antennae.

Similar to *R. guamae* in having prominent hyaline spots over median and posterior portions of wing. On the basis of Malloch's figure of the wing there would appear to be striking differences in these taxa. The senior author has a colour photograph of the type of *R. guamae* and Malloch's figure is not correct. Malloch shows the 4th costal section half longer than 5th and the longitudinal brown band through middle of cell r_5 connected with band through upper portion of cell which runs along apex of vein R_{4+5}. The type has one wing missing and the other has the apex broken off but enough remains to show the median band through r_5 free of the upper band and the 4th costal section is subequal to 5th. *R. guamae* is known only from the holotype and differs from *R. wedelia* by lacking brown parafacial marks, having only four scutellar bristles, lacking the strong preapical pair and the small basolateral pair.

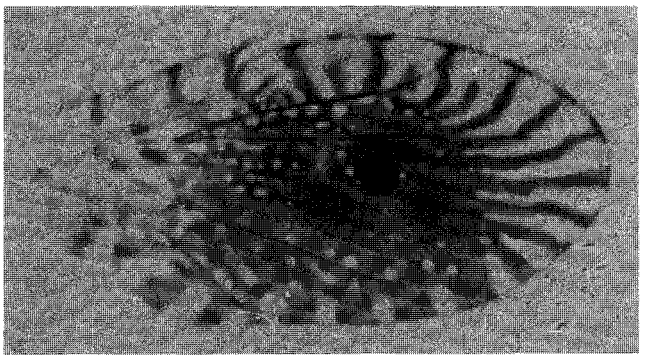
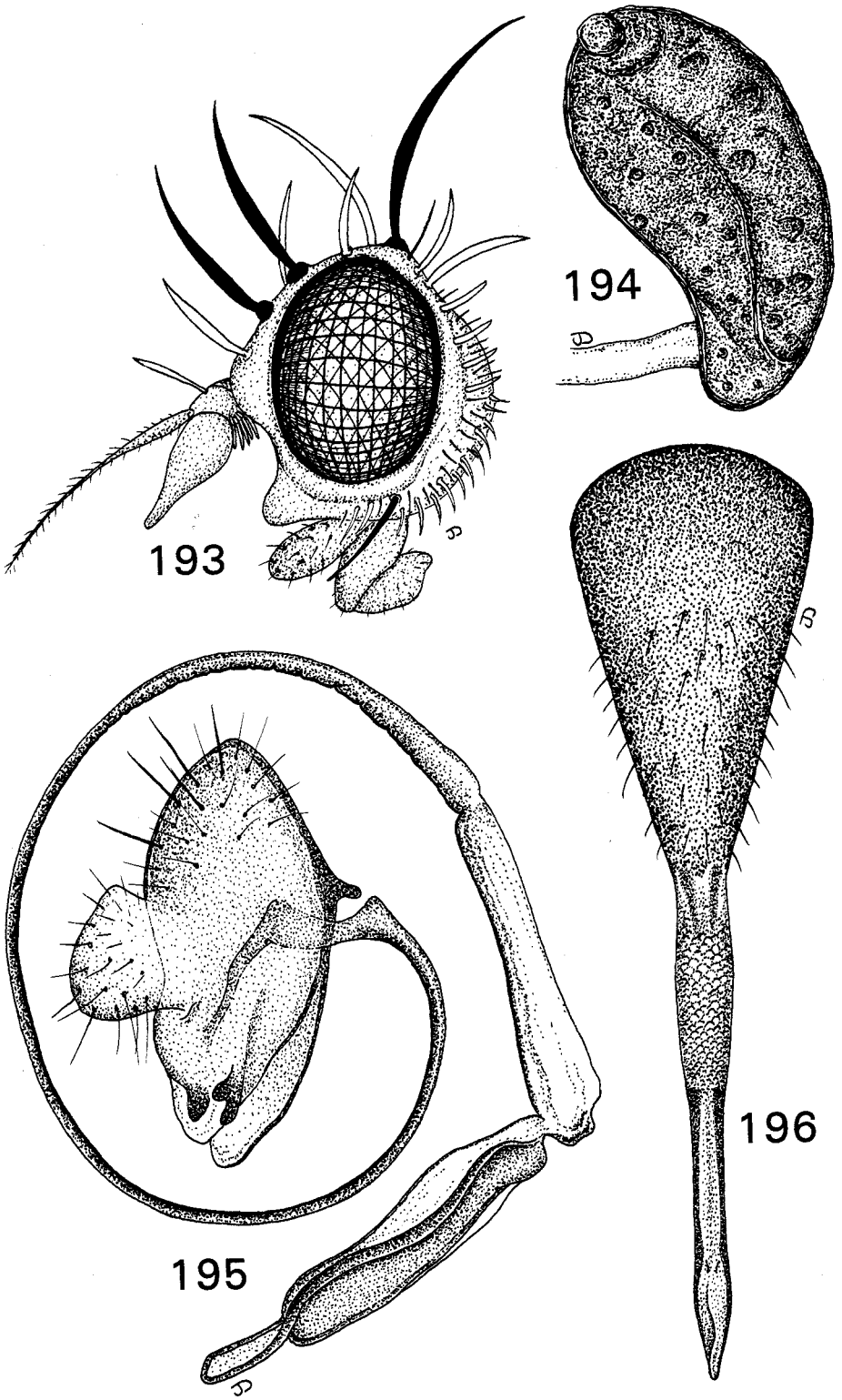


Fig. 192. *Rhabdochaeta wedelia*, sp. nov., wing.



Figs 193–196. *Rhabdochaeta wedelia*, sp. nov.: *193*, head; *194*, ♀ spermatheca; *195*, ♂ genitalia; *196*, ♀ ovipositor.

Description

Male

Length. Body 2·25 mm; wing 2·5 mm.

Head. Nearly quadrate, frons gently sloping and face rather deeply concave in middle and oral margin protruded (Fig. 193). Antenna situated at upper 0·25 of head as seen in lateral view. Third antennal segment about 3× longer than wide, sharply tapered to apex. Three frontal, 2 orbital bristles and 1 pair inner frontal bristles. Upper 2 pair frontals, inner vertical and genal bristles brown and tinged yellow, other head bristles and setae yellow-white except for black interspersed postocular setae. Upper frontals not strongly flattened. A prominent brown to blackish spot on parafacial opposite base of antenna.

Thorax. Black in ground colour of dorsum, except yellow on sides and humerus and tinged yellow on margin of scutellum. Pleura pale yellow, brown to blackish in ground colour of lower portion of anepisternum and over katepisternum and postnotum. Microtrichosity of thorax predominately grey with a faint brown median vitta on mesonotum and brownish over scutellum and posteromedian portion of mesonotum. Also brownish around bases of dorsocentral and prescutellar bristles. Bristles brown tinged with yellow except for white preapical dorsal scutellars, yellow-white posterior notopleurals, lower anepisternals, anepimeral and katepisternal bristles. Dorsocentral bristles and postsutural setae over median portion of mesonotum mostly brown, erect.

Legs. Yellow with a faint brown prebasal band on hind tibia and a brown ventral mark at apical 0·67 of hind femur.

Wings. As in Fig. 192 with 1 complete brown ray through cell c, 1 through r_1, 2 through r_3 and 1 through middle of r_5.

Abdomen. Largely brown to black in ground colour, densely brown to grey microtrichose and covered with subrecumbent yellow setae. Apex of tergum V polished black, genitalia yellow. Cercus subequal in length to epandrium. Surstylus gradually tapered to subacute point at apex. Vanes of aedeagal apodeme widely separated. Basiphallus long and slender, distiphallus slender, scarcely expanded, with tube extending from apex (Fig. 195).

Female

Length. Body 2·4 mm; wing 2·8 mm.

As in male. Tergum VI about equal in length to tergum V, medioapical portion polished yellow-brown, grey microtrichose on anterolateral margins. Ovipositor base yellow, tinged brown at base, about equal in length to terga IV+V and with spiracles at basal 0·33 of segment. Aculeus slender, needlelike (Fig. 196). Two irregular oval spermathecae (Fig. 194).

Biology

Reared from *Wedelia* sp. on coastal Queensland islands.

Etymology

Named after the host plant *Wedelia*.

Genus ***Rhochmopterum*** Speiser

Rhochmopterum Speiser, 1910: 185.

Type species: *Rhochmopterum neuropteripenne* Speiser. By monotypy.

Description

Differentiated from *Rhabdochaeta* by having a pair of strong erect mediodorsal white bristles on each abdominal tergum; last section of vein M straight or nearly so and vein R_{4+5} curved upward sharply so cell r_5 is expanded at apex; bulla in cell m absent; mesonotum with a pair of presutural dorsocentral bristles and abdomen rufous with last tergum polished black. For a detailed description refer to Ito (1984: 285).

Distribution

Seven species are known from southern Africa. One species now known from Australia (Queensland), Indonesia, South-east Asia and Japan and the following species from over the Oriental region belong here (these are all new combinations): *Rhochmopterum melanurum* (Bezzi, 1926: 311) and *R. parvum* (Hardy, 1974: 219) from the Philippines; *R. seniorwhitei* (Bezzi, 1926: 313) from Sri Lanka; *R. centralis* (Hendel, 1915: 464) from Taiwan; and *R. tribullosum* (Hering, 1940: 14) from Timor, Indonesia.

Key to Known Non-Afrotropical Species of *Rhochmopterum* Speiser

1. Mesonotum evenly grey microtrichose; abdomen usually yellow except for black tergum V of ♂ and tergum VI of ♀ [except in *R. dorsosetosum* (Hardy)] 2
   Mesonotum with a broad white microtrichose band extending down middle, continuous over scutellum and contrasting from the dull grey-black sides; abdomen yellow down middle, continuous over tergum V in ♂ and tergum VI in ♀ and broadly brown on sides; Sri Lanka ... . *R. seniorwhitei* (Bezzi)
2. Rays in anterior margin of wing consist of narrow brown 3
   Rays in cell r_1 broad, consisting of a white streak through middle bordered by brown on each side 5
3. With a pair of preapical dorsal bristles on scutellum; 3rd antennal segment *c.* 2× longer than wide, abruptly tapered, ending in a horn-like projection at apex (Fig. 198) 4
   With 4 scutellars, lacking prescutellar dorsal bristles; 3rd antennal *c.* 3× longer than wide, gradually tapered to a sharp point; Taiwan ..... *R. centralis* (Hendel)
4. Tergum VI of ♀ *c.* 2× longer than wide; four pairs of dorsocentral bristles; larger species, body and wings each 2·5–3·0 mm; Indonesia, Japan (Ryukyu Is), Laos, Thailand, Vietnam .... *R. venustum* (de Meijere)
   Tergum VI of ♀ short, scarcely longer than wide; six pairs of dorsocentrals; small species, body and wings 1·75 mm; Philippines ..... *R. parvum* (Hardy)
5. Abdomen predominantly brownish yellow; tergum V of ♂ dull black, microtrichose on basal half polished black apically; Indonesia (Timor) ..... *R. tribulosum* (Hering)
   Abdomen predominantly yellow; tergum V polished black, not microtrichose; Philippines .... *R. melanurum* (Bezzi)

Rhochmopterum venustum de Meijere, comb. nov.

(Figs 197–201)

Rhabdochaeta venusta de Meijere, 1914: 215. Holotype ♀ in ZMUA.
Type locality: Salatiga, Java.

Rhochmopterum subsolanum Ito, 1984: 287. Holotype ♂ in the Ito collection, Osaka, Japan. New synonym.
Type locality: Ryukyu, Japan.

Rhabdochaeta dorsosetosa Hardy, 1970: 110. Holotype ♂ in ZMUC. New synonym.
Type locality: Palawan, Philippines.

Material Examined

Australian specimens examined: **Queensland**: Blackdown Tableland, Expedition Range, 5–7.xii. 1979, G. Daniels and M. A. Schneider; Dunk I., Sep. 1968, R. Pullen; 7–14 mi W of Herberton, via Watsonville, 1.v.1967, D. H. Colless; Repulse Ck, 23 km NE of Bauhinia Downs, 22.iv.1981, D. H.

Colless; Ormiston, 6.vii.1966, B. A. Franzmann; Archerfield, 24.vii.1954, R. Domrow; Brisbane, 27.viii.1957; 50 km N of Marlborough, 9.ii.1975, B. K. Cantrell; Herbert R., Ingham, 7.xi.1975, I. D. Galloway; Townsville, 7.xi.1975, I. D. Galloway; Mackay, 8.xi.1975, I. D. Galloway; Dauan Is (Torres Strait), 28.iii.1984, J. W. Turner. **New South Wales**: Cabramatta; Georges R. Valley, 24.ii.1962, M. I. Nikitin and Kurnell; Cabramatta, 19.x.1958, sweeping costal brush, M. I. Nikitin.

Diagnosis

Differs from all known non-African Schistopterini by the generic characters given above. We had no opportunity to examine specimens from Africa and in Bezzi's key (1924*b*: 153) it would run imperfectly to *R. munroi* Bezzi which is characterised by having only 2 white spots in the brown area in middle of wing and, according to Munro, the abdomen is generally yellow or reddish yellow with a pair of submedian darker reddish spots on the penultimate and antipenultimate terga of both sexes. *R. venustum* has numerous small white spots around the perimeter of the brown area (Fig. 197) and the abdomen is yellowish to rufous except for the polished black last tergum.

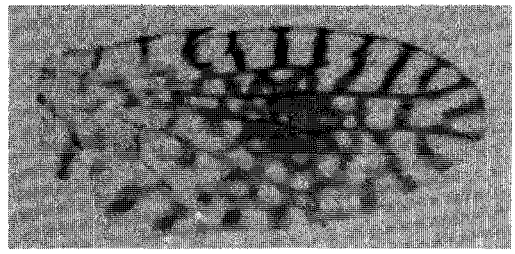


Fig. 197. *Rhochmopterum venustum* de Meijere, wing.

Description

Male

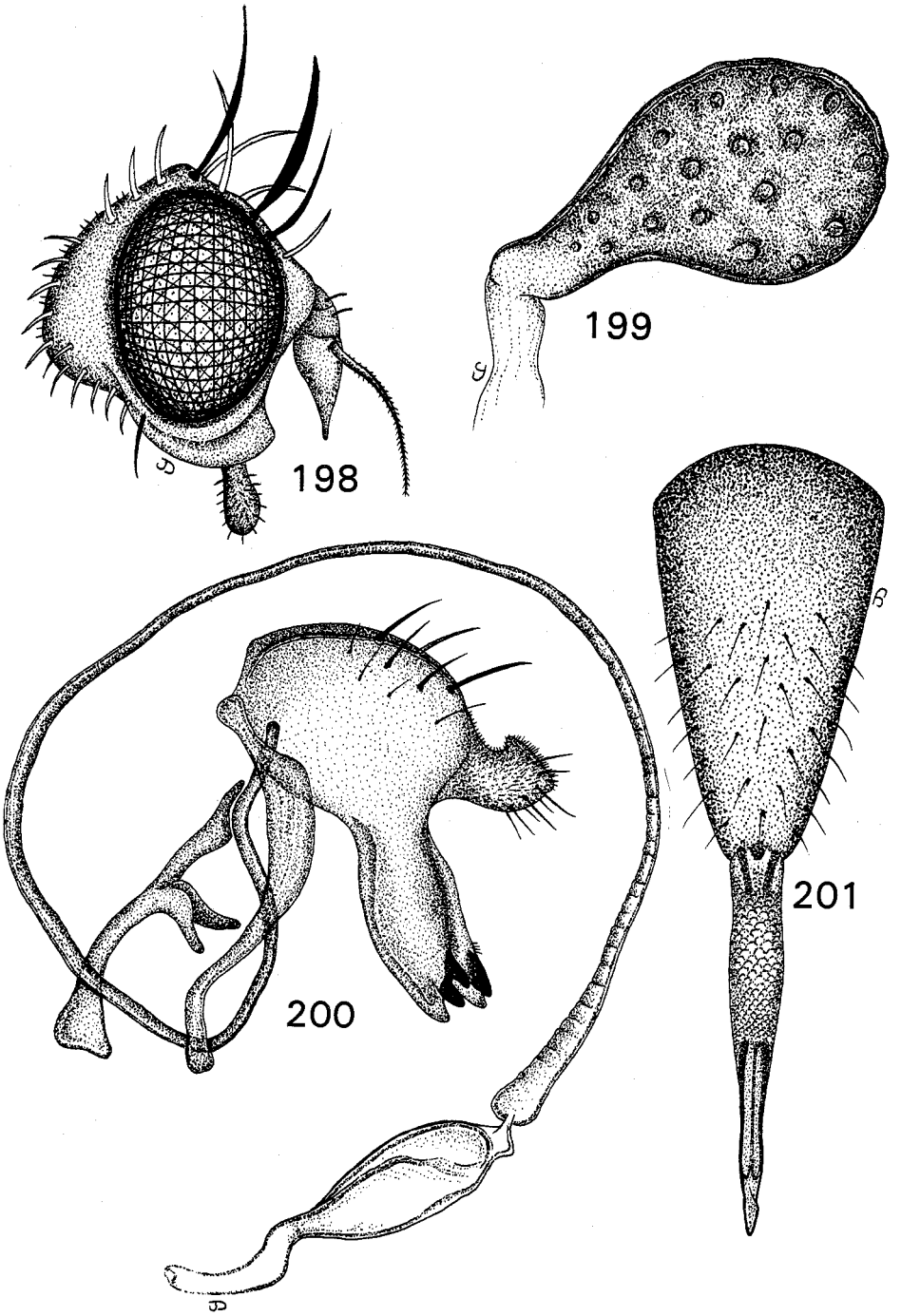
Length. Body and wing each 2·0–2·5 mm.

Head and appendages yellow, except for eye and brownish base of arista and ocellar triangle nearly quadrant with frons gently sloped and face gently concave, distinctly produced on oral margin. Antenna at upper 0·25 of head as seen in lateral view (Fig. 198), about 3× longer than wide, convex on ventral margin and tapered to a sharp point at apex. Three frontal bristles, lower white, middle brownish yellow and upper brown, flattened, lanceolate in shape. Two pairs white orbitals lower, situated almost opposite upper frontal, 1 pair white frontals; ocellar bristles strong and inner verticals brown, tinged yellow.

Thorax. Densely grey microtrichose, obscuring mostly brown to black ground colour, humerus, notopleuron and scutellum yellow. Bristles and setation of pleura white, except for a few yellow-brown setae on posterior portion of anepisternum. Bristles of dorsum brown tinged yellow except for white median scutellar, acrostichal, anterior notopleural and one pair dorsocentral on suture. Prescutellar bristles almost in line with dorsocentrals. Three pairs dorsocentrals, posterior pair distinctly anterior to supraalars; 1 white bristlelike seta on suture and 1 yellow-brown anterior dorsocentral opposite presutural bristle. Two pair white, erect acrostichal bristles on posterior portion of mesonotum. Scutellum with a pair of strong white preapical median bristles, about 0·67× length of basal yellow-brown bristle, and a pair of smaller, white apical bristles.

Legs. Yellow, mid and hind tibiae each with a brown band at basal 0·33; 2 incomplete brown bands each on mid and hind femora and a brown mark on apical 0·67 of front femur. Ventral bristles of femora white except for 1 yellow-brown posteroventral bristle near apex of front femur.

Wings. With 2 short costal spines, 1 brown ray through cell c, 2 each through r_1 and r_3, an incomplete ray through apex of r_5, 1 elongate reddish bulla in cell r_5 and 1 round bulla in dm and venation as in Fig. 197. Vein R_{4+5} setose above to beyond r-m.



Figs 198–201. *Rhochmopterum venustum* de Meijere: *198*, head; *199*, ♀ spermatheca; *200*, ♂ distiphallus; *201*, ♀ ovipositor.

Abdomen. Opaque yellow except for polished mostly or entirely black on tergum V of male and tergum VI of female, a pair of strong white median bristles at apices of terga II–V in both sexes. Tergum VI of female with a pair of white median bristles at apical 0·6, plus a

ring of white bristles at apex. Tergum V of male black setose except for white setae on sides. Tergum V of male and tergum VI of female unusually large, subequal to remainder of abdomen in male and about equal to segments II-IV in female. Male genitalia yellow to rufous. Epandrium nearly globose about as high as long, with prominent dorsal setae. Cercus subequal in length to epandrium. Surstylus slender, straight sided, pointed at apex and about equal in length to epandrium. Prensisetae large and blunt (Fig. 200). Aedeagal apodeme with vanes widely forked and distiphallus poorly developed, scarcely expanded and ending in a long filament (Fig. 200).

Female

As for male. Basal segment of ovipositor mostly yellow, brown to black basally, about equal in length *in situ* to tergum VI and with spiracular openings on venter at basal 0·33 of segment. Two short gourd-shaped spermathecae (Fig. 199). Aculeus slender, sharp pointed (Fig. 201).

Distribution

Widespread throughout Indonesia, New Guinea, South-east Asia, Philippines, Ryukyu Islands and Australia.

Genus *Spathulina* Rondani

Spathulina Rondani, 1856: 113.

Type species: *Spathulina sicula* Rondani, by original designation (= *Tephritis tristis* Loew).

Diagnosis

Fitting nearest to *Paraspathulina*, gen. nov., and differing by lacking apical scutellar bristles; mesonotum densely covered with grey flat scalelike blunt setae; wing with an isolated hyaline mark at apex of cell c and 3 hyaline wedges in cell r_1 (Fig. 202); 3rd antennal segment rounded at apex and abdomen shining black, sparsely microtrichose. Otherwise as described under species.

Biology

Breeds in flowerheads of Asteraceae.

Distribution

An African genus with 9 presently recognised species and 6 varieties or subspecies from the Afrotropical Region; 1 of these, *S. acroleuca* (Schiner), is almost worldwide in distribution and is the only species known from Australia.

Spathulina acroleuca (Schiner)

(Figs 202–206)

Tephritis acroleuca Schiner, 1868: 268. Holotype ♀ in NHMV.
Type locality: Sydney.

Trypeta undecimguttata Thomson, 1869: 581. Holotype ♀ in ZMUC.
Type locality: Sydney.

Oxyna parca Bezzi, 1913: 159. Syntypes ♂ and ♀ in ZSIC.
Type locality: Calcutta, India.

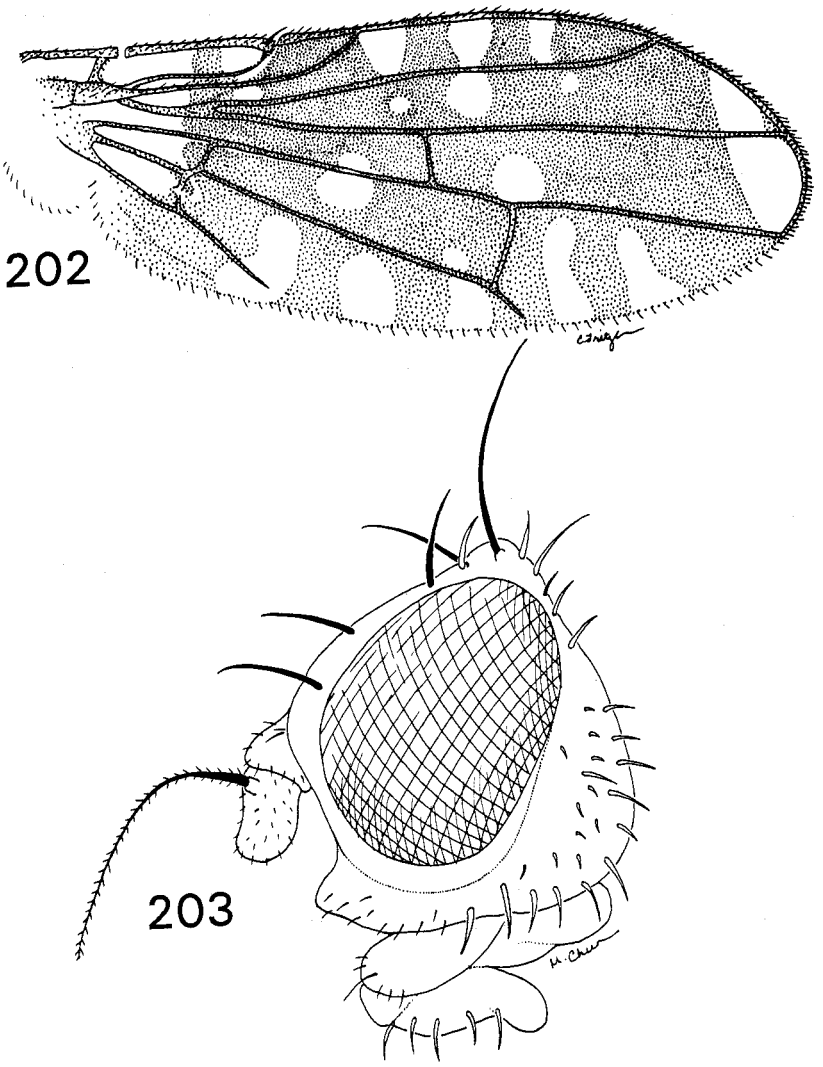
Oxyna nigrifemorata de Meijere, 1914: 220. Holotype ♀ in ZMUA.
Type locality: Nongkodjadjar, Java.

Material Examined

About 800 specimens from numerous localities in all States of Australia.

Diagnosis

Differs from other Australian Tephritinae by wing markings: having base of wing hyaline to level near middle of cell c, 3 hyaline marks in cell R_3 and apices of cells R_3 and R_5 largely hyaline (Fig. 202).



Figs 202, 203. *Spathulina acroleuca* (Schiner): *202*, wing; *203*, head.

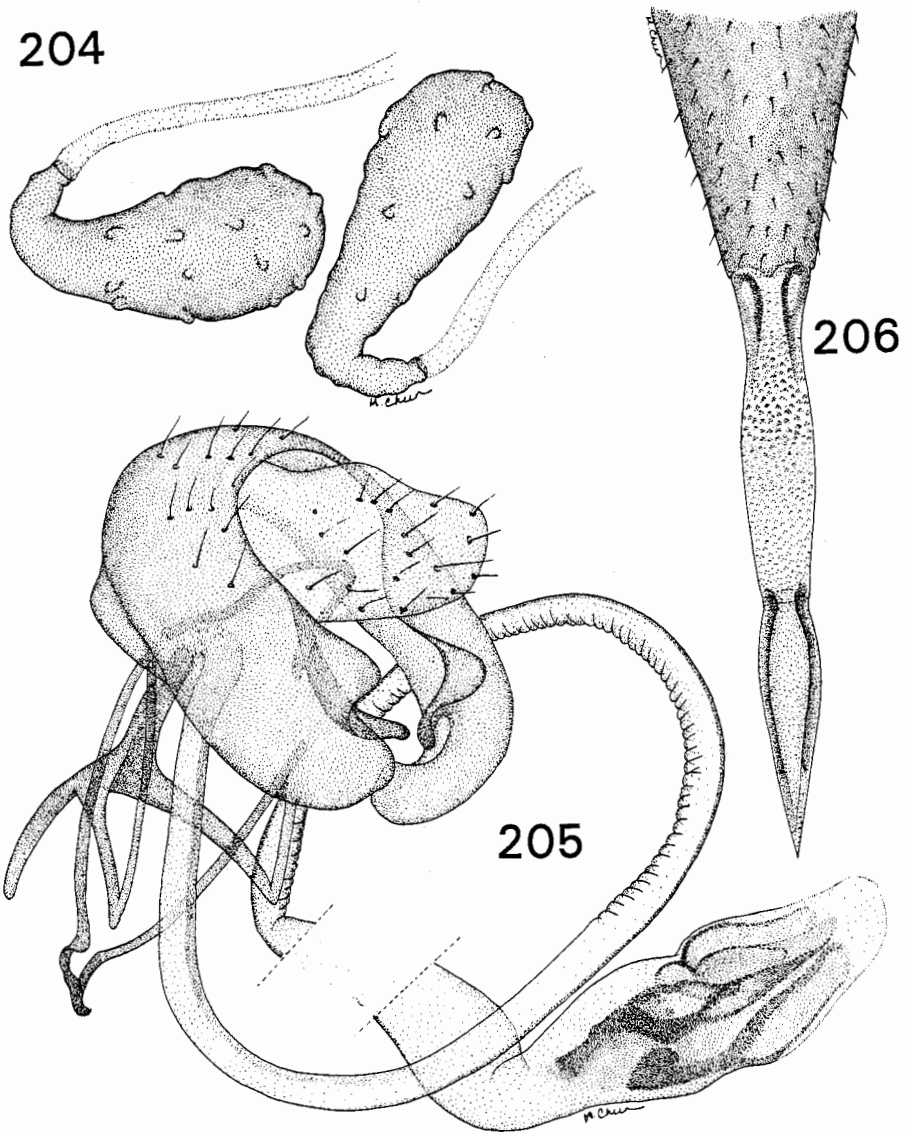
Description

Male

Length. Body and wing each 3·0–3·5 mm.

Head. Slightly higher than long with frons gently sloping. Face moderately concave and oral margin prominently protruded (Fig. 203). Antennae situated near upper third of head with 3rd segment broadly rounded at apex and about 2× longer than wide. Most head bristles black; upper orbital, outer vertical, postocellar and postocular bristles and setae yellow-white. Two pairs of frontal and 2 orbital bristles and ocellar bristles well developed, subequal in size to inner verticals. Interfrontal area bare.

Thorax. Black in ground color, densely grey or grey-brown microtrichose, completely obscuring ground colour. Mesonotum densely covered with flat, subrecumbent, scalelike yellow-white setae. Dorsocentral bristles just slightly behind level of suture. Scutellum grey microtomentose, sparsely setose and with only basal scutellars developed, these are stronger than posterior supraalar bristles.



Figs 204–206. *Spathulina acroleuca* (Schiner): *204*, ♀ spermathecae; *205*, ♂ genitalia; *206*, ♀ ovipositor.

Wings. As in Fig. 202 and as noted above. A large hyaline spot in apex of cell c, cell sc brown and apices of cells r_3 and r_5 hyaline except for a small brown mark usually present in lower apex of r_3. Five hyaline marks along hind margin and 2 isolated round marks in middle of wing. Vein R_1 with a bare area opposite end of Sc. R_{4+5} bare except for a few setae on upper side near base.

Abdomen. Shining black, lightly grey dusted and brown to black setose. Fifth sternum of male deeply concave on posterior margin and sparsely setose. Male genitalia as in Fig. 205, surstylus broadly rounded at lower apex. Aedeagus bare, distiphallus slightly expanded, with internal sclerotisation as in Fig. 205. Vanes of aedeagal apodeme widely separated.

Female

As for male. Tergum VI slightly longer than tergum V. Basal segment of ovipositor 2–3× longer than wide and slightly longer than terga V and VI with spiracular openings situated at basal 0·33 of segment. Aculeus comparatively short and thick, sharply tapered at apex (Fig. 206). Spermathecae gourd shaped with curved necks and sparsely tuberculate (Fig. 204).

Biology

Breeds in flowerheads of various Asteraceae. Specimens from Australia examined for this study have been reared from the following: *Ageratum conyzoides*, *Brachycome squamatus*, *Helichrysum acuminatum*, *H. scorpioides* and *Leptorhynchos squamatus*.

Distribution

Widespread over Oriental, Afrotropical, Southern Palaearctic and Australasian Regions. Common throughout Australia.

Genus ***Sphenella*** Robineau-Desvoidy

Sphenella Robineau-Desvoidy, 1830: 773.
Type species: *Sphenella linariae* Robineau-Desvoidy, by monotypy (= *Tephritis marginata* Fallén).

Sinevra Lioy, 1864: 1024.
Type species: *Tephritis marginata* Fallén, by monotypy.

Description

Fitting in the *Paroxyna* group of genera by having 4 scutellar bristles, vein R_{4+5} bare except for a few dorsal setae near base; two pairs of frontal bristles, upper orbital bristles white and the mouthparts moderately long, geniculate. Fits near *Paroxyna* Hendel and differs by having the lower squama broad (about equal in width to upper); distinctive wing markings: apex brown, usually with a small hyaline spot on upper apex of cell r_3 and forming a hooklike pattern on upper inner margin, a broad transverse preapical hyaline band and a complete brown transverse band covering cross-veins (Fig. 207); lacking preapical setae on male basiphallus and the distiphallus comparatively short and thick with the seminal duct extended beyond the apex (Fig. 211); the inner surstylus terminating in a single elongate toothlike-lobe (Fig. 209); hind femur with 1 preapical dorsal and 1 anterodorsal bristlelike seta. Four species are recognised for the Australasian Region. For key to species refer to Hardy (1988*b*: 61).

Biology

Breeds in flowerheads of Asteraceae, especially *Senecio* spp. The biology has been discussed by Munro (1957*a*: 34) and Niblett (1950, 1956).

Sphenella ruficeps (Macquart)
(Figs 207–212)

Urophora ruficeps Macquart, 1851: 288. Holotype male in MNHP (believed lost). Neotype male in UQM (see Munro 1957*a*).
Type locality (neotype): Stanthorpe, Queensland.

Trypeta heterura Thomson, 1869: 584. Holotype female in NRS.
Type locality: Sydney.

Material Examined

Over 750 specimens have been examined from numerous localities in all States.

Diagnosis

Fitting in a species complex with *S. sinensis* Schiner and differentiated by the following wing markings: a transverse preapical hyaline area across wing, broader at posterior margin and 2·5–3× wider than brown transverse fascia that encloses the cross-veins (Fig. 207), rather than with preapical hyaline band parallel sided through cells r_5 and m, < 1·5× as broad as the brown band enclosing cross-veins and with a brown mark in wing apex (Hardy 1974: 246, fig. 140).

Fitting the major characteristics of the *S. marginata–S. sinensis* complex of species as described by Munro (1957*a*: 28) and Hardy (1973: 323; 1974: 246; 1988*b*: 64).

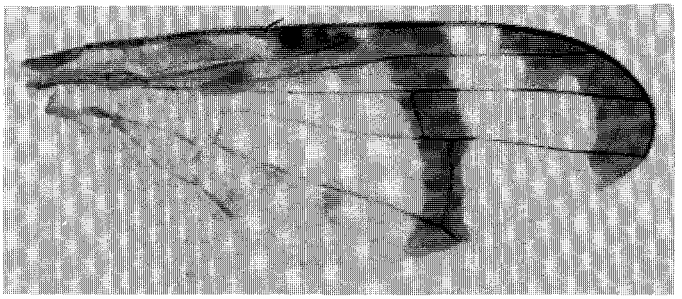


Fig. 207. *Sphenella ruficeps* (Macquart), wing.

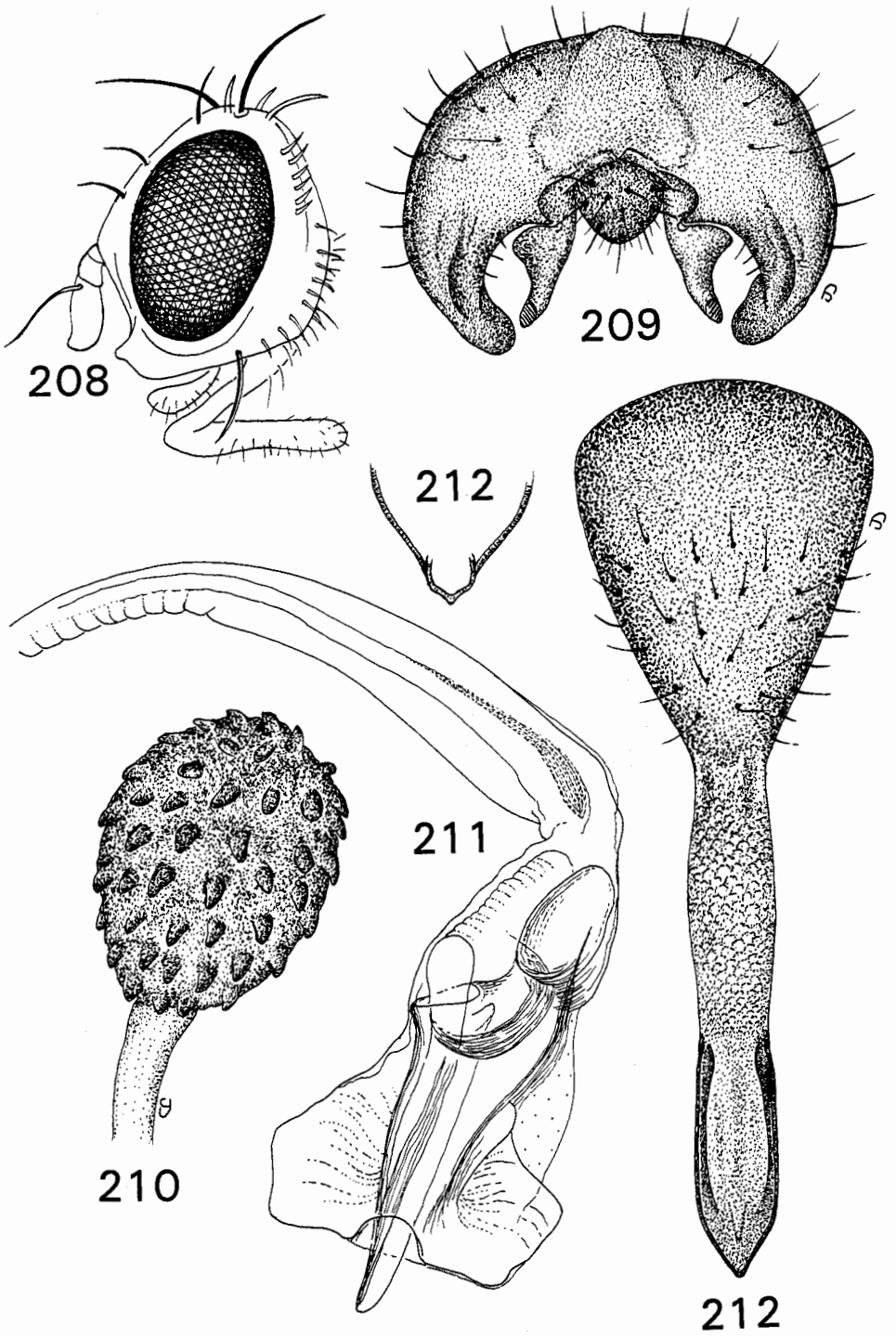
Description

Head as in Fig. 208; tergum VI of female about equal in length to tergum V and ovipositor base slightly longer than terga V+VI, with spiracular openings at about basal 0·4 of segment. Aculeus comparatively short and thick, about 4× longer than wide, sharply tapered at apical 0·25 and indistinctly trilobed at apex (Fig. 212). Spermathecae nearly round, heavily sclerotised and densely tuberculate and with rather long, straight necks (Fig. 210). Sternum V of male about 2× wider than long, gently concave on hind margin. Outer surstylus blunt and curved inward at apex. Inner surstylus terminates in a single large lobe which is black and transversely striated at apex (Fig. 209). Aedeagus bare, distiphallus short and thick, about 2× longer than wide with complex internal sclerotisation and with seminal duct extending well beyond apex (Fig. 211).

Remarks

Sphenella ruficeps was treated as a subspecies of *Sphenella marginata* (Fallén) (Munro 1957*a*) but later raised to species rank (Hardy 1988*b*) based upon differences in wing markings and male genitalia. Munro differentiated *S. ruficeps* from the nominal subspecies on 'apical band entire with a broad hook, sometimes tending to disappear and occasionally a trace of a hyaline spot below tip of vein 2; in male femora black, front pair sometimes less so; oviscape about 0·2 wing length' as opposed to 'apical band on wing with well defined hook on inner margin, more usually with a hyaline spot below tip of vein 2 and a strong tendency for the band to be divided by the union of the spot with the indent at the hook;

oviscape generally shorter, about 0·17 wing length'. Typical *S. marginata* have the male femora rufous except for a tinge of brown in middle of hind pair. *S. ruficeps* and *S. sinensis*



Figs 208–212. *Sphenella ruficeps* (Macquart): *208*, head; *209*, ♂ surstyli and claspers; *210*, ♀ spermatheca; *211*, ♂ distiphallus; *212*, ♀ ovipositor and apex of aculeus.

Schiner typically have the male femora brown to black. The apex of the prensiseta (inner lobe of surstylus) of *S. marginata* is tapered and black over apical half of narrowed portion of lobe whereas in *S. ruficeps* the apex is oblique with the black portion extending scarcely 0·25× length of the narrowed portion (Fig. 209); also the seminal duct of *S. marginata* does not extend beyond the apex. For figures of the wing markings and male genitalia of *marginata* refer to Munro (1957*a*: figs 12, 13, 57 and 77).

Biology

Larvae are seed feeders in flowerheads of *Senecio* spp. (Asteraceae). In Australia it has been reared from *Senecio amygalifolius*, *Senecio madagascariensis* and *Senecio lautus*. In the collection made by G. Bush were numerous specimens bearing field numbers referring to the following Asteraceae: *Calotis lappulacea*, *Erechthites valerianaefolia*, *Helichrysum bracteatum* and *Ixiolaena brevicompta*. However, there is no indication whether these were reared from or collected on these plants.

Distribution

Widespread over Australia.

Genus ***Tephritis*** Latreille

Tephritis Latreille, 1804: 196.

Type species: *Musca arnicae* Linnaeus, by designation of Cresson (1914: 278).

Diagnosis

This genus has been allied to *Paroxyna* Hendel because of the similar wing markings, densely microtrichose body, 4 scutellar and 2 frontal bristles, usually with a bare area on vein R_1 opposite end of Sc and vein R_{4+5} bare on dorsum except for a few setae at base and with a few ventral setae before r-m. It differs from *Paroxyna* in having the proboscis short and capitate, not geniculate, with labellum fleshy and in normal position protruding just a short distance beyond oral margin (Fig. 239), aedeagus bare lacking setulae at apex of basiphallus (Fig. 219), cell sc usually lacking an isolated hyaline spot in middle and pattern of markings in wing extremely diverse. It is related to *Campiglossa* Rondani but differs in having the antennal bases approximate, separated by less than 0·25× the width of the scape, parafacial and gena comparatively narrow, former about equal to width of two rows of eye facets or about 0·33–0·25× width of 3rd antennal segment and latter about equal to width of 3rd segment; frons about equal to or slightly wider than eye; wing irregularly spotted or variously marked (Figs 213, 217, 221); proboscis shorter, not geniculate; head less distinctly angulate at junction of frons and face.

Description

Head slightly higher than long, frons meeting face at a slight angle but not protruding. Face nearly straight, anterior oral margin only slightly protruded. Two frontal and 2 orbital bristles with upper orbital pale yellow-white. Lower side of face bare except for microscopic pale setae continuous on gena. Apical scutellar comparatively small, about 0·33–0·5× size of basal bristles. Dorsocentral bristles in line with or near suture, wings displaying 3 rather distinct wing patterns in Australian species: (1) *Trupanea* like, a stellate pattern with large preapical dark brown mark and radiating lines of brown (Fig. 229); (2) rather evenly spotted (Fig. 233); and (3) anterior half predominantly brown distal of apex of vein Sc (Fig. 217). Hind tibia with a row of prominent erect anterodorsal bristlelike setae in middle of segment and hind femur with 1 preapical anterodorsal and no dorsal bristlelike setae in Australian species except for *T. poenia* (Walker) and *T. pelia* Schiner, which have preapical dorsals.

Remarks

The genus is well developed and rather highly diversified in Australia.

Distribution

A large worldwide genus of about 140 known species which breed largely in flowerheads of Asteraceae.

Key to Known Species of *Tephritis* from Australia

1. With stellate pattern of dark markings in apical portion of wing, that is, a large brown preapical mark with arms of brown radiating to posterior margin and often through apex (Fig. 229) . 2
Wing markings of various patterns, not as above, if with a large brown mark filling most of anterior portion then with irregular hyaline spots over posterior portion of wing (Fig. 217), not a distinct stellate pattern 7

2 (1). Solid brown in preapical portion of wing confined to area beyond level of r-m cross-vein; cell sc 1/3–1/4 as long as 4th costal section that borders r_1 (Fig. 221) 3
Brown mark extended basally, filling cells r_3 and r_5 to fork of veins R_{2+3} and R_{4+5} (Fig. 253); cell sc about half as long as section of costa bordering r_1; WA, NT ..... *T. prolixa*, sp. nov.

3 (2). Apex of cell r_5 without a complete fork, at most with 1 ray reaching to apex of M; with a preapical hyaline spot in cell r_1 4
With a complete brown fork in apex of cell r_5 and an arm of brown extending obliquely from solid brown mark to costa in cell sc; apex of cell r_1 brown; 5th costal section 2× longer than 6th (Fig. 225); Qld ..... *T. furcata*, sp. nov.

4 (3). With 2 transverse hyaline marks extending from costa, through cells r_1, r_3 and r_5 to vein M; all sc filled with a dark brown mark that extends through cell r_1 and most of r_3 (Fig. 221). Also keyed in couplet 8; WA ..... *T. distigmata*, sp. nov.
With 2 hyaline spots in cell r_1 not extending into r_3 and r_5 5

5 (4). Cell r_3 not with an isolated hyaline spot at upper apex; no arm of brown extending from r-m cross-vein to cell sc; if with 5 lines of brown through posterior portion then the streak from r-m not continuing as a dark brown mark beyond cell dm (Figs 263, 272) 6
Cell r_3 with an isolated hyaline spot at upper apex; brown streak from r-m continuous to sc and to hind margin of wing in apex of cell cu (Fig. 229); WA, SA ..... *T. hesperia*, sp. nov.

6 (5). No distinct brown mark on r-m and no mark continuing into cell dm; large brown preapical mark not touching r-m cross-vein (Fig. 263); wing tinged faintly brownish; smaller species, body and wing each 2·0–2·5 mm; ACT, NSW, Qld, SA, Vic., WA ..... *T. pumila*, sp. nov.
With a brown mark over r-m which continues through cell dm; brown preapical mark touching r-m (Fig. 272); wing mostly hyaline; larger species, body and wing each 3·0–3·5 mm; WA, SA ..... *T. trupanea*, sp. nov.

7 (1). Anterior portion of wing largely dark brown or with a large preapical solid brown area and cell sc all brown, with irregular hyaline marks through posterior portion (Figs 221, 267) 8
Not as above 9

8 (7). With a solid brown area extending through cells r_1, r_3 and r_5 to forking of veins R_{2+3} and R_{4+5}; anterior margin with tiny hyaline spots (Fig. 267); NSW, SA ..... *T. quasiprolixa*, sp. nov.
Solid brown confined to a preapical mark extending to about level with dm-cu cross-vein and a mark over cell sc extending through basal portions of cells r_1 and r_3 (Fig. 221); WA ..... *T. distigmata*, sp. nov.

9 (7). Wing mostly hyaline with irregular transverse streaks of brown, the streak at about level of dm-cu cross-vein is complete or nearly so; preapical portion of wing broadly hyaline with 2–3 isolated brown spots (Fig. 238); Widespread ..... *T. pelia* Schiner
Not as above 10

10 (9). With an almost complete hyaline band extending longitudinally through middle of wing (Fig. 276); Vic. ..... *T.* sp. 'A'
Not as above 11

11 (10). Wing evenly spotted with abundance of rather uniform round hyaline spots separated by a network of brown lines (Fig. 233); tiny species 2·0–2·5 mm; NSW, ACT, Tas. ..... *T. pantosticta*, sp. nov.
Hyaline spots irregular in shape and separated by solid brown areas (Fig. 271) 12

12 (11). Cell sc short scarcely longer than high and entirely brown; 2 large brown marks in cell c; 1 large hyaline spot in cell r_3 above r-m cross-vein; spots in cell r_1 not contiguous with hyaline marks across middle of wing and other wing markings as in Fig. 271; Tas. ..... *T. tasmaniae*, sp. nov.

Cell sc 2–3× longer than wide; wing markings not as above 13

13(12). Cell sc with 2 hyaline spots, if occasionally 1 it is near apex of cell 14

Cell sc all brown or brown with hyaline base, no isolated spots 17

14 (13). Wing not with apices of cells r_3 and r_5 mostly hyaline (Fig. 257) 15

Wing mostly hyaline at apices of r_3 and r_5 except for a brown spot at lower apex of r_3; with an isolated brown mark on margin in cell m (Fig. 249); mesonotum grey with faint brown vittae and with brown spots at bases of dorsocentral, prescutellar and scutellar bristles; abdomen yellow setose and with small paired submedian brown spots on terga beyond II; widespread ..... *T. poenia* (Walker)

15 (14). Hyaline marks in cell r_1 just beyond apex of vein R_1 continue across cells r_3 and r_5; r_3 with 2 marginal hyaline spots, 1 touching apex of R_{2+3}; posterior portion of wing with transverse hyaline streaks; oral margin of face weakly produced and abdomen lacking paired brown spots 16

Hyaline marks in cell r_1 not running across middle of wing; cell r_3 with 1 marginal hyaline spot, not touching apex of R_{2+3}; with hyaline spots in posterior portion of wing and a large isolated hyaline mark in cell dm (Fig. 257); face strongly protruding on oral margin (Fig. 258); abdominal terga II–V with large paired brown spots; Qld, NSW ..... *T. protrusa*, sp. nov.

16 (15). Sterna of abdomen, tergum I, basal half and broad median portion of tergum II all pale yellow; mesonotum densely grey microtrichose, faintly brown on posterior margin; female with basal segment of ovipositor broadly yellow over median portion, equal in length *in situ* to terga IV–VI; ACT, NSW, Vic. ..... *T. bushi*, sp. nov.

Base of abdomen black, sterna marked with brown to black; mesonotum and scutellum brown microtrichose, grey only on anterior margin of mesonotum; female ovipositor base mostly black, yellow to reddish on sides of median portion, comparatively short, scarcely longer than wide, length about equal to terga V–VI; Vic., ACT ..... *T. brunnea*, sp. nov.

17 (13). Cell sc all brown; hyaline mark at apex of cell r_5 continuous through r_3, other wing details as in Fig. 244; male distiphallus bare; Vic., WA ..... *T. phaeostigma*, sp. nov.

Base of cell sc hyaline; apex of cell r_3 brown except for hyaline spot at upper apex; hyaline mark at apex of cell r_5 broadly continuous through cell m; cell m hyaline except for a brown mark on upper median margin just below vein M and a brown mark along cross-vein dm-cu (Fig. 151); mesonotum with rather distinct brown longitudinal vittae and abdomen with paired submedian brown spots on terga after tergum II; apex of male basiphallus densely spiculated (Fig. 152); Qld ..... *Paroxyna infrequens*, sp. nov.

Tephritis brunnea, sp. nov.

(Figs 213–216)

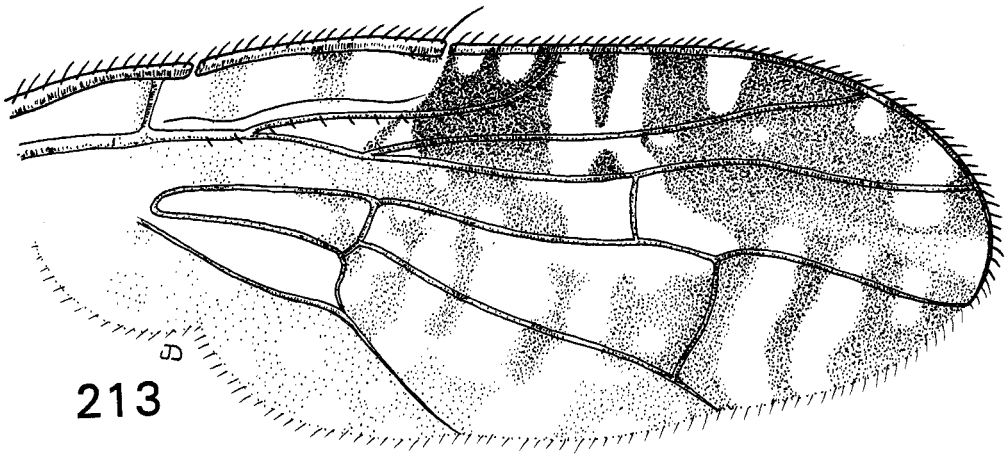
Material Examined

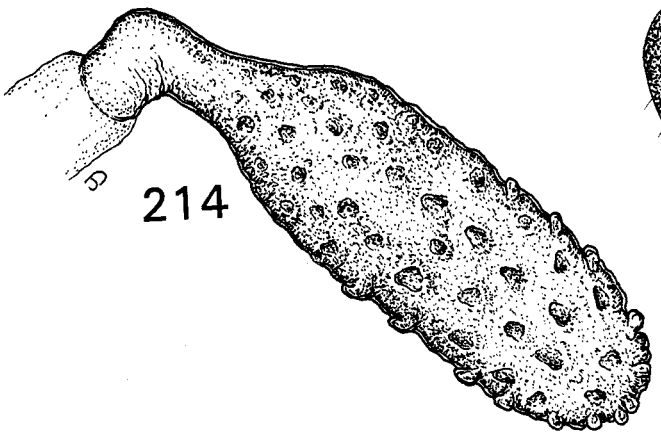
Holotype. ♂, Vic., Tommy's Bend, 7·4 km E Marysville, 24.xi.1964, No. 64129, G. L. Bush, ANIC.

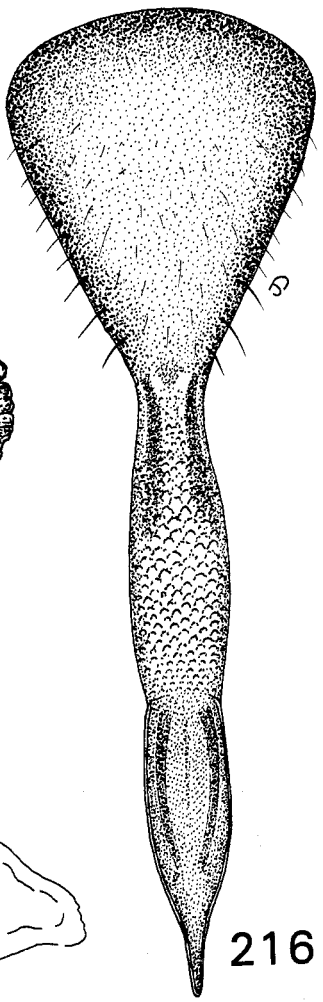
Paratypes. **Victoria**: Allotype ♀ (ANIC), 4♂, 5♀, same data as holotype; several ♂, Mt Baw Baw, nr Tanjilbren, 30.xi.1964, No. 64134, G. L. Bush; 1♀, 9 km E Marysville, 24.xi.1964, No. 64130, G. L. Bush; 1♂, Wilson's Promontory, 30.v.1964, ex *Vittadinia triloba* (Gaud.) D.C., No. 6444, G. L. Bush; 1♀, Healesville, 9.v.1964, ex *Senecio lautus* Forst., No. 6428, G. L. Bush. **Australian Capital Territory**: 1♀, 'Picadilly Circus', Brindabella Range, 29.iv.1972, D. K. McAlpine and M. Richards. Paratypes in AMS, ANIC, BPBM, MSU.

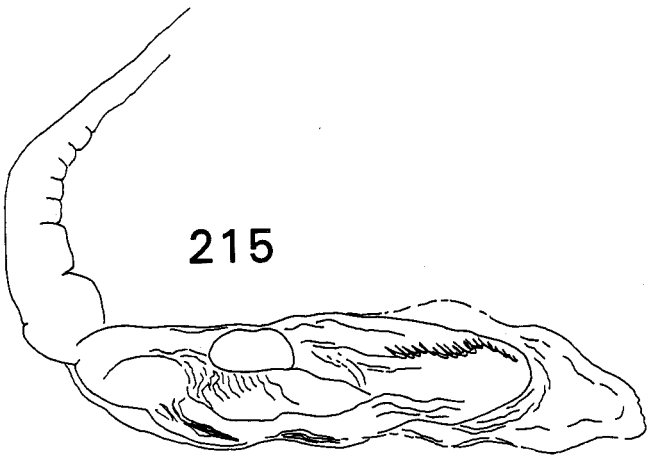
Diagnosis

Fitting near *T. bushi*, sp. nov., and differing by having the basal terga of abdomen black and the sterna marked with brown to black; mesonotum and scutellum brown microtrichose, grey only on anterior margin of mesonotum; basal segment of ovipositor short and broad, scarcely longer than wide, about equal in length to terga V+VI and predominantly black, yellow on sides in median portion (Fig. 216).









Figs 213–216. *Tephritis brunnea*, sp. nov.: *213*, wing; *214*, ♀ spermatheca; *215*, ♂ distiphallus; *216*, ♀ ovipositor.

Description

Male

Length. Body 3·0 mm; wing 3·5 mm.

Fitting the description of *T. bushi* except for the characters noted above. Wing markings as in Fig. 213. Sterna I, IV and V mostly or entirely brown to black, sterna II and III yellow. Distiphallus as in Fig. 215.

Female

Length. Body, excluding ovipositor 3·5 mm; wing 4·2 mm.

As for male but sternae I, IV–VI mostly or entirely brown to black. Basal segment of ovipositor as in Fig. 216 and spermathecae as in Fig. 214.

Remarks

One paratype from type locality lacks the anterior hyaline spot in cell sc and this may be a variable character.

Biology

Reared from larvae in flowers of *Senecio lautus* and *Vittadinia triloba* (Asteraceae).

Etymology

The specific epithet is from the Latin *brunneus*, brown, referring to the brown microtrichose mesonotum.

Tephritis bushi, sp. nov.

(Figs 217–220)

Material Examined

Holotype. ♂, ACT, Mt Gingera, 4.ii.1965, reared from flowerheads of *Celmisia longifolia* Cass., No. 658, G. L. Bush, ANIC.

Paratypes. **Australian Capital Territory**: Allotype ♀(ANIC), same data as holotype. 28♂, 30♀, from the following localities: **New South Wales**: Mt Kaputar Nat. Pk, 1370 m, 14.i.1978, G. Daniels; Wentworth Falls, Blue Mtns, 21.xii.1973 and 12.xii.1980, D. K. McAlpine and B. J. Day; 0·5 km W junction Apollo Bay; Barrington Tops, via Salisbury, 9–10.ii.1965, G. Monteith. **Australian Capital Territory**: Condor Creek, Brindabella Range, 29.iv.1972, D. K. McAlpine. **Victoria**: Colac Road and Torton's Pass Road, 9.iii.1965, No. 6519, G. L. Bush. Paratypes in AMS, ANIC, BPBM, MSU, UQM.

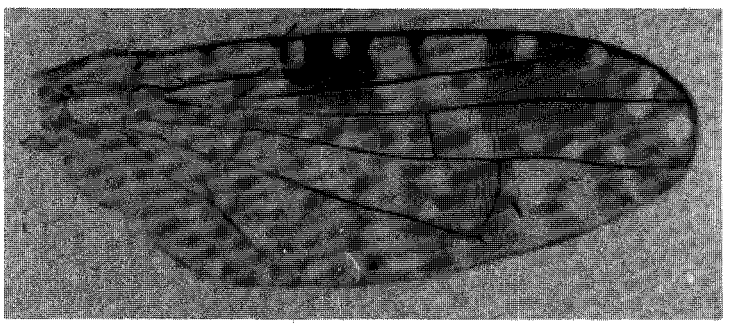
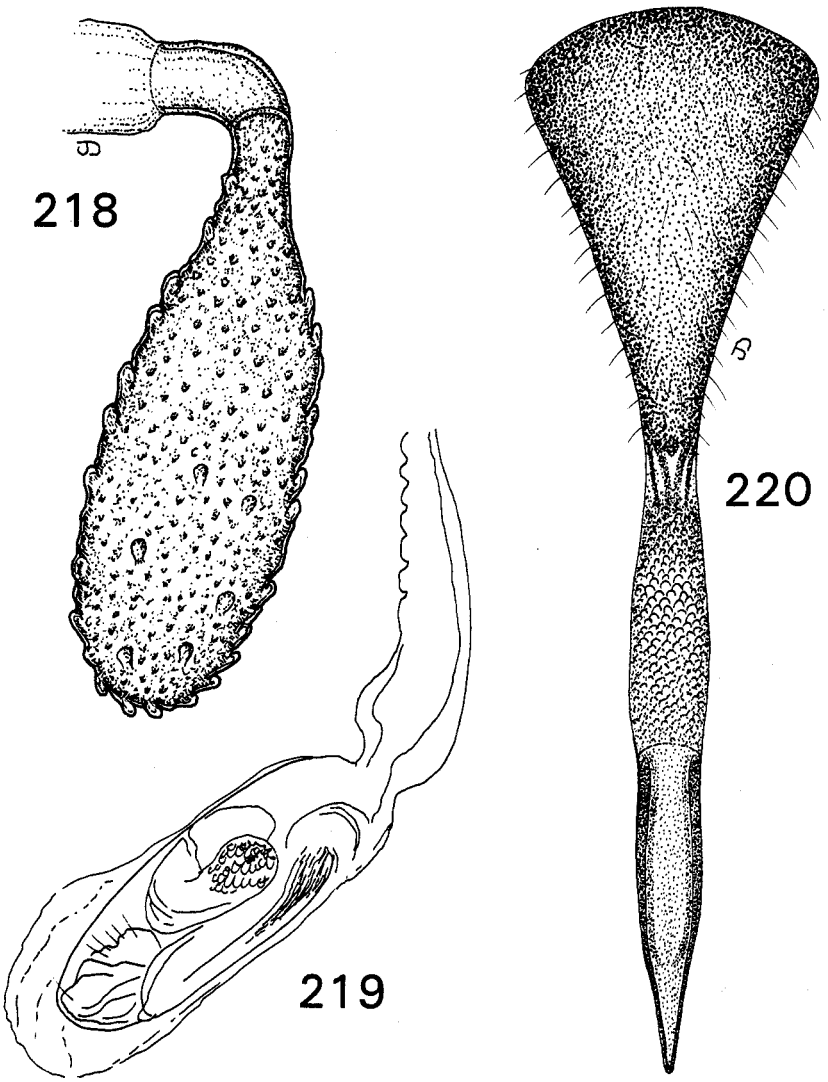


Fig. 217. *Tephritis bushi*, sp. nov., wing.

Diagnosis

Fitting in species complex that has 2 hyaline spots in cell sc and 2 large hyaline spots in cell r_1 just beyond vein R_1 and continuous through cell r_3. The wing markings are similar to those of *T. brunnea*, sp. nov., and it is differentiated from that species by having tergum I and broad median portion of tergum II pale yellow; mesonotum densely grey microtrichose, faintly brown on posterior margin; basal segment of female ovipositor broadly yellow through median portion (Fig. 220) and equal in length to terga IV–VI.



Figs 218–220. *Tehpritis bushi*, sp. nov.: *218*, ♀ spermatheca; *219*, ♂ distiphallus; *220*, ♀ ovipositor.

Description

Male

Length. Body and wing 4·0 mm.

Head. Slightly higher than long, with frons gently sloping, face gently concave with oral margin slightly protruded. Frons bare, orange in colour except for narrow yellow orbital margins. Parafacial narrow, about 0·25× width of 3rd antennal segment. Gena subequal in width to 3rd antennal segment.

Thorax. Black in background with yellow on humerus, notopleura, upper edge of anepisternum and margin of scutellum. Densely grey microtrichose, faintly tinged brown posterior to prescutellar bristles. Sparsely thin yellow setose, dorsocentral bristles just behind mesonotal suture. Bristles black except for brownish yellow posterior notopleural and pale yellow pteropleural and lower mesopleural bristles.

Legs. Yellow, with 1 preapical dorsal and 1 anterodorsal bristle on hind femur.

Wings. With a thin streak of brown across middle of cell c and 2 prominent hyaline spots in sc. Three hyaline marks bisecting cell r_1, 2 basal marks large and continuing through cell r_3 into r_5. With an isolated hyaline spot in upper apex of r_3 and a second mark in apicomedian portion of r_3 extending into cell r_5 usually narrowly separated from hyaline mark in apex of r_5. Cell m with 3 transverse hyaline marks usually continuous into cell r_5 (Fig. 217).

Abdomen. Sterna, genitalia, tergum I and basal half and median portion of tergum II yellow. Remainder of abdomen black in ground colour, mostly brown microtrichose and black setose, narrowly grey and with white setae on lateral and posterior margins of terga III–V. Surstylus tapered, blunt at lower apex. Distiphallus large, heavily sclerotised (Fig. 219).

Female

Length. Body, excluding ovipositor, 4·0 mm; wing 4·4 mm.

As in male. Basal segment of ovipositor noted above, (Fig. 220) spiracles at basal 0·33 of segment. Aculeus slender, sharp pointed. Two oval spermathecae (Fig. 218).

Biology

Reared from flowers of *Celmisia longifolia* (Asteraceae).

Etymology

Named after Dr Guy Bush, Michigan State University, who did intensive field studies of the Australian Tephritinae and whose valuable collections have added much to this study.

Tephritis distigmata, sp. nov.

(Figs 221–224)

Material Examined

Holotype. ♂, WA, Porongurup Nat. Pk, 10.xi.1977, D. H. Colless, ANIC.

Paratypes. **Western Australia**: Allotype ♀ (ANIC), 4♂ same data as holotype; 4♂, 6♀ from the following localities: Margaret River Dist., 13.iv.1936, A. L. Raymond; Flinders Bay, 12.iv.1936, A. R. Raymond; Mt Adam, 9.x.1986, on *Podotheca grapholoides*, N. Gough. Paratypes in ANIC, BPBM, NHM, QDPI, UH.

Diagnosis

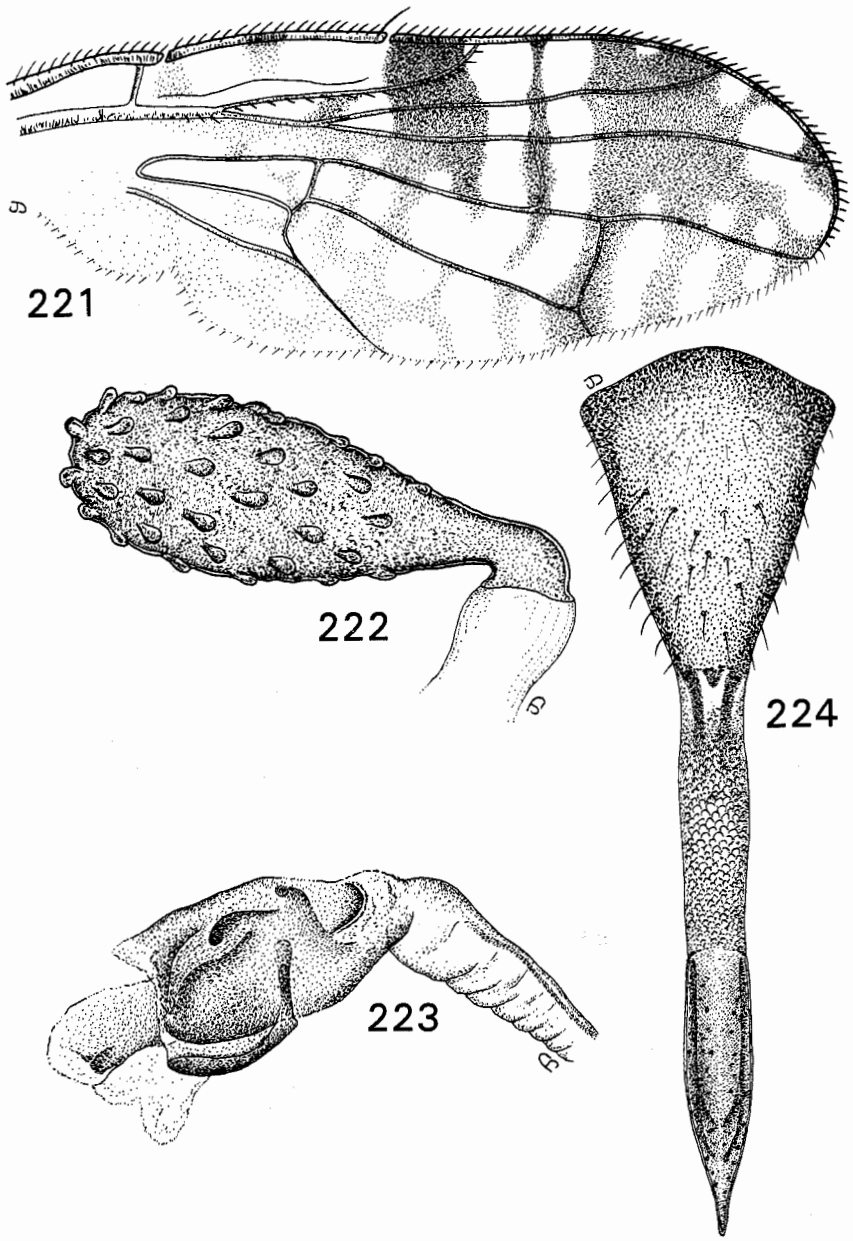
Fitting nearest to *T. quasiprolixa*, sp. nov., by having anterior half of wing extensively marked with brown and differing by having 2 hyaline marks in cell r_1 just beyond end of vein Sc extending across wing into cell dm, cell sc all brown and having an isolated hyaline spot at upper apex of cell r_3.

Description

Male

Length. Body 2·5 mm; wing 3·0–3·3 mm.

Head. As in other *Tephritis* with parafacial about equal to 1–2 rows of eye facets and gena less than width of 3rd antennal segment. Lower side of face bare except for a few inconspicuous pale setae. Genal bristle brown, tinged with yellow. Interfrontalia yellow-golden, face and genae yellowish white. Frons 0·33× wider than eye.



Figs 221–224. *Tephritis distigmata*, sp. nov.: *221*, wing; *222*, ♀ spermatheca; *223*, ♂ distiphallus; *224*, ♀ ovipositor.

Thorax. Grey-brown microtrichose on dorsum, grey on sides and covered with thin yellow setae. Scutellum nearly bare on disk with a few yellow setae on margin; apical scutellars about half size of basal bristles.

Legs. Yellow, tinged brown on femora, slightly blackish on hind pair. Hind femur with 1 preapical anterodorsal bristle and no dorsal bristles. Anterodorsal row of black erect setae prominent over middle of hind tibia.

Wings. As above and as in Fig. 221, with large quadrate brown mark filling cell sc and extending through cells r_1 and r_5 almost to vein R_{4+5}. With narrow brown vitta extending transversely from anterior margin in line with r-m cross-vein, connected with pale brown preapical vitta across cell dm. A small preapical hyaline spot on margin in cell r_1. Three round hyaline marks along lower margin of cell r_5, almost continuous with transverse hyaline marks through cell m. Wing posterior to vein R_{4+5} and basal of dm-cu cross-vein with numerous irregularly arranged transverse pale brown bands, 3 complete brown bands through cell cu (Fig. 221). Cell bcu with short point at lower apex.

Abdomen. Grey-brown microtrichose, yellow pilose. Surstylus slender, about 0·4× as long as epandrium. Distiphallus well sclerotised, comparatively short and thick (Fig. 223).

Female

Length. Body, excluding ovipositor, 2·6 mm; wing 3·0 mm.

As in male. Tergum VI slightly longer than tergum V. Basal segment of ovipositor shining black at apex and base, rufous medially, bare of microtrichia, covered with thin black setae and slightly longer than terga V+VI. Aculeus rather broad, tapered to a point on apical 0·33 (Fig. 224). Two club-shaped, spiculated spermathecae with curved necks (Fig. 222).

Etymology

The specific epithet is from the Greek *di*, 'two', combined with *stigmatos* 'mark, brand, spot', referring to the two large brown marks in anterior portion of wing.

Tephritis furcata, sp. nov.

(Figs 225–228)

Material Examined

Holotype. ♂, Qld, 6·5 mi SE of Mt Nebo, *c.* 1500 m, 24.v.1966, Z. Liepa, ANIC.

Paratypes. **Queensland**: Allotype ♀ (ANIC), 9 mi N of Dayboro, 23.v.1966, Z. Liepa; 2♂, 2♀, from the following localities: same as holotype; Mitchell Gully, 2 mi E of Cunningham's Gap, 2.vi.1966, Z. Liepa; Clayton Gully, 2·5 mi E of Cunningham's Gap, 1.vi.1966, Z. Liepa; Brisbane, 18.viii.1962, C. F. Ashby. Paratypes in ANIC, BPBM.

Diagnosis

Fitting the *Trupanea*-like group of species because of the wing markings and differs from other known Australian *Tephritis* by having a brown fork in apex of wing and a narrow arm of brown extending obliquely from large preapical brown mark to costa in cell sc; apex of cell r_3 brown and 5th costal section (between apices of veins R_{2+3} and R_{4+5}) 2× longer than 6th (between apices of veins R_{4+5} and M).

Description

Male

Length. Body and wing each 3·2–3·5 mm.

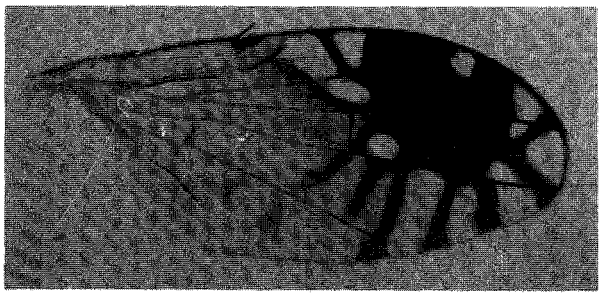
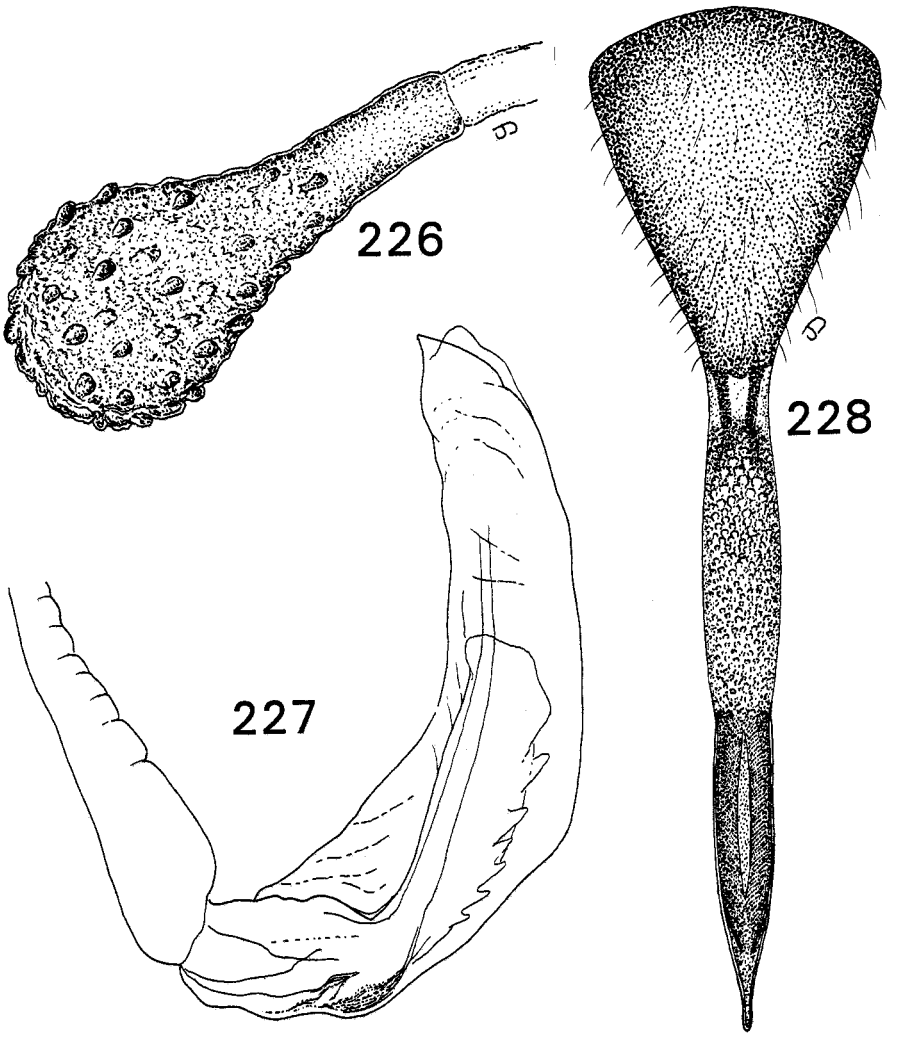


Fig. 225. *Tephritis furcata*, sp. nov., wing.

Head. Fitting the norm for genus. Anterior oral margin gently protruding and lower sides of face with very inconspicuous short yellow seta.

Thorax. Densely grey microtrichose, grey-brown over dorsum. Mesonotum and most of scutellum densely covered with recumbent yellow-white scalelike setae. Dorsocentral bristles slightly behind level of suture and apical scutellars about 0·4× size of basal bristles.



Figs 226–228. *Tephritis furcata*, sp. nov.: *226*, ♀ spermatheca; *227*, ♂ distiphallus; *228*, ♀ ovipositor.

Legs. Yellow. Hind femur with 1 preapical anterodorsal bristle-like seta and no dorsal seta. Anterodorsal row of setae in middle of hind tibia rather inconspicuous, those of the row only 2–3× larger than surrounding setae.

Wings. As above and as in Fig. 225. Counting lower arm of apical fork 6 arms of brown extend through posterior portion of wing. Cell r_5 with an isolated round hyaline mark on lower margin just distal to r-m cross-vein. Cell bcu with a very short point at lower apex.

Abdomen. Densely grey-brown microtrichose with apices of terga narrowly yellowish. Covered with yellow-white scalelike setae as mesonotum. Genitalia pale yellow. Outer surstylus broad and blunt at apex. Distiphallus short except for an elongate filament from apex extending about 2× length of body of distiphallus (Fig. 227).

Female

Length. Body and wing, each 3·4–3·6 mm.

As in male. With flat yellow scales extending over proximal half of ovipositor base, apical half with thin yellow to brownish setae. Mostly rufous, about as long as terga V+VI, with spiracular openings at basal 0·33 of segment. Aculeus tapered to a point on apical 0·33 (Fig. 228). Spermathecae clavate, densely covered with thornlike tubercles (Fig. 226).

Remarks

Showing remarkable parallelism with *Trupanea signata* Foote from the Nearctic region and to *Tephritis* sp. illustrated by Foote (1980: 76–77, figs 111 and 115).

Etymology

The name comes from the Latin *furcatus*, forked, referring to the apical fork in the wing.

Tephritis hesperia, sp. nov.

(Figs 229–232)

Material Examined

Holotype. ♂, WA, Midlands, Cervantes, 7.x.1986, swept from *Olearia axillaris*, I. M. White, ANIC.

Paratypes. **Western Australia**: Allotype ♀ (ANIC), same data as holotype; 30♂, 21♀ from the following localities: same as holotype; Southwest, Leeuwin Naturaliste Nat. Pk, Prevelly Pk and Hamelin Bay, 18.x.1986, on *Olearia axillaris*, I. M. White; Cape Naturaliste, 1.x.1970, D. H. Colless; Yallingup, Nov. 1913, R. E. Turner. One of the latter specimens in NHM is labelled 'type of an undescribed, sp. nov., by F. A. Perkins'. Paratypes in AMS, ANIC, BPBM, NHM.

Diagnosis

Fitting in group of species that has a Trupanea-like wing pattern. Differs from all known

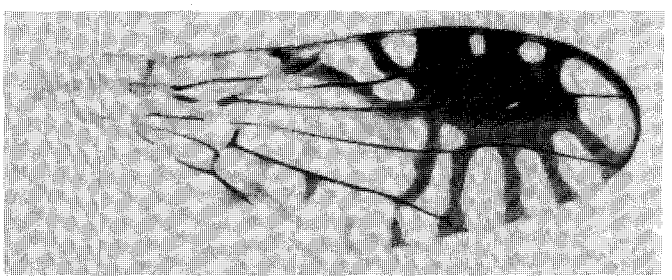


Fig. 229. *Tephritis hesperia*, sp. nov., wing.

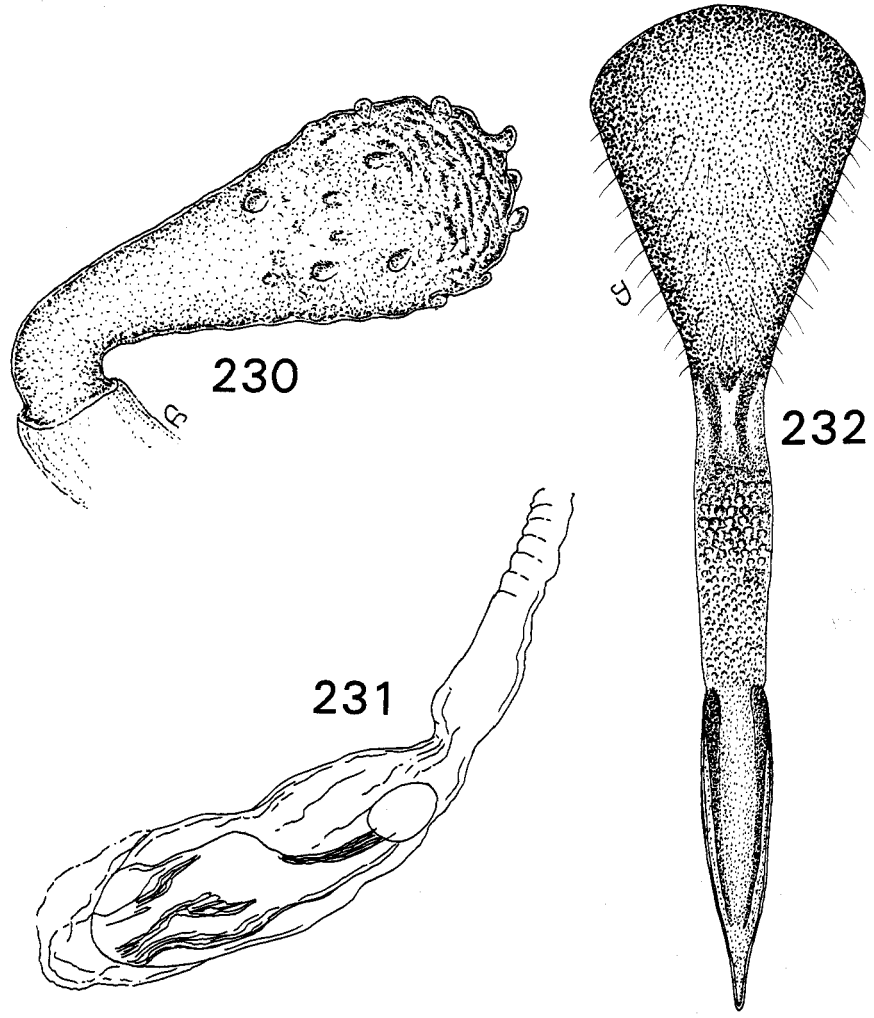
species by having a narrow brown band continuing from brown preapical mark to wing margin in cell sc; an isolated hyaline spot in upper apex of cell r_3 and a narrow brown band over r-m cross-vein continuous to wing margin in cell cu (Fig. 229).

Description

Male

Length. Body 3·5 mm; wing 3·3 mm.

Head. Pale yellow in ground colour except for compound eyes and black on ocellar triangle and in upper median portion of occiput, densely grey-white microtrichose especially over frons, parafacial and gena. Approximately 1·3× higher than long, with frons gently sloping and face nearly straight, only slightly produced on oral margin. Frons about 0·33× wider than long, measured from lower ocellus to lunule and bare except for a few microscopic fine yellow setae. Parafacial about half as wide as 3rd antennal segment and gena about equal in width to 3rd. Antenna situated at upper 0·33 of head height. Bristles brown, faintly tinged with yellow except yellow genal and white upper orbital and outer vertical bristles.



Figs 230–232. *Tephritis hesperia*, sp. nov.: *230*, ♀ spermatheca; *231*, ♂ distiphallus; *232*, ♀ ovipositor.

Thorax. Densely white microtrichose, fine yellow-white setose. Bristles brown tinged with yellow except for white posterior notopleural lower anepisternal, anepimeron and katepesternum. Black in ground colour except for yellow humerus, notopleuron, upper edge of anepisternum and ventral surface of scutellum. Halter pale yellow. Dorsocentral bristles in line with suture. Apical scutellars about 0·33× as long as basal bristles.

Legs. Yellow and as in other *Tephritis*, with 1 small preapical anterodorsal bristlelike seta and no preapical dorsal.

Wings. Trupanea-like, with a large dark brown preapical mark with 5 brown lines radiating to posterior margin. Apex hyaline except for brown lower portion of cell r_5 and a very thin border of brown along costal margin through 0·6 of cell r_3. Cell r_3 with an isolated hyaline spot in upper apex. Cell r_1 with a preapical hyaline spot and 2 large basal marks, basal mark extending through most of cell r_3 and bordered by a brown band extending preapical brown mark to margin in cell sc (Fig. 229). Cross-vein r-m situated rather close to dm-cu, about half its length from this cross-vein. Last section of M slightly convex. Vein Cu_2 straight, cell bcu not pointed at lower apex.

Abdomen. White microtrichose completely obscuring black ground colour. Rather densely fine white setose. Surstylus produced into a blunt lobe at lower apex. Distiphallus as in Fig. 231.

Female

Length. Body, excluding ovipositor, and wing each 3·3–3·5 mm.

As in male. Basal segment of ovipositor polished black, equal in length to terga V+VI. Aculeus sharply tapered to apex (Fig. 232). Spermathecae oval with curved necks (Fig. 230).

Etymology

The specific epithet is from the Latin *hesperius*, western, alluding to its origin, Western Australia.

Tephritis pantosticta, sp. nov.

(Figs 233–237)

Material Examined

Holotype. ♂, ACT, Black Mtn Reserve, 25.xi.1979, Z. Liepa, ANIC.

Paratypes. **New South Wales**: Allotype ♀ (ANIC), Bateman's Bay, 15.x.1968, J. C. Cardale. Approximately 200 specimens from the following localities: **Queensland**: 7 km N Cooroy, 12.xi.1965, ex *Helichrysum diosmifolium* (Vent.), No. 6579, G. L. Bush. **New South Wales**: Cabramatta, Georges River Valley, 1.ix.1960–24.x.1961, M. Nikitin; Coachwood Gully, 21·7 km SE Threeways, 32°39', 150°26', 31.xii.1977, G. Daniels; Barrington Tops, 380 m, 24.x.1965, No. 6544, G. L. Bush; Comerong I., nr Nowra, 16.v.1971, sweeping *Leptospermum laevigatum*, C. E. Chadwick; Whian Whian S.F., 20 km N Lismore, 11.iii.1981, M. J. Fletcher, G. R. Brown and I. Clements; 6 km NE of Bateman's Bay, 4.xi.1975, D. H. Colless; Bateman's Bay, 15.x.1968, J. C. Cardale; Uladulla Beach, 1.x.1971, Z. Liepa; 12 mi NW of Adaminaby, 10.xi.1961, D. H. Colless; 91 km SW of Singleton, Putty Road, 29.vi.1976, Z. Liepa; 92 km SW of Singleton, Putty Road, 7.x.1974, Z. Liepa; Scientist's Cabin, Royal Nat. Pk, 16.x.1975, mv Lamp, G. and A. Daniels; 5 mi S of Mt Wilson, Blue Mtns, 15.iv.1971, D. K. McAlpine; Oatley Pk, nr Sydney, 16.ii.1969, G. A. Holloway; Bateman's Bay, 6 km NE, 4.vi.1975, on *Cassia aculeata*; Mt Keira, nr Wollongong, 4.vii.1971, G. A. Holloway. **Australian Capital Territory**: Black Mtn, 16.i.1962, light trap, I. F. B. Common; Black Mtn, 26.i.1965, light trap, I. F. B. Common; Black Mtn, 12.i.1968, light trap, I. F. B. Common; Black Mtn, 27.iv.1961, D. H. Colless; Black Mtn, 19.i.1968, Z. Liepa; Black Mtn Reserve, 25.xi.1979, Z. Liepa; Blundell's, 14.iv.1931, L. F. Graham; Black Mtn, 22.ii.1930, J. W. Evans. **Victoria**: Latrobe R., No. 3 Lake, 28.ix.1973; 14·4 km N

Stockdale, 15.iv.1964, ex *Calotis lappulacea* Ben, No. 6423, G. L. Bush; Cobbannah, 15.iv.1964, No. 6424, G. L. Bush; Mt Baw Baw, nr Tanjilbren, 4.iii.1965, No. 6515, G. L. Bush; 3 km E Noojee at Moe Junc., 24.viii.1965, G. L. Bush; 10·4 km E Noojee, Tooronga Falls, 3.iii.1965, No. 6513, G. L. Bush. **Tasmania**: Weldboro Pass, 25.x.1933, A.L. Tonnoir; Tungatinah Lagoon nr Tarraleah, 28.iii.1980, G. F. Hevel and J. A. Fortin; Lake Binney Area, north of Tarraleah, 28.iii.1980, G. F. Hevel and J. A. Fortin. Paratypes in AMS, ANIC, BPBM, MSU, NHM, NSWA, NMVM, UH, UQM, USNM.

Diagnosis

We are unable to relate this unusual species to any known *Tephritis*. It seems unique in that the entire wing is evenly covered with small hyaline spots (Fig. 233). It is the smallest known *Tephritis*.

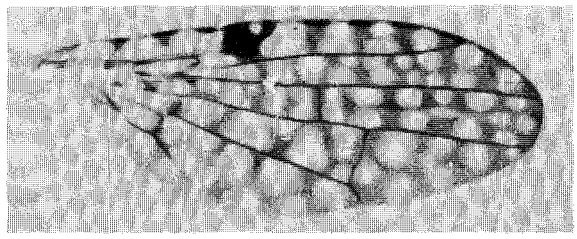


Fig. 233. *Tephritis pantosticta*, sp. nov., wing.

Description

Male

Length. Body, 1·7 mm; wing, 2·0 mm.

Head. Nearly quadrate, frons gently sloping, face straight except for a slight protruberance on anterior oral margin. Junction of frons and face forming an angle but not projected. Mostly grey-white except for eyes and ocellar triangle and with interfrons golden yellow. Genal bristle pale yellow to brownish yellow and with fine yellow-white setae over gena but lower parafacial bare. Otherwise as typical for genus.

Thorax. Densely grey microtrichose and rather thinly fine yellow pilose. Dorsocentral bristles just behind level with suture and apical scutellar about 0·33× size of basal bristles.

Legs. Yellow. Hind femur with 1 anterodorsal preapical bristle and no dorsal bristle. Anterodorsal row of erect setae on hind tibia rather inconspicuous.

Wings. As noted above and as in Fig. 233. Cell sc dark brown except for basal margin and a small hyaline spot at upper apex. Brown mark in sc extending into cell r_1. A multitude of small hyaline spots in all the cells separated by a reticulation of pale brown lines (Fig. 233). Vein Cu straight, cell very slightly pointed at lower apex.

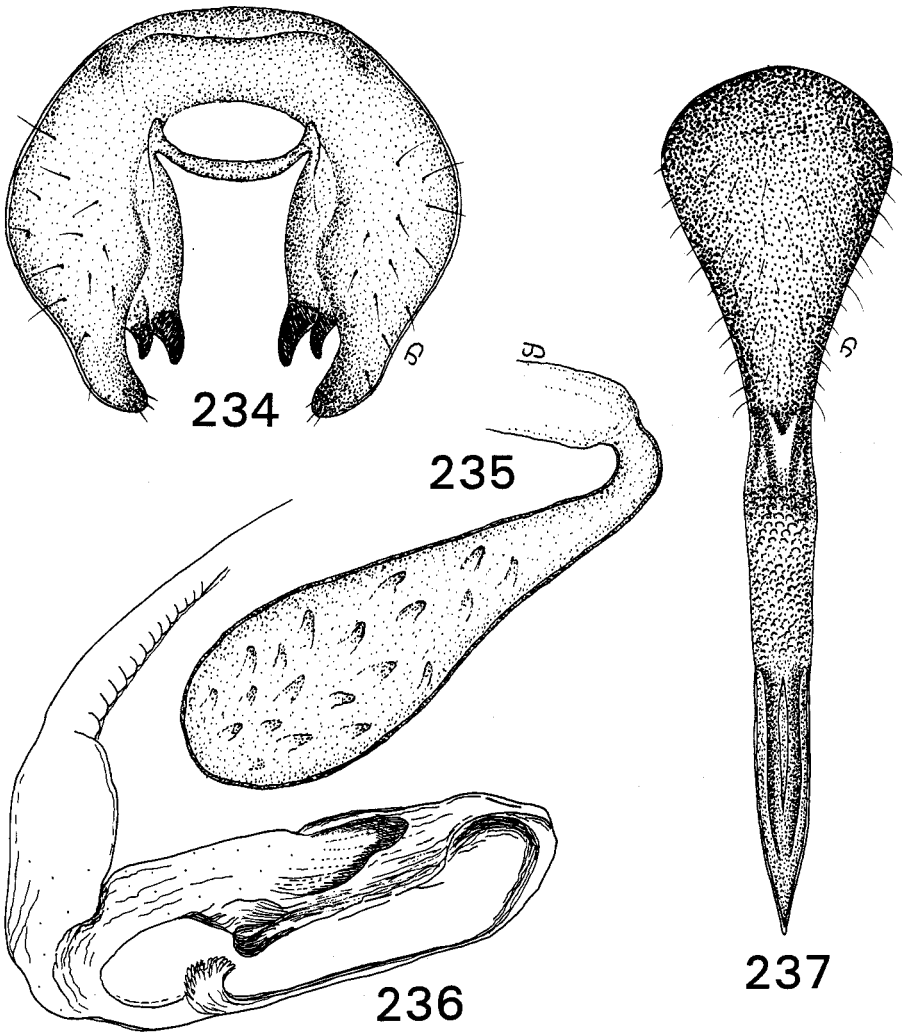
Abdomen. Grey-brown microtrichose and rather thickly yellow-white setose. Genitalia yellow, brown to black on apex of surstylus. Outer surstylus developed into a prominent lobe at apex and prensisetae at apex of inner surstylus plainly visible (Fig. 234). Distiphallus about 4× longer than wide, lacking a membranous extension (Fig. 236).

Female

Length. Body 2·0–2·2 mm; wing 2·2–2·5 mm.

As in male. Tergum VI equal to tergum V. Basal segment of ovipositor shining black, yellow-white setose, *in situ* about 0·33× longer than 6th segment and scarcely over 1·5×

longer than wide, with spiracular openings at basal 0·4 of segment. Aculeus tapered to sharp point on apical 0·33–0·4 (Fig. 237). Spermathecae gourd-shaped with bent necks and rather sparsely small tuberculate (Fig. 235).



Figs 234–237. *Tephritis pantosticta*, sp. nov.: *234*, ♂ surstyli and claspers; *235*, ♀ spermatheca; *236*, ♂ distiphallus; *237*, ♀ ovipositor.

Biology

Reared from flowers of *Calotis lappulacea* and *Helichrysum diosmifolium* (Asteraceae).

Etymology

The specific epithet is from the Greek *panto*, all, and *stiktose*, spotted, referring to the completely spotted wing.

Tephritis pelia Schiner
(Figs 238–243)

Tephritis pelia Schiner, 1868: 271. Holotype ♀ in NHMV.

Type locality: Sydney.
Holotype has been studied previously (Hardy 1968: 138).

Material Examined

About 250 specimens from all states of Australia.

Diagnosis

Readily differentiated from other Australian *Tephritis* by having the wing mostly hyaline, with irregular transverse streaks of brown. One at level of dm-cu cross-vein is complete or nearly so. Hyaline markings in apical 0·33 of wing extend uninterrupted from costa in upper apex of cell r_3 to hind margin in cell m (Fig. 238).

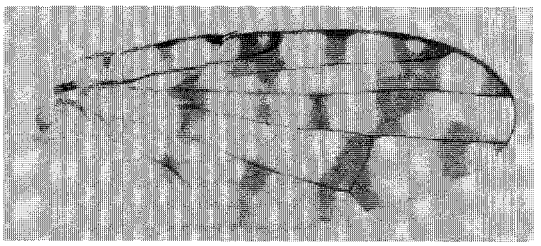


Fig. 238. *Tephritis pelia* Schiner, wing.

Description

Length. Body 3·25–3·5 mm; wing 3·5–3·7 mm.

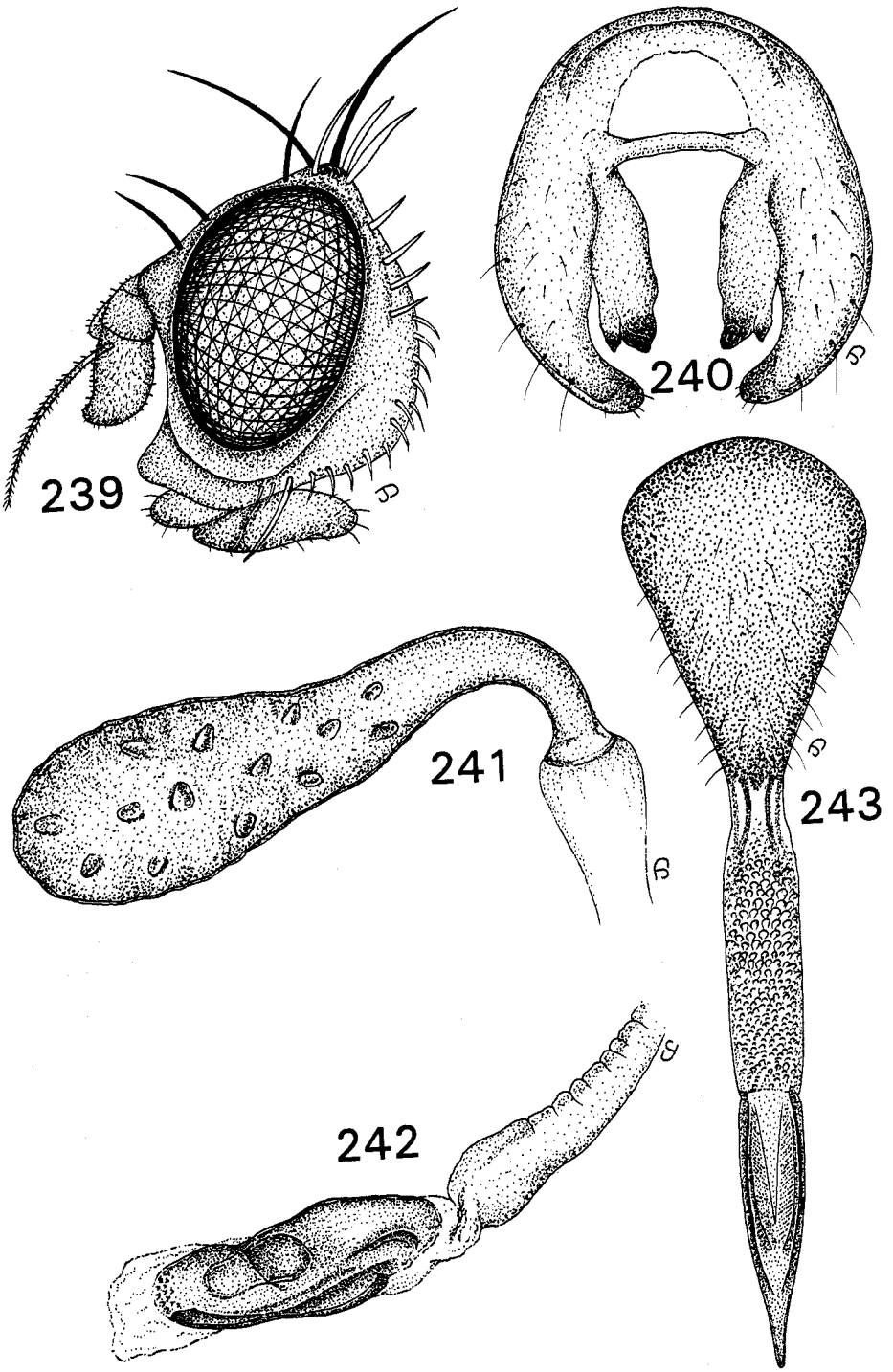
Fitting usual characters for genus with frons and face meeting at almost a right angle. Face concave, anterior oral margin rather strongly produced (Fig. 239). Parafacial about equal to 2 rows of eye facets and gena about equal to width of 3rd antennal segment. Frons about equal in width to eye. Lower sides of face bare except for microscopic fine setae. Thorax and abdomen moderately covered with thin yellow setae. Scutellum yellow on margin and bare except for a few setae on margin. Apical scutellars half size of basal bristles. Wing as noted above and as in Fig. 238. Cell c with a brown mark at middle; sc hyaline on basal half and with a preapical hyaline spot; r_1 with a brown mark at middle and with apex broadly brown; apices of cells r_3 and r_5 hyaline except for a brown mark in lower apex of r_3. Hind femur with 1 preapical anterodorsal and 1 dorsal bristle. Anterodorsal row of erect black setae well developed in middle of hind tibia. Male genitalia as in Fig. 240, prensisetae short and blunt. Distiphallus rather heavily sclerotised (Fig. 242). Basal segment of female ovipositor rufous, except for black apex, covered with fine yellow-brown setae and about equal to terga IV–VI. Spiracular openings at basal 0·33 of ovipositor base. Aculeus tapered to sharp point on apical 0·4 (Fig. 243). Spermathecae club-shaped with sharp bend in neck (Fig. 241).

Remarks

Hering (1944: 9) redescribed *T. pelia* and placed it in *Paroxyna*. This was an error. Malloch (1939*a*: 461) described and figured what he thought was *T. pelia* but it was not correctly identified. He was dealing with *T. poenia* (Walker). The synonymy of *T. pelia* with *T. poenia* by Hardy (1959: 218) was not correct; this referred to *T. pelia* Malloch Nec Schiner. Malloch, *loc. cit.* says 'this may be the species recorded by Macquart as *T. leontodontis* De Geer'. The latter statement would pertain to *T. poenia*.

Biology

Breeds in flowerheads of Asteraceae. In Australia it has been swept from *Podolepis canescens*.



Figs 239–243. *Tephritis pelia* Schiner: *239*, head; *240*, ♂ surstyli and claspers; *241*, ♀ spermatheca; *242*, ♂ distiphallus; *243*, ♀ ovipositor.

Distribution

Widespread over Australia.

Tephritis phaeostigma, sp. nov.

(Figs 244–248)

Material Examined

Holotype. ♂, Vic., 9·6 km S Hattah, 4.viii.1965, ex *Olearia pimelioides* (DC) Ben., No. 6529, G. L. Bush, ANIC.

Paratypes. **Victoria**: Allotype ♀ (ANIC), 13♂, 5♀, same data as holotype. 13♂, 4♀ from the following localities: **Victoria**: 10·48 km W Junc. Apollo Bay–Colac Road and Turtons Pass Road, 9.iii.1965, No. 6519, G. L. Bush. **South Australia**: 6·5 km S Whyalla, 7.viii.1965, ex *Olearia pimelioides* (DC) Ben., No. 6533, G. L. Bush; Ivy Tanks, 15.x.1964, No. 6499, G. L. Bush. **Western Australia**: Stirling Range, 13.x.1965, N. Dobrotworsky; Lower Great Southern Porongurup Nat. Pk, 15.x.1986, swept from adjacent plants of *Graphalium luteoalbum* and *Coryza* sp., I. M. White. Paratypes in AMS, ANIC, BPBM, MSU, NHM.

Diagnosis

Fitting in the complex of species near *T. brunnea*, sp. nov., and *T. bushi*, sp. nov., and differentiated by having cell sc mostly brown with a small distal hyaline spot only occasionally; abdomen mostly brown microtrichose and with a narrow grey longitudinal vitta down middle of terga II–V; basal segment of female ovipositor polished black (Fig. 248); distiphallus of male short and thick (Fig. 247) and femora tinged with brown.

Description

Male

Length. Body 2·6 mm; wing 3·2 mm.

Head. Shaped as in other *Tephritis* with face only slightly concave, almost straight, except for gentle protrusion of oral margin. Genal bristle pale yellow, other head bristles dark brown to black except for yellow-white upper orbital and outer vertical bristles. Upper half of occiput black in ground colour, densely grey microtrichose. Third antennal segment tinged with brown over dorsum.

Thorax. Black in background, yellow on humerus, notopleura and upper edge of anepisternum, densely grey microtrichose, faintly brown over posterior half of mesonotum, a median vitta extending to anterior margin and over scutellum. Dorsocentral bristles in line with suture.

Legs. Yellow except for tinge of brown over dorsal surfaces of femora. Hind tibia with a complete row of short, erect black bristlelike anterior setae. Hind femur with 1 preapical dorsal and 1 anterodorsal bristle.

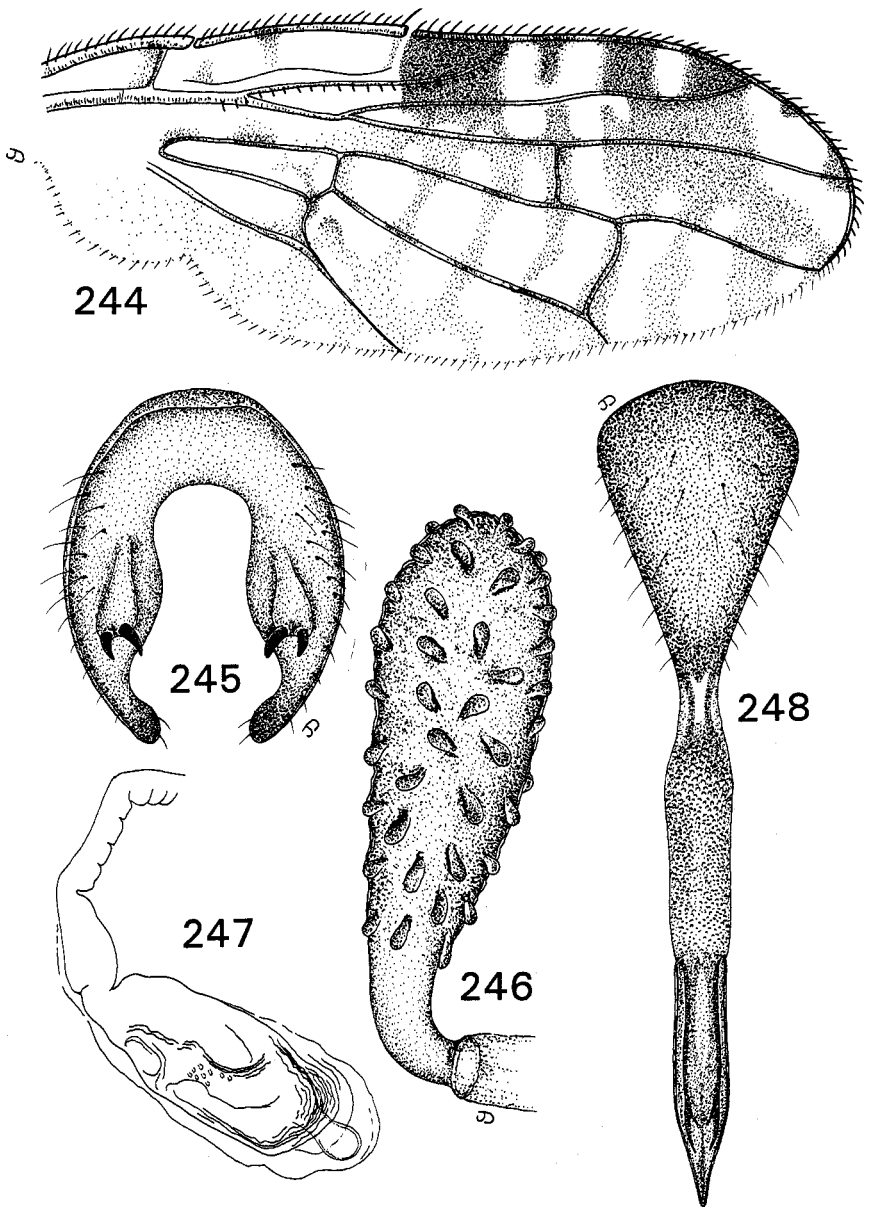
Wings. Typically as in Fig. 244, with cell sc slightly less than half as long as cell c and all brown. Cell sc brown. Cell r_1 with 3 hyaline marks transversing cell, 2 basal spots large and continuous over wing through cells r_3, r_5 and dm. Hyaline mark filling apex of cell r_5 broadly continuous through cell r_3 to margin in upper apex, leaving an isolated spot of brown in lower apex of r_5. Three hyaline bands through cell m extending into cell r_5.

Abdomen. As noted above, fine yellow setose. Surstylus bluntly lobate on apex (Fig. 245). Distiphallus comparatively short and thick (Fig. 247).

Female

Length. Body, excluding ovipositor, 3·2 mm; wing 3·8 mm.

As in male with an isolated hyaline spot in upper apex of cell r_3. Basal segment of female ovipositor polished black with a faint rufous tinge on sides at middle, sparsely fine yellow setose and with spiracular openings at basal 0·33 of segment and about equal in length to terga III–VI. Aculeus gradually tapered to sharp point at apex (Fig. 248). Spermathecae oblong, densely covered with short spicules and with curved necks (Fig. 246).



Figs 244–248. *Tephritis phaeostigma*, sp. nov.: *244*, wing; *245*, ♂ surstyli and claspers; *246*, ♀ spermatheca; *247*, ♂ distiphallus; *248*, ♀ ovipositor.

Remarks

Sometimes, as in the allotype, the hyaline mark in apex of cell r_5 is continuous through r_3 and isolates a small spot at upper apex of r_3. This is obviously a variable character. In a few specimens a small hyaline spot is present in distal portion of cell sc.

Biology

Reared from flowers of *Olearia pimelioides* (Asteraceae).

Etymology

The specific epithet is from the Greek *phaios*, brown, combined with *stigma*, mark, spot (cell sc); referring to the all-brown sc.

Tephritis poenia (Walker)

(Figs 249–252)

Trypeta poenia Walker, 1849: 1025. Holotype ♀ in NHM.
Type locality: 'New Holland' (Australia).

Holotype previously studied (Hardy 1959: 218). It is in good condition. One wing has been removed and mounted on a slide.

Material Examined

Over 1500 specimens from numerous localities in all Australian states.

Diagnosis

Differs from other Australian species by having 2 hyaline spots in cell sc, 3 hyaline spots in r_1 with the 2 basal ones contiguous with hyaline areas in cells r_3, r_5 and br; cell r_3 with 1 large or 2 smaller hyaline spots in apex, if the latter then 1 spot merges with a large hyaline spot filling apex of r_5 and thus isolating a brown mark at lower apex of r_3; extensive hyaline areas extend from posterior margin from cells cu and a to about vein R_{4+5} basal to r-m cross-vein and through cell m to vein M, both areas isolating marks of brown (Fig. 249).

Description

Length. Body 2·8–3·25 mm; wing 3·3–4·00 mm.

Fitting characters of the genus with head nearly quadrate, slightly longer than high. Frons meeting face at about a right angle, face concave with oral margin rather prominently produced. Antennal bases rather narrowly separated by a distance equal to 0·25× width of scape. Parafacial and gena narrow, former approximately equal in width to two rows of eye facets and latter equal to slightly less than width of 3rd antennal segment. Fine, inconspicuous pale setae extend up each side of face from gena to about level with top margin of projection of oral margin. Thorax and abdomen moderately covered with thin yellow setae and with a small dark brown spot at base of each bristle on dorsum and sometimes a faint indication of pale brownish longitudinal vittae on anterior portion of mesonotum. Humerus and broad margin of scutellum yellow in ground colour. Dorsocentral bristles slightly behind suture and apical scutellars about 0·33–0·4× size of basal bristles. Hind femur with 1 preapical anterodorsal and 1 dorsal bristle and anteroventral row of erect black setae well developed on hind tibia. Wing as noted above. Prensisetae of male blunt, distiphallus heavily sclerotised with a short membranous extension at apex (Fig. 251).

Basal segment of female ovipositor rufous except for brown to black apex and about 2× longer than wide, spiracular opening at basal 0·25 of segment. Aculeus rather broad, tapered to sharp point on apical half (Fig. 252). Spermathecae similar to *T. pelia* (Fig. 241) with rather sparse small tubercles.

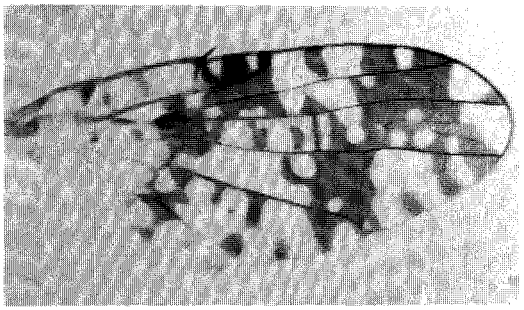
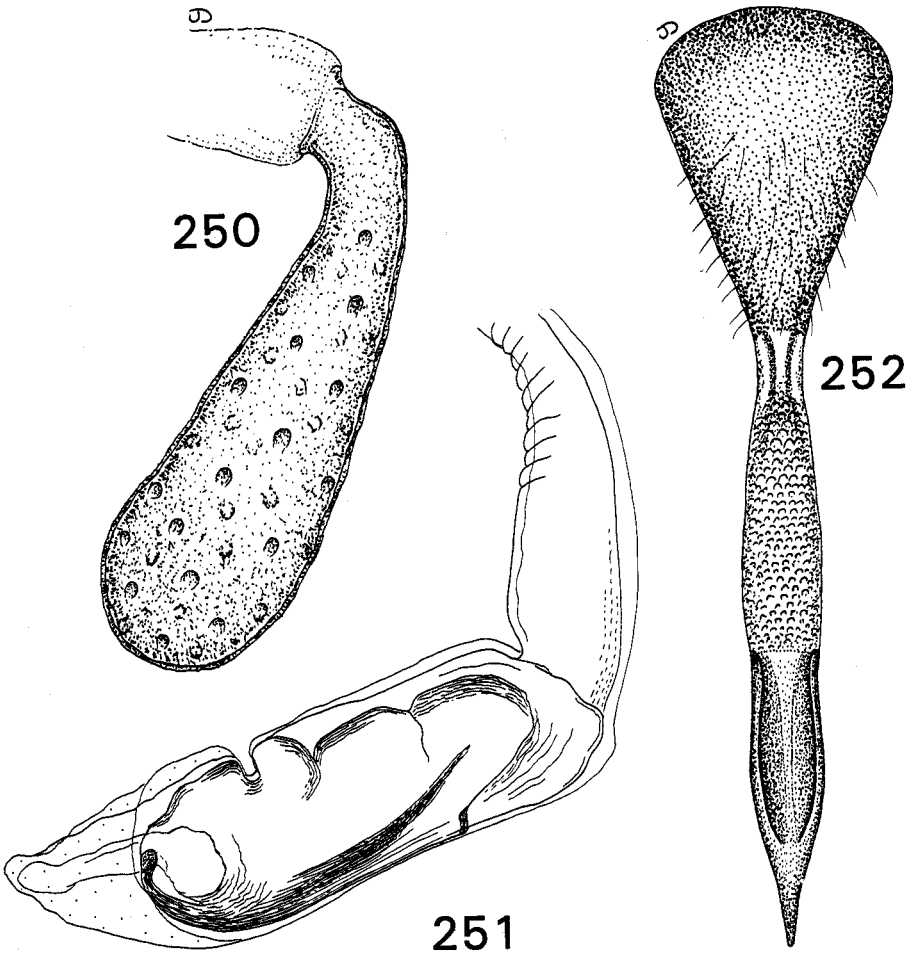


Fig. 249. *Tephritis poenia* (Walker), wing.

Remarks

One of us (Hardy 1959: 219) recorded *Tephritis pelia* Schiner as a synonym of *Trypeta poenia* Walker based upon Malloch's (1939*a*: 461) incorrect identification. Hering (1944: 9) pointed out that *T. pelia* Malloch, nec Schiner is a synonym of *T. poenia*. He placed the latter in *Campiglossa* Rondani. We do not agree with this placement and prefer to treat it as a *Tephritis*.



Figs 250–252. *Tephritis poenia* (Walker): *250*, ♀ spermatheca; *251*, ♂ distiphallus; *252*, ♀ ovipositor.

Biology

Breeds in flowerheads of various Asteraceae. In Australia bred from or collected on *Centaurea* sp., *Cotula* sp., *Helipterum* sp., *Podolepis* sp., *Podotheca* sp. and *Waitzia* sp.

Distribution

Indonesia (Irian Jaya) and Australia.

Tephritis prolixa, sp. nov.

(Figs 253–256)

Material Examined

Holotype. ♂, WA, 25 km ESE of Cocklebiddy, 25.x.1977, at light, D. H. Colless, ANIC.

Paratypes. **Western Australia**: Allotype ♀ (ANIC), same data as holotype. 72 specimens from the following localities: **South Australia**: 41 km NE of Nullabor, 24.x.1977, at light, D. H. Colless; 4 mi N of Colona HS, 20.x.1968, Britton, Upton, Balderson; 3 mi E of Watson, 4.x.1968, Key, Upton, Balderson; Poochera, 23.x.1977, at light, D. H. Colless, 15 km N Port Broughton, 7.v.1980, G. Holloway; 79 km W Nundroo, 11.ix.1964, ex *Helichrysum apiculatum* (Lab.) DC, No. 6454, G. L. Bush; 39 km E Ivy Tanks, 15.x.1964, No. 64100, G. L. Bush; 615 km W Iron Knob, 28.iii.1964, collected at ultraviolet light, No. 6414, G. L. Bush; 24 km W Nullabor Homestead, 12.ix.1964, No. 6457, G. L. Bush. **Western Australia**: 23 mi W of Fraser Range HS, 7.xi.1969, M. S. Upton; 0·5 km E of Miaboolya, 9.ix.1981, L. P. Kelsey; Mt Ragged, 30.x.1977, at light, D. H. Colless; Junana Rock, 26.x.1977, D. H. Colless; Junana Rock, 28.x.1977, *Melaleuca* blossom, D. H. Colless; Pine Hill, 1.xi.1977, D. H. Colless; 40 km SW of Madura, 31°59′S, 126°37′E, 11.x.1970, Upton and Feehan; 12 mi WSW of Eucla Motel, 7.x.1968, Key, Upton, Balderson; 19 mi NE of Mundrabilla HS, 16.x.1968, Britton, Upton, Balderson; 25 km ESE of Cocklebiddy, 25.x.1977, at light, D. H. Colless; Kalbarrie, 21.xi.1978, M. S. and B. J. Moulds; Circular Pool, 6 mi NE Walpole, 12.xii.1970, G. A. Holloway; 16 km W Eucla, 13.ix.1964, No. 6459, G. L. Bush; 30·5 km E Balladonia, 13.x.1964, No. 6496, G. L. Bush; 14·5 km W Balladonia, 12.x.1964, No. 6494, G. L. Bush; 18 mi E Pingelly, 2.i.1971, M. V. Lamp, G. A. Holloway and H. Hughes; 57 km S Norseman, 31.xii.1985, G. and A. Daniels. **Northern Territory**: 30 km WNW of Alice Springs, 8.x.1978, D. H. Colless; 56 km SE of Alice Springs, 3.x.1978, at light, D. H. Colless; 23°32′S, 133°38′E, Mt Solitaire, 30 km WNW of Alice Springs, 29.ix.1978, J. C. Cardale. Paratypes in AMS, ANIC, BPBM, UH, UQM.

Diagnosis

Fitting in the species-group that has a *Trupanea*-like wing pattern, with a large dark brown area bearing arms of brown radiating to apical and hind margins of wing. Differs from other known species by having the brown mark much more extensive, extending basal to forking of Rs (Fig. 253).

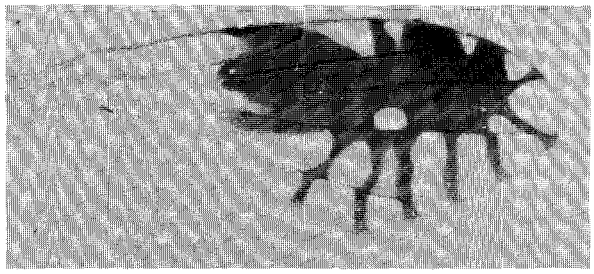


Fig. 253. *Tephritis prolixa*, sp. nov., wing.

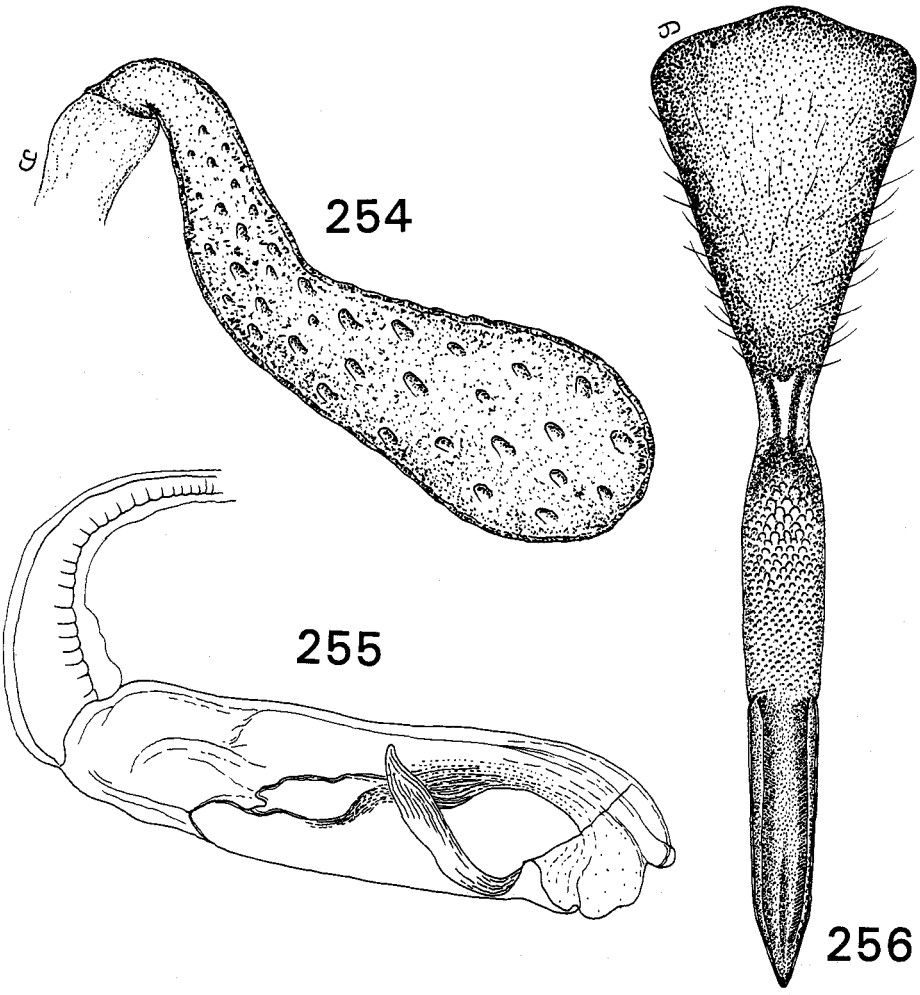
Description

Male

Length. Body and wing each 3·3–3·5 mm.

Head. Slightly higher than long, frons meeting face at distinct angle but not protruding. Face nearly straight in profile, slightly projecting on anterior oral margin. Bristling as for genus. Genal bristle black, other vestiture of occiput and gena white. Lower sides of face nearly bare, with only short microscopic setae. Palpus linear sided about equal in length to mouthparts, with 3 black setae at apex and otherwise densely white haired over ventral surface.

Thorax. Black in ground colour, densely grey microtrichose and yellow-white setose. Bristles black except for yellow-white posterior notopleural, katepisternal and anatergals. Dorsocentrals slightly behind level with mesonotal suture. Halters yellow. Apical scutellars small, about 0·33× size of basal bristles.



Figs 254–256. *Tephritis prolixa*, sp. nov.: *254*, ♀ spermatheca; *255*, ♂ distiphallus; *256*, ♀ ovipositor.

Legs. Yellow, vestiture mostly black except for white setae over dorsal surface of front femur. Hind femur with 1 anterodorsal bristle and no dorsal bristles. Hind tibia with a row of prominent anterodorsal setae.

Wings. As noted above and as in Fig. 253, with brown marking extending through cell sc, 2 hyaline wedges through cell r_1, 2 hyaline wedges at margin in cell r_3, a large brown fork in apex of r_5, 5 brown rays through cells m, dm and cu and an isolated round hyaline mark in cell r_5 just distal to r-m cross-vein.

Abdomen. Densely grey microtrichose and yellow-white setose. Outer surstylus ending in a blunt lobe at apex and prensisetae on inner surstylus large and blunt. Distiphallus as in Fig. 255, with a short apical filament.

Female

As in male. Basal segment of ovipositor bare of pollen, shining black, rather thickly yellow-white setose and about equal in length to terga V+VI. Spiracular openings in basal 0·33 of segment VII. Aculeus evenly tapered to a truncate point on apical 0·2 (Fig. 256). Spermathecae elongate, covered with strong spinelike tubercles (Fig. 254).

Biology

Reared from flowers of *Helichrysum apiculatum* (Asteraceae).

Etymology

The specific epithet is from the Latin *prolixus*, stretched out, long, referring to the elongate brown mark in wing.

Tephritis protrusa, sp. nov.

(Figs 257–262)

Material Examined

Holotype. ♂, Qld, Mt Spec, Star Valley Lookout, 29.xi.1965, ex *Helichrysum rupicola* DC, No. 6599, G. L. Bush, ANIC.

Paratypes. **Queensland**: Allotype ♀ (ANIC), 13♂, 2♀, same data as holotype. 10♂, 8♀ from the following localities: **Queensland**: 6 km W Kuranda, 2.viii.1982, ex *Helichrysum bracteatum*, G. H. Johnstone; 1·6 km W Paluma, 862 m, 5.x.1965, R. Blackith; Gillies Hwy, 6·4 km N Heale's Lookout, 380 m, 4.xii.1965, ex *Helichrysum rupicola* DC., No. 65113, G. L. Bush; 1♀, Fraser I., Aug. 1971, E. M. Exley. **New South Wales**: Piliga Scrub, 59 km S Narrabri, 4.xii.1976, on Eucalyptus, E. M. Exley and T. Low; 1♂, Wright's Lookout, New England Nat. Pk, 1178–1265 m, 29.x.1965, No. 6560, G. L. Bush. Paratypes in AMS, ANIC, BPBM, MSU, NHM, QDPI, UH, UQM.

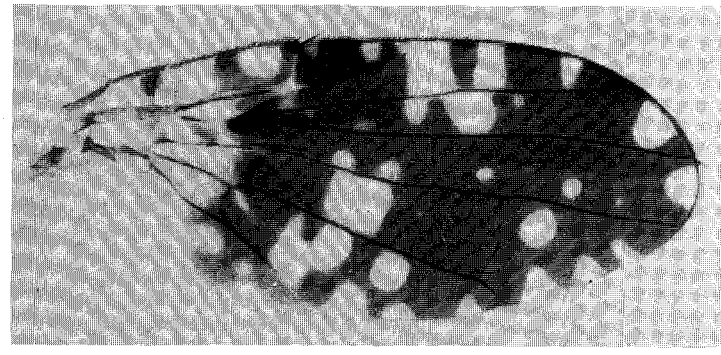
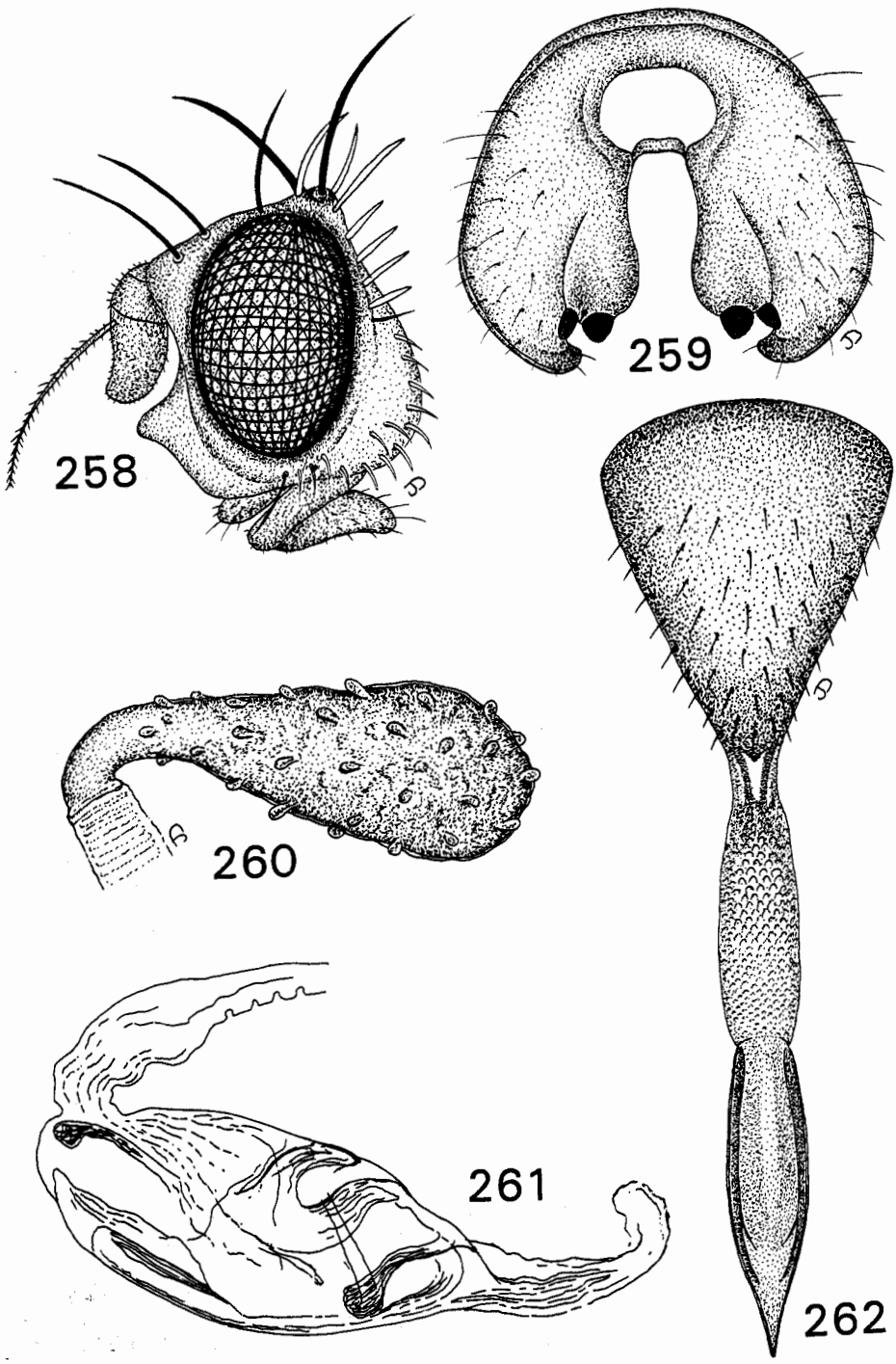


Fig. 257. *Tephritis protrusa*, sp. nov., wing.



Figs 258–262. *Tephritis protrusa*, sp. nov.: *258*, head; *259*, ♂ surstyli and claspers; *260*, ♀ spermatheca; *261*, ♂ distiphallus; *262*, ♀ ovipositor.

Diagnosis

Fitting in the species-group that has 2 hyaline spots in cell sc. In the key it runs near *T. bushi*, sp. nov., and *T. brunnea*, sp. nov., but does not show close relationship to these taxa. The wing markings are distinctive as in Fig. 257; abdomen grey with large paired brown marks on terga III–V; the oral margin strongly protruded (Fig. 258) and mouthparts conspicuously extended beyond oral margin.

Description

Male

Length. Body and wing each 4·25–4·5 mm.

Head. As in most *Tephritis* but with mouthparts longer than normal, rather similar to most *Paroxyna* with labium nearly as long as oral margin and labellum folded back, geniculate but short and fleshy, about half length of labium also lower margin of face prominently protruded (Fig. 258). Frons bare, about 1·33× wider than eye. Junction of frons and face forming an acute angle. Parafacial less than half as wide as 3rd antennal segment and gena about equal to 3rd. Genal bristle dark brown to black. Palpus yellow tinged with brown at apex, sparsely setose.

Thorax. Ground colour mostly black, yellow on humerus, notopleuron, margin and venter of scutellum. Densely grey microtrichia with very faint indications of 3 brown vittae on mesonotum and dark brown spots at bases of the following bristles: dorsocentral, prescutellar, inner postalar and scutellar. Apical scutellars half as large as basal bristles. Dorsocentrals almost in line with suture.

Legs. Yellow, hind femur with 1 anterodorsal and 1 dorsal preapical bristlelike setae.

Wings. Base hyaline except for 2 streaks of brown across base of cell br, a brown mark over h cross-vein and tinge of brown in base of cell c. A broadly u-shaped brown mark in apical 0·6 of c. Cell sc dark brown with 2 small hyaline spots and about 0·67× as long as cell c. Remainder of wing dark brown with the following hyaline spots (Fig. 257): 3 in r_1, the 2 basal spots large and incompletely connected with 1 large and 1 small round spot in cell r_3; 1 spot in apico-median portion of cell r_3 extends to or almost to vein R_{4+5}; spot in cell r_5 not filling apex; r_5 with about 5 small spots distal to r-m cross-vein a, 2 basal to r-m; cell m with 4–5 small spots; 5–6 in cu; 3 in a and 1 large central spot in dm.

Abdomen. Densely grey microtrichia except for large submedian basal paired brown marks on terga III–V. Covered with thin yellow setae and with 4 black bristles at apex of tergum V. Genitalia rufous, blackened at apex of surstylus (Fig. 259). Distiphallus well sclerotised and with a short filament from apex (Fig. 261).

Female

As in male. Basal segment of ovipositor mostly yellow, tinged brown to black at base and brown to black at apex, *in situ* equal in length to terga V+VI and with spiracular openings at basal 0·33 of segment. Aculeus comparatively broad and tapered to a sharp point at apex (Fig. 262). Spermathecae oval with curved necks (Fig. 260).

Biology

Reared from flowers of *Helichrysum bracteatum* and *Helichrysum rupicola* (Asteraceae).

Etymology

The specific epithet is from the Latin *protusus*, 'protruded' or 'thrusted out', referring to the protruded oral margin.

Tephritis pumila, sp. nov.

(Figs 263–266)

Material Examined

Holotype. ♂, ACT, 6–9.v.1967, light trap, I. F. B. Common, ANIC.

Paratypes. **Australian Capital Territory**: Allotype ♀(ANIC), same data as holotype, 2.ix.1967. Approximately 100 specimens from the following localities: **Queensland**: 6·4 km N Cooroy, 12.xi.1965, reared from flowerheads of *Helichrysum diosmifolium* (Vent.), No. 6579, G. L. Bush; Burpengary, 5.xii.1899, T. I. Bancroft; Mt Glorious, Brisbane, 8–15.v.1986, Y. Basset. **New South Wales**: Back Yama State Forest, 11.vi.1964, D. H. Colless; 26 mi W of Mullaley, 3.vi.1966, Z. Liepa; Royal Nat. Pk nr Sydney, 13.viii.1971, D. K. McAlpine; Pidgeon House Mtn nr Ulladulla, 20.ix.1975, S. Daniels; 5 mi S Mt Wilson, Blue Mtns, 15.iv.1971, D. K. McAlpine; Waterfall, 7.viii.1964, D. K. McAlpine; Shoalhaven Bay nr Braidwood, 9.i.1965, D. H. Colless; 1·6 km S Qld–NSW border, Mt Lindsay Hwy, 2.xi.1965, ex *Cassinia compacta* F. Muell., No. 6569, G. L. Bush; Waterfall, 23.xi.1959, M. Niktin; Valley of Georges Rv., Cabramatta, 3.ix.–1.x.1960, M. Nikitin; Casula, Georges Rv., 9.xii.1952, sweeping along river bank, N. Nikitin; Carey's Peak, Barrington Tops, 13.ii.1965, No. 6510, G. L. Bush; 60 km N Windsor, 23.x.1965, reared from flowerheads of *Helichrysum diosmifolium* (Vent.) Sweet, No. 6542, G. L. Bush; 3·2 km SW Tumorrama, 10.vi.1964, ex *Vittadinia triloba* (Gaud.) DC; The Big Hill, Kempsey-Armidale Road, 27.x.1965, 800 m, ex *Calotis lappulacea* Benth.; 1·6 km W of West Wyalong, 18.xii.1965, No. 6515, G. L. Bush; Goonoo State Forest, 5 mi S of Mendooran, 3–5.x.1970, D. K. McAlpine and G. A. Holloway; 5 mi South Mendooran, 3.x.1970, G. Daniels; Stanwell Tops, 18.ix.1976, G. Daniels; Minyon Falls, 10 mi W of Rosebank, 9.ix.1965, E. F. Riek; 5 km SE of Dorrigo, 24.vi.1976, Z. Liepa. **Australian Capital Territory**: Mt Gingera, 19.xi.1968, D. H. Colless; Black Mtn, 23.ii.1968, Z. Liepa; Black Mtn, 12.xi.1965, D. H. Colless; same locality and collector as holotype and allotype, 21.iii.1955, 16.ii.1965, 3.iii.1965, 3.ii.1966, 10.ii.1966, 14.ii.1967, 27.ii.1967, 23.iii.1967, 6–9.v.1967, 29.ii.1968. **Victoria**: Mt William, Grampians, nr Summit, 10.xii.1977, D. K. McAlpine and M. A. Schneider; Bendigo, 7.i.1925, F. E. Wilson; Tooronga Falls nr Noojee, 13.iv.1965, No. 6525, G. L. Bush; 0·5 km W Junct. Apollo Bay-Colac Road and Turtons Pass Road, 9.iii.1965, No. 6519, G. L. Bush; Elphinstone, 1.xi.1964, No. 64108, G. L. Bush; Mt Baw Baw, nr Tanjilbren, 4.iii.1965, No. 6515, G. L. Bush; Somers, 21.i.1973, E. A. Fonseca; Mt Baw Baw nr Summit, 4.viii.1965, No. 6516, G. L. Bush; Teddy Bears Gap, Grampians, 18.v.1964, ex. *Helipterum albicans* (A. Cunn.) DC, No. 6435, G. L. Bush; nr Reeds Lookout, Grampians, 17.v.1964, ex *Hypochoeris radicata* L., No. 6431, G. L. Bush. **South Australia**: 34 km NE Cowell, 7.viii.1965, ex *Olearia lepidophylla* (Pers.) Benth., No. 6534, G. L. Bush; Alligator Gorge nr Wilmington, 28.iii.1964, No. 6412, G. L. Bush; 6·5 km W Iron Knob, 28.iii.1964, ex *Senecio amygdalifolius* F. Muell., No. 6414, G. L. Bush; 2·5 km N Windsor, 27.iii.1964, ex *Podolepis longipedata* A. Cunn., No. 6410, G. L. Bush; 6·5 km N Beaufort, 27.iii.1964, No. 6411, G. L. Bush; Wilpena Pound, Flinders Ra, 3.x.1975, Z. Liepa. **Western Australia**: Mingenew, 15–22.x.1935, R. E. Turner. Bernier I., Shark Bay, 16 and 17.v.1963, R. D. Hughes. Paratypes in AMS, ANIC, BPBM, MSU, NHM, NMVM, QDPI, UH.

Diagnosis

Fitting in the species-group that has the wing markings *Trupanea*-like, with a large brown preapical mark and arms of brown radiating to posterior margin through cell m. Fits nearest to *Tephritis trupanea*, sp. nov., and differs by having basal 0·67 of wing tinged with brown, faint hyaline spots in cell cu; r-m cross-vein only tinged with brown and no brown mark extending into cell dm; large preapical brown mark not continuous with brown on r-m (Fig. 263); a smaller species.

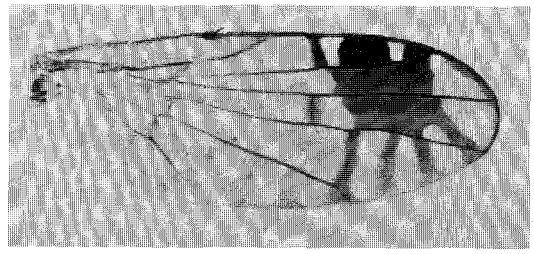
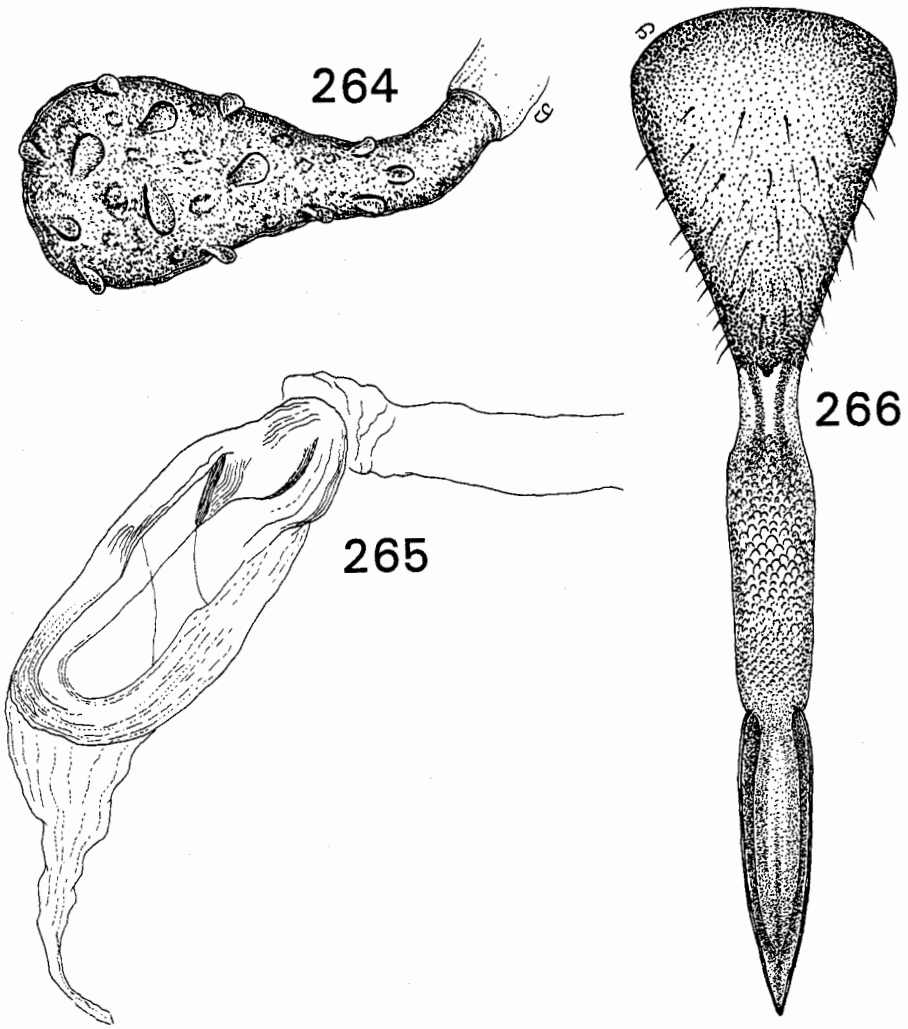


Fig. 263. *Tephritis pumila*, sp. nov., wing.



Figs 264–266. *Tephritis pumila*, sp. nov.: *264*, ♀ spermatheca; *265*, ♂ distiphallus; *266*, ♀ ovipositor.

Description

Male

Length. Body 1·9–2·25 mm; wing 2·1–2·5 mm.

Head. Fitting characters of typical *Tephritis* and similar to *T. prolixa*, sp. nov., but with genal bristle pale yellow. Lower sides of face bare.

Thorax. Fitting the norm, densely grey-brown microtrichose on dorsum, grey on sides, yellow-white setose and with bristles black except for yellow-white posterior notopleural, katepisternal and anepimeral. Dorsocentral bristles near level with suture. Scutellum nearly bare of setae. Apical scutellars about 0·25× size of basal bristles.

Legs. Yellow. Hind femur with 1 preapical anterodorsal and no dorsal bristlelike seta. Anterodorsal row of black erect setae in middle of segment less differentiated than in most *Tephritis*.

Wings. As noted above and as in Fig. 263, 2 hyaline marks from costa in cell r_1, a narrow brown border through apex of r_3 and 4 arms of brown reaching margin in cell m.

Abdomen. Grey-brown microtrichose, subshining, yellow-white setose. Genitalia brownish yellow, outer surstylus ending in a slender subacutely pointed lobe. Prensisetae of inner surstylus plainly visible. Distiphallus as in Fig. 265, with a membranous filament at apex.

Female

Length. Body, excluding ovipositor, and wing each 2·3–2·5 mm.

As in male. Basal segment of ovipositor bare of pollen, shining black, fine dark setose, subequal in length to terga V–VI. Spiracular openings at basal 0·4 of segment. Aculeus evenly tapered to a sharp point on apical 0·33 (Fig. 266). Spermathacae as in Fig. 264 with large scales over surface.

Biology

Reared from flowers of the following Asteraceae: *Calotis lappulacea, Cassinia compacta, Helichrysum diosmifolium, Helipterum albicans, Hypochoeris radicata, Olearia lepidophylla, Podolepis longipedata* and *Senecio amygdalifolius*.

Etymology

The specific epithet is from the Latin *pumila*, dwarfish, small, referring to the small size.

Tephritis quasiprolixa, sp. nov.

(Figs 267–270)

Material Examined

Holotype. ♂, SA, Wilpena Pound, Flinders Ra., 1.x.1975, Z. Liepa, ANIC.

Paratypes. **South Australia**: Allotype ♀ (ANIC), Mt Serle, 5.iv.1964, V. Williamson; 1♂, same data as holotype; 1 specimen, same data as allotype. **New South Wales**: 2♀, 17 mi W of Mullaley, 3.vi.1966, Z. Liepa; 7♂, 9♀, Camp Wambelong, Warrumbungle Nat. Pk, 14 and 15.vi.1982, K. C. Khoo. Paratypes in AMS, ANIC, BPBM, NHM.

Diagnosis

Fitting nearest to *T. distigmata*, sp. nov., but differing by having the brown marking in anterior portion of wing very extensive, extending from near wing apex to base of cell sc, interrupted only by 4 small hyaline spots along costal margin (Fig. 267).

Description

Male

Length. Body and wing each 2·8–3·0 mm.

Head. As in other Australian *Tephritis* with only a gentle angle at junction of frons and face; parafacial equal to 1–2 rows of eye facets and gena less than width of 3rd antennal segment. Mostly yellow-white, interfrontalia golden. Frons about equal in width to eye. Genal bristle yellow. Lower side of face with an inconspicuous row of short dark setae.

Thorax. Fitting the norm, densely grey to grey-brown microtrichose and fine yellow setose. Dorsocentral bristle just behind suture. Apical scutellars about 0·4× as long as basal bristles.

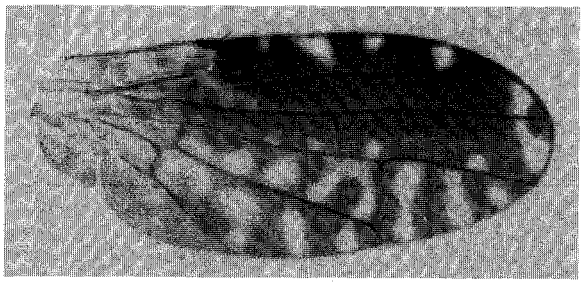
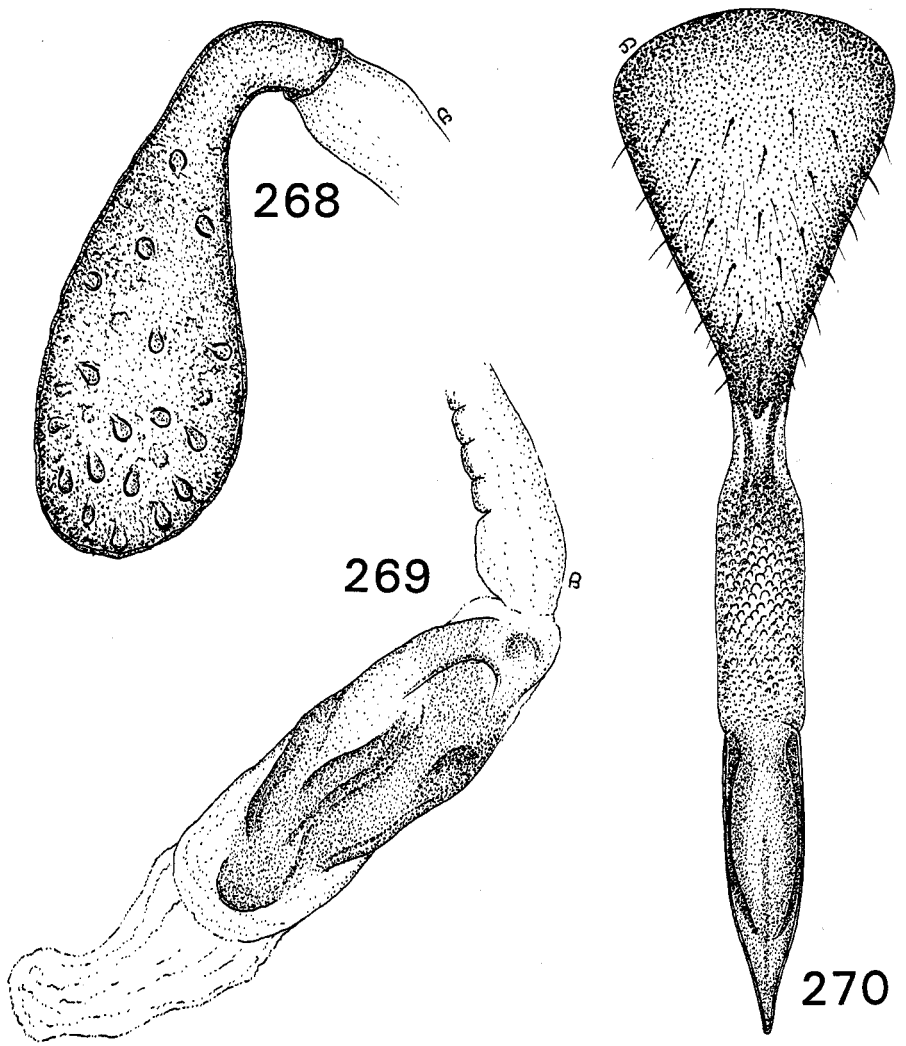


Fig. 267. *Tephritis quasiprolixa*, sp. nov., wing.

Legs. Yellow, sometimes with tinge of brown on femora. Hind femur with 1 anterodorsal preapical bristle and no dorsal bristle. Anterodorsal row of erect setae on hind tibia prominent.



Figs 268–270. *Tephritis quasiprolixa*, sp. nov.: *268*, ♀ spermatheca; *269*, ♂ distiphallus; *270*, ♀ ovipositor.

Wings. As noted above and as in Fig. 267. Solid brown area filling most of wing anterior to vein M; with a narrow hyaline transverse mark across apex, isolating a small spot of brown at end of vein R_{2+3}; with 3 hyaline spots on margin in cell r_1 and 1 small spot at apex of cell sc. Base of wing to level of forking of R_{2+3} and R_{4+5} and the posterior half largely subhyaline, with faint brown irregular spotting through cells dm, m and cu. Only a very slight point at lower apex of cell bcu.

Abdomen. Grey brown microtrichose and yellow setose; aedaegus as in Fig. 269.

Female

Length. Body, excluding ovipositor and wing, each 2·8–3·2 mm.

As in male. Tergum VI equal in length to tergum V. Basal segment of ovipositor shining black, thin black setose and *in situ* 1·5× longer than tergum VI. Ovipositor as in Fig. 270; spermathecae oval (Fig. 268).

Etymology

The specific epithet is from the Latin *quasi*, 'appearing as if, simulating', combined with the species name *prolixa*, referring to the resemblance to *T. prolixa*, sp. nov.

Tephritis tasmaniae, sp. nov.

(Fig. 271)

Material Examined

Holotype. ♂, Tas., Iris Ri., 7 m from Cradle Mtn, 30.i.1965, sweeping alpine meadow, mainly flowering Asteraceae, I. C. Yeo, QM.

Paratype. **Tasmania**: 1 ♀, same data as holotype, BPBM.

Diagnosis

Fitting somewhat intermediate between those species with a *Trupanea*-like pattern of wing marks and the more usual *Tephritis* marking of irregular brown markings and hyaline spots. Differs from all known species by having cell sc all brown and unusually short, scarcely over 0·33× as long as cell c; having extensive brown marking through basal portions of cells r_1, r_3 and br; a large preapical brown mark with 4 arms of brown from posterior portion of wing extending through cell m and other details as in Fig. 271.

Description

Male

Length. Body 3·0 mm; wing 3·2 mm.

Head. Bristling and shape as usual for *Tephritis* with antennal bases narrowly separated and frons just slightly wider than eye but with parafacial and gena slightly broader than usual, somewhat bordering on the feature characters for separating *Campiglossa*. The parafacial is about half as wide as 3rd antennal segment and the gena is 1·33× broader than 3rd. Anterior margin of face prominently projected. Genal bristle yellow. Bases of antennae narrowly separated like typical *Tephritis*, distance between being ≤ 0·25× width of scope.

Thorax. Densely grey on sides, golden brown pollinose and thickly covered with subrecumbent scalelike yellow-white setae over mesonotum. Scutellum brownish grey microtrichose and sparsely setose on margin. Apical scutellar bristles about half size of basal bristles. Dorsocentrals just behind level with suture.

Legs. Yellow. Hind femur with 1 preapical anterodorsal bristlelike seta but no dorsal seta. Anterodorsal row of erect setae on hind tibia prominent.

Wings. As above and as in Fig. 271. Three large hyaline marks in cell r_1; cell r_3 with an isolated hyaline spot in upper apex and wing apex hyaline except for a mark of brown at apex of vein R_{4+5}.

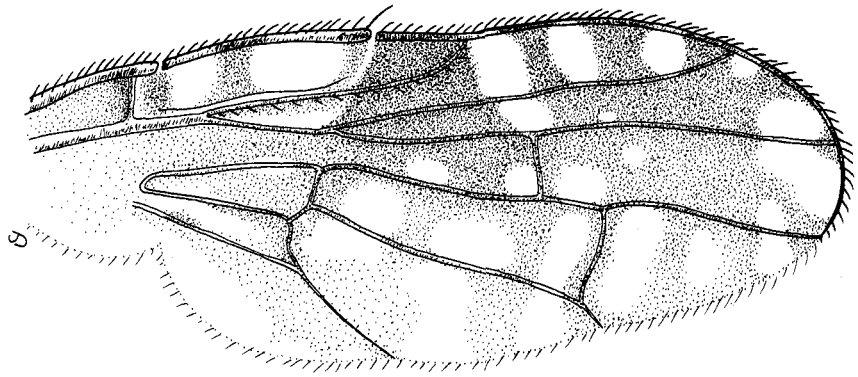


Fig. 271. *Tephritis tasmaniae*, sp. nov., wing.

Abdomen. Grey-brown microtrichose and pale yellow setose. Genitalia not studied.

Female

Length. Body, excluding ovipositor, 3·2 mm; wing 3·5 mm.

As in male. Tergum VI, shining black covered with thin brown setae, slightly longer than tergum V. Basal segment of ovipositor shining black, short, as seen *in situ* about as wide as long and not much longer than tergum VI. Ovipositor and spermathecae not seen.

Etymology

The specific epithet is a noun in apposition for the island of Tasmania.

Tephritis trupanea, sp. nov.

(Figs 272–275)

Material Examined

Holotype. ♂, SA, Long Gully, Robe District, 9.xii.1977, D. K. McAlpine and M. A. Schneider, AMS.

Paratypes. **South Australia**: Allotype ♀ (AMS), same data as holotype. 38♂, 23♀ from the following localities: **Queensland**: Harlin, 10.ii.1938, A. May. **New South Wales**: 12 km E Gol Gol, nr Mildura, 10.xi.1964, ex *Celmisia longifolia* Cass. **South Australia**: same as holotype; the Coorong, 30 km S of Meningie, 8.xii.1977, D. K. McAlpine and M. S. Schneider; Kingston, 9.xii.1977, D. K. McAlpine and M. S. Schneider; Upper Ravine des Casoars, Kangaroo I., 30.xi.1977, D. K. McAlpine and M. S. Schneider; 2 km S Willunga, 26.xi.1977, D. K. McAlpine and M. S. Schneider; 6·5 km S Whyalla, 7.viii.1965, ex *Olearia pimelioides* (DC) Benth., No. 6533, G. L. Bush; 2·5 km N Windsor, 27.iii.1964, ex *Podolepis longipedata* A. Cunn. ex DC, No. 6410, G. L. Bush; 13 km W Port Augusta, 28.iii.1964, No. 6413, G. L. Bush; 10·3 km SE Burra, 31.iii.1964, No. 6416, G. L. Bush; Alligator Gorge, nr Wilmington, 28.iii.1964, No. 6412, G. L. Bush; Fleurieu Peninsula, Deep Creek Conservation

Pk, 25.xi.1989, R. Wharton; Adelaide, 2.xii.1989, R. Wharton; Mount Baker, 3–10.xii.1989, R. Wharton; Aldinga Scrub, 3.xii.1989, R. Wharton. **Western Australia**: Bluff Knoll, Stirling Ranges, 8.xii.1970, G. A. Holloway and H. Hughes; Mt Adam, 9.x.1986, on *Podotheca gnaphaloides*, N. Gough. Paratypes in AMS, ANIC, BPBM, MSU, NHM, QDPI, TAMU, UH.

Diagnosis

Fitting in the group of species with a *Trupanea*-like pattern of brown marks in the wing. Nearest to *T. pumila*, sp. nov., and differing by having the wing largely hyaline. With a brown mark over r-m cross-vein that continues through cell dm; brown preapical mark contiguous with r-m and body larger in size.

Description

Male

Length. Body and wing each 2·8–3·0 mm.

Head. As in typical *Tephritis* and with anterior oral margin distinctly but gently protruded. Genal bristle yellow, tinged with brown, with 1 row of short, inconspicuous yellow setae along lower margin of face. Frons about equal in width to eye. Parafacial narrow about 0·33× width of 3rd antennal segment and gena subequal to 3rd.

Thorax. Densely grey microtrichose faintly tinged brownish on dorsum. Yellow in ground colour of humerus, notopleuron and margin of scutellum. Mesonotum rather densely covered with flat, recumbent yellow setae. Scutellum bare except for a few setae on margin. Dorsocentrals in line with suture.

Legs. Yellow. Hind femur with 1 preapical anterodorsal bristle and no dorsal bristle. Anterodorsal row of larger setae on hind tibia prominent.

Wings. As noted above and in Fig. 272. Basal 0·67 subhyaline, with a faint brownish tinge. Preapical brown mark solid except for 2 hyaline marks from costa in cell r_3 and with 5 slender arms of brown extending through posterior portion of wing, 4 reaching margin in cell m and 1 extended from r-m cross-vein through subapical portion of dm and sometimes extending to margin. A narrow margin of brown around apex of cell r_3 and often a faint indication of 2–3 pale brownish streaks across cell cu.

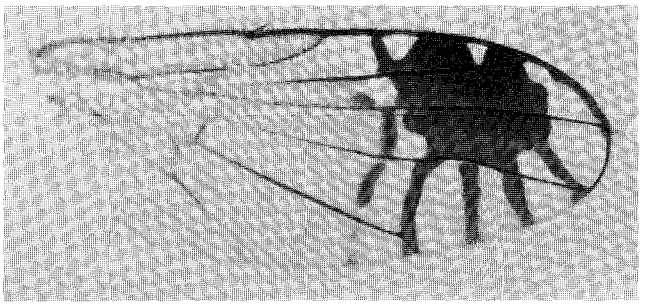


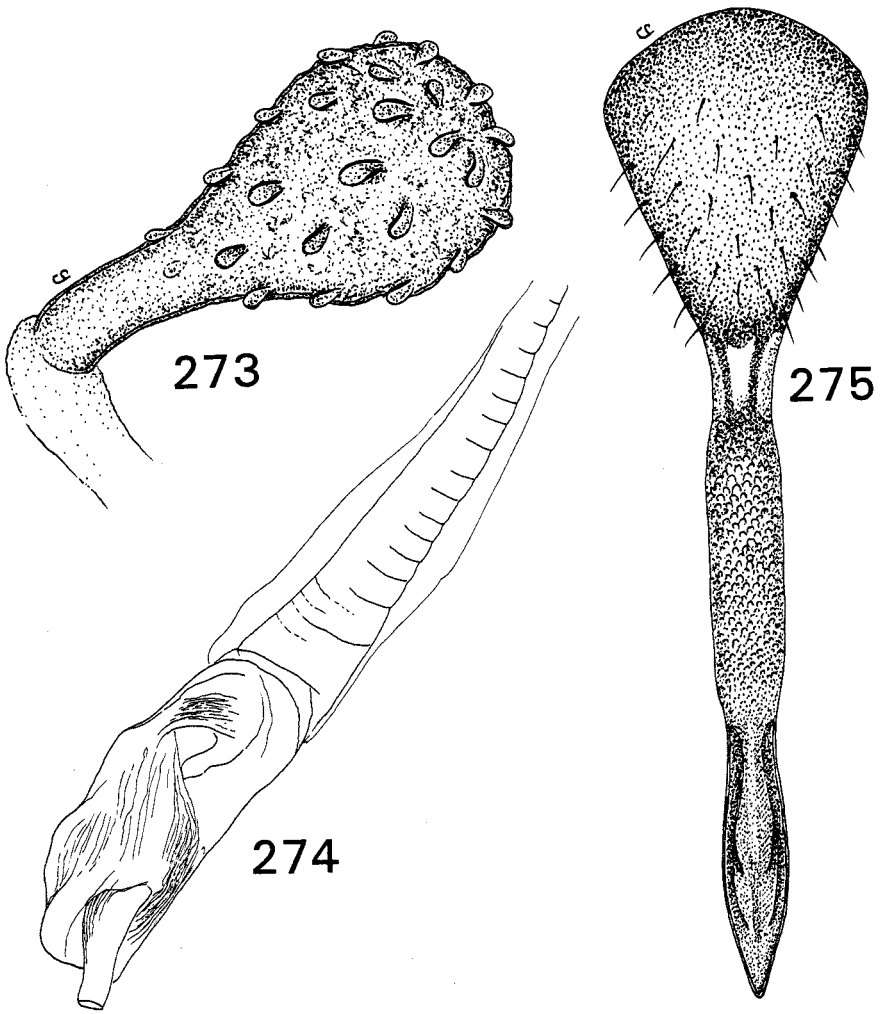
Fig. 272. *Tephritis trupanea*, sp. nov., wing.

Abdomen. Mostly black in ground colour, terga I and II tinged yellow. Densely grey to brownish grey microtrichose and densely covered with yellow scalelike setae. Genitalia yellow. Outer surstylus developed into a blunt apical lobe and lobes of inner surstylus plainly visible. Distiphallus as in Fig. 274, comparatively short, with gonopore exposed and with a short apical filament.

Female

Length. Body, excluding ovipositor, 3·0 mm; wing 3·5 mm.

As in male. Basal segment of ovipositor bare, shining black on apical half, rufous on base, thinly covered with fine yellowish setae and about equal in length to terga V+VI with spiracular openings on basal 0·4 of segment. Aculeus gradually tapered to a sharp point on apical 0·33 (Fig. 275). Spermathecae gourd shaped, covered with short spicules (Fig. 273).



Figs 273–275. *Tephritis trupanea*, sp. nov.: *273*, ♀ spermatheca; *274*, ♂ distiphallus; *275*, ♀ ovipositor.

Biology

Reared from flowers of *Celmisia longifolia, Olearia pimelioides, Podolepis longipedata* and *Podotheca gnaphaloides* (Asteraceae).

Etymology

The name is given because of its remarkable resemblance to *Trupanea.*

Tephritis sp. 'A'

(Fig. 276)

Material Examined

One female specimen from Lower Tarwin, Victoria, Nov. 1925 (G.F. Hill) appears to differ from other known *Tephritis* by having a longitudinal hyaline band extending the full length through the middle of the wing, slightly interrupted in cell r_5 opposite dm-cu cross-vein (Fig. 276).

Specimen in NMVM.

Diagnosis

Fitting general characteristics of *Tephritis* with third antennal segment broadly rounded at apex, about half longer than wide. Mesonotum black in ground colour, densely yellow-grey microtrichose. Scutellum yellow in ground colour. Abdomen predominantly black in ground colour, yellow at apices of terga III–VI and with longitudinal median yellow line extending over terga IV–VI. Tergum VI equal in length to slightly longer than tergum V. Basal segment of ovipositor rufous except for black apex and *in situ* subequal in length to terga V+VI.

Length. Body, excluding ovipositor, and wing each 3·6 mm.

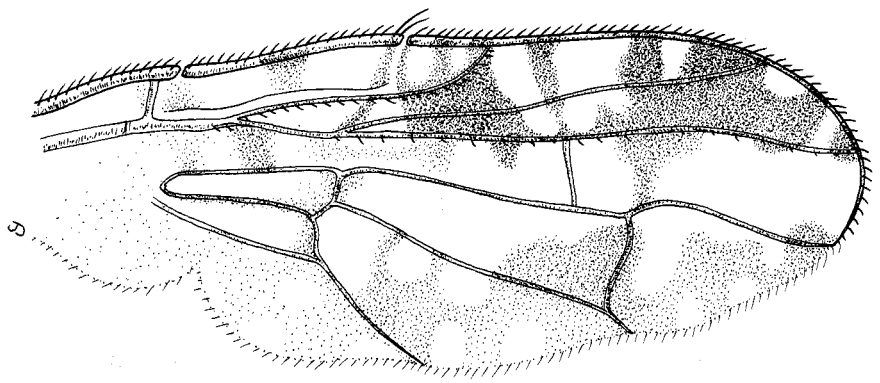


Fig. 276. *Tephritis* sp. 'A', wing.

Genus ***Trupanea*** Schrank

Trupanea Guettard, 1762: 170. Unavailable name, author did not use in a binomial sense.

Trupanea. — Schrank, 1795: 147.

Type species: *Trupanea radiata* Schrank, by monotypy = *T. stellata* (Fuessley).

Urellia Robineau-Desvoidy, 1830: 774.

Type species: *Urellia calcitrapae* Robineau-Desvoidy, by subsequent designation by Coquillett (1910: 618), = *T. stellata* (Fuessley).

Diagnosis

Fitting in the group of genera characterised by having only basal scutellar bristles. Differentiated from other genera by the male having a prominent spinelike process (Fig. 279) at apex of distiphallus in combination with mouthparts short, labellum fleshy and scarcely extending beyond oral opening; 3 pairs of frontal bristles and characteristic wing markings, usually with a large preapical brown area from which narrow brown lines radiate to the wing margin (Fig. 277).

Description

Head. About as high as long in side view, frons gently sloping, slightly angulate at base

of antenna and face concave with oral margin slightly protruded. Antenna near upper 0·33 of head, 3rd segment broad, 1·5–2× longer than wide, straight on dorsal margin and rounded at apex. Arista short and pubescent over entire length.

Thorax. Densely grey microtrichose and yellow-white setose. Dorsocentral bristles usually near suture but may be variable in position. Hind femora with 1 anterodorsal bristlelike seta and no dorsal bristle. Lower squama narrow, less than half width of upper.

Wings. Usually with characteristic subapical stellate pattern of dark markings, a large dark brown mark from which narrow bands radiate to margin (Fig. 277), proximal 0·67 of wing usually hyaline. Vein R_{4+5} bare except for few setae at base. Cell sc short, about 0·67–0·5× as long as cell c, cross-vein r-m near apical 0·25 of cell dm and cell bcu terminates in short pointed lobe at lower apex.

Abdomen. Tergum VI of female longer than tergum V and basal segment of ovipositor shining, yellow-white setose at base, brown to black setose on apical 0·67. Male basiphallus bare. Except for *T. heronensis*, sp. nov., we have not seen spermathecae because of weak sclerotisation. Pattern of wing markings is the most reliable character for species differentiation. In other regions, sexes show considerable dimorphism in markings with male often having larger hyaline areas and reduction of dark markings. We find little or no sexual dimorphism in the known Australian species. Some species show considerable intraspecific variation in some wing markings, while others seem very constant.

Biology

The larvae feed in ovaries of flowers of a wide assortment of Asteraceae (Compositae). Many are host specific, others are general feeders.

Key to Known Species of *Trupanea* from Australia

1. Wing markings consisting of a distinct large preapical dark brown mark reaching anterior margin and with narrow radiating brown bands extending to posterior margin (Fig. 277) or with a larger brown area with radiating bands extending to apex as well as hind margin (Fig. 280) 2
   Wing markings not as above but with hyaline spots around entire margin (Fig. 284) 10
2 (1). Brown wing pattern forming a fork in apex of cell r_5 (Fig. 280) 3
   Apex of r_5 hyaline (Fig. 291) 4
3 (2). Brown band extending diagonally from r-m cross-vein continuous through cell sc; wing extensively marked with brown basal to r-m cross-vein, cells dm and cu mostly brown with hyaline spots; 1 small hyaline spot near base of cell r_5 (Fig. 280); NSW .. *T. bifida*, sp. nov.
   Brown band from r-m ending at vein R_1, cell sc subhyaline; wing hyaline basal to r-m except for band from r-m to R_1 and a spot of brown on vein Cu_1; with 2 hyaline spots in base of r_5 (Fig. 290); Qld ..... *T. notata*, sp. nov.
4 (2). Brown colouring of wing around cross-vein r-m not continuous to sc (Fig. 291, 294) 5
   Brown colouring enclosing r-m cross vein continuous to sc, at least as a narrow arm (Figs 277, 290) 7
5 (4). With a complete preapical brown ray in cell dm and a brown band extending along lower portion of cell r_3 basal to r-m cross-vein to almost level with apex of vein Sc. A thin border of brown around apex of cell r_3 (Fig. 291); NSW, SA, Vic., WA ..... *T. prolata*, sp. nov.
   Not with a complete ray in dm, other characters not as above (Figs 281, 294) 6
6 (5). Cell sc hyaline with a brown spot on costal margin; cell r_3 with short brown mark basal to r-m cross-vein and joined with large preapical brown mark; with arm of brown extending into preapical portion of cell r_5 towards apex of vein M in both sexes (Fig. 281). Widespread over Australia, Philippines ..... *T. glauca* (Thomson)
   Cell sc yellow-brown without a dark spot; with brown mark in r_3 basal to r-m extending diagonally across cell r_3; arm of brown in cell r_5 lacking in male (Fig. 294); WA ..... *T. pusilla*, sp. nov.

7 (4). Lacking a complete brown band in preapical portion of cell r_5 to margin in upper apex of cell m (Fig. 277) 8
Female with a complete band of brown through preapical portion of r_5 to upper apex of m (Fig. 298); WA ..... *T.* sp. 'A' nr *terryi*

8 (7). Brown band from r-m extends diagonally and is continuous to costa through cell sc; lacking extensive brown markings along vein Cu_1 (Fig. 277) 9
Brown band from r-m extends longitudinally through lower portion of cell r_5 to opposite cell sc, bending up through cell not quite reaching cell sc; cell sc pale yellow; with extensive brown mark extending along upper and lower sides of vein Cu_1, on underside extending to base of cell dm (Fig. 300); Vic. Tidal Rv. ..... *T.* sp. 'C' nr *mutabilis*

9 (8). With isolated brown spots in cell m; brown band extending from r-m to cell sc broad, equal in width to length of sc; area around r-m brown with a small hyaline spot before and after cross-vein (Fig. 299); Qld ..... *T.* sp. 'B' nr *terryi*
With 2 brown bands to margin through cell m; a narrow band of brown extends from r-m to sc; area around r-m hyaline (Fig. 277); widespread ..... *T. amoena* Frauenfeld

10(1). Abdomen and scutellum yellow, ground colour not obscured by microtrichia; pleura conspicuously marked with yellow; abdomen yellow setose; wing as in figure with cells br, dm and cu hyaline basally; Qld ..... *T. heronensis*, sp. nov.
Abdomen and scutellum black, densely grey microtrichose; pleura mostly black; abdomen white setose; basal br, dm and cu marked with brown (Fig. 297); Qld .....
..... *T. queenslandensis*, sp. nov.

Trupanea amoena (Frauenfeld)

(Figs 277–279)

Trypeta amoena Frauenfeld, 1856: 542. Holotype believed lost.

Type locality: Dalmatia, Yugoslavia.

Material Examined

Queensland: 1♂, Bluewater Ck, 38 km WNW of Townsville, 25.xi.1980, D. H. Colless. **Northern Territory**: 1♂, Renner Springs, 23.viii.1964, T. E. Woodward.

Diagnosis

Fitting in the group of species that has a brown stellate pattern in the wing with arms radiating to posterior margin, apices of cells r_5 and m hyaline and with a narrow band of brown extending obliquely from r-m cross-vein to costa in cell sc. Shows similarity to *T. asteria* (Schiner), from the Oriental Region, New Guinea and Solomon Islands and differs by having a complete brown band to cell sc, lacking a complete brown band in lower apex of cell r_5 to apex of vein m and with a brown marking through cell sc. Fitting near *T. opprimata* Hering from Nusa Tenggara, Indonesia, and differs by having the band from r-m cross-vein pale brown and narrow, its width equal to about 0·33× length of r-m and filling only basal portion of cell sc (Fig. 277). In *T. opprimata* the band from r-m is dark brown, rather broad, width about 0·67× length of r-m and filling apical 0·75 of sc (Hering 1941*a*, Pt 1, fig. 13).

As in other *Trupanea* that have a stellate pattern of wing markings, this species can only be differentiated by the wing markings as noted above and as in Fig. 277. Surstylus and prensisetae of male as in Fig. 278. Distiphallus largely membranous, swollen, about 3× wider than basiphallus and with a large hook at apex (Fig. 279).

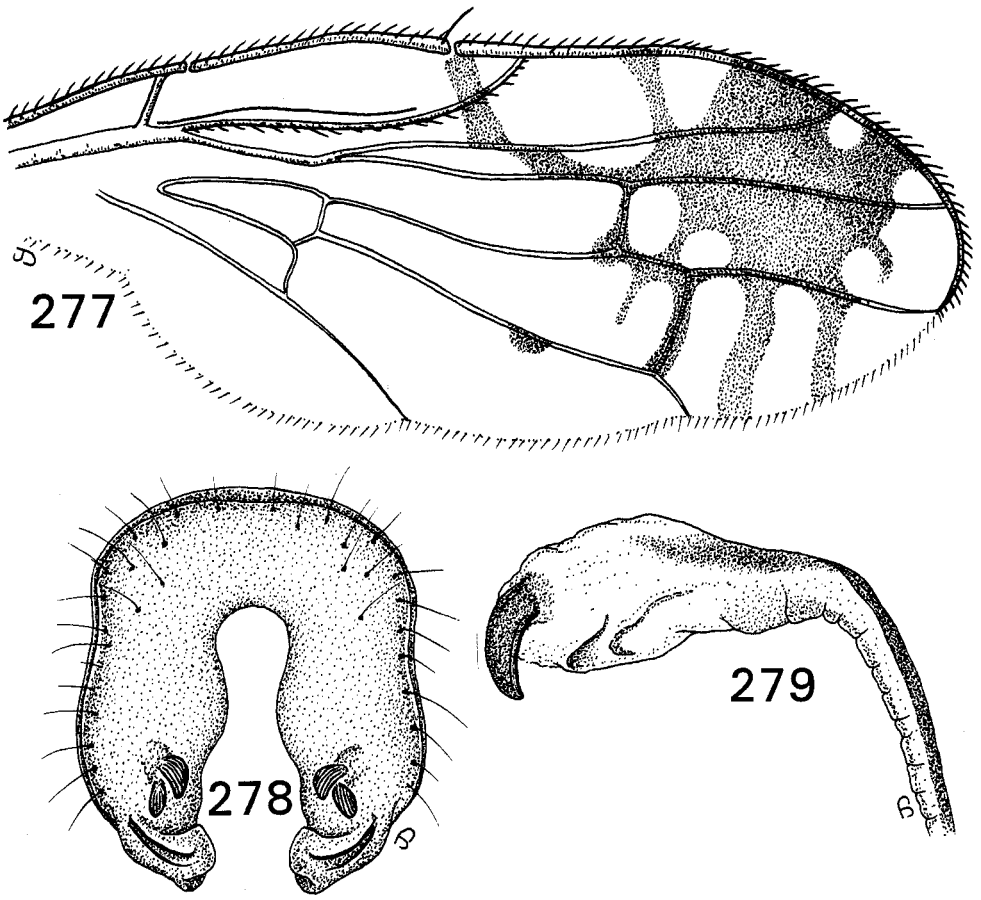
Length. Body 3·3–3·5 mm; wing 3·5–4·0 mm.

Remarks

This species has been redescribed by Ito (1984: 253).

Hosts

The larvae develop in flowerheads of Asteraceae.



Figs 277–279. *Trupanea amoena* (Frauenfeld): *277*, wing; *278*, ♂ surstyli and claspers; *279*, ♂ distiphallus.

Distribution

Widespread over Palaearctic, Afrotropical and Oriental Regions.

Trupanea bifida, sp. nov.

(Fig. 280)

Material Examined

Holotype. ♀, NSW, 58 km Dorrigo-Coramba Rd, 17.iv.1970, D. H. Colless, ANIC.

Diagnosis

Fitting in a group of species that has rays of brown diverging through apex of cell r_5 and with a band of brown from r-m cross-vein through cell sc (Fig. 280). Fits nearest to *T. notata*, sp. nov., and differs by having the brown band extending diagonally from r-m cross-vein continuous through cell sc; apical 0·67 of cell dm brown except for a round hyaline spot; 1 small hyaline spot near base of cell r_5; cell cu brown with 4–5 hyaline spots and with only 1 hyaline mark completely bisecting cell m (Fig. 280). In *T. notata* the brown band

from r-m ends at vein R_1 and does not extend into cell sc; the wing is hyaline basal to r-m cross-vein except for a diagonal band to vein R_1, a brown spot on vein Cu_1, 3 hyaline marks bisecting cell m and 2 hyaline spots in base of cell r_5 (Fig. 280).

Description

Female

Length. Body, excluding ovipositor, 2·5 mm; wing 2·8 mm.

Head. Frontal, ocellar and inner vertical bristles brown tinged yellow, except for yellow-white upper orbitals; other bristles and setae yellow-white with some short yellow-brown setae on oral margin. Junction of frons and face gently angulate. Parafacials narrow, width equal to about 3 rows of eye facets. Gena about 0·8× width of 3rd antennal segment. Third segment about half longer than wide, broadly rounded at apex.

Thorax. Densely grey microtrichose, covered with subrecumbent yellow-white setae. Scutellum bare on disk, sparsely setose on margin. Bristles of dorsum brown tinged yellow except for white posterior notopleurals. Dorsocentral bristles near suture.

Legs. Yellow, hind femur with 1 erect yellow-brown preapical anterodorsal bristlelike seta and no preapical dorsal seta.

Wings. As above and as in Fig. 280. Extensively brown with no distinct stellate pattern as in most *Trupanea*, with hyaline marks in posterior portion mostly isolated into round spots and only 1 complete hyaline mark through cell m. Diverging brown rays in apex of cell r_5 extending broadly into upper apex of cell m and lower apex of r_3. Veins R_{4+5} and M slightly diverging at apices.

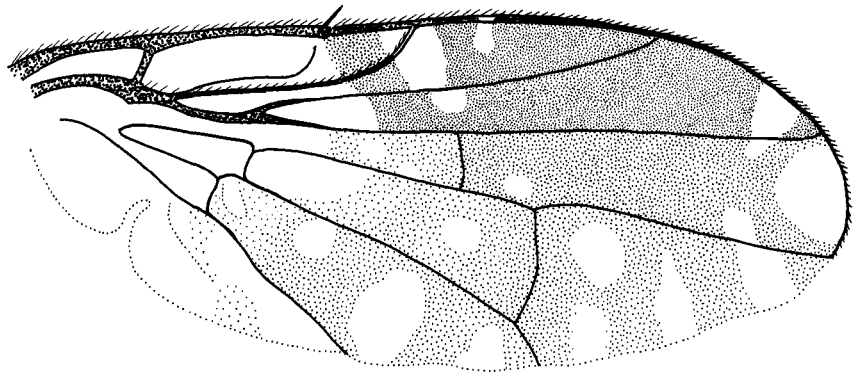


Fig. 280. *Trupanea bifida*, sp. nov., wing.

Abdomen. Dark grey microtrichose, covered with thin, yellow white, subrecumbent setae. Segment VI slightly longer than segment V. Basal segment of ovipositor shining black, yellow-white setose basally, brown setose on apical 0·67; equal in length to segments V+VI and length *in situ* about equal to greatest width. Aculeus not extruded for study.

Etymology

The specific epithet is from the Latin *bifidus* 'split into two parts', referring to the diverging brown rays in wing apex.

Trupanea glauca (Thomson)

(Figs 281–283)

Trypeta glauca Thomson, 1869: 581. Syntypes, 1♂ and 1♀ in NRS.

Type locality: Sydney, Australia.

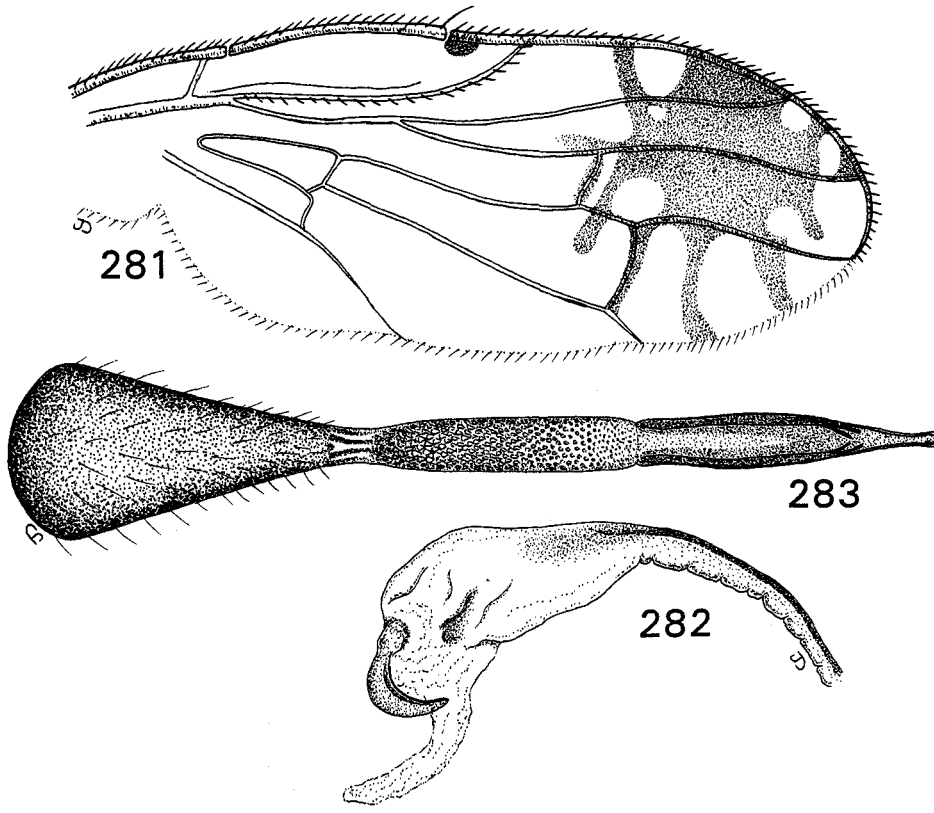
Material Examined

Several hundred specimens from many localities over all states of Australia except Northern Territory and Tasmania. **Queensland**: Stanthorpe, 3.x.1923, F. A. Perkins; Eungella, 25.xi.1965, No. 6589, G. L. Bush; Heron I., 18–22.xi.1965, No. 6583, G. L. Bush; Eungella Nat. Pk, 24.xi.1965, No. 6587, G. L. Bush; Moggill, 9.xi.1965, No. 6573, G. L. Bush; 8 km S Noosa, 11.xi.1965, No. 6555, G. L. Bush; Kennedy, 5.iv.1976, I. D. Galloway; 30 km N Wrotham Pk, 23.iv.1983, J. F. Donaldson. **New South Wales**: 7·8 km W Kiandra, 1488 m, 9.xii.1964, No. 64139, G. L. Bush; 1·6 km S Paterson, 26.x.1965, reared from flowerheads, *Helichrysum apiculatum* (Lab.), No. 6585, G. L. Bush; 28 km NE Coonabarabran, 17.xii.1965, No. 65153, G. L. Bush; Bannyabba, 2.xi.1965, No. 6568, G. L. Bush; Kooragang I. nr Newcastle, 9–10.xii.1981, P. Miller; Junee, 5.11.1966, M. Nikitin; Narrandera, 6.xii.1966, M. Nikitin; Blayney, 21.xi.1966, M. Nikitin; Narrabri, 25.i.1960, M. Nikitin; Roseville, Nov. 1947, flowerheads of Gerbera, no collector given; Charlotte Pass, Snowy Mtns, 9.ii.1979, D. K. McAlpine and M. A. Schneider; Mt Tomah, Blue Mtns, 28.xii.1982, N. W. Rodd; Mt Kosciusko, 2100 m, 9.ii.1979, D. K. McAlpine and B. J. Day; Charlotte Pass, Snowy Mtns, 9.ii.1977, D. K. McAlpine and B. J. Day; Tuglo, 48 km N Singleton, 10.xii.1981, G. A. Holloway; Lake Cootapatamba, and Snowy Mtns, 9.ii.1979, D. K. McAlpine and M. A. Schneider; Flora Res., Gilgandra, 24.x.1983, T. Woolley. **Australian Capital Territory**: Mt Gingera, 4.ii.1965, No. 658, G. L. Bush. **Victoria**: 10 km E Marysville, 950 m, 24.xi.1964, No. 64130, G. L. Bush; Mangalore, 8.xii.1964, No. 64135, G. L. Bush; Treasure's, 1402 m, 13.ii.1965, N. Dobrotworsky; Mt Baw Baw, nr Tanjilbren, 30.xi.1964, No. 64133, G. L. Bush; 3 km W Torrita, 12.xi.1964, ex *Vittadinia trilobata* (Gard.) DC, No. 64123, G. L. Bush. **South Australia**: 14 km E Yamba, 2.xi.1964, ex *Brachycome aculeata* (Lab.) Less, No. 64120, G. L. Bush; 13·5 km W Port Augusta, 16.x.1964, No. 64105, G. L. Bush; 30 km W Kimba, 16.x.1964, No. 64103, G. L. Bush; Flinders Range, 32 km N Hawker, 24.x.1965, N. Dobrotworsky; 14 km E Adelaide, 12.xi.1977, J. F. Donaldson; Ravine des Casoars, Kangaroo I., 30.xi.1977, D. K. McAlpine and M. A. Schneider; Western R. Cove, Kangaroo I., 29.xi.1977, D. K. McAlpine and M. A. Schneider; Salt Ck, Coorong District, 8.xii.1977, D. K. McAlpine and M. A. Schneider; 17·5 km N Victor Harbour, 26.xi.1977, D. K. McAlpine and M. A. Schneider; 20 km W Taylorville, 11.x.1982, D J. Scambler; Snake Lagoon, Flinders Chase, Kangaroo I., 3.xii.1977, D. K. McAlpine and M. A. Schneider; Mt Lofty, 25.xi.1977, D. K. McAlpine and M. A. Schneider; Old Alton Downs, Simpson Desert, 19.ix.1972, Z. Liepa. **Western Australia**: Crossing Pool, Millstream, 21.x.1970, D. H. Colless.

Diagnosis

Fits in the complex of species characterised by having apices of cells r_5 and m hyaline and not bisected by a brown ray, lacking a brown band from r-m cross-vein to cell sc and no sexual dimorphism in wing markings. Fits near *T. pusilla*, sp. nov., but differs by having cell sc hyaline, by possessing a brown mark along R_{4+5} basal to r-m cross-vein and rarely extending diagonally across cell r_3, with a rectangular-shaped hyaline mark bisecting cell r_5 immediately distal to r-m cross-vein; also specimens are slightly larger. Also near *T. prolata*, sp. nov., but differs in the hyaline sc, by having an isolated brown mark in lower apex of cell r_3, brown mark extending along R_{4+5} basal to r-m cross-vein and ending beyond level of apex of vein R_1, transverse brown ray extending between r-m and dm-cu cross-veins less than half way across cell dm, lacking brown mark on vein Cu_1, mesonotal and scutellar bristles yellow.

Fitting characteristics of most *Trupanea*, with head slightly narrowed at level with anterior margin of eye as seen in profile. Frontal and ocellar bristles brown except for yellow-white upper orbitals, other head bristles and setae yellow-white to white except for some short pale brown setae along oral margin. Dorsocentral bristles near level of suture. Wing as above and in Fig. 281. Cell sc less than half length of c. Some variation in extent of brown mark in cell r_3 basal of r-m cross-vein, in some specimens extending obliquely through cell r_3 but continuous with large preapical brown mark along vein R_{4+5}. Distiphallus of male as in Fig. 282. Basal segment of female ovipositor about equal in length to terga IV–VI and 2× longer than greatest width. Aculeus tapered to sharp point on apical 0·25 (Fig. 283).



Figs 281–283. *Trupanea glauca* (Thomson): *281*, wing; *282*, ♂ distiphallus; *283*, ♀ ovipositor.

Length. Wing 3·5–4·0 mm.

Remarks

Hendel's (1927*a*: 201) record of *T. stellata* (Fuessley) is in error for *T. glauca*.

Biology

Breeds in various Asteraceae and is probably a generalist feeder. Has been reared from *Ageratum* sp., *Brachycome aculeata*, *Helichrysum apiculatum*, *Senecio* sp., *Vittadinia trilobata* and *Wedelia* sp.

Distribution

Philippines and Australia.

Trupanea heronensis, sp. nov.

(Figs 284–289)

Material Examined

Holotype. ♂, Qld, Heron I., 18.xi.1965, No. 6584, G. L. Bush, ANIC.

Paratypes. **Queensland**: Allotype ♀ (ANIC), Heron I., 22.xi.1965, No. 6585, G. L. Bush; 14♂, 17♀, same data as holotype and allotype; 3♂, 3♀, Mission Beach, 13.xii.1965, Nos 65144 and 65147,

G. L. Bush; 1♂, One Tree I., Barrier Reef, 15.v.1968, H. Heathwole. Bush's field number 65144 refers to a plant identified as 'perhaps Wyethia sp.?'. It is not indicated whether this was reared or just collected from this plant.

Paratypes in AMS, ANIC, BPBM, MSU, NHM, UH.

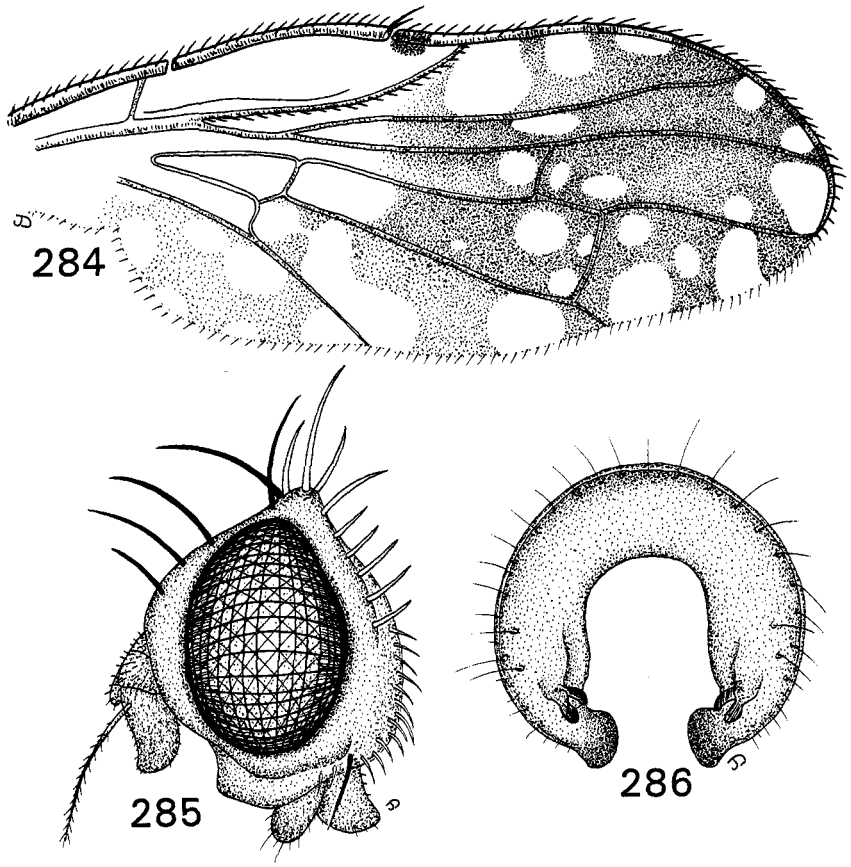
Diagnosis

Differentiated from other known Australian species by having the abdomen and scutellum yellow and wing markings as in Fig. 284. Fitting in the *T. rufa* complex of species and closely related to *T. rufa* Hardy from Papua New Guinea. Differs by having a rather broad brown marking extending transversely over wing from anterior margin in cell sc to hind margin in middle of cell cu and with 1 or more round hyaline spots isolated in cell cu (Fig. 284). In *T. rufa* a narrow pale brown band extends diagonally from r-m cross-vein to margin in cell sc and the area basal of r-m is largely hyaline, lacking a transverse brown marking (Hardy 1988*b*: 80). Also showing relationship to *T. decepta* Hardy from the Philippines but differing by having mesonotum black in ground colour, lacking brown markings in basal cells basal of apex of vein Sc and by having brown colouring extending through cell sc. The markings show relationship to *T. queenslandensis*, sp. nov., but that species has the abdomen and scutellum black and different wing markings.

Description

Male

Length. Body 4·6–4·8 mm; wing 4·0–4·5 mm.

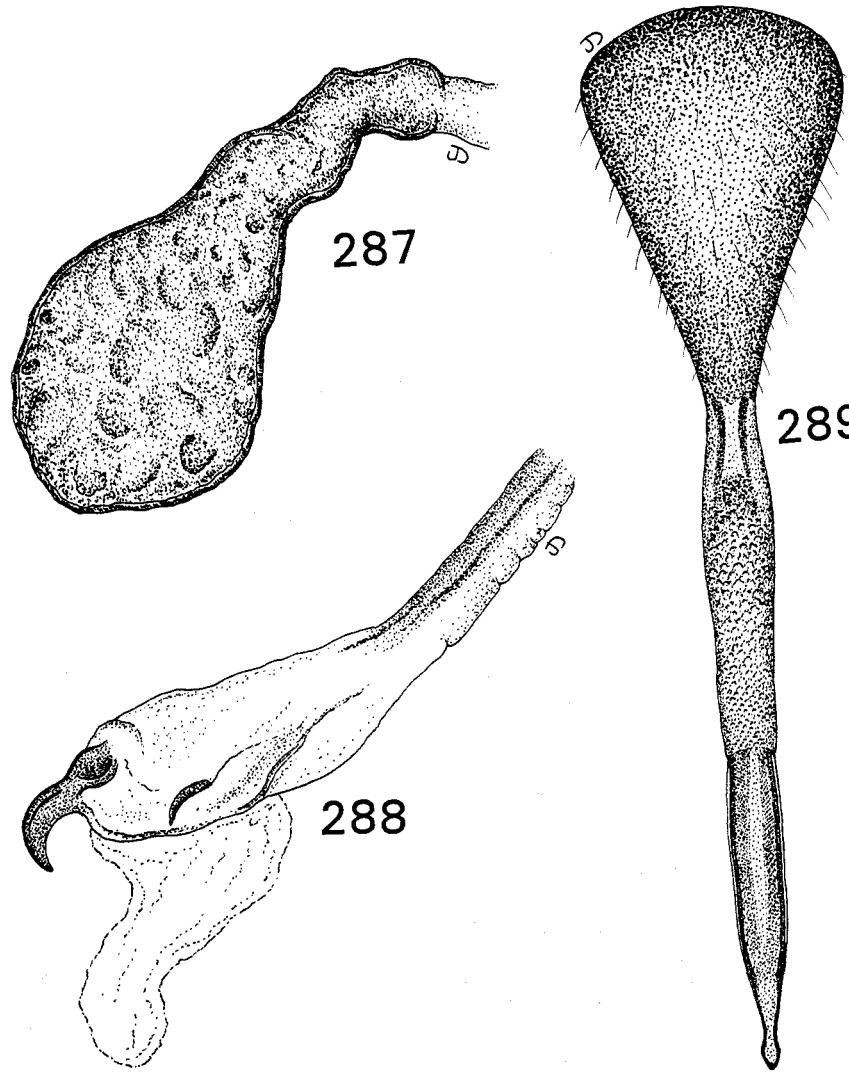


Figs 284–286. *Trupanea heronensis*, sp. nov.: *284*, wing; *285*, head; *286*, ♂ surstyli and claspers.

Head. As in Fig. 285. Frontal, lower orbital, ocellar, inner vertical and genal bristles yellow-brown, other bristles white. Parafacial about equal in width to three rows of eye facets. Gena about equal in width to 3rd antennal segment. Occiput nearly half as wide as compound eye. Thickened basal portion of arista yellow, remainder brown. Mouthparts rather inconspicuous, labellum about half as long as oral opening.

Thorax. Mostly black in ground colour of dorsum, grey microtrichose and yellow-white pilose, yellow on humerus, notopleuron and on suture. Scutellum mostly yellow. Proepimeron and katatergite yellow, also yellow on dorsal and anterior portions of anepisternum and posterior margins of katepisternum anepimeron and anatergite. Bristles yellow tinged with brown except for white posterior notopleural and lower anepisternals. Dorsocentral bristles just behind suture.

Wings. Largely brown distal of level with apex of vein Sc. Cell sc tinged with brown, hyaline at apex and at base. Two large hyaline spots in cell r_1 beyond apex of vein R_1, apical



Figs 287–289. *Trupanea heronensis*, sp. nov.: *287*, ♀ spermatheca; *288*, ♂ distiphallus; *289*, ♀ ovipositor.

half of cell brown. Cell r_3 with 1 hyaline spot at upper apex, 1 at lower apex and 1 opposite r-m cross-vein. Apex of cell r_5 filled with a hyaline mark except for a narrow rim of brown along upper and lower margins, mark sometimes confluent with spot in lower apex of r_3. A small preapical hyaline spot in lower r_5, approximating a hyaline mark in cell m. Two small hyaline spots in r_5 distal of r-m cross-vein and 1 spot basal. Four hyaline spots in cell m and 2–4 spots in dm. Cell cu with 1 or several hyaline spots on margin with spots in basal portion often confluent. A faint marking of brown extends over basal portion of cell cu and apical portion of cell a.

Legs. Yellow, with 1 preapical dorsal and 1 anterodorsal bristlelike setae on hind femur.

Abdomen. Yellow, yellow microtrichose and yellow-white setose, bristles at apices of terga yellow tinged with brown. Genitalia yellow except for brown prensisetae and inner apices of surstyli (Fig. 286). Distiphallus scarcely wider than basiphallus, weakly sclerotised and terminating in a strong hook (Fig. 288).

Female

Length. Body 4·6–4·8 mm; wing 4·0–4·5 mm.

As in male. Abdomen usually with discoloration of brown to black and grey microtrichose over tergum VI. Tergum VI equal to or slightly longer than tergum V. Basal segment of ovipositor polished black, faintly tinged reddish and equal in length *in situ* to terga V+VI and sparsely yellow-brown setose. Aculeus spearhead shaped (Fig. 289). Two small weakly sclerotised gourd-shaped spermathecae (Fig. 287).

Distribution

Queensland.

Etymology

Named after the type locality, Heron Island.

Trupanea notata, sp. nov.

(Fig. 290)

Material Examined

Holotype. ♀, Qld, Mt Crosby, 9.xi.1965, No. 6575, G. L. Bush, ANIC.

Paratypes. **New South Wales**: Allotype ♂ (NHM), Durras Dunes, 1.ii.1973, E. A. Fonesca. **Queensland**: 1 ♀, Bundaberg, 8.iii.1972, H. Frauca, BPBM.

Diagnosis

This species is closely related to *T. renschi* Hering from Nusa Tenggara, Indonesia. These species fit into a complex that has diverging brown bands through apex of cell r_5 and a brown band connecting r-m cross-vein and cell sc. *T. notata* differs by having the hyaline wedge from wing margin in middle of cell r_1 extending into upper portion of cell r_3, a triangular-shaped hyaline mark from margin in cell r_3, a brown spot in middle of vein Cu_1 and basal segment of ovipositor comparatively short and subequal in length to terga V+VI. *T. renschi* has the hyaline mark in middle of r_3 confined to the cell, the mark in apex of r_3 not expanded on costal margin, cu_1 lacking a brown spot and basal segment of ovipositor comparatively long and slender, equal in length to terga IV–VI. *T. notata* differs from *T. bifida*, sp. nov., in having cell sc subhyaline and wing largely hyaline basal of r-m cross-vein and other details as noted under *T. bifida* and as shown in Fig. 290.

Description

Male

Length. Body and wing each 3·0–3·2 mm.

As in female except for sexual characters. First 2 terga broadly yellow on sides. Genitalia not studied.

Female

Length. Body, excluding ovipositor, and wing 3·2 mm.

Head. As long as high with frons sloping and angulate at junction of frons and face. Frontal, ocellar and inner vertical bristles brown tinged yellow except for white upper orbitals. Parafacial narrow, equal in width to 2–3 rows of eye facets. Gena scarcely more than half width of 3rd antennal segment. Oral margin slightly protruded.

Thorax. Densely grey-white microtrichose, covered with thin pointed yellow-white setae. Bristles of dorsum yellow tinged with brown, except for white posterior notopleurals. Dorsocentral bristles near suture.

Legs. Yellow, hind femur with 1 preapical anterodorsal bristlelike seta and no preapical dorsal seta.

Wings. As noted above and as in Fig. 290. Cell sc very faintly tinged with yellow, about 0·67× longer than wide. Basal hyaline wedge from margin in cell r_1 extending about 0·8 through cell r_3 and 2nd hyaline wedge extending into upper edge of r_3. Brown rays in apex of cell r_5 widely diverging, ending in margin in apices of lower cell r_3 and upper m. Preapical brown ray in cell dm not complete, ending before vein Cu_1. Vein Cu_1 with a brown mark in middle.

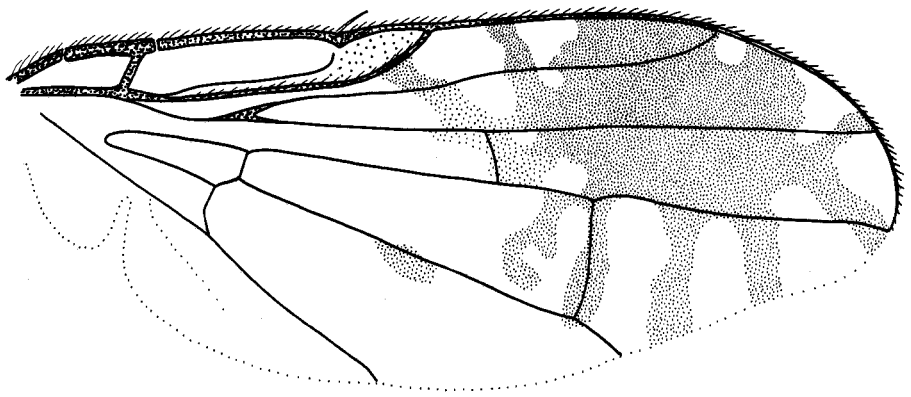


Fig. 290. *Trupanea notata*, sp. nov., wing.

Abdomen. Densely grey microtrichose, covered with flattened, sharply pointed yellow-white setae. Basal segment of ovipositor shining black, yellow-white setose on basal half, with short brown setae apically, about equal in length to terga V+VI and slightly longer than wide. Aculeus tapered to sharp point, not extruded for study.

Etymology

The specific epithet is from the Latin *nota* 'mark', referring to the brown mark on CuA_1.

Trupanea prolata, sp. nov.

(Figs 291–293)

Material Examined

Holotype. ♂, SA, 28 km W Tailem Bend, 9.viii.1965, ex *Senecio lautus* Forst., G. L. Bush, ANIC.

Paratypes. **Queensland**: 1♂, 1♀, South Stradbroke I., 11.ix.1991, D. Sparks; 1♀, Sherwood, Nov. 1990, D. Sparks; 1♀, 3 km N of Woollongarra, 2.i.1992, B. Whyte; all specimens reared from larva on *Senecio madagascariensis*. **New South Wales**: 2♀, Carey's Peak, Barrington Tops, 775 m, 13.ii.1965, No. 6510, G. L. Bush; 1♀, Barrington Tops, 775 m, reared from *Senecio amygdalifolius* F. Muell., No. 6546, G. L. Bush. **Victoria**: 1♂, 3 km W Torrita, 12.xi.1964, ex *Vittadinia triloba* (Gaud.) D.C., No. 64123, G. L. Bush. **South Australia**: Allotype ♀ (ANIC), 4♂, 3♀, same data as holotype; 1♀, 34 km E Ceduna, 10.ix.1964, ex *Calotis lappulacea* Benth., No. 6453, G. L. Bush; 1♀, 62 km E Kyancutta, 10.ix.1964, *Ixiolaena brevicompta* F. Muell., No. 6450, G. L. Bush. **Western Australia**: 2♂, 1♀, Rottnest I., 23.xii.1965 and 12.i.1971, J. A. Grant and G. A. Holloway; 1♂, Long Point, 14 km SW Walpole, 13.x.1970, G. A. Holloway. Paratypes in ANIC, BPBM, MSU, NHM, QDPI.

Diagnosis

Fitting in the *T. glauca* complex by having apices of cells r_5 and m hyaline and no brown ray connecting r-m cross-vein with cell sc. Differs from *T. glauca* by having cell sc yellowish fumose, a narrow line of brown along margin of cell r_3, a broad band of brown along lower portion of cell r_3 basal of r-m cross-vein extending almost to level with apex of vein Sc, a complete brown ray through preapical portion of cell dm, a line of brown extending along underside of vein M basal to r-m cross-vein, usually with a brown mark in middle of vein Cu_1, mesonotal and scutellar bristles brown and with a comparatively short basal segment of ovipositor, about equal in length to terga V+VI and only slightly longer than its greatest width.

Description

Male

Length. Wing 4·0–4·2 mm.

Head. As in other *Trupanea*. Frontal and ocellar bristles dark brown except for yellow-white upper orbitals. Face gently concave, oral margin slightly protruded.

Thorax. Bristles on dorsal surface brown, humerals and anterior notopleural bristles brown tinged with yellow, posterior notopleural yellow-white. Dorsocentral bristles near suture.

Legs. Yellow. Front femur with complete row of yellow-white bristlelike dorsal setae, a complete row of anterodorsal setae, yellow-white on basal 0·67, brown on apical 0·33 and with 4 brown anteroventral setae on apical 0·33. Hind femur with 1 preapical anterodorsal bristle-like seta and no dorsal seta.

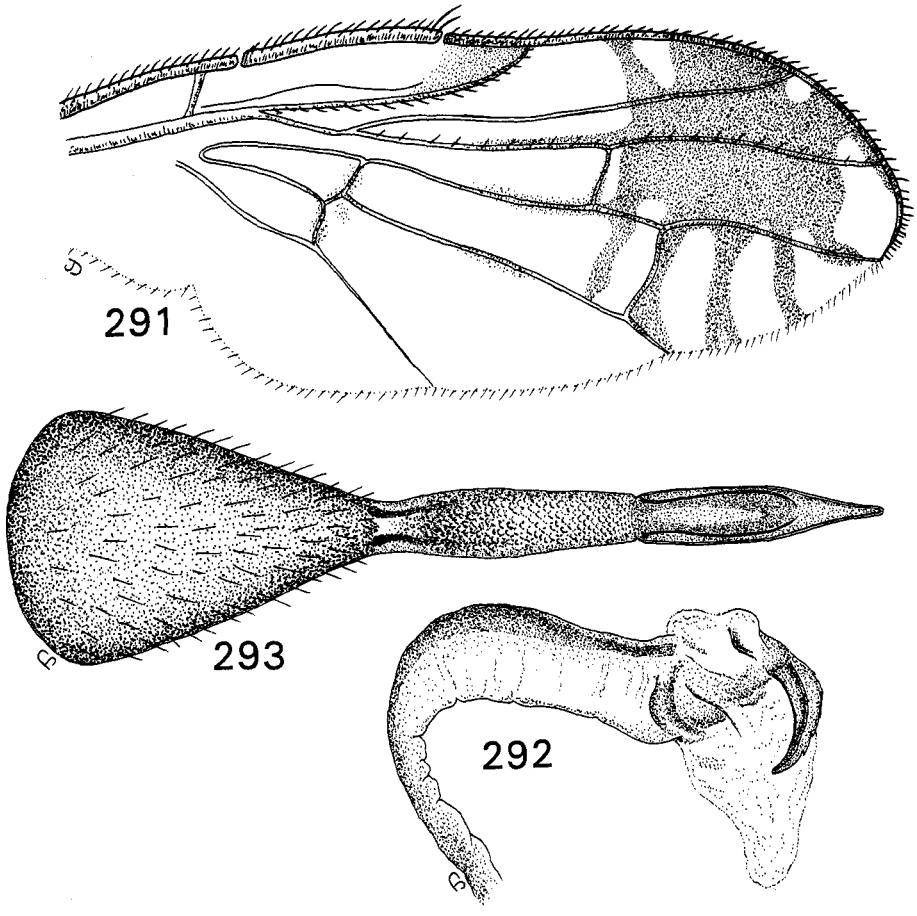
Wings. As above and as in Fig. 291 with small hyaline wedge into preapical brown mark from costa in middle of cell r_1 and a small round hyaline mark in upper apex of cell r_3 with ray of brown extending to vein M in preapical portion of cell r_5. Cell m with 3 complete brown rays. Brown mark in middle of vein Cu_1 variable, usually distinct but sometimes faint or absent.

Abdomen. Moderately covered with pointed, flattened, subrecumbent yellow-white setae, with black bristles around margin of tergum V. Distiphallus as in Fig. 292.

Female

Length. Wing 4·4 mm.

As above, no apparent sexual dimorphism except frontal bristles stronger, each bristle equal in length to over half width of frons. Basal segment of ovipositor about equal in length to terga V+VI and only slightly longer than wide, measured on widest portion. Spiracular openings on venter at basal 0·4 of segment. Aculeus tapered to sharp point on apical 0·33 (Fig. 293).



Figs 291–293. *Trupanea prolata*, sp. nov.: *291*, wing; *292*, ♂ distiphallus; *293*, ♀ ovipositor.

Distribution

Queensland, New South Wales, Victoria, South Australia, Western Australia.

Biology

Reared from flowers of *Calotis lappulacea, Ixiolaena brevicompta, Senecio amygdalifolius, Senecio lautus, Senecio madagascariensis* and *Vittadinia triloba* (Asteraceae).

Etymology

The specific epithet is from the Latin *prolatus* 'extended', referring to the elongated brown mark in cell r_3.

Trupanea pusilla, sp. nov.

(Figs 294–296)

Material Examined

Holotype. ♂, WA, Crossing Pool, Millstream, 22.x.1970, at light, D. H. Colless, ANIC.

Paratypes. **Western Australia**: Allotype ♀ (ANIC), same data as holotype. 31 specimens from the following locations: same data as holotype; Crossing Pool, Millstream, 22.x.1970, D. H. Colless; Millstream, 24.x.1970, D. H. Colless; Millstream, 8 and 10.iv.1971, D. H. Colless. **Queensland**: 1♂, Elizabeth Ck Crossing, SE Wrotham Pk, 23.iv.1983, J. F. Donaldson and J. F. Grimshaw. Paratypes in AMS, ANIC, BPBM, NHM, QDPI.

Diagnosis

Fits in the *T. glauca* complex and differs from *T. glauca* (Thomson) by having cell sc yellow-brown, a complete oblique brown mark across cell r_3 connected with brown mark over r-m cross-vein (Fig. 294), usually with a hyaline mark distal of r-m cross-vein not completely bisecting cell r_5; male lacking an extension of the preapical brown mark in cell r_5 (Fig. 294) and specimens smaller in size.

Description

Male

Length. Wing 2·4 mm.

Head. Shaped as in other species of genus (Fig. 295), interfrontal and ocellar bristles pale brown except for yellow-white upper orbitals. Two lower pairs of frontal bristles approximate, upper bristle widely spaced and situated near middle of frons. Other head bristles and setae yellow-white to white. Frons about as long as wide, measured from ocellar triangle to lunule, and 0·25× wider than eye.

Thorax. Densely grey-white microtrichose, with bristles and setae pale yellow to yellow-white. Dorsocentral bristles near suture. Mesonotal setae thin, sharply pointed, only slightly flattened and recumbent. Scutellum bare over disc, setose on margin.

Wings. As above and as in Fig. 294. Cell sc about 0·33× as long as c. Apex broadly hyaline except for an isolated brown spot in lower apex of cell r_3. Two brown rays extending to margin in cell m, a brown ray over cross-vein dm-cu and a short abbreviated ray in upper preapical portion of cell dm. Cross-vein r-m situated near apical 0·75 of cell dm. Vein R_{4+5} with 2–3 setae near base and R_1 with a bare area opposite end of Sc. Vein Cu_1 evanescing beyond cross-vein dm-cu and vein A_1+Cu_2 hyaline, evanescing before wing margin.

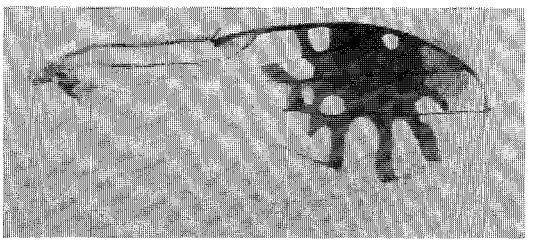


Fig. 294. *Trupanea pusilla*, sp. nov., wing.

Legs. Yellow with bristles and setae mostly pale yellow.

Abdomen. Brown to black in ground colour, yellow on lateral margins of terga I and II. Moderately covered with flattened, thin yellow-white recumbent setae. Genitalia yellow tinged with brown. Surstylus blunt, curved inward at apex. Distiphallus as in Fig. 296.

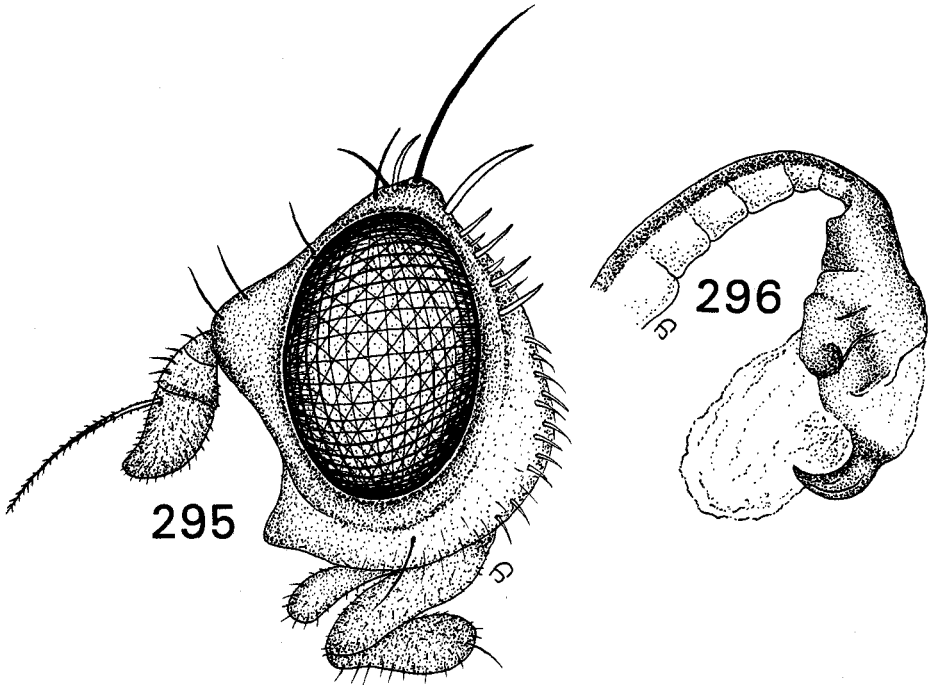
Female

Length. Wing 2·4–3·2 mm.

As in male. Wing with an arm of brown extending from preapical brown area through cell r_5 to vein M and with brown ray extending through upper half of preapical portion of cell dm. Ovipositor base shining black. Yellow-white setose on basal 0·4, fine brown to black setose on apical 0·6, about 2× longer than wide and slightly longer than terga V+VI *in situ* and with spiracular openings in basal 0·25 of segment. Aculeus sharply tapered to a point on apical 0·25.

Etymology

The name is from the Latin *Pusillus* 'small', referring to its small size.



Figs 295, 296. *Trupanea pusilla*, sp. nov.: *295*, head; *296*, ♂ distiphallus.

Trupanea queenslandensis, sp. nov.

(Fig. 297)

Material Examined

Holotype. ♂, Qld, North West I., nr Yeppoon, 17–28.viii.1968, D. M. Reeves, QM.

Paratypes. **Queensland**: Allotype ♀ (ANIC), Awonga Dam, Boyne Rv., SW Gladstone, 10.ii.1975, at light, B. K. Cantrell; 1♀, Corallie R., Bruce Highway, NW Gladstone, 23.i.1970, MV lamp, G. A. Holloway; 1♀, Brisbane, 1.x.1955, D. J. Rogers; 1♀, Brisbane (Yeerongpilly), 1–10.i.1982, Malaise trap, no collector recorded. Paratypes in BPBM, QDPI, UQM.

Diagnosis

Fits nearest to *T. heronensis*, sp. nov., in having the brown preapical wing markings extending basal to r-m cross-vein and broken up by hyaline spots around margin. Differs by

having the abdomen and scutellum black and densely grey microtrichose, pleura mostly black, abdomen white setose and cells br, dm and cu marked with brown basally.

Description

Male

Length. Body 4·5 mm; wing 4·7 mm.

Head. Slightly higher than long with front sloping and face gently concave. Greyish yellow except for compound eyes and yellow antennae and mouthparts. Three pairs yellow-brown frontal bristles, 2 orbitals, upper pair white. Ocellar, inner vertical and genal bristles yellow-brown, other bristles and setae white except for yellow setae over genae and with a few tiny yellow-white setae over interfrontal region.

Thorax. Black, densely grey-white microtrichose, yellow on scutellum, basicosta, tegula, auxillary sclerites of wing and anterior margin of proepisternum. Bristles of dorsum yellow, faintly tinged with brown, those of pleura pale yellow. Pile subrecumbent, white. Dorsocentral bristles just posterior to suture.

Wings. Basal costal and costal cells hyaline. Cell sc brown, narrowly hyaline at base and at apex. Brown colouring in sc continuous through cells r_1 r_3 and br. Cell r_1 with large hyaline mark just beyond apex of vein R_1 continuous through about 0·75 of cell r_3, also with a hyaline mark extending about 0·75× distance to vein R_{2+3} in middle of 4th costal section. Two hyaline spots in apex of cell r_3 and 1 hyaline spot fills most of apex of r_5. A moderately large preapical hyaline mark in r_5 confluent with large mark in upper apex of m, also 2 tiny hyaline spots along lower margin of r_5 and 2 rather large hyaline spots just before r-m cross-vein. Cell br with a hyaline mark filling cell just basal to r-m and with brown marking continuous with mark extending through cell sc. Cells m and dm each with 4 hyaline spots. Four round hyaline spots in cell cu and brown colouring extending to base of cell and continuous through a to costal margin (Fig. 297).

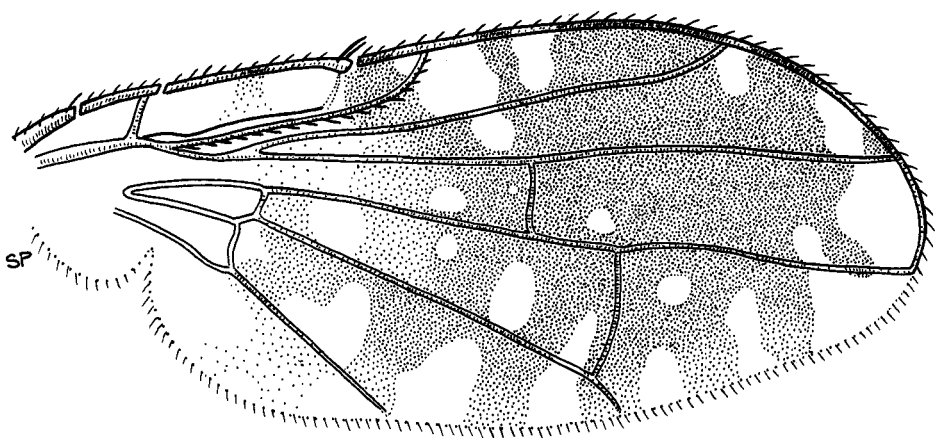


Fig. 297. *Trupanea queenslandensis*, sp. nov., wing.

Legs. Yellow.

Abdomen. Black in ground colour, yellow on narrow lateral margins of first 2 terga, densely grey microtrichose and covered with moderately long subrecumbent pile. Genitalia not relaxed for study.

Female

Length. Body, excluding ovipositor, and wing both 4·5 mm.

Fitting description of male except for differences in wing markings: hyaline mark in apex of r_5 confluent with mark in m, only 1 hyaline spot in basal r_5, 1 small spot in br and other details as shown in Fig. 294. Terga V and VI about equal in length. Basal segment of ovipositor shining black and equal in length to terga V+VI and sparsely yellowish setose. Piercer long, slender, sharp pointed, not relaxed for study. Spermathecae not studied.

Remarks

Four specimens on hand from several states of Australia apparently represent three species. These cannot be described until further specimens are available for study.

Trupanea sp. 'A' near *terryi* Hardy

(Fig. 298)

Material Examined

Specimen in CAS collection.

Diagnosis

One specimen (Dales Gorge, WA, 625 m, 10 October 1962, E. S. Ross and D. Q. Cavagnaro) has wing markings that resemble those of females of *T. terryi* Hardy, from Indonesia but the brown band extending through lower apex of cell r_5 is not expanded in upper cell m and band of brown extending from r-m cross-vein over cell dm not expanding in cell cu or extending basal in cell dm. It differs from male wing of *T. terryi* by having a complete band of brown extending through preapical portion of cell r_5 to upper apex of m. Other differences as shown in Fig. 298, compared with Hardy (1988*b*: 83).

Trupanea sp. 'B' near *terryi* Hardy

(Fig. 299)

Material Examined

Specimen from Qld in ANIC and one from NSW in CAS.

Diagnosis

One specimen(Moreton Telegraph Station, Cape York, Qld, 8 September 1968, R. E. Tovey) resembles *T. terryi* Hardy but differs by having a short preapical arm of brown in cell r_5, not extending to wing margin and isolating a hyaline spot in lower r_5; brown ray from r-m cross-vein not extending to hind margin, extending about 0·67 through cell cu and other differences as shown in Fig. 299, compared with Hardy (1988*b*: 83).

One ♂ (Moggill, NSW, 10 April 1959, R. Metcalf) may be the same species but the apex of the wing is broken and its identity cannot be definitely determined.

Trupanea sp. 'C' near *mutabilis* Hering

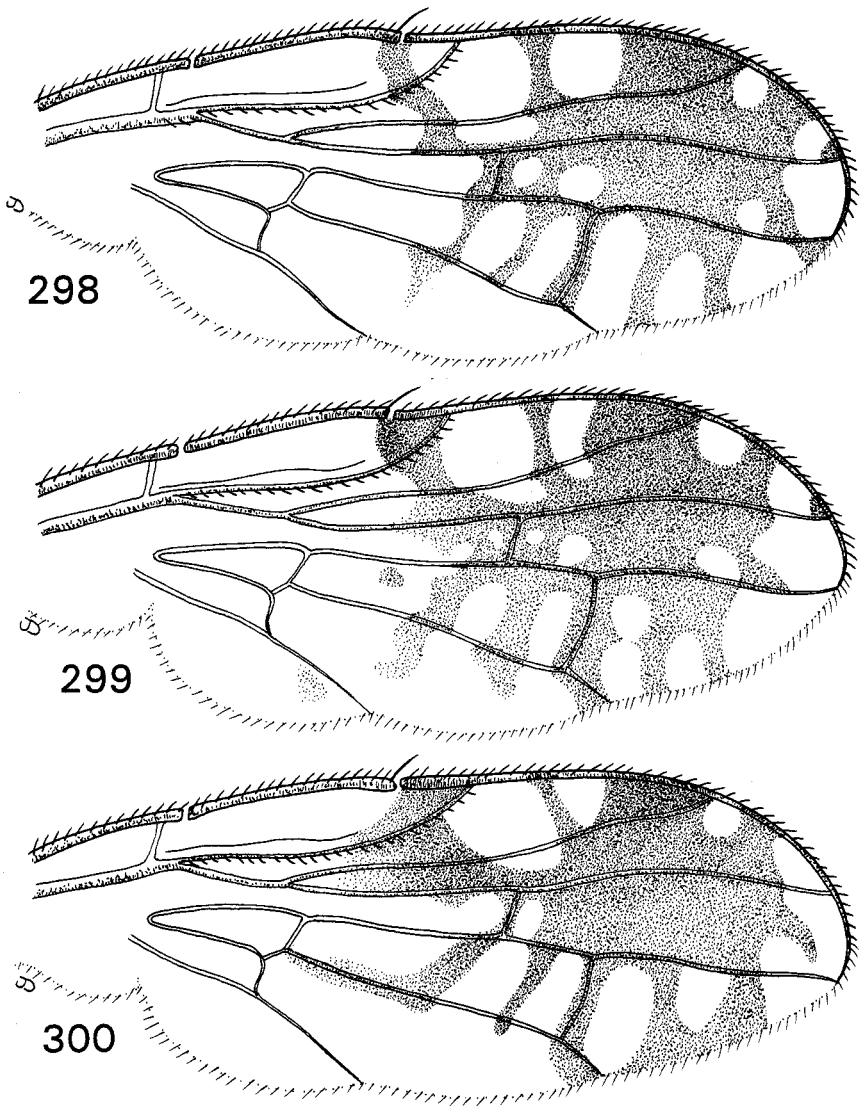
(Fig. 300)

Material Examined

Specimen in NMVM.

Diagnosis

One ♂ (Tidal River, Vic., at light, 28 January 1967, G. Etterschank) resembles *T. mutabilis* Hering, from Indonesia but the wing markings are distinctive. Brown band extending basal from r-m cross-vein runs longitudinally through lower portion of cell r_5 to opposite cell sc then bending up through cell but not quite reaching cell sc; cell sc pale yellow; second hyaline mark in cell r_1 wedge shaped and 0·33–0·25× as wide as basal mark; with extensive brown markings extending longitudinally along upper and lower sides of vein Cu_1, on underside extending to level of base of cell dm. Compare Fig. 300 with Hardy (1988*b*: 78).



Figs 298–300. *298*, *Trupanea* sp. 'A' near *terryi* Hardy, wing; *299*, *Trupanea* sp. 'B' near *terryi* Hardy, wing; *300*, *Trupanea* sp. 'C' near *mutabilis* Hering, wing.

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