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## The Drosophilidae (Insecta: Diptera) of Iron Range, Queensland

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### Abstract

A collection made in the rainforests of Iron Range, far north Queensland, in May 1981 yielded 54 species of Drosophilidae in the genera *Drosophila* (34 species, six described as new; first Australian record for *D. menisigra* Bächli), *Liodrosophila* (three species), *Sphaerogastrella* (one species), *Zygothrica* (one species), *Nesiodrosophila* (two species, both new), *Microdrosophila* (three species), *Mycodrosophila* (seven species, three new), *Paramycodrosophila* (one new species) and *Leucophenga* (two species). Seventy-six described species of Drosophilidae have now been recorded at Iron Range, and several further species are known to exist; a key to these species is provided. The 12 new species described in this paper bring the Australian drosophilid total to 234.

### Introduction

Although much of the vegetation of Cape York Peninsula is sclerophyllous woodland, several small patches of tropical rainforest exist. Among the latter, that in the Iron Range area is already known to possess particularly rich faunas of several groups, including New Guinean elements not detected further south (Kikkawa *et al.* 1981).

The Australian drosophilid fauna has been studied extensively in recent years and most areas have been collected fairly extensively (Bock 1976, 1977, 1979, 1980, 1982). The fauna of the Iron Range area is, however, still poorly known, although previous collections on several occasions have suggested an abundant drosophilid fauna. Previous records for the 30 or so known Iron Range species are scattered through general treatises on particular genera (Bock, *op. cit.*) or collection methods (Bock and Parsons 1978*a*, 1978*b*). A further collection trip was made to Iron Range during May 1981 to supplement existing records. This paper summarizes the fauna of Iron Range as now known and provides descriptions of the 12 new species detected in the latter collection.

### Methods: May 1981 Collection

Several different methods were employed to collect Drosophilidae during this survey. Firstly, sweeping through rainforest undergrowth or above debris on the forest floor is a general method of collecting insects, already known to be useful for some drosophilids, although the yield is often small. Secondly, many species of Drosophilidae are known to breed in decaying fruit; collections were made by sweeping above both rotting native fruits and artificially yeasted fruit baits (tinned or bottled baby-food peaches are useful for this purpose if, as in these collections, fresh bananas are not available), and about clumps of figs growing about 2 m above the ground. Thirdly, many species of Drosophilidae are closely associated with fungi; many specimens were collected at Iron Range by sweeping or aspirating directly from fungi growing on decaying logs. Fourthly, some Drosophilidae are known to live in or to frequent

flowers (Cook *et al.* 1977; Carson and Okada 1980; Okada and Carson 1980); flowers were swept at Iron Range for drosophilids although the yield of flies obtained was small.

### Results: May 1981 Collection

The specimens collected have been deposited in the Australian National Insect Collection, Division of Entomology, CSIRO, Canberra (ANIC) and the Australian Museum, Sydney (AM), or retained in the collection of the Department of Genetics and Human Variation, La Trobe University (LT), as indicated below.

With the exception of *Drosophila menisigra* Bächli (see also species 4), full details of the locations of type specimens, type localities, synonymies and known distributions of previously described species, and of type species of genera and generic synonymies, are given in Bock (1976, 1979, 1980, 1982); this information has therefore not been repeated below.

Many specimens were collected at Gordon Creek, a rainforest locality 1.5 km east of Cook's Hut, 12°43'S., 143°19'E., between 7 and 12 May 1981 by S. F. McEvey. This information is abbreviated to 'Gordon Ck' in the lists of specimens examined below.

### Genus *Drosophila* Fallén

*Drosophila* Fallén, 1823, p. 4.

#### 1. *Drosophila (Drosophila) rubida* Mather

*Specimens examined.* Gordon Ck, fruit bait, 6♂, 1♀ (ANIC), 5♂, 1♀ (AM).

#### 2. *Drosophila (Drosophila) pseudotetrachaeta* Angus

*Specimens examined.* Gordon Ck, fruit bait, 1♂, 1♀ (ANIC), 1♂, 1♀ (AM). [Cf. comments by Bock (1982) on this species.]

#### 3. *Drosophila (Drosophila) sulfurigaster sulfurigaster* (Duda)

*Specimens examined.* Gordon Ck, fruit bait, numerous ♂♀ (ANIC, AM, LT). (Cf. following species.)

#### 4. *Drosophila (Drosophila) ? kohkoa* Wheeler

[*Drosophila kohkoa* Wheeler, 1969, p. 217. (Holotype in University of Texas; type locality Cambodia.)]

*D. sulfurigaster* and this species are members of the *nasuta* complex of the *immigrans* species-group. This complex includes a number of species of extremely similar morphology (including identical or almost identical male genitalia) separable by reference to courtship behaviour, polytene chromosomes and, to some extent, some fine details of morphology, i.e. patterns of frontal and lateral thoracic pollinosity or pigmentation in males (Lambert 1978*a*, 1978*b*, 1982; Spieth 1969; Wilson *et al.* 1969). Although only *D. s. sulfurigaster* has been identified from Australia, a second species has been noted in collections from far northern Queensland (McEvey 1981). Males of *D. s. sulfurigaster* and those of the second species are distinguishable by the presence in the latter of full frontal pollinosity, while in the former, pollinosity is restricted to the orbits; females are indistinguishable.

Specific determination within the *nasuta* complex is hindered by the reliance which is necessary on behavioural and chromosomal traits, that is to say, on

cultures. Live specimens of the present species were, however, successfully cultured. (Of 82 fertile females of the complex successfully cultured, 43 proved to be *D. s. sulfurigaster* while 39 were the present species.) Males of four species of the complex (*nasuta*, *kohkoa*, *kepulauana* and *albomicans*) possess full frontal pollinosity; in three of these species (*nasuta*, *kepulauana* and *albomicans*), additional lateral markings are present on the thorax of males. Since the present species entirely lacks thoracic markings, it closely resembles *D. kohkoa*; its courtship behaviour is also similar to that of *kohkoa* as described by Spieth (1969). However, *kohkoa* has been described as possessing a darkened face and antennal segments, while these parts are pale in the present species. It thus appears that the species is a variant of *kohkoa*, or perhaps a new species. Extensive comparisons will be necessary to decide between these alternatives.

*Specimens examined.* Gordon Ck, fruit bait, numerous ♂♀ (ANIC, AM, LT). (Females of this species are indistinguishable from those of *sulfurigaster*, but pinned specimens have been retained from cultures of each species.)

#### 5. *Drosophila (Sophophora) ananassae* Doleschall

*Specimens examined.* Gordon Ck, fruit bait, 1 ♂ (ANIC), swept, 1 ♂ (ANIC), swept over flowers at rainforest fringe, 2 ♂ (AM). (Females of this and species 6–10 of the *melanogaster* species-group reported below are not unequivocally separable from one another; female counts are omitted for these species.)

#### 6. *Drosophila (Sophophora) pseudoananassae* Bock

*Specimens examined.* Gordon Ck, fruit bait, numerous ♂ (ANIC, AM, LT).

#### 7. *Drosophila (Sophophora) bipectinata* Duda

*Specimens examined.* Gordon Ck, fruit bait, 1 ♂ (ANIC), swept, 1 ♂ (ANIC), swept over flowers at rainforest fringe, 2 ♂ (AM).

#### 8. *Drosophila (Sophophora) denticulata* Bock & Wheeler

*Specimens examined.* Gordon Ck, swept, 4 ♂ (ANIC), 3 ♂ (AM).

#### 9. *Drosophila (Sophophora) ironensis* Bock & Parsons

*Specimens examined.* Gordon Ck, fruit bait, numerous ♂ (ANIC, AM, LT), swept, 1 ♂ (AM), off fungus, 4 ♂ (ANIC), 4 ♂ (AM).

#### 10. *Drosophila (Sophophora) birchii* Dobzhansky & Mather

*Specimen examined.* Gordon Ck, swept, 1 ♂ (ANIC).

#### 11. *Drosophila (Sophophora) scopata* Bock

*Specimen examined.* Gordon Ck, swept, 1 ♂ (ANIC).

#### 12. *Drosophila (Hirtodrosophila) tricolora* Bock

*Specimens examined.* Gordon Ck, swept, 3 ♀ (ANIC); Lamond Hill, 12°43'S., 143°18'E., swept in rainforest, 9.v.1981, S. F. McEvey, 2 ♀ (AM), 1 ♀ (LT).

#### 13. *Drosophila (Hirtodrosophila) trifurca* Bock

*Specimens examined.* Gordon Ck, off fungus, 24 ♂♀ (ANIC, AM, LT).

14. *Drosophila (Hirtodrosophila) baechlii* Bock

*Specimens examined.* Gordon Ck, off rainforest fungus, numerous ♂♀ (ANIC, AM, LT), swept in rainforest, 3♀ (ANIC), fruit bait, 1♂, 1♀ (AM).

15. *Drosophila (Hirtodrosophila) hirtominuta* Bächli

*Specimens examined.* Gordon Ck, off rainforest fungus, numerous ♂♀ (ANIC, AM, LT), swept in rainforest, 6♂, 1♀ (ANIC), fruit bait, 1♂ (AM).

16. *Drosophila (Hirtodrosophila) menisigra* Bächli

*Drosophila (Dasydrosophila) latifrons seminigra* Duda, 1926, p. 68. (Types in Natural History Museum, Leiden, Netherlands; type locality Sumatra.) [Part; Duda's determinations included two species (Bächli 1973).]

*Drosophila (Hirtodrosophila) menisigra* Bächli, 1973, p. 309. (Holotype in Amsterdam; type locality Sumatra.)

*Distinguishing features.* Body small. Front dusky; mesonotum and scutellum blackened; body otherwise tan. 3rd antennal segment with several very long hairs. Cheek broad; vibrissa very prominent. Carina well developed but rather low, flat. Further details are given by Bächli (1973). The species keys to *baechlii* and *laurelae* in Bock (1982) but is easily distinguished from each of the latter by its entirely pale abdomen.

*Distribution.* Previously known only from Sumatra.

*Specimens examined.* Gordon Ck, off rainforest fungus, 3♂, 4♀ (ANIC), 3♂, 4♀ (AM), 2♂, 4♀ (LT).

✓ 17. *Drosophila (Hirtodrosophila) danielae*, sp. nov.

*Types.* Holotype ♂: Gordon Ck, ex rainforest fungus (ANIC). Paratypes: same data as holotype, 5♂, 1♀ (ANIC), 6♂, 1♀ (AM); Gordon Ck, swept, 2♂ (LT).

*Distinguishing features.* Body rather small, pale. 3rd antennal segment with very long hairs. Cheek very broad. Carina large.

*Body length.* 2.1 mm (holotype); 1.4–2.1 mm (paratype range).

*Head.* Arista with 3 rays above and 1 ray below plus large terminal fork. Front tan; breadth in mid-region 1.3 times length; ocellar triangle dark brown. 2nd and 3rd antennal segments tan, latter with *c.* 7 extremely long hairs in row along anterolateral margin. Carina very large, rather flat, rounded and wider below. Cheek tan, curved, very wide especially anteriorly (*c.* 0.35 times eye diameter). Vibrissa very prominent. Orbital bristles in ratio 10:5:12; anterior reclinate orbital fine, close and posterolateral to proclinate orbital. Eye narrower below, with sparse long pile.

*Thorax.* Mesonotum dark tan, darkest in lines of dorsocentral bristles, with 3 diffuse paler longitudinal lines in mid-region. Acrostichal hairs in 6 rows in front of dorsocentral bristles, 4 rows between dorsocentrals. Ratio anterior:posterior dorsocentrals 0.6. Scutellum dark tan; basal scutellar bristles slightly divergent, *c.*  $\frac{1}{2}$  length of apicals. Sterno-index 0.55. Pleura tan, paler below. Legs pale tan; fore-femur with 2 long ventral bristles; apical bristle on mid-tibia only; preapical on hind-tibia only.

*Wing.* Hyaline. *C*-index, 1.0; *4V*-index, 2.1; *5X*-index, 2.3; *M*-index, 0.7. 3rd costal section with heavy setation on basal *c.* 0.5. Length (holotype), 1.7 mm.

*Abdomen.* Tergites 2–3 in male, 2–4 in female dark tan posteriorly, slightly paler

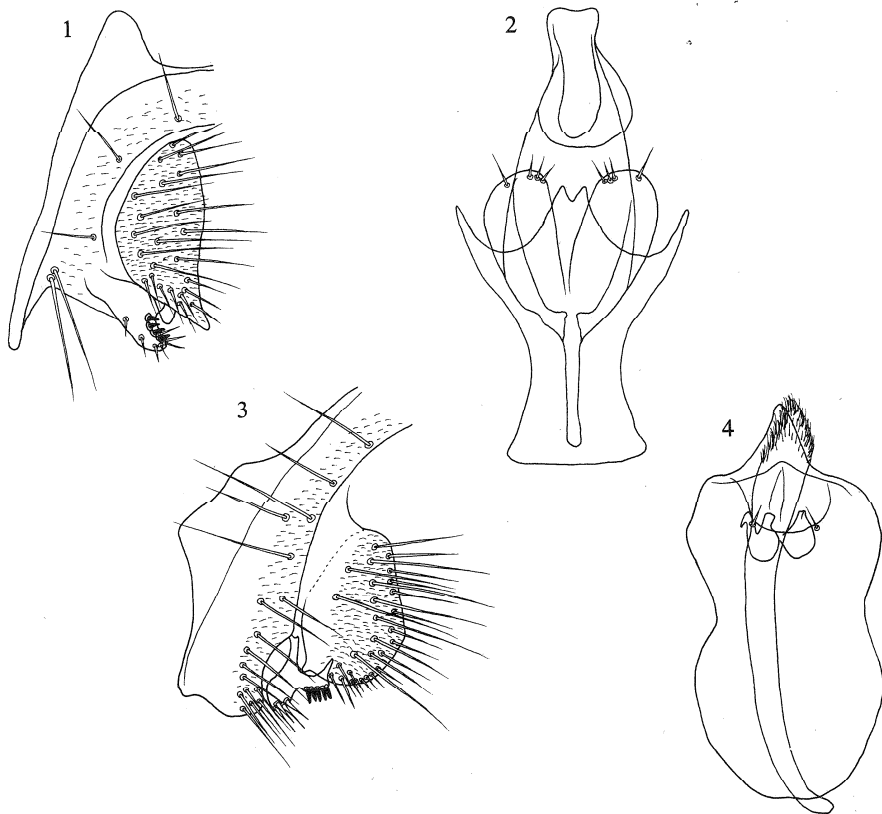
anteriorly, yellowish tan anterolaterally and on incurved portions. Remainder of abdomen yellowish tan.

*Male genitalia* (Figs 1, 2). Clasper small; medial margin indented, with 4 black teeth. Anal plate pointed below. Aedeagus swollen basally, bare. Parandrites large, round, with 4 small apical bristles.

*Female genitalia*. Egg guide long, slender, narrowly rounded apically with 1 large and several small teeth.

*Distribution*. Known only from type locality.

*Specimens examined*. Types as above. Gordon Ck, ex fungus, 10♂, 1♀ (ANIC), 8♂, 1♀ (AM), 4♂ (LT); Gordon Ck, fruit bait, 1♂ (AM).



**Figs 1, 2.** *Drosophila danielae*: 1, male external genitalia; 2, male internal genitalia.

**Figs 3, 4.** *Drosophilla albiventer*: 3, male external genitalia; 4, male internal genitalia.

### Special Comments

*D. danielae* is a typical member of the *hirticornis* species-group, *latifrontata* subgroup (Bächli 1973). The species closely resembles *D. paralatifrontata* Bächli (distribution: Taiwan), *D. sublineata* Duda (Sumatra) and *D. innocua* Malloch (Samoa), but is distinguishable from each of the latter on male genitalia, the setations of the clasper and the parandrite being especially distinctive in *danielae*. Further comments on the *hirticornis* species-group may be found in Bächli (1973).

*D. danielae* keys to *reilliana* in Bock (1982), but is easily distinguished from the latter species by the low small carina in *reilliana* (carina large and broad in *danielae*).

✓ 18. *Drosophila (Hirtodrosophila) albiventer*, sp. nov.

*Types.* Holotype ♂: Gordon Ck, ex rainforest fungus (ANIC). Paratypes: same data as holotype, 2♂, 1♀ (ANIC), 2♂, 1♀ (AM), 1♂ (LT).

*Distinguishing features.* Pleura with broad dark longitudinal band; sternopleuron and legs pale tan. C-index rather low. Carina rudimentary. Occipital margin squared. Wing with brownish tinge.

*Body length.* 2.7 mm (holotype); 2.4–2.8 mm (paratype range).

*Head.* Arista with 6–7 straight rays above and 2 below plus terminal fork; basal half of axis thickened. Front tapered anteriorly; breadth in mid-region 1.5 times length; front largely black, with tan anterior margin and blackish brown orbits. 2nd and 3rd antennal segments dusky tan. Carina reduced to small pale tan ridge on upper part of face, entirely obsolete below. Face dark. Palp dusky tan with 2 prominent bristles. Cheek dark, extremely narrow in middle region. Eye with sparse short pile. Orbital bristles in ratio 5:2:8, equidistant. Posterior reclinate and inner vertical bristles very large, subequal. Outer vertical and ocellar bristles slightly smaller, subequal. Postvertical bristles large.

*Thorax.* Mesonotum mid-brown, paler laterally and anteriorly. Scutellum darker brown dorsally, tan laterally. Acrostichal hairs in 6 rows in front of dorsocentral bristles, irregular between dorsocentrals. Ratio anterior: posterior dorsocentrals 0.7. Sterno-index 0.7. Upper part of pleura broadly dark brown; lower part uniform pale tan; line of colour demarcation almost straight, from just above fore-coxa to just below haltere. Haltere concolorous with upper pleura. Legs pale tan; large apical bristle on mid-tibia only; preapical bristles on all tibiae.

*Wing.* Uniform weak brownish tinge present. C-index, 2.1; 4V-index, 2.1; 5X-index, 1.7; M-index, 0.6. 3rd costal section with heavy setation on basal 0.4. Length (holotype), 2.3 mm.

*Abdomen.* Shiny blackish; innermost portions only of incurved parts of tergites pale tan.

*Male genitalia* (Figs 3, 4). Clasper small with c. 5 short black medial teeth and cluster of lower bristles. Aedeagus apically tapered with dense pubescence. Hypandrium with small submedian spines. Parandrites small, bare.

*Female genitalia.* Egg guide strongly sclerotized, broad basally, narrowed and rounded apically, with very fine marginal teeth.

*Distribution.* Known only from type locality.

*Specimens examined.* Types as above. Same data as types, 1♂, 1♀ (ANIC), 1♂, 1♀ (AM), 1♂, 1♀ (LT); Gordon Ck, swept, 1♀ (AM).

*Special Comments*

This species is very similar to *D. mixtura* Bock, but is distinguishable by its possession of the pleural band (pleural band lacking in *mixtura*). The following species is also very similar to these two; further comments are given following the description of this species.

✓ 19. *Drosophila (Hirtodrosophila) nigriventer*, sp. nov.

*Types.* Holotype ♀: Gordon Ck, ex rainforest fungus (ANIC). Paratypes: same data as holotype, 4♀ (ANIC), 4♀ (AM), 1♀ (LT).

*Distinguishing features.* Similar to preceding species but pleura and legs almost entirely darkened, and wing more deeply infuscated.

*Body length.* 2.6 mm (holotype); 2.4–2.8 mm (paratype range).

*Head.* Arista with 6 rays above and 2 below plus terminal fork; basal half of axis thickened. Front tapered anteriorly; breadth in mid-region 1.4 times length; front blackish brown laterally, narrowly tan anteriorly, otherwise blackish. 2nd and 3rd antennal segments blackish tan. Carina small, pale tan, ridge-like, confined to upper part of face. Face dark. Palp dusky tan with 2 prominent bristles. Cheek blackish, extremely narrow in middle region. Eye with short pile. Orbital bristles in ratio 4:2:7, about equidistant. Posterior reclinate and inner vertical bristles very large, subequal; outer vertical and ocellar bristles slightly smaller, subequal. Postvertical bristles large.

*Thorax.* Mesonotum dark brown (cf. preceding species), paler laterally. Scutellum blackish above, paler laterally. Acrostichal hairs in 6 rows in front of dorsocentral bristles, c. 4 rows between dorsocentrals. Ratio anterior:posterior dorsocentrals 0.7. Sterno-index 0.65. Upper pleura broadly dark brown; sternopleuron largely dark brown; pale tan coloration present in irregular band along suture between sternopleuron and meso- and pteropleura. Metapleuron pale tan. Coxae blackened, whitish about basal part of fore-coxa. Femora dark brown; legs otherwise dark tan. Apical bristle on mid-tibia only; preapicals on mid- and hind-tibiae.

*Wing.* Strong brownish tinge present. *C*-index, 1.8; *4V*-index, 2.0; *5X*-index, 1.8; *M*-index, 0.55. 3rd costal section with heavy setation on basal 0.4. Length (holotype), 2.3 mm.

*Abdomen.* Entirely shiny black.

*Female genitalia.* Similar to those of preceding species but slightly broader, marginal teeth larger.

*Distribution.* Known only from type locality.

*Specimens examined.* Types as above. Same data as types, 1♀ (teneral) (LT).

### *Special Comments*

This species, the preceding one and *D. mixtura* are very similar in gross morphology but are easily distinguishable on coloration. In addition, there are substantial differences between *mixtura* and *albiventer* in male genitalia (the male of *nigriventer* is unknown). There seems no doubt that these three species are very closely related. *D. mixtura* has been recorded from various north Queensland rainforest localities (south of Iron Range) and is known to use the lower sides of hard bracket fungi as courting territories (Parsons and Bock 1977); whether or not similar phenomena occur in *albiventer* and *nigriventer* remains to be determined.

### *J* 20. *Drosophila (Hirtodrosophila) lappetata*, sp. nov.

*Types.* Holotype ♂: Gordon Ck, ex rainforest fungus (ANIC). Paratypes: same data as holotype, 3♂, 2♀ (ANIC), 3♂ (AM); Gordon Ck, swept, 1♂, 2♀ (AM).

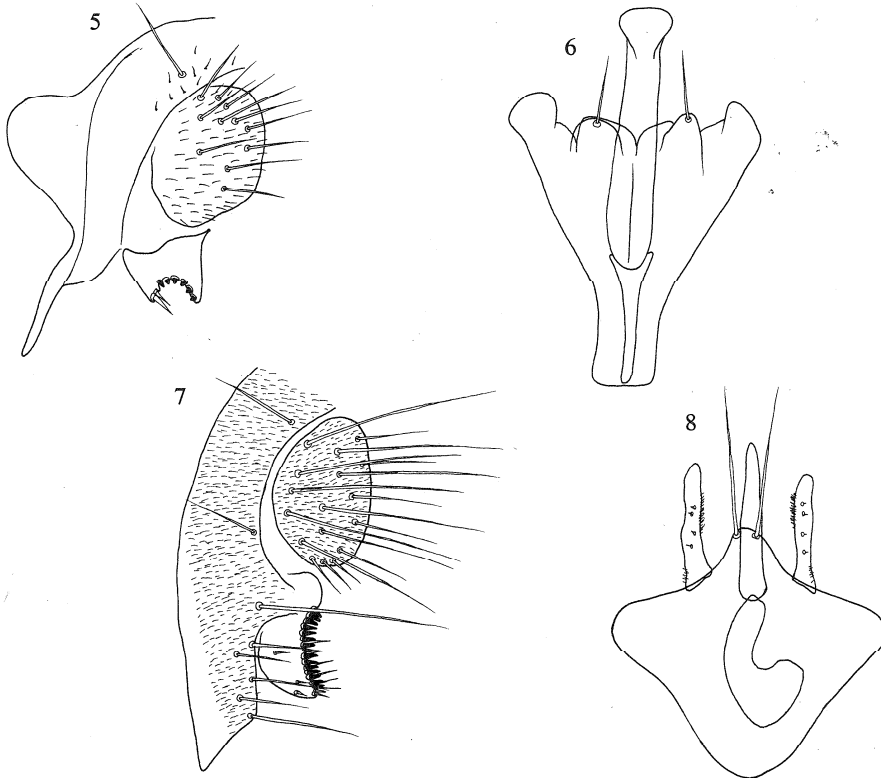
*Distinguishing features.* Wing with costal lappet (see *Special Comments*). This species is otherwise a typical member of the *hirticornis* species-group.

*Body length.* 1.6 mm (holotype); 1.5–1.7 mm (paratype range).

*Head.* Arista with 3 straight rays above and 1 below plus terminal fork. Front 1.4 times broader than long, pale golden tan. 2nd antennal segment pale tan with 2 large bristles; 3rd segment large, largely dusky tan, with several extremely long hairs in addition to shorter pubescence. Carina narrow and high on face, entirely obsolete below. Face largely pale tan, blackish below base of 2nd antennal segment and weakly



on sides of carina. Palp dusky tan, with long apical bristle. Labellum blackened. Cheek wide, *c.* 0.25 times greatest eye diameter, slightly curved, black anteriorly, pale tan posteriorly. Eye with sparse short pile. Orbital bristles in ratio 2:1:2; anterior reclinate orbital lateral and slightly anterior to proclinate orbital.



**Figs 5, 6.** *Drosophila lappetata*: 5, male external genitalia; 6, male internal genitalia.

**Figs 7, 8.** *Drosophila melanopleura*: 7, male external genitalia; 8, male internal genitalia.

*Thorax.* Mesonotum and scutellum pale golden tan, darker in median band enclosing middle 4 rows of acrostichals; bases of dorsocentral and scutellar bristles in small black spots; darkening present above and below humeral callus. Acrostichal hairs in 6 rows in front of dorsocentral bristles, 4 rows between dorsocentrals. Pleura pale tan apart from weak darkening on upper part of sternopleuron and about metathoracic spiracle. Ratio anterior:posterior dorsocentral bristles 0.7. Sterno-index 0.6. Basal scutellar bristles 0.7 length of apicals. Haltere largely pale tan; knob with some darkening. Legs very pale tan; fore-femur with 2 long bristles on inner side; large apical bristle on mid-tibia only; preapical on hind-tibia only.

*Wing.* Hyaline, with well developed black lappet at distal costal incision. *C*-index, 1.0; *4V*-index, 2.1; *5X*-index, 2.2; *M*-index, 0.8. 3rd costal section with heavy setation on basal *c.* 0.6. Length (holotype), 1.4 mm.

*Abdomen.* Largely pale tan; tergites 2-6 with dark apical bands (weak on 6) interrupted in midline.

*Male genitalia* (Figs 5, 6). Medial margin of clasper weakly indented, with row of *c.* 6 small black teeth. Aedeagus long, slender, bare. Hypandrium narrowed basally. Parandrite with long apical spine.

*Female genitalia*. Egg guide elongate, narrow, strongly sclerotized, with narrow toothed apical extension and *c.* 3 subapical teeth.

*Distribution*. Known only from type locality.

*Specimens examined*. Types as above. Same data as types, 2♂ (ANIC), 2♂ (AM), 3♂, 2♀ (LT).

#### *Special Comments*

This species has posed a dilemma in its generic classification. In practically all respects (body size and coloration, habitat, third antennal segment with very long hairs, egg guide with toothed apical projection, frontal breadth greater than length, eyes with pile, *C*-index low, clasper of male genitalia with medial indentation, etc.) the species is a typical member of the *hirticornis* species-group, *latifrontata* subgroup (Bächli 1973), other members of which are also known from north Queensland (Bock 1982; see also species 16–17 above). *D. lappetata*, however, possesses a prominent costal lappet, a feature of (most!) species of several other genera (*Mycodrosophila*, *Styloptera*, *Paramycodrosophila*, *Dettopsomyia*) but not of any species hitherto included in *Drosophila*. There can be little (if any) doubt, however, that *lappetata* is very closely allied to the other species of the *latifrontata* subgroup of the genus *Drosophila*, agreeing in all respects of gross morphology and of male and female genitalia with the diagnosis of that group except in the single feature of its possession of the lappet. In these circumstances the species clearly seems best included in the genus *Drosophila* and assigned to the *latifrontata* subgroup, even if yet another qualification must now be added to the generic diagnosis of *Drosophila* to accommodate one more exceptional species.

#### 21. *Drosophila (Scaptodrosophila) metaxa* Bock

*Specimen examined*. Gordon Ck, fruit bait, 1♀ (AM).

#### 22. *Drosophila (Scaptodrosophila) eluta* Wheeler & Takada

*Specimens examined*. Gordon Ck, fruit bait, 2♂ (ANIC), 3♂ (AM).

#### 23. *Drosophila (Scaptodrosophila) novoguineensis* (Duda)

*Specimens examined*. Gordon Ck, off fungus, 4♂ (ANIC), swept, 1♂ (AM), fruit bait, 2♂, 1♀, 3? (AM).

#### 24. *Drosophila (Scaptodrosophila) pictipennis* Kertész

*Specimens examined*. Gordon Ck, near fruit bait, 3♀ (ANIC).

#### 25. *Drosophila (Scaptodrosophila) fungi* Bock & Parsons

*Specimens examined*. Gordon Ck, off fungus, 1♂ (ANIC), swept, 1♂ (AM).

#### 26. *Drosophila (Scaptodrosophila) altera* Bock

*Specimens examined*. Gordon Ck, off fungus, 4♂, 1♀ (ANIC), swept, 1♂, 3♀ (AM), fruit bait, 2♂, 4♀ (AM).

#### 27. *Drosophila (Scaptodrosophila) bryani* Malloch

*Specimens examined*. Gordon Ck, swept, 2♂, 2♀ (ANIC), fruit bait, 1♂, 3♀ (AM), 2♀ (LT).

28. *Drosophila (Scaptodrosophila) fimbriata* Bock

*Specimens examined.* Gordon Ck, swept, 1♂, 2♀ (ANIC), off figs 2 m up tree, 5♀ (AM); Lamond Hill, 12°43'S., 143°18'E., swept in rainforest, 9.v.1981, S. F. McEvey, 1♂ (AM).

29. *Drosophila (Scaptodrosophila) brunnea* de Meijere

*Specimens examined.* Gordon Ck, off fungus, 17♂, 3♀, 1? (ANIC), at fruit bait, 8♂, 2♀ (AM), swept, 2♂, 1♀ (LT).

30. *Drosophila (Scaptodrosophila) nimia* Bock

*Specimens examined.* Lamond Hill, 12°43'S., 143°18'E., swept in rainforest, 9.v.1981, S. F. McEvey, 1♂, 1♀ (ANIC), 1♂, 1♀ (AM).

∩ 31. *Drosophila (Scaptodrosophila) melanopleura*, sp. nov.

*Types.* Holotype ♂: Gordon Ck, off figs 2 m up tree (ANIC). Paratypes: same data as holotype, 2♂ (ANIC).

*Distinguishing features.* Arista large. Eye large; cheek narrow. Pleura with extensive blackening. 3rd costal section of wing with extensive fringe of heavy setation.

*Body length.* 3.0 mm (holotype); 2.7 and 3.0 mm (paratypes).

*Head.* Arista large, with 5–6 apically curved rays above and 3–4 rays below plus terminal fork. Front tan; periorbits silvery (to just anterior to proclinate orbitals); frontal breadth equal to length. 2nd antennal segment concolorous with front; 3rd segment dusky. Carina prominent, rather nose-like. Face pale tan. Palp tan, with c. 4 prominent bristles. Check whitish, curved, very narrow. Eye large, with sparse short pile. Orbital bristles in ratio 2:1:3; anterior reclinate orbital fine, lateral and slightly posterior to proclinate orbital. Ocellar bristles long.

*Thorax.* Mesonotum tan; humeral callus darkened below, whitish posteriorly. Scutellum tan. Acrostichal hairs in c. 10 rows in front of dorsocentral bristles, c. 6 irregular rows between dorsocentrals. Ratio anterior:posterior dorsocentrals 0.6. Prescutellars well developed. Pleura blackened except about wing articulation and in small band extending from mesothoracic spiracle to posterior part of humeral callus. Sterno-index 0.7. Haltere pale tan. Legs largely pale tan; fore-coxa blackened; preapical bristles large on mid- and hind-tibiae, small on fore-tibia; apical bristle on mid-tibia only. Fore-femur with 4 large bristles on outer side and 2 further large bristles apically on inner side.

*Wing.* Faint brownish tinge present. C-index, 2.0; 4V-index, 1.6; 5X-index, 1.5; M-index, 0.5. 3rd costal section with heavy setation on basal 0.9. Length (holotype), 2.4 mm.

*Abdomen.* Dorsum largely dirty tan, tergites 2–4 with weak narrow apical blackish bands, tergite 5 with similar but much broader band, tergite 6 blackish; all tergites except 1st black laterally and on incurved portions.

*Male genitalia* (Figs 7, 8). Black. Anal plate with exceptionally long hairs; clasper small, with numerous small black medial teeth. Hypandrium with pair of long spines; parandrite finger-like.

*Distribution.* Known only from type locality.

*Special Comments*

This species is distinctive in its combination of distinguishing features as listed above. Superficially (in size and coloration), *D. melanopleura* is strongly reminiscent

of the male of *D. rubida*, but the latter is a member of a different subgenus (most conspicuously lacking prescutellar bristles). Within the *Scaptodrosophila*, *D. melanopleura* does not show strong affinities to any other species although the extensive fringe on the third costal section and the large spines on the hypandrium are reminiscent of *D. fimbriata*.

32. *Drosophila (Scaptodrosophila) oenops*, sp. nov.

*Type.* Holotype ♂: Gordon Ck, swept in rainforest (ANIC).

*Distinguishing features.* Mesonotum dark tan; abdomen blackish. Arista large. Carina very prominent, broad, flat. *C*-index low.

*Body length.* 3.0 mm.

*Head.* Arista with 5 rays above and 3 rays below plus terminal fork. Front dark brownish tan, black between posterior ocelli, silvery about ocellar triangle and orbits; frontal breadth equal to length. 2nd antennal segment concolorous with front; 3rd segment tan, faintly dusky. Carina very large, broad and flat, wedge-shaped, lateral and ventral margins squared. Face and palp dark tan. Cheek linear, rather narrow. Eye coloration well preserved in type, dark winey red. Eye practically bare, with occasional trace only of fine pile evident under high magnification. Orbital bristles in ratio 2:1:2; anterior reclinate orbital lateral and slightly posterior to proclinate orbital. Ocellar, vertical and postvertical bristles large.

*Thorax.* Mesonotum dark orangey tan, with faint diffuse darkening in lines of dorsocentral bristles; scutellum tan. Acrostichal hairs irregular, in *c.* 12 rows in front of dorsocentral bristles, *c.* 8 rows between. Ratio anterior:posterior dorsocentrals 0.6. Prescutellar bristles very strong. Scutellar bristles subequal. Pleura irregular dark brown, appreciably darker than mesonotum. Sterno-index 0.8. Propleural bristle long. Haltere tan. Legs mid-brownish; preapical bristles on all tibiae; apical bristle present on mid-tibia only.

*Wing.* Faint brownish tinge present. *C*-index, 1.8; 4*V*-index, 2.0; 5*X*-index, 2.0; *M*-index, 0.75. 3rd costal section with heavy setation on basal 0.7. Length, 2.3 mm.

*Abdomen.* Tergites 1–2 dark brown; remainder of abdomen subshining blackish.

*Distribution.* Known only from holotype.

*Special Comments*

Although represented only by a single specimen, the holotype is in very good condition. This species is rather reminiscent of *D. novoguineensis*, but lacks the unusual supernumerary scutellar microchaetae characteristic of the latter, and there are further differences in coloration and especially in the shape of the carina.

33. *Drosophila (Scaptodrosophila) species A*

The following abbreviated description is provided for two female specimens (Gordon Ck; one swept, one off fungus; LT) in poor condition, which probably represent a new species.

*Distinguishing features.* Thorax tan; abdominal tergites with broad black apical bands. Anterior and middle sternopleural bristles small; posterior sternopleural bristle large.

*Description.* Body length *c.* 2.4 mm. Arista with 4 rays above and 2 rays below plus terminal fork. Front 1.1 times broader than long, largely dark tan; ocellar

triangle blackened. 2nd antennal segment pale tan; 3rd segment dark dusky tan, paler posteriorly. Carina rather nose-like. Face and palp tan. Orbital bristles in ratio 5:2:5; anterior reclinate orbital posterolateral to proclinate orbital. Thorax entirely tan. Acrostichal hairs in 6–8 rows in front of dorsocentral bristles, 4 rows between dorsocentrals. Anterior and middle sternopleural bristles greatly reduced. Wing hyaline. *C*-index, 2.1; 4*V*-index, 2.0; 5*X*-index, 1.6; *M*-index, 0.6. 3rd costal section with heavy setation on basal 0.6. Abdominal tergite 2 tan medially, blackish tan posterolaterally. Tergites 3–5 tan with broad black apical bands. Tergite 6 black.

#### *Special Comments*

This species is very unusual within the *Scaptodrosophila* in possessing reduced anterior and middle sternopleural bristles, but is otherwise typical. *D. eluta* also possesses reduced anterior and middle sternopleurals, but the mesonotum of the latter species is striped and the species is thus easily distinguishable from species A.

#### 34. *Drosophila (Scaptodrosophila) species B*

The following abbreviated description is provided for a single female (Gordon Ck, swept) in poor condition, which is probably also a new species. This species is rather similar to the preceding one; specimens of both species are retained in LT.

*Distinguishing features.* Similar to preceding species but black bands on abdominal tergites narrower and sternopleural bristles not reduced.

*Description.* Body length 2.6 mm. Arista with 5 apically curved rays above and 4 straight rays below plus small terminal fork. Frontal breadth equal to length; front tan, slightly paler anteriorly and narrowly in midline; periorbits silvery. 2nd antennal segment tan; 3rd segment slightly dusky. Carina rather nose-like. Face tan. Cheek narrow. Thorax tan. Acrostichal hairs in *c.* 8 rows in front of dorsocentral bristles, *c.* 6 rows between dorsocentrals. Prescutellar bristles small. Wing almost hyaline. *C*-index, 2.0; 4*V*-index, 1.8; 3rd costal section with heavy setation on basal 0.8. Abdominal tergites tan with narrow apical black bands; incurved portions more extensively blackened.

#### *Special Comments*

The above specimen is carded; the middle sternopleural bristle is missing, but a large socket is present suggesting the presence of the typical large bristle in this position.

#### Genus *Liodrosophila* Duda

*Liodrosophila* Duda, 1922, p. 153.

#### 35. *Liodrosophila moyae* Bock

*Specimens examined.* Gordon Ck, fruit bait, 10♂, 12♀, off figs 2 m up tree, 1♀ (ANIC), swept, 4♂, 2♀ (AM), off fungus, 1♂, 1♀ (LT).

#### 36. *Liodrosophila lutea* Bock

*Specimens examined.* Gordon Ck, swept, 1♂, 4♀ (AM).

#### 37. *Liodrosophila vitrea* Bock

*Specimen examined.* Gordon Ck, fruit bait, 1♂ (ANIC).

Genus *Sphaerogastrella* Duda

*Sphaerogastrella* Duda, 1922, p. 158.

38. *Sphaerogastrella javana* (de Meijere)

*Specimens examined.* Gordon Ck, fruit bait, 3♂, 1♀, 1?, swept, 1♂, off fungus, 1♂ (ANIC).

Genus *Zygothrica* Wiedemann

*Zygothrica* Wiedemann, 1830, p. 12.

39. *Zygothrica samoensis* Malloch

*Specimens examined.* Gordon Ck, off fungus, 1♂, 1♀ (ANIC).

Genus *Nesiodrosophila* Wheeler & Takada

*Nesiodrosophila* Wheeler and Takada, 1964, p. 238.

✓ 40. *Nesiodrosophila argentea*, sp. nov.

*Type.* Holotype ♀: Gordon Ck, swept in rainforest (ANIC).

*Distinguishing features.* Front and thoracic dorsum with very distinctive silvery greenish pollinosity. Front almost square; carina small; pleura very pale below. Abdomen distinctively banded.

*Body length.* 1.7 mm.

*Head.* Arista with 6 rays above (becoming more curved towards apex of arista) and 2 rays below plus terminal fork; 1st ventral ray straight, long; 2nd ventral ray curved apically and separated from 1st by about  $\frac{1}{2}$  length of axis. Front flat, almost square (extended in posterior corners), silvery grey pollinose; ocellar triangle darkened. 2nd antennal segment pale tan pollinose, with 3 strong bristles; 3rd segment pale tan, rounded. Carina weakly developed, low, very narrow. Face very pale tan with dark line above clypeal margin. Palp tan. Margin of labrum dark. Cheek slightly curved, narrow; vibrissa very large. Eye oval (greatest diameter oblique), with dense pile. Orbital bristles large; proclinate and anterior reclinate orbitals subequal; posterior reclinate a little larger; anterior reclinate orbital lateral and slightly anterior to proclinate orbital. Ocellar bristles large, parallel, outside ocellar triangle.

*Thorax.* Mesonotum tan, darker laterally; scutellum dark tan; both mesonotum and scutellum with superimposed silvery greenish pollinosity. Acrostichal hairs in 4 rows in front of dorsocentral bristles, 2 irregular rows between dorsocentrals. Ratio anterior: posterior dorsocentrals 0.7. Scutellar bristles subequal. Pleura largely very pale tan, darkened along uppermost part and about suture between meso- and pteropleura. Anterior sternopleural bristle fine, c. 0.6 length of posterior sternopleural. Haltere dusky tan. Legs largely very pale tan; tarsi slightly darker. Fore-femur with several very long bristles; preapical bristles on all tibiae; apical bristle on mid-tibia only.

*Wing.* Faintly infuscated except for 2 small hyaline patches on each side of 3rd longitudinal vein near its apex, and in very narrow band along apical half of 5th longitudinal vein, latter weakened apically. C-index, 1.8; 4V-index, 3.2; 5X-index, 3.9; M-index, 1.1. 3rd costal section with heavy setation on basal 0.65. Length, 1.6 mm.

*Abdomen.* Tergites 1–2 blackish brown; incurved portion of tergite 2 partly paler. Tergites 3–6 blackish brown posteriorly and centrally, narrowly paler anterolaterally; incurved portions pale anteriorly, dark posteriorly.

*Female genitalia.* Egg guide large, strongly sclerotized, with few very large apical and subapical teeth.

*Distribution.* Known only from holotype.

#### *Special Comments*

In general morphology this species is similar to *N. plana* Bock and to the following species, but is very easily distinguished from them by its distinctive pollinosity, a characteristic apparently otherwise unknown in this small genus.

#### ✓ 41. *Nesiodrosophila pectinata*, sp. nov.

*Types.* Holotype ♂: Gordon Ck, swept in rainforest (ANIC). Paratypes: same data as holotype, 1 ♂, 2 ♀ (ANIC), 1 ♂, 1 ♀ (AM).

*Distinguishing features.* Anterior reclinate orbital bristle very small. Mesonotum short, shiny brown; abdomen shiny black. Fore-femur with row of *c.* 7 long setulae.

*Body length.* 1.6 mm (holotype); 1.6–1.7 mm (paratype range).

*Head.* Arista large, with 5–6 apically curved rays above and 2 long straight rays below plus terminal fork. Front 1.4 times broader than long, flat, dark tan, largely shiny, with subshining bands adjacent to orbits; ocellar triangle black. 2nd antennal segment dark tan, with 1 stout bristle; 3rd segment long and finely hirsute, dusky tan posteriorly changing to blackish anteriorly. Carina weakly developed, smoothly rounded, broad, low. Face dark tan; clypeal margin with broad but weak whitish band; dark brown line present above latter. Palp tan, with large apical bristle. Labellum with numerous long hairs. Cheek almost linear, rather narrow. Eye more or less oval, with dense pile; greatest diameter oblique. Proclinate and posterior reclinate orbital bristles large, subequal; anterior reclinate orbital very short and fine, barely distinguishable from microchaetae; orbitals almost in line and close together. Inner vertical bristle about twice as long as outer vertical. Ocellar bristles fine but long and well outside triangle.

*Thorax.* Mesonotum short, dome-like, dark brownish, shiny, with fine micropubescence; scutellum similar in coloration and micropubescence. Acrostichal hairs weak and sparsely scattered anterior to dorsocentral bristles, in 2 (sometimes irregular) rows between dorsocentrals. Ratio anterior: posterior dorsocentral bristles 0.75. Sterno-index 0.4. Pleura irregular dark brownish. Haltere dark brownish, stalk slightly paler. Legs dark tan; fore-femur with ventromedial row of *c.* 7 long stout black setulae and several very long bristles dorsally; preapical bristles on fore- and hind-tibiae only; apical bristle on mid-tibia only.

*Wing.* Hyaline. Distal costal incision deep; costa near latter slightly darkened. *C*-index, 1.2; *4V*-index, 2.6; *5X*-index, 2.5; *M*-index, 0.9. 3rd costal section with heavy setation on basal 0.9. Length (holotype), 1.4 mm.

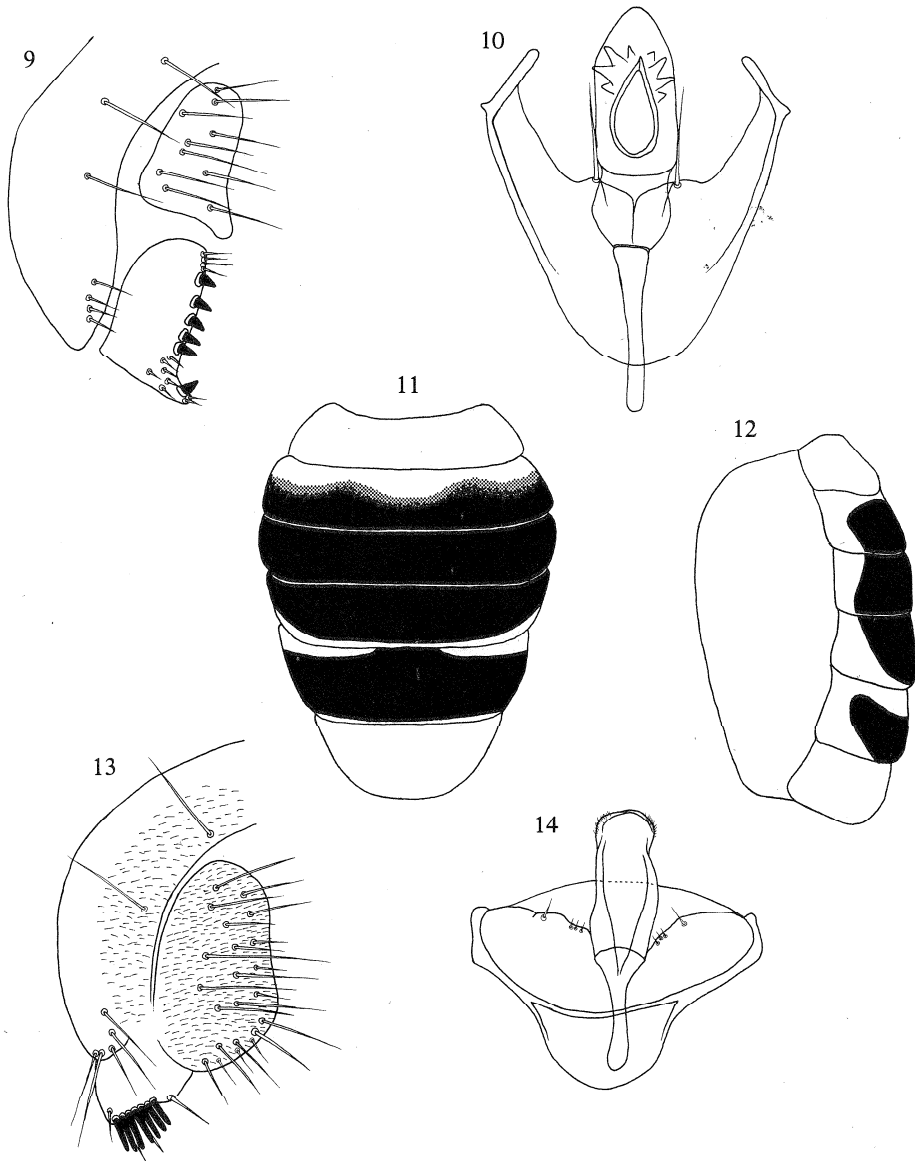
*Abdomen.* Shiny blackish; genitalia tan.

*Male genitalia* (Figs 9, 10). Clasper large, with row of *c.* 6 separated marginal teeth; anal plate small. Hypandrium with submedian spines. Aedeagus with subapical ornamentation.

*Female genitalia.* Egg guide very large, heavily sclerotized, with very large apical tooth and small ventral marginal teeth.

*Distribution.* Known only from type locality.

*Specimens examined.* Types as above. Gordon Ck, fruit bait, 1♂, 1♀ (LT).



**Figs 9, 10.** *Nesiodrosophila pectinata*: 9, male external genitalia; 10, male internal genitalia.

**Figs 11–14.** *Mycodrosophila grandifrons*: 11, abdomen, dorsal view; 12, abdomen, ventrolateral view; 13, male external genitalia; 14, male internal genitalia.

#### *Special Comments*

This species is rather similar to *N. plana* (widely distributed in Queensland and New South Wales) but is distinguished from the latter by its darker thoracic coloration, weaker clypeal band, minute middle orbital bristle (middle orbital well



developed in *plana*), entirely darkened abdomen (abdominal tergites banded in *plana*), and row of large setulae on the fore-femur.

Genus *Microdrosophila* Malloch

*Microdrosophila* Malloch, 1921, p. 312.

42. *Microdrosophila takadai* Bock

*Specimens examined.* Gordon Ck, swept, 2♀ (ANIC).

43. *Microdrosophila hasta* Bock

*Specimens examined.* Gordon Ck, swept, 1♂, 1♀ (ANIC).

44. *Microdrosophila pleurolineata* Wheeler & Takada

*Specimen examined.* Gordon Ck, swept, 1? (ANIC).

Genus *Mycodrosophila* Oldenberg

*Mycodrosophila* Oldenberg, 1914, p. 4.

45. *Mycodrosophila separata* (de Meijere)

*Specimens examined.* Gordon Ck, off fungus, 3♂, 6♀ (ANIC), 3♂, 5♀ (AM).

46. *Mycodrosophila claudensis* Bock

*Specimens examined.* Gordon Ck, off fungus, numerous ♂♀ (ANIC, AM, LT), swept, 1♂, 1♀ (ANIC); East Claudie R. at Coen Rd ford, ex fungus, 7.v.1981, S. F. McEvey, 2♂, 2♀ (ANIC).

47. *Mycodrosophila aqua* Bock

*Specimens examined.* Gordon Ck, off fungus, 1♂ (AM); East Claudie R. at Coen Rd ford, ex fungus, 7.v.1981, S. F. McEvey, 1♂ (AM).

48. *Mycodrosophila helenae* Bock

*Specimen examined.* Gordon Ck, off fungus, 1♂ (ANIC).

✓ 49. *Mycodrosophila grandifrons*, sp. nov.

*Types.* Holotype ♂: East Claudie R. at Coen Rd ford, ex fungus, 7.v.1981, S. F. McEvey (ANIC). Paratypes: same data as holotype, 3♂, 2♀ (ANIC), 4♂, 1♀ (AM).

*Distinguishing features.* Front very broad in both sexes; head broader than thorax. Pleura pale tan below level of wing articulation. Carina very large, unusually shaped. Wing without lappet.

*Body length.* 1.8 mm (holotype); 1.8–2.0 mm (paratype range).

*Head.* Arista with 5 apically curved rays above and 1 straight ray below plus large terminal fork. Front very wide, 2.1 times broader than long (paratype range 1.9–2.3), tan and pollinose in anterior half only, blackish brown in posterior half. 2nd and 3rd antennal segments tan. Carina large, broad, broader below, flat anteriorly above (but with trace of median longitudinal ridge), transversely depressed in lower half then upturned and pointed at ventral tip, latter protuberant. Face tan; clypeal margin shiny blackish brown. Palp pale tan with long fine apical bristle. Cheek broad, blackish brown anteriorly, pale tan posteriorly. Orbital bristles

in ratio 5:1:6; anterior reclinate orbital barely distinguishable from adjacent microchaetae.

*Thorax.* Mesonotum shiny black. Scutellum velvety black, with very fine micropubescence in apical half. Pleura black above level of wing articulation, entirely pale tan below. Stalk of haltere pale tan; knob black. Legs largely pale tan; tarsi slightly darker. Preapical bristle on hind-tibia only; apical bristle on mid-tibia only.

*Wing.* Hyaline. *C*-index, 1.2; *4V*-index, 3.4; *5X*-index, 4.1; *M*-index, 1.6. 3rd costal section with heavy setation on basal 0.6. Length (holotype), 1.8 mm.

*Abdomen* (Figs 11, 12). Tergite 1 pale tan. Tergite 2 pale tan anteriorly, becoming black posteriorly; incurved portion pale tan medially, black laterally. Tergite 3 black; incurved portion tan medially, black laterally. Tergite 4 largely black, narrowly pale tan posteriorly; incurved portion black anterolaterally, otherwise pale tan. Tergite 5 black with narrow pale tan areas anterolaterally; incurved portion black posterolaterally, otherwise pale tan. Tergite 6 pale tan.

*Male genitalia* (Figs 13, 14). Clasper small, with marginal row of *c.* 7 long black rounded bristles. Hypandrium with fine submedian bristles; aedeagus with very fine apical pubescence on each side.

*Female genitalia.* Egg guide heavily sclerotized, with strong preapical and apical teeth.

*Distribution.* Known only from Iron Range.

*Specimens examined.* Types as above. Same data as types, 2♂, 1♀ (ANIC), 1♂ (AM), 2♂, 1♀, 1? (LT); Gordon Ck, off fungus 1♂ (LT).

#### *Special Comments*

The unusually broadened head of this species and the peculiar carina are highly distinctive features. In addition, very few species of *Mycodrosophila* lack the characteristic costal lappet (Bock 1980; cf. also the following species). In other respects, however, *M. grandifrons* is a typical member of the genus.

#### 50. *Mycodrosophila heterothrix*, sp. nov.

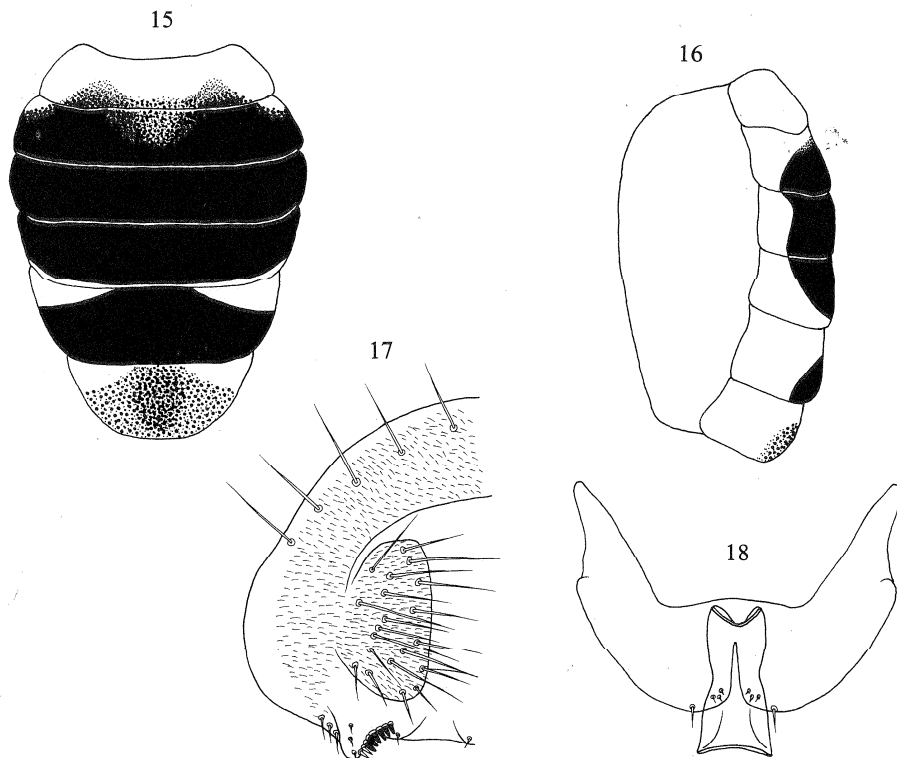
*Types.* Holotype ♂: Gordon Ck, off fungus (ANIC). Paratypes: same data as holotype, 4♂, 3♀ (ANIC), 4♂, 3♀ (AM), 1♂, 1♀ (LT).

*Distinguishing features.* Thorax brown. Costa without lappet. Mesopleuron with 2–3 small bristles. Abdomen largely black.

*Body length.* 1.9 mm (holotype); 1.9–2.1 mm (paratype range).

*Head.* Arista with 4 apically curved rays above and 1 long straight ray below plus terminal fork. Front as broad as long, pollinose when viewed from in front, pale creamy tan in anterior half and (becoming darker) in broad bands between ocellar triangle and posterior corners; ocellar triangle shiny black within large dark tan triangle; posterior corners of front subshining dusky tan. 2nd antennal segment very pale tan; 3rd segment dark tan, slightly dusky. Carina prominent but narrow, not greatly widened below. Face pale tan; clypeal margin and labrum slightly darker. Palp dusky, with long apical and smaller preapical bristles. Cheek whitish, narrow, linear, enlarged in posterior corner. Eye bare. Orbital bristles in ratio 7:2:6, almost in line and equally spaced; anterior reclinate orbital very fine. Ocellar bristles fine. Postverticals strong.

*Thorax.* Mesonotum shiny tan, darker medially especially posteriorly, with weak violet tinge. Scutellum subshining tan, paler at apex. Anterior dorsocentral bristles just distinguishable as slightly larger than acrostichals, very close to posterior dorsocentrals. Basal scutellar bristles very weak, *c.* 0.3 length of apical scutellars. Pleura very pale tan. Sterno-index *c.* 0.5; middle sternopleural bristle absent.



**Figs 15–18.** *Mycodrosophila heterothrix*: 15, abdomen, dorsal view; 16, abdomen, ventrolateral view; 17, male external genitalia; 18, male internal genitalia.

Mesopleuron with 2 or (less frequently) 3 hairs in centre. Legs tan; preapical bristle on hind-tibia only; apical bristle on mid-tibia only. Male fore-tarsus with 4 long curved dorsal hairs.

*Wing.* Hyaline. Costa weakly darkened at distal incision. *C*-index, 1.3; *4V*-index, 1.5; *5X*-index, 1.2; *M*-index, 0.3. 3rd costal section with heavy setation on basal 0.5. Length (holotype), 1.8 mm.

*Abdomen* (Figs 15, 16). Tergite 1 largely very pale tan. Tergite 2 largely black, coloration weaker centrally in anterior portion, pale tan anterolaterally; incurved portion black posterolaterally, otherwise pale tan. Tergites 3–4 black; incurved portions black laterally, tan medially. Tergite 5 largely black, pale tan anterolaterally; incurved portion largely pale tan, black posterolaterally. Tergite 6 tan with some darkening especially centrally in some specimens only (otherwise entirely pale tan).

*Male genitalia* (Figs 17, 18). Clasper small, with short row of marginal teeth. Hypandrium and aedeagus small and weakly sclerotized; aedeagus short, without ornamentation.

*Female genitalia.* Egg guide strongly sclerotized, slender, apically rounded, almost devoid of teeth.

*Distribution.* Known only from type locality.

*Specimens examined.* Types as above. Same data as types, 4♂ (ANIC), 3♂ (AM), swept, 1♂, 1♀ (ANIC), 1♂, 1♀ (AM), 3♂, 1♀ (LT).

#### *Special Comments*

This species is exceptional within the Drosophilidae in possessing mesopleural hairs, and within the genus *Mycodrosophila* in its thoracic coloration and lack of costal lappet.

With regard to the former character, the Drosophilidae are generally defined *inter alia* as lacking hairs or bristles on the mesopleuron. A few species are, however, known which possess such hairs (Bock 1982), and the presence of mesopleural microchaetae does not exclude a species from the Drosophilidae if the other diagnostic characters are met. *M. heterothrix* is, however, the first such species known from Australia.

With regard to the thoracic coloration and lack of lappet, several species of *Mycodrosophila* are known which lack the lappet (see *Special Comments* following the preceding species). A pale brown thorax, or a thorax with other than the usual glossy black mesonotum and velvety scutellum is also exceptional but not unknown (see, for example, Wheeler and Kambysellis 1966). Again, however, this is the first such species of *Mycodrosophila* known from Australia. In other respects (especially arista, frontal pollinosity, vestigial anterior dorsocentral bristles, weak basal scutellars, structure of male genitalia, abdominal coloration) the species is a typical *Mycodrosophila*. The collection of many specimens on fungus is also typical of that genus, all known members being fungus feeders.

#### ✓ 51. *Mycodrosophila gordonii*, sp. nov.

*Types.* Holotype ♀: Gordon Ck, off fungus (ANIC). Paratypes: same data as holotype, 2♂, 1♀ (ANIC).

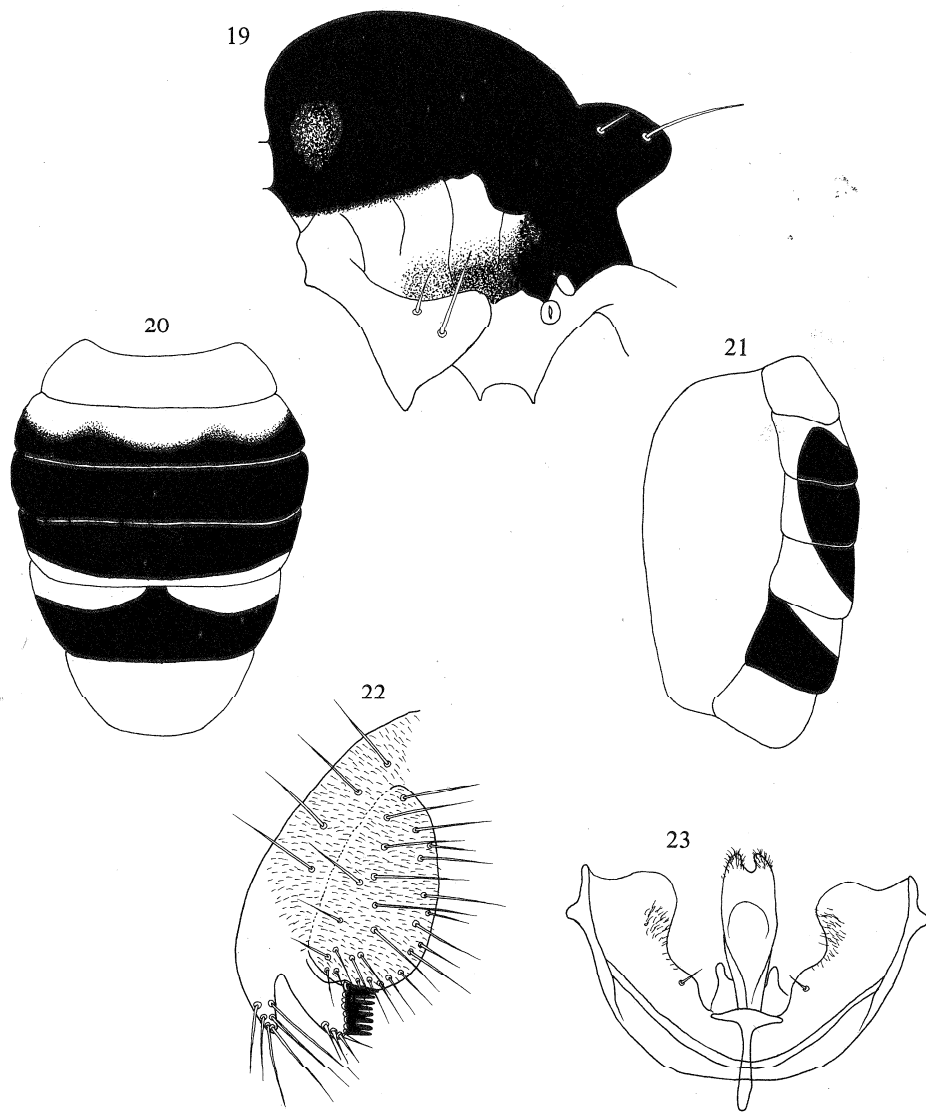
*Distinguishing features.* A typical *Mycodrosophila* with pleural darkening on pleurotergite and lower part of pteropleuron just extending on to mesopleuron. Abdominal patterns as in Figs 20, 21.

*Body length.* 3.1 mm (holotype); 3.0–3.1 mm (paratype range).

*Head.* Arista with 4 apically curved rays above and 1 ray below plus large terminal fork (right arista of holotype with extra dorsal ray and smaller terminal fork). Front 1.2 times broader than long, blackish brown laterally and posteriorly, tan in triangular area from ocellar triangle to anterior corners; transverse darker band present in some specimens behind anterior margin. 2nd and 3rd antennal segments dusky dark tan. Carina very large, broader and flared below, flat, slightly more protuberant in midline along ventral margin, lateral edges squared. Face largely blackish brown, paler in uppermost portion. Labrum concolorous with lower part of face. Palp large, flat, dusky black, with short bristles only. Labellum very pale tan. Cheek narrow, linear, dark brown with pale tan posterior corner. Eye bare. Orbital bristles in ratio 4:2:5, almost in line; anterior reclinate orbital close to proclinate orbital.

*Thorax* (Fig. 19). Mesonotum glossy blackish; scutellum velvety black. Pleura dark above level of wing articulation, pale tan below with darkening on pleuroter-

gite and lower part of pteropleuron just extending on to mesopleuron. Stalk of haltere pale tan; knob black (cf. *M. diversa* Bock). Legs entirely pale tan; weak preapical bristle on hind-tibia; strong apical on mid-tibia.



**Figs 19–23.** *Mycodrosophila gordonii*: 19, thorax, lateral view; 20, abdomen, dorsal view; 21, abdomen, ventrolateral view; 22, male external genitalia; 23, male internal genitalia.

*Wing.* Faintly brownish with well developed lappet; trace of darkening present behind lappet. *C*-index, 1·6; *4V*-index, 2·6; *5X*-index, 2·3; *M*-index, 0·8. 3rd costal section with heavy setation on basal 0·75. Length (holotype), 2·4 mm.

*Abdomen* (Figs 20, 21). Tergite 1 pale tan. Tergite 2 tan anteriorly, black posteriorly; incurved portion tan medially and narrowly anteriorly, otherwise black. Tergite 3 black; incurved portion black laterally, tan medially. Tergite 3 largely

black, narrowly pale tan posteriorly; incurved portion black anterolaterally, otherwise pale tan. Tergite 5 black with pale tan patches anterolaterally; incurved portion tan anterolaterally, otherwise black. Tergite 6 pale tan.

*Male genitalia* (Figs 22, 23). Clasper with *c.* 8 large medial teeth. Hypandrium with small submedian spines and patches of pubescence; aedeagus apically notched, pubescent; parandrite small, bare.

*Female genitalia*. Egg guide well developed, apically rounded, with few apical teeth only.

*Distribution*. Known only from type specimens.

### *Special Comments*

This species is very similar to *M. diversa* Bock, 1980 and to *M. joalahae* Bock, 1982, sharing with them rather similar patterns of pleural and abdominal patterning. The species are, however, unequivocally separable by reference to male genitalia, and there are subtle differences in abdominal and thoracic coloration, wing indices and structure of the carina (figures and descriptions for *diversa* and *joalahae* in Bock 1980, 1982) which also permit separation of both sexes of the species.

## Genus *Paramycodrosophila* Duda

*Paramycodrosophila* Duda, 1924, p. 191.

### 52. *Paramycodrosophila diversicrus*, sp. nov.

*Type*. Holotype ♂: Gordon Ck, off fungus (ANIC).

*Distinguishing features*. Hind-femur almost entirely darkened. First 2 orbital bristles on blackened prominence. Thoracic and abdominal patterning as in Figs 24–27.

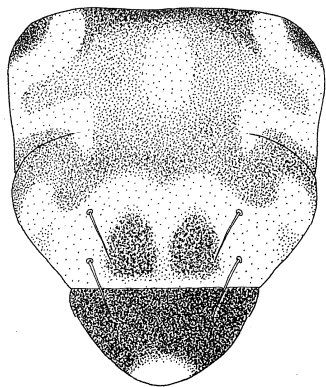
*Body length*. 1.9 mm.

*Head*. Arista with 8 curved rays above (becoming straighter towards apex of arista) and 1 long straight ray below near apex of arista, plus terminal fork; axis of arista tan basally, black apically. Front 1.4 times broader than long, largely dark tan, paler in band along anterior margin; orbital bristles 1 and 2 on blackened prominence; ocellar triangle raised, black. 2nd antennal segment tan; 3rd segment dusky black, tapered below. Carina high on face, entirely obsolete below, knife-like. Face largely very pale tan, with dark transverse band at level of carina. Palp black, with apical bristle. Cheek pale tan, curved, *c.* 0.1 times greatest diameter of eye. Vibrissa long. Eye with sparse short pile. Orbital bristles in ratio 7:7:8; anterior reclinate orbital lateral and well anterior to proclinate orbital. Ocellar, vertical and postvertical bristles large.

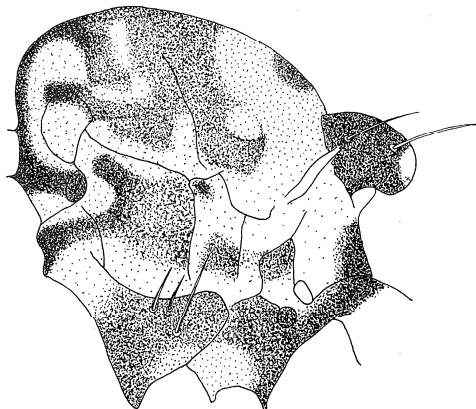
*Thorax* (Figs 24, 25). Mesonotum pale brown with extensive dark patterning (Fig. 24), most noticeably in 2 spots in front of scutellum and large anterior area; scutellum dark, pale apically. Acrostichal hairs in 6 rows in front of dorsocentral bristles, 4 rows between dorsocentrals. Ratio anterior: posterior dorsocentrals 0.7. Scutellar bristles subequal. Pleura (Fig. 25) with extensive darkening. Sterno-index *c.* 0.5. Stalk of haltere pale tan; knob white. Fore-femur tan with broad dark brown basal annulus and narrow dark brown subapical annulus; mid-femur tan with narrow basal and subapical annuli; hind-femur entirely dark except in very narrow tan apical band. Each tibia tan with narrow dark brown subbasal and subapical annuli. Tarsi tan. Preapical bristle on hind-tibia; apical bristle on mid-tibia.

*Wing.* Hyaline, with large black lappet. *C*-index, 1·2; *4V*-index, 2·3; *5X*-index, 2·3; *M*-index, 0·8. 3rd costal section with heavy setation on basal 0·6. Length, 1·7 mm.

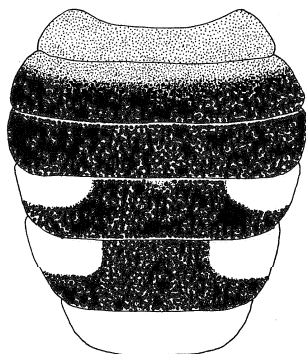
24



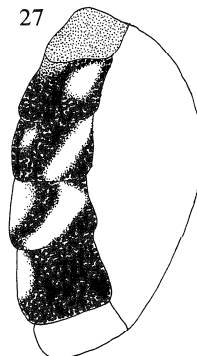
25



26



27



**Figs 24–27.** *Paramycodrosophila diversicrus*: 24, thorax, dorsal view; 25, thorax, lateral view; 26, abdomen, dorsal view; 27, abdomen, ventrolateral view.

*Abdomen* (Figs 26, 27). Tergite 1 blackish tan. Tergite 2 blackish tan anteriorly, black posteriorly; incurved portion largely black, with pale tan patch. Tergite 3 black; incurved portion black with small medial and large lateral pale tan patches. Tergite 4 black with large anterolateral pale tan patches; incurved portion black with extensive pale tan patches laterally and in middle region. Tergite 5 black with large anterolateral pale tan patches; incurved portion largely black. Tergite 6 entirely pale tan.

*Distribution.* Known only from type locality.

*Specimens examined.* Holotype as above. Gordon Ck, fruit bait, 1♂ [damaged] (LT).

#### *Special Comments*

Species of the genus *Paramycodrosophila* are most easily distinguished by subtleties of patterning, all of the small number of species known possessing complex thoracic (including leg) patterns and markings on the abdominal tergites. *P. diversicrus* is distinguishable from all other Australian, south-east Asian and Pacific species by its almost entirely darkened hind-femur, the latter being tan with much

less extensive banding in the other species; there are further differences in the thoracic and abdominal markings. Amongst the Australian fauna the present species most closely resembles *P. pictula* (de Meijere) and *P. parapictula* Wheeler & Takada in abdominal pattern, but there are minor differences amongst these species in patterning as well as in the more distinctive coloration of the hind-femur.

#### Genus *Leucophenga* Mik

*Leucophenga* Mik, 1886, p. 317.

#### 53. *Leucophenga janicae* Bock

*Specimen examined.* Lamond Hill, 12°43'S., 143°18'E., swept in rainforest, 9.v.1981, S. F. McEvey, 1♀ (ANIC).

#### 54. *Leucophenga zebra* Bock

*Specimens examined.* Gordon Ck. swept, 1♂, 1♀ (ANIC)

### Discussion

The collections reported in this paper together with previous records bring the total number of drosophilid species now known to occur in the rainforests of Iron Range to 80. A full list of these species is given in Table 1; for each species not detected during the survey reported above, a reference for its occurrence at Iron Range is given in the table.

It is highly likely that more species remain to be detected at Iron Range. Species such as *Paramycodrosophila pictula* and *P. parapictula*, known from south-east Asia, New Guinea, Micronesia and more southerly north Queensland rainforests, have not yet been found at Iron Range; it seems probable that such species occur at the latter intermediate locality. A key to the 80 known species is, however, provided below.

Bock (1982) listed an Australian total of 221 described species in the family Drosophilidae. A further 12 species have been described in this paper, and the new Australian record *Drosophila menisigra* reported. Not including *D. ?kohkoa* (final determination of this species awaiting the results of necessarily extensive genetic and cytological analyses) and the three Iron Range species designated as *Drosophila* spp. A and B and *Leucophenga* sp. C, the Australian total of described species therefore now stands at 234, 76 or practically one-third of which have been collected within a few square kilometres of rain forest at Iron Range. It appears, indeed, that Iron Range possesses the greatest diversity of drosophilid species in Australia, the closest comparable areas in terms of species diversity being the rainforest sites about Tully and the Atherton Tableland. This finding supports the view that the Australian drosophilid fauna is most closely related to that of south-east Asia and New Guinea, and at least very largely derived from the latter, which although still largely unworked is known to be very large and diverse.

Of the 80 species now known from Iron Range, 25 (indicated by asterisks in Table 1) are unknown from more southerly localities. Since fairly extensive collections have been made in the more southern rainforests, it is possible that the latter species do not occur south of Iron Range, but the possibility cannot be excluded that some species have become extinct as a result of the very extensive destruction of habitat that has been perpetrated in such areas as the Atherton Tableland, where only tiny, isolated pockets of the original rainforest remain.



**Table 1. Drosophilidae recorded at Iron Range**

References are given for species not detected in the collection reported above. Species unknown from localities south of Iron Range are indicated by asterisks

<i>Amiota annulata</i> Malloch: [Bock 1982]	<i>D. rubida</i> Mather
<i>A. fasciata</i> (Kertész): [Bock 1982]	<i>D. scopata</i> Bock
<i>Balara poecilithorax</i> (Malloch): [Bock 1982]	<i>D. s. sulfurigaster</i> (Duda)
<i>Drosophila albiventer</i> *, sp. nov.	<i>D. tricolora</i> Bock
<i>D. altera</i> Bock	<i>D. trifurca</i> Bock
<i>D. ananassae</i> Doleschall	<i>D. variata</i> Bock: [Bock 1982]
<i>D. baechlii</i> Bock	<i>D. sp. A</i> *
<i>D. bipectinata</i> Duda	<i>D. sp. B</i> *
<i>D. birchii</i> Dobzhansky & Mather	<i>Hypselothyrea claudensis</i> * Bock:
<i>D. brunnea</i> de Meijere	[Bock 1982]
<i>D. bryani</i> Malloch	<i>Leucophenga albofasciata</i> (Macquart): [Bock
<i>D. cancellata</i> Mather: [Bock 1976]	1979]
<i>D. concolor</i> Bock: [Bock 1976]	<i>L. bellula</i> (Bergroth): [Bock 1979]
<i>D. cultello</i> Bock: [Bock 1982]	<i>L. gibbosa</i> (de Meijere): [Bock 1979]
<i>D. danielae</i> *, sp. nov.	<i>L. janicae</i> Bock
<i>D. denticulata</i> Bock & Wheeler	<i>L. ornata</i> Wheeler: [Bock 1979]
<i>D. durantae</i> Bock & Parsons: [specimens	<i>L. scutellata</i> Malloch: [Bock 1979]
in AM]	<i>L. subpollinosa</i> (de Meijere): [Bock 1979]
<i>D. eluta</i> Wheeler & Takada	<i>L. zebra</i> Bock
<i>D. fimbriata</i> Bock	<i>L. sp. C</i> * (Bock 1979): [Bock 1979]
<i>D. fungi</i> Bock & Parsons	<i>Liodrosophila lutea</i> Bock
<i>D. glauca</i> Bock: [McEvey 1981]	<i>L. moyae</i> Bock
<i>D. hirtominuta</i> Bächli	<i>L. vitrea</i> Bock
<i>D. ironensis</i> Bock & Parsons	<i>Lissocephala metallescens</i> (de Meijere): [Bock 1982]
<i>D. jackeyi</i> * Bock: [Bock 1982]	<i>Microdrosophila hasta</i> Bock
<i>D. kennedyi</i> * Bock: [Bock 1982]	<i>M. pleurolineata</i> Wheeler & Takada
<i>D. ? kohkoa</i> * Wheeler	<i>M. takadai</i> Bock
<i>D. lappetata</i> *, sp. nov.	<i>Mycodrosophila aqua</i> Bock
<i>D. melanopleura</i> *, sp. nov.	<i>M. claudensis</i> * Bock
<i>D. menisigra</i> * Bächli	<i>M. gordonii</i> *, sp. nov.
<i>D. metaxa</i> Bock	<i>M. grandifrons</i> *, sp. nov.
<i>D. moana</i> * McEvey: [McEvey 1981]	<i>M. helenae</i> Bock
<i>D. nigriventer</i> *, sp. nov.	<i>M. heterothrix</i> *, sp. nov.
<i>D. nimia</i> Bock	<i>M. separata</i> (de Meijere)
<i>D. novoguineensis</i> (Duda)	<i>M. stigma</i> Bock: [Bock 1980]
<i>D. oenops</i> *, sp. nov.	<i>Nesiodrosophila argentea</i> *, sp. nov.
<i>D. paracultello</i> * Bock: [Bock 1982]	<i>N. pectinata</i> *, sp. nov.
<i>D. persicae</i> Bock & Parsons: [Bock and Parsons	<i>Paramycodrosophila diversicrus</i> *, sp. nov.
1978a]	<i>Sphaerogastrella javana</i> (de Meijere)
<i>D. pictipennis</i> Kertész	<i>Stegana claudana</i> * Bock: [Bock 1982]
<i>D. pseudoananassae</i> Bock	<i>S. lamondi</i> * Bock: [Bock 1982]
<i>D. pseudotetrachaeta</i> Angus	<i>Zygothrica samoensis</i> Malloch

### Key to the Known Drosophilidae of Iron Range

1. Mesonotum with more than 2 pairs of dorsocentral bristles.....2
- Mesonotum with 1–2 pairs of dorsocentral bristles .....3
- 2(1). Mesonotum with 3 pairs of dorsocentrals, anterior pair somewhat removed from posterior 2 pairs.....*Balara poecilithorax*
- Mesonotum with 4 pairs of large dorsocentral bristles..... *Drosophila pseudotetrachaeta*
- 3(1). Mesonotum with 1 pair of dorsocentrals, or anterior pair extremely small.....4
- Mesonotum with 2 pairs of large dorsocentrals.....12

4(3).	Scutellum strongly upturned, apically pointed.....	<i>Hypselothyrea claudensis</i>	
	Scutellum broadly rounded, not upturned (genus <i>Mycodrosophila</i> ).....		5
5(4).	Wing without lappet.....		6
	Costa protruding at distal incision as large black lappet.....		7
6(5).	Mesonotum brown.....	<i>M. heterothrix</i>	
	Mesonotum black.....	<i>M. separata</i>	
7(5).	Head laterally expanded, noticeably broader than thorax.....	<i>M. grandifrons</i>	
	Head not laterally expanded.....		8
8(7).	Wing with apical darkening.....	<i>M. stigma</i>	
	Wing without apical darkening.....		9
9(8).	Thorax with some darkening on pleurotergite and lower part of pteropleuron.....		10
	Thorax entirely pale below level of wing articulation.....		11
10(9).	Abdominal tergites 3-4 almost entirely black dorsally.....	<i>M. gordonii</i>	
	Abdominal tergites 3-4 pale tan with posterior and central black markings.....	<i>M. aqua</i>	
11(9).	Wing with obvious dark transverse band behind lappet.....	<i>M. claudensis</i>	
	Wing at most with trace of dark band behind lappet.....	<i>M. helenae</i>	
12(3).	Well developed prescutellar bristles present.....		13
	Prescutellars absent.....		53
13(12).	Carina knife-like (genus <i>Stegana</i> ).....		14
	Carina, if present, not knife-like.....		15
14(13).	Pleura with broad dark longitudinal band.....	<i>S. claudana</i>	
	Pleura entirely pale.....	<i>S. lamondi</i>	
15(13).	Carina, if present, low and smoothly rounded.....		16
	Carina prominent [genus <i>Drosophila</i> (part)].....		32
16(15).	Discal and 2nd basal wing cells separate (genus <i>Amiota</i> ).....		17
	Discal and 2nd basal cells confluent.....		18
17(16).	Arista entirely bare.....	<i>A. fasciata</i>	
	Arista with basal dorsal rays.....	<i>A. annulata</i>	
18(16).	Costa reaching apex of 4th longitudinal wing vein; 3rd costal section without ventral thorn-like spines.....	<i>Drosophila jackeyi</i>	
	Costa reaching only to or just beyond apex of 3rd longitudinal vein; 3rd costal section with small ventral thorn-like spines (genus <i>Leucophenga</i> ).....		19
19(18).	3rd abdominal tergite partly or completely white, desclerotized, short, usually largely concealed beneath 2nd tergite; 4th tergite appreciably longer than 3rd or 5th.....		20
	3rd abdominal tergite not white, desclerotized or concealed beneath 2nd tergite; 4th tergite about same length as 3rd and 5th.....		23
20(19).	Wing with general infuscation.....	<i>L. gibbosa</i> ♂	
	Wing hyaline.....		21
21(20).	3rd abdominal tergite not entirely desclerotized, with brownish coloration and several bristles in posterolateral corners.....	<i>L. janicae</i> ♂	
	3rd abdominal tergite entirely desclerotized, white and devoid of bristles.....		22
22(21).	Scutellum with basal black spots.....	<i>L. scutellata</i> ♂	
	Scutellum without basal black spots.....	<i>L. albofasciata</i> ♂	
23(19).	Pleura with dark lateral stripe.....		24
	Pleura without dark lateral stripe.....		26
24(23).	Thorax and abdomen with strong whitish pollinosity.....	<i>L. subpollinosa</i> ♂	
	Thorax and abdomen at most with very weak pollinosity.....		25
25(24).	Wing with small basal dark patch, otherwise clear.....	<i>L. subpollinosa</i> ♀	
	Wing with general infuscation.....	<i>L. zebra</i>	
26(23).	Wing with distinct pattern.....		27
	Wing not patterned.....		28
27(26).	Wing with large weakly darkened patch about apical half of 2nd longitudinal vein....	<i>L. ornata</i>	
	Wing with strongly darkened patch at end of 2nd longitudinal vein.....	<i>L. sp.C</i>	
28(26).	Abdominal tergites 3-5 tan with small median black spots; tergites 4-5 with additional lateral spots.....	<i>L. bellula</i>	
	Abdominal pattern not as above.....		29
29(28).	Scutellum with basal black patches.....	<i>L. scutellata</i> ♀	
	Scutellum without basal black patches.....		30

30(29).	Wing infuscated.....	<i>L. gibbosa</i> ♀	
	Wing hyaline.....		31
31(30).	Abdominal tergites 3-5 tan with apical black bands of near uniform width.....	<i>L. janicae</i> ♀	
	Abdominal tergites 3-5 black with lateral (tergite 3) or submedian (tergites 4-5) tan patches.....	<i>L. albofasciata</i> ♀	
32(15).	Wing patterned.....	<i>D. pictipennis</i>	
	Wing not patterned.....		33
33(32).	Scutellum with several fine marginal hairs in addition to usual 4 macrochaetae.....	<i>D. novoguineensis</i>	
	Scutellum bare apart from usual 4 macrochaetae.....		34
34(33).	Arista consisting only of axis with single dorsal ray, axis ending in large terminal fork.....	<i>D. moana</i>	
	Axis of arista with several rays.....		35
35(34).	Mesonotum patterned.....		36
	Mesonotum unicolorous, almost unicolorous or with different coloration on humeral calli only.....		42
36(35).	Scutellum with pale spots basally and apically.....		37
	Scutellum unicolorous, or paler apically only.....		38
37(36).	Mesonotum dark with paler longitudinal streaks.....	<i>D. cancellata</i>	
	Mesonotum with irregular, occasionally coalescing longitudinal dark brown stripes.....	<i>D. glauca</i>	
38(36).	Mesonotum tan with longitudinal dark brown stripes of uniform width.....	<i>D. eluta</i>	
	Mesonotum otherwise patterned.....		39
39(38).	Carina with dark transverse band.....	<i>D. paracultello</i>	
	Carina of uniform coloration.....		40
40(39).	Carina dark brown.....	<i>D. brunnea</i>	
	Carina pale tan.....		41
41(40).	Face entirely pale tan.....	<i>D. variata</i>	
	Carina pale tan; face otherwise darkened.....	<i>D. cultello</i>	
42(35).	Anterior scutellar bristles $c \frac{1}{2}$ length of posterior scutellars.....	<i>D. bryani</i>	
	Anterior scutellars about as long as posterior scutellars.....		43
43(42).	Mesonotum blackish or very dark blackish brown.....		44
	Mesonotum pale tan to mid-brownish.....		46
44(43).	C-index $c. 1.0$ .....		45
	C-index $c. 1.6$ .....	<i>D. altera</i>	
45(44).	Prescutellar bristles much weaker than anterior dorsocentrals.....	<i>D. fungi</i>	
	Prescutellars larger than anterior dorsocentrals.....	<i>D. metaxa</i>	
46(43).	Pleura appreciably darker than mesonotum.....		47
	Pleura not darkened.....		48
47(46).	Carina nose-like.....	<i>D. melanopleura</i>	
	Carina broad and flat, lateral and ventral margins squared.....	<i>D. oenops</i>	
48(46).	Fringe of heavy bristles on 3rd costal section of wing almost entire.....	<i>D. fimbriata</i>	
	Fringe of heavy bristles on 3rd costal section not $> 0.8$ length of section.....		49
49(48).	C-index $c. 1.2$ .....	<i>D. kennedyi</i>	
	C-index $c. 2.0$ or greater.....		50
50(49).	C-index $c. 3.1$ .....	<i>D. nimia</i>	
	C-index $c. 2.0-2.3$ .....		51
51(50).	Abdomen uniformly tan.....	<i>D. concolor</i>	
	Abdominal tergites with apical black bands.....		52
52(51).	Abdominal tergites with broad apical bands.....	<i>D. sp. A</i>	
	Abdominal tergites with narrow apical bands.....	<i>D. sp. B</i>	
53(12).	Costa protruding at distal incision as large black lappet.....		54
	Wing without lappet.....		55
54(53).	Mesonotum tan with darkening in median longitudinal band.....	<i>Drosophila lappetata</i>	
	Mesonotum with complex pattern of pale and dark areas.....	<i>Paramycodrosophila diversicrus</i>	
55(53).	Frons highly polished, with metallic sheen evident at certain angles of illumination.....		56
	Frons not highly polished, without metallic sheen.....		60
56(55).	Wing with transverse basal black band.....	<i>Lissocephala metallescens</i>	
	Wing entirely clear.....		57

- 57(56). Abdomen globose, broader than thorax..... *Sphaerogastrella javana*  
 Abdomen not globose, not broader than thorax (genus *Liodrosophila*)..... 58
- 58(57). Acrostichal hairs absent..... *L. vitrea*  
 Acrostichals present..... 59
- 59(58). Abdomen black..... *L. moyae*  
 Abdominal tergites 3-6 tan, tergites 3-4 with apical black bands..... *L. lutea*
- 60(55). Front flat, square or rectangular; ocellar bristles beside anterior ocellus, outside ocellar triangle  
 (genus *Nesiodrosophila*)..... 61  
 Front not as above; ocellar bristles behind anterior ocellus, within triangle..... 62
- 61(60). Mesonotum with prominent silvery greenish pollinosity..... *N. argentea*  
 Mesonotum dark brownish, without pollinosity..... *N. pectinata*
- 62(60). Proboscis very heavily sclerotized, unusually long..... *Zygothrica samoensis*  
 Proboscis not unusually heavily sclerotized or long..... 63
- 63(62). Front broad; anterior reclinate orbital bristle minute or absent; anterior dorsocentral bristles  
 large, close to transverse suture (genus *Microdrosophila*)..... 64  
 Anterior reclinate orbital usually well developed; anterior dorsocentral bristles close to  
 posterior dorsocentrals [genus *Drosophila* (part)]..... 66
- 64(63). Fringe of heavy bristles on 3rd costal section of wing entire..... *M. takadai*  
 Fringe of heavy bristles on 3rd costal section not entire (up to 0.95)..... 65
- 65(64). Mesonotum dark brown; pleura dark brown above abruptly changing to pale tan below....  
 ..... *M. hasta*  
 Mesonotum tan; upper pleura weakly and unevenly darkened, lower pleura becoming paler  
 ..... *M. pleurolineata*
- 66(63). 3rd antennal segment with several very long hairs in addition to usual pubescence..... 67  
 3rd antennal segment with pubescence only..... 71
- 67(66). Mesonotum blackened..... 68  
 Mesonotum tan to mid-brownish..... 60
- 68(67). Abdominal tergites 3-4 with apical black bands..... *D. baechlii*  
 Abdomen entirely pale..... *D. menisigra*
- 69(67). C-index c. 1.0; carina very large..... *D. danielae*  
 C-index c. 1.6-1.7; carina small, obsolete below..... 70
- 70(69). Body entirely tan; wing clear..... *D. hirtominuta*  
 Body mid-brownish; abdominal tergites 2-5 with darker apical bands; wing with brownish  
 tinge..... *D. trifurca*
- 71(66). Fore-femur with row of strong peg-like setulae on inner side..... 72  
 Fore-femur without peg-like setulae..... 73
- 72(71). Male front with milky white orbital pollinosity..... *D. s. sulfurigaster*  
 Milky white pollinosity on male front entire..... *D. ? kohkoa*
- 73(71). Carina large, broad, flat, wedge-shaped..... 74  
 Carina, if present, not as above..... 75
- 74(73). Body entirely shiny dark brownish..... *D. persicae*  
 Male abdomen black; female abdominal tergites tan with darker apical bands..... *D. rubida*
- 75(73). Carina absent, or consisting of no more than small low ridge on upper part of face..... 76  
 Carina developed..... 79
- 76(75). C-index c. 1.0..... 77  
 C-index c. 2.0..... 78
- 77(76). Humeral calli whitened..... *D. tricolora*  
 Humeral calli not whitened..... *D. durantae*
- 78(76). Pleura with broad dark band; sternopleuron pale..... *D. albiventer*  
 Pleura almost entirely darkened..... *D. nigriventer*
- 79(75). Male fore-leg without sex-comb..... *D. ironensis*  
 Male fore-leg with sex-comb or at least several large teeth on metatarsus..... 80
- 80(79). Sex-comb consisting of large bushy brushes on 1st 2 tarsal segments..... *D. scopata*  
 Sex-comb consisting of blackened teeth..... 81
- 81(80). Sex-comb consisting only of 1-2 very large bristles apically on metatarsus..... *D. denticulata*  
 Sex-comb more extensive..... 82
- 82(81). Sex-comb consisting of transverse rows of bristles on 1st 2 tarsal segments..... 83  
 Sex-comb longitudinal or oblique..... 84

- 83(82). Sex-comb consisting of 2 rows of bristles on metatarsus and 1 row on 2nd tarsal segment ..... *D. pseudoananassae*  
 Sex-comb consisting of 5 rows of bristles on metatarsus and 3-4 rows on 2nd tarsal segment ..... *D. ananassae*
- 84(82). Sex-comb longitudinal along entire lengths of metatarsus and 2nd tarsal segment ..... *D. birchii*  
 Sex-comb consisting of oblique comb on metatarsus and 1-2 apical bristles on 2nd tarsal segment ..... *D. bipectinata*

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