

REPORT OF WORK
OF THE
EXPERIMENT STATION
OF THE
HAWAIIAN SUGAR PLANTERS' ASSOCIATION

On Some New Species of Leaf-Hopper
(Perkinsiella) on Sugar Cane.

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BY F. MUIR
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HONOLULU, HAWAII.
DECEMBER 16, 1910.

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LETTER OF TRANSMITTAL.

To the Experiment Station Committee of the
Hawaiian Sugar Planters' Association,
Honolulu, Hawaii.

Dear Sirs: I herewith submit for publication, as Bulletin No. 9 of the Entomological Series, a paper prepared by Mr. F. Muir, entitled: "On Some New Species of Leaf-Hopper (*Perkinsiella*) on Sugar Cane."

Yours very truly,

C. F. ECKART,
Director.

Honolulu, Hawaii, October 19, 1910.

ON SOME NEW SPECIES OF LEAF-HOPPER (PERKINSIELLA) ON SUGAR CANE.

PERKINSIELLA Kirkaldy.

This genus was erected by Kirkaldy for *saccharicida* in 1903. It differs from *Dicranotropis* in the first joint of antennae being broader at the apex than at the base and both joints somewhat flattened, not cylindrical, also in the presence of two spines on ventral margin of pygophor. The genus is particularly attached to sugar cane (*Saccharum officinarum*), only occasionally going on to other grasses. The thirteen known species are distributed in the following manner:—

New Guinea 6, Amboina 3, Ceram 1, Java 4, Borneo 3, Australia 2, Fiji 2, Hawaiian Islands 1 (introduced), China 1.

From this it appears that it is a Malayan genus with its center in New Guinea. Considering the amount of sugar cane taken from island to island in native boats, it is surprising that some of these species have such a restricted range.

The males are best distinguished by the genitalia, otherwise the species may be separated as follows:

- | | | |
|---|---|--------------------|
| 1. Frons concolorous. | 2 | |
| Frons darker between eyes than below. | 5 | |
| 2. Vertex, pronotum, and scutellum lighter than frons and clypeus. | | <i>fuscifrons</i> |
| Vertex, pronotum, and scutellum not lighter than frons and clypeus. | 3 | |
| 3. Veins on tegmina apparently white, sparsely granulated. | | <i>castatrix</i> |
| Veins on tegmina apparently dark, closely granulated. | 4 | |
| 4. Median, radial, and cubital cells clear; longitudinal markings on femora very faint. | | <i>amboinensis</i> |
| Median, radial, and cubital cells dark; longitudinal markings on femora plainer. | | <i>lalokensis</i> |

5. Spur on hind leg same color as tibia. 6
 Spur on hind leg darker than tibia. 9
6. Tegmina divided into two longitudinal parts by the median, 5th cubital, and all cells posterior to them (including clavus) being dark; all anterior clear. *bicoloris*
 Tegmina not so colored. 7
7. Pattern on tegmina formed by brown and yellow on clear cells. *variegata*
 Pattern on tegmina formed by brown on clear cells (no yellow) 8
8. Pattern on tegmina on 5 and 6 apical cells, granules on veins pallid and fine. *saccharicida*
 Pattern on tegmina on 6 and at each end of 5 apical cells, making curved pattern; granules on veins dark and coarse. *sinensis*
9. Scutellum concolorous. 10
 Lateral parts of scutellum darker than middle. 11
10. Tegmina almost immaculate, some of apical veins lightly infuscate; granules inconspicuous and very sparse. *vitiensis*
 Tegmina with granulation darker and coarser (all females brachypterous). *graminicida*
11. Antennae concolorous, dark. *papucensis*
 Antennae not concolorous. 12
12. Head and thorax light, veins on tegmina sparsely and finely granulated. *pallidula*
 Head and thorax dark, granules on tegminal veins closer and coarser. *rattlei*

1. *saccharicida* Kirkaldy, 1903, Entom. XXXVI., 179.

I have one male specimen from Viti Levu, Fiji, probably imported from Queensland with cane. It is possible that New Guinea species will eventually be recorded from the same locality, as much sugar cane has been imported direct from that locality.

2. *vitiensis* Kirkaldy, 1906, Bull. H. S. P. A. Ent. 1, 406.

3. *graminicida* Kirkaldy, 1906, Bull. H. S. P. A. Ent. I., 406.

4. *sinensis* Kirkaldy, 1907, Bull. H. S. P. A. Ent. III., 138.

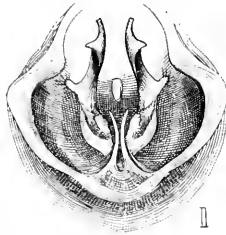
I have one macropterous female specimen from Telok Ayer, West Borneo, that agrees with the Chinese males, except that the dark mark runs down apical cell 6 instead of 5.

5. *pallidula* sp. nov.

Female macropterous. Antennae, frons between eyes, clypeus, lateral edges of pronotum, and scutellum, light brown; frons below eyes, vertex, pronotum, and scutellum between lateral keels, and rest of thorax and legs yellowish. Pleural spot very faint. Anterior and intermediate tarsi, band on anterior and intermediate femora, and spur, blackish. Abdomen, yellowish. Tegmina, hyaline; clavus, light brown; dorsum, white with dark spot before end of anal vein; dark brown at base and near apex of 5, and greater part of 6 and 7 apical cells, leaving a light spot near apex of these cells; veins, light, sparsely studded with brown granules. Length of female 3 mm, 4 mm.*

Habitat, Pontianak, Borneo, on sugar cane. This comes near to *P. sinensis*, but I have specified it, as it is much more uniform and light in color. The presence of a dark band on the femora, and not longitudinal marks, and the black spur distinguish it. The granules on veins are less distinct than in *sinensis*, but more so than in *saccharicida*.

6. *rattlei* sp. nov. (Fig. 1.)



*First measurement front of vertex to end of abdomen, second measurement to end of tegmina.

Male macropterous. Head, antennae, and thorax, brown; frons between eyes, clypeus, lateral edges, pronotum, scutellum, and distal part first antennal joint, darker; keels and spots on frons, lighter. Anterior and intermediate tarsi, band on tibiae and spur, dark; also longitudinal marks on femora, pleural spot, plain. Dorsum, inner margin or edge of clavus, abdomen, black with brown markings along sides. Tegmina, hyaline, suffused with light brown. Radial and median cells, dark brown, running into central part of subcostal cell. Apical cells 2 to 8, dark brown with light spots in 2 to 4 and 6 to 7, also in radial and median. Veins closely granulated. Anal tube with claw-like, curved spine; genital styles, large antler-like, reaching beyond middle of pygophor, basal part thick and slightly concave, with small protuberance in middle, distal part flattish provided with blunt prong on outer side and apex drawn out into two flat prongs. Ventral spines, thin, smooth, cone-shaped, curved, touching in center, but not at base or tips.

Female macropterous, somewhat lighter in color than male, especially the abdomen. Dark marks on tegmina confined to along the apical veins, especially the distal part, and along base of 5 to 6 apical cells. Length, female, 4.5 mm, 6 mm; male broken.

Habitat, Laloki River, British New Guinea, on sugar cane.

This species comes near to *lalokensis* and *auboinensis*, but the light frons below the eyes makes it easy to distinguish.

7. bicoloris sp. nov.

Female macropterous. Antennae, frons between eyes, clypeus, lateral margins of pronotum, and scutellum, piceous brown, with light spots on frons; frons between eyes and apex of clypeus, white, with dark sub-apical line across former; vertex and pronotum and scutellum between lateral keels, yellowish. Legs, light; posterior and intermediate tarsi and band on tibiae, piceous, with longitudinal markings on femora. Pleural dark spot, plain. Abdomen, dark, marked with light brown. Tegmina, hyaline; dark on clavus; median, discoidal and 5 to 6 apical cells, dark along 1 to 4 apical veins. Veins finely granulate. Only females taken, length 3 mm, 5 mm.

Habitat, Laloki River, British New Guinea, on sugar cane.

8. *variegata* sp. nov. (Fig. 2.)

Male macropterous. Vertex, pronotum, and scutellum, yellowish brown, broadly whitish along keels; antennae, frons between eyes, and clypeus brown, former with light spots; frons below eyes and apex of clypeus, white. Legs, white; anterior and intermediate tarsi and band on tibia, dark; dark longitudinal mark on femora; spur, light. Pleural spot, small. Abdomen, piceous, marked with brown. Tegmina, hyaline; yellowish between dorsum and axillary veins and across distal part of subcostal cell; between anal and axillary veins, basal half of median and spreading into radial, 5 to 8 apical cells, also along apical vein 2 to 4, dark brown; white spot at edge of 5 to 7 and across middle of 5 apical cells. Veins, light, granules exceedingly fine and sparse. Anal spines curved, pointing distally. Genital styles large, reaching past middle of pygophor, horn-shaped and twisted, without any lateral prongs. Ventral spines large, reaching about to middle of pygophor, sub-cylindrical and rounded at ends, swollen about middle, from which point they divaricate. The pattern on wings and large ventral spines distinguishes this species.

Female macropterous, similar to male, except the abdomen, which is lighter. Length: male 2.5 mm, 4 mm; female, 3.5 mm, 5 mm.

Habitat, Laloki River, British New Guinea, on sugar cane.

9. *papuensis* sp. nov.

Female macropterous. Antennae, frons between eyes, clypeus, lateral edges of pronotum and scutellum, black, with light spots on frons between eyes; frons below eyes and apex of clypeus, white; sub-apical dark marks between keels on frons; vertex, pronotum, and scutellum, yellowish between white keels. Legs, whitish; anterior and intermediate tarsi, band on tibiae, and spur, black; dark longitudinal marks on femora. Large black pleural spot. Abdomen, black. Tegmina, hyaline, suffused with brown on clavus; dorsum, white; black dot at end of anal vein; apical cells 5 to 8, and running into discoidal and median cells, dark brown, also along apical veins 1 to 4; white spot at apex of 5 to 8, and center of 5, apical. Veins, thickly studded with dark granules.

This is a very distinctly contrasted species represented only by a female. Length, 3.5 mm, 6mm.

Habitat, Laloki River, British New Guinea, on sugar cane.

10. *rustatrix* (Breddin).

I have specimens of both sexes of this species from Java, West Borneo, Amboina, Piroe (Ceram), and Laloki River (British New Guinea). There is a distinct darkening of the wing pattern as we pass eastward.

The spine on anal tube is bifurcate.

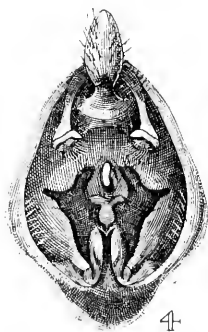
11. *lalokensis* sp. nov. (Fig. 3.)

Males macropterous. Head, antennae, thorax, and legs, brown, with small lighter spots on frons. Apex of first antennal joint, black. Lateral margins of pronotum and scutellum, dark. Large, black pleural spot. Anterior and intermediate tarsi, and apex of tibiae, banded with black. Tegmina, hyaline, suffused with brown. Dorsum, white to end of clavus; black spot on apex of anal vein. Apical cells 4 to 8, and along apical veins 1 to 3, dark brown, continuing into distal part of radial, median, and inner discoidal cells; light spot in distal cells 6 to 8. Veins, dark, finely granulated. Anal tube large, with a pair of straight, somewhat bulbous spines reaching beyond middle of pygophor. Genital styles, broad, flat-tish, distal end cut off square, outer edge giving out blunt prong half way down and inner edge small blunt knob. Ventral spines, thin, touching from base to tip.

Female dimorphic, macropterous forms similar to male, excepting abdomen which is lighter; brachypterous forms lighter with the spot at apex of anal vein and a spot at end of radial cell. Length, males 3 mm, 5 mm; females, 5 mm, 6 mm; brachypterous females 4.5 mm, 4 mm.

Habitat, Laloki River, British New Guinea, on sugar cane.

12. *amboinensis* sp. nov. (Figs. 4 and 5.)



Males macropterous, markings on head and thorax similar to *lalokensis*, but lighter, especially the legs. Tegmina, brownish hyaline. Apical cells 4 to 7 and base of 3 dark, also along apical

veins 2 to 3, light spot in apical cells 4 to 7. Dorsum, whitish to end of clavus, spot at end of anal vein, faint. Veins, dark, finely granulated.

Pygophor approaching *lalokensis*, anal tube with a pair of curved, claw-like spines pointing distally. Genital styles, broad, flattish; distal end and prong on outer edge less square than in *lalokensis*. Ventral spines, thin, diverging near apex.

Female macropterous; tegmina often slightly darker than male; light spot in apical cell 4 sometimes missing. Length, male, 3 mm, 4.5 mm; female, 4 mm, 6 mm.

Habitat, Island of Amboina, on sugar cane.

13. *fuscifrons* sp. nov.

Pronotum and scutellum, light brown, darker on lateral edges, keels whitish. Vertex and frons, brown, slightly lighter between eyes than below; keels, small spots on frons, and a line across apex, whitish; clypeus darker than frons. Front and intermediate tarsi and bands on tibiae, dark; femora, dark. Black pleural spot. Tegmina, hyaline, yellowish between axillary vein and dorsum; dark spot at end of anal vein; dark along tips of apical veins; base of apical cell 5 and across apical cell 6. Only females taken. Length, 2.5 mm, 4 mm.

Habitat, Island of Amboina, on sugar cane.

The frons and clypeus darkening towards the apex, together with the light dorsal and dark ventral aspect, distinguishes this species.

PHACALASTOR.

Phacalastor pseudomaidis Kirkaldy, 1906, Bull. U. S. P. A. Ent. I, 408, was placed by its author in the genus *Perkinsiella* (1907 Bull. U. S. P. A. Ent. III., 136, Plate XIII., Figs. 1-2) on account of the pair of ventral spines, but the specimen examined and figured had the oedeagus abnormally extruded and laying on the prolongation of the ventral edge of the pygophor, the two spines seen belong to the oedeagus. This pygophor is of the same type as *P. koebeli* Kirkaldy, so I place them together again in that genus.

