

## A review of the genus *Proutista* Kirkaldy (Homoptera, Derbidae) in New Guinea

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ABSTRACT: A review is given of the *Proutista* species occurring in New Guinea. A key to the species is presented, *P.lutea* Muir, *P.lurida* Muir, *P.decisa* (Distant) and *P.straminea* Muir are redescribed; a lectotype is selected for *P.decisa* (Distant) and three species are newly described: *P.sacchari* sp.nov., *P.awarensis* sp.nov. and *P.grootaerti* sp.nov.

### 1. INTRODUCTION

The genus *Proutista* s.l. of the derbid tribe Zoraidini presently accommodates 23 species distributed over the African, Oriental and Australian regions. Species have been recorded on various plants of economic importance such as cacao, sugar cane and bananas.

The *Proutista* species occurring in New Guinea have never been studied in detail. Distant (1907) described *Proutista decisa* while Muir (1913) added *P.lurida*, *P.lutea* and *P.straminea*. These early descriptions are mainly based on external morphology without illustrations, making their modern diagnosis difficult or impossible. These taxa are redescribed and figured here.

As a result of the present study three further species, new to science, are recorded from New Guinea, and are described here: *P.awarensis* sp.nov. and *P.grootaerti* sp.nov. were collected by Dr P.Grootaert in 1982 and *P.sacchari* was collected by J.W.Ismay on sugar cane, bringing the total number of species to seven. It might be expected that further collecting will increase the number of known species.

As far as known, all species treated below are confined to New Guinea. *P.lurida* seems to be the commonest species. It was recorded several times in association with bananas. Unfortunately records of food plants of the other species are lacking.

Taking into account our poor knowledge of the Oriental and Australian Derbidae little can be said about their zoogeographical affinities. *P.decisa* and *P.straminea*

are closely related to the Australian species *P.pseudodecisa*. The types of these taxa have been compared and they proved to be closely related. No related taxa for the other species have been found in the present literature.

## 2. SYSTEMATIC ACCOUNT

The following genera are currently placed in synonymy with *Proutista*; the full synonymy is as follows:

*Proutista* Kirkaldy, 1904

= replacement name for *Assamia* Buckton, 1896, homonym;

type species: *Derbe moesta* Westwood, 1851;

= *Assamia dentata* Buckton, 1896.

*Afakia* Kirkaldy, 1909

= replacement name for *Arfaka* Distant, 1907, homonym;

type species: *Arfaka decisa* Distant, 1907

*Sardis* Kirkaldy, 1906;

type species *Phenice maculosa* Krüger, 1897

= *P.moesta* (error).

Although currently considered as synonyms since Metcalf (1945), their true relationships have never been the subject of a thorough study. The matter is complicated by the presence of homonyms, wrong type species identification (*Sardis*) and synonyms in the type-species. Furthermore, the species groups mentioned above are closely related to a number of genera such as *Lydda* and *Diostrombus*, which, like *Proutista*, contain species from several geographical regions. The relationships between these widely scattered species have, in most cases, not been fully investigated. Study might reveal differences necessitating the description of several new genera.

The species treated below are all referred to the genus *Proutista* to which they are most closely related. A study on a much larger scale however will be needed to place them more adequately. The type species of *Proutista*, *P.moesta* (from Oriental region), has densely mottled tegmina and six medial sectors. The species treated below, including *Afakia decisa* (= *Proutista decisa*) have five medial branches and a narrow head which might suggest that *Afakia* Kirkaldy is a good genus representing species with pale, ochreous or hyaline tegmina with five medial branches, allied to *Proutista*. Without further study I hesitate to make these generic changes.

The material studied below is deposited in the Koninklijk Belgisch Instituut voor Natuurwetenschappen, Brussel, Belgium (KBIN), the Bernice P.Bishop Museum, Honolulu, Hawaii (BPBM) and the British Museum (Natural History), London, United Kingdom (BMNH).

## Key to the *Proutista* species of New Guinea

1. Tegmina densely mottled with fuscous spots, not hyaline (Figs 3 and 4).....2  
Tegmina transparent, with pale, ochreous colour markings or completely hyaline (Figs 11, 16, 20, 32).....3
2. Medioventral process of pygofer present but small (Fig. 6); genital styles with a spinose process along dorsal margin (Fig. 8).....*P.sacchari* sp.nov.  
Ventral border of pygofer straight, devoid of a medioventral process, genital styles devoid of a spinose process, but provided with a blunt process (Fig. 1).....*Pawarensis* sp.nov.
3. Greater part of tegmina ochreous, hyaline, leaving free costal border and middle of the medial sectors (Fig. 16).....*Plutea* Muir, 1913  
Ochreous colour more restricted, tegmina sometimes completely colourless.....4
4. Tegmina with radial cell ochreous (Fig. 11).....*P.grootaerti* sp.nov.  
Tegmina with radial cell completely colourless.....5
5. Tegmina with about 10 ochreous spots along costal margin and circular spots along tips of medial and cubital sectors (Fig. 20).....*Plurida* Muir, 1913  
Tegmina colourless, hyaline (Fig. 32).....6
6. Pregenital sternite of female with a short submedian process, not exceeding level of apex of abdomen (Figs 33 and 34); male genitalia (see Figs 25-31).....*P.decisa* (Distant, 1907)  
Pregenital sternite of female with submedian process appreciably longer than wide, parallel-sided, reaching or nearly exceeding apex of abdomen (Fig. 35).....*P.straminea* Muir, 1913

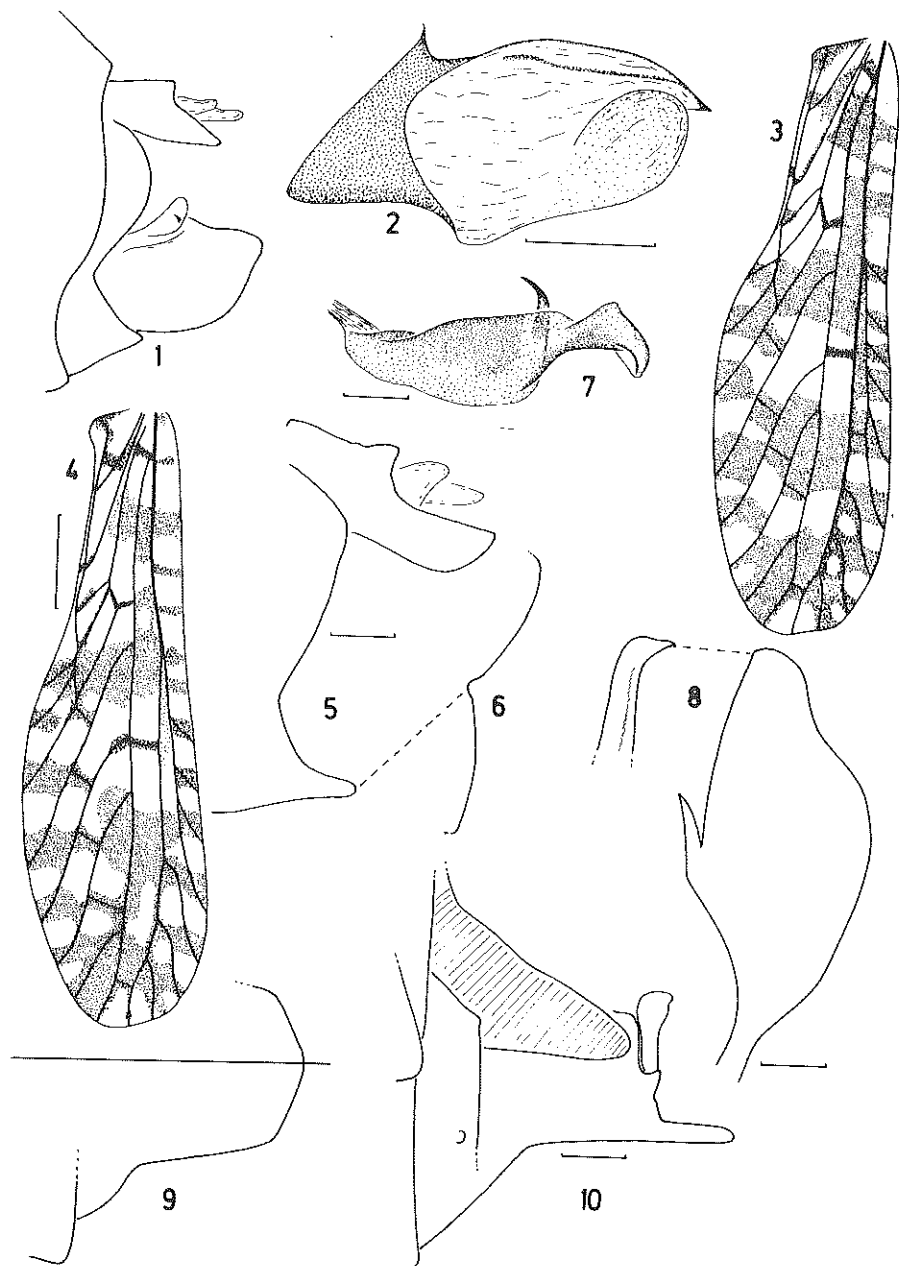
*Proutista awarensis* sp.nov. (Figs 1-3)

*Material examined.* Holotype ♂, Papua New Guinea, Awar airfield (Madang province), 11.5.1982, leg. P.Grootaert, KBIN. Paratypes: 1♂, Papua New Guinea, Awar bush, 10.5.1982, leg. Dr P.Grootaert, KBIN.

*Description.* Frons whitish, ventrally brown fumated; postclypeus and anteclypeus brown, rostrum whitish, last segment brown. Pronotum and mesonotum brown fumated. Abdomen covered with irregular brown markings. Tegmina mottled with dark brown markings as illustrated in Figure 3. Legs whitish; protarsi, mesotarsi and last segment of posttarsi brown; apex of posttibiae brown. Length 7.5 mm.

Male genitalia: small in comparison to abdomen. Ventral edge of pygofer truncate, without a distinct medioventral process. Genital styles (Fig. 1) with a small spine along inner side of apex. Aedeagus (Fig. 2) with a lamelliform process apically, curved from right to left along ventral margin; major part of left side membranous. Genital styles with a small tooth along their apex in ventral view.

Female unknown.



Figures 1-10. *Proutista* species. 1-3. *Pawarensis* sp.nov. holotype: 1. Anal segment, pygofer and genital style, left lateral view; 2. Aedeagus, left lateral view; 3. Right tegmen; 4-10. *P.sacchari* sp.nov.: 4-8. Holotype; 4. Right tegmen; 5. Anal segment and pygofer; 6. Ventral margin of pygofer; 7. Aedeagus, left lateral view; 8. Left genital style, with a ventral view of the apex; 9. Pregenital sternite; 10. Female genitalia, left lateral view. Scale Figures 3 and 4: 0.5 mm; others: 0.2 mm.

*Diagnosis.* Differs from *Pperkinsi* Muir, 1913 (Queensland) in the colour of the tegmina; it is readily distinguished from *P.sacchari* sp.nov. by the structure of the male genitalia.

*Proutista sacchari* sp.nov. (Figs 4-10)

*Material examined.* Holotype ♂, Papua New Guinea, Western P., Sapoka 8°09'S 141°59'E, 4.3.1981, J.W.Ismay, BMNH 'on Sugar cane'. Paratypes: 1 ♂, 1 ♀, same locality, BMNH, 1 in KBIN.

*Description.* Head pale ochreous, postclypeus partly and anteclypeus completely fuscous. Rostrum dark ochreous, last segment fuscous. Pronotum and mesonotum and abdomen partly pale brown mottled. Legs pale ochreous, protarsi, mesotarsi, tips of posttibiae and last segment of posttarsi fuscous. Tegmina densely covered with fuscous spots (Fig. 4).

Male genitalia: anal segment short, pygofer with a small medioventral process (Fig. 6). Genital styles with a spine along their dorsal margin (Fig. 8) and a tooth-shaped apex in ventral view. Aedeagus (Fig. 7) with a large process apically and a spine along right side directed dorsally.

Female genitalia: Last segment of abdomen produced into a large flattened spinose process (Fig. 9). Pregenital sternite with a large lamelliform black process (Fig. 10).

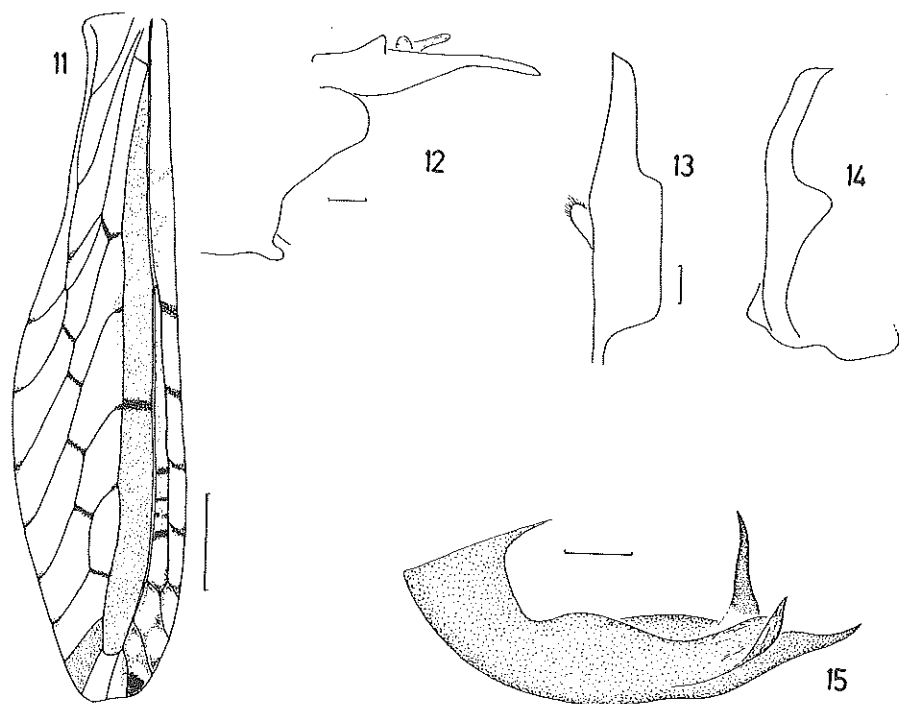
*Diagnosis.* *P.sacchari* differs from fuscous Australian species as follows: it differs from *P.australis* (Distant, 1907), known from Queensland, in the pale colour of head and abdomen. It is easily distinguished from *P.lumholtzi* (Kirkaldy, 1906) from Queensland by the shape of the male genitalia, especially by the absence of a well-defined medioventral process on the pygofer, by the absence of a ventral process on the anal segment and the structure of the aedeagus. *P.sacchari* differs from *P.gemina* Muir, 1913 (loc. unknown) in the shape of the anal segment which is longer than twice its width; the ventral edge of the pygofer is not truncate but shows a small medioventral process. It differs from *P.koebeli* in the absence of triangular plates on the pygofer.

*Proutista grootaerti* sp.nov. (Figs 11-15)

*Material examined.* Holotype ♂, Papua New Guinea, Condor Point (Madang province), 13.5.1982, leg. Dr P.Grootaert, KBIN.

*Description.* General colour yellowish; tegmina (Fig. 11) hyaline, radial cell ochreous and dark brown spots along the transverse veinlets and the ends of the cubital and medial sectors; veins not coloured. Legs ivory white, last segment of tarsi brown. Length: 8 mm.

Male genitalia: anal segment apically blunt. Pygofer (Fig. 12) with a rounded dorsolateral angle and a small medioventral process. Genital styles terminating in a tapering apex (Figs 13 and 14). Aedeagus (Fig. 15) with three spinose processes, all visible from left side.



Figures 11-15. *Proutista grootaerti* sp. nov., holotype: 11. Right tegmen; 12. Anal segment and pygofer; 13. Left genital style; 14. Left genital style and ventral margin of pygofer, ventral view; 15. Aedeagus, left lateral view. Scale Figure 11: 0.5 mm; others: 0.2 mm.

**Diagnosis.** *P. grootaerti* is readily distinguished from other *Proutista* species by the colour of the tegmina and the shape of the male terminalia; no closely related species have been observed.

***Proutista lutea* Muir, 1913 (Figs 16-19)**

*Proutista lutea* Muir, 1913: 77.

**Material examined.** Holotype ♂, Papua New Guinea, Laloki, F. Muir, 1910, BPBM.

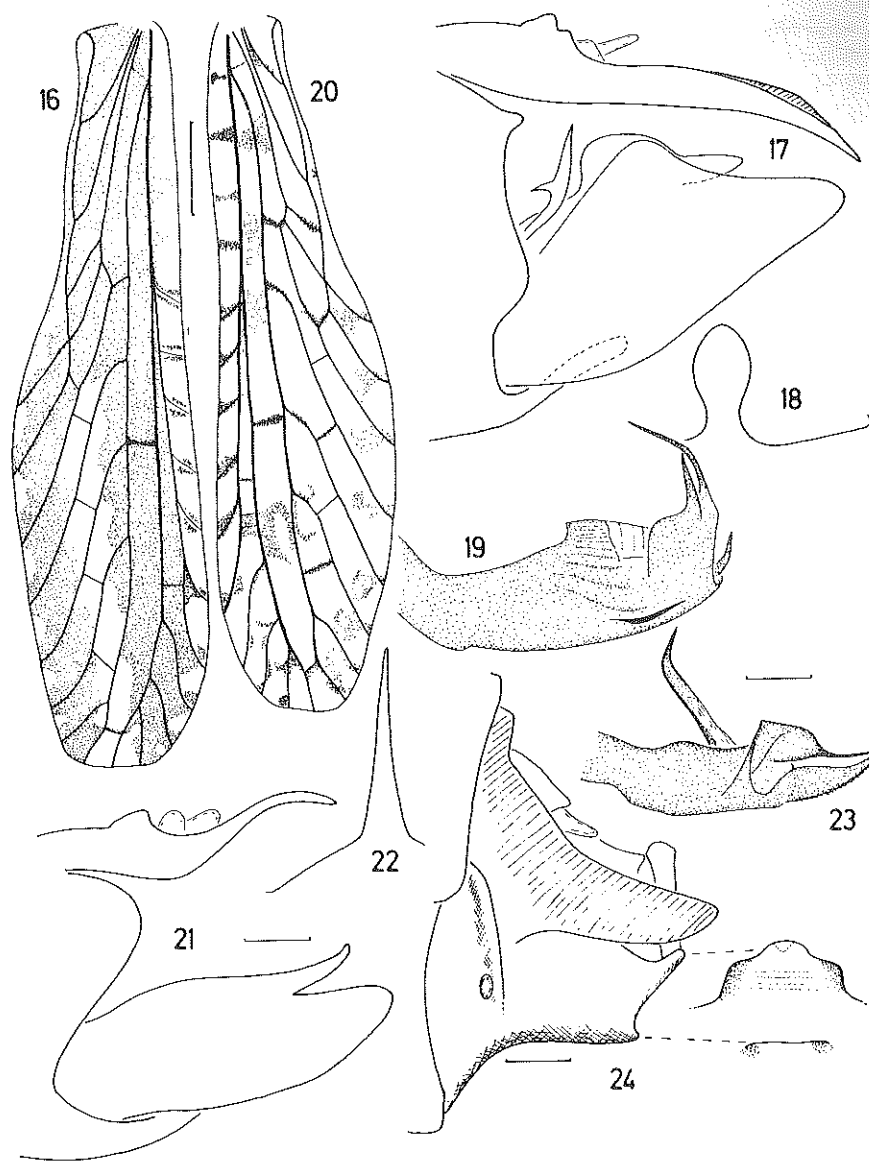
**Remarks.** The external morphology was described by Muir (1913); the male terminalia and right tegmen of the holotype are figured.

Male genitalia: anal segment tapering distally. Pygofer with a large medioventral process (Fig. 18). Genital styles with a bifurcate process and a spine more distally along its dorsal margin. Aedeagus (Fig. 19) with three spinose processes distally.

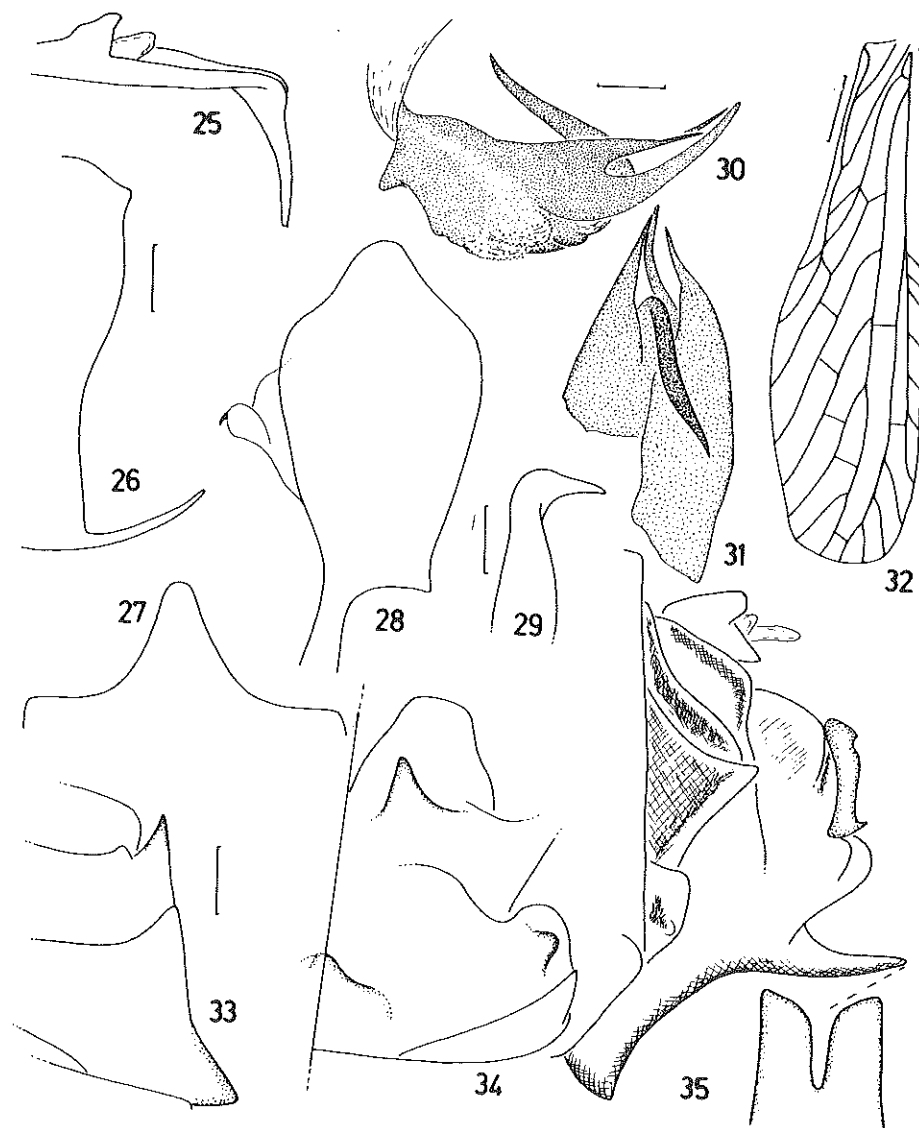
Female unknown.

***Proutista lurida* Muir, 1913 (Figs 20-24)**

*Proutista lurida* Muir, 1913: 76.



Figures 16-24. *Proutista* species. 16-19. *Phutea* Muir, holotype: 16. Right tegmen; 17. Anal segment, pygofer and genital style; 18. Medioventral process of pygofer; 19. Aedeagus, left lateral view; 20-24. *Phurida* Muir: 20. Left tegmen; 21. Anal segment, pygofer and genital style; 22. Medioventral process of pygofer; 23. Aedeagus, left lateral view; 24. Female genitalia, left lateral view, with the two transverse ridges on the pregenital sternite. Scale Figures 16 and 20: 0.5 mm; others: 0.2 mm.



Figures 25-35. *Proutista* species. 25-34. *P. decisa* (Muir): 25. Anal segment; 26. Pygofer; 27. Medioventral process of pygofer; 28. Left genital style, lateral view; 29. Apex of genital style, ventral view; 30. Aedeagus, left lateral view; 31. Aedeagus, dorsal view; 32. Right tegmen; 33. Lower half of female genitalia, left lateral view; 34. Female genitalia, right side, ventral view; 35. *P. straminea* Muir, holotype female genitalia, left lateral view, with a ventral view of the apical process on the pregenital sternite. Scale Figure 32: 0.5 mm; others: 0.2 mm.

**Material examined.** Holotype ♀, Papua, Laloki, BPBM; 5 ♂, 2 ♀, Papua New Guinea, Northern Province, Mamba plantation, 2.3.1983, J.W. Ismay, 'under Banana leaves'; 9 ♂, 15 ♀, Papua, Kokoda 1200 ft, 9.1933, L.E. Cheesman; 3 ♂, New Guinea, Huon Gulf, Morobe District, 22.5/19.6.1937, 'on Banana foliage'; 1 ♂, Papua, Aroa plantation, Centr. District, 15.5.1957, 'feeding on Banana'; 1 ♂, 3 ♀, Papua New Guinea, Morobe Prov., Buso, 9/11.1979, J. Martin, BMNH, KBIN.

**Description.** External morphology described by Muir (1913); four or five veinlets between Sc and costal margin; tegmen illustrated in Figure 20.

**Male genitalia:** pygofer with a large spine-like medioventral process. Genital styles with a spinose process along its dorsal margin, no apical spine. Aedeagus with three apical spines as illustrated in Figure 23, slightly variable in shape.

**Female genitalia:** last abdominal segment produced into an oblong triangular process exceeding apex of abdomen. Pregenital sternite provided with a subapical ridge which forms two indistinct submedian processes (Fig. 24).

**Remarks.** The female holotype was compared to the series listed above; they proved to be completely identical.

*Plurida* seems to be the commonest *Proutista* species in New Guinea and was found several times associated with Banana.

***Proutista decisa* (Distant, 1907) (Figs 25-34)**

*Arfaka decisa* Distant, 1907: 398.

*Afakia decisa* Distant, 1910: 318.

*Proutista decisa* Muir, 1918: 174.

**Material examined.** Lectotype ♂, here designated, New Guinea, BMNH. Paralectotype ♀, New Guinea, BMNH.

Additional: 1 ♀, 'Nouvelle Guinée', coll. Camille Van Volxem, KBIN.

**Description.** General colour pale ochreous, tegmina completely hyaline, without colour marks; veins brown, inner branch of Y-vein and basal cell pale yellowish. Last segment of six tarsi and last segment of rostrum black. Length: 8.5 mm.

**Male genitalia:** anal segment produced into a single apical process deflexed distally. Pygofer with a triangular medioventral process. Genital styles with a recurved, spine-like apex. Aedeagus with four spinose processes, one of which recurved cephalically, the others directed caudally.

**Female genitalia:** Last abdominal segment bearing a small triangular rounded lobe. Pregenital sternite provided with a single tapering process basally (directed ventrally) which bears a black spot along its cephalic border, and two small submedian processes caudally not exceeding tip of abdomen (Figs 33 and 34).

**Diagnosis.** Differs from *P. pseudodecisa* in the blunt dorsolateral angle of the pygofer (pointed in *pseudodecisa*), in the blunt medioventral process (spine-shaped in *pseudodecisa*), and in the presence of three apical spines (two spines and a blunt process in *pseudodecisa*). The female terminalia differ in the much shorter process

on the pregenital sternite (those of *P.pseudodecisa* closely resemble the female genitalia of *P.straminea*, illustrated in Figure 35). Finally, the tegmina of *P.decisa* are completely hyaline, while those of *P.pseudodecisa* have small brown marks along the costal margin and along the cubital and medial sectors.

**Proutista straminea** Muir, 1913 (Fig. 35)

*Proutista straminea* Muir, 1913: 76.

*Material examined.* Holotype ♀, Papua, Laloki, F.Muir, 1910, BPBM.

*Description.* General colour pale ochreous. Tegmina completely hyaline, only a small fuscous spot along costal margin before branches of Sc. Costal margin, Sc+R, basal part of M and Cu and claval veins pale ochreous, others fuscous; four veinlets going from Sc to costal margin.

Male unknown.

Female genitalia: last abdominal segment projected into a triangular lobe, not exceeding level of apex of anal segment. Pregenital sternite bearing two distinct processes, nearly surpassing tip of abdomen.

*Diagnosis.* Closely related to *P.pseudodecisa* Muir, known from Australia. The latter bears additional brown marks on the ends of the cubital and medial sectors and one additional brown spot along the costal margin while these of *P.straminea* are almost completely devoid of brown marks. The differences in the female genitalia are very small; in *P.pseudodecisa* the triangular projection of the last abdominal segment is upcurved while flat in *P.straminea*. Until the male genitalia will be described both taxa are tentatively considered as good species.

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