BISHOP MUSEUM BULLETINS IN ENTOMOLOGY

The Tephritinae of Indonesia, New Guinea, the Bismarck and Solomon Islands (Diptera: Tephritidae)

D. Elmo Hardy

Bishop Museum Bulletin in Entomology 1

Bishop Museum Press
Honolulu

The *Bulletin of the Bernice P. Bishop Museum* (ISSN 0005–9439) was begun in 1922 as a series of monographs presenting the results of research in many scientific fields throughout the Pacific. Beginning in 1987, the *Bulletins* continued with a slightly modified title as four new series: *Bishop Museum Bulletins in Anthropology* (ISSN 0893–3111), *Bishop Museum Bulletins in Botany* (ISSN 0893–3138), *Bishop Museum Bulletins in Entomology* (ISSN 0893–3146), and *Bishop Museum Bulletins in Zoology* (ISSN 0893–312X). Each series is sequentially numbered, beginning with number 1. *Bulletins* are issued irregularly.

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The Editor
Bishop Museum Press
P.O. Box 19000-A
Honolulu, Hawai'i 96817

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PUBLISHED BY
Bishop Museum, Honolulu
W. Donald Duckworth, Director

Bishop Museum Press
Robert J. Armbruster, Director
Shirley Samuelson, Assistant Editor

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Printed in the United States of America

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ANSI Z39.48–1984

ISBN 0–930897–35–8
ISSN 0893–3146
Library of Congress Catalog Card No. 87–70047

Contents

THIS STUDY was made possible by National Science Foundation Grant No. DEB 8019307. This financial support has been greatly appreciated.

I express sincere thanks to all of the institutions whose collections have been studied, as listed in the Introduction.

The illustrations have been prepared by Michelle Chun, Marianne Early, Cynthia Fritzler, Diane Masuda, David Cassidy, and Gwen Yoshimura. The manuscript typing was done by Maria Au Hoy. The meticulous work done by these students at the University of Hawaii adds greatly to the value of this study and I am grateful for their help.

D.E.H.

Abstract

THE SUBFAMILY TEPHRITINAE is treated in 2 tribes: Tephrellini and Tephritini. The former comprises 3 genera and 6 species (1 new) and the latter 14 genera and 41 species (8 new, plus 3 undescribed). The following are newly synonymized: *Hendrella* (= Tephrella); *Actinoptera trypaneoides* (= *Actinoptera montana*); *Paroxyna gemina*, *Paroxyna conflicta funalis*, and *Dioxyna heringi* (all synonyms of *Dioxyna conflicta*); *Paratephritis naucina* Hering and *P. senecionis* (both synonyms of *Orotava hamula*); *Stylia apiciclara* (= *Paroxyna orientalis*); *paroxyna timorensis* (= *Paroxyna stigmosa*); *Platensina dilatata* (= *Platensina amplipennis*); *Indaresta* (= *Pliomelaena*). The following are new combinations: *Orotava hamula* for *Tephritis hamulus* and *Pliomelaena callista* for *Indaresta callista*.

The Tephritinae

The Tephritinae is characterized by flattened postocular bristles and setae that are rather scalelike and whitish in color, or by the postvertical bristles and some occipitals being flattened and white. There are sometimes short black setae interspersed in the occipital row; the scapular bristles are absent or weakly developed and scarcely differentiated from the mesonotal setae; the transverse suture before the hind margin of the mesopleuron is rudimentary or absent; vein R_1 usually has a bare area opposite the end of vein Sc; vein R_{4+5} is usually bare except for a few setae above, near the base; the 6th tergum of the female is usually longer than the 5th; the thorax and abdomen are usually densely gray or yellow-gray pollinose, with subrecumbent scalelike setae over the dorsum; the wings are usually reticulated (Fig. 14) or with a dark stellate pattern in the apical portion (Fig. 39); and the dorsocentral bristles are situated slightly or distinctly anterior to the supraalar bristles. The arista is bare or short pubescent, the vanes of the male aedeagal apodeme arise separately on the axis and are widely separated, and the female has only 2 spermathecae.

The confusion and problems existing among the higher categories of Tephritinae could not be resolved in this study because of the paucity of material available. I am retaining the tribe Tephrellini under Tephritinae to include the genera *Tephrella* Bezzi, *Indaciura* Hering, and *Spathulina* Rondani. *Platensina* Enderlein, *Pliomelaena* Bezzi, and *Elaphromyia* Bigot have been listed under Aciurinae, Aciurini by Cogan & Munro (1980). The first 2 genera have been treated under Platensini by Munro (1937), Hering (1942a), and others, based upon the head shape and the comparatively broad wing. I have found considerable intergradation in the angulation of the front of the head at the junction of the front and the face in species of *Platensina* and in related and unrelated genera and have not been able to find consistent characters for grouping these genera as a tribe. The wing shape character is reliable only for differentiating the genus *Platensina*. *Platensina* and *Pliomelaena* may be grouped by the setae on the upper side of vein R_{4+5} extending to or beyond the r-m crossvein, but I do not consider this a tribal character; I prefer to treat the genera tentatively as Tephritini. I also prefer to treat *Spathulina* under Tephrellini rather than as a separate tribe as listed by Cogan & Munro (1980: 541). Hering (1953: 78) placed *Indaresta* Hering (new synonym of *Pliomelaena*) and *Sundaresta* Hering in Euarestini based upon their having the interfrontal area bare and wing markings that form a

radiating pattern in the apex of the wings. I find considerable intergradation in the number of setae in the middle of the front and do not consider the wing marking character of tribal importance.

These flies predominantly breed in flowerheads of Compositae, Acanthaceae, and other plant families. The larvae of most are seed feeders but many are stem gall formers.

Abbreviations for Institutions

Collections are located in the following institutions.

AMNH	American Museum of Natural History, New York, USA
AMS	Australian Museum, Sydney, Australia
BMNH	British Museum (Natural History), London, England
BPBM	Bernice P. Bishop Museum, Honolulu, Hawai'i, USA
CAS	California Academy of Sciences, San Francisco, California, USA
CIHS	Commonwealth Institute of Health, University of Sydney, Sydney, Australia
DEI	Institute für Pflanzenschutzforschung (formerly Deutsches Entomologisches Institut), Kleinmachnow, Eberswalde, DDR
DPIK	Department of Primary Industries, Konedobu, Papua New Guinea
FRSB	Forest Research Station, Bulolo, Papua New Guinea
MNHP	Museum National d'Histoire Naturelle, Paris, France
MSNG	Museo Civico di Storia Naturale, Genoa, Italy
MZB	Museum Zoologicum Bogoriense, Bogor, Java
NHMB	Naturhistorisches Museum, Basel, Switzerland
NHMV	Naturhistorisches Museum, Vienna, Austria
NIAS	Entomological Museum, National Institute of Agricultural Science, Tokyo, Japan
NRS	Naturhistoriska Riksmuseet, Stockholm, Sweden
PIZW	Polska Akademia Nauk Instytut Zoologiczny, Warsaw, Poland
RNHL	Rijksmuseum van Natuurlijke Histoire, Leiden, Netherlands
SMNS	Staatliches Museum für Naturkunde, Stuttgart (Ludwigsburg), BDR
TMB	Termeszettudomanyi Muzeum, Budapest, Hungary
UH	University of Hawaii, Honolulu, Hawai'i, USA
UMO	University Museum, Oxford University, Oxford, England
UQM	University of Queensland Museum, St. Lucia, Brisbane, Australia
USNM	National Museum of Natural History, Smithsonian Institution, Washington, D.C., USA
ZIUH	Zoologisches Institut der Universitat Halle am Salle, DDR

ZMHB Zoologisches Museum, Humboldt Universität, East Berlin, DDR
ZMUA Zoologische Museum, Universiteit van Amsterdam, Amsterdam, Netherlands
ZMUC Zoologisk Museum, Universitets Copenhagen, Denmark
ZSIC Zoological Survey of India, Calcutta, India

All holotypes and allotypes are deposited in BPBM unless otherwise indicated.

Key to Tephritinae of Indonesia and New Guinea

1. Wing dark brown, with hyaline, usually wedge-shaped marks on anterior and posterior margins and few or no hyaline spots in middle (Fig. 1, 2); only basal scutellar bristles present (in Indonesia and New Guinea genera) in combination with abdomen and sometimes thorax shining dark brown to black, devoid, or nearly so of pollen . . . Tephrellini and *Platensina zodiacalis* (Bezzi) .. 2

Wing variously marked, usually reticulated (Fig. 32a) with preapical stellate pattern (Fig. 35), a hyaline crossband (Fig. 31c), or without distinct markings (Fig. 12a, 28); thorax and abdomen usually densely gray pollinose and covered with yellow-white squamose setae on dorsum, if abdomen subshining 4 scutellar bristles are present . . . Tephritini (including "Platensini" of authors) 5

2(1). Thorax densely gray or yellow-gray pollinose and densely covered with flat, pale yellow setae; cell Sc at least ½ as long as 2nd costal cell: 2 pairs of superior fronto-orbital bristles 3

Thorax shining black or but lightly gray dusted and devoid, or nearly so, of yellow setae; cell Sc very short, ¼ or less as long as 2nd costal; only 1 pair of superior fronto-orbitals . . . (also keys in Trypetini) ..... **Indaciura**

3(2). With 3 pairs of inferior fronto-orbital bristles; basal radial and basal medial cells marked with brown; proboscis short, not geniculate 4

Only 2 pairs of inferior fronto-orbital bristles; base of wing broadly hyaline to apices of basal radial and medial cells, also apex of wing hyaline (Fig. 2b); proboscis comparatively long and geniculate, epistomal margin protruded (Fig. 2a) ..... **Spathulina**

A large hyaline spot fills apex of cell R_5 (Fig. 23); wing rather broad, ca. 2 × longer than wide . . . Tephritini .. **Platensina zodiacalis**

4(3). Apex of wing dark brown (Fig. 3b); wings normal in shape, ca. 3 × longer than wide ..... **Tephrella**

5(1). Wing entirely hyaline or subhyaline, except for pale brown cell Sc, lacking distinct markings 6

Wing with a prominent pattern of brown marks 7

6(5). Head longer than high; only 1 pair of superior fronto-orbital bristles; wing hyaline (Fig. 12a); thorax and abdomen conspicuously marked with yellow; mouthparts elongate, ½ longer than head height (Fig. 12c) ..... **Ensina**

Head higher than long; 2 pairs of superior bristles; wing subhyaline, evenly smoky gray (Fig. 28); body black in ground color, gray pollinose; mouthparts rather short, entire length equal to less than head height ..... **Soraida**

7(5). Wing normal in shape, 2½–3 × longer than wide, widest basad of r-m crossvein; vein R_1 with an area bare of setae at level of end of vein Sc, except in *Elaphromyia* Bigot, which is characterized by having long narrow wings 8

Wing unusually broad, less than 2 × longer than wide, widest at level just basad of m crossvein; mostly dark brown with rather few hyaline spots (Fig. 19); R_1 not with a bare area opposite end of Sc; front of head rounded in profile, not angulate at junction of face and front; parafacials narrow ..... **Platensina**

8(7). With 4 scutellar bristles 9

Only basal scutellars present 16

9(8). Wing long and narrow, parallel-sided, predominantly brown with abundant small subhyaline spots (Fig. 10); vein R_1 setose throughout, not with a bare area opposite end of vein Sc ..... **Elaphromyia**

Wing normal in shape, not marked as above; R_1 with a bare area opposite end of Sc 10

10(9). Vein R_{4+5} setose above to or beyond r-m crossvein; wing markings as in Fig. 24a, 32a); 3 pairs of inferior fronto-orbital bristles; 6th tergum of female slightly shorter or ca. equal to 5th 11

R_{4+5} bare above, or with only a few setae at base; wing markings not as above; usually 2 pairs of inferior fronto-orbitals; 6th tergum of female longer than 5th 12

11(10). With a radiating pattern in apex of wing, with 2 elongate hyaline marks bisecting apex of cell R_3, 3 from margin of 2nd M_2, and apical spot in apex of cell R_5 longer than wide (Fig. 32a); interfrontal area lacking conspicuous setae; abdomen densely gray pollinose; female ovipositor base longer than remainder of abdomen ... **Sundaresta**

Not with radiating pattern around apex of wing, marginal hyaline spots around apex comparatively small, mostly wider than long (Fig. 24a); interfrontal area usually distinctly yellow setose; abdomen shining or subshining (in Indonesia and New Guinea species); base of ovipositor equal in length to terga 5+6 or 4–6 ... **Pliomelaena**

12(10). Proboscis short and thick, not conspicuously geniculate, labium ca. equal in length to palpus, labellum ca. ½ as long as oral opening and fleshy; epistomal margin not extended 13

Proboscis moderately long, conspicuously geniculate with labium longer than and labellum almost equal in length to oral opening; head longest on lower margin, epistoma protruded; hind femur with 1–2 preapical anterodorsal and 1 preapical dorsal bristlelike setae 15

13(12). Wing brown to the base at least on anterior ½, with numerous tiny yellow-brown spots over the field, only slightly differentiated from brown background and with posterior ½ mostly hyaline except for a broad brown crossband connecting to wing margin across apices of cells 1st M_2 and M_4 (Fig. 13); or with a complete hyaline transverse band just beyond level with m crossvein (non-Indonesian); 2 dark-colored inferior fronto-orbitals; front rather densely setose ..... **Orotava**

Not as above, wing as in Fig. 27a 14

14(13). Apical scutellars large, ca. equal in size to basal pair; anterior dorsocentral bristles distinctly behind suture; wing marked as in Fig. 27a; aedeagus of male with a dense patch of dorsal setae before glans ..... **Scedella**

Apical scutellars less than ½ as long as basal bristles; anterior dorsocentrals usually near suture; an apical fork usually present in wing pattern; male aedeagus bare before apex ..... **Tephritis**

15(12). Front bare in middle; lacking ventral bristles on hind femur; wing brown with numerous white spots; no continuous brown or hyaline bands across wing and with 2–3 hyaline spots in cell R_1 (Fig. 14); dorsocentral bristles at or near suture; lower squama narrow ..... **Paroxyna**

Front with numerous scalelike hairs in middle; with 2–4 anteroventral bristles before apex of hind femur; wing with a continuous brown band through area between r-m and m crossveins and a complete hyaline band just beyond (Fig. 30b); dorsocentrals ca. in line with supræalars; lower squama broad, ca. as wide as upper ..... **Sphenella**

16(8). Proboscis short, labellum fleshy, much shorter than head; epistoma not strongly produced and lower margin of head not longer than upper; dorsocentrals at or near suture; wing with prominent markings 17

Proboscis long, slender, geniculate, labellum as long as lower margin of head (Fig. 9c); epistoma produced, head longer on lower margin than on upper; dorsocentrals ca. in line with supraalars; wing hyaline with numerous somewhat diffused brownish spots (Fig. 9a) ..... **Dioxyna**

17(16). Cell Cu pointed; 2 pairs of superior fronto-orbital bristles and 3 pairs of inferior fronto-orbitals; basal ½–⅗ of wing hyaline (Fig. 43, 44) ..... **Trupanea**

Apical margin of Cu straight or nearly so, only a slight point to cell; 1 pair of superior fronto-orbitals and 2 inferior fronto-orbitals; wing with scattered pale brown marks basad of r-m crossvein (Fig. 6a) ..... **Actinoptera**

Tephrellini

As I have discussed above, in dealing with the Oriental and Australasian fauna I prefer to treat Tephrellini as Tephritinae. This is a completely artificial arrangement, and I am using it only as a temporary expediency until more phylogenetic data become available.

Species in the Tephrellini have largely or entirely broad, flattened, whitish postorbital bristles with short black setae interspersed in the occipital row (1 species of *Indaciura* has only postvertical and outer vertical bristles flattened and white); they lack scapular bristles; lack a distinct vertical suture before the hind margin of the mesopleuron; vein R_{4+5} is usually bare except for a few setae above, near the base; they usually have a bare area on vein R_1 opposite the end of vein Sc; the thorax is densely gray or yellow-gray pollinose and mesonotum covered with yellow-white, scalelike setae (except in *Indaciura*, which has the mesonotum subshining and fine setose).

Tephrellini differs from other Tephritinae by having dark brown wings with prominent hyaline wedges on the anterior and posterior margins and few or no isolated hyaline spots in the middle (Fig. 1a); the abdomen is shining black, in Indonesian and New Guinea species with only basal scutellars present; dorsocentral bristles vary in position from just behind the suture to almost the level of the supraa-

lars, and the 6th tergum of females varies in length from subequal to longer than the 5th.

Only 3 Indonesian and New Guinea genera fit here.

Genus **Indaciura** Hering

Indaciura Hering, 1942, Mitt. Zool. Mus. Berlin 25(2): 283. Type species: *Aciura formosae* Hendel. By original designation.

As pointed out by Hering (loc. cit.) the position of this genus is between Trypetinae and Tephritinae. It has been placed in the tribe Aciurini by Hering (1942: 283), and I have noted (Hardy, in press) in a discussion under Trypetini-Aciurini that this is an intermediate group and its phylogenetic status is completely confused. Refer to a discussion by Munro (1947) of the transition genera between Tephritinae and Trypetinae: his extensive studies provide no conclusive information concerning the proper placement of these intergrading genera.

The type of species of *Indaciura*, *I. formosae* Hendel, has the occipital setae black and the postvertical and outer vertical bristles yellow-white and flattened, which are characters typical of Tephritinae. The species *I. basivitta* Hering, from South India, and *I. xanthotricha* (Bezzi), from the Oriental Region, have prominent flat, yellow-white occipital bristles or setae, like typical Tephritini. Only the latter species is recorded from the area treated in this study.

This genus is readily differentiated from all other known Tephritinae by the all subshining black, lightly gray pollinose thorax and abdomen, and the predominantly dark brown wing with prominent hyaline wedges on the anterior and posterior margins (Fig. 1a). Vein R_1 has a bare area opposite the end of the subcostal vein, which is typical of Tephritinae, and vein R_{4+5} is typically bare in all but a few species, these latter bearing a few setae above near the base and sparsely setose above to the level of the m crossvein in *basivitta* Hering.

Head higher than long, front strongly sloping, face gently convex and antenna situated near middle of head. Third segment broad, 2–3 × longer than wide and arista short pubescent. With 3 pairs inferior fronto-orbitals and 2 pairs superior fronto-orbitals. Interfrontal area bare except for fine pale hairs visible under high magnification. Upper portion of front rather deeply excavated, lower portion moderately swollen, at widest point equal to ca. ½ width of eye. Gena equal to ½ × wider than 3rd antennal segment. Only 2 basal scutellars present. Scapular bristles lacking and vertical suture on mesopleuron weakly developed. Sixth tergum of female shorter than 5th. Other details as described under species below.

Only 1 species recorded from area covered in this study.

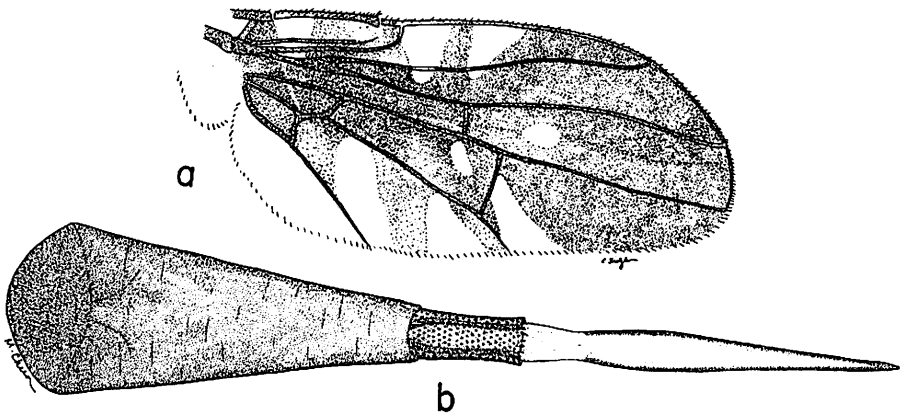

Fig. 1. *Indaciura xanthotricha*: a, wing; b, female ovipositor.

Indaciura xanthotricha (Bezzi) Fig. 1

Aciura xanthotricha Bezzi, 1913, Mem. Indian Mus. 3: 151. Type-locality: Dhikata, Gharwal Dist, India. Type female in ZSIC.

Diagnosis. Differs from other known species of the genus by having all the occipital setae flattened and white and by having only 3 hyaline marks in hind margin of wing.

Characters as noted above. Thorax and abdomen entirely shining black, including basal segment of female ovipositor, lightly gray dusted, with dark colored, thin setae over mesonotum. Dorsocentral bristles situated in front of supraalars. Bristles and most setae of thorax black. Propleuron with flat, white setae on anterior margin and with a few brownish yellow setae on hind margin of mesopleuron. Femora mostly dark brown to black, tinged yellow to rufous at apices, legs otherwise yellow. Spine at apex of mid tibia ca. ⅓ as long as basitarsus. Wing dark brown to base, alula and anal cell subhyaline; with a prominent hyaline mark through middle of 2nd costal section; 2 large wedges through cell R_1 extending into cell R_3; 1 hyaline wedge from costal margin through basal portion of cell 2nd M_2; 2 hyaline marks through cell R_4 and an oblong hyaline mark in cell R_5 beyond r-m crossvein and in upper apex of cell 1st M_2 just below r-m crossvein (Fig. 1a). Third costal section (cell Sc) short, scarcely over ¼ as long as 2nd costal section. Crossvein r-m near apical ¼ of cell 1st M_2 and cell Cu terminated in an acute point at lower apex but not distinctly lobate. Abdomen as noted above. Sixth tergum of female shorter than 5th. Basal segment of female ovipositor ca. 3 × longer than wide and ca. equal in length to abdominal segments 3–6. Spiracle situated near basal ⅓ of segment. Piercer slender, tapered to sharp point at apex (Fig. 1b). Male genitalia not studied.

Lengths: body 3.0 mm; wing 3.3 mm.

Distribution. Probably over much of the Oriental Region. I have recorded it from Vietnam and Thailand (Hardy 1973: 311); recorded from Java by de Meijere (1914: 215).

Specimens examined. Type female and specimens from Vietnam and Thailand as noted above. I have not seen specimens from Indonesia.

Genus **Spathulina** Rondani

Spathulina Rondani, 1856, Dipt. Ital. Prodr. 1: 113. Type-species: *sicula* Rondani (= *Tephritis tristis* Loew). By original designation.

Spathulina fits in the group of genera that are characterized by having the wing predominantly dark brown with hyaline wedges on the margin and the abdomen shining black, almost devoid of pollen. It fits closest to *Tephrella* Bezzi and differs by having the apex of the wing hyaline, rather than brown; the epistomal margin distinctly protruded; the head as long as high and the proboscis moderately long and geniculate, with the labium almost equal in length to the oral opening and the labellum rather narrow, ca. ⅔ as long as the oral opening (the proboscis is short, thick, not geniculate in *Tephrella*). This genus was treated in a tribe Spathulinini (Aciurinae) by Cogan & Munro (1980: 541), apparently based upon head shape and elongate mouthparts. I do not consider such characters of tribal importance unless they can be supported by other data.

Without scapular bristles and with only 2 scutellar bristles. With a bare area on vein R_1 opposite end of vein Sc, vein R_{4+5} bare above. Vertical suture lacking on hind portion of mesopleuron and dorsocentrals near suture. Sixth tergum of female longer than 5th. Otherwise as described under species below.

This is an African genus with 9 species presently recognized and 6 varieties or subspecies from the Afrotropical region; 1 of these species, *acroleuca* Schiner, is almost world-wide in distribution.

Hosts. Breeds in flower heads of Compositae.

Spathulina acroleuca (Schiner) Fig. 2

Tephritis acroleuca Schiner, 1868, Reise der Osterreichischen Freg. *Novara*, Zool. Dipt. 2(1): 268. Type-locality: Sydney, Australia. Type female in NRMV.

Trypeta undecimguttata Thomson, 1869, K. Sven. Freg. *Eugenies* Resa pt. 2 Zool. 1: 581. Type-locality: Sydney, Australia. Type female in ZMUC.

Oxyna parca Bezzi, 1913, Mem. Indian Mus. 3: 159. Type-locality: Calcutta, India. Syntypes male, female in ZSIC.

Oxyna nigrifemorata de Meijere, 1914, Tijdschr. Entomol. 57: 220. Type-locality: Java. Type female in ZMUA.

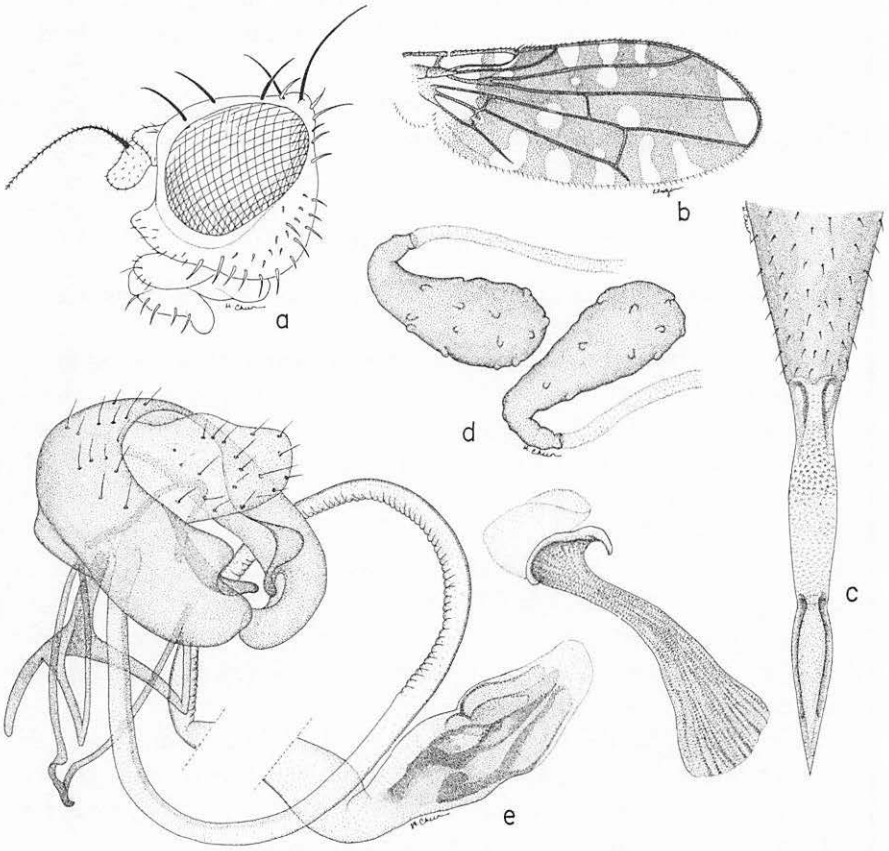

Fig. 2. *Spathulina acroleuca*: a, head; b, wing; c, female ovipositor; d, spermathecae; e, male genitalia.

Diagnosis. This species is readily differentiated from any other Indonesian and New Guinea Tephritinae by the wing markings: base of wing hyaline to level near middle of 2nd costal section, 3 hyaline marks in cell R_3, and apices of cells R_3 and R_5 largely hyaline (Fig. 2b).

Head slightly longer than high with front gently sloping, face moderately concave and epistomal margin prominently protruded (Fig. 2a). Antenna near upper ⅓ of head, with 3rd segment short and broad, scarcely ½ longer than wide and arista microscopically pubescent. Frontal, ocellar and vertical bristles black except for yellow-white upper superior fronto-orbitals and outer vertical bristles. Two pairs inferior fronto-orbitals on lower ⅖ of front and 2 pairs superior fronto-orbitals on upper ¼. Ocellars strong, subequal in size to inner verticals. Interfrontal area bare.

Thorax entirely black in ground color, densely gray or gray-brown pollinose completely obscuring ground color. Mesonotum densely covered with flat, subrecumbent, scalelike, pale, yellow-white setae. Dorsocentral bristles just slightly behind suture. Wing as noted above and as in Fig. 2b. Brown spot in apex of cell R_3 somewhat variable, may be lacking in some specimens. Vein R_1 has a bare area opposite end of vein Sc, R_{4+5} bare except for a few inconspicuous setae at base. Abdomen shining black, lightly gray dusted and brown to black setose. Sixth tergum of female slightly longer than 5th. Basal segment of ovipositor 2–3 × longer than wide and slightly longer than terga 5+6. Spiracles at basal ⅓ of segment 7. Piercer comparatively short and thick, sharply tapered at apex and lacking preapical setae (Fig. 2c). With 2 gourd-shaped spermathecae (Fig. 2d). Fifth sternum of male rather deeply concave on posterior margin and sparsely setose, almost bare. Male genitalia as in Fig. 2e, with cercus rather small and surstylus expanded on posteroventral margin. Inner surstylus with 2 blunt prensisetae. Aedeagus bare, glans slightly expanded, with extensive internal sclerotization. Vanes of male aedeagal apodeme widely separated. For a detailed description and figure refer to Shiraki 1968: 65, pl. 25.

Lengths: body and wing each 3.0–3.5 mm.

Distribution. Widespread over the Oriental, Australasian, and southern Palaearctic regions.

Specimens examined. Numerous specimens from over much of the range of the species and from many localities on the island of New Guinea and throughout Indonesia.

Hosts. Breeds in flower heads of various Compositae.

Genus **Tephrella** Bezzi

Tephrella Bezzi, 1913, Mem. Indian Mus. 3: 151. Type-species: *Tephrella decipiens* Bezzi. By original description.

Hendrella Munro, 1938, Proc. R. Entomol. Soc. Lond. Ser. B, 7: 117. Type-species: *Trypeta caloptera* Loew, as "*Aciufa caloptera* Lolu" (typographical errors). By original designation. **New synonymy.**

Munro (1938: 117) limited the concept of *Tephrella* to the type species, *T. decipiens*, and established *Hendrella* as a new genus based upon the arista being pubescent, rather than bare; the front being bare, rather than with setae; the presence of 2 brown, inferior fronto-orbital bristles and only rarely an additional white bristle in front, rather than 3 brown inferior fronto-orbitals; the presence of 1 brown and 1

white superior fronto-orbitals, rather than 2 brown; the dorsocentral bristles being nearer the suture, rather than nearer the supraalar bristles; and vein R_{4+5} being bare (Munro says setulose at base in *basalis*), rather than setulose at base. A specimen of *decipiens* before me, from Burma, determined by Hering, fits Munro's diagnosis except that all of the frontal bristles are brownish yellow, as noted by Bezzi in the original description. The arista is microscopically pubescent on the base. I do not consider any of the characters given by Munro as clearly diagnostic and prefer to treat the species of *Hendrella* as synonyms. All of the specimens I have examined have the arista short pubescent on the swollen basal portion and bare on the apical ⅔; the vestiture on the front varies considerably from only a few fine hairs in the median portion to rather densely fine setose. Hendel (1927: 112) figures the head of *T. caloptera* and shows distinct inferior fronto-orbital bristles; *T. sexincisa* Malloch typically has only 2 pairs of inferior fronto-orbitals and fits Munro's concept for *Hendrella* except that the arista is pubescent at the base, the front has pale yellow setae over median portion, and the dorsocentral bristles are about halfway between the suture and supraalars. I do not consider the position of the dorsocentrals as being diagnostic in this case. All specimens and species that I have examined have a few setae on the dorsobasal portion of vein R_{4+5}.

The species from Indonesia and New Guinea that fit here differ from the nominate species by lacking a bare area on vein R_1 opposite the end of vein Sc, and the 6th tergum of the female varies from about equal in length to slightly longer than the 5th. The significance of these characters cannot be ascertained until more detailed studies can be made.

Tephrella fits in the group of genera ("Tephrellini") that have the wing predominantly dark brown with prominent hyaline wedges on the anterior and posterior margins and a few hyaline marks in the middle and that have the abdomen shining black, almost devoid of pollen, with only basal scutellar bristles present. It fits nearest to *Spathulina* Rondani and is differentiated by having the apex of the wing dark brown; the head higher than long and the proboscis short, broad, not geniculate, and, in Indonesian and New Guinea species, without a bare area on vein R_1 opposite the end of Sc.

Head shaped as in Fig. 3a, with front moderately sloping and face gently concave, only slightly produced on oral margin. Antenna situated at middle of head, with 3rd segment broad, scarcely ½ longer than wide and with arista pubescent on swollen basal portion. With 2–4 pairs of inferior fronto-orbital bristles and 2 pairs superior fronto-orbitals, upper pair usually paler in color than other orbital bristles. Ocellars and inner verticals strong, colored like lower frontal bristles. Postvertical, outer vertical, and occipital bristles pale yellow-white, flattened, typically Tephritinae-like. Thorax mostly black in ground color, densely gray-brown pollinose, mesonotum densely covered with subrecumbent flat, scalelike setae. Dorsocentral bristles variable

in position from just before supraalar bristles to just behind suture. Propleuron with several flattened, pale yellow-white setae on anterior margin. Sixth tergum of female variable in length from subequal to slightly longer than 5th. Otherwise as noted under species description.

Members of this genus may be gall formers on Compositae (Asteraceae). Dr. C. Radhakrishnan has reported (1984) that *Tephrella variegata* Radhakrishnan from India forms large galls on the stem of the plant *Inula cappa* (DC).

Key to Tephrella *from Oriental and Australasian Regions*

1. Second costal cell with a broad mark of brown across middle and with a subbasal brown mark across wing from apex of cell Cu through basal median and basal radial cells to costa just before base of 2nd costal cell (Fig. 4); anal cell mostly brown 2

   Second costal cell and base of wing hyaline to level with forking of radial sector; anal cell hyaline (Bezzi 1913: pl. X, Fig. 56) 4

2. With 2 hyaline wedges in cell R_1 and only 2 hyaline marks in 2nd M_2 (Fig. 4) 3

   With 3 hyaline wedges in R_1 and 3–4 hyaline marks in 2nd M_2 .. 5

3. Only 2 inferior fronto-orbital bristles; with a prominent hyaline spot in cell R_5 ca. opposite m crossvein; only 2 hyaline wedges through cell M_4 and no hyaline spots in anal cell... (Solomon Is) . **sexincisa**

   Three pairs inferior fronto-orbitals; cell R_5 entirely brown or with a tiny faint spot on upper margin ca. opposite end of vein R_{2+3} and a similar faint spot just above on lower margin of cell R_3; 3 hyaline wedges through M_4 and 2 hyaline spots in anal cell (Fig. 5a) . . . (Indonesia; Philippines) ..... **trimaculata, n. sp.**

4. With a large, preapical, oblique, hyaline mark extending from hind margin of wing in cell 2nd M_2 continuous through cell R_5 into cell R_3 (Malloch, 1939a, pl. XI, Fig. 18) . . . (Western Australia; Papua New Guinea) ..... **australis**

   Wing not with such a preapical hyaline mark (Bezzi, 1913, pl. X, Fig. 56) . . . (India; Burma) ..... **decipiens**

5. Proboscis yellow; coxae and femora yellow-brown; cell Cu nearly straight on hind margin . . . (Bismarck Archipelago; New Zealand) ..... **heringi**

   Proboscis black; legs all yellow; cell Cu lobate at apex . . . (India) ..... **variegata**

Tephrella australis Malloch

Tephrella australis Malloch, 1939, Proc. Linn. Soc. N.S.W. 64: 456. Type-locality: Western Australia. Type female in CIHS.

Diagnosis. Differs from other known Tephellini from the region treated in this study by having base of wing broadly hyaline, 2 large hyaline wedges from anterior margin through cells R_5 and R_3, and 4 large hyaline wedges through posterior portion. Wing otherwise brown.

This distinctive species is being described and figured in a monograph of the Australian Tephritinae by D. E. Hardy and R. A. I. Drew (in prep.). Refer to Malloch (loc. cit.) for a description and wing photograph.

Distribution. Australia (Western Australia and Queensland) and Papua New Guinea.

Specimens examined. 1♂, PNG: NEW GUINEA: Western Prov, nr Kandarisa, 26.XI.1985 (J. W. Ismay). Compared with specimens from Queensland, Australia.

Tephrella heringi Hardy

Fig. 3

Tephrella heringi Hardy, 1970, Entomol. Medd. 38: 129. Type-locality: Mussau, Bismarck Archipelago. Type female in ZMUC.

Diagnosis. Differs from other known species of *Tephrella* by having 3 hyaline marks in cell R_1 and 4 marks in cell 2nd M_2 and by having a pair of faint spots in apical portion of wing, 1 on each side of vein R_{4+5}, slightly before level with apex of vein R_{2+3}. Shows relationship to *T. trimaculata*, n. sp, from Java, but other details of wing markings differ as shown in Figs. 3b, 5a. The original description reported 4 pairs of inferior fronto-orbital bristles (type probably aberrant) and 2 dorsocentrals. Specimens studied have 3 well-developed inferior fronto-orbitals and only 1 pair of dorsocentrals.

Head as in Fig. 3a. Orbital, ocellar, and inner vertical bristles brown, tinged lightly with yellow. Upper superior fronto-orbital and outer vertical bristles yellow-white. Median portion of front rather densely covered with flat, recumbent, pale yellow setae. Swollen portion of arista short pubescent, apical portion bare. Gena narrow, width equal to ca. ⅔ that of 3rd antennal segment. Thorax as typical for genus and with dorsocentral bristles just slightly behind suture. Mesonotum rather densely covered with flattened, subrecumbent yellow-white setae. Legs mostly yellow, femora

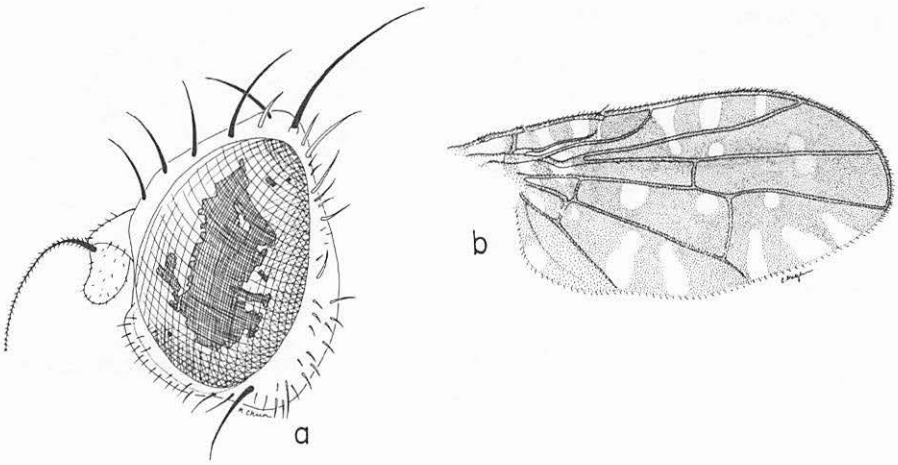

Fig. 3. *Tephrella heringi*: a, head; b, wing.

tinged lightly with brown. Wing as noted above and as in Fig. 3b. Abdomen shining black, lightly gray pollinose on 6th tergum and basal segment of ovipositor polished black. Abdomen brown setose. Sixth tergum of female slightly longer than 5th. Basal segment of ovipositor ca. equal in length to terga 3–6. Piercer slender, evenly tapered to apex.

Lengths: body, excluding ovipositor, and wing each 3.25 mm.
Male unknown.

Distribution. New Ireland.

Specimens examined. 1, PNG: BISMARCK ARCH: NEW IRELAND: Medina High School, 5.XI.1981, swept from low vegetation nr shore (J. W. Ismay).

Remarks. *Tephrella variegata* Radhakrishnam (1984: 41) may be a variant or a sibling species. I have not seen specimens of *variegata*; the characters used for differentiating this are not tenable.

Tephrella sexincisa Malloch Fig. 4

Tephrella sexincisa Malloch, 1939, Ann. Mag. Nat. Hist. Ser. 11, 4: 272. Type-locality: Russel Islands, Solomon Islands. Type male in BMNH.

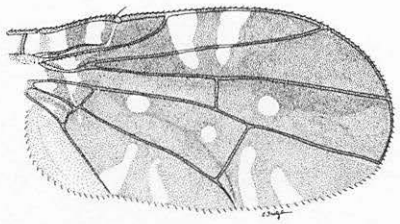

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Fig. 4. *Tephrella sexincisa*, wing.

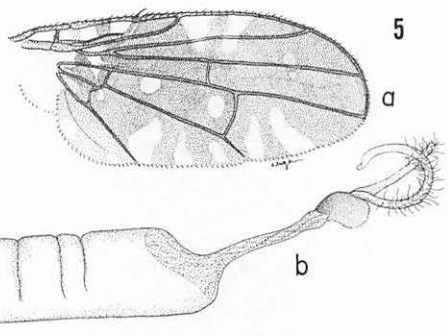


Fig. 5. *Tephrella trimaculata*: a, wing; b, aedeagal glans.

Diagnosis. Differs from other known *Tephrella* by having only 2 pairs of inferior fronto-orbital bristles, by having a prominent hyaline spot in cell R_5 ca. opposite m crossvein 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 M_4 and no hyaline spots in anal cell (Fig. 4).

Fits description of most *Tephrella* except with only 2 prominent inferior fronto-orbital bristles. Upper superior fronto-orbital and outer vertical bristles yellow-white. Front with a few scattered, flat, pale setae in middle. Dorsocentral bristles slightly in front of a line drawn between supraalars, closer to supraalars than to suture. Legs entirely yellow. Wing as noted above and as in Fig. 4. 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. Crossvein r-m situated near apical ⅕ of cell 1st M_2. Anal cell pale brown, without hyaline spots. Abdomen shining black, lightly gray pollinose on terga 1–5 and polished on 6th tergum and base of female ovipositor. Sixth tergum ca. equal in length to 5th and basal segment of female ovipositor, comparatively short, less than 2 × longer than wide and ca. equal in length to terga 5+6.

Lengths: body 3.0–3.25 mm; wing 3.2–3.4 mm.

Distribution. Solomon Islands and Nusa Tenggara [recorded from Flores and Sumbawa islands by Hering (1941c: 33)].

Specimens examined. Type, 1♀, INDONESIA: NUSA TENGGARA: Sumbawa I (recorded by Hering); 1♀, SOLOMON IS: Guadalcanal: Honiara, 0–100 m, 1.XI.1961 (N. L. H. Krauss).

Tephrella trimaculata Hardy, new species Fig. 5

Diagnosis. Related to *T. heringi* by having similar wing markings but differs by having only 2 wedges in cell R_1, both continuous through most of cell R_3 (*heringi* has 3 marks in R_1 with middle discontinuous and a hyaline spot in lower ½ of cell R_3); by having 2 hyaline marks in cell 2nd M_2 (4 in *heringi*); by having 3 hyaline marks in apex of cell M_4 (Fig. 5a) [2 in *heringi* (Fig. 3b)]; and by having 2 hyaline spots in anal cell (1 in *heringi*).

MALE. Fits general characteristics of genus. *Head.* Frontal bristles brown, upper superior fronto-orbitals only slightly paler, tinged lightly with yellow. Three pairs inferior fronto-orbitals. Interfrontal area densely covered with subrecumbent, flat, yellow-white setae. Swollen portion of arista short pubescent. *Thorax.* Mostly black in ground color, humerus yellow. Densely gray to gray-brown pollinose and densely covered with flat, subrecumbent, yellow-white scalelike setae over mesonotum. Bristles brownish yellow, dorsocentrals slightly nearer suture than to supraalar bristles. Halter pale yellow. *Legs.* Yellow except for tinge of brown on femora. *Wing.* As noted above and as in Fig. 5a. *Abdomen.* Entirely shining dark reddish brown to black. Cercus comparatively small, ca. equal in length to epandrium. Surstylus short, broadly rounded at apex, completely covering lobes of 10th sternum as seen in lateral view. Vanes of aedeagal apodeme broad, triangular in shape, widely separated. Aedeagus weakly sclerotized and bare, glans small, poorly developed, reduced to a thin tube terminating in 2 feathery extensions (Fig. 5b).

Lengths: body 2.65 mm; wing 3.0 mm.

FEMALE. Fits description of male. Terga 1–5 shining dark reddish brown to black, lightly gray pollinose. Tergum 6 and base of ovipositor polished. Sixth tergum slightly longer than 5th. Base of ovipositor comparatively long, ca. equal in length to terga 3–6. Piercer long and slender, evenly tapered to sharp-pointed apex.

Lengths: body, excluding ovipositor, 2.9 mm; wing 3.4 mm; basal segment of ovipositor 1.36 mm.

Type data. Holotype ♂ (BPBM 13619), INDONESIA: JAVA: Bogor, Kabun Raya (botanical gardens), 3.VIII.1964 (M. D. Delfinado). Allotype ♂ (BPBM) same data except 5.IX.1964. Three paratypes, 1♀, 2♂, same data but 1 collected IV.1975 (D. E. Hardy), Paratypes in MZB and UH.

Etymology. The specific epithet combines the Latin *tri*, "3," with *maculata*, spot or mark, referring to the 3 hyaline marks in cell M_4.

Tephritini

Tephritini differs from Tephrellini by having the wings differently marked: usually reticulated (Fig. 9a) or with stellate markings in the apex (Fig. 39), brown with a hyaline crossband (Fig. 36b), or nearly without markings (Fig. 28). The thorax and abdomen are densely gray or yellow-gray pollinose and usually densely covered with subrecumbent, scalelike, yellow-white setae. Vein R_1 always has a bare area opposite the end of vein Sc; R_{4+5} is bare except for a few setae above near the base, and the 6th tergum of females is longer than the 5th.

Genus **Actinoptera** Rondani

Actinoptera Rondani, 1871, Bull. Soc. Entmol. Ital. 3: 162. Type-species: *Trypeta aestiva* Meigen. By designation of Coquillett (1910: 503) = *Tephritis discoides* Fallén (1814: 171).

Actinoptera fits in the complex of genera that have only 2 scutellar bristles and the labellum fleshy, short, not elongate and geniculate. The genus is characterized by having only 1 pair of superior fronto-orbital bristles, the apex of cell Cu straight or nearly so not lobate and the wing with scattered pale brown marks basad of r-m crossvein. Shiraki (1968: 88) incorrectly placed this taxon in "Euribiinae" (Myopitinae).

Head nearly quadrate in shape, front almost horizontal and face vertical. Antennae near upper ⅓ of head height. Front broad, equal or slightly wider than compound eye. Third antennal segment short, broadly rounded at apex, scarcely ½ longer than wide. Arista short pubescent. Head and body pale brownish yellow except for white flattened bristles along posterior margin of head. Ocellar bristles strong, ca. equal in size to frontal bristles. Front bare except for a few scattered minute setae on orbits. Dorsocentral bristles at level with suture. Mesonotum and dorsum of abdomen densely gray pollinose, without markings and rather densely covered with white, semirecumbent, flattened, scalelike setae. Wing as noted above and as in Fig. 6a. Vein R_{4+5} bare above. Male genitalia with vanes of aedeagal apodeme widely separated, aedeagus bare, and 5th sternum with a broad V-shaped concavity on hind margin. Basal segment of female ovipositor cone-shaped, with spiracular openings on venter at basal ⅓ of segment. Piercer evenly tapered to sharp point at apex, lacking preapical setae. Two round or oblong spermathecae.

Twenty-nine species are presently known from the Afrotropical and Palaearctic regions and 6 are known from the Oriental Region. Only 1 species has been recorded in the area covered in this study.

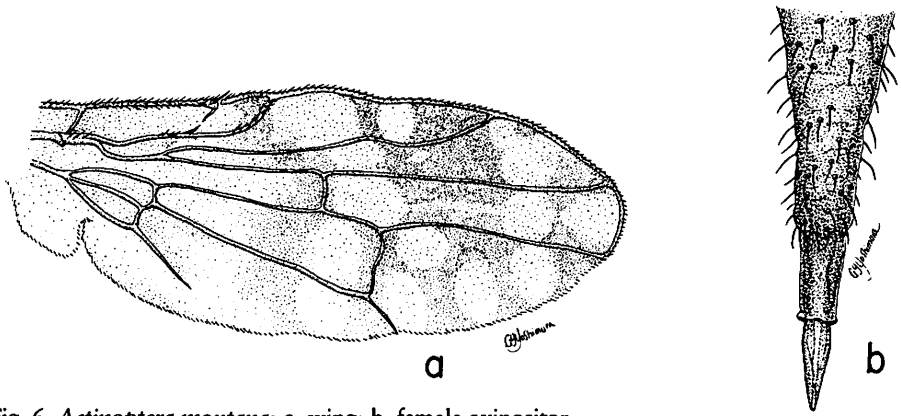


Fig. 6. *Actinoptera montana*: a, wing; b, female ovipositor.

Biology. Most of the species breed in flower heads of Compositae. Some African species form terminal galls on twigs of Compositae.

Actinoptera montana (de Meijere) Fig. 6

Tephritis montana de Meijere, 1924, Tijdschr. Entomol. 67: 223. Type-locality: Pangerango, Java. Type female in ZMUA.

Actinoptera trypaneoides Shiraki, 1968, U.S. Natl. Mus. Bull. 263: 88. Type-locality: Iriomote Island, Ryukyu Islands. Type male in NIAS. **New synonymy.**

Diagnosis. Differs from *A. formosana* Shiraki and related species by having only 2 hyaline spots in cell R_1 rather than 3. *Actinoptera trypaneoides* Shiraki, from the Ryukyus, was based upon a slight difference in wing markings; this is a trivial variation and not of specific importance.

For detailed descriptions and figures refer to Hardy (1974: 233) and Shiraki (1968: 88). Wing as in Fig. 6a, female ovipositor as in Fig. 6b.

Lengths: body 2.0–2.2 mm; wing 2.5–3.0 mm.

Distribution. Java, Philippines (Luzon), and Ryukyu Islands.

Specimens examined. Type and a large series from Luzon (Hardy 1974: 235); 6, INDONESIA: JAVA: Mt Gedah, 9,000 ft (2,743 m), XI.1908, ex native composite bush (Terry coll); Sarangan, 3,048 m, 18.XXI.1928 (A. Thienemann).

Hosts. Flower heads of Compositae. Reared from flowers of *Buchanania arborescens* in the Philippines.

Genus **Dioxyna** Frey

Dioxyna Frey, 1944, Commentat. Biol. Soc. Sci. Fenn. 8(10): 62. Type-species: *Trypeta sororcula* Wiedemann. By original designation.

By lacking apical scutellar bristles, *Dioxyna* fits in the key near *Trupanea* Schrank, but the two are not related and *Dioxyna*'s affinities are with the *Paroxyna* grouping of genera. *Dioxyna* differs by having only 2 scutellar bristles; the mouthparts much more elongate when fully extended, measuring ca. 3 × length of head, with labellum linear and equal in length to lower margin of the head; and by having the head longer than high with epistomal margin produced, so that the lower margin of the head is longer than the upper. Also the basiphallus is entirely bare, not setose at the apex before the glans.

With 2 pairs each of inferior and superior fronto-orbital bristles, upper pair of latter and outer vericals pale yellow-white, flattened, lanceolate. Ocellar bristles strong, black. Thorax and abdomen densely gray pollinose and pale yellow pilose with paired, submedian, subshining brown to black spots on abdominal terga.

I consider 4 species of *Dioxyna* as valid: *sororcula* (Wiedmann), widespread over a large area of the world; *thomae* (Curran), from Central America and the southern United States; *conflicta* (Curran) from the Southwest Pacific; and the new species *brachybasis* from New Guinea and the South Pacific. As noted under *sororcula*, some of the characters are variable and the range of variation is not yet clearly understood. I have not studied specimens of *Stylia bidentis* Robineau-Desvoidy, which has been transferred to *Dioxyna* by White (1986: 147).

For more detailed treatments of the genus, refer to Munro (1957a: 936) and Novak (1974: 4).

Key to known Dioxyna *from the Australasian, Oriental Regions*

1. Wing with only 2 hyaline marks in cell R_1, if rarely a 3rd small spot it is confluent or nearly so with median spot and confined to top margin of cell; only 2–4 hyaline marks in cell 2nd M_2 and with a transverse series of hyaline spots, confluent or nearly so, over wing at level between r-m and m crossveins (Fig. 7a) 2

   With 3 hyaline spots in R_1; 4–5 round spots in 2nd M_2 and no complete arrangement of hyaline spots across wing as above; portion of cell 1st M_2 between r-m and m crossveins mostly brown (Fig. 9a) . . . (widespread) ..... **sororcula**

2. Basal segment of ovipositor ca. equal in length to remainder of abdomen, with 2 large hyaline marks bisecting cell 2nd M_2 . . .

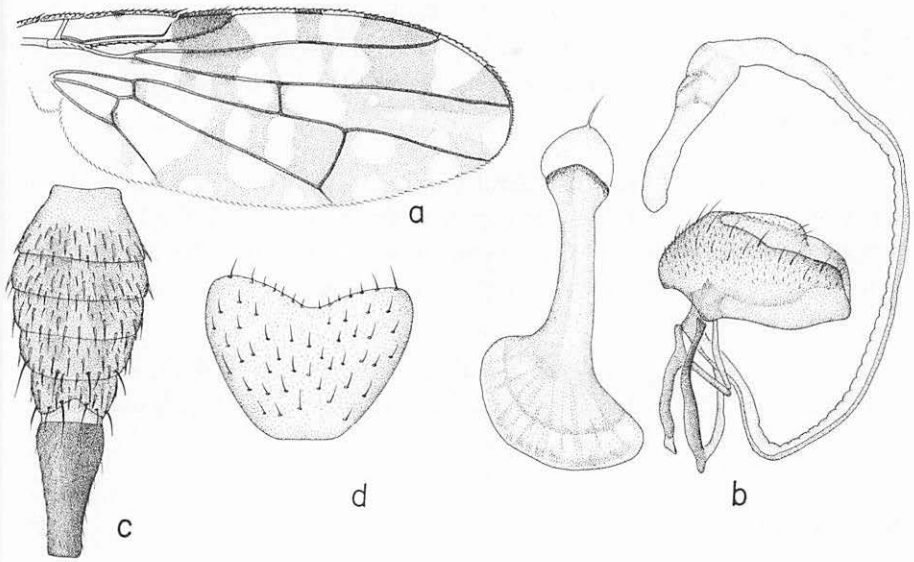


Fig. 7. *Dioxyna brachybasis*: a, wing; b, male genitalia; c, female abdomen; d, 5th sternum of male.

(New Caledonia; Nusa Tenggara; New Britain; New Guinea; Philippines) ..... **conflicta**

Ovipositor base equal to abdominal terga 4–6; cell 2nd M_2 with 4 hyaline spots . . . (New Guinea; South Pacific) . **brachybasis, n. sp.**

Dioxyna brachybasis Hardy, **new species** Fig. 7

Diagnosis. Fits close to *D. conflicta* (Curran) but differs by having the basal segment of the female ovipositor comparatively short, equal in length to terga 4–6 (elongate, equal in length to the remainder of the abdomen in *conflicta*) and by having cell 2nd M_2 with 4 hyaline spots (bisected by 2 large hyaline marks in *conflicta*).

Fits most characteristics of *D. conflicta* and *D. sororcula*. Wing with 2 nearly quadrate hyaline marks in cell R_1, a large mark in apex and 3 in middle of cell R_3, 4 spots in 2nd M_2 and other markings as in Fig. 7a. Female abdomen as in Fig. 7c. Fifth sternum of male gently concave on hind margin nearly 2 × wider than long (Fig. 7d). Surstylus short, blunt at apex, other aspects of male genitalia as in Fig. 7b.

Lengths: body and wing 2.5–2.8 mm.

Type data. Holotype ♂ (BPBM 13620), PNG: NEW GUINEA (SE): Central Prov, Saranga, 14.V.1981, in grasses (J. W. Ismay). Allotype ♀ (BPBM), PNG: NEW GUINEA (SE): Port Moresby, 25.IV.1959 (C. D. Michener). 2♂, 6♀ paratypes:

3, same data as allotype; 4, PNG: NEW GUINEA (SE): Oro Prov, Myola 2, 1–2.VI.1984, from grassland (J. W. Ismay); 1, IRIAN JAYA: Vogelkop, Surarai Vill area, W shore Lake Anggi Giji, 1,850 m, 25.VII.1957 (D. E. Hardy). Paratypes in BPBM, DPIK, and UH.

Remarks. Eight specimens from the Austral (Tubuai), Niue, and Cook islands in the south central Pacific appear to belong here. Cell 2nd M_2 is almost completely hyaline in most of these, or the spots are very faint; the specimens may be teneral and are not being included in the type series.

Etymology. The specific epithet combines the Greek *brachy*, "short," with *basis*, "base," referring to the short basal segment of the female ovipositor.

Dioxyna conflicta (Curran) Fig. 8

Ensina conflicta Curran, 1929, Am. Mus. Novit. 339: 11. Type-locality: Balky Island, New Caledonia. Type male, allotype female, 5 paratypes in AMNH.

Paroxyna gemina Hering, 1941, Arb. Morphol. Taxon. Entomol. Berlin-Dahlem 8: 40. Type-locality: Rana Mese, Flores. Type male in DEI, paratypes in ZMHB and BMNH. **New synonymy.**

Paroxyna conflicta funalis Hering, 1944, Siruna Seva 5: 8. Mentioned in key as "n. ssp." from New Guinea, no type designated. A female specimen in BMNH is labeled allotype. **New synonymy.**

Dioxyna heringi Hardy, 1974, Pac. Insects Monogr. 32: 235. Type-locality: Mt Makiling, Luzon, Philippines. Type male in MSNG. **New synonymy.**

Diagnosis. Fits close to *D. brachybasis*, n. sp., but the latter has basal segment of female ovipositor comparatively short, equal in length to terga 4–6 and cell 2nd M_2 usually with 4 hyaline spots. Also, aedeagal glans of *conflicta* greatly attenuated at apical 3/5 (Fig. 8b).

Fits characteristics of *sororcula* (Wiedemann) except wing with only 2 hyaline marks in cell R_1 (Fig. 8a), rarely a tiny 3rd spot, confluent or nearly so with median spot and confined to top part of cell; only 2 hyaline spots in cell 2nd M_2; with a transverse series of hyaline spots, confluent or nearly so, extending over wing at level between r-m and m crossveins. Also differs by having female ovipositor elongate with basal segment ca. equal in length to remainder of abdomen (Fig. 8c). A male from Star Mts, Sibil Val, Irian Jaya, typical of *conflicta* has 5th sternum almost straight on hind margin, very gently concave and ca. as long as wide (Fig. 8d). Male genitalia as in Fig. 8b very similar to that of *sororcula*, surstylus blunt at apex and

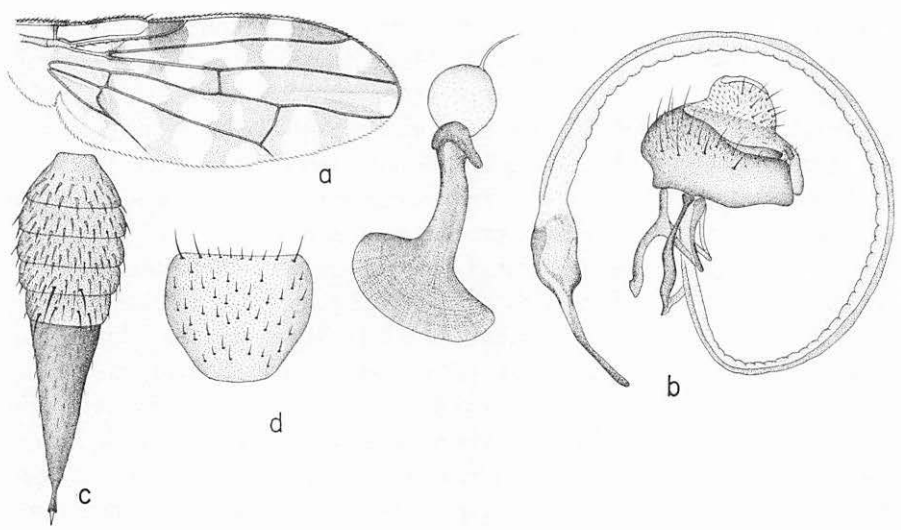


Fig. 8. *Dioxyna conflicta*: a, wing; b, male genitalia; c, female abdomen; d, 5th sternum of male.

with ejaculatory apodeme comparatively large, expanded at apex but with aedeagal glans distinctly different (Fig. 8b).

Lengths: body and wing each 2.8–3.2 mm.

Distribution. New Caledonia, Nusa Tenggara, New Britain, New Guinea, and the Philippines.

Specimens examined. Type series of all taxa except *conflicta* (studied for me by Kathleen A. Schmidt, Department of Entomology, AMNH). 1 ♀, PNG: BISMARCK ARCH: NEW BRITAIN: Gazelle Pen, Rabaul, 5 m, 18.X.1962 (J. Sedlacek); 1 ♂, IRIAN JAYA: Star Mts, Sibil Val, 1,245 m, 10.X.–8.XI.1961 (L. W. Quate).

Remarks. Hering (1944: 8) placed *Paroxyna gemina* Hering as a geographic subspecies of *conflicta* and designated, in a key, *funalis* Hering as a new subspecies of *conflicta* from New Guinea. He differentiated typical *conflicta* by the black pteropleural and apicolateral bristles of the last 2 terga, the presence of 2 hyaline spots on cell R_1, the hyaline mark at apex of cell R_3 that is not continuous into cell R_5, and the predominantly black femora. The subspecies *funalis* and *gemina* were separated from the nominal species by their yellow pteropleural and abdominal marginal bristles (aside from those of the last 2 terga); the presence of 2–3 hyaline

spots on cell R_1 and the hyaline mark near the apex of R_3 that continues into cell R_5. I find no validity in these characters; Hering's (loc. cit.) statement concerning the apical bristles on the abdomen is contradictory. In all specimens I have examined the bristles and setae of the abdomen are predominantly yellow-white excepting a few black bristles on the hind margin of the last 2 terga in both sexes. The hyaline mark near the apex of cell R_3 is a variable character; in some specimens it is isolated in the cell, in some it is continuous into cell R_5, and in some 2 small hyaline spots are present in R_5 at level with spot in R_3. Hering separated *funalis* from *gemina* as follows: *funalis* with predominantly black front 2 pairs of femora, 2 hyaline spots in cell R_1, and the brown spot in middle of cell 1st M_2 continuous to hind margin of wing; *gemina* with predominantly yellow front 2 pairs of femora, 2–3 hyaline spots in R_1, and the brown spot in middle of cell 1st M_2 not continuous to hind margin. He gave the body length of *gemina* as male 3.0 mm and female 3.2 mm, compared with 2.6 mm for *funalis*. I have examined the type series of *gemina* and also a specimen of *funalis* labeled allotype and see no validity in the characters used by Hering. The coloration of the femora is variable and considerable variation is apparent in the wing markings. I see no differences in the wing markings in the color photographs I have of paratypes of *gemina* and the allotype of *funalis*; both show only 2 hyaline marks in cell R_1. Also, the basal segment of the female ovipositor of *funalis* is elongate.

Dioxyna sororcula (Wiedemann) Fig. 9

Trypeta sororcula Wiedemann, 1830, Aussereurop. Zweifl. Insekt. 2: 509. Type-locality: Teneriffe, Canary Islands. Location of type not known, probably lost.

Ensina chilensis Macquart, 1843, Mém. Soc. R. Sci. Agric. Artes 2(1842) (3): 387, pl. 31, Fig. 11. Type-locality: Chile. One specimen in MNHP may be the holotype. It is labeled "M. Gay, Chile, #17, 1833." It is in poor condition; only the thorax and 1 wing remain.

Acinia picciola Bigot, 1857, Hist. Fisica Politica y Nat. da la Isla Cuba 7: 347. Type-locality: Cuba. Location of type unknown.

Ensina vacillans Wollaston, 1858, Ann. Mag. Nat. Hist. Ser. 3, 1: 115. Type-locality: Madiera. Syntypes BMNH.

Trypeta humilis Loew, 1862, Smithson. Misc. Collect. 6(1): 81. Type-locality: Cuba. Location of type unknown.

Trypeta aurifera Thomson, 1869, K. Sven. Freg. *Eugenies* Resa pt. 2, Zool. 1: 585. Type-locality: California. Type probably in NRS.

Leptomyza variipennis van der Wulp, 1897, Termesz. Fuz. 20: 143. Type-locality: Kandy, Ceylon. Type in ZMUA.

Ensina bisetosa Enderlein, 1911, Zool. Jahrb. Syst. 31: 455. Type-locality: Takao, Taiwan. Type probably in ZMHB.

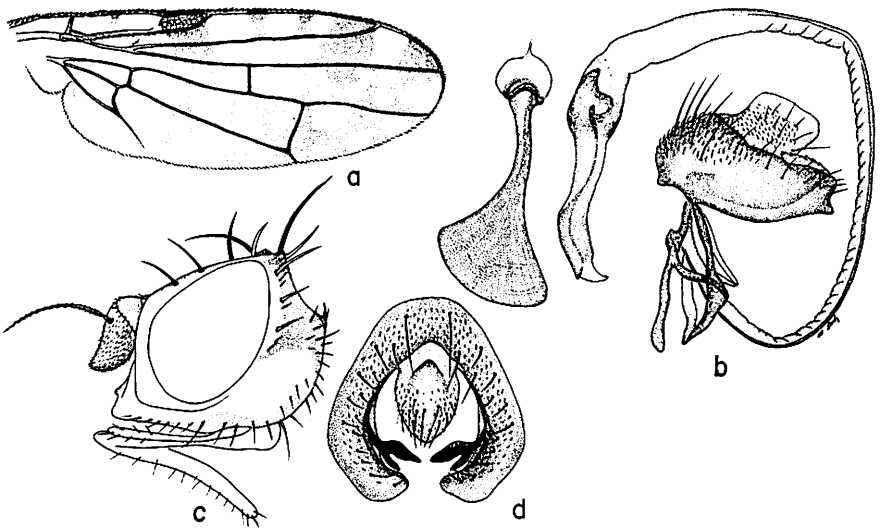


Fig. 9. *Dioxyna sororcula*: a, wing; b, male genitalia, lateral view; c, head; d, male genitalia, end view.

Ensina bisetosa var. *nigrinotum* Enderlein, 1911, Zool. Jahrb. Syst. 31: 466. Type-locality: Takao, Taiwan. Type probably in ZMHB.

Diagnosis. Fits near *D. conflicta* but differs by having 3 large hyaline spots filling cell R_1, by having 4–5 round hyaline spots in cell 2nd M_2, and by lacking a complete transverse series of hyaline spots over wing. It closely resembles *D. thomae* (Curran 1928: 70), from the southern Nearctic and northern Neotropical regions, but differs by having thickened base of arista long and tapering and male epandrium comparatively slender, gradually tapered to apex (thickened base of arista short and male epandrium short and thick, as wide as long, broad, blunt, not tapered at apex in *thomae*).

Fits general characteristics of typical Tephritini. With thorax densely gray pollinose and yellow setose, with dense subrecumbent scalelike setae over mesonotum, and with similar setae over abdomen. Dorsocentral bristles ca. halfway between supraalars and suture. Femora typically dark brown to blackish on basal ⅔ but variable and sometimes entirely yellow, probably depending on age of specimen. Abdomen predominantly gray pollinose with paired brown, submedian spots on terga. Base of female ovipositor shining black, subequal in length to terga 4–6. Piercer sharp pointed, evenly tapered to apex. Fifth sternum of male slightly wider than long and gently concave on hind margin. Head as in Fig. 9c. Wing as in Fig. 9a and male

genitalia as in Figs. 9b, d. For more complete details refer to Hardy (1973: 319, 1974: 237) and to Shiraki (1968: 85).

Lengths: body and wing each 2.5–3.0 mm.

Distribution. Widespread throughout the tropics and subtropics of the world; also Japan, and from southern Canada to Chile in the New World.

Specimens examined. Large numbers of specimens from over the Australasian, Oriental, and Nearctic regions.

Remarks. The above synonymy is from the literature, mostly from Hendel (1927), Hering (1944: 8), Munro (1957a: 939), and Foote (1965). I have not confirmed these, but I am convinced that *sororcula* has been spread over much of the world in flowerheads of weed and commercial Compositae. *Dioxyna picciola* (Bigot) was synonymized with a question mark by Hendel (1927: 159). Munro (1957a: 936) separated *picciola* by "wing with a marked, more complete infuscated pattern" and *sororcula* by "wing pattern mainly with dark spots along costa, otherwise appearing almost hyaline but with dark microtrichial pattern and at times stronger infuscation, in oblique light pattern appears about as dark as in *picciola*." I find considerable variation in the intensity of the markings in the wing and do not consider them reliable as a taxonomic character; it often depends upon the degree of tenerality of the specimen. Munro (loc. cit.) further says, "Differences in the shape in the sternites between *sororcula* and *picciola* appear to be significant. In the latter they are markedly rounded, in the former generally angular. In *sororcula* too there is considerable variation in shape, even from 1 locality (South America), but whether any particular shape occurs regionally there is not enough material available to show. In the Teneriffe specimen, sternites 3 and 4 are markedly narrower, in others wider and more or less square." I have compared numerous specimens from the Oriental and Australasian regions with *piccola* from continental United States and have not found distinct differences in wing markings, sterna of male abdomen, or male genitalia and find no characters that I would consider valid for separating species. The specimens of typical *sororcula* also fit all of the characteristics of *piccola* given by Novak (1974: 8). Sibling species of a world-wide complex are indistinguishable, or nearly so; external morphological characters very likely may be represented.

Hosts. Breeds in the flowerheads of a wide assortment of Compositae.

Genus **Elaphromyia** Bigot

Elaphromyia Bigot, 1859, Rev. Mag. Zool. Ser. 2, 11: 314. Type-species: *Elaphromyia melas* Bigot (=*adatha* Walker). By monotypy. *Paralleloptera* Bezzi, 1913, Mem. Indian Mus. 3: 154. Type-species: *Paralleloptera pterocallaeformis* Bezzi. By original designation.

Elaphromyia fits in Tephritini by having the typical flat scalelike bristles on the hind margin of the head and fine, usually not flattened or scalelike, setae over the thorax and abdomen. It can be readily recognized by the elongate, slender, parallel-sided wing, by the wing markings (Fig. 10), and by lacking a bare area on vein R_1 opposite the end of vein Sc. The wing is ca. 2 × longer than wide and predominantly dark brown covered with numerous small, subhyaline spots. This has been treated as Aciurinae. The data I have do not support Cogan & Munro's (1980: 535) placement of this genus in the Aciurini.

Head slightly higher than long with front gently sloping and face short, concave in median portion, projected on oral margin. Antenna near middle of head, with 3rd segment short, ca. ⅓–½ longer than wide, arista short pubescent. Occiput greatly narrowed on upper portion, expanded ventrally, at widest point almost ½ eye width. Three pairs inferior fronto-orbital bristles on lower ½ of front and 2 pairs superior fronto-orbitals on upper ⅓. Ocellar bristles well developed. Thorax with full complement of bristles but lacking intrapostalars. With 4 scutellars, apical pair comparatively small, cruciate, ca. ⅓–⅖ as long as basal bristles. Dorsocentrals at level with or in front of supraalars. Wing as noted above and as in Fig. 10. Vein R_1 lacking a bare area opposite end of vein Sc. Vein R_{4+5} bare above except for a few setae at base and with scattered ventral setae to beyond r-m crossvein. Third costal section subequal to 2nd, crossvein r-m near apical ⅓ of cell 1st M_2 and vertical portion of vein Cu, closing off cell Cu, distinctly convex in middle so cell Cu is not lobate, only slightly pointed at lower apex. [Because of this feature, Shiraki (1968: 2, 90) treated the genus under the subfamily Euribiinae but this placement is not correct.] Abdomen yellow, with variously arranged brown spots on terga, especially on last 2. Piercer of female ovipositor flattened laterally on apical portion. Two oblong, heavily sclerotized, spiny spermathecae (Fig. 11e).

Three species are known from the Afrotropical Region and 4 species plus 1 subspecies from the Oriental Region. Two additional new species are recorded from Java and New Guinea.

Elaphromyia magna Hardy, new species — Fig. 10

Diagnosis. Readily differentiated from all known species of the genus by its large size; by having the costal margin of the wing hyaline to subhyaline with no distinct

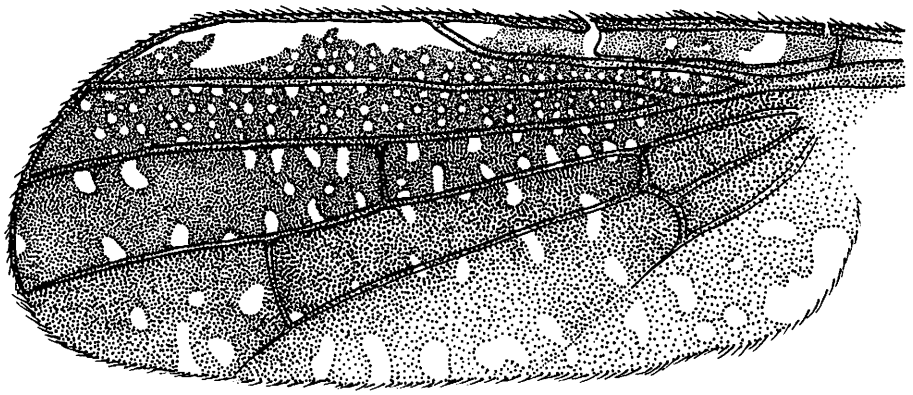


Fig. 10. *Elaphromyia magna*, wing.

spots; cell R_3 with great abundance of tiny, round, hyaline spots in 4–5 incomplete longitudinal rows (Fig. 10); cells R_5 and M_2 mostly brown, the subhyaline spots indistinct; posterior margin of the wing broadly subhyaline not distinctly spotted; and cell Cu ending in a short point at lower apical margin.

MALE. *Head.* Shaped as in other species, almost as high as long, with antenna situated near middle of head and face gently concave, produced on epistomal margin. Frontal, inner vertical, and ocellar bristles dark brown with a light tinge of yellow. Three pairs strong inferior fronto-orbitals on lower ½ of front and 2 pairs superior fronto-orbitals on upper ¼. Ocellar bristles equal in size to lower superior fronto-orbitals. Postvertical and outer vertical bristles pale yellow, broad, flattened, also with interspersed large, flattened, pale yellow and short black bristles in occipital row. Interfrontal area bare. Supracervical hairs pale yellow, closely appressed. Posterior portion of occiput with pale yellow setae and bristles; these are especially abundant and strong on lower margin, continuing with hind portion of gena. Anterior portion of occiput, over swollen area, mostly short black setose. Genal bristle brownish yellow. Vibrissal margin with short black setae. With a small subshining black spot on each side of lower front along eye orbit, opposite base of antenna; head and appendages otherwise yellow except for the ocellar triangle and compound eyes. Third antennal segment ca. 2 × longer than wide, broadly rounded at apex and ca. ¾ as long as face. Arista bare, yellow, tinged faintly with brown on swollen basal portion, black on apical ¾. *Thorax.* Mesonotum, postscutellum, metanotum, and sternopleuron brown to blackish in ground color. Ground color of humerus, sides of mesonotum, and most of pleura yellow-rufos. Entire thorax densely gray to yellow-brown pollinose, entirely concealing ground color. With full complement of moderately large brownish yellow bristles except lacking intrapostalars, with a dense

covering of yellow setae, those on mesonotum flattened, scalelike, and subrecumbent. Dorsocentral bristles distinctly in front of a line drawn between supraalars, almost halfway to suture. *Legs.* Yellow, with brown to yellow-brown setae and bristles. *Wing.* Fitting typical shape and venation except that cell Cu ends in a distinct short, pointed lobe at apex. Fitting characters noted above and as in Fig. 10. *Abdomen.* Black in ground color, densely gray pollinose and yellow setose over basal 3–4 terga and mostly black setose over terga 4 and 5. Genitalia not studied.

Lengths: body 7.5 mm; wing 8.15 mm.

FEMALE. Unknown.

Type data. Holotype ♂ (MZB), INDONESIA: W JAVA: Mts Gede, Panggerango, Tjibodas, 1,400 m, 18.XI.1954 [name of collector not legible; label seems to read "Maclfoedr"].

Etymology. The specific epithet comes from the Latin *magnus*, "large, great," and refers to the large size.

Elaphromyia transversa Hardy, new species Fig. 11

Diagnosis. Close to and fits the general characteristics of *E. pterocallaeformis* (Bezzi), from over a wide range of the Oriental Region, but differs by having subhyaline markings extending transversely, completely over most of the cells (*pterocallaeformis* has numerous isolated, subhyaline spots arranged in 2 irregular, longitudinal rows through the cells); the entire wing brown with subhyaline spots through posterior portion (posterior margin broadly subhyaline lacking such distinct spots in *pterocallaeformis*); the male lacking brown submedian spots on 5th tergum.

MALE. *Head.* Slightly higher than long with face concave in middle, slightly projected on oral margin. Antenna near middle of head, 3rd segment short and broad, only 1½ × longer than wide. Arista short pubescent. Three inferior fronto-orbital bristles, lower superior fronto-orbital, ocellars and inner vertical bristles brownish yellow, other bristles pale yellow-white. Palpus moderately brown setose. *Thorax.* Brown to blackish in ground color, densely covered with gray pollen that completely obscures ground color and yellow setose. A small spot of brown present on each side of mesonotum at inner margin of suture. Pleura mostly yellow in ground color with a tinge of brown in middle of mesopleuron, on hypopleuron, pleurotergon, and most of scutellum; mesonotum black in ground color. Halter mostly rufous, tinged with brown on knob. With full complement of bristles that are mostly brownish yellow in color; sternopleurals, pteropleurals, and apical scutellars yellow-white. Dorsocentrals in line with supraalars. Wing as noted above and as in Fig. 11a. Venation typical for genus but with vein R_{4+5} sparsely setose above to just beyond

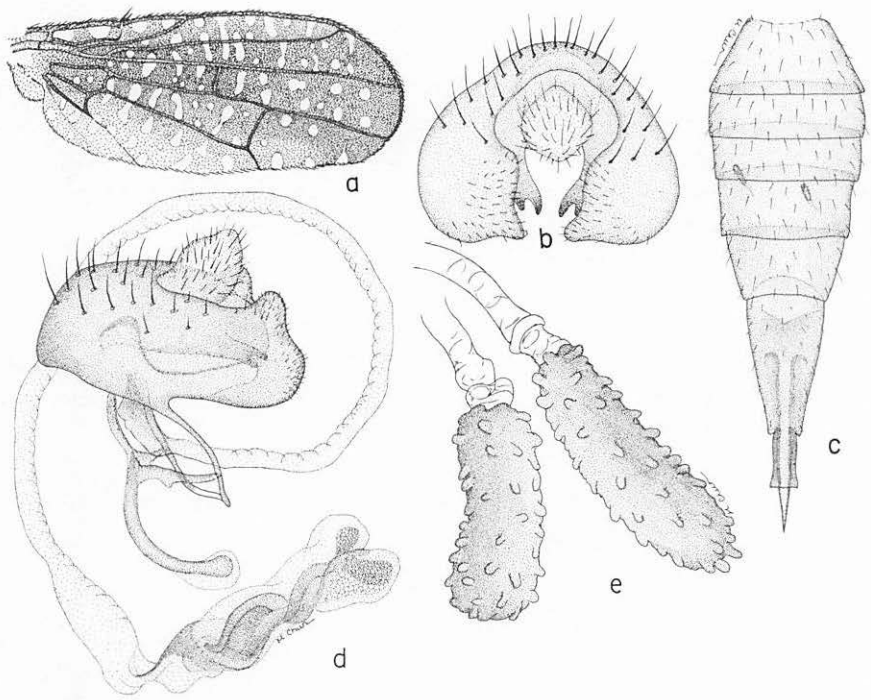


Fig. 11. *Elaphromyia transversa*: a, wing; b, male genitalia, end view; c, female abdomen; d, male genitalia, lateral view; e, female spermathecae.

r-m crossvein. Costal spines moderately developed, almost equal in length to upcurved portion of vein Sc. Third costal section ⅔ as long as 2nd. Veins R_{4+5} and M_{1+2} parallel. Crossvein r-m near apical ⅔ of cell 1st M_2 and cell Cu slightly pointed at lower apex. *Abdomen*. Predominantly yellow. Fourth tergum with 2 small, oblong, submedian brown spots in middle and 2 tiny brown sublateral spots on apical ⅓. Fifth tergum with 2 submedian and 2 lateral small, brown spots on basal margin; 2 transverse submedian brown marks on apical ⅔ and a brown median mark at apex of segment. Cercus small, not much over ½ as long as epandrium. Surstylus short and broad, blunt at apex and expanded on dorsoapical margin (Fig. 11b), completely hiding inner lobe of surstylus as seen in lateral view (Fig. 11d). Vanes of aedeagal apodeme widely separated. Aedeagal glans expanded and bifid apically with extensive internal sclerotization (Fig. 11d).

Lengths: body 3.6 mm; wing 5.0 mm long by 1.68 mm wide.

FEMALE. Fits description of male except abdomen yellow with 2 submedian, basal brown to black spots on 6th tergum. Sixth tergum ⅓ longer than 5th. Basal segment of ovipositor yellow except for brown spots on basomedian portion, and

equal in length to terga 4+6 and with spiracular openings near basal ¼ of segment. Piercer slender, attenuated to sharp point at apex (Fig. 11c). Two oblong, densely papillate spermathecae (Fig. 11e).

Lengths: body, excluding ovipositor, 3.6 mm; wing 5.2 mm.

Type data. Holotype ♂ (BPBM 13621), PNG: New Guinea (NE): Wau, 20.X.1972, in malaise trap (B. S. Cheary). Allotype ♀ (AMS), same locality as holotype, 1,200 m, 1.XI.1965, in malaise trap (P. Shanahan). 3 ♂, 2 ♀ paratypes, NEW GUINEA (NE): Sinofi, 1,590 m, 30 km S of Kainantu, 1–6.X.1959 (T. C. Maa); same as allotype; Salawaket Range, Sepalakambang, 1,920 m. 15.IX.1956 (E. J. Ford Jr). 1 ♂, 1 ♀ paratypes, PNG: NEW GUINEA (SE): Anga Gorge, E of Mendi, 14.X.1958 (J. L. Gressitt). Paratypes in BPBM and UH.

Etymology. The specific epithet is from the Latin *transversus*, "crosswise," and refers to the transverse arrangement of the subhyaline marks over the wings.

Genus **Ensina** Robineau-Desvoidy

Ensina Robineau-Desvoidy, 1830, Mem. Pres. Acad. R. Sci. Inst. Fr. 2: 751. Type-species: *Musca sonchi* Linnaeus. By designation of Coquillett (1910: 538).

This genus is readily recognized by the almost completely hyaline wing, and the lack of brown markings except for a pale spot in cell Sc, occasional faint indication of brown in cell R_1 (Fig. 12a) and, rarely, in cell R_5 and on r-m and m crossveins; by the long slender, geniculate proboscis with the labellum linear; by the 3 pairs of inferior fronto-orbital bristles and single pair of superior fronto-orbitals; and by the weak, pale scapular bristles.

Head longer than high, produced on epistomal margin, similar to *Dioxyna*; 4 pairs almost equal-sized scutellar bristles and dorsocentral bristles slightly in front of a level with supraalars. Genitalia as in Fig. 12c. Vanes of aedeagal apodeme broad and widely separated. Aedeagal glans slender, poorly developed, not expanded, with extensive internal sclerotization, bifid at apex and with apical microscopic cilia.

One species is spread widely over much of the world. Most other species placed here have been removed to other combinations or their status is unclear.

Ensina sonchi (Linnaeus) Fig. 12

Musca sonchi Linnaeus, 1767, Systema Naturae (Ed. 12) 1(2): 998. Type-locality: not given. For synonymy refer to Hendel (1927: 171), Shiraki (1968: 82). Type apparently lost (White 1987).

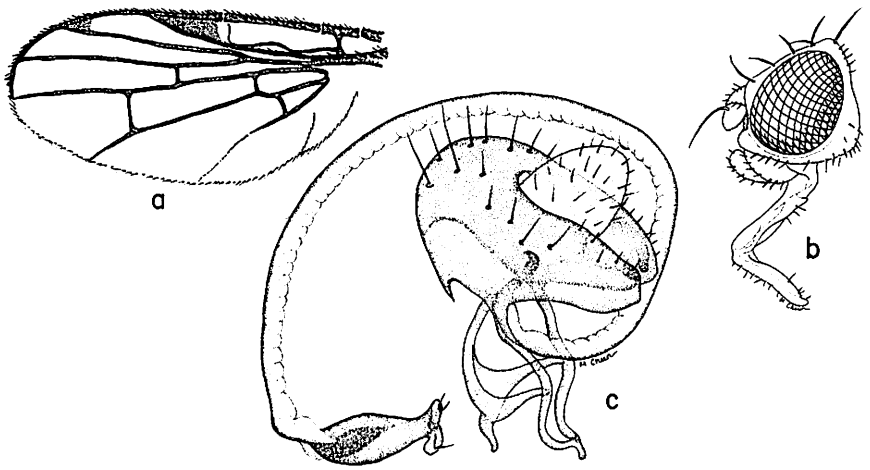


Fig. 12. *Ensina sonchi*: a, wing; b, head; c, male genitalia.

Diagnosis. Superficially resembles *Dioxyna sororcula* because of the small size, head shape, and elongate, geniculate mouthparts, but the 2 taxa are not related. Readily recognized by the hyaline, unmarked wing; 3 pairs inferior fronto-orbitals and only 1 pair of superior fronto-orbitals; 4 nearly equal sized scutellar bristles; yellow legs; humerus, sides of mesonotum, most of scutellum and most of pleura yellow with a faint tinge of green and abdomen broadly yellow on apical margins of terga.

The species has been described and figured by Hardy (1974: 239), Hardy & Delfinado (1980: 44), and Shiraki (1968: 82). Head as in Fig. 12b. Wing as in Fig. 12a, ranging from completely hyaline except for faintly marked cell Sc to having faint indications of markings as shown by Hardy (1974: 241, Fig. 137d) and Shiraki (1968: plate 31, Fig. 1). Vein R_{2+3} rarely with a short dorsal spur near apical ⅔, as shown by Shiraki (loc. cit). Vein M_{3+4} evanesces before reaching costal margin and cell Cu developed into a short point at lower apex. Sixth tergum of female ca. equal to or slightly longer than 5th, basal segment of ovipositor subequal in length to terga 4+6, and with spiracles at basal ⅓ of segment. Piercer slender, sharp pointed, completely bare. Two oblong spermathecae. Male genitalia as in Fig. 12c and as noted above under genus.

Lengths: body and wing each 2.8–3.0 mm.

Distribution. Widespread over the Palaearctic, Afrotropical, Neotropical, and Oriental regions and the Hawaiian Islands. Very probably occurring over a wide area of the Pacific.

Specimens examined. Large series of specimens from over much of the known range. There are no records from Indonesia or New Guinea, but it very probably occurs in these areas.

Hosts. Breeds in developing seeds of a wide assortment of compositae such as *Aster*, *Cirsium*, *Crepis*, *Lactuca*, *Sonchus*, and *Tragopogon*.

Genus Orotava Frey

Orotava Frey, 1936, Commentat. Biol. Soc. Sci. Fenn. 6(1): 63. Type-species: *Sphenella caudata* Becker [= *cribrata* (Bigot)]. By original designation.

Orotava fits in the *Sphenella* group of genera by having the lower squama broad, nearly equal in width to the upper. It is close to *Paratephritis* Shiraki but differs by lacking anteroventral bristles on the hind femur, by having vein R_{4+5} bare except for a few setae above at the base, and by the distinctive wing markings: anterior portion dark brown with abundant, round, brownish yellow marks and with a brown transverse band extending to hind margin of wing over m crossvein (Fig. 13). Munro (1957b: 20) placed 2 Oriental species under this combination: *senecionis* Ito, from Japan, and *naucina* Hering, from Java. These were both described as *Paratephritis*. I have placed both of these as synonyms of *hamula* (de Meijere).

Head rather similar in shape to *Sphenella*, just slightly higher than long with front moderately sloped. Antenna just above middle of head and face concave as seen in lateral view, with oral margin slightly protruded. With 2 pairs inferior fronto-orbital bristles on lower ½ of front and 2 pairs superior fronto-orbitals on upper ¼, with upper superiors and outer verticals flattened, yellow white. Front rather densely covered with flat subrecumbent pale yellow setae. Third antennal segment broad, ca. 2 × longer than wide and arista microscopically pubescent on swollen basal portion. Proboscis comparatively short, labium distinctly shorter than oral opening, and labellum fleshy, densely long setose. Thorax densely yellow-gray pollinose, completely obscuring ground color, with mesonotum densely covered with flat, subrecumbent, scalelike setae. Dorsocentral bristles slightly in front of a line drawn between supraalars. Legs with a strong row of posteroventrals on front femur and lacking ventral bristles on hind pair. Wing as noted above and as in Fig. 13. Abdomen densely gray pollinose and covered with flattened, yellow-white, scalelike setae over dorsal surface.

Only 2 species are known. The type of the genus, from the Canary Islands, has been studied by Munro (1957b: 20, Fig. 7).

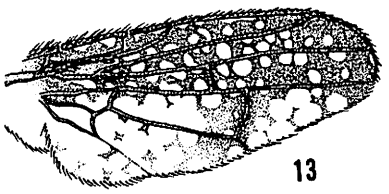


Fig. 13. *Orotava hamula*, wing.

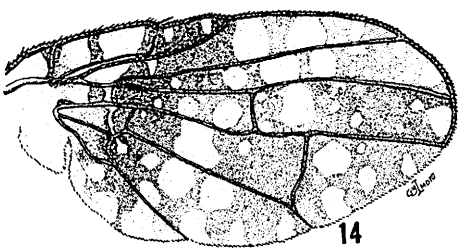


Fig. 14. *Paroxyna brunneimaculata*, female wing.

Orotava hamula (de Meijere), **new combination** Fig. 13

Tephritis hamulus de Meijere, 1914, Tijdschr. Entomol. 57: 219. Type-locality. Nongkodjadjar, Java. Type female in ZMUA.

Paratephritis naucina Hering, 1952, Treubia 21(2): 288. Type-locality: Idjen, Java. Type male in RNHL, paratypes in BMNH. **New synonymy.**

Paratephritis senecionis Ito, 1953, Bull. Naniwa Univ. (B) 2: 22. Type-locality: Nose, Japan. **New synonymy.**

Diagnosis. Readily recognized by the generic characters given above. Differs from *Orotava caudata* by having anterior margin of wing predominantly brown to a level with vein M_{1+2}, this area completely filled with small round to oblong brownish yellow spots. Also with a continuous transverse band of brown extending to hind margin of wing at level of m crossvein, with most of band fitting in cell 1st M_2 (Fig. 13).

Crossvein r-m near apical ¾ of cell 1st M_2. Lobe of cell Cu ca. equal in length to vertical section of vein Cu. Abdomen gray-brown pollinose and densely covered with flat scalelike yellow setae over terga 1–5 in male and 1–6 in female. First 2 terga yellow, other terga brown to black on bases, yellow on apices. Male genitalia not studied. Sixth tergum of female slightly longer than 5th. Ovipositor base yellow except for black apex as seen in situ, ca. ½ longer than 6th tergum.

Lengths: body 4.0—4.4 mm; wing 4.5–4.8 mm.

Refer to Ito (1984: 230) for further details.

Specimens examined. Types of *hamula* and *naucina* and paratypes of *senecionis*.

Remarks. I find no ways to differentiate the above taxa and am convinced they are synonyms. Ito (1953: 23) differentiated *senecionis* from *hamula* by the small hyaline spot in the apex of cell 1st M_2, the brown 2nd basal cell (basal medial) with

3 yellow spots, and the inner margin of the brown crossband over m crossvein that lies mostly in cell 1st M_2 rather than mostly in cell 2nd M_2. These differences obviously were based upon comparison with de Meijere's figure. My photograph of the type of *hamula* compares in all aspects the paratype specimens of *senecionis*.

Hosts. Breeds in flowerheads of Compositae. Reared from *Senecio fauriei* in Japan.

Genus Paroxyna Hendel

Paroxyna Hendel, 1927, [Fam. 49], in E. Lindner, ed., Die Fliegen der Palaearktischen Region. 5: 146. Type-species: *Trypeta tessellata* Loew. By original designation; but validity questioned by White (1986: 151).

Paroxyna fits in the group of genera that have 4 scutellar bristles, vein R_{4+5} bare except for a few setae at base, and only 2 pairs of inferior fronto-orbitals present. It fits near *Tephritis* Latreille, and the only consistently reliable character for separating these appears to be the male genitalia. In *Paroxyna* the male aedaegus is setose or spiculose near apex of basiphallus (Fig. 17c) and the distiphallus is well sclerotized (*Tephritis* has the basiphallus bare and the distiphallus weakly sclerotized). The known species of *Paroxyna* from Indonesia and New Guinea also differ from *Tephritis* by the more elongate, geniculate mouthparts, with labium ca. equal in length to oral margin and labellum rather narrow, not expanded (*Tephritis* has short, not geniculate mouthparts, with labellum fleshy, scarcely extended beyond oral opening). *Paroxyna* wings are predominantly brown with numerous hyaline spots and species from other areas of the world often have a prominent hyaline spot in cell Sc (*Tephritis* species have a varying arrangement of wing markings but usually have brown diverging lines in apex of cell R_5 and rarely have a spot in Sc). Hind femur of *Paroxyna* with 1–2 anterodorsal and 1 dorsal preapical bristle like setae (*Tephritis* lacks a dorsal preapical seta).

Head usually as high as long with epistomal margin protruded and parafacials rather broad, epistoma only slightly protruded and parafacials narrow. Rather angulate at antenna base, with front gently sloping, antenna just above middle of head and face moderately concave (Fig. 18a). Third antennal segment straight on dorsal margin, rounded on ventral margin and around apex, slightly upcurved at dorsoapex. Arista short pubescent over entire length. Interfrontalia bare. Dorsocentral bristles variable in position from near suture to near supraalars. Apical scutellars variable in size, from ca. ½–⅔ size of basal bristles. Lower squama narrow, reduced to a thin stripe ½ width of upper squama. Wing pattern variable but usually as noted above. Presence of hyaline spot in middle of Sc apparently typical of *Paroxyna*

world-wide but in region treated in this study cell Sc all brown in 3 species, with a tiny spot in 1 and with 2 spots in 1. Other details of wing markings and venation as in Fig. 14, 16. Mesonotum and abdomen rather densely covered with subrecumbent yellow-white scalelike setae in most species; *P. putrida* Hering has all setae of thorax and abdomen thin, dark brown to black. For genital chartacters refer to Fig. 17b–c.

This is a large genus of over 100 species, occurring over much of the world. Five species are recorded for the area covered in this study.

Biology. The larvae breed in flowerheads and stem galls of Compositae.

Key to Paroxyna *known from Indonesia and New Guinea*

1. Mesonotum and abdomen covered with flattened, scalelike yellow-white setae 2
   Setae of thorax and abdomen thin, dark brown to black; with 2 hyaline marks in cell R_1 continuous across wing, or nearly so, to hind margin (Fig. 17a) . . . (Nusa Tenggara, Indonesia; New Guinea) ..... **putrida**
2. Cell Sc entirely dark brown or with a tiny hyaline spot on upper margin near middle; only 1 hyaline spot on margin in cell R_3 .. 3
   With 2 prominent hyaline spots in cell Sc; cell R_3 with 2 hyaline spots on margin (Fig. 14) . . . (Papua New Guinea) .... **brunneimaculata, n. sp.**
3. Hyaline mark at apex of cell R_5 not filling apex; with comparatively few hyaline spots in cells R_3 and R_5 (Fig. 18b) 4
   Hyaline mark at apex of R_5 filling cell; with numerous small spots in R_3 and R_5 (Fig. 15a) . . . (Java; SE Asia; Sri Lanka). . **orientalis**
4. Cell Sc with a tiny hyaline spot on upper median margin; R_1 with 3 large, nearly contiguous spots, these contiguous with 2 large spots in cell R_3 and with a large spot in R_5; with large hyaline mark crossing apex of cell R_3 (Fig. 18b) . . . (Indonesia; Papua New Guinea) ..... **stigmosa**
   Cell Sc all brown except for hyaline base; R_1 with 2 or 3 well-spaced spots, the 1 in middle contiguous or nearly so with spot in R_3 and not contiguous with spot in R_5; only a small spot in upper apex of R_3 (Fig. 16) . . . (New Guinea; Maluku) ..... **paula**

Paroxyna brunneimaculata Hardy, **new species** Fig. 14

Diagnosis. Readily differentiated from all known *Paroxyna* by the presence of 2 prominent hyaline spots in cell Sc, 2 hyaline spots on margin in cell R_3, and dark brown spots at bases of the bristles on dorsum of thorax.

FEMALE. *Head.* Almost quadrate in shape with front nearly horizontal and antenna near upper ⅓ of head height. Inferior fronto-orbital bristles situated closer together than normal and at lower ⅓ of front. Occiput moderately swollen, at widest point ca. ½ width of eye. Gena broad, width almost equal to length of 3rd antennal segment. Parafacials broad, over ½ width of 3rd antennal segment. Occiput and gena yellow-white setose except for a few brown setae scattered among flat scalelike bristles in occipital row. Also genal bristle dark brown. Mouthparts intermediate with *Tephritis*, comparatively shorter than normal in *Paroxyna*, with labium subequal in length to oral margin and labellum ca. ½ length of oral margin. Palpus slender, covered with short black spicules. Third antennal segment short, black spiculate over dorsal surface. Head yellow, gray-white pubescent except for compound eyes and ocellar triangle and a thin streak of brown on each side near upper parafacial margin just below base of antenna, a narrow oblong streak of brown through median portion of occiput, and a tinge of brown to black in upper median portion of occiput. *Thorax.* Densely gray pollinose and yellow-white setose, bristles black except for white pteropleurals and brownish yellow lower mesopleurals. Each bristle on dorsum with dark brown spot at base; and mesonotum with a faint indication of 3 thin, longitudinal vittae over anterior portion in front of supraalar bristles and a narrow postsutural streak of brown on each side in line with inner postalar bristles. Dorsocentrals just slightly behind suture. Apical scutellars ca. ⅔ as long as basal bristles. *Legs.* Rufous, hind femur with 2 preapical anterodorsal and 1 dorsal bristlelike setae. *Wing.* As noted above and as in Fig. 14. Costal spines rather strong, ca. equal in length to upcurved portion of vein Sc. Crossvein r-m near apical ¼ of cell 2nd M_2. *Abdomen.* Densely gray pollinose and yellow-white pilose with prominent paired, brown, submedian spots on all terga. Sixth tergum ca. equal in length to 5th. Basal segment of ovipositor shining, black at base and at apex, rufous through median portion, as seen in situ ca. equal in length to terga 5+6. Piercer not visible for study.

Lengths: body, excluding ovipositor, 4.4 mm; wing 5.0 mm.

MALE. As in female except that parafacials lack brown streak, thorax and abdomen show no brown spots or markings, but body greased and markings completely obscured. Hyaline spot in apex of cell R_3 almost contiguous with spot in R_5. Genitalia not studied.

Lengths: body 4.4 mm; wing 4.7 mm.

Type data. Holotype ♀ (BPBM 13622), PNG: NEW GUINEA (NE): Sepik, Angora, 80–300 m, 14–16.VIII.1960 (J. L. Gressitt). Allotype ♂ (BPBM), PNG: NEW GUINEA (NE): Mt Piora, 6°45's 146°E, 1,760 m, 12.VI.1966 (J. L. Gressitt).

Etymology. The specific epithet combines the Latin *brunneus*, "brown," with *maculata*, "spot"; it refers to the prominent brown spots on the dorsum of the thorax.

Paroxyna orientalis (de Meijere) Fig. 15

Tephritis orientalis de Meijere, 1908, Tijdschr. Entomol. 51: 130. Type-locality: Semarang, Java. Type male in SMUA.

Stylia apiciclara Hardy, 1973. Pac. Insects Monogr. 31: 326. Type-locality: N of Dalat, Vietnam. Type male in BPBM. **New synonymy.**

Diagnosis. Differs from related species by having the subcostal cell entirely dark brown except for a hyaline spot at base; a hyaline spot in apex of cell R_5 filling cell and cells R_3 and R_5 with numerous small, hyaline spots; and a cluster of closely placed large spots extending from hind margin of wing in cells M_4 and anal cell through cell 1st M_2 into basal portion of cell R_5 (Fig. 15a).

Head just slightly higher than long with front gently sloping and antenna near upper ⅔ of eye level. Front ca. as wide as long, measured on midline, very slightly narrowed anteriorly, with interfrontal area bare. Epistoma protruded and gena broad as typical for genus. Labium ca. equal in length to oral margin and labellum ca. ⅔ as long as lower margin of head. Thorax mostly black in ground color, yellow on humerus, apex of scutellum, and over notopleural area; densely gray pollinose and with 3 indistinct brown vittae on median portion of mesonotum.

Dorsocentral bristles slightly in front of a level with supraalars. Legs yellow except for a slight tinge of brown near base of hind femur. Wing as noted above and as in Fig. 15a. Abdomen predominantly black in ground color, densely gray pollinose, and with paired brown submedian spots on all terga beyond 2. Tergum 5 of female slightly longer than 6. Basal segment of ovipositor shining, predominantly yellow to rufous, tinged with brown at apex and at extreme base, nearly 3 × longer than wide and slightly longer than terga 3–6. Piercer evenly tapered to a sharp point at apex (Fig. 15c). Two oblong spermathecae (Fig. 15b).

Lengths: body 2.8–3.0 mm; wing 3.0–3.25 mm.

Distribution. Java and East Asia. Recorded from Sri Lanka by Frey (1917: 19).

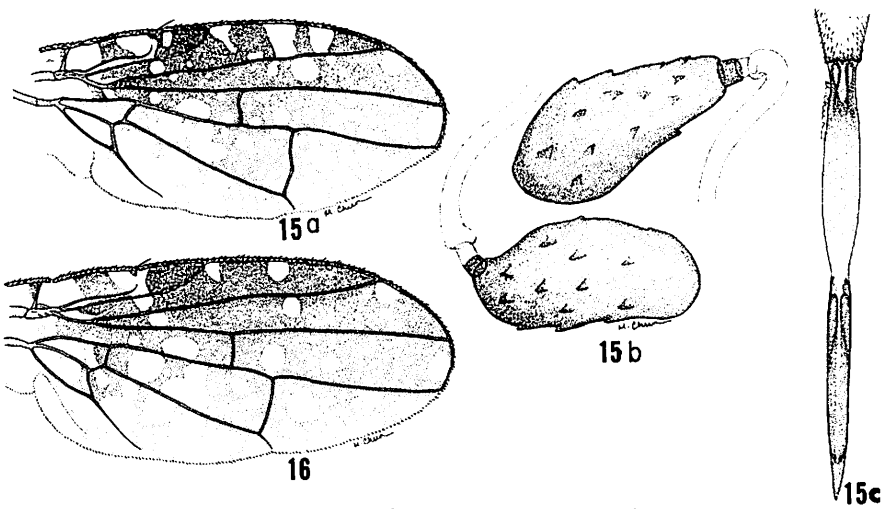


Fig. 15. *Paroxyna orientalis*: a, wing; b, female spermathecae; c, female ovipositor.

Fig. 16. *Paroxyna paula*, wing.

Specimens examined. Type. Series of specimens from South Vietnam.

Paroxyna paula Hering Fig. 16

Paroxyna paula Hering, 1941, Ann. Hist. Nat. Mus. Natl. Hung. 34: 64. Type-locality: Seleo, Berlinhafen, New Guinea. Type female in TMB.

Diagnosis. Fits *stigmosa* (de Meijere) but differs by having cell Sc entirely dark brown except for hyaline base; cell R_1 with 2 or 3 well-spaced hyaline marks with mark in middle of cell continguous or nearly so with 1 spot in cell R_3 and not contiguous with spot in R_5; and other markings as in Fig. 16.

A small species fitting general characteristics of genus, with epistomal margin slightly protruded and gena and parafacia rather broad. Labium equal or slightly longer than oral opening and labellum small, not expanded, ca. ⅔ as long as oral opening. Thorax mostly black in ground color, humerus, notopleural callus, hind margins of mesonotum, and most of scutellum yellow, densely gray pollinose, and with 2 faint brown vittae at level with dorsocentral bristles. Dorsocentrals just behind suture. Apical scutellars ⅔–⅘ as long as basal bristles. Wing as noted above and as in Fig. 16. Abdomen densely gray with paired brown spots on terga.

Lengths: body and wing each 2.0–2.25 mm.

Distribution. New Guinea.

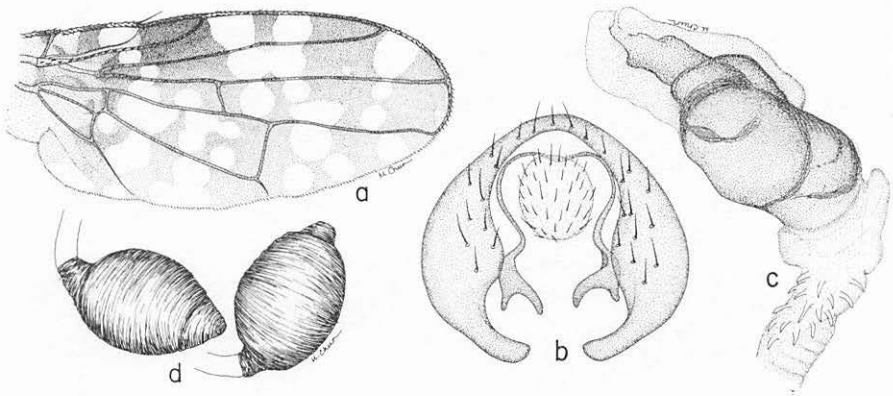


Fig. 17. *Paroxyna putrida*: a, wing; b, male genitalia, end view; c, apex of male aedeagus; d, female spermathecae.

Specimens examined. Type. 1♂, MALUKU: Larat Island, XII.1907 (F. Muir).

Paroxyna putrida Hering Fig. 17

Paroxyna putrida Hering, 1941, Arb. Morphol. Taxon. Entomol. Berlin-Dahlem 8(1): 39. Type-locality: Rana Mese, Flores Island. Type male in DEI, paratypes in ZMHB and BMNH.

Diagnosis. Differs from all known *Paroxyna* by having the setae of thorax and abdomen thin, dark brown to black; by having 2 prominent hyaline marks in cell R_1, continuous or nearly so across median portion of wing to hind margin; mark in apex of cell R_3 continuous or nearly so across wing; hyaline spots in apex of cell R_5 tiny, filling scarcely ½ of cell; and femora predominantly dark brown to black.

Head shaped as in other members of genus but with epistomal margin more gently protruded. Pale yellow to rufous except for compound eye, ocellar triangle, and upper median portion of occiput. Inferior fronto-orbital bristles widely spaced on lower ½ of front and superior fronto-orbitals on upper ¼ of front. Genal bristle and all setae of gena and occiput yellow-white except for a few short, brown setae scattered in occipital row. Thorax densely gray pollinose, tinged with brown over mesonotum, with dorsocentral bristles just slightly in front of a level with supraalars, and apical scutellars small, ½–⅗ as long as basal bristles. Thoracic bristles black except for yellow-white pteropleurals and lower mesopleurals. Legs predominantly yellow, femora dark brown to blackish except for broad yellow apices. Hind femur with 2 preapical bristlelike setae, 1 anterodorsal and 1 dorsal. Wing as noted above

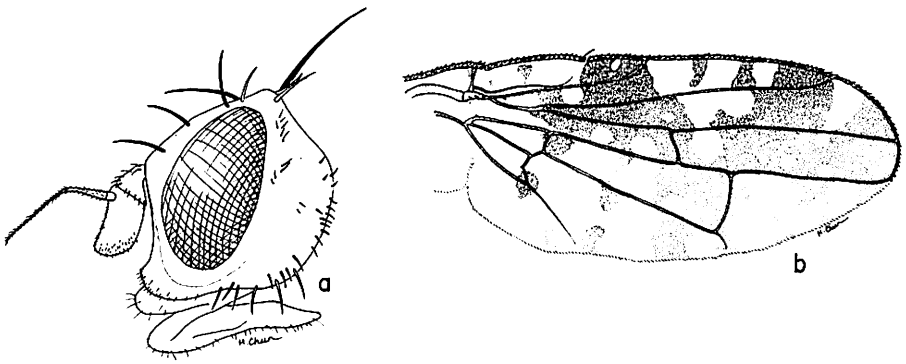


Fig. 18. *Paroxyna stigmosa*: a, head; b, wing.

and as in Fig. 17a. Markings somewhat variable, typically with only 2 hyaline marks in cell R_1, sometimes with an extra small spot in apical portion of cell. Abdomen gray pollinose with large, paired, brown submedian spots on terga. Male surstylus broad, narrowed at apex and completely covering inner lobe of surstylus from lateral view. One large and 1 small prensisetae (Fig. 17b). Aedeagus with a dense clump of spicules on each side just before distiphallus (Fig. 17c). Basal segment of female ovipositor shining black, as seen in situ, ca. equal in length to terga 5+6. Sixth tergum equal in length to 5th. Piercer not extruded for study. Two oblong spermathecae (Fig. 17d).

Lengths: body 2.8–3.0 mm; wing 3.2–3.5 mm.

Distribution. Nusa Tenggara (Hering recorded it from Lombok, Sumbawa, and Flores islands) and Papua New Guinea.

Specimens examined. Type series. 12 specimens from PNG: NEW GUINEA (NE) with the following data: Madang Central Distr, Moro Vil, Finisterre Ra, 5,550 ft (1,692 m) IX.1964 (R. Pullen); Okapa, 64 km S of Kainantu, 1,800 m, 28.IX.1959 (T. C. Maa); Kundiawa, Chimbu Riv, 26.III.1964 (D. H. Colless); 6.4 km W of Wabag, 2,020 m, 13.VI.1963 (J. Sedlacek); Mt Wilhelm, 3,000 m, 9.VIII.1969 (J. L. Gressitt); Mt Hagen area, 1,650 m, 28.VI.1957 (D. E. Hardy); and Eliptamin Val, 1,200–1,350 m, 16–30.VIII.1959 (W. W. Brandt).

Paroxyna stigmosa (de Meijere) Fig. 18

Tephritis stigmosa de Meijere, 1915, Tijdschr. Entomol. 58, Suppl.: 83. Type-locality: Sumatra. Type male in ZMUA.

Paroxyna timorensis Hering, 1940, Siruna Seva 1: 8. Type-locality: Timor Island. Type male in SMNS, paratypes in BMNH. **New synonymy.**

Diagnosis. Fits nearest to *paula* Hering but differs by having a tiny hyaline spot on upper median margin of cell Sc; cell R_1 with 3 large, nearly contiguous spots that are contiguous with 2 large spots in cell R_3 and a large spot in cell R_5; and a large hyaline spot crossing apex of cell R_3, contiguous or nearly so with a spot in cell R_5 (Fig. 18b).

Fits typical *Paroxyna*, with epistomal margin distinctly protruded and mouthparts comparatively elongate (Fig. 18a). Thorax mostly black, densely gray pollinose. Dorsocentral bristles slightly behind suture and with apical scutellar bristles comparatively small, ca. ½ as long as basal bristles. Legs mostly yellow to rufous, femora predominantly dark brown to black, broadly yellow on apices. Wing as noted above and as in Fig. 18b. Abdomen gray pollinose and yellow-white setose with paired brown spots on terga. Basal segment of female ovipositor shining black, densely black setose. Sixth tergum of female slightly longer than 5th. Basal segment of ovipositor ca. 2 × longer than wide and almost as long as terga 4–6.

Lengths: body 3.2–3.6 mm; wing 3.75–4.0 mm.

Distribution. Sumatra and New Guinea.

Specimens examined. Type. PNG: NEW GUINEA (NE): 1, Sinofi, 30 km S of Kainantu, 1,590 m, 1–6.X.1959 (T. C. Maa), and Goroka-Kababe, 1,800 m, 20.VI.1955 (J. L. Gressitt); 3, PNG: NEW GUINEA (SE): Oro Prov, Myola 2, 2,080 m, 22.IV.1984 and 13.IX.1985, collected in grass (J. W. Ismay).

Genus **Platensina** Enderlein

Platensina Enderlein, 1911, Zool. Jahrb., Syst. 31: 454. Type-species: *Platensina sumbana* Enderlein. By original designation.

Tephrostola Bezzi, 1913, Mem. Indian Mus. 3: 153. Type-species: *Trypeta acrostacta* Wiedemann. By original designation.

Munro (1937: 10) established the tribe Platensinini to include *Platensina* Enderlein, *Pliomelaena* Bezzi, and some other African genera. He differentiated it from Xyphosiini by the head shape: "frons curved downward, forming a very obtuse angle with the line of the face in profile, the fronto-facial angle barely prominent before the eye which is large." He did not place it in a subfamily. Hering (1947: 14) treated *Platensina* and related genera as a tribe under Tephritinae and considered the wing and head shapes as important diagnostic features. Cogan & Munro (1980: 538) have

treated *Platensina* in the tribe Aciurini, under Aciurinae. As I have discussed (Hardy, in press), the status of Aciurinae-Aciurini is completely confused. I prefer to treat these under Trypetinae. I see no logical reason to retain a tribe Platensinini; I consider the shape of the head and the wing of only generic importance. I find considerable intergradation among various genera in the degree of angulation where the front meets the face and have not found this to be a definitive character.

Platensina fits in the group of genera that have the anterior margin of the head rounded, not distinctly angulate at the junction of the face and front; vein R_{4+5} setose to beyond the r-m crossvein; and the wing comparatively broad and mostly dark brown with prominent hyaline marks around margin and in the middle. It can be readily differentiated from other Indonesian and New Guinea Tephritinae by the broad rounded wings that are 2 × or more longer than wide and broadest at level just basad of m crossvein (Fig. 19); by the front margin of the head, which is rounded, not angulate at the antennae bases; and by vein R_1 being completely setose above, not with a bare area opposite the end of vein Sc.

Typically with 4 scutellar bristles, apical pair ½ to ⅔ as long as basal [*zodiacalis* (Bezzi), with only basal scutellars present, is aberrant]. Usually with 3 pairs inferior fronto-orbitals and 2 pairs superior fronto-orbitals. Arista pubescent. Mesonotum densely gray pollinose, completely obscuring ground color, densely covered with flat, recumbent, scalelike, yellow-white setae. Abdomen subshining at least on apices of segments, rather lightly pollinose. Outer surstylus of male short and thick, rounded at apex, completely obscuring inner lobe as seen in lateral view. Vanes of aedeagal apodeme narrow, widely separated, aedeagus slender, bare (Fig. 20d). Sixth tergum of female about equal in length to 5th. Basal segment of ovipositor with spiracles at basal ¼. Piercer slender, evenly tapered to sharp point at apex, and with 2 moderately long, hirsute spermathecae.

Seventeen species have been recorded from the Oriental Region and New Guinea and 5 are known from the Afrotropical Region.

Biology. Munro (1937: 27) said the larvae breed in flowers of Acanthaceae, such as *Asystasia*. One Oriental species, *acrostacta* (Wied.), causes galls on *Jussiaea* (Onagraceae). No host information is available for Indonesian and New Guinea species.

Key to known species of Platensina *from Indonesia and New Guinea*

1. Four scutellar bristles 2
   Only the 2 basal scutellars present... (widespread over Oriental Region) ..... **zodiacalis**

2. Apex of cell R_5 entirely, or mostly, hyaline (Fig. 20a) 3
Apex of R_5 with only a tiny hyaline spot, other wing marking as in Fig. 22 ... (Indonesia) ..... **sumbana**
3. With 2 complete hyaline wedges on median margin of wing extending through cell R_1 and apical portion of cell R_5 with only 1 hyaline spot (Fig. 20a–21a) 4
Only 1 hyaline wedge, plus 2 round marks on margin through R_1 and cell R_5 with 2 hyaline marks at margin, other wing marks as in Fig. 19 ... (Indonesia; New Guinea) ..... **ampla**
4. Wing lacking white spots except on margin, field with small, inconspicuous, pale fuscous spots that are slightly paler than the remainder of the wing membrane (Fig. 21a) ... (Burma; Indonesia; Thailand) ..... **euryptera**
Wing with conspicuous white marks over the field (Fig. 20a) ... widespread over Southeast Asia, Indonesia, New Guinea, Solomon Islands, Admiralty Islands and Taiwan ..... **amplipennis**

Platensina ampla de Meijere Fig. 19

Platensina ampla de Meijere, 1914, Tijdschr. Entomol. 57: 217. Type-locality: Batavia (Jakarta), Java. Type male in ZMUA.

Diagnosis. Readily differentiated from other *Platensina* by the unusually broad wing, by having only 1 complete hyaline wedge bisecting cell R_1, and by having 2 hyaline spots in apex of cell R_3 (Fig. 19).

Head fits characteristics of genus with interfrontal area very sparsely setose and short yellow-white setae along orbits. Thorax densely gray pollinose, yellow in ground color over humerus, metanotum, much of pleura and apex, and venter of scutellum. With faint brown spots at bases of prescutellar and dorsocentral bristles and a pair of spots on suture immediately in front of dorsocentrals. Dorsocentrals ca. ⅓ distance from supraalars to suture. Apical scutellars cruciate, ca. ⅔ as long as basal bristles. All thoracic bristles yellow, tinged with brown except for yellow-white pteropleurals. Wing only 1½ × longer than high, widest at point basad of level with m crossvein, markings in Fig. 19 and as noted above, with a small hyaline spot at base of cell Sc; a quadrate spot at apex of cell R_5, not filling cell; 2 hyaline spots on margin in cell 2nd M_2 and 2 on margin in each of cells M_4 and A. Middle of wing with a few hyaline spots but with several paler yellow-brown spots. Crossvein r-m situated at apical ⅗ of cell 1st M_2 and lobe of cell Cu short. Costal spines moderately developed, subequal in length to upcurved portion of vein Sc. Vein R_{4+5} setose above to beyond level of m crossvein. Abdomen mostly subshining brown to black, tinged

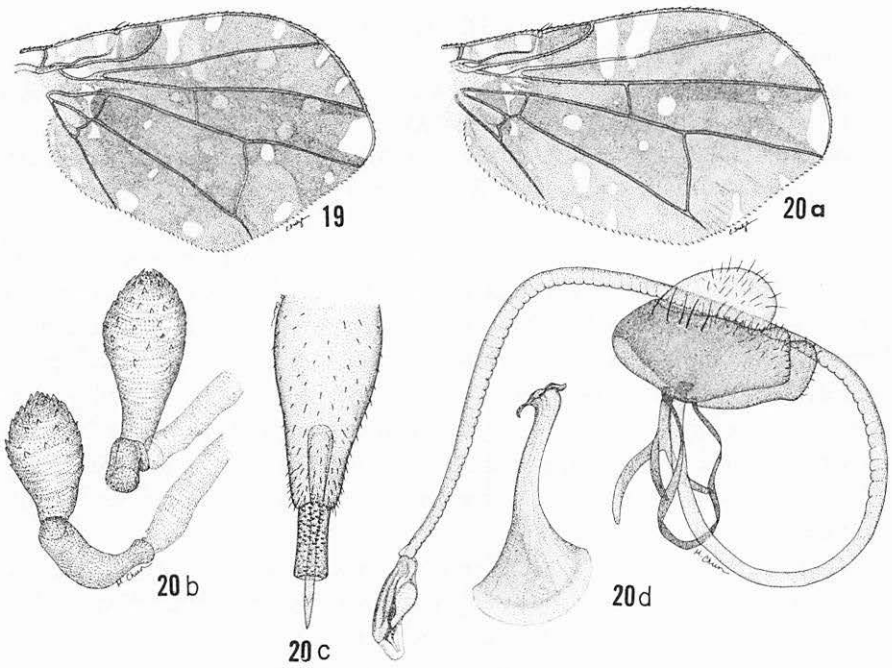


Fig. 19. *Platensina ampla*, wing.

Fig. 20. *Platensina amplipennis*: a, wing; b, female spermathecae; c, female ovipositor; d, male genitalia.

brown to black, tinged with rufous in ground color, gray pollinose over 1st 2 terga and bases of terga 3–5, with 5th tergum shining except for narrow opaque base. Ovipositor base of female shining black, slightly longer than terga 5+6.

Lengths: body 4 mm; wing 4.48 mm long by 2.88 mm wide.

Distribution. Java, Maluku, and Papua New Guinea.

Specimens examined. Type. 1♂, INDONESIA: Ambon 0–150 m, 2–6.XII.1973 (S. Shinonaga); 1♂, PNG: NEW GUINEA (NE): Sepik, Maprik area, 160 m, 27.VIII.1957 (D. E. Hardy).

Platensina amplipennis (Walker) Fig. 20

Trypeta amplipennis Walker, 1860, J. Proc. Linn. Soc. Lond., Zool. 4: 159. Type-locality: Makassar (Ujung Padang), Sulawesi. Type female in BMNH (*amplissima*, error).

Platensina platyptera Hendel, 1915, Ann. Hist. Nat. Mus. Natl. Hung. 13: 461. Type-locality: Taihorin, Taiwan. Type female in TMB.

Platensina malaita Curran, 1936, Proc. Calif. Acad. Sci. (4) 22(1): 29. Type-locality: Malaita Island, Solomon Islands. Type female in CAS.

Platensina dilatata Hering, 1941, Ann. Hist. Nat. Mus. Natl. Hung. 34: 63. Type-locality: Astrolobe Bay, Papua New Guinea. Type male in TMB. **New synonymy.**

Diagnosis. Fits near *P. euryptera* (Bezzi) but differs by having conspicuous white spots in the middle of the wing (Fig. 20a) (wing entirely dark brown through median portion or with very faint yellow-brown spots in *euryptera*). I see no other characters differentiating *amplipennis* and *euryptera* and they may prove to be subspecies; considerable variation has been seen in the wing spotting and the reliability of this character is questionable. I see no way to differentiate *dilatata* Hering and consider it a synonym. The type specimen has an extra, tiny hyaline spot in lower apex of cell R_3; this spot is not present in other specimens I have seen from New Guinea, and I feel certain it is a variation.

Fits characteristics of most species of *Platensina*. Mesonotum with 3 faint, pale brown longitudinal vittae and abdomen predominantly shining dark brown to black, yellow on sides of 1st 2 terga. Entirely black setose. Fifth sternum of male ca. as wide as long, narrowed anteriorly and concave on posterior margin. Cercus of male higher than long, surstylus broad and blunt, completely concealing inner lobe. With 2 black prensisetae at apex of each lobe of inner surstylus. Aedeagus moderately long, slender, and bare, distiphallus poorly developed, weakly sclerotized (Fig. 20d). Vanes of aedeagal apodeme slender, widely separated. Basal segment of female ovipositor dark shining brown to black, ca. equal in length to terga 4–6 and approximately 0.85 mm long. Piercer slender, sharp pointed (Fig. 20c). Two gourd-shaped, spiculated spermathecae (Fig. 20b).

Lengths: body and wing each 4.0–4.5 mm; wing averages 4.2 mm long by 2.7 mm wide.

Distribution. Widespread over SE Asia, Indonesia, New Guinea, Solomon Islands, Admiralty Islands, Malaysia, Singapore, and Taiwan.

Specimens examined. A large series of specimens from over known range of species.

Platensina euryptera Bezzi — Fig. 21

Platensina euryptera Bezzi, 1913, Mem. Indian Mus. 3: 162. Type-locality: Tenasserim, Burma. Type female in ZSIC.

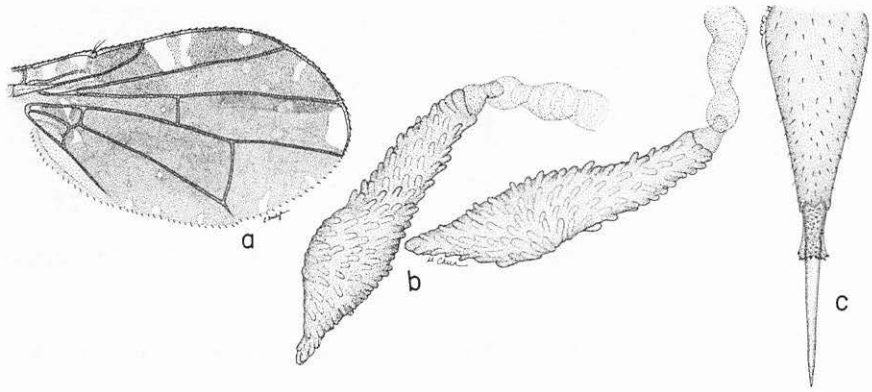


Fig. 21. *Platensina euryptera*: a, wing; b, female spermathecae; c, female ovipositor.

Platensina extincta Hering, 1952, Verh. Naturforsch. Ges. Basel 63: 47. Type-locality: Wai Lekabe, Sumba Island, Nusa Tenggara. Type male in NHMB.

Diagnosis. Fits very close to *P. amplipennis* and the only character that I find for separating *euryptera* is the lack of hyaline spots in middle of wing. The entire median portion of the wing is dark brown with no hyaline spots and with small, inconspicuous, pale fuscous spots that are just slightly paler than remainder of wing (Fig. 21a). The number and the arrangement of the paler colored spots in field varies from those that have only a few barely distinguishable spots (includes the type of *extincta* Hering) to those that have more numerous spots.

Interfrontal area with numerous flat, scalelike, yellow-white setae on lower portion. Arista long pubescent. Thorax largely yellow in ground color, black on mesonotum and base of scutellum, densely gray pollinose and with gray-brown pollen over median portion of mesonotum, arranged in 3 longitudinal vittae on anterior ½. Cell R_1 with a small preapical hyaline spot on margin. Cell R_3 with a small spot at apex and mark in cell R_5 almost completely filling apex. Cell 2nd M_2 with 2 small hyaline spots on margin and cell M_4 with 2–3 tiny marginal spots. Dorsocentral bristles situated ca. ⅓ distance from supraalars to suture. Abdomen subshining dark reddish brown to black, lightly gray pollinose and brown to black setose, except for yellow-white setae on sides of terga 1–3. Basal segment of ovipositor shining, dark reddish brown to black, equal in length to terga 4–6. Piercer slender, as in Fig. 21c, and spermathecae as in Fig. 21b.

Lengths: body and wing each average 6.0 mm; width of wing 3.5 mm.

Distribution. Burma; Nusa Tenggara, Indonesia; and Thailand.

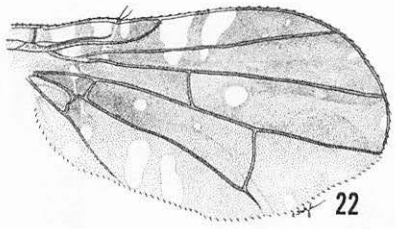


Fig. 22. *Platensina sumbana*, wing.

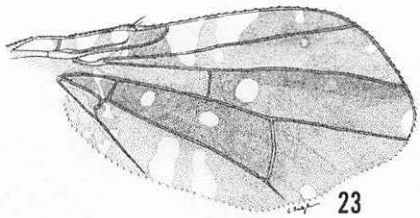


Fig. 23. *Platensina zodiacalis*, wing.

Specimens examined. Type male of *P. extincta* and specimens from Thailand (Hardy, 1973: 305).

Platensina sumbana Enderlein Fig. 22

Platensina sumbana Enderlein, 1911, Zool. Jahrb. Syst. 31: 454. Type-locality: Sumba Island, Nusa Tenggara. Type female in PIZW.

Diagnosis. Differs from other known species by having only a small hyaline spot in apex of cell R_5 and only a slight indication of a small spot on margin at apex of cell R_3 and another in preapical portion of cell R_1 (Fig. 22).

Coastal spines moderately large, equal to upcurved portion of vein Sc. Two prominent brown marks extend across 2nd costal cell and cell Sc with a prominent hyaline mark at base. Middle portion of front margin of wing with 2 rather broad hyaline wedges through cell R_1, extending through most of cell R_3; cell R_5 with a large, round hyaline spot just beyond r-m crossvein; cell 1st M_2 with 2 round hyaline spots; cell 2nd M_2 with a tiny marginal hyaline spot in lower portion; cell M_4 with 2 hyaline spots crossing most of cell and a tiny preapical spot on margin; anal cell with 1 prominent hyaline mark. Otherwise fits characters of most members of genus with humerus, narrow sides of mesonotum and pleura mostly yellow in ground color and mesonotum black, densely gray pollinose. Dorsocentral bristles slightly in front of supraalars. Abdomen shining black, yellow to rufous on sides of first 2 terga and covered with short black setae. Basal segment of ovipositor ca. equal in length to terga 4–6.

Lengths: body 6.0 mm; wing 6.25 mm.

Male unknown.

Distribution. Java and Nusa Tenggara.

Specimens examined. Type. 1 ♀, INDONESIA: JAVA: Mt Tjemere, Cirebon, 400–1,400 m, 19–25.XI.1973 (S. Shinonaga).

Platensina zodiacalis Bezzi Fig. 23

Tephritis zodiacalis Bezzi, 1913, Mem. Indian Mus. 3: 165. Type-locality: Calcutta, India. Type female in ZSIC.
Platensina zodiakalis: Hering, 1956, Verh. Naturforsch. Ges. Basel 67(1): 69. Error.

Diagnosis. Differs from all known *Platensina* by having only 2 scutellar bristles, the apical pair completely lacking. Resembles *P. amplipennis* but shows slight differences in wing markings. Apical hyaline mark in cell R_5 smaller, filling only part of cell and other markings as in Fig. 23.

The wing markings show some variations over the range of the species. The type specimen has a tiny hyaline spot in cell R_5 before r-m crossvein and has several minute hyaline spots in preapical portion of wing; these are present in some specimens from Sri Lanka, the Philippines, and Thailand and absent in others. It is obviously a variation.

Fits description of other species of *Platensina*. Lower median portion of front setose and mesonotum densely gray pollinose, with indications of faint brown submedian marks. Male abdomen shining dark brown to black, 2 basal segments yellow except for a black margin on each side of 2nd tergum. Third tergum broadly yellow on sides and over anterior margin, shining black on hind margin, and 5th tergum shining black. Female abdomen mostly shining black, tinged rufous on sides. Basal segment of ovipositor shining dark reddish brown to black, ca. equal in length to terga 4–6. Male genitalia as in Hardy (1973: 309, Fig. 150a, b).

Lengths: body and wing 4.0–4.5 mm; width of wing 2.5 mm.

Distribution. Widespread over Oriental Region as recorded by Hardy (1973: 310, 1974: 227).

Specimens examined. A large series from over range of species. 1, INDONESIA: JAVA: Pekalongan, V.1907 (F. Muir); 1, MALUKU: Larat Is, XII.1907 (F. Muir).

Remarks. This species appears to fit rather close to *Tephrella* Bezzi, as defined for Indonesia–New Guinea species, by having only basal scutellars present and lacking a bare area on vein R_1 opposite the end of vein Sc. Until we can obtain a better understanding of the phylogenetic relationships, I prefer to treat this as an aberrant *Platensina*.

Genus **Pliomelaena** Bezzi

Euresta (*Pliomelaena*) Bezzi, 1918, Bull. Entomol. Res. 8: 220. (Key): 1918, op. cit. 9: 30 (descr.). Type-species, *Pliomelaena brevifrons* Bezzi. By designation of Munro (1937:13).

Protephritis Shiraki, 1933, Mem. Fac. Sci. Agric. Taihoku Imp. Univ. 8: 439. Type-species: *Tephritis sauteri* Enderlein. By original designation.

Indaresta Hering, 1941. Arb. Morphol. Taxon. Entomol. Berlin 8(1): 36. Type-species: *Indaresta callista* Hering. By original designation. **New synonymy.**

I find no characters for separating *Indaresta*. Hering treated this in the *Euaresta* group of genera and differentiated it by the pilose front, the dorsocentral bristles just behind the suture, and the apical scutellars being shorter than the basal bristles. I find fine pile in the middle of the front, the dorsocentral bristles just slightly in front of supraalars, and the apical pair of scutellars subequal in length to basal pairs in *I. callista* Hering fitting most *Pliomelaena* that I have examined. In *P. assimilis* (Shiraki), from the Ryukyu Islands, and *Pliomelaena* undescribed species B, from Papua New Guinea, the apical scutellars are ⅕–¼ the size of the basal bristles and in *Pliomelaena* undescribed species A, from Irian Jaya, they are about ½.

Pliomelaena fits in the group of genera having 4 scutellar bristles; vein R_{4+5} setose above to at least the r-m crossvein; 3 pairs of inferior fronto-orbital bristles and 2 pairs of superior fronto-orbitals; the face concave, projected on epistomal margin; the proboscis short, labellum fleshy; the wing with prominent hyaline marks around the margin; crossvein r-m near apical ⅔ of cell 1st M_2; and cell Cu developed into a short point at lower apex. It is closest to *Sundaresta* Hering and differs from it by having the median portion of the front distinctly pilose; the basal segment of the female ovipositor comparatively short, ca. equal in length to terga 5+6 or 4+6 (longer than abdomen in *Sundaresta*); the abdomen subshining, lightly pollinose, not obscuring ground color (densely gray pollinose in *Sundaresta*); and by having only 1 hyaline mark in apex of cell R_3 (2 marks in *Sundaresta*).

Pliomelaena has been considered close to *Platensina* Enderlein because vein R_{4+5} is setose above, the front is broadly rounded, not angulate, at base of the antenna, the parafacials are narrow, and the wing is dark brown with comparatively few hyaline spots. It was placed in Platensinini by Munro (1937: 13) and in Aciurinae, Aciurini by Cogan & Munro (1980: 538). *Pliomelaena* differs from *Platensina* by having a bare area on vein R_1 opposite the end of Sc and the wing normal in shape, nearly 3 × longer than wide. Most species have large apical scutellars, equal or subequal to basal bristles [small, poorly developed in *assimilis* (Shiraki) from Taiwan and Ryukyu Islands].

For further details refer to Munro (1937: 13).

Seven species from the Afrotropical Region and 6 from the Oriental Region have

been placed under this genus. Two of the latter have been recorded from the area treated in this study.

Hosts. According to Munro (1937: 27), the larvae live in developing flowers of Acanthaceae (*Hyposestes*, *Justicia*, and *Rhinacanthis*) in Africa.

Key to known Pliomelaena *from the Oriental and Australasian Regions*

1. Wing with cell R_5 predominantly dark brown (Fig. 24a) 2
   Cell R_5 with large hyaline marks filling cell before and after r-m crossvein (Hering 1942a: 16, Fig. 6) ... (Sri Lanka) .... **translucida**
2(1). Cells R_3 and R_5 with only a few hyaline spots and with 3–4 marks in cell 2nd M_2 (Fig. 24a) 3
   Cells R_3 and R_5 with numerous small hyaline spots and cell 2nd M_2 with 8 spots (Shiraki 1933, pl. XII, Fig. 6) ... (Taiwan) .... **sonani**
3(2). Wing with only 2 hyaline marks in cell R_1 4
   With 3 hyaline marks in R_1 5
4(3). With a hyaline spot in cell R_5 before r-m crossvein and a large hyaline mark in middle of cell 1st M_2 continuous with marks in cell M_4; abdomen rufous with black bands on bases of terga 3–5 male and 3–6 female ... (India) ..... **zonogastra**
   No hyaline mark in R_5 before r-m, and small spot in middle of 1st M_2 isolated (Hardy 1974: 244, Fig. 138a) ... (Philippines) ... **luzonica**
5(4). Wing with only a single hyaline spot in cell R_3 directly below the basal 2 hyaline marks in R_1 and with no hyaline mark in cell R_5 basad of r-m crossvein (Fig. 24a); apical scutellars large, equal or subequal to basal bristles 6
   With 2 hyaline marks in R_3 beneath marks in R_1; with a spot in R_5 basad of r-m and with apical scutellars ca. ½–¼ size of basal bristles 7
6(5). With a subbasal hyaline mark bisecting cell Sc ... [Taiwan; Java (?)] ..... **sauteri**
   Cell Sc with only a tiny prebasal hyaline spot on margin just beyond the costal spines (Fig. 24a) . . . (Nusa Tenggara; Papua New Guinea) ..... **callista**
7(6). With only 1 hyaline spot on margin in apex of cell R_3 and no preapical hyaline spot on upper margin of cell R_5 (Fig. 26); apical scutellars ca. ¼ size of basal bristles 8

With 2 spots in apex of R_3; a small preapical hyaline spot on upper margin of R_5 and other wing markings as in Fig. 25; apical scutellars ca. ½ size of basal bristles... (Irian Jaya) ..... **Undescribed species A**

8(7). Hyaline mark filling apex of cell R_5; with a hyaline mark across base of cell Sc; with a narrow streak of brown across middle of 2nd costal cell; with 1st mark in cell R_1 nearly 2 × longer than 2nd and with 4 hyaline marks in cell 2nd M_2 (Shiraki 1968: pl. 30, Fig. 1) ... (Ryukyu Is) ..... **assimilis**

Hyaline mark filling less than ½ of apex of R_5; cell Sc all dark brown except for tiny pale spot on upper basal margin; a broad band of brown across middle of 2nd costal; 2 basal hyaline marks in R_1 subequal and with only 3 spots in 2nd M_2 (Fig. 26) ... (Papua New Guinea) ..... **Undescribed species B**

Pliomelaena callista (Hering), new combination Fig. 24

Indaresta callista Hering, 1941, Arb. Morphol. Taxon. Entomol. Berlin Dahlem 8(1): 36. Type-locality: Batoe Doelang, W Soembawa (Sumbawa), Nusa Tenggara, Indonesia. Type female in DEI.

Diagnosis. Fits in complex of species that have 3 hyaline spots in cell R_1 and only a single spot in cell R_3 directly below the basal 2 hyaline marks in R_1, no hyaline mark in cell R_5 basad of r-m crossvein, and hyaline mark in apex of cell R_5 not filling cell. It fits very close to *P. sauteri* (Enderlein), and may prove to be a synonym. The only character that I find for separating *callista* is the presence of only a tiny prebasal hyaline spot on margin in cell Sc just beyond costal spine (Fig. 24a) (one specimen on hand has Sc all brown); Enderlein's figure of *sauteri* (1911: 457, Fig. 5a) shows the prebasal portion of cell Sc completely bisected by a hyaline mark. My photograph of a syntype specimen of *sauteri* shows a subbasal spot extending ca. halfway to cell Sc; this is probably a variable character.

Head just slightly higher than long, with frontal, ocellar, and vertical bristles yellow tinged with brown and with postvertical and occipital row strong, flat, and white, with small dark brown to black setae interspersed in occipital row. Interfrontal area rather densely fine yellow pilose over median portion. Third antennal segment short, scarcely ½ longer than wide and arista sparsely pubescent. Bristles of thorax pale yellow, tinged lightly with brown. Dorsocentrals just slightly in front of supra-alars and apical scutellars almost equal to basal pair. Thorax densely gray pollinose, completely obscuring the predominantly black ground color. Ground color of humerus, propleuron, and hind margin of scutellum yellow. Mesonotum densely

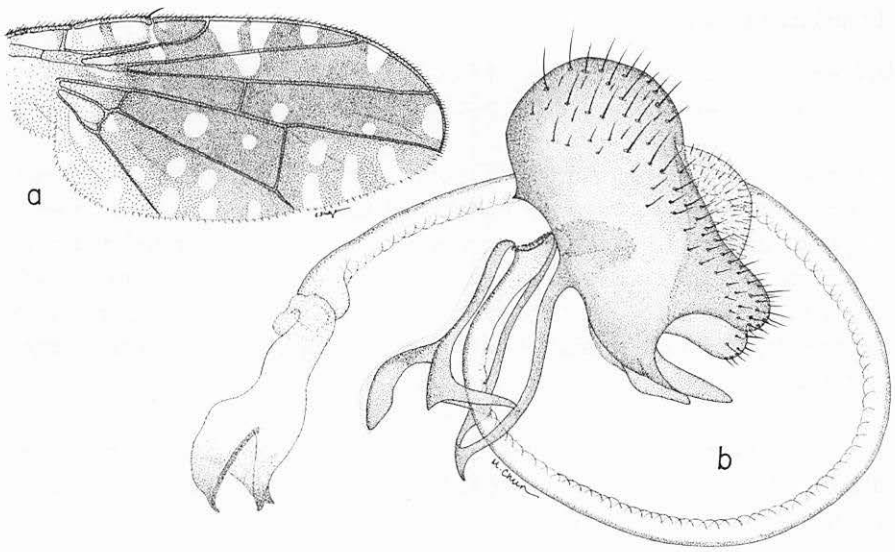


Fig. 24. *Pliomelaena callista*: a, wing; b, male genitalia.

covered with pale, thin, yellow-white setae. Scutellum setose over sides of disc. Halter yellow to rufous. Legs entirely yellow. Wing as noted above and as in Fig. 24a. Abdomen mostly subshining black, lightly gray pollinose on sides, yellow to rufous on apices of terga 2–3, and brownish yellow on narrow apices of 4–5. Mostly black setose but with yellow-brown setae on sides of terga 2–4. Sixth tergum of female shorter than 5th. Male genitalia with surstylus short, bilobed at apex, ending in a short blunt dorsal lobe and a fingerlike ventral lobe (Fig. 24b). Epandrium with a number of brownish yellow setae over dorsal portion. Male aedeagus smooth, dististylus largely membranous, trilobed at apex (Fig. 24b). Vanes of aedeagal apodeme widely separated. Basal segment of female ovipositor (segment 7) ca. equal in length to terga 4–6 and with spiracles near basal ¼ of segment. Spermathecae not observed.

Lengths: body and wing each 4.0–4.5 mm.

Distribution. Nusa Tenggara (Sumbawa and Sumba) and entire island of New Guinea.

Specimens examined. Type. 1♂, 1♀, PNG: NEW GUINEA (NE): Wau, 1,200 m, 12.VIII–7.XI.1965 (J. & M. Sedlacek, P. Shanahan); 1♂, IRIAN JAYA: Hittikima, 100 m, 19.II.1960 (T. C. Maa).

Remarks. Specimen from Irian Jaya has no spot in cell Sc.

Pliomelaena sauteri (Enderlein)

Tephritis sauteri Enderlein, 1911, Zool. Jahrb. Syst. 31: 456. Type-locality: Ryukokado, S Formosa. Lectotype male in PIZW, paralectotypes in DEI and BMNH.

Diagnosis. As noted under *P. callista* the only character I find for separating *sauteri* is one illustrated by Enderlein in his original figure: a subbasal mark in cell Sc completely dividing the cell. I suspect this is a variable character and that *sauteri* and *callista* are synonyms. A female paratype that I photographed has only a rather small subbasal spot in Sc extending ca. halfway across cell. Further specimens from over the range of both of these taxa need to be examined to clarify the range of variation.

Distribution. Taiwan and Java(?). Recorded from Muara Angkee, near Batavia (Jakarta), Java by de Meijere (1914: 217). I have not seen specimens from Java and cannot confirm the record.

Specimens examined. Type series.

Pliomelaena undescribed species A Fig. 25

Diagnosis. This species shows relationship with *P. assimilis* by the pattern of wing marks, the smaller apical scutellar bristles and the sparsely setose interfrontal area. It differs by having cell Sc dark brown, lacking a hyaline mark at base; 2nd hyaline mark in cell R_1 straight sided (not wedge shaped); cell R_2 with 2 hyaline spots (not 1) at apex, hyaline spot at apex of cell R_5 not filling cell; 2 hyaline marks (not just 1) on margin in cell 2nd M_2; with only 4 hyaline spots in cell M_4 in addition to the basal spot (not with 6 spots) (compare Shiraki 1968:81, pl. 30, Fig. 1), and by the abdomen subshining rufous, tinged with brown (black, entirely obscured by brownish gray tomentum in *assimilis*).

Fits characteristics of most *Pliomelaena*. Head and appendages yellow-rufous except for compound eyes and ocellar triangle and a spot of brown in upper medium portion of occiput. Frontal bristles dark brown to black except for brownish yellow upper superior fronto-orbital and pale brownish ocellars. Arista short pubescent. Thorax yellow on sides, humerus, and notopleuron, dark brown to black in ground color of dorsum except for a tinge of yellow-rufous along each side of suture. Disc of scutellum brown to blackish, broadly yellow on margin and on venter. Postscutellum and metanotum brown, covered with gray pollen and pleurotergon yellow, tinged with brown. Mesonotum densely gray pollinose and densely covered with pale yellow, squamose setae. Apical scutellars ca. ½ size of basal bristles. Legs entirely yellow. Wing as in Fig. 25. Abdomen as noted above. Genitalia not studied.

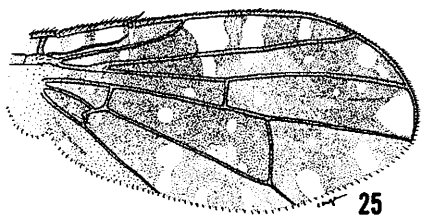


Fig. 25. *Pliomelaena* undescribed sp. A, wing.

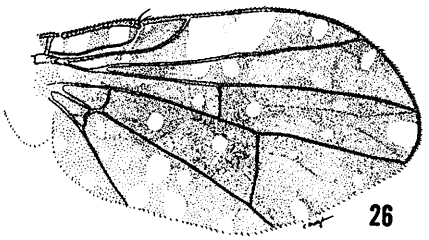


Fig. 26. *Pliomelaena* undescribed sp. B, wing.

Lengths: body 4.4 mm; wing 5.2 mm long by 2.24 mm wide.
Female unknown.

Specimens examined. 1 ♂, IRIAN JAYA: Fak-Fak (A. E. Pratt, Per Janson, C. J. Wainwright) BM 1948-488 (BMNH).

Remarks. The species is not being named until additional specimens can be examined.

Pliomelaena undescribed species B Fig. 26

Diagnosis. Fits in the *assimilis* complex of species by having the apical scutellar bristles poorly developed, scarcely over ¼ the size of the basal bristles and by the pattern of wing markings. It differs from *assimilis* by having a broad band of brown across middle of 2nd costal cell; having cell Sc entirely dark brown except for a tiny pale spot on upper basal margin; having 2 basal spots in cell R_1 subequal in size; apical spot in cell R_5 filling less than ½ width of cell and subapical spots in cells R_5 and R_3 faint, yellow-brown, not hyaline; having only 2 spots on margin in cell 2nd M_2 (Fig. 26) and abdomen shining, dark reddish brown to black.

Fits description of *assimilis*, with head mostly yellow except for broad black mark on upper medium portion of occiput. Thorax predominantly black in ground color, densely gray pollinose, with yellow scalelike setae over mesonotum. Dorsocentral bristles just slightly in front of a level with supraalars. Pleura mostly yellow-rufous, discolored with brown to black. Abdomen shining, yellow on narrow lateral margins of terga 1–2, rufous, tinged with brown over 1st tergum and bases of terga 2–3, black on apices on 2–3 and entirely shining black on terga 4–6. Basal terga lightly gray pollinose, terga 5, 6, and 7 polished black. Abdomen black setose except for some pale setae around base on 1st tergum. Basal segment of female ovipositor ca. equal in length to terga 4–6. Piercer slender, sharp pointed.

Lengths: body, excluding ovipositor, 3.6 mm; wing 4.4 mm long by 2.16 mm wide.
Male unknown.

Specimens examined. 1♀, PNG: NEW GUINEA (SE): Central Prov, Tapini, 1,000 m, 3.IX.1983, in grassland (J. W. Ismay).

Remarks. The specimen is being retained in BPBM until further specimens can be studied.

Genus Scedella Munro

Scedella Munro, 1957, Br. Mus. (Nat. Hist.) Ruwenzori Exped. 1934–35 Vol. 2(9). Trypetidae: p. 988. Type-species: *Trypeta caffra* Loew.
By original designation.

This genus was erected for 14 African species and *S. spiloptera* (Bezzi), from India and Sri Lanka. One additional Oriental and Pacific species, *S. formosella* (Hendel), has been placed here (Hardy 1973: 323). It fits in the group of genera that have 4 scutellar bristles, vein R_{4+5} bare except for a few setae at base above, and mouthparts that are comparatively short, not conspicuously geniculate, with labium about equal in length to palpus and labellum rather fleshy, about ½ as long as oral opening. It is closest to *Tephritis* Latreille but differs from it by having the apical scutellars large, subequal in size to the basal pair; the dorsocentral bristles distinctly behind the suture; the aedeagus of the male with a dense patch of dorsal setae near the apex of the basiphallus (Hardy 1974: 244, Fig. 139a), wing markings as in Fig. 27a, and lower lobe of squama narrow, reduced to just a thin strip, less than ½ width of upper lobe. For further details refer to Munro (1957a: 988).

Hosts. Breeds in flowerheads of Compositae.

Scedella formosella (Hendel) Fig. 27

Euribia formosella Hendel 1915, Ann. Hist. Nat. Mus. Natl. Hung. 13: 465. Type-locality: Tainam, Taiwan. Syntypes male, female in TMB.
Euaresta punctata Shiraki, 1968, Bull. U.S. Natl. Mus. 263: 73. Type-locality: Iriomote Island, Ryukyu Islands. Type male in USNM.

Diagnosis. Differs from *S. spiloptera* (Bezzi) by the distinctive wing markings (compare Fig. 27a with Bezzi's (1913), Pl. 10, Fig. 68). The distinctive features are a broad brown mark across middle of 2nd costal section, only a tiny hyaline spot at base of cell Sc, only 1 hyaline spot at apex of cell R_3, hyaline spots at apices of cells R_5 and 2nd M_2 distinctly separated by brown, and median portion of wing predominantly brown with small hyaline spots (predominantly hyaline with lines of brown in *spiloptua*).

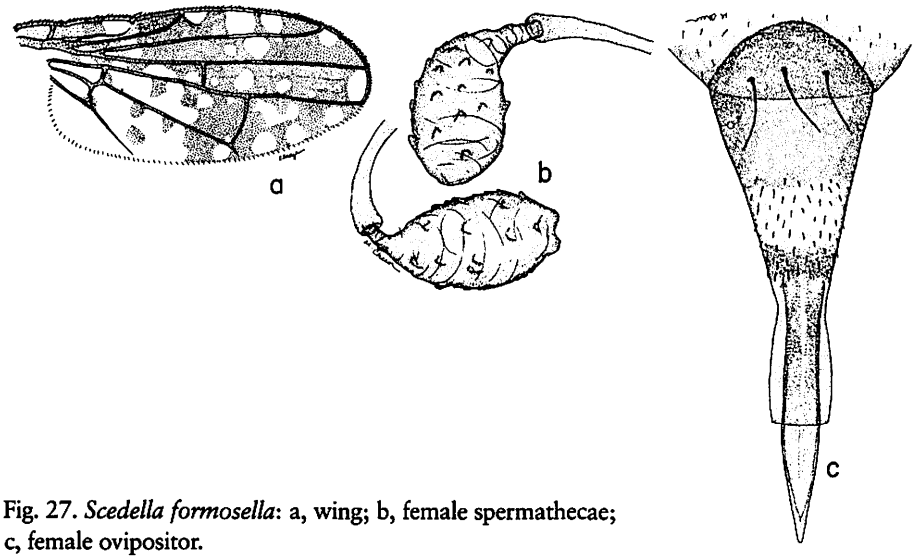


Fig. 27. *Scedella formosella*: a, wing; b, female spermathecae; c, female ovipositor.

Head ca. as high as long, with front gently sloping and antenna near upper ⅓ of head as seen in lateral views (Hardy 1974: 244, Fig. 139d), with 2 pairs inferior fronto-orbital bristles on lower ½ of front and 2 pairs superior fronto-orbitals on upper ¼. Interfrontal area bare, parafrontalia with fine yellow setae along orbits. Third antennal segment broad, rounded at apex, approximately 2 × longer than wide. Arista short pubescent. Face gently concave with epistomal margin slightly protruded. Upper superior fronto-orbital, outer vertical and genal bristles flattened, pale yellow-white. Other bristles of dorsal surface of head black except for postverticals; occiput and gena yellow-white setose. Thorax mostly black in ground color, yellow on humerus, notopleuron, and scutellum, and densely gray pollinose, obscuring ground color. Mesonotum with 3 faint, brown, longitudinal vitae and densely covered with scalelike yellow-white setae. Dorsocentral bristles ⅓–½ distant between supraalars and suture. Most thoracic bristles black, pteropleurals and lower mesopleurals yellow-white. Humerus with a clump of flattened, yellow-white setae on front margin and propleuron with a row of similar setae on front margin. Apical scutellars almost equal in size to basal bristles. Legs yellow except for a faint tinge of brown in middle of hind femur. Lacking anteroventral bristles on hind femur. Wing as in Fig. 27a; cell Sc slightly over ½ as long as 2nd costal, dark brown except for a small hyaline spot at base; 3 hyaline spots in cell R_1; 1 at apex of R_3 and 1 filling apex of R_5; 5 hyaline spots in cell 2nd M_2. Crossvein r-m near apical ⅔ of cell 1st M_2, cell Cu with a short pointed lobe at apex. Abdominal terga 1–2 yellow, tinged with brown, abdomen otherwise predominantly black in ground color, dense-

ly gray pollinose, with a pair of brown submedian spots on terga 3–5 in male and 3–6 in female. Terga rather densely covered with flattened, subrecumbent, scalelike setae, not extended onto ovipositor base in female. Fifth tergum of male with 6–8 black bristles at apex. Fifth sternum of male ca. as wide as long, with a V-shaped concavity on hind margin extending nearly ½ length of sclerite. Cercus ca. 2 × higher than long and surstylus short and broad, blunt apices. With 2 prominent black teeth at apex of each lobe of 10th sternum. Aedeagus with a dense clump of short setae on each side just before glans (Hardy 1974: 244, Fig. 139a). Vanes of aedeagal apodeme slender, widely separated. Basal segment of female ovipositor shining, covered with thin brown setae and mostly rufous, tinged with brown on basal ½ and at extreme apex. Spiracles situated at basal ⅓ of 7th segment. Piercer moderately broad, moderately tapered to sharp point at apex (Fig. 27c). Two oblong densely spiculated spermathecae (Fig. 27b).

Lengths: body and wing 3.0–3.25 mm.

Distribution. Widespread over Oriental Region and Pacific as recorded by Hardy (1973: 323, 1974: 245); recorded from Nusa Tenggara by Hering (1941c: 38). Maluku and entire island of New Guinea.

Specimens examined. A large series from over known range of species including a number of localities in Sarawak, Maluku, Papua New Guinea, Irian Jaya, New Britain, New Ireland, and the Solomon Islands.

Host. Specimens have been reared from flowers of *Wedelia biflora.*

Genus Soraida Hering

Soraida Hering, 1941, Arb. Morphol. Taxon. Entomol. Berlin-Dahlem 8(1): 34. Type-species, *Soraida tenebricosa* Hering. By original designation.

Hering placed this genus in the tribe Terelliini, under Tephritinae. Later (Hering 1961: 324) he treated it as belonging to subfamily Terelliinae, related to *Hyleurinus* Ito, from Japan, *Axiothauma* Munro, from Africa, and *Galada* Hering, from Afghanistan. He differentiated it from these genera by the dorsocentral bristles at a level with the suture and the wing without markings. I do not agree with this placement; the only constant character that I find for differentiating the tribe Terelliini (or subfamily Terelliinae) is that the upper superior fronto-orbital bristles are bent inwards, whereas in other Tephritinae the superior fronto-orbital bristles are usually reclinate. Other characters that have been used to differentiate the terelliines are duplicated in the Tephritinae. *Soraida* has both superior fronto-orbitals reclinate and

I prefer to treat it in Tephritini. *Soraida* differs from other known Tephritinae from the Oriental or Australasian regions by lacking distinct markings on the wing in combination with having the head, bristles mostly black with only the outer verticals flattened, yellow-white, and with flattened white setae interspersed in the occipital row, and by having dorsocentral bristles situated on or near the suture.

Head slightly higher than long, with front gently sloping, antenna near middle of head and face short, concave, with epistomal margin produced. Three pairs of strong inferior fronto-orbital bristles on lower ½ of front and 2 pairs of reclinate superior fronto-orbital bristles on upper ¼. Ocellar bristles strong, equal or stronger than frontal bristles. Wing as in Fig. 28 and other characters as described under species below.

Only 1 species is known.

Soraida tenebricosa Hering Fig. 28

Saoraida tenebricosa Hering, 1941, Arb. Morphol. Taxon. Entomol. Berlin-Dahlem 8(1): 35. Type-locality: Plawangan, Lombok. Type female in DEI.

Diagnosis. Differentiated by characters given under genus above. With additional characters, as follows. Occiput somewhat concave above, swollen on lower portion. Occipital row of bristlelike setae mostly black, with thick, flat yellow-white setae interspersed. Upper superior fronto-orbital and outer vertical bristles flattened, yellow-white, head bristles otherwise black. Head and appendages yellow-rufous except for shining black triangle and reddish brown compound eye, also upper hind portion of occiput black in ground color. Third antennal segment short, broadly rounded at apex, ca. 1¼ × longer than wide. Proboscis geniculate but not greatly elongate, labellum shorter than oral margin. Thorax black in ground color, rather densely gray pollinose, more gray-brown on dorsum. Halter yellow-white. Thorax with full complement of mostly black bristles, with pteropleurals and sternopleurals yellow-brown and mesopleuron with several yellow-white bristlelike setae directly below strong black mesopleural bristle. Four scutellars with apical bristles shorter than basal. Setae of thorax mostly yellow-white but with fine blackish setae in middle and with flat, stubby scalelike setae on anterior and posterior portions of mesonotum. Legs rufous, tinged faintly with brown. Wing evenly tinged, smokey gray to faint brownish, with cell Sc pale brown. Costal spine moderately developed ca. equal in length to upcurved portion of vein Sc. Cell Sc ca. ½ as long as 2nd costal section. Vein R_{2+3} straight and vein R_{4+5} gently convex on last section, parallel with vein M_{1+2}. Crossvein r-m situated at apical ⅗ of cell, 1st M_2 and cell Cu slightly pointed at lower apex but not distinctly lobate (Fig. 28). Abdomen black in ground color, gray pollinose and white setose, with distinct black bristles on apical margins of terga 3–5 in male and

3–6 in female. Sixth tergum of female slightly longer than 5th. Basal segment of female ovipositor rufous, narrowly black at apex, ca. as long as terga 5+6 and entirely covered with white setae.

Length: wing 4.6 mm.

Distribution. Nusa Tenggara.

Specimens examined. Type♀ from Lombok (DEI) and 1♂ labelled "paratype" from Sunda I (BMNH). Known only from these 2 specimens.

Genus **Sphenella** Robineau-Desvoidy

Sphenella Robineau-Desvoidy, 1830, Mem. Pres. Acad. R. Sci. Inst. Fr. 2: 773. Type-species: *Sphenella linariae* Robineau-Desvoidy [= *marginata* (Fallén)]. By monotypy.

Sineura Lioy, 1864, I. R. Ist. Veneto di Sci., Let. ed Arti, Atti Ser. 3, 9: 1024. Type-species: *Tephritis marginata* Fallén. By monotypy.

Sineura, emendation or error.

Sphenelle, error.

Sphenella fits in the group of genera that have 4 scutellar bristles, vein R_{4+5} bare except for a few dorsal setae at base, and the proboscis moderately long, geniculate. It fits closest to *Paroxyna* Hendel and differs by the distinctive wing markings: a broad preapical hyaline crossband just beyond m crossvein (Fig. 29) (brown with scattered hyaline spots over wing in *Paroxyna*) and lower squama broad, subequal in width to upper (narrow, reduced to a thin stripe, scarcely ½ width of upper in *Paroxyna*). It is also related to *Paratephritis* Shiraki but differs from it by having vein R_{4+5} bare except for a few setae at the base and by the different wing markings.

Head ca. as long as high, with bristles and setae typical of Tephritini, including flat white upper inferior fronto-orbital and outer vertical bristles. Front strongly sloping, rather densely covered with flat, recumbent, scalelike, yellow-white setae. With 2 pairs inferior fronto-orbital bristles rather widely spaced on lower ½ of front and 2 pairs rather closely placed superior fronto-orbitals on upper ¼. Antenna at middle of head as seen in lateral view, 3rd segment broad, ca. 2 × longer than wide, arista short pubescent. Face concave in middle as seen in lateral view with epistomal margin produced. Mouthparts moderately long and geniculate, labium equal or slightly longer than oral opening and labellum linear, subequal to length of oral opening. Mesonotum, sides of scutellum, and dorsum of abdomen densely covered with flat, scalelike white setae, these extending over basal ½ of 7th segment (ovipositor base) in female. Dorsocentral bristles ca. at level with supraalars. Hind femur with short anteroventral bristles at apex. Wing as in Fig. 29. Male genitalia

apparently distinctive by having only a single strong black tooth at apex of inner lobe of surstylus ("prensiseta" of Munro). Sixth tergum of female equal to slightly longer than 5th. Female ovipositor short and thick, basal segment subequal in length to terga 5+6, and with spiracular openings on venter at basal ⅔ of segment. Piercer abruptly tapered at apex. Two oval, densely spiculated spermathecae (Fig. 31d). Vanes of male aedeagal apodeme narrow, widely separated.

The genus has been treated in detail by Munro (1957b: 25). Of the species he was able to identify, 1 is European, 1 Oriental, 1 Australian, and 11 African, including 3 subspecies of *marginata*, which ranges from Europe to Africa and Australia. The concept of *marginata* and the complex of closely related species is still not clarified. Considerable variation in wing markings and coloration of femora is evident, but I feel that the Australian taxon *S. ruficeps* (Macquart) should be raised to specific status. I am considering 4 species in the Oriental and Australasian regions.

Biology. According to Munro (1957b: 17) *Sphenella* species infest flowerheads of Compositae, sometimes causing swelling. The type species has been bred from *Senecio* spp. in Africa and Europe.

Key to known Oriental and Australasian Sphenella

1. With hyaline marks along anterior margin of wing in addition to the preapical hyaline crossband: 2 in 2nd costal cell, 2 in cell R_1, and 1 at upper apex of R_3 (Fig. 30b) 2

   Brown markings of wing not interrupted by hyaline spots (Fig. 29) ... (Java) ..... **nigropilosa**

2. Apical brown marking shaped hookline on upper basad margin and with no hyaline spots except sometimes an isolated spot at upper apex of cell R_3 (Fig. 31c) 3

   Basad margin of apical brown mark straight and with a number of hyaline spots; brown marking over median portion of wing forming a hooklike shape in cells 1st M_2 and M_4 (Fig. 30b) ... (New Guinea) ..... **novaguineensis, n. sp.**

3. Transverse preapical hyaline marking over wing with margins diverging in posterior portion and through cells R_5 and 2nd M_2 2½–3 × wider than brown fascia over wing through crossveins ... (Australia) ..... **ruficeps**

   Hyaline marking with margins parallel and through cells R_5 and 2nd M_2 subequal in width to brown marks over crossveins and in wing apex (Fig. 31c) ... (widespread over Oriental Region and New Guinea) ..... **sinensis**

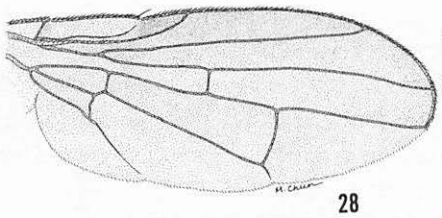


Fig. 28. *Soraida tenebricosa*, wing.

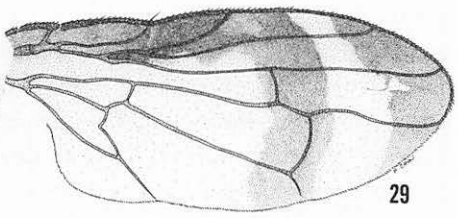


Fig. 29. *Sphenella nigropilosa*, wing.

Sphenella nigropilosa de Meijere Fig. 29

Sphenella nigropilosa de Meijere, 1914, Tijdschr. Entomol. 57: 220. Type-locality: Gunung Ungaran, Java. Type male in ZMUA.

Diagnosis. Differentiated by wing markings given in key above.

Wing markings distinctive—markings and venation as in Fig. 29; anterior border brown from base of 1st costal section to ca. middle of cell R_3, continuing as a broad, transverse band across wing over r-m and m crossveins, and apex of wing broadly brown across apices of cells R_1, R_3, R_5 and probably 2nd M_2; no hyaline spots present in brown markings. Crossvein r-m near apical 4/5 of cell 1st M_2 and m crossvein convex. Thorax mostly black in ground color, densely gray-brown pollinose and with flattened scalelike yellow-white setae over mesonotum. Scutellum yellow, tinged with brown. Abdomen mostly rufous with broad brown basal margins on terga and mostly brown to black setose with some pale hairs on sides of 1st 2 terga.

Lengths: body and wing each 3.5 mm.

Female unknown.

Distribution. Java. Known only from type.

Specimens examined. Type.

Remarks. Munro (1975b: 25) says, "this does not seem to be a *Sphenella*, but may come within the group." I have studied the type in ZMUA; it is in poor condition, but from the wing it does appear to fit in this genus. The head is missing, the thorax is broadly damaged, and only 2 legs and 1 wing remain.

Sphenella novaguineensis Hardy, **new species** Fig. 30

Diagnosis. Appears to fit near *S. atra* Munro, from South Africa, because of the distinctive wing markings. It differs by having numerous hyaline spots around margin

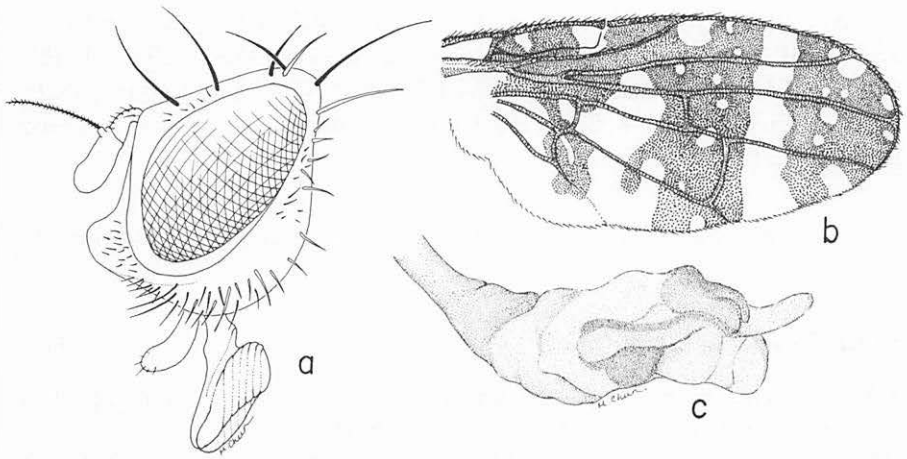


Fig. 30. *Sphenella novaguineensis*: a, head; b, wing; c, glans of aedeagus.

and through the brown areas of the wing, the basad border of apical brown marking transverse; by the formation of a hooklike process on basal margin of median brown marking in cells 1st M_2 and M_4 and the extension of the brown mark from basal portion of wing transversely through cells basal radial, basal medial, basal portion of M_4 and upper portion of anal cell [compare Fig. 30b with Munro's (1957b: 52) Fig. 24].

MALE. *Head*. Typical for genus and as in Fig. 30a. Front rather densely covered with suberect, flat, scalelike setae, type with a few thin brown setae on lower median margin just above lunule. Occiput yellow-white setose except for a few small brownish, tinged with yellow, setae in occipital row. Gena and lower margin of face yellow-brown setose. *Thorax*. Typical of other *Sphenella*. Mesonotum and sides of scutellum densely covered with flat, subrecumbent scalelike setae. *Legs*. Yellow with a faint tinge of brown in median portions of femora. *Wing*. As noted above and as in Fig. 30b. *Abdomen*. Broadly black on posterior borders of terga, yellow at apices, predominantly brown setose with some flattened yellow-white setae on posteromedian portion of 2nd tergum. Genitalia similar to that of *S. sinensis* Schiner but distiphallus distinctive (as in Fig. 30c).

Lengths: body and wing each 3.8–4.0 mm.

FEMALE. As male. Basal segment of ovipositor mostly black, tinged rufous in median portion, short and broad, in situ ca. as wide as long and scarcely longer than 6th abdominal tergum. Sixth tergum slightly longer than 5th.

Type data. Holotype ♂ (BPBM 13623), PNG: BISMARCK ARCH: NEW BRITAIN: Sio, N Coast, 600 m, 24.VII.1956 (E. J. Ford Jr.) Allotype ♀

(BPBM), IRIAN JAYA: Bokomdini, 40 km N of Balien Val, ca. 1,300 m, 16–23.XI.1961 (L. W. Quate). Paratypes: 2♂, 1♀, IRIAN JAYA: Kulima, 1,400 m, 19–22.II.1960 (T. C. Maa). PNG: NEW GUINEA (NE): Banz, 1,600 m, IX.1959 (Maa); Western Highlands, Baiyer Riv, 1,150 m, "*Castanea*-like trees" (J. L. Gressitt). Paratypes in BM, NH, and UH.

Etymology. The specific epithet is the Latinization of "New Guinea."

Sphenella sinensis Schiner Fig. 31

Sphenella sinensis Schiner, 1868, Reise Osterreichischen Freg. *Novara*, Zool. Dipt. 2: 267. Type-locality: Shanghai, China. Type female in NHMV.

Sphenella indica Schiner, 1868, Reise Osterreichischen Freg. *Novara*, Zool. Dipt. 2: 267. Type-locality: Madras, India. Type male in NHMV.

Trypeta sinensis Thomson, 1869, K. Sven. Freg. *Eugenies* Resa, Zool. 1: 585. Type-locality: China. Type male in NRS.

Diagnosis. Fits in the *marginata* complex of species and differs by having the hyaline preapical transverse band over wing parallel-sided, not with margins diverging in posterior portion at widest point. In cells R_5 and 2nd M_2, the band is subequal in width to the brown bands across wing apex and over middle of wing. In *S. marginata* the margins of the hyaline marking strongly diverge in the posterior portion of the wing and in cells R_5, and 2nd M_2 is ca. 3 × wider than the brown crossbands in apex and over middle of wing.

Described by Hardy (1973: 323, 1974: 324). Head as in Fig. 31a. Wing as in Fig. 31c. Occasionally with a small isolated hyaline spot at upper apex of cell R_3, showing considerable variation in shape of hooklike marking of upper basad portion of brown apical mark and in shape and intensity of brown markings in cell M_4 along vein M_{3+4}. Femora typically brown to black. Male genitalia as in Figs. 31e, f. Munro (1957b: 42) indicated that the aedeagus is distinctive "the end of the tube is strongly bent and the vesica apparently much reduced. This may be accidental and more male terminalia should be studied." I have dissected a number of specimens from over range of species and the distiphallus terminates in 2 thin extensions of tissue. Female ovipositor as in Fig. 31b and spermathecae as in Fig. 31d.

Lengths: body and wing each 3.2–3.6 mm.

Distribution. Widespread over Oriental Region and New Guinea.

Specimens examined. Numerous specimens from over range of species.

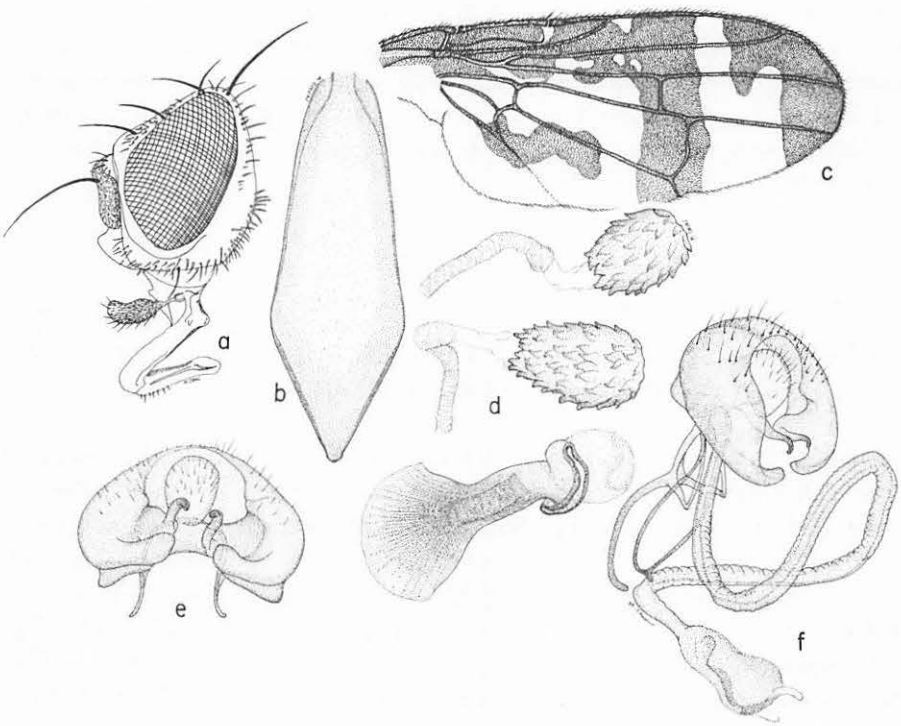


Fig. 31. *Sphenella sinensis*: a, head; b, female piercer; c, wing; d, female spermathecae; e, male genitalia, end view; f, male genitalia, lateral.

Remarks. Munro (1957b: 41) attributed the name *sinensis* to Thomson, but as I have pointed out (Hardy 1968: 140), it should be attributed to Schiner 1868.

Genus **Sundaresta** Hering

Sundaresta Hering, 1953, Verh. Naturforsch. Ges. Basel 64(1): 78. Type-species: *Sundaresta hilaris* Hering. By original designation.

Sundaresta fits in the complex of genera that have 4 scutellar bristles, vein R_{4+5}setose above to at least level of r-m crossvein, 3 pairs of inferior fronto-orbitals and 2 pairs of superior fronto-orbitals, the wing with 2 approximal hyaline marks across cell R_1 just beyond the apex of vein R_1 and markings as in Fig. 32a, and the 6th tergum of the female slightly shorter than the 5th. It is very close to *Pliomelaena* and the only differences I see are that the front is bare except for a few short inconspicuous

pale setae that are visible only under high magnification (densely pilose over median portion in *Pliomelaena*); the head is slightly angulate in lateral view at junction of front and face (rounded in *Pliomelaena*); the basal segment of the female ovipositor is longer than the remainder of the abdomen (about equal in length to segments 4–6 in *Pliomelaena*); cell R_3 has 2 hyaline marks in apex (only 1 in *Pliomelaena*). In all other characters it fits *Pliomelaena*.

Only 1 species is known.

Sundaresta hilaris Hering Fig. 32

Sundaresta hilaris Hering 1953, Verh. Naturforsch. Ges. Basel 64(1): 79. Type-locality: Pogobina, West Sumba Island. Type female in NHMB.

Diagnosis. In most respects fits description of *Pliomelaena callista*. Head and body bristle all yellow with a faint tinge of brown except for the yellow-white, flattened postvertical and occipital bristles. Separated by the generic characters given above.

Front rufous down middle, gray-white pollinose along orbits with few pale inconspicuous hairs in interfrontal area, visible under high magnification. Thorax mostly black in ground color but completely obscured by dense gray pollen. Humerus, propleuron, posterodorsal margin of each sternopleuron, and area just below wing base yellow. Scutellum yellow on margin and on venter. Mesonotum with 3 pale brown longitudinal vittae extending down middle from ca. opposite humerus to just beyond dorsocentral bristles, a brown spot at base of each prescutellar bristle, and a faint streak of brown on each side extending from inner postalar almost to suture. Dorsocentral bristles just slightly in front of level with supraalars. Wing with venation and markings as in Fig. 32a: a mark of brown over humeral crossvein; 2 streaks of brown across 2nd costal section; a narrow brown streak across prebasal portion of cell Sc, followed by a rather broad hyaline crossband; usually 3 hyaline marks across cell R_1 (1 specimen on hand has only 2, apparently variable); 3 hyaline spots at apex of cell R_3, and several small hyaline spots in remainder of cell R_3; cell R_5 with 4 hyaline spots beyond r-m crossvein and 1 before; cell 2nd M_2 with 5 hyaline marks; cell 1st M_2 with 4 and cell M_4 with 8 hyaline spots. Cell Sc ca. ¾ as long as 2nd costal section. Costal spines moderately developed, ca. ⅔ as long as upcurved portion of vein Sc. Crossvein r-m near apical ⅔ of cell 1st M_2 and cell Cu ending in a short but distinct apical lobe (Fig. 32a). Vein R_1 with a bare area opposite end of Sc, vein R_{4+5} setose to beyond m crossvein. Abdomen mostly black in ground color, narrowly yellow to rufous at apices of terga, densely gray pollinose, and covered with fine yellow setae. Basal segment of female ovipositor shining dark brown to blackish, yellow on narrow margin of apical ⅓, elongate, equal or slightly longer than remainder of abdomen. Piercer evenly tapered to a sharp point at apex (Fig. 32b).

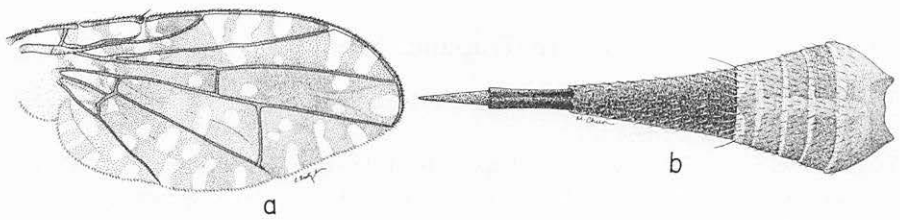


Fig. 32. *Sundaresta hilaris*: a, wing; b, female abdomen.

Lengths: body, excluding ovipositor, 4.0 mm; basal segment of female ovipositor 2.16 mm; wing 3.5 mm. Hering measured the wing length as 5.8 mm.

Male unknown.

Distribution. Nusa Tenggara (Sumba Island) and Java.

Specimens examined. Type. 2♀, INDONESIA: JAVA: Cibodas, 1,400 m, 26.III.1975 (D. E. Hardy).

Genus **Tephritis** Latreille

Tephritis Latreille, 1804, Nuov. Dict. Hist. Nat. Deterville 24: 196. Type-species: *Musca arnicae* Linnaeus. By designation of Cresson (1914: 278).
Euribia, Hendel, 1914, Wien. Entomol. Z. 33: 96 (nec *Euribia* Meigen, 1800).

A number of species from Indonesia–New Guinea were originally assigned to *Tephritis*, but all have been removed and placed in other combinations. I have not seen *Tephritis* from this region, but this genus is so ubiquitous it probably will be found here. It is well represented in the Australian fauna.

Tephritis fits in the complex of genera that have 4 scutellar and only 2 inferior fronto-orbital bristles, a gap in the setae on vein R_1 opposite the end of vein Sc, and vein R_{4+5} bare except for a few dorsal setae at the base. It is near *Paroxyna* Hendel and often has rather similar wing markings. It differs by having the proboscis short, not geniculate, with labellum fleshy and protruding only a short way beyond the oral margin. Cell Sc is lacking an isolated hyaline spot in the middle and the wing usually has radiating brown lines at the apex; the hind femur has 1–2 preapical anterodorsal and no preapical dorsal bristles; the abdomen is densely gray pollinose with no paired brown spots and the male aedeagus is bare, lacking setulae before apex.

No species have been recorded from Indonesia–New Guinea.

Genus Trupanea Schrank

Trupanea Guettard, 1762, Mem. Acad. R. Sci. Hist. Paris, 1756, p. 170–173. Unavailable name, author not binomial.

Trupanea Schrank, 1795, Naturhist. Okonom. Briefe Donaumoor, Mannheim, p. 147. Type-species: *Trupanea radiata* Schrank [= *Musca stellata* (Fuessley)]. By monotypy.

Trypanea. Emendation.

Urellia Robineau-Desvoidy, 1830, Mem. Pres. Acad. R. Sci. Inst. Fr. 2(2): 774. Type-species: *Urellia calcitrapae* Robineau-Desvoidy, [= *Musca stellata* (Fuessley)]. By designation of Coquillett (1910: 618).

Trupanea fits in the group of genera that have only basal scutellar bristles, no apical pair. Short mouthparts, with labellum fleshy and scarcely extending beyond edges of oral opening is characteristic of the genus; the wing pattern is very characteristic, usually with a dark area in center of wing from which narrow bands radiate to the anterior, apical, and posterior margins; most Indonesia–New Guinea species lack the radiating lines through the apex of cell R_5. Also characteristic are 3 pairs, inferior fronto-orbital bristles, and the male aedeagal distiphallus terminating in a prominent spinelike process (Fig. 34b).

Head ca. as high as long, with front gently sloping, almost straight and slightly angulate at base of antenna. Antenna near upper ⅓ of head, 3rd segment broad, 1½–2 × longer than wide, rounded at apex. Arista short pubescent over its entire length. Face gently concave and epistomal margin slightly protruded. Thorax and abdomen densely gray pollinose and rather densely yellow-white setose. Dorsocentral bristles usually near suture but may be variable in position. Lower squama narrow. Wing as noted above and as in Fig. 35. Vein R_{4+5} bare except for few setae at base. Third costal section (cell Sc) ca. ⅓–½ as long as 2nd costal section and crossvein r-m situated near apical ¼ of cell 1st M_2. Sixth tergum of female longer than 5th. Base of ovipositor shining, white setose on base and brown to black setose on apical ⅔, except in *T. latinota*, n. sp. Other details as noted in descriptions of species.

The species diagnoses are based largely upon differences in wing markings; too few specimens have been examined from Indonesia and New Guinea to assess the diagnostic value of some characters. Some species show considerable sexual dimorphism; others show none.

This is a large world-wide genus. Thirteen (including species 1 undescribed) are recorded for Indonesia–New Guinea.

Hosts. The larvae breed in flowerheads of a wide assortment of Compositae.

Key to known Trupanea *from Indonesia and New Guinea*

1. Lacking diverging brown lines through apex of wing (Fig. 38) ... 2
With brown marks radiating through apex of cell R_5 (Fig. 41b) .. 12

2(1). Wing with a complete, rarely broken apical ray of brown extending through lower apex of cell R_5 to costa in upper apex of cell 2nd M_2 (Fig. 45) 3
No complete apical ray 7

3(2). Apical ray expanded in upper apex of cell 2nd M_2; with broad, uninterrupted, brown mark over apex of cell 1st M_2, ca. equal in width to length of penultimate section of vein M_{1+2} (Fig. 45) ... (Solomon Is) ..... **undescribed species A**
Wing not as above; ray narrow, not expanded and apex of 1st M_2 narrowly brown or interrupted with hyaline spots 4

4(3). Wing not with a brown band extending from vein M_{1+2} just basad of r-m crossvein to margin across cells 1st M_2 and M_4; cell R_1 with 2 hyaline marks (Fig. 34a); with 3 pairs of inferior fronto-orbital bristles 5
Wing with a brown band to hind margin through cells 1st M_2 and M_4; R_1 with 3 hyaline marks (Fig. 37b); with 6 inferior fronto-orbitals ... (New Ireland) ..... **lyneborgi**

5(4). With a dark brown mark through cell Sc continuous as a narrow band to r-m crossvein; preapical brown band across cell 1st M_2 continuous to costal margin (Fig. 43) or to or beyond vein M_{3+4} (Fig. 44) 6
Cell Sc subhyaline and with a faint, pale brown discontinuous band extending to r-m; preapical band in 1st M_2 ending in vein M_{3+4} (Fig. 34a), or abbreviated; with little or no sexual dimorphism in wing markings ... (widespread: India; Java; Solomon I; New Guinea) ..... **asteria**

6(5). Female with apical brown ray ending in costa well below apex of vein M_{1+2}, leaving a hyaline area in upper apex of cell 2nd M_2; oblique brown mark from cell Sc not continuous with mark in middle of vein M_{3+4}, the latter mark small, not greatly expanded along vein and into cell M_4; preapical mark over 1st M_2 extending to wing margin (Fig. 43) (known only from female) ... (Nusa Tenggara) ..... **stulta**
Female with apical ray extending to costa along underside of vein M_{1+2}; oblique band from Sc continuous with a broad brown mark over cell R_5 basad of r-m crossvein, through middle of cell

1st M_2, and broadly expanded into cell M_4 along underside of vein M_{3+4}; preapical mark over 1st M_2 enclosing a small hyaline spot and extending just a short way into cell M_4; with 2 small brown marks at base of anal cell (male lacking apical band and running in couplet 8) . . . (Java) ..... **terryi, n. sp.**

7(2). Cell Sc all or mostly all brown, or with a distinct brown streak and with a narrow band of brown extending obliquely from cell Sc to r-m crossvein (Fig. 44), except in female *sarangana* Curran; with brown markings basad of r-m 8

Cell Sc hyaline except for a tiny spot of brown on upper margin at base; lacking brown band connecting to r-m and wing hyaline basad of r-m (Fig. 35) . . . (widespread over Pacific and Australasian regions) ..... **glauca**

8(7). With a brown mark extending from r-m crossvein through cell 1st M_2 and forming a hook-shaped mark or a broad expansion on vein M_{3+4} (Fig. 42a–b), or continuous to wing margin through cell M_4 (Fig. 44) 9

No such mark with only a small, isolated spot of brown in middle of vein M_{3+4} (Fig. 33) 11

9(8). Brown band through middle of cell 1st M_2 from r-m crossvein expanded along underside of vein M_{3+4} but not continuing to costa; female with only a short appendage of an apical ray (Fig. 38, *mutabilis*), or lacking vestige (Fig. 42a–b, *sarangana*) 10

Male with band from r-m continuous to hind margin of wing in cell M_4; with a dumbbell-shaped hyaline mark in apex of cell 1st M_2 (Fig. 44); (female with complete, or broken, apical ray and runs in couplet 6) . . . (Java) ..... **terryi, n. sp.**

10(9). Second hyaline mark in cell R_1 equal in size to 1st; hyaline mark in cell R_5 just beyond r-m crossvein continuous to costa in cell R_1; no continuous brown band from r-m crossvein to cell Sc (Fig. 42a–b); preapical band across cell 1st M_2 ending at vein M_{3+4} . . . (Java) ..... **sarangana**

Second hyaline mark ca. ½ size of 1st; hyaline mark in R_5 just beyond r-m isolated; with a continuous dark brown band from cell Sc to r-m crossvein (Fig. 38); preapical band over 1st M_2 extending beyond M_{3+4}, to wing margin at least in female . . . (Nusa Tenggara) ..... **mutabilis**

11(8). Cell Sc all dark brown except for tiny pale mark at apex; with a dark brown band continuous from costa to vein R_{4+5}, joined with large apicomedian brown mark just distad of r-m crossvein and

mark in upper preapical portion of cell 1st M_2 short, extending only short way across cell (Fig. 39) . . . (Endeh I "Poeloe Endeh"; Flores I) ..... **opprimata**

Cell Sc subhyaline; oblique band from Sc extending to vein M_{1+2} basad of r-m; with a complete brown band across preapical portion of 1st M_2 from vein M_{1+2} to M_{3+4} (Fig. 33) . . . (wide spread) ..... **amoena**

12(1). Thorax and abdomen black in ground color, densely gray pollinose 13

Abdomen rufous except for tinge of brown in middle of 6th tergum of female and shining dark reddish brown to black ovipositor base; thorax mottled with rufous; wing as in Fig. 41b, with a broad band of brown over apex of cell 1st M_2 containing a small hyaline spot . . . (Papua New Guinea) ..... **rufa, n. sp.**

13(12). Only a narrow streak of brown extending diagonally from cell Sc to r-m crossvein and wing mostly hyaline basad of r-m crossvein (Fig. 40) . . . (Nusa Tenggara) ..... **renschi**

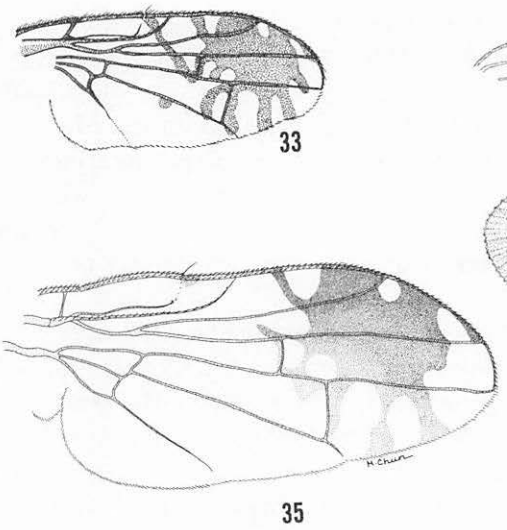
With a broad brown mark from cell Sc and wing extensively brown, with isolated hyaline spots basad of r-m crossvein, especially in female (Fig. 36a & 36c) . . . (Papua New Guinea) .. **latinota, n. sp**

Trupanea amoena Frauenfeld Fig. 33

Trupanea amoena Frauenfeld, 1856, Sber. Akad. Wiss. Wien. 22: 524. Type-locality: Dalmatia, Yugoslavia. Type probably lost.

Diagnosis. This species shows similarity to *asteria* (Schiner) but differs by lacking a complete ray of brown extending through lower apex of cell R_5 or to wing margin in upper apex of cell 2nd M_2; by having a distinct narrow band of brown from vein M_{1+2} just basad of r-m crossvein diagonally over wing to costa in cell Sc; and by having a small isolated brown spot under vein M_{3+4} in upper median portion of cell M_4 (Fig. 33). Most closely related to *T. opprimata* Hering from Nusa Tenggara, Indonesia and differs by having cell Sc subhyaline (dark brown in *opprimata*); oblique band from cell Sc extending to vein M_{1+2} basad of r-m crossvein (extending only to vein R_{4+5} and connected with large apicomedian brown mark just distad of r-m crossvein in *opprimata*); and by having a complete crossband over preapical portion of cell 1st M_2 (Fig. 33) (mark abbreviated in *opprimata*). I see no other distinguishing features. I see no evidence of sexual dimorphism.

Lengths: body 3.3–3.5 mm; wing 3.5–4.0 mm.



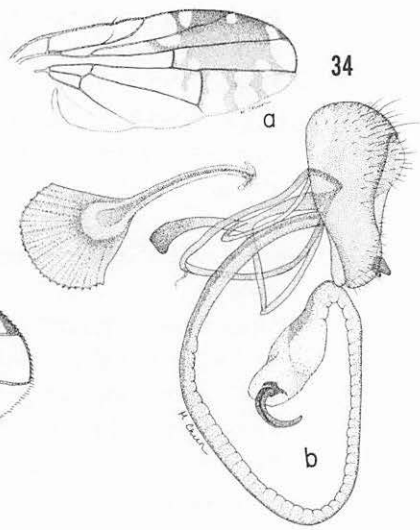


Fig. 33. *Trupanea amoena*, wing. Fig. 34. *Trupanea asteria*: a, wing; b, male genitalia.

Fig. 35. *Trupanea glauca*, male wing.

Distribution. Widespread over Palaearctic, Afrotropical, and Oriental regions.

Specimens examined. Numerous specimens from Europe, Sri Lanka.

Remarks. This ubiquitous species has not been seen from Indonesia–New Guinea but is so widespread it probably does occur in the region.

Hosts. The larvae develop in flowerheads of Compositae.

Trupanea asteria (Schiner) Fig. 34

Tephritis asteria Schiner, 1868, Reise der Osterreichischen Freg. *Novara*, Zool. Dipt. 2: 270. Type-locality: Madras, India. Syntypes male, female in NHMV.

Diagnosis. Fits in the complex of species that have a complete ray of brown from subapical portion of cell R_5 extending to wing margin in upper apex of cell 2nd M_2 and fitting very close to *T. stulta* Hering, from Nusa Tenggara, Indonesia, which may prove to be a synonym; too few specimens have been studied to date to determine the range of variation of the wing-marking characters. The only characters I see for

separating these taxa is that in *asteria* cell Sc is subhyaline and a faint pale brown discontinuous band extends to r-m crossvein and a preapical brown crossband in cell 1st M_2 ends at vein M_{3+4} (Fig. 34a) or is abbreviated, while in *stulta* a distinct narrow, dark brown band extends obliquely from vein R_{4+5} just basad of r-m crossvein to costa through cell Sc; and the preapical brown crossband in cell 1st M_2 is continuous to costa.

No apparent sexual dimorphism. Specimens from Papua New Guinea show some variation in length of preapical band over cell 1st M_2; this is abbreviated, extending 3/5–3/4 distance across cell, not attaining vein M_{3+4}; these specimens lack a faint brown mark extending from crossvein r-m over cell 1st M_2 to vein M_{3+4}. I consider this just a variation. Male genitalia as in Fig. 34b.

Lengths: body, excluding female ovipositor, and wing each 2.5–3.2 mm.

Distribution. India, Java, Solomon Islands, and New Guinea.

Specimens examined. Syntype series.

Remarks. Recorded from Semarang, Java by de Meijere (1908:132).

Trupanea glauca (Thomson) Fig. 35

Trypeta glauca Thomson, 1869, K. Sven. Freg. *Eugenies* Resa, Pt. 2, Zool. 1: 581. Type-locality: Sydney, Australia. Syntypes male, female in NRS.

Diagnosis. Very close to and possibly should be treated as a subspecies of *Trupanea stellata* (Fuessly), from the Palaearctic Region. The only characters I can find for differentiating *glauca* and *stellata* is that in *stellata* the hyaline mark in cell R_1 extends into the upper edge of cell R_3 in both sexes (Hendel 1927: pl. 16, Fig. 3–4), the male has the front femur predominantly brown to black and the mid and hind femora are tinged with brown or predominantly brown to black, whereas in *glauca* the mark in R_1 is confined to the cell and the legs are all yellow in both sexes. Fits in complex of species characterized by having no complete apical brown ray in wing and differs from related species by having cell Sc entirely hyaline except for a tiny spot of brown on upper margin at base; lacking a brown oblique band from cell Sc to r-m crossvein and wing hyaline basad of r-m crossvein except for a small pale brown spot in middle of vein M_{3+4} (Fig. 35). Very little sexual dimorphism evident; a short section of apical ray extending to vein M_{1+2} in female and completely lacking in male. Otherwise fitting description of *stellata* and other species of *Trupanea*.

Lengths: body and wing each 2.75–3.0 mm.

Distribution. Probably widespread over the Pacific Region to Australia. Hendel's record of *stellata* from Australia would pertain to *glauca*.

Specimens examined. Syntypes of *glauca* and a good series of specimens from Philippines (Hardy 1974: 254). INDONESIA: JAVA: Buitenzorg [Bogor], III.[19]07 (F. Muir); AUSTRALIA: N.S.W.: Roseville, XI.1946, flower heads of *Gerbera* (no collector given).

Hosts. Breeds in flower heads of Compositae.

Trupanea latinota Hardy, **new species** Fig. 36

Diagnosis. Fits near *renschi* Hering, from Nusa Tenggara, Indonesia, by having radiating brown marks through apex of cell R_5 but differs from all known *Trupanea* from Indonesia–New Guinea by having a broad continuation of the large apicomedian brown mark in wing extending to anterior margin in cell Sc and wing more extensively brown basad of r-m crossvein, especially in female (Fig. 36a).

Fits general characteristics of most species of *Trupanea*. *Head* and body bristles pale yellowish with a faint brownish tinge except for white, flattened, upper superior fronto-orbital, outer vertical, notopleural, and pteropleural bristles. Third antennal segment rounded on ventral margin, straight on dorsal margin (Fig. 36b). Type male with 4 inferior fronto-orbital bristles on right side and 3 + a small seta on left side; female with 3 pairs. *Thorax* and abdomen densely gray pollinose and yellow-white setose. Dorsocentral bristles situated just slightly behind suture. *Legs* yellow. *Wing* as noted above and as in Figs. 36a, 36c. Male showing reduction in brown markings basad of r-m crossvein. Male with only a faint mark of brown in upper median margin of 2nd costal cell and faint brown markings interspersed with irregular subhyaline spots basad of r-m (Fig. 36c). Female with a prominent brown mark in 2nd costal cell; dark brown coloring extending basad of r-m to bases of cells R_3, 1st M_2 and M_4, isolating several round, hyaline spots: 2 in cell R_5 before r-m; 2 large spots in 1st M_2; 3, plus a small spot at base, in M_4, and 2 large hyaline marks in anal cell. Male genitalia and female ovipositor not relaxed for study. Sixth tergum of female longer than 5th. Ovipositor base shining black, brown to black setose, lacking yellow-white setae on basal margin and subequal in length to abdominal terga 4–6.

Lengths: male body 3.75 mm; wing 4.0 mm; female body, excluding ovipositor, 4.0 mm; wing 4.32 mm.

Type data. Holotype ♂ (BPBM 13624), PNG: NEW GUINEA (NE):

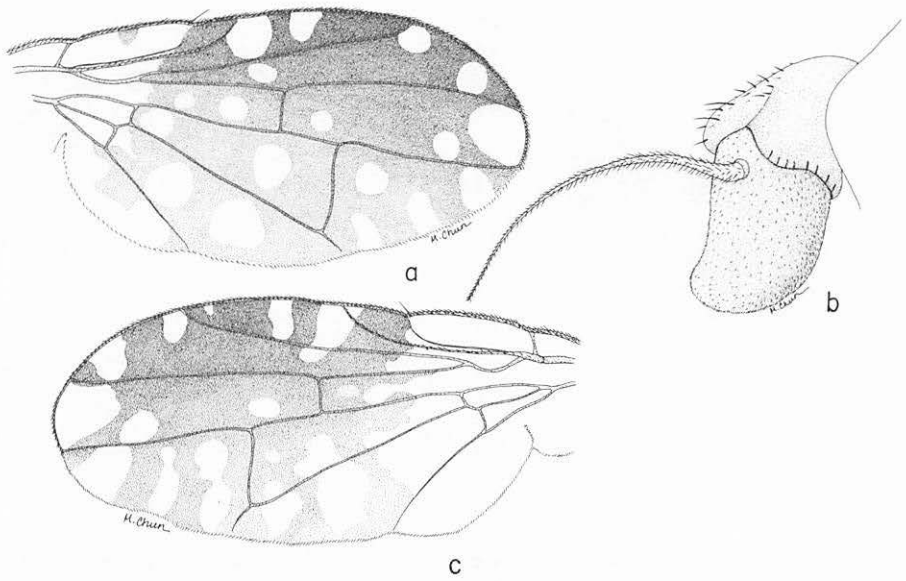


Fig. 36. *Trupanea latinotata*: a, female wing; b, antenna; c, male wing.

Madang Distr, Wanuma, 600–720 m, VIII.1968 (N. L. H. Krauss). Allotype ♀ (BPBM), IRIAN JAYA: Kulina, 1,400 m, 19–22.II.1960 (T. C. Maa).

Etymology. The specific epithet combines the Latin *latus*, "broad," "wide," with *nota*, "mark." It alludes to the broad, brown mark extending to the anterior margin of wing in cell Sc.

Trupanea lyneborgi Hardy Fig. 37

Trupanea lyneborgi Hardy, 1970, Entomol. Medd. 38: 131. Type-locality: Lemakamin, New Ireland. Type male in ZMUC.

Diagnosis. Fits in the complex of species that have a complete apical brown ray in wing from cell R_5 to margin in upper apex of cell 2nd M_2 and differs from other related species by having a continuous brown band from vein M_{1+2} just basad of r-m crossvein extending across cell 1st M_2 to wing margin near lower apex of cell M_4 and by having faint streaks of brown in base of cell M_4 and through anal cell. It also differs by having 6 pairs of inferior fronto-orbital bristles.

Head shaped as in Fig. 37a. Orbital, ocellar, and inner vertical bristles brownish

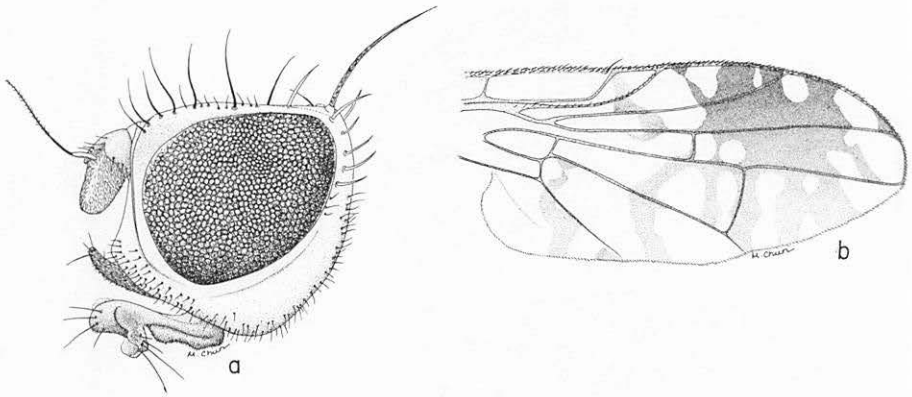


Fig. 37. *Trupanea lyneborgi*: a, head; b, male wing.

yellow. Face very slightly concave as seen in lateral view. Parafacials and gena comparatively broad, former ca. ½ as wide as 3rd antennal segment and latter ca. equal in width to 3rd segment. Front comparatively broad, just slightly longer than wide. Thorax black in ground color, very densely gray pollinose and densely covered with white, flat, scalelike setae. Humerus largely yellow in ground color. Thoracic bristles yellow, some tinged faintly with brown. Dorsocentral bristles distinctly behind suture, ca. ⅓ distance to line drawn between supraalar bristles and distinctly farther from suture than in most *Trupanea*. Legs entirely yellow. Wing marked as in Fig. 37b with a pale brown mark from margin in cell Sc diagonally over wing to vein R_{4+5}, expanded slightly into cell R_5 and extending along vein connecting with dark brown apicomedian mark near r-m crossvein. With 3 hyaline marks in cell R_1, decreasing in size from apex to base. Apices of cells R_3 and R_5 hyaline exept for small mark of brown in lower apex of R_3. Median hyaline mark from margin in cell 2nd M_2 interrupted and with isolated hyaline spot in upper median portion of cell. Also with a complete hyaline band across preapical portion of cell 1st M_2. Abdomen mostly black in ground color, densely gray pollinose and thickly covered with short, yellow-white setae; broadly yellow on sides of 1st 2 terga, tinged yellow-rufous on sides of terga 3 and 4, narrowly yellow on apical margin of 5th tergum.

Genitalia not studied.

Lengths: body and wing each 5.0–5.25 mm.

Distribution. New Ireland.

Specimens examined. Type series.

Remarks. The species is known only from the male; it is not known whether or not there is sexual dimorphism.

Trupanea mutabilis Hering Fig. 38

Trumpanea mutabilis Hering, 1941, Arb. Morphol. Taxon. Entomol. Berlin-Dahlem 8(1): 42. Type-locality: Geli Moetoe, Flores Island. Type female in DEI, 1 male, 1 female paratypes in BMNH.

Diagnosis. Fits in complex of species that have no complete ray in apex of wing, a hookshaped brown mark extending from vein M_{1+2} basad of m crossvein across cell 1st M_2 and expanded over underside of vein M_{3+4} (Fig. 38), and an oblique brown band extending from costa in cell Sc to r-m crossvein. Fits very close to *T. sarangana* Curran and further specimens need to be examined to make certain these are actually distinct species. *Trupanea mutabilis* differs from *sarangana* by having 2nd hyaline marks in cell R_1 ca. ½ size of 1st (equal in size in *sarangana*); hyaline mark in cell R_5 just beyond r-m crossvein isolated (continuous to costa in cell R_1 in *sarangana*); a continuous brown band extending from cell Sc to r-m crossvein (a broken band in female and lacking such a band in male in *sarangana*), and preapical brown band in cell 1st M_2 extending to the wing margin in female and distinctly beyond vein M_{3+4} in male (ending at vein M_{3+4} in *sarangana*) (compare Fig. 38 & 42a–b).

Showing rather slight sexual dimorphism, with a short stub of an apical ray present in cell R_5 ending slightly before vein M_{1+2} in female and completely absent in male and with the brown preapical band in cell 1st M_2 complete to wing margin in female and extending through about ½ of cell M_4 in male.

Length: wing 3.8 mm.

Distribution. Nusa Tenggara.

Specimens examined. Type series.

Trupanea opprimata Hering Fig. 39

Trupanea opprimata Hering, 1941, Arb. Morphol. Taxon. Entomol. Berlin-Dahlem 8(1): 43. Type-locality: Endeh Island, Nusa Tenggara. Type in DEI, 1 male, 1 female paratypes in BMNH.

Diagnosis. Fits very close to *T. amoena* but differs by having cell Sc entirely dark brown except for a pale apical mark and a continuous band of brown from costa

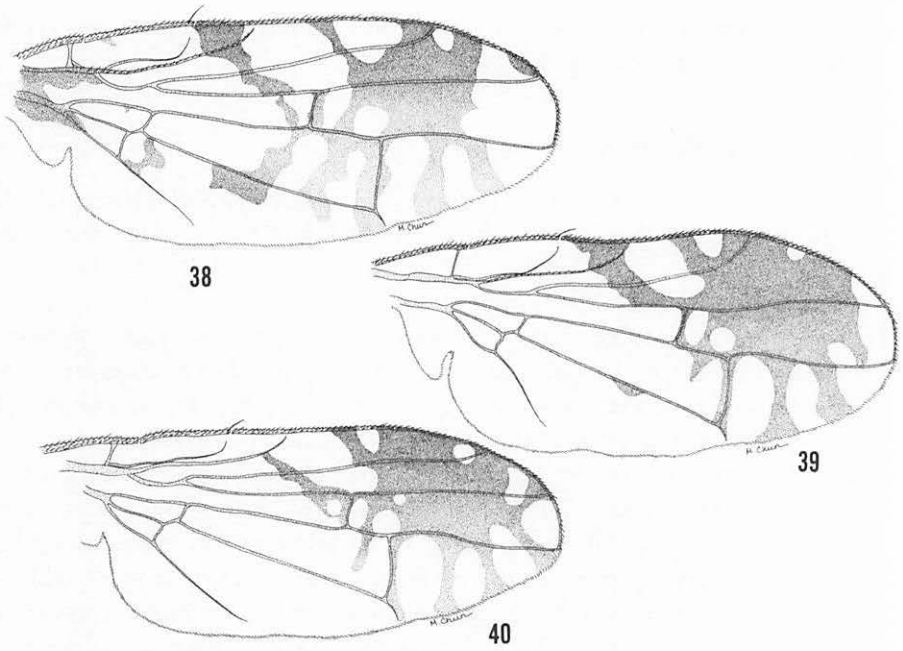


Fig. 38. *Trupanea mutabilis*, male wing, copied from Hering (1941c).

Fig. 39. *Trupanea opprimata*, male wing, copied from Hering (1941c).

Fig. 40. *Trupanea renschi*, female wing, copied from Hering (1941c).

to vein R_{4+5}, joined with the large apicomedian brown mark in wing just distad of r-m crossvein (with cell Sc subhyaline and oblique band from Sc extending to vein M_{1+2} basad of r-m crossvein in *amoena*); mark in upper preapical portion of cell 1st M_2 short, extending only a short way across cell (Fig. 39) (with a complete brown preapical band in cell 1st M_2 in *amoena*). I see no other features for differentiating these taxa.

Length: wing 2.9 mm.

Distribution. Nusa Tenggara.

Specimens examined. Type series.

Trupanea renschi Hering Fig. 40

Trupanea renschi Hering, 1941, Arb. Morphol. Taxon. Entomol. Berlin-Dahlem 8(1): 43.

Type-locality: Sumbawa Island, Nusa Tenggara. Type female was in ZIUH, probably lost, 4 paratypes in DEI, 2 paratypes in BMNH.

Diagnosis. This species differs from other *Trupanea* known from Indonesia–New Guinea by having diverging lines of brown radiating through apex of cell R_5 (Fig. 40).

Wing with cell Sc mostly pale brown with an oblique band of brown extending to vein R_{4+5} and connecting with brown preapical mark near r-m crossvein. Cell R_1 with 2 hyaline marks, 2nd mark comparatively small, ca. ⅓ size of 1st. Cell R_3 with 2 hyaline marks on margin and cell 2nd M_2 with 3 large hyaline marks completely bisecting cell. Preapical brown mark in cell 1st M_2 extending ca. ¾ distance across cell. No dark mark on vein M_{3+4} and no dark markings basad of r-m crossvein except for oblique streak extending to cell Sc. Hering indicated front basitarsus of male short, scarcely longer than 2nd tarsomere. Bristles yellow-brown except for white upper superior fronto-orbital and outer vertical. Basal segment of ovipositor comparatively long and slender, ca. as long as last 3 abdominal terga, shining black with white setae along anterior margin.

Lengths: Hering did not record the length, and I failed to note it when I examined the type. My photograph of a paratype male indicates it is ca. the same size as *mutabilis*.

Distribution. Nusa Tenggara.

Specimens examined. Type series.

Trupanea rufa Hardy, new species Fig. 41

Diagnosis. Fits in a complex near *renschi* by having diverging lines of brown in apex of cell R_5 and cell Sc only faintly marked pale brown and with a rather narrow brown band extending obliquely from cell Sc to r-m crossvein. It is readily differentiated from *renschi* by the predominantly yellow to rufous abdomen and the thorax mottled with rufous, the gray pollinosity not obscuring the ground color (thorax and abdomen predominantly black in ground color, densely gray polinose in *renschi*), by having a broad brown band crossing apex of cell 1st M_2, isolating a small hyaline spot (*renschi* with a narrow preapical streak of brown extending part way across cell); and the comparatively short basal segment of female ovipositor, equal in length to terga 5+6 and with white, scalelike setae over basal ⅗ of segment (basal segment comparatively long and slender, equal in length to terga 4–6, mostly black setose with white setae only on basal margin in *renschi*); and by the presence of 4 pairs of inferior fronto-orbital bristles (*renschi* has 3).

FEMALE. *Head.* Front gently sloping, almost horizontal, with antenna near

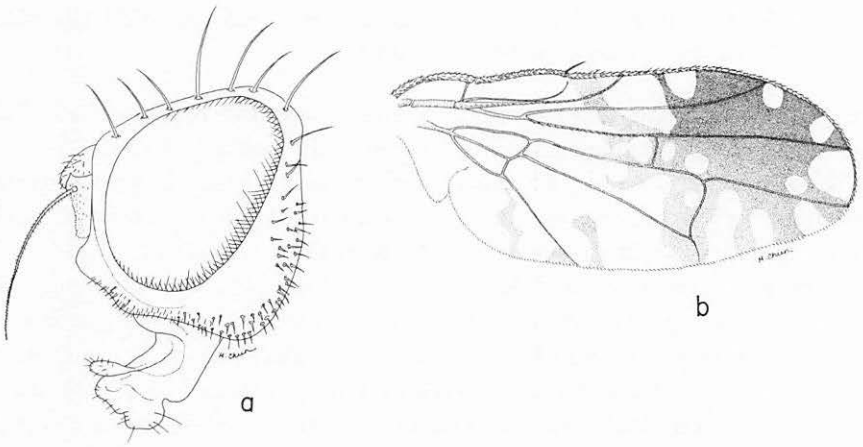


Fig. 41. *Trupanea rufa*: a, head; b, female wing.

upper ⅓ of head as seen in lateral view. Face moderately concave, distinctly protruding on epistomal margin (Fig. 41a). Parafacia comparatively broad, ca. ½ width of 3rd antennal segment. Gena slightly greater in width than 3rd antennal segment. Occiput moderately swollen, at widest point almost ½ width of eye. Bristles pale in color, yellow, faintly tinged with brown except for yellow-white upper superior fronto-orbitals, outer verticals, postverticals, and occipitals. Front moderately broad, ca. as wide as long, with rather abundant, inconspicuous, pale setae on lower median portion. Lunule comparatively large, broadly U-shaped and extending almost to level with 2nd pair of inferior fronto-orbital bristles. Four pairs of inferior fronto-orbitals and 2 pairs of superior fronto-orbitals. Two pairs of strong ocellar bristles, 2 situated outside of triangle laterad of lower ocellus and 2 located in triangle equidistant between ocelli. Third antennal segment ca. ⅓ longer than wide, straight on dorsal margin, broadly rounded at apex on venter. Arista short pubescent. Mouthparts short, as in other members of genus. *Thorax*. Mostly yellow on pleura marked with brown over median portion of mesopleuron, lower portion of pteropleuron, median portion and hind margin sternopleuron. Mesonotum mostly brown to blackish in ground color with irregular blotches of rufous over median portion and on lateral margins. Humerus, notopleuron, and upper margins of mesopleuron and pteropleuron yellow. Scutellum mostly rufous with a tinge of brown over basomedian portion and postscutellum and metanotum dark reddish brown to black in ground color, with gray pollen. Bristles pale colored, yellow with a slight tinge of brown except for white notopleurals and pteropleurals. Densely covered with white, scalelike setae. Halter pale yellow. *Legs*. Yellow, front femur with a row of ca. 5 brownish yellow, posteroventral bristles on apical ⅖ of segment. Apical spur on mid

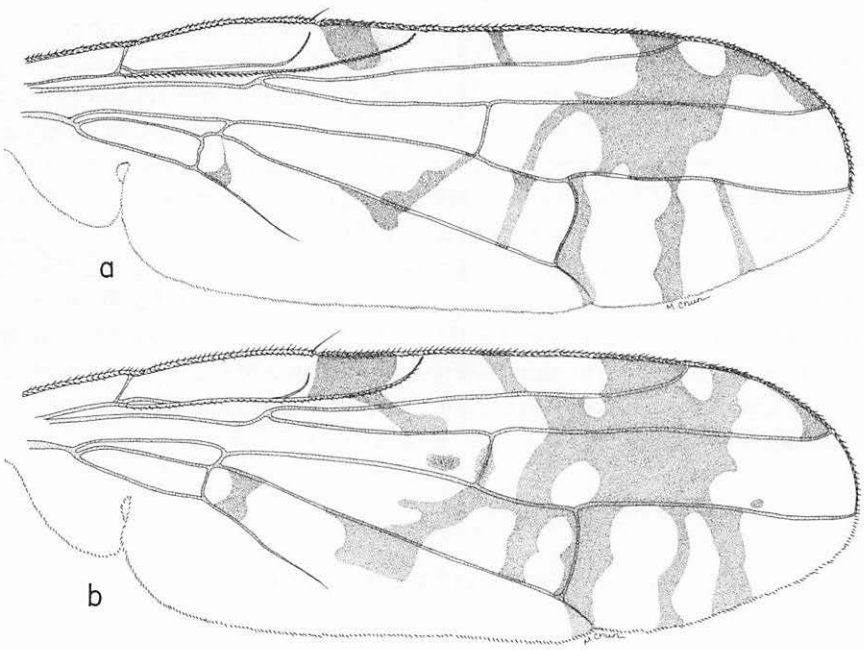


Fig. 42. *Trupanea sarangana*: a, male wing; b, female wing, both copied from Curran (1931).

tibia brown. Hind femur lacking preapical dorsal but with 1 inconspicuous anterodorsal bristlelike seta. *Wing*. As noted above and as in Fig. 41b. *Abdomen*. Yellow-rufous with a faint tinge of brown on narrow apical margins of terga 2–4 and with a tinge of brown in ground color in middle of 6th tergum. Rather lightly gray pollinose, not obscuring ground color, densely covered with white scalelike setae, these extending over basal ⅗ of basal segment of ovipositor. Sixth tergum distinctly longer than 5th. Ovipositor not relaxed for study.

Lengths: body, excluding ovipositor, and wing each 4.8 mm.

MALE. Unknown.

Type data. Holotype ♀ (BPBM 13625), PNG: NEW GUINEA (SE): Milne Bay Prov, Trobriand Is, Wawela, 15.VIII.1983, in forest (J. W. ISMAY).

Etymology. The specific epithet is from the Latin *rufus*, "reddish," and refers to the largely rufous body.

Trupanea sarangana Curran Fig. 42

Trupanea sarangana Curran, 1931, Am. Mus. Novit. 474: 4. Type-locality: Sarangan, Mt Lawu, Java. Type male in AMNH.

Diagnosis. Fits very close to *T. mutabilis* and *mutabilis* may be a synonym; more specimens need to be studied. Curran (loc. cit.) showed considerable sexual dimorphism in wing: male with markings reduced, lacking a band from subcosta to r-m and with marks in R_1 not isolated, extending broadly through cell R_3. It differs from *mutabilis* by having 2nd hyaline mark in cell R_1 large, equal in size to 1st (ca. ½ size of 1st in *mutabilis*); hyaline mark in cell R_5 just beyond r-m crossvein continuous to costa in cell R_1 (this mark isolated in *mutabilis*); a discontinuous line of brown from vein M_{1+2} basad of r-m crossvein to margin in subcosta in female (Fig. 42b) and lacking such a band in male (Fig. 42a) (a continuous band in both sexes of *mutabilis*); and preapical brown band in cell 1st M_2 ending at vein M_{3+4} in both sexes (extending to wing margin in female and beyond M_{3+4} in male *mutabilis*). I see no other characters for differentiating *sarangana* from *mutabilis*.

Length: Curran (loc. cit.) gave the body length as 3.4–4.0 mm.

Distribution. Java.

Remarks. I have not seen specimens of *sarangana*.

Trupanea stulta Hering Fig. 43

Trupanea stulta Hering, 1941, Arb. Morphol. Taxon. Entomol. Berlin-Dahlem 8(1): 42. Type-locality: Sumbawa Island, Nusa Tenggara. Type female was in ZIUH, probably lost; 2 female paratypes in DEI.

Diagnosis. Fits very close to *T. asteria* by having a complete brown apical ray extending through lower apex of cell R_5 to costa in upper apex of cell 2nd M_2, by lacking a brown band extending from vein M_{1+2}, basad of r-m crossvein, to wing margin across cells 1st M_2 and M_4, and by having only 2 hyaline marks in cell R_1. It differs from *asteria* by having a dark brown mark through cell Sc continuous as a narrow band to r-m crossvein and by having a preapical brown band over cell 1st M_2 continuous to costal margin (Fig. 43) (*asteria* has cell Sc subhyaline, with a faint pale brown mark discontinuous to r-m and preapical band of 1st M_2 ending at vein M_{3+4}, or abbreviated). I see no other features that separate these taxa, and it will be necessary to examine more specimens to clarify the validity of these characters. Only females of *stulta* have been seen, and it is not known whether there is dimorphism in wing markings.

Length: Hering did not record the length in the original, and I failed to note lengths when I examined the paratypes. My photograph of a paratype female indicates that it is the same size as *T. opprimata*.

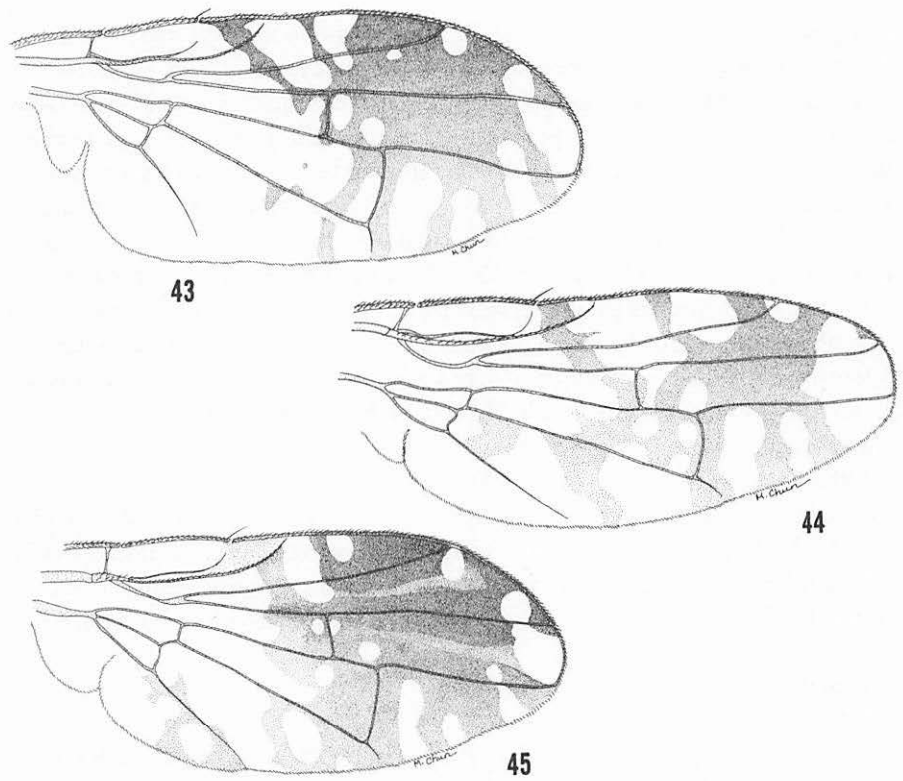


Fig. 43. *Trupanea stulta*, female wing, copied from Hering (1941c).

Fig. 44. *Trupanea terryi*, male wing.

Fig. 45. *Trupanea* undescribed sp. A, female wing.

Distribution. Nusa Tenggara.

Specimens examined. Paratypes.

Trupanea terryi Hardy, **new species** Fig. 44

Diagnosis. This species shows considerable sexual dimorphism. The female fits near *T. stulta* by having an apical brown ray in cell R_5 and cell Sc dark brown with a narrow brown band extending diagonally to vein R_{4+5} just basad of r-m crossvein. The female differs from *stulta* by having apical ray extending to costa along underside of vein M_{1+2} (ray ends in costa well below apex of vein, leaving a hyaline area in upper apex in cell 2nd M_2 in *stulta*); the oblique band from Sc continuous with a

broad brown mark over cell R_5 basad of r-m crossvein, through middle of cell 1st M_2, and broadly expanded into cell M_4 along underside of vein M_{3+4} (oblique brown mark from Sc not continuous with mark in middle of vein M_{3+4} in *stulta* the latter small, not greatly expanded along vein and into cell M_4); the preapical mark over 1st M_2 enclosing a small hyaline spot and extending just a short way into cell M_4 (preapical mark over cell 1st M_2 extending to wing margin in *stulta*); and 2 small brown spots in basal portion of anal cell (*stulta* lacks these spots). In the male the apical ray is lacking and cell Sc is brown, a brown oblique band extending to r-m and a brown mark extending from r-m crossvein over cell 1st M_2 and broadly expanding along vein M_{3+4}; the male fits near *T. mutabilis* and *T. sarangana* but differs from both by having the band in posterior portion of wing from r-m crossvein continuous to hind margin in cell M_4 and by having a dumbbell-shaped hyaline mark in apex of cell 1st M_2 (Fig. 44).

Otherwise fits description of most *Trupanea*, with 3rd antennal segment broadly rounded on venter and apex, straight on dorsal margin. Thorax and abdomen black in ground color, densely gray pollinose and white setose. Dorsocentral bristles just slightly behind suture and 6th tergum of female longer than 5th. Female ovipositor shining black, white setose on basal ⅓–⅔ and ca. equal in length to abdominal terga 5+6.

Lengths: body 3.2 mm; wing 3.6 mm.

Type data. Holotype ♂ (BPBM 13626) allotype ♀ (BPBM), 6♀ paratypes, INDONESIA: JAVA: Dieng Plat, 2,135 m, XII.1908 (F. W. Terry).

Etymology. The species is named after F. W. Terry, one of the early exploratory entomologists for the Hawaiian Sugar Planters Association.

Trupanea undescribed species A Fig. 45

Five female specimens on hand from the Solomon Islands and New Britain appear to be an undescribed species but are in poor condition and the species cannot be named until additional specimens can be studied. It fits in the complex of species that have a single apical ray of brown extending through the lower apex of cell R_5 to the costa in the upper apex of cell 2nd M_2.

Diagnosis. Differs from other known species by wing markings: basal ⅔ of wing hyaline except for gray reticulations in anal cell and lower basal portion of cell M_4; with faint brownish marking through cell Sc continuous as a darker brown band across middle of wing to middle of cell 1st M_2, continuing distad along veins R_{4+5} and M_{1+2} and joining large preapical brown mark; apical portion of cell

1st M_2 broadly brown; 2 hyaline marks in cell R_1, basal mark large and continuous through most of cell R_3; 2 hyaline spots in apex of cell R_3, lower spot continuous through most of apex of R_5; 3 oblong marks through cell 2nd M_2; 2 in apex of M_4 and with 2 irregular hyaline spots in anal cell (Fig. 45). Female ovipositor base shining black, subequal in length to terga 5+6.

Lengths: body, excluding ovipositor, 5.2–5.6 mm; wing 5.3–5.6 long × 2.2–2.4 wide.

Male unknown.

Specimens examined. 5♀, SOLOMON ISLANDS: Guadalcanal: Mt Austin, 300 m, 25.IV.1964 (R. Straatman); Gizo Gizo, 0–200 m, XI.1970–XII.1975 (N. L. H. Krauss); Bic Florida, 28.XI.1949 (H. E. Milliron); PNG: BISMARCK ARCH: NEW BRITAIN: N Coast, Bialla, 4–9.VII.1956 (E. J. Ford Jr). All in BPBM.

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Synonyms are printed in *italics*, new species are in boldface, and full treatment of species is indicated by **boldface numbers.**