

**APHROPHORINAE OF NEW CALEDONIA AND THE LOYALTY ISLANDS (RHYNCHOTA: HOMOPTERA: CERCOPIDAE)<sup>1,2</sup>****K. G. A. Hamilton<sup>3</sup>**

*Abstract.* The Aphrophorinae of New Caledonia and the Loyalty Is are keyed, and 16 new species are described in *Carystoterpa*, *Novophilaenus*, *Strandiana* and 2 new genera: *Costaclovia* (type-species: *C. furfuris*, n. sp.) and *Fusiptyelus* (type-species: *F. umbrosus*, n. sp.). Three new synonymies are created: *P. nocturnus* Distant, 1920 = *Ptyelus roonensis* Distant, 1920 and *P. novaecaledoniae* Lallemand, 1924; and *P. lineolus* Montrouzier, 1861 = *Ptyelus calatus* Lallemand, 1924. The 26 recognized species are placed in 6 genera, with 9 new combinations.

The spittlebug fauna of New Caledonia and the Loyalty Islands is quite distinctive, despite the relatively short distance of these islands from the New Hebrides (now Vanuatu) and the Solomon Islands. Fewer than ½ the known species have been described, in separate papers by Montrouzier (1861), Distant (1920) and Lallemand (1924, 1942). No comprehensive treatment of the fauna is available. The present work attempts to provide an up-to-date classification of the subfamily Aphrophorinae for this region.

All types are deposited in the Bishop Museum, Honolulu, Hawaii (BISHOP), except for some paratypes in the Canadian National Collection, Ottawa (CNC), as noted.

**FAUNAL ELEMENTS**

Four genera are apparently endemic<sup>4</sup> to New Caledonia and the Loyalty Is: *Costaclovia*, n. gen., *Fusiptyelus*, n. gen., *Novophilaenus* Lallemand and *Strandiana* Lallemand. All are represented in New Caledonia, and all but *Fusiptyelus* occur in the Loyalty Is. Two additional genera, represented by a single species each, are apparently derived from the faunas of adjacent island groups. *Interocrea* Walker occurs in New Caledonia, Solomon Is, New Guinea and other more remote islands to the NW of New Caledonia. *Carystoterpa* Lallemand occurs in New Caledonia, Lord Howe Island and New Zealand.

New Caledonia has a much richer fauna than its offshore islands. Only 4 species are represented in the Loyalty Is: *Costaclovia mareana* (Lall.), *Novophilaenus lineolus*

1. Based on material in the Bishop Museum, Honolulu, Hawaii. A revision of the genera of the Aphrophorinae and illustrations of the male genitalia of the species described here will be published in a Memoir of the Entomological Society of Canada.
2. Material examined partially resulted from fieldwork supported by grants to Bishop Museum from the U.S. National Institutes of Health (AI-01723, E-1723) and the U.S. National Science Foundation (GB-34986).
3. Biosystematics Research Institute, Agriculture Canada, Ottawa, Canada.
4. Several species described from the Caroline Is in Micronesia (Synave 1957) may be congeneric with these.

(Mtz.), *N. sexmaculatus* (Mtz.), and *Strandiana remota*, n. sp. Three of these are represented on Lifou, and another group of 3 on Maré; only 2 species occur on Ouvea. By contrast, 22 species are known from New Caledonia.

### SYSTEMATICS

The genera and species of the Aphrophorinae from New Caledonia and its offshore islands may be distinguished by the following key. Generic characters and specific descriptions of new taxa follow.

#### KEY TO THE APHROPHORINAE OF NEW CALEDONIA AND THE LOYALTY ISLANDS

1. Crown of head longer than pronotum . . . (New Caledonia) . . . . .  
     . . . . . **Interocrea montaguei, n. comb.**
- Crown of head shorter than pronotum . . . . . 2
- 2 ( 1). Tegmina with costal margin convex at base (Fig. 4-6) . . . . . 21
- Tegmina with costal margin straight *or* concave at base (Fig. 1-3) . . . 3
- 3 ( 2). Tegmina with prominent veins (Fig. 1) . . . . . *Strandiana* . . . 15
- Tegmina with obscure veins (Fig. 2-3) . . . . . 4
- 4 ( 3). Length (including folded tegmina) greater than 7 mm; color tawny,  
     mottled along costa and sometimes with yellow dashes on claval  
     veins (Fig. 16) . . . (New Caledonia) . . . . **Carystoterpa xenobilis, n. sp.**
- Length less than 6.5 mm; color dark (Fig. 18), *or* tawny with extensive  
     pale areas (Fig. 12B, 17) . . . . . *Novophilaenus* . . . 5
- 5 ( 4). Pale mark near center of tegmen forming a transverse stripe directed  
     towards commissure behind apex of scutellum, usually continuous  
     with stripe on other tegmen (Fig. 8, 9, 11) . . . . . 13
- Pale mark near center of tegmen forming a spot on costa, *or* forming  
     an oblique or curved stripe directed towards scutellum (Fig. 7, 12-  
     15, 17-18), *or* absent . . . (New Caledonia) . . . . . 6
- 6 ( 5). Pronotum with transverse pale band across anterior margin, *or* 2  
     transverse pale bands across anterior margin nearly meeting at meso-  
     son (Fig. 12-15) . . . . . 8
- Pronotum with anterior margin dark, *or* with 2 widely separated pale  
     patches (Fig. 7, 18) . . . . . 7
- 7 ( 6). Males less than 4.5 mm long (including folded tegmina); ♀ less than  
     5.5 mm long; crown not banded (Fig. 7) . . . . .  
     . . . . . **Novophilaenus nocturnus, n. comb.**
- Males more than 4.5 mm long; ♀ more than 5.5 mm long; crown  
     more or less banded (Fig. 18) . . . . .  
     . . . . . **Novophilaenus ignambianus, n. comb.**
- 8 ( 6). Each tegmen with furcate pale mark near center, together surround-  
     ing dark spot(s) on clavus (Fig. 15) . . . (Lifou; Maré) . . . . .  
     . . . . . **Novophilaenus lineolus, n. comb.**

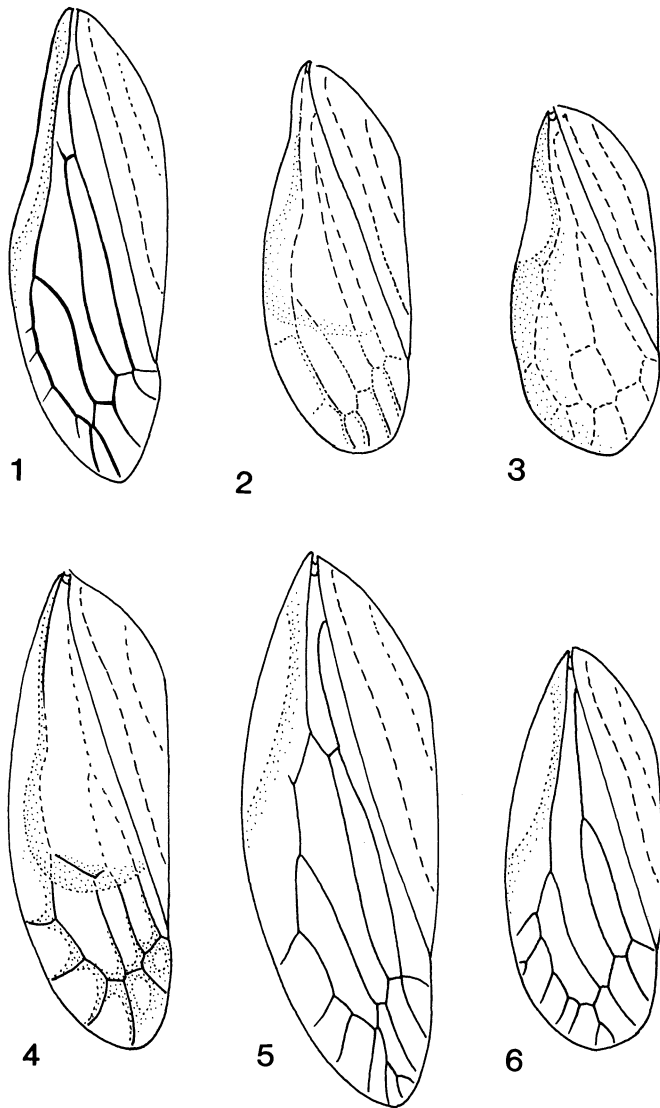


FIG. 1-6. 1, *Strandiana virgulifera*, tegmen; 2, *Carystoterpa xenobilis*, tegmen; 3, *Novophilaenus nocturnus*, tegmen; 4, *Lallemandana oceanica*, tegmen; 5, *Fusiptyelus umbrosus*, tegmen; 6, *Costaclovia furfuris*, tegmen.

- Each tegmen with pale mark near center linear or ovoid, not furcate; dark spot on clavus continuous with dark markings on corium (Fig. 17-18) ..... 9
- 9 ( 8). Pale ochre without dark markings; transverse pale band of tegmina fine, often broken in middle (Fig. 17) or absent ..... **Novophilaenus panieanus, n. comb.**

- Blackish brown with pale markings (Fig. 10, 13), *or* tawny with broad transverse pale band on tegmina (Fig. 12) ..... 10
- 10 ( 9). Tegmina without transverse bands ..... **Novophilaenus pampaianus, n. comb.**
- Tegmina transversely banded ..... 11
- 11 (10). Center of scutellum dark (Fig. 13) ..... **Novophilaenus minor, n. sp.**
- Scutellum entirely pale (Fig. 12) ..... 12
- 12 (11). Anterior margin of pronotum paler than base of tegmina (Fig. 14) ..... **Novophilaenus pulcher, n. sp.**
- Anterior margin of pronotum as dark as base of tegmina, or darker (Fig. 12) ..... **Novophilaenus kraussi, n. sp.**
- 13 ( 5). Tips of tegmina contrastingly paler (Fig. 11) ... (New Caledonia) ..... **Novophilaenus mouensis, n. sp.**
- Tips of tegmina dark, scarcely paler than rest of tegmina (Fig. 9) .. 14
- 14 (13). Pale band of tegmina nearly transverse (Fig. 8) ... (New Caledonia) ..... **Novophilaenus transversus, n. sp.**
- Pale band of tegmina distinctly oblique (Fig. 9) ... (Loyalty Is) ..... **Novophilaenus sexmaculatus, n. comb.**
- 15 ( 3). Face dark, with contrastingly yellow chevron-shaped band across middle ... (New Caledonia) ..... **Strandiana virgulifera, n. sp.**
- Face entirely pale, or dark without contrastingly pale band ..... 16
- 16 (15). Tegmina with basal  $\frac{2}{3}$  entirely opaque brown ... (New Caledonia) ..... **Strandiana montrouzieri, n. comb.**
- Tegmina entirely translucent or transparent to base, with contrastingly dark veins ..... 17
- 17 (16). Tegmina 2 $\times$  banded with brown before middle ... (New Caledonia) ..... **Strandiana distincta, n. sp.**
- Tegmina without transverse bands ..... 18
- 18 (17). Length (including folded tegmina) of  $\delta$  8.5 mm or more; of  $\text{♀}$  9.5 mm or more;  $\delta$  subgenital plates pointed at tips ... (New Caledonia) ..... **Strandiana major, n. sp.**
- Length of  $\delta$  8.0 mm or less, of  $\text{♀}$  9.2 mm or less;  $\delta$  subgenital plates rounded at tips ..... 19
- 19 (18). Length of  $\delta$  7.3 mm or less;  $\delta$  subgenital plates tapered to slender tips ... (New Caledonia) ..... **Strandiana hyalina, n. sp.**
- Length of  $\delta$  7.3 mm or more;  $\delta$  subgenital plates scarcely tapered, tips broad and blunt ..... 20
- 20 (19). Pronotum and scutellum striped with brown; tegminal veins heavy; obviously patterned with brown ... (New Caledonia) ..... **Strandiana longipennis**
- Pronotum and scutellum striped with rufous; tegminal veins fine; pat-

- tern obscure, insect thus appearing entirely ochreous . . . (Ouvea; Lifou) . . . . . **Strandiana remota, n. sp.**
- 21 ( 2). Fusiform, apices of tegmina bluntly pointed (Fig. 5); below brown, similar to dorsum, but with yellow facial and pleural stripes . . . (New Caledonia) . . . . . **Fusiptyelus umbrosus, n. gen. & n. sp.**
- Dorsoventrally compressed, not fusiform, with apices of tegmina broadly rounded (Fig. 6); below entirely yellow, contrasting with darker dorsum . . . . . *Costaclovia*, n. gen. . . . . 22
- 22 (21). Length 8.0 mm or more; head almost as long as median length of pronotum; tegmina dark brown, with strongly contrasting white costal spots . . . . . 25
- Length 7.0 mm or less; head distinctly shorter than median length of pronotum; tegmina tawny, with faint pale markings . . . (New Caledonia) . . . . . 23
- 23 (22). Crown and pronotum with broad rufous median stripe, bordered with yellow stripes, in turn bordered with brown on lateral margins . . . . . **Costaclovia rubrolinea, n. sp.**
- Crown and pronotum brown with narrow yellow median line . . . . . 24
- 24 (23). Corium tawny brown, clavus ochre-yellow, without irrorations . . . . . **Costaclovia parva, n. sp.**
- Corium and clavus tawny brown, with pale irrorations throughout . . . . . **Costaclovia furfuris, n. sp.**
- 25 (22). Crown and pronotum with broad ochre-yellow median band . . . (Maré) . . . . . **Costaclovia mareana, n. comb.**
- Crown and pronotum entirely blackish brown . . . (New Caledonia) . . . . . **Costaclovia magniceps, n. sp.**

### Genus *Carystoterpa* Lallemand

*Carystoterpa* Lallemand, 1936: 264. Type-species by monotypy: *Ptyelus trimaculatus* Butler, 1874.

Not dorsoventrally compressed; head wider than pronotum, distinctly shorter (0.75) than pronotum on midline; tegmina with base of costa concave, apices rounded, venation weakly carinate at apices of tegmina, elsewhere obscure, similar to that of *Novophilaenus* but with narrower inner antepical cell (Fig. 2).

*New Caledonian species.* One new species, described below.

### ***Carystoterpa xenobilis* Hamilton, new species**

Fig. 16

♂ unknown; ♀, 8.0–8.3 mm. Tawny, marked with brown on legs, across lower ½ of face and pleura, and as faint bands across crown of head and faint tegminal mottling; further marked with yellow dashes on 1st claval vein, 5 pairs of fuscous lines across frons, and a broken sinuate fuscous band down costal margin of each tegmen (Fig. 16). Costal margin of tegmen straight at base.

Holotype ♀ (BISHOP 12,054), NEW CALEDONIA: Plateau de Dogny, 31.I.1969, N.L.H. Krauss. Paratype, 1 ♀, same data as holotype.

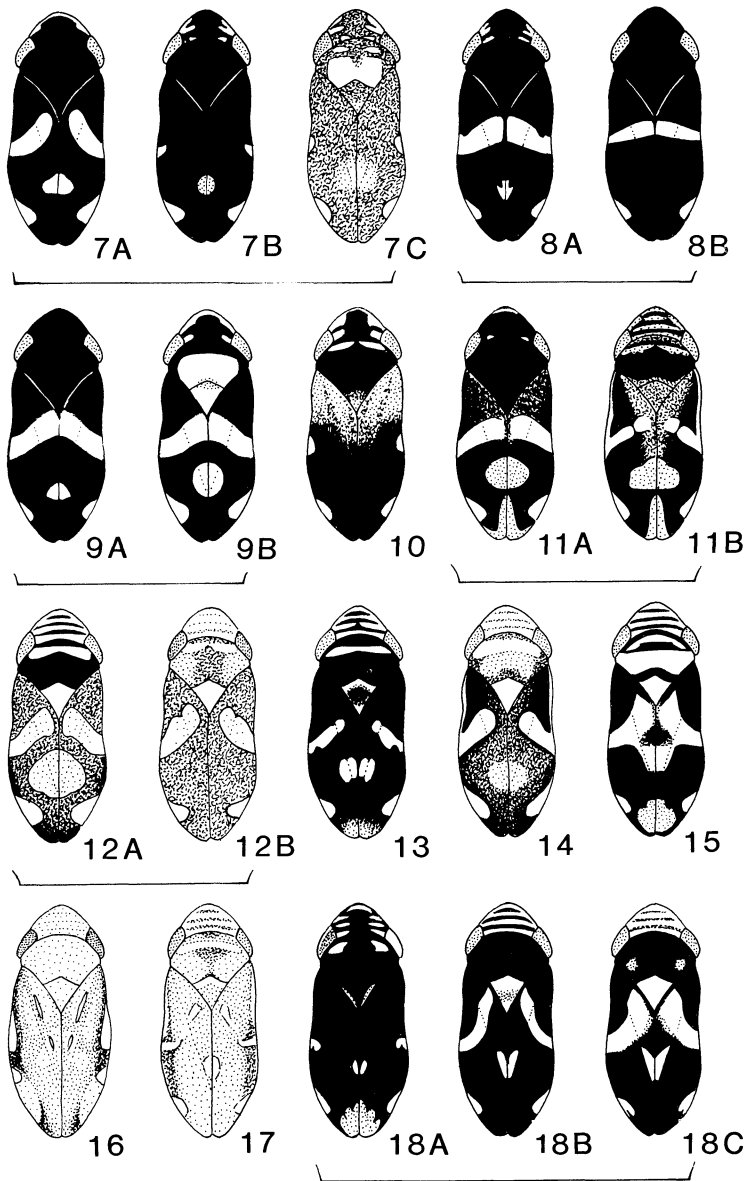


FIG. 7-18. Color varieties of a single species bracketed. 7A-C, *Novophilaenus nocturnus*, color varieties. 8A-B, *N. transversus*, color varieties; 9A-B, *N. sexmaculatus*, color varieties; 10, *N. pampaiamus*, drawn from description; 11A-B, *N. mouensis*, color varieties; 12A-B, *N. kraussi*, color varieties; 13, *N. minor*; 14, *N. pulcher*; 15, *N. lineolus*; 16, *Carystoterpa xenobilis*; 17, *N. panianus*; 18A-C, *N. ignambianus*, color varieties.

*Remarks.* Females of *C. xenobilis* resemble those of *C. fasciata* Evans from Lord Howe I, from which they differ by their larger size and pale costal maculations (Fig. 16). They are superficially similar to females of *Novophilaenus panieanus* (Distant), which are smaller and have a longer emarginate area on the costa of the tegmen (Fig. 17).

### **Costaclovia** Hamilton, new genus

Gender: feminine. Type-species: *Costaclovia furfuris*, n. sp.

Dorsoventrally compressed; head large, much wider than pronotum and about as long (0.75–0.95) on midline; tegmina with costal margin evenly convex, apices rounded, veins forming 3 anteapical cells of similar width, the central one open at base (Fig. 6), and 6–12 apical cells extending onto costal margin; 1st longitudinal vein ( $R_1$ ,  $R_{2+3}$  or  $S_1$  of authors) of tegmen connected to costa by 3–8 veins.

*New Caledonian species.* *Costaclovia mareana* (Lall.), **new combination**, and the following 4 new species.

### **Costaclovia furfuris** Hamilton, new species

Fig. 6

♂, 5.4–6.7 mm; ♀, 5.7–7.0 mm. Head distinctly shorter than midlength of pronotum (0.85). Venter yellow; dorsum tawny brown mottled with diffuse pale areas throughout, usually marked with a brown patch just beyond midlength of costa, in darkest specimens the costal patches form the ends of a brown irrorate chevron across tegmina, and brown irregular lines parallel midline of crown and pronotum. Costal crossveins numerous (Fig. 6). Penis shaft slender, curved dorsad, apically armed with long spine directed caudoventrad; style apices angled dorsad.

Holotype ♂ (BISHOP 12,055), NEW CALEDONIA: Mt des Koghis, 600–900 m, 19.III.1968, T.C. Maa. 53 paratypes: NEW CALEDONIA: 1♂, 2♀, same data as holotype; 3♂, 2♀, Mt Koghi, 400–600 m, II.1973, N.L.H. Krauss; 7♂, same data, I.1969; 1♂, same data, I.1962; 3♂, 1♀, Mt Koghi, 450–600 m, 4–6.X.1967, J. & M. Sedlacek; 1♂, same data, 500–800 m, 23–27.X.1967; 1♂, Mt Koghi, 15.II.1963, C.M. Yoshimoto; 1♀, Mt Koghi, 500 m, 28.XI.1963, R. Straatman; 1♂, same data, 29.XI.1963; 1♀, same data, 600 m, 30.XI.1963; 4♂, 1♀, 6 km N of Paita, 25.I.1963, Yoshimoto; 4♂, between Plum and Yati, 25.III.1968, T.C. Maa; 1♂, 1♀, Col d'Amieu, 130 km N of Noumea, 350–650 m, 13.XI.1963, Straatman; 1♂, 1♀, headwaters of Honailou Riv, 26.X.1958, C.R. Joyce; 2♂, NE of Yiambi, 500–700 m, 14.X.1967, J. & M. Sedlacek; 1♂, Mt Ignambi, 900–1100 m, 4.II.1964, Straatman; 1♂, 7 km S of Tchambouenne, 750 m, 28.I.1964, Straatman; 1♂, Paita-Mou, 300 m, 8.III.1972, J.L. Gressitt; 1♂, 7 km S of Koh, 31.I.1963, Yoshimoto; 1♂, Bourail, III.1959, Krauss; 1♂, Vallee d'Amoa, 7.II.1963, Yoshimoto; 1♂, Plateau de Dogny, 1.II.1963, Krauss; 1♀, Col de Pirogue, 23.I.1962, Krauss; 1♀, same locality, 14.II.1963, Yoshimoto; 1♀, Montagne des Sources, VIII.1950, Krauss; 1♀, in mts up Boulari Riv, 3–4.XI.1958, Joyce; 1♀, on hghts between Thio and Nakety, 12.XI.1958, Joyce. 2 paratypes in CNC.

*Remarks.* The pallid color and irrorations immediately distinguish adults of this species from those of all other New Caledonian species. The original description of *Ptyelus inermis* Montrouzier, 1861 is vaguely suggestive of *furfuris*, but as *furfuris* has 2 prominent black-tipped spines on the hind tibiae it cannot be a synonym.

**Costaclovia magniceps** Hamilton, new species

♂ unknown; ♀, 9.5 mm. Head almost as long as midlength of pronotum (0.95). Venter yellow; dorsum dark brown, marked with 3 pale costal spots on tegmen; the smallest at midlength of costa, the largest at  $\frac{1}{2}$  length, and the 3rd immediately behind this. Costal crossveins numerous.

Holotype ♀ (BISHOP 12,056), NEW CALEDONIA: Mt Koghi, 450-600 m, 4-6.X.1967, J. & M. Sedlacek.

*Remarks.* The distinctive color and large crown distinguish females of this species from those of all other New Caledonian species of Cercopidae. The superficially similar species of Polynesian *Lallemandana* may be distinguished from this and other species of *Costaclovia* by the outer anteapical cell of the tegmen being wider than the other anteapical cells (Fig. 4).

**Costaclovia parva** Hamilton, new species

♂ unknown; ♀, 6.0 mm. Head distinctly shorter than midlength of pronotum (0.75). Venter yellow; dorsum tawny, costa of tegmen brown with 3 small white spots, 1 at midlength, 2 near apex; clavi ochre-yellow. Costal crossveins few.

Holotype ♀ (BISHOP 12,057), NEW CALEDONIA: Mt Koghi, III.1959, N.L.H. Krauss.

*Remarks.* This is the smallest species in the genus. The female is similar to that of *C. rubrolinea* but has a distinctive color pattern.

**Costaclovia rubrolinea** Hamilton, new species

♂ unknown; ♀, 6.3-6.7 mm. Head distinctly shorter than midlength of pronotum (0.75). Venter yellow; dorsum tawny, median  $\frac{1}{2}$  of crown and pronotum, and all of scutellum rufous, bordered with yellow stripes, in turn bordered with brown behind eyes; tegmina darker at base and along costa except for 2 indefinite paler areas on latter, marked with narrow yellow stripes continuous with those of pronotum, curving outwardly across clavi to disc of corium. Costal crossveins few.

Holotype ♀ (BISHOP 12,058), NEW CALEDONIA: Yiambi, NE, 500-700 m, 14.X.1967, J. & M. Sedlacek. Paratype, 1 ♀, same data as holotype.

*Remarks.* This species may be immediately recognized by the color pattern of the crown and pronotum.

**Fusiptyelus** Hamilton, new genus

Gender: masculine. Type-species: *Fusiptyelus umbrosus*, n. sp.

Not dorsoventrally compressed; head same width as pronotum, apex pointed, crown somewhat shorter (0.8) than pronotum on midline; tegmina with costal margin evenly convex, apices bluntly pointed, shape of body thus fusiform; tegminal veins forming 3 anteapical cells of similar width, and 8-10 apical cells extending onto costal margin; 1 longitudinal vein of tegmen connected to costa by 4-6 veins.

*New Caledonian species.* One new species described below.

**Fusiptyelus umbrosus** Hamilton, new species

Fig. 5

♂, 8.4 mm; ♀ unknown. Infumose brown, marked with broad yellow lateroventral lines converging from sides of thorax to just below apex of head, and by blackish-brown discal spot on face below these.



Penis shaft moderately wide, strongly laterally compressed, curved cephalad, terminating in quadrate ventral expansion; style tips curved dorsad.

Holotype ♂ (BISHOP 12,059), NEW CALEDONIA: Mt Mou, 600 m, 7.III.1972, J.L. Gressitt.

*Remarks.* The form of the body and male terminalia are unique. From males of *Strandiana*, males of *F. umbrosus* may be readily distinguished by the evenly curved costal margin and the tegminal venation (Fig. 5), as well as the quadrate apex of the penis shaft.

### Genus *Interocrea* Walker

*Interocrea* Walker, 1870: 328. Type-species by monotypy: *I. nigripes* Walker, 1870.

Somewhat dorsoventrally compressed; crown usually elongate, often longer than pronotum on midline; tegmina with costal margin evenly convex, apices rounded; tegminal venation similar to that of *Costaclovia* (Fig. 6) but less apparent; tegmina usually dark or spotted with black.

*New Caledonian species.* *Interocrea montaguei* (Dist.), **new combination**. This species is not known to me, but it is included in *Interocrea* on the basis of the elongate crown, which is similar to that of some species of *Interocrea* from the Solomon Is.

### Genus *Novophilaenus* Lallemand

*Novophilaenus* Lallemand, 1936: 264. Type-species by monotypy: *Ptyelus calatus* Lall., 1924.

Not dorsoventrally compressed; eyes large, head wider than pronotum, distinctly shorter (0.7) than pronotum on midline; tegmina very short, with base of costa straight, apices rounded, venation obscure, similar to that of *Lallemandana* (Fig. 4) but with anteapical cells similar in size (Fig. 3).

*New Caledonian species.* *Novophilaenus ignambianus* (Dist.), **new combination**; *N. lineolus* (Mtz.), **new combination** [= *calatus* (Lall.), **new synonymy**]; *N. nocturnus* (Dist.), **new combination** [= *roonensis* (Dist.), **new synonymy**; = *novaecaledoniae* (Lall.), **new synonymy**<sup>5</sup>]; *N. pampaianus* (Dist.), **new combination**; *N. panieanus* (Dist.), **new combination**; *N. sexmaculatus* (Mtz.), **new combination**; and the following 5 new species.

### *Novophilaenus kraussi* Hamilton, **new species**

Fig. 12

♂, 4.2–4.5 mm; ♀, 4.9 mm. Dark brown, variegated with tawny on coxae, apices of leg segments, and sometimes with genal patches of the same color; with 7 pairs of tawny frontal arcs, 4 transverse tawny coronal bands, 1 broad band across anterior margin of pronotum (sometimes narrowly interrupted at meson) and scutellum tawny; tegmina marked with broad white oblique bands near middle directed towards scutellum, white spots near tips, and usually with an extensive tawny patch in region of apices of clavi (Fig. 12A). Penis shaft slender, weakly sinuate, directed dorsad, unarmed; style moderately broad, widening slightly just before apex, slender apical lobe curved caudodorsad.

Holotype ♂ (BISHOP 12,060) (Fig. 12A), NEW CALEDONIA: Yate, VI.1950, N.L.H. Krauss. 3 paratypes: NEW CALEDONIA: 1♂, same data as holotype; 1♂, 1♀, Isle of Pines, III.1959, N.L.H. Krauss.

*Remarks.* The bold color pattern of adults of *N. kraussi* resembles that of adults of

5. Synonymies based on color pattern and distribution data.

*pulcher*, n. sp. The males of *kraussi* may be distinguished from those of *pulcher*, n. sp. by the slender penis shaft.

**Novophilaenus minor** Hamilton, **new species**

Fig. 13

♂, 4.4 mm; ♀, unknown. Venter yellow, marked with dark brown on lower ½ of face and pleura, with 6 pairs of dark brown frontal arcs, and legs brown; dorsum dark brown, barred with yellow across crown, pronotum, scutellum, and tegmina, the longest tegminal bars at midlength, oblique, directed towards apex of scutellum (Fig. 13). Penis shaft broad, strongly laterally compressed, in posterior aspect thin with a pair of diverging retrorse processes at midlength, in lateral aspect strongly widened just before apex, then tapered to rounded tip; style broad, apical lobe narrow, directed caudodorsad, apex sharp.

Holotype ♂ (BISHOP 12,061), NEW CALEDONIA: Plateau de Dogny, 1000 m, 11.IV.1973, [on] *M. demonstrans*, J.L. Gressitt.

*Remarks.* Males of *N. minor* may be immediately recognized by the banded scutellum and lamellate penis shaft.

**Novophilaenus mouensis** Hamilton, **new species**

Fig. 11

♂, 4.8–5.0 mm; ♀ unknown. Dark brown, marked with tawny on beak, femora, tarsi, 10 pairs of frontal arcs, and sometimes also on clypellus, genae, coronal and pronotal bands and apices of tibiae; tegmina marked with broad white band near middle, directed towards commissure just behind scutellum, and by white spots near tips of tegmina, ochreous patch at apex of clavus, and ochreous tips (Fig. 11). Penis shaft stout, in posterior aspect sagittate with a pair of diverging retrorse processes near midlength, in lateral aspect broadened on apical ½, beaked at tip; style very broad, globular, with slender apical lobe directed dorsad, furcate on posterior margin.

Holotype ♂ (BISHOP 12,062) (Fig. 11A), NEW CALEDONIA: Mt Mou, 1220 m, 9.III.1972, on *Nothofagus*, J.L. Gressitt. Paratype, 1♂, same data as holotype, except at 1100 (m?), no host given.

*Remarks.* The contrastingly ochreous tips of the tegmina and the distinctive male genitalia readily distinguish males of this species.

**Novophilaenus pulcher** Hamilton, **new species**

Fig. 14

♂, 4.3–4.7 mm; ♀, 5.3–5.6 mm. Venter yellow; hind legs, tibiae, crown and at least anterior ⅓ of pronotum tawny; scutellum yellow; posterior ⅔ of pronotum variable from tawny to rufous, edged with fuscous; tegmina brown with broad oblique white dashes either end of wing, apex and inner edge of clavus more or less ochreous (Fig. 14); frons with 6 pairs of fuscous lines; crown with 3 faint brown bands. Penis shaft gradually broadening from base to midlength, tapering from there to apex (in both lateral and posterior aspects), armed with spicules on edge at midlength; styles very broad, abruptly narrowed to slender, broadly furcate apices, 1 prong directed dorsad, 1 caudad.

Holotype ♂ (BISHOP 12,063), NEW CALEDONIA: Mt Panie trail, 8–9.II.1963, N.L.H. Krauss. 8 paratypes: NEW CALEDONIA: 1♂, same data as holotype; 3♂, Tao, 0–10 m, 8.X.1967, J. & M. Sedlacek; 1♂, 2♀, Yiambi, NE, 50–500 m, 14.X.1967, newly cleared forest, J. & M. Sedlacek; 1♂, Mt Panie, 500–1000 m, 11.X.1967, J. & M. Sedlacek. 1 paratype in CNC.

*Remarks.* The genitalia immediately distinguish males of this species. The pronotum being paler than the tegmina is also unique.

**Novophilaenus transversus** Hamilton, **new species**

Fig. 8

♂, 4.2–4.9 mm; ♀, 5.2–5.6 mm. Dark brown, marked with tawny on coxae, 3 pairs of frontal arcs and usually several dashes near eyes on crown; tegmina marked with broad to narrow transverse white band just beyond apex of scutellum, white spots near tips of tegmina, and usually an irregular ochreous patch at apex of clavus (Fig. 8). Penis shaft slender, in posterior aspect lamellate, in lateral aspect strongly sinuate, unarmed; style parallel-margined nearly to apex, with slender apical lobe directed dorsad, straight.

Holotype ♂ (BISHOP 12,064) (Fig. 8A), NEW CALEDONIA: Vallee d'Amoa, 7.II.1963, C.M. Yoshimoto. 16 paratypes: NEW CALEDONIA: 5♂, 3♀, same data as holotype; 1♂, Nepoui Val, VII.1940, F.X. Williams; 1♂, Mt Panie, 270–500 m, 9.X.1967, J. & M. Sedlacek; 2♀, Poindimie, 0–50 m, I.1969, N.L.H. Krauss; 4♀, Mt Panie trail, 8–9.II.1963, Krauss. 2 paratypes in CNC.

*Remarks.* Adults of *N. transversus* closely resemble those of *kraussi* in the shape of the male genitalia, but differ markedly from the latter in color pattern. The sinuate penis shaft distinguishes males of *transversus* from the superficially similar males of *sexmaculatus*.

**Genus Ptyelus** LePeletier & Serville

*Ptyelus* LePeletier & Serville, 1825: 608. Type-species by subsequent designation of the ICZN (1961): *P. ferrumequinum* LePeletier & Serville, 1825.

This genus has been reported from New Caledonia, but it is doubtful that any representatives of this African genus of spittlebugs will be found there. I have placed all but 1 species in other genera. The sole remaining species, *Ptyelus inermis* Montrouzier, 1861 was described as lacking lateral spines on the hind tibia. The only known species of spittlebugs to have this feature all belong to the Machaerotinae, to which subfamily I am provisionally transferring *inermis*.

**Genus Strandiana** Lallemand

*Strandiana* Lallemand, 1936: 264. Type-species by monotypy: *Hindola longipennis* Lall., 1924.

Dorsoventrally compressed; head wider than pronotum, apex pointed, crown distinctly shorter (0.7) than pronotum on midline; tegmina with costal margin straight for  $\frac{1}{3}$  its length, apices bluntly pointed (Fig. 1). Tegminal veins forming 3 antepical cells, the outermost widest, and about 8 indefinite apical cells extending onto costal margin; 1st longitudinal vein of tegmen with several weak branches that do not reach costal margin.

*New Caledonian species.* *Strandiana longipennis* (Lall.), *S. montrouzieri* (Dist.) **new combination**, and the following 5 new species.

**Strandiana distincta** Hamilton, **new species**

♂, 8.9 mm; ♀, 10.1 mm. Male tawny, ♀ brown, marked with yellow venter of head and thorax, yellow front and middle legs, and yellow midline and outer angles of scutellum; coronal margin of head black, bordered on crown with tawny, disc of crown with 2 indefinite tawny longitudinal lines, and pronotum with 7 indefinite tawny longitudinal lines; tegmina transparent with 2 transverse tawny or brown bands before apical brown patch. Penis shaft somewhat laterally compressed, stout, armed with 2 ventral hooks,

1 at apex, 1 just beyond midlength; style strongly constricted before apex, apex clubbed and angled caudodorsad.

Holotype ♀ (BISHOP 12,065), NEW CALEDONIA: Mokoue to Dothio, 150–500 m, 20–22.III.1968, J.L. Gressitt. Paratype: NEW CALEDONIA: 1♂, Thio, 11.XI.1958, C.R. Joyce.

*Remarks.* Adults of *S. distincta* are readily identified by their large size and banded tegmina. The male genitalia are similar to those of *S. remota* (q.v.).

### **Strandiana hyalina** Hamilton, new species

♂, 6.6–7.3 mm; ♀, 7.5–8.7 mm. Color as in *longipennis* but with all dark markings except apical marks of tegmina paler, dorsal lines rufous; color varieties also occur which have the ♂ terminalia black, or have the entire frons, clypellus and lora black, and brown pleural stripes near the coxae. Penis shaft slender, slightly clubbed on apical ¼, strongly curved only at base; style slightly tapered before apex, apically bent dorsad and tapered to blunt point.

Holotype ♂ (BISHOP 12,066), NEW CALEDONIA: Mokoue to Dothio, 150–500 m, 20–22.III.1968, J.L. Gressitt. 17 paratypes: NEW CALEDONIA: 1♀, same data as holotype; 1♂, 1♀, Tao, II.1963, Krauss; 1♀, same data, 8–10.II.1963, C.M. Yoshimoto; 3♂, 2♀, Vallee d'Amoa, 7.II.1963, Krauss; 1♀, Poindimie, I.1969, Krauss; 2♂, same data, 11.II.1963; 1♂, same data, VII.1950; 1♂, Yiambi, NE, 0–100 m, 8.X.1967, J. & M. Sedlacek; 1♂, Mt Mou, 11.II.1962, Krauss; 1♀, Mt W Hovailou, 5.II.1962, Krauss; 1♀, Sarramea, 70–150 m, II.1971, Krauss. 2 paratypes in CNC.

*Remarks.* Adults of this species have the least coloration of the tegmina of all species of *Strandiana*. The genitalia of the males resemble those of males of *longipennis*, but the head is distinctly shorter than the interocular width of the crown in *hyalina*.

### **Strandiana major** Hamilton, new species

♂, 8.5–9.1 mm; ♀, 9.7–10.4 mm. Color as in *hyalina* but ♂ usually with black face, ♀ with at most brown clouding on lower part of frons. Penis shaft laterally compressed, stout, curved cephalad, unarmed, notched on dorsal margin just before apex; style slightly tapered to near apex, then strongly constricted to form fingerlike lobe directed caudad.

Holotype ♂ (BISHOP 12,067), NEW CALEDONIA: Mt Koghi, 15.II.1963, C.M. Yoshimoto. 15 paratypes: NEW CALEDONIA: 1♂, same data, 500 m, 26–30.I.1963; 2♀, Mt Koghi, 500–800 m, 23–27.X.1967, J. & M. Sedlacek; 1♀, Mt Koghi, II.1962, N.L.H. Krauss; 1♀, same data, 400–600 m, II.1973; 1♂, 1♀, "Mts des Koghis" [Mt Koghi], 400–600 m, I.1969, Krauss; 1♂, 1♀, Col d'Amieu, 650 m, 21.III.1968, J.L. Gressitt & T.C. Maa; 1♂, Thi Riv Val, I.1940, F.X. Williams; 1♂, La Foa–Canala Saddle Rd, 300–450 m, 30.I.1963, Krauss; 1♀, Yahoue, 12.II.1962, Krauss; 1♀, La Crouen, 16.III.1961, J. Sedlacek; 1♀, Plateau de Dogny, 29.III.1968, Gressitt & Maa; 1♀, hgts between Thio and Nakety, 12.XI.1958, C.R. Joyce. 2 paratypes in CNC.

*Remarks.* The unique genitalia immediately distinguish males of *S. major* from those of all other species of *Strandiana* except *montrouzieri*. The large size and transparent tegmina separate the adults from those of all other species of *Strandiana*.

**Strandiana remota** Hamilton, **new species**

♂, 7.3–7.9 mm; ♀, 8.0–9.2 mm. Ochre; face, legs, venter of thorax more or less yellow, marked with bold black coronal margin and obscure rufous dorsal stripes similar to those of *hyalina* but paler; tegmina hyaline, smoky or brown in region of apical crossveins, other veins scarcely darker than membrane. Penis as in *distincta*; style somewhat sinuate and constricted before apex, apex strongly clubbed and curved dorsad.

Holotype ♂ (BISHOP 12,068), LOYALTY IS: OUEVA: Fayaoue, 0–50 m, XII.1968, N.L.H. Krauss. 19 paratypes: LOYALTY IS: OUEVA: 1♂, 1♀, same data as holotype; 2♂, 4♀, same data, I.1969; 1♂, 2♀, same data, II.1963, on citrus; LIROU: 3♂, 1♀, We (Oue), 30–31.I.1962, N.L.H. Krauss; 1♂, We, 16–19.II.1963, C.M. Yoshimoto; 1♀, We, II.1962, Krauss; 1♀, We, 16–18.II.1963, Yoshimoto; 1♀, nr We, 2–35 m, 26–28.III.1968, T.C. Maa. 2 paratypes in CNC.

*Remarks.* Adults of *S. remota* are readily distinguished by the pallid color and by the distribution, being the only species of *Strandiana* to inhabit the Loyalty Is. They are similar to adults of *distincta*, differing from the latter in the unmarked tegmina and smaller, distinctly tapered style apex. There is also a considerable difference in size between these 2 species.

**Strandiana virgulifera** Hamilton, **new species**

♂, 6.4–7.7 mm; ♀, 7.0–8.8 mm. Venter brown; dorsum brown to blackish brown, darker on abdomen, tibiae and apical segment of beak in paler specimens; marked with bold yellow chevron-shaped band across middle of face, extending back across pleurae as broad stripes, and with 4 narrow longitudinal yellow lines on pronotum more or less fusing on sides of crown, and scutellum with yellow median line; tegmina smoky hyaline brown, darker at apices and on veins, sometimes with 2 more or less yellow lines between claval veins and claval suture (veins P+E,<sup>6</sup> 1A and 2A). Penis shaft very slender beyond base, bent cephalad near midlength, apex reflexed ventrad, unarmed; style nearly parallel-margined, apex abruptly tapered and angled caudodorsad.

Holotype ♂ (BISHOP 12,069), NEW CALEDONIA: Col d'Amieu, 650 m, 21.III.1968, T.C. Maa. 64 paratypes: NEW CALEDONIA: 2♂, 1♀, same data as holotype, J.L. Gressitt & T.C. Maa; 1♀, Col D'Amieu, 650 m, 31.III.1968, Gressitt & Maa; 3♂, 3♀, Mt Mou, 1200 m, 9.I.1972, Gressitt; 12♂, 6♀, same data, 3.II.1963, on *Dracophyllum*; 1♀, Mt Mou, 11.II.1962, N.L.H. Krauss; 2♂, 3♀, Mt Mou, 600 m, 7.III.1972, Gressitt; 1♀, same data, 400–1000 m, 3.III.1972; 1♂, Mt Mou, 1800± [m], 21.VIII; 10♂, 4♀, Yiambia, NE, 50–500 m, 14.X.1967, newly cleared forest, J. & M. Sedlacek; 3♀, Plateau de Dogny, 29.III.1968, Gressitt & Maa; 1♂, Plateau de Dogny, 1000 m, 11.IV.1973, [on] *M. demonstrans*, Gressitt; 1♂, 2♀, Mokoue to Dothio, 150–500 m, 20–22.III.1968, Gressitt; 1♂, 1♀, Tao, 0–10 m, 8.X.1967, J. & M. Sedlacek; 1♂, Mt Koghi, 27.I.1963, C.M. Yoshimoto; 1♀, Col des Pirogue, 23.I.1962, Krauss; 1♀, same data, 14.II.1963; 1♀, Col des Roussettes, 450–550 m, 4–6.II.1963, Gressitt; 1♀, St. Louis, V.1950, Krauss. 2 paratypes in CNC.

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6. "Claval suture" of authors.

*Remarks.* The distinctive facial coloration and the slender, bent penis shaft of the males immediately distinguish this species from all other species of *Strandiana*.

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#### LITERATURE CITED

- Distant, W. L.** 1920. Rhynchota from New Caledonia. Part II. Homoptera. *Ann. Mag. Nat. Hist.* (9) **6**: 456-70.
- International Commission on Zoological Nomenclature.** 1961. Opinion 590—*Aphrophora* Germar, 1821 (Insecta, Hemiptera): Designation under the plenary powers of a type-species in harmony with accustomed usage. *Bull. Zool. Nomen.* **18**: 109-11.
- Lallemand, V.** 1924. Homoptères nouveaux de la collection du Muséum National de Paris et de la mienne. *Bull. Paris Mus. Hist. Nat.* (1) **30**: 201-07, 294-300, 378-85, 490-93.
1936. Description de trois genres et de deux espèces nouvelles de Homoptera de l'Insulinde et de l'Océanie. p. 264-66. *Festschrift zum 60. Geburtstage von Professor Dr. Embrik Strand.* Vol. 1.
1942. Cercopides du Muséum de Paris. *Bull. Paris Mus. Hist. Nat.* (2) **14**: 428-32.
- LePeletier, A. L. M. & J. G. Audinet-Serville.** 1825. *Tettigonia*. p. 600-13. *Olivier's Encyclopédie Méthodique, Histoire naturelle.* Vol. 10.
- Montrouzier, X.** 1861. Essai sur la faune entomologique de la Nouvelle-Calédonie (Balade) et des Îles des Pins, Aru, Lifu, etc. Hémiptères. *Ann. Soc. Entomol. Fr.* (4) **1**: 59-74.
- Synave, H.** 1957. Homoptera: Cercopidae. *Insects Micronesia* **6**(4): 213-30.
- Walker, F.** 1870. Catalogue of the homopterous insects collected in the Indian Archipelago by Mr. A.R. Wallace, with descriptions of new species. *J. Linn. Soc. London, Zool.* **10**: 82-193, 276-330.

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