

# INSECTS OF MICRONESIA

## Homoptera: Cicadellidae, Supplement

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### INTRODUCTION

Since I published the Cicadellidae part in *Insects of Micronesia* **6**(5): 231–344 in 1960, a considerable amount of additional material has been collected in field trips organized by the B. P. Bishop Museum. The specimens are not only from the previously well known areas but also, for instance, from the zoogeographically interesting Bonin Islands, whose fauna has a strong Japanese influence in contrast to the other parts of Micronesia with a fauna of more southern origin.

In recent years our knowledge on the Cicadellid fauna of the neighboring parts of Asia has been greatly enlarged. The most important contribution has been Dworakowsk's and Vilbaste's revision of the previously unobtainable Matsumura types, which are now preserved in the Hokkaido University in Sapporo. The revision has caused several nomenclatorial changes in the Micronesian fauna.

This supplement increases the Micronesian Cicadellidae from 79 to 86 species, including two new species of *Empoasca*— *dworakowskiae* (Palau) and *setsukooae* (Bonin Is.). Nomenclatorial changes include several new combinations and new synonymies, along with those necessitated by recent revisionary work by others in the intervening years. The number of genera is also increased, from 29 to 33.

The types are deposited in the U. S. National Museum and duplicates, insofar as they are available, will be distributed to the host museums of the Pacific Science Board, and my private collection.

### SYSTEMATICS

#### SUBFAMILY IASSINAE

#### Genus **Batrachomorpha** Lewis

**2. *Batrachomorpha viridoflavida* (Metcalf)**

PALAU. NGURUKDABEL: 1 ex., Ngaremediu, May 14, 1957, Sabrosky.

S. MARIANA IS. GUAM: some ex., Mt. Lamlam, Feb. 1958, Krauss;  
Yigo, Feb. 1958, Krauss.

**3. *Batrachomorphus atrifrons* (Metcalf)**

S. MARIANA IS. GUAM: several ex., Mt. Lamlam, Feb. 1958, Krauss;  
Yigo, Feb. 1958, Krauss.

Subfamily TYPHLOCYBINAE

Tribe Empoascini

Genus ***Empoasca*** Walsh

**14. *Empoasca morindae* Metcalf**

S. MARIANA IS. GUAM: some ex., Yigo, Dec. 1958, Krauss.

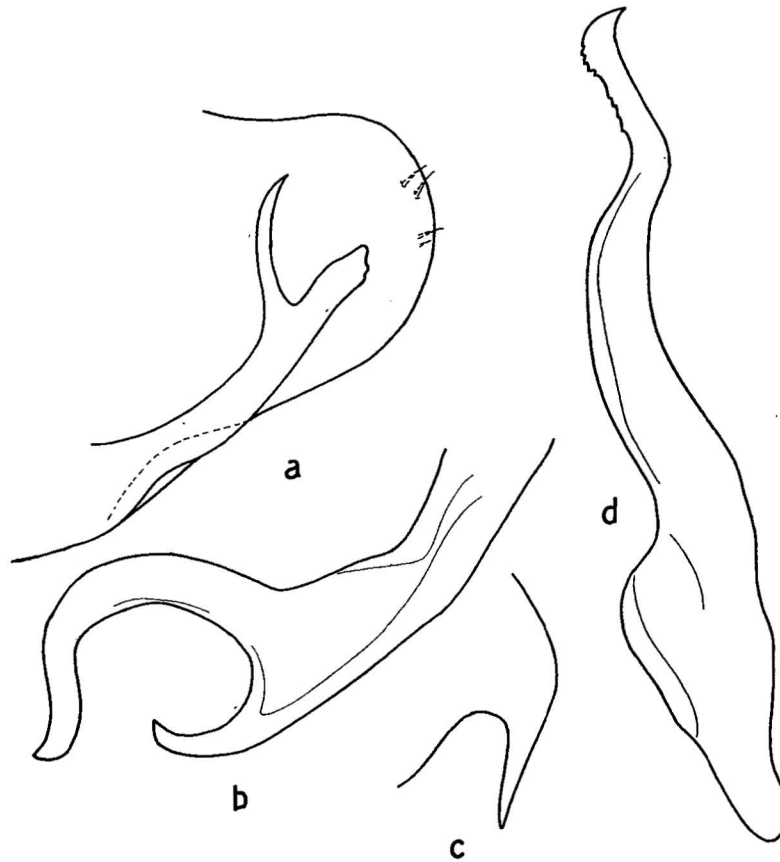


FIGURE 1. *a*, *Empoasca yona* Metc.: *a*, side lobe of pygofer. *b-d*, *E. pitiensis* Metc.: *b*, appendage of pygofer; *c*, appendage of anal tube; *d*, stylus.

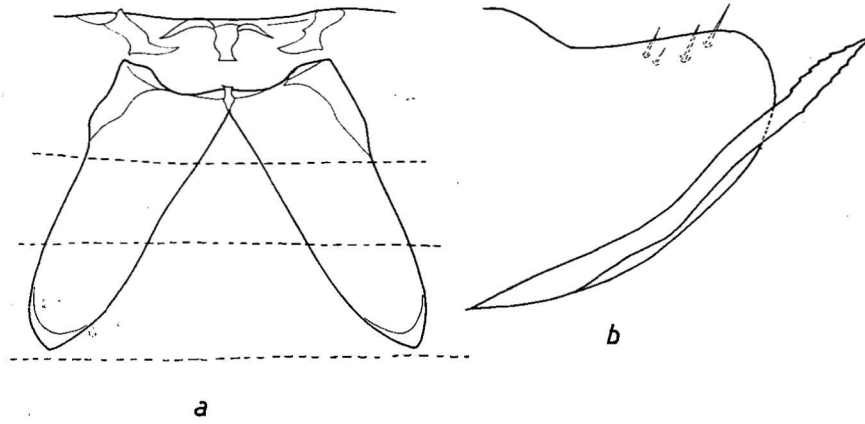


FIGURE 2. *Empoasca dworakowskæ* n. sp.: a, apodemes of 2nd sternite ( $\sigma$ ); b, side lobe of pygofer.

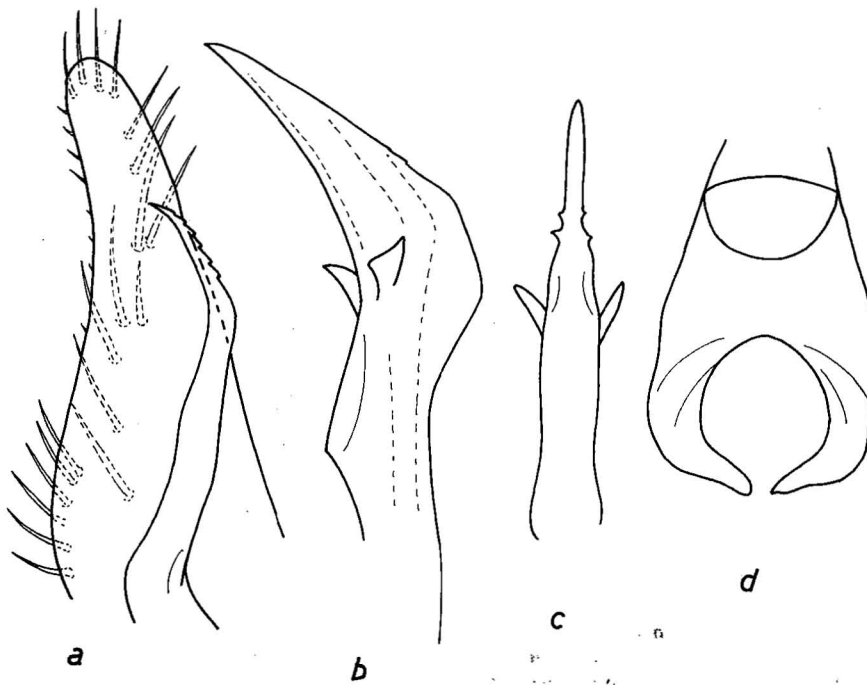


FIGURE 3. *Empoasca dworakowskæ* n. sp.: a, genital plate and stylus; b, penis, lateral; c, same, ventral; d, appendages of anal tube.

**19. *Empoasca pitiensis* Metcalf (figs. 1, b-d)**

Male genitalia as in fig. 1, b-d. Easily distinguished from the closely related *E. yona* Metcalf in the shape of the appendages of the pygofer. Those of *E. yona* illustrated in fig. 1, a.

S. MARIANA IS. GUAM: some ex., Mt. Lamlam, Oct. 1957, Krauss.

**19a. *Empoasca dworakowskae* Linnavuori, n. sp. (figs. 2, 3)**

Length 3–3.25 mm. Pale yellowish. In ♂, entire upper surface, in ♀, median and basal part of pronotum and elytra, bright yellow. Tip of ovipositor sheath black.

Slender. Head a little broader than pronotum. Crown roundedly produced, medially somewhat longer than laterally. 3rd apical cell of elytra triangular, stalked. Apodemes of 2nd sternite long and strongly diverging caudad (fig. 2, a). Genital plates (♂) tapering apicad, provided with several macrosetae. Style slender, apex distinctly dentate. Side lobes of pygofer rounded (fig. 2, b), ventral margin with a long, straight, apically dentate appendage.

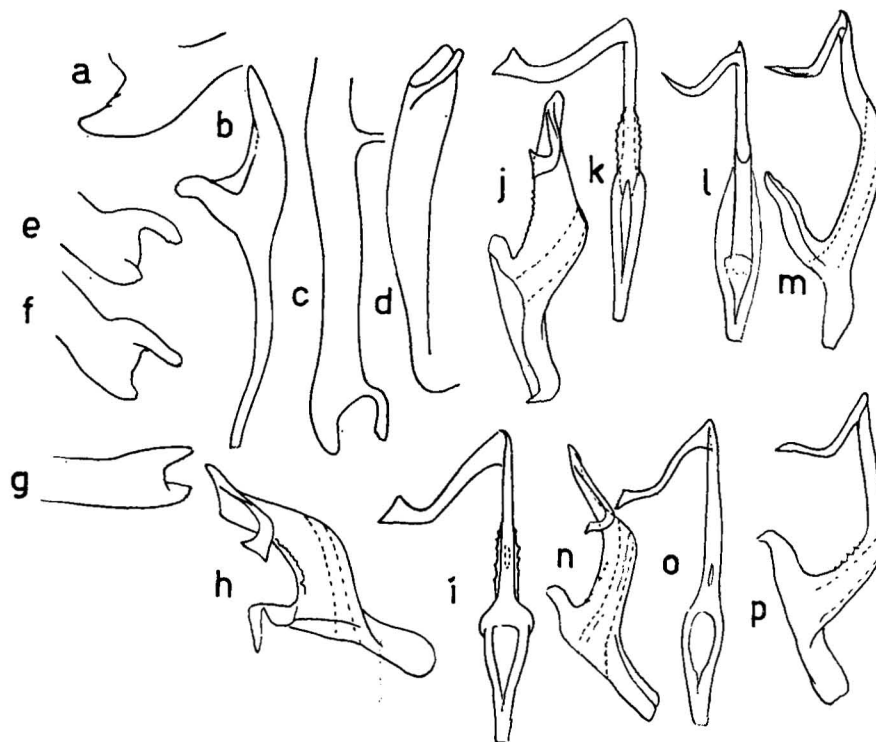


FIGURE 4. a-d, *Empoasca boninensis* Mats. (type): a, appendage of anal tube; b, penis, lateral; c-d, appendage of pygophore. e-g, *E. formosana* Paoli: e-f, apex of appendage of pygophore (specimen from Japan, Takasaha, Saitawa; g, same (from China, Cisian-Shan, near Nanking). h-i, *E. sakaii* Dwor. (Japan) h-i, penis from side and in ventral. j-k, *E. rubiogon* Dwor. (Korea): j-k, same. l-m, *E. cisiana* Dwor. (China): l-m, same. n-o, *E. lutowa* Dwor. (Korea): n-o, same. p, *E. decedens* Paoli (Israel): p, penis, lateral. (Drawn by I. Dworakowska.)

Appendages of anal tube short, digitate, Penis with 2 small triangular lobes (fig. 3, *b, c*). 7th sternite (♀) long, hind margin truncate.

Holotype, ♂ (USNM), and 10 paratypes, Palau, Babelthuap I., Airai, Ngerimal R., June 1, 1957, Sabrosky.

Easily distinguished from the other Micronesian species in the male genitalia.

The species is dedicated to Dr. I. Dworakowska, of Warsaw, who has published several important papers on the taxonomy of Typhlocybinae.

**20. *Empoasca boninensis*** (Matsumura) (figs. 4, *a-d*)

Male genitalia (fig. 4, *a-d*). Dr. Dworakowska has informed me in a letter that *E. formosana* Paoli, known from Bengal, Vietnam, China and Japan is apparently a synonym of *E. boninensis*. The shape of the appendages of the pygophore is variable in *E. formosana* (fig. 4, *e-g*).

Until now only the type series of *E. boninensis* was known.

**20a. *Empoasca setsukoae*** Linnavuori, n. sp. (fig. 5, *a-c*)

Length 3.5 mm. Externally as *E. decedens* Paoli, but differing from it and the other species of the group in the shape of the penis (fig. 5) in which the base of the stem is remarkably broad and suddenly tapering to the narrow upper part near the gonopore (lateral aspect). The genitalia of the related species are illustrated in fig. 4, *h-p*.

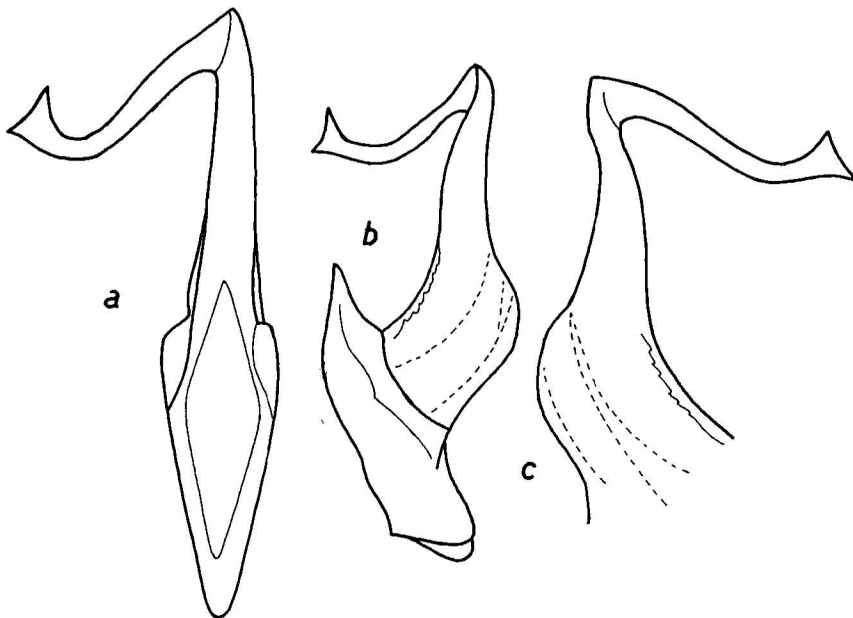


FIGURE 5. *Empoasca setsukoae* n. sp.: *a-c*, penis in different aspects.

Holotype, ♂ (USNM), and 5 paratypes, Bonin Is., Chichi Jima, Ani Jima, Sen-zan (NE Bay), May 28, 1958, Snyder. Haha Jima, Okimura, 1 ♀ probably of this species, not marked as a paratype: April 26—June 9, 1958, Snyder.

The species is dedicated to the late Miss Setsuko Nakata, of the Bishop Museum, Honolulu.

Genus **Sundapteryx** Dworakowska

*Sundapteryx* Dworakowska, 1970, Bull. Acad. Polonaise **18**: 708 (type: *Chlorita biguttula* Ishida, 1913, Formosa).

Differing from *Empoasca* in certain details in the male genitalia, especially in the enormously long and narrow, parallel-sided genital plates:

**25. Sundapteryx sesuvii** (Linnavuori)

*Empoasca sesuvii* Linn., 1960, Insects of Micronesia **6**: 260–61.

WAKE ATOLL. Wake I., several ex., Nov. 1957, Krauss.

**29a. Sundapteryx biguttula** (Ishida)

*Chlorita biguttula* Ishida, 1913, Gov. Formosa, Bur. Ind., Prod., Publ. **12**: 1–3.

*Empoasca bipunctata* Schumacher, 1915, Suppl. Ent. **4**: 127.

*Chlorita bimaculata* Matsumura, 1917, App. Ent. **1**: 393–394.

*Empoasca devastans* Distant, 1918, Fauna of British India, Rhynchota **7**: 93.

*Empoasca quadrinotatissima* Dlabola, 1957, Mitt. Münchner Ent. Ges. **47**: 296.

*Empoasca schumacheri* Metcalf, 1968, Gen. Cat. of the Homoptera Fasc. **6**(17): 353. **NEW SYNONYMY.**

Differing from *S. bipunctulata* (Metcalf) in the pattern of the crown: provided with 2 round black apical spots, surrounded by a whitish ring. Also the male genitalia are different, the appendages of the pygofer, for instance, are straight and provided with a small subapical spine on the dorsal surface.

**DISTRIBUTION:** Afghanistan, India, Indonesia, Formosa, China, Japan, Manchuria, S. Mariana Is.

**S. MARIANA IS. SAIPAN:** several ex., Chalan Piao, Feb. 1958, Krauss. **GUAM:** 1 ex., Inarajan, Oct. 1957, Krauss; 1 ex., Santa Rita, Oct. 1957, Krauss.

According to Esaki and Ito, 1954, Japan. Soc. Promotion Sci., Tokyo, **64**: 188, found on cotton plant, rose mallow, *Hibiscus* spp., sweet potato, egg plant and *Abelmoschus moschatus*.

Subfamily NIRVANINAE  
Genus **Pactana** Linnavuori

**34. *Pactana elegantula* Linnavuori**

YAP. YAP: 2 ex., Chol, June 19, 1957, Sabrosky; 4 ex., Giliman, June 12, 1957, Sabrosky.

PALAU. BABELTHUAP: 2 ex., Airai, Ngerimal R., May 26, 1957, Sabrosky.

## SUBFAMILY DELTOCEPHALINAE

## Tribe Hecalini

Genus **Linnavuoriella** Evans

*Linnavuoriella* Evans, 1966, Australian Mus. Memoir **12**: 134 (type: *Parabolocratus arcuatus* Motschulsky, Ceylon).

**36. *Linnavuoriella gressitti* (Linnavuori), n. comb.**

*Parabolocratus gressitti* Linnavuori, 1960, Insects of Micronesia **6**: 272-73.

PALAU. BABELTHUAP: 1 ex., Airai, Ngarsung, May 16, 1957, Sabrosky; 1 ex., Ngaremlengui, June 3, 1957, Sabrosky; 2 ex., Ngardmau, May 10, 1957, Sabrosky; 1 ex., Malakal I., May 2, 1957, Sabrosky.

## Tribe Deltocephalini

Genus **Recilia** Edwards

*Recilia* Edwards, 1922, Ent. Monthly Mag. **58**: 206 (type: *Jassus coronifer* Marsh., Europe).

*Inemadara* Ishihara, 1953, Matsuyama Agric. Coll. Sci. Rep. **11**: 48 (type: *Deltocephalus oryzae* Matsumura, Japan).

*Deltocephalus* subgenus *Insulanus* Linnavuori, 1960, Insects of Micronesia **6**: 303 (type: *Stirellus subviridis* Metcalf, Micronesia).

**61. *Recilia hopponis* (Matsumura)**

*Thamnotettix hopponis* Matsumura, 1914, J. Coll. Agr. Tohoku Imp. Univ. **5**: 179-180.

*Stirellus subviridis* Metcalf, 1946, Insects of Guam II, B. P. Bishop Museum Bull. **189**: 125-126.

DISTRIBUTION: Formosa, Micronesia.

S. MARIANA IS. GUAM: Anderson AFB, Oct. 1957, Krauss; Apra Heights, Jan. 2—Feb. 3, 1959, Krauss; Nimitz Hill, Dec. 1957, Krauss; Talofoto, Feb. 1958, Krauss; Umatac, Oct. 1957, Krauss; Yigo, Dec. 1958, Krauss; Ylig Bay, Dec. 1958, Krauss.

PALAU. BABELTHUAP: Ngaremlengui, June 1, 1957, Sabrosky. KOROR:

July 24, 1956 Daniel; Apr. 17, 1957, Sabrosky. MALAKAL: May 2, 1957, Sabrosky.

CAROLINE ATOLLS. ULITHI: Falalop I., Sept. 26, 1956, Daniel.

MARSHALL IS. ENIWETOK: Japtan I., Aug. 31, 1958, Tuthill. JALUIT: Elisabeth I., Nov. 11, 1964, Perkins. KWAJALEIN: Ennubirr I., Oct. 28, 1964, Perkins.

GILBERT IS. TARAWA: Bairiki I., Dec. 1957, Krauss.

**61a. *Recilia pacifica*** (Osborn)

*Stirellus pacificus* Osborn, 1934, Insects of Samoa **4**: 173.

Somewhat larger than the preceding species, length 3–3.6 mm. Crown with 2 small brown apical dots and 2 larger transverse brown discal spots. Elytra immaculate. Penis slightly more slender. A redescription appeared in Linnavuori 1960, Acta Ent. Fennica **15**: 44–45.

DISTRIBUTION: Samoa, Fiji, S. Mariana Is.

S. MARIANA IS. GUAM: 1 ex., Merizo, Dec. 1958, Krauss.

**62. *Recilia affinis*** (Osborn)

*Stirellus affinis* Osborn, 1934, Insects of Samoa **4**: 180–81.

*Deltocephalus hospes*: Linnavuori, 1960, Insects of Micronesia **6**: 306 nec Kirkaldy, 1904, Entomologist **37**: 177.

DISTRIBUTION: Samoa, Fiji, Marshall Is., Gilbert Is.

MARSHALL IS. ENIWETOK: 1 ex., Igurin I., Aug. 20, 1956, Tuthill.

GILBERT IS. KURIA: 1 ex., Nov. 19, 1964, Perkins.

**63. *Recilia distincta*** (Motschulsky)

*Deltocephalus distinctus* Motschulsky, 1858, Études Ent. **7**: 112.

PALAU. BABELTHUAP: 1 ex., Ngerehelong, May 8, 1957, Sabrosky; 3 ex., Ngiwal, May 21, 1957, Sabrosky.

SUBFAMILY TARTESSINAE

Genus **Tartessus** Stål

**38. *Tartessus swezeyi*** Metcalf

S. MARIANA IS. GUAM: some ex., Mt. Lamlam, Dec. 1958, Krauss.

**41. *Tartessus fieberi sycophantus*** Linnavuori

YAP. YAP: 1 ex., Woloy, June 15, 1957, Sabrosky.

PALAU. BABELTHUAP: 1 ex., Ngardok, May 22, 1957, Sabrosky; 1 ex., Ngaremlengui, June 2, 1957, Sabrosky; 1 ex., N. end of Peleliu, May 28, 1957, Sabrosky.

SUBFAMILY COELIDIINAE

Genus **Coelidia** Germar

The genus has spread from Japan into the Bonin Islands. The material



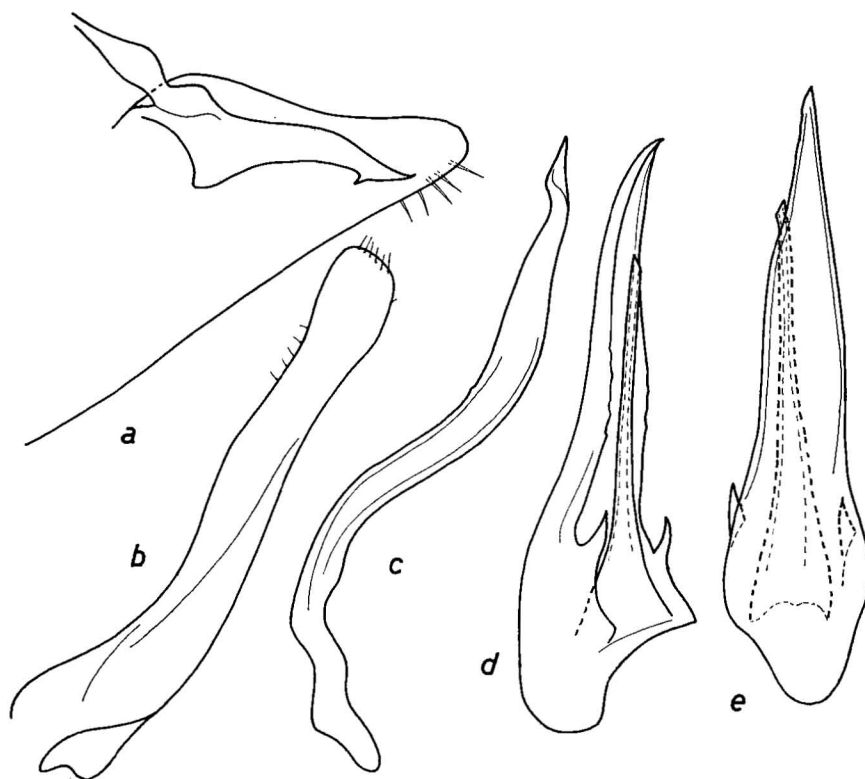


FIGURE 6. *Coelidia fuscovenosa* Mats.: a, side lobe of pygofer, median; b, genital plate; c, stylus; d, penis lateral; e, same, ventral.

examined by me consists of all recorded species except *C. insularis* Mats. The species of the Bonin Islands form two groups. One group is comprised of *C. fuscovenosa* Mats., distinguished by the short and broad frontoclypeus and the male genitalia (figs. 6a-e). According to the figures published by Ishihara (1953, Sci. Rep. Matsuyama Agr. College **11**: 64, fig. 10) it is closely related to the Japanese *C. satsumensis* Mats. and could even be identical with it, although the styli of *C. satsumensis* appear slenderer in Ishihara's illustrations. The second group consists of the rest of the species. It represents a recent immigration into Micronesia, wherefore the taxonomic treatment of the species causes difficulties. The species differ from each other only in the color pattern and to some extent also in the body form, but the male genitalia, for instance, are similar. Moreover there seems to be variability even in the coloring and the body form between different populations. Without examining large series of specimens from various localities in the Bonin Islands and conducting

breeding experiments, it is not possible to establish the taxonomic value of Matsumura's species.

**42, 43. *Coelidia boninensis* Matsumura**

*Coelidia boninensis* Mats., 1914, Sapporo Nat. Hist. Soc. Trans. **5**: 84.

*Coelidia ogasawarensis* Matsumura, 1914, Sapporo Nat. Hist. Soc. Trans. **5**:

**84. NEW SYNONYMY.**

Often uniformly pale brown species. In dark specimens originally described as *ogasawarensis*, the lateral margins of the frontoclypeus below the antennae are narrowly dark, the sides of the same sclerite have a red longitudinal band, the crown is provided with 2 reddish apical spots and is also laterally near the eyes tinged with the same color. The pronotum is darker, likewise the general coloring of the elytra, in which the veins are concolorous as in the pale form. Both forms are connected to each other by intermediates, in which, for instance, the lateral margins of the frontoclypeus are darkened, but the general coloring otherwise is only slightly darker than in the nominate form. Both forms occur in same populations and are undoubtedly conspecific. Hence I regard *C. ogasawarensis* as a synonym of *C. boninensis*.

The pale form (and intermediates)—BONIN IS. Numerous exc. CHICHI JIMA: Ani Jima, Sen-zan, May 28, 1958, Snyder; Ani Jima, Southwest Bay, May 11, 1958, Snyder; Miyano-hama, Jack Wm's beach, May 12-June 9, 1958, Snyder; Ototo Jima, Kammuri-iwa, June 3, 1958, Snyder; Sakai-ura, Bull beach, May 12-31, 1958, Snyder; Yoake Yama, May 21, 1958, Snyder. HAHU JIMA: Okimura, Apr. 26-June 9, 1958, Snyder.

The dark form—BONIN IS. Numerous ex. CHICHI JIMA: Ani Jima, Sen-zan, May 28, 1958, Snyder; Ani Jima, Southwest Bay, May 27, 1958; Omura, Camp Beach, May 5-June 9, 1958; Ototo Jima, SE Beach, Apr. 9, 1958, Snyder; Sakai-Ura, Bull Beach, May 12-31, 1958, Snyder; Yoake Yama, Apr. 21, 1958, Snyder. HAHU JIMA: Okimura, Apr. 26-June 9, 1958, Snyder.

**44. *Coelidia fuscovenosa* Matsumura (fig. 6a-e)**

Easily distinguished in the facial sclerites (anteclypeus only slightly broadening apicad, frontoclypeus short and broad, a little broadening upwardly) and the male genitalia (styli long, stem of penis lying in a boat-shaped ventral process).

BONIN IS. Several exx. Chichi Jima: Ani Jima, Southwest bay, Apr. 17, 1958, Snyder; Ani Jima, Commander's beach, Apr. 22, 1958, Snyder; Okumura, Yankee Town, May 12-June 9, 1958, Snyder; Omura, Camp beach, Apr. 2-25, 1958, Snyder; Ototo Jima, Kammuri-iwa, June 3, 1958, Snyder; Yoake Yama, Apr. 21, 1958, Snyder.

**45. *Coelidia nigrifrons* Matsumura**

Paler, e.g. apex of scutellum always pale, and somewhat more elongate than the following species. Tuberculation of pronotum generally a little sparser and coarser.

MALE: (dark) Frontoclypeus either totally black or provided with a pale midline, face

otherwise pale, immaculate. Crown with 2 small dark dots. Pronotum largely brownish medially, with pale tubercles, laterally pale, sides with a black triangle behind either eye. Scutellum with 4, often  $\pm$  confluent, black spots. Elytra yellowish brown, apically smoky, veins dark brown. Under surface with distinct dark markings. (Pale): Pale golden brown. Face pale yellowish, frontoclypeus with a faint orangish or reddish band along lateral margins. Crown immaculate. Pronotum medially brownish, Tuberculation pale, laterally largely pale, immaculate. Scutellum with large dark basal spots, also apex often with minute dark dotting. Elytra golden brown, apically smoky, veins dark brown. Under surface unicolored pale.

FEMALE: As the dark colored ♂, but frontoclypeus medially pale, laterally orangish or brown. Clavus with an arcuate milky spot, apex of elytra usually with 2 milky spots, 1 at apex of clavus, 1 in base of 5th apical cell.

Females from Ototo Jima are shorter and more robust, with the pronotum totally blackish with pale tuberculation and the dark basal spots of the scutellum greatly reduced. Unfortunately no males were obtained from this locality.

BONIN IS. Numerous ex. CHICHI JIMA: Ani Jima, Southwest bay, May 17, 1958, Snyder; Miyanoama, Jack Wm's beach, 1 ♂ of pale form, May 12-June 9, 1958, Snyder; Omura Camp beach, several (about half of the dark form, half of the pale form), May 5-June 9, 1958, Snyder; Ototo Jima, SE beach, Apr. 9, 1958, Snyder; Sakai-Ura, Bull beach, 1 dark ♂, 1 pale ♂, May 12-31, 1958, Snyder.

#### 46. *Coelidia virescens* Matsumura

Somewhat more robust than *C. nigrifrons*. Tuberculation of pronotum generally denser and finer.

MALE. Besides the black frontoclypeus, other parts of face also largely darkened. Crown pale. Pronotum black, with pale tubercles. Scutellum black, margins narrowly pale. Elytra dark brownish, veins black. Under surface largely blackish.

FEMALE. As the ♂, but frontoclypeus laterally paler brown. In pale ♀♀ the frontoclypeus is pale, with a red band on either side and the scutellum is provided with pale irroration and spotting.

BONIN IS. Several ex. CHICHI JIMA: Ani Jima, Southwest bay, May 17, 1958, Snyder; Omura, Camp beach, Apr. 2-25, 1958, Snyder; Okumura, Yankee Town, May 12-June 9, 1958, Snyder; Ototo Jima, Kammuri-iwa, June 3, 1958, Snyder; Yoake Yama, May 21, 1958, Snyder.

#### Genus *Tharra* Kirkaldy

#### 54. *Tharra flavomaculata palauensis* Linnavuori

PALAU. NGURUKDABEL: 2 ex., Ngeremediu, May 14, 1957, Sabrosky.

#### SUBFAMILY DRABESCINAE

#### Genus *Melichariella* Matsumura

According to Ishihara (1961, Nature and Life in Southeast Asia 1: 243),

*Melichariella* is a valid genus and a not a synonym of *Bhatia* Distant.

**74. *Melichariella boninensis* Matsumura (figs. 7, a-d and 8, a)**

Head broader than pronotum. Face flattish, broad, lower part nearly semicircular in outline; anteclypeus broadening apicad; frontoclypeus moderately broadening upwardly; genae broad, only shallowly insinuated near eyes; lora large; ocellar-ocular area very broad, antennae arising near upper margin of head, a distinct oblique ledge above antennal pits. Crown of uniform length, nearly 0.5 X as long as median length of pronotum; anterior margin slightly upturned medially, transversely striated; frontal region narrow, transversely striated; discal region sloping apicad, slightly depressed medio-apically, obliquely longitudinally striated; ocelli small, in fore margin, distant from eyes by about twice their own diameter. Antennae very long, extending to apical part of abdomen. Pronotum with lateral margins longish, parallel and subcarinate, disk apically shagreened, otherwise very densely transversely striated and

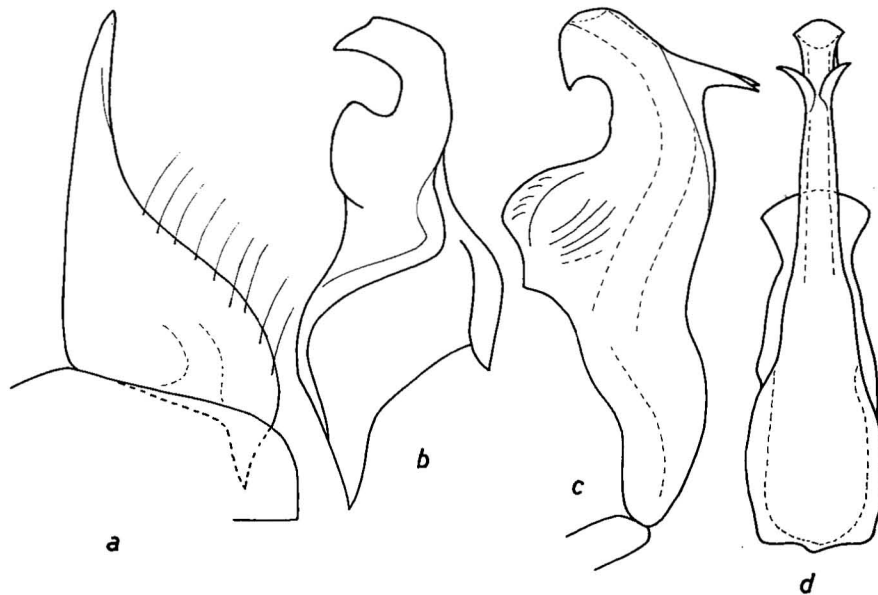


FIGURE 7. *Melichariella boninensis* Mats.: a, genital plate; b, stylus; c, penis, lateral; d, same, ventral.

minutely and faintly punctate. Elytra long, appendix well developed, 2 closed long, parallel-sided subapical cells, veins delicate and smooth. Spinulation of fore tibiae 1 + 4, of hind knees 2 + 1 + 1.

Male genitalia: Pygofer broadly conical, dorsally sclerified; side lobes short and broad, roundedly triangular, ventral margin broadly turned mesad, with several macrosetae, otherwise unarmed. Anal tube short and broad, tapering apicad, extending to apex of pygofer, sclerified, dorsally rather deeply insinuated. Genital plates strongly tapering apicad, without macrosetae. Stylus broad, apophysis short and digitate, preapical angle bluntly prominent. Connective robust, Y-shaped, articulated. Penis symmetrical, lamellate, stem with 2 horn-shaped subapical processes on ventral surface, gonopore apical.

BONIN IS. CHICHI JIMA: 1 ex., Ani Jima, Southwest bay, May 17, 1958, Snyder.

Well distinguished from *Jamitettix* in the pale coloring, the much longer crown, the flatter pronotum etc. *M. boninensis* differs considerably from the type of the genus, *M. satsumanus* Matsumura (redescribed by Ishihara, 1954, Zool. Magazine **63**: 243–245) in the pale coloring, without vermiculate fuscous lines, the longer crown, the long antennae, the absence of basal aedeagal appendages, the position of the gonopore (subterminal on the dorsal surface in *M. satsumanus*) and the thinner apophysis of the styli. Without seeing *M. satsumanus* and in the absence of a revision of the genera of the group of the Oriental Region I am not proposing any splitting of *Melichariella*.

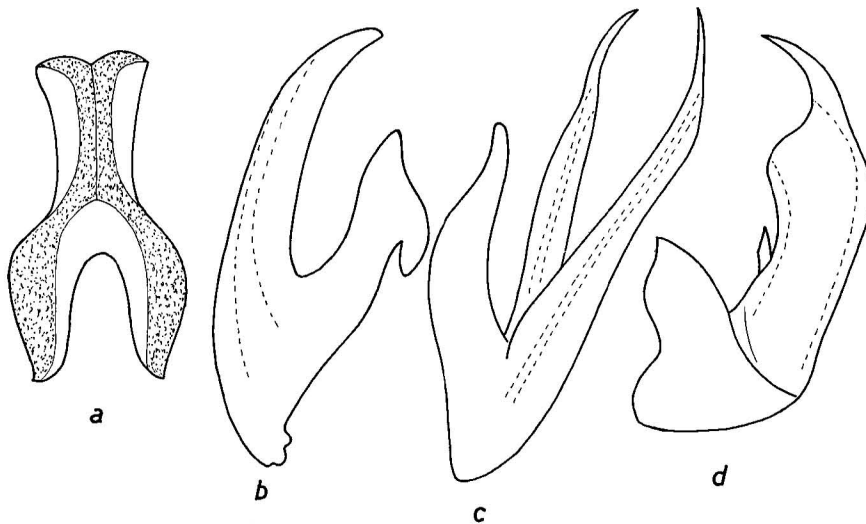


FIGURE 8. *a*, *Melichariella boninensis* Mats.: *a*, connective. *b*, *Orosius argentatus* (Ev.): *b*, penis, lateral. *c*, *O. ryukyuensis* (Ish.): *c*, same (after Ishihara). *d*, *Exitianus fusconervosus* (Motsch.): *d*, same.

#### Genus **Jamitettix** Matsumura

##### 75. **Jamitettix guamensis** Metcalf

S. MARIANA IS. GUAM: 3 ex., Yigo, Feb. 1958, Krauss.

#### SUBFAMILY XESTOCEPHALINAE

#### Genus **Xestocephalus** Van Duzee

##### 57. **Xestocephalus izzardii sodalis** Linnavuori

PALAU: 1 ex., Babelthuap I., Airai, Ngerimal R., May 26, 1957,

Sabrosky; 1 ex., Melekeiok, May 23, 1957, Sabrosky; 2 ex., Ngaremlengui, June 3, 1957, Sabrosky.

#### Tribe Stirellini

To this tribe belong the genera *Stirellus* Osborn & Ball, *Exitianus* Ball and *Nephotettix* Matsumura.

#### Genus *Stirellus* Osborn & Ball

*Stirellus* Osborn & Ball, 1902, Ohio Naturalist **2**: 232 and 250 (type: *Athysanus bicolor* Van Duzee, North America).

*Aconura auct. nec* Lethierry, 1876, Soc. Ent. Belgique, Ann. **19**: 85 (type: *A. jakovlefi* Lethierry, South Russia).

#### 64. *Stirellus grandis* (Matsumura)

*Aconura grandis* Matsumura, 1914, Tohoku Imp. Univ., J. Coll. Agric. **5**: 229.

BONIN IS. Several ex. CHICHI JIMA: Ani Jima, Southwest bay, Mar. 17, 1958, Snyder; Chihiro-iwa, Mulberry beach, Apr. 11–22, 1958, Snyder; Ototo Jima, SE Beach, Apr. 9, 1958, Snyder; Yoake Yama, Apr. 21, 1958, Snyder. HAHA JIMA: Okimura, Apr. 26–June 9, 1958, Snyder.

#### Genus *Exitianus* Ball

The genus has recently been revised by Ross, 1968, Bull. British Museum (Nat. Hist.) Entomology **22**: No. 1.

#### 65. *Exitianus fusconervosus* (Motschulsky) (fig. 8d)

*Jassus fusconervosus* Motschulsky, 1863, Moscow Soc. Nat., Bull. **36**: 97.

*Athysanus indicus* Distant, 1908, Fauna of British India **4**: 344.

*Athysanus atkinsoni* Distant, 1908, Fauna of British India **4**: 345.

*Phrynomorphus ootacamundus* Distant, 1918, Fauna British India **7**: 51.

#### New Synonymy.

In the long series of specimens from the Bonin Islands examined by me, a minor part represents the common pale type (Ross op. cit., p. 6, figs. 9 and 10), in which the crown has a transverse black band between the anterior corners of the eyes, while the anterior margin is immaculate or provided with faint brownish spots. Also the dark pattern of the pronotum and the scutellum is greatly reduced. In darkest specimens, approximately as numerous in the samples as the pale type, the crown has the *ootacamundus* pattern (see Ross op. cit., p. 6, fig. 12). The black transverse band of the crown is very broad and the anterior margin has contrasting black spots, a larger one near either

ocellus and 2 minor spots in apex of the crown, the last named sometimes fused. The disk of the pronotum is  $\pm$  infumed and the scutellum has black basal triangles and a dark median figure. Many specimens, about 50% of the material, are intermediates having the anterior spots of the crown  $\pm$  reduced. All these forms are undoubtedly conspecific. Consequently it seems to me that *E. ootacamundus*, regarded as a valid species by Ross on the basis of the pattern of the head, is a synonym of *E. fusconervosus*.

The species is distinguished from the closely related *E. plebeius* in the considerably thicker penis (fig. 8, *d*). In 2 ♂♂ the side lobes of the pygofer have 3 black spines, 1 long and slender, 2 short and thick. This undoubtedly represents an anomaly.

DISTRIBUTION: The Oriental Region, Japan, Bonin Is.

BONIN IS. Numerous ex. CHICHI JIMA: Ani Jima, May 17, 1958, Snyder; Futami-ko, May 10, 1956, Clagg; Miyano-hama, Jack Wm's beach, Apr. 15–21, 1958, Snyder; Okumura, Yankee Town, May 12–June 9, 1958, Snyder; Omura, Camp beach Apr. 2–25, 1958, Snyder; Ototo-Jima, Kammuri-iwo, June 3, 1958, Snyder; Sakai-ura, Bull beach, May 12–31, 1958, Snyder; Yoake Yama, May 21, 1958, Snyder. CHIHIROIWA: Mulberry beach, Mar. 11–22, 1958, Snyder.

**65a. *Exitianus plebeius* (Kirkaldy)**

*Nephotettix plebeius* Kirkaldy, 1906, Hawaiian Sugar Planters' Assoc. Exper. Sta. Ent. Bull. **1**: 331.

*Eutettix norrisi* Evans, 1938, Pap. Proc. R. Soc. Tasmania 1938: 14.

*Euscelis transversus* Metcalf, 1946, Insects of Guam II, B. P. Bishop Mus. Bull. **189**: 122.

Numerous examples.

S. MARIANA IS. GUAM: Cocos I., Oct. 1957, Krauss.

MARSHALL IS. ENIWETOK: Aniyaanii I., Aug. 24, 1956, Tuthill; Igurin I., Aug. 20, 1956, Tuthill; Japtan I., Aug. 31, 1956, Tuthill; Parry I., Aug. 15, 1956, Tuthill. JALUIT: Elisabeth I., Nov. 11, 1964, Perkins; Jaluit I., Nov. 11, 1964, Perkins. KWAJALEIN: Bennett I., Aug. 27, 1944, Wallace; Carlson I., Nov. 1, 1964, Perkins; Ebeye I., Nov. 11, 1958, Clagg; Ennubirr I., Oct. 28, 1964, Perkins; Gea I., Oct. 30, 1964, Perkins; North Roi I., Nov. 8, 1964, Perkins.

WAKE. Wake I., Oct. 1959, Ford.

GILBERT IS. BUTARITARI: Butaritari I., Dec. 1957, Krauss. KURIA: Nov. 19, 1964, Perkins. TARAWA: Bairiki I., Nov. 1957, Krauss; Betio I., Aug. 15, 1956, Brown; Bikenibeu, Nov. 1957, Krauss; Eret, Dec. 1957, Krauss; Naanikai, Nov. 1957, Krauss; Taborio, Nov. 1957, Krauss.

**66. *Exitianus nanus*** (Distant)

*Athysanus nanus* Distant, 1908, Fauna of British India **4**: 345.

*Athysanus insularis* Distant, 1909, Trans. Linn. Soc. London. Zool. **13**: 47.

*Athysanus simillimus* Matsumura, 1914, Tohoku Imp. Univ., J. Coll. Agric. **5**: 185.

*Athysanus fasciolatus* Melichar, 1911, Bull. Mus. Hist. Nat. Paris **1911**: 107.

**New Synonymy.**

*Euscelis vulnerans* Bergevin, 1925, Arch. Inst. Pasteur d'Algerie **3**: 42.

DISTRIBUTION: Palaeotropical.

BONIN IS. Numerous ex. CHICHI JIMA: Futami-ko, May 10, 1956, Clagg; Minami-Jima, Long I., May 27, 1958, Snyder; Okumura, Yankee Town, May 12-June 9, 1958, Snyder; Omura, Camp beach, May 5-June 9, 1958, Snyder; Ototo Jima, Kaminuri-iwa, June 3, 1958, Snyder; Sakai-Ura, Bull beach, May 12-31, 1958, Snyder. HAAHA JIMA: Okimura, Apr. 26-June 9, 1958, Snyder.

Genus ***Nephotettix*** Matsumura**67. *Nephotettix apicalis apicalis*** (Motschulsky)

S. MARIANA IS. GUAM: 1 ex., Inarajan, Oct. 1957, Krauss; sev. ex., Umatal, Oct. 1957, Krauss.

PALAU. BABELTHUAP: sev. ex., Ngerehelong, May 8, 1957, Sabrosky; sev., Ngiwal, May 21, 1957, Sabrosky.

**68. *Nephotettix apicalis yapicola*** Linnavuori

YAP. YAP: 2 ex., Kolonia, June 13, 1957, Sabrosky.

## Tribe Opsiini

To this tribe, recognized by the biramose penis with 2 gonopores, belong the following Micronesian genera: *Opsianus* Linnavuori, *Satsumanus* Ishihara, *Nesophrosyne* Kirkaldy and *Orosius* Distant.

Genus ***Orosius*** Distant

Ghuri, 1966, Bull. British Museum (Nat. Hist.) Entomology **18**, No. 7, has regarded *Orosius* as a valid genus, referring to certain differences between *Nesophrosyne* and *Orosius*. The center of origin of the tribe Opsiini is in the subtropical and tropical parts of the Old World. *Nesophrosyne* has certainly been evolved of an ancestor, apparently of the *Orosius* type, and immigrated into Hawaii across Oceania from the East. In Hawaii numerous species have evolved. Many of them differ from *Orosius* by the larger size, the colour



pattern, the longer crown etc., as pointed out by me (Linnavuori, 1960, Acta Ent. Fennica **15**: 55–57). Some species, like *N. signatula* Osb. and *N. notatula* Osb., have retained, however, certain characters of the ancestor: the blunt crown and the minutely flecked elytra. In *N. signatula* the outer subapical cell of the elytra is long and extends to the base of the 5th apical cell, as it does in *Orosius*. Also the facial sclerites are variable in *Nesophrosyne*. While in *N. perkinsi* (Kirkaldy) the frontoclypeus is remarkably broad, in some other species, e.g. in *N. giffardi* Kirkaldy, it is considerably narrower, resembling that in *Orosius*. The hollow in the inner margins of the eyes near to the base of the antennae can be found to some extent also in *Nesophrosyne* and not only in *Orosius*. The male genitalia in both genera are very similar. The most important difference in my opinion is the apical hook in the aedeagal branches, present in *Nesophrosyne* (only 2 species were studied), absent in *Orosius*. But it is very small in *N. giffardi*, in which the penis otherwise is very similar to that of *Orosius ryukyuensis* (Ishihara). A careful revision of the Hawaiian species is needed to establish whether *Nesophrosyne* and *Orosius* can be regarded as separate genera, or, whether, owing to possible intermediates, they have to be united with *Orosius* as a subgenus, as I have formerly proposed.

The species of *Orosius* have been revised by Ghauri (op. cit.) and Ishihara, 1965, Publ. Ent. Lab. Ehime University, Matsuyama 1965: 1–16. Of the treated Oceanian species *O. lotophagorum* (Kirkaldy) is certainly a valid species, differing from its relatives in the shape of the aedeagal branches that in lateral aspect are broad and suddenly constricted before the claw-like apex (fig. 44 in Linnavuori, 1960, Insects of Micronesia **6**: 321). Likewise *O. ryukyuensis* (Ishihara) is readily distinguished both in the colour pattern and in the remarkably narrow aedeagal branches (fig. 8, *c*). On the contrary the proposed validity of *O. cantonis* (Oman) seems to me dubious. I have not seen it from the type locality, Canton Island, but have examined a series of specimens from the Eniwetok Atoll, where it was recorded by Ghauri. An extensive series of specimens of *O. argentatus* (Evans) was studied from the Gilbert Islands. The size in both populations is practically the same, length ♂ 2.6–2.75 mm, ♀ 2.75–2.9 mm. The Eniwetok population is generally pale, but there exist also specimens with a pattern typical of *argentatus*. In the Gilbert populations most specimens have a well developed *argentatus* pattern, but also pale specimens together with intermediates. Since also the male genitalia (penis in fig. 8, *b*) are similar, I regard both populations conspecific and *O. cantonis* as a strict synonym of *O. argentatus*, **New Synonymy**.

**71. *Orosius argentatus* (Evans)**

*Thamnotettix argentatus* Evans, 1940, Roy. Soc. Queensland, Proc. **52**: 11.

*Nesaloha cantonis* Oman, 1943, Pan-Pacific Ent. **19**: 33. **New Synonymy.**

Ishihara, 1963, Trans. Shikoku Ent. Soc. **7**: 121–123, has redescribed the species as *Eutettix orientalis* Matsumura, 1914, J. Coll. Agr. Tohoku Imp. Univ. **5**: 192. If Ishihara's interpretation of the species is correct, the valid name will be *Orosius orientalis* (Matsumura).

DISTRIBUTION: Indonesia, Formosa, Oceania, Australia, Micronesia. Numerous ex.

WESTERN CAROLINE IS. FAIS: Apr. 28, 1964, Beardsley.

PALAU. BABELTHUAP: Ngaremlengui, June 4, 1957, Sabrosky; Ngerehelong, May 8, 1957, Sabrosky; Ulimang, Dec. 24, 1947, Dybas.

MARSHALL IS. ENIWETOK: Japtan I., Aug. 27, 1958, Tuthill.

GILBERT IS. ARONUKA: Nov. 20, 1964, Perkins. KURIA: Nov. 12, 1964, Perkins.

**72. *Orosius lotophagorum* (Kirkaldy)**

*Allygus lotophagorum* Kirkaldy, 1907, Bull. Haw. Sugar Pl. Assoc. Div. Ent. **3**: 62–63.

*Nesophrosyne argentatus distans* Linnavuori, 1960, Insects of Micronesia **6**: 322.

DISTRIBUTION: Micronesia, Polynesia.

WAKE. Numerous ex. WAKE: Nov. 1957, Krauss, Nov. 1959, Ford. Peale Islet, Feb. 15, 1959, Oshiro. On *Boerhavia* and *Poinsettia*.

**72a. *Orosius ryukyuensis* (Ishihara)**

*Nesophrosyne ryukyuensis* Ishihara, 1965, Japanese J. Appl. Ent. Zool. **9**: 19.

DISTRIBUTION: Ryukyu Islands, Micronesia.

CAROLINE ATOLLS. ULITHI: Falalop I., 1 ♀ probably of this species, Apr. 30, 1952, Beardsley (recorded as *argentatus* in Linnavuori, 1960, Insects of Micronesia **6**: 322).

Tribe Macrostelini  
Genus **Cicadulina** China

**81. *Cicadulina bipunctella* (Matsumura)**

Several ex.

BONIN IS. CHICHI JIMA: Miyanoama, Jack Wm's beach, May 12–June 9, 1958, Snyder; Omura, Camp beach, May 5–June 9, 1958, Snyder. HANA JIMA: Okimura, Apr. 26–June 9, 1958, Snyder.

S. MARIANA IS. SAIPAN, Mar. 1958, Krauss.

PALAU. BABELTHUAP: Airai, Ngarsung, May 16, 1957, Sabrosky; Ngarem-lengui, June 9, 1957, Sabrosky; Ngerehelong, May 7, 1957, Sabrosky. KOROR: Apr. 22, 1957, Sabrosky. MALAKAL: May 2, 1957. NGERKABESANG: Apr. 25, 1957, Sabrosky.

Genus **Balclutha** Kirkaldy

Many species of the genus are cosmopolitan in range causing several synonyms, recently clarified by Dr. Vilbaste (in press).

**83. *Balclutha chloroptera*** Melichar

*Balclutha chloroptera* Melichar, 1914, Notes Leyden Mus. **36**: 138.

*Balclutha olivacea* Melichar, 1923, Wien. Ent. Zeit. **40**: 100.

*Balclutha barbiventris* Linnavuori, 1960, Insects of Micronesia **6**: 336-337.

DISTRIBUTION: Indonesia, Philippines.

YAP. BUMUN: 1 ex., June 19, 1957, Sabrosky.

**84. *Balclutha rubrostriata*** (Melichar)

*Gnathodus rubrostriatus* Melichar, 1903, Homopteren-Fauna of Ceylon. **1903**: 208.

*Balclutha rubrovittata* Matsumura, 1914, J. Coll. Agr. Tohoku Imp. Univ. **5**: 168-169.

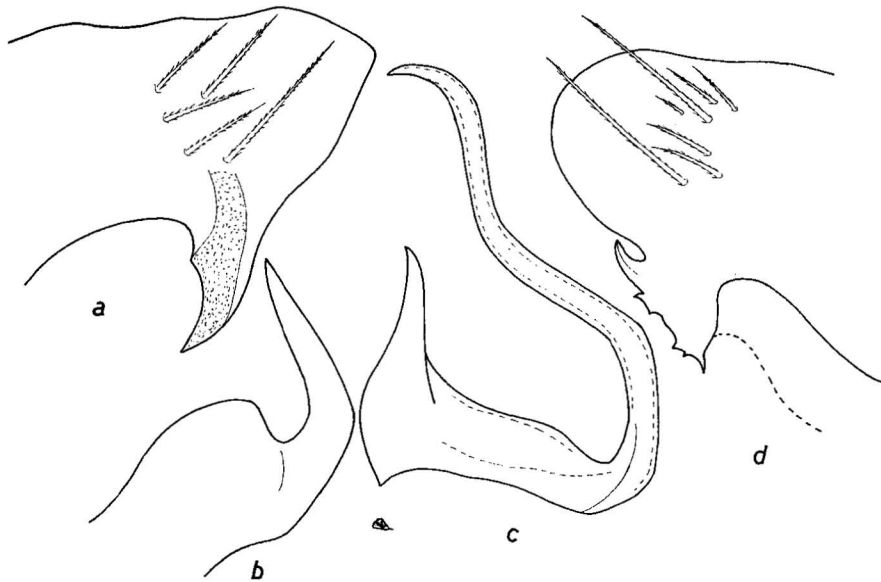


FIGURE 9. *a-c*, *Balclutha kuroiwae* Mats.: *a*, side lobe of pygofer; *b*, apex of stylus; *c*, penis, lateral. *d*, *B. dubiosa* Vilb.: side lobe of pygofer.

*Balclutha rufofasciata* Merino, 1936, Philippine J. Sci. **61**: 381.

PALAU. Many ex. BABELTHUAP: Ngardmau, May 10, 1957, Sabrosky; Ngaremlengu, June 1, 1957. KOROR: Apr. 17, 1957, Sabrosky. MALAKAL: May 2, 1957, Sabrosky. SE ULEBSEHEL; Apr. 24, 1957, Sabrosky.

**84a. *Balclutha kuroiwa*** Matsumura (fig. 9, *a-c*)

*Balclutha kuroiwa* Matsumura, 1914, J. Coll. Agr. Tohoku Imp. Univ. **5**: 168.

Resembling *B. rubrostriata*, but easily distinguished in the shape of the penis.

DISTRIBUTION: Indo-China, Ryukyu Islands, China, Okinawa.

BONIN IS. CHICHI JIMA: sev. ex., Yatsuse R. (Minato-ko), Gen's beach, several ex., 10–22.IV 1958, Snyder.

**85. *Balclutha spiniloba*** Linnavuori

PALAU. BABELTHUAP: 1 ex., Ngiwal, May 21, 1957, Sabrosky.

**85a. *Balclutha dubiosa*** Vilbaste (figs. 9 *d*, 10 *a*)

*Balclutha dubiosa* Vilbaste, 1972.

Resembling *B. spiniloba* Linnavuori, but with red pattern and considerably thinner penis.

DISTRIBUTION: Philippines.

PALAU. NGERKEBESANG: some, 13.V.1957, Sabrosky.

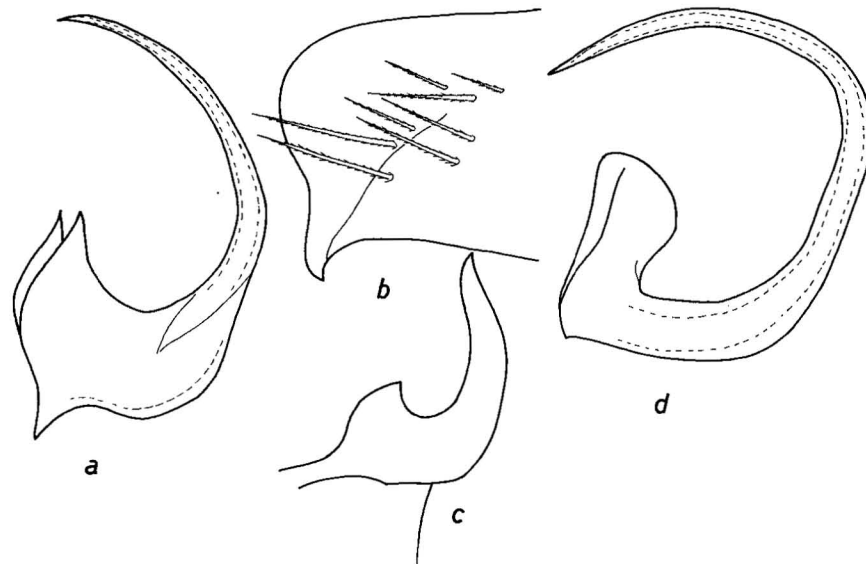


FIGURE 10. *a*, *Balclutha dubiosa* Vilb.: *a*, penis, lateral. *b-d*, *B. bifasciata* (Mer.): *b*, side lobe of pygofer; *c*, apex of stylus; *d*, penis, lateral aspect.

**86. *Balclutha frontalis*** (Ferrari)

*Gnathodus frontalis* Ferrari, 1882, Ann. Mus. Genova **18**: 117.

*Gnathodus roseus* Scott, 1876, Ent. Month. Mag. **13**: 83 *nec* Provancher, 1872, Nat. Canadien **4**: 378.

*Gnathodus pallidulus* Matsumura, 1908, J. Coll. Sci. Imp. Univ. Tokyo **23**: 11-12.

*Balclutha orientalis* Matsumura, 1914, J. Coll. Agr. Tohoku Imp. Univ. **5**: 169.

Other synonymy see Linnavuori, 1960, Insects of Micronesia **6**: 339 (under *B. rosea*).

S. MARIANA IS. Many ex., Saipan, Mar. 1958, Krauss. Guam, Apra Hgts., Jan 2-Feb. 3, 1959, Krauss.

**87, 90. *Balclutha incisa*** (Matsumura)

*Gnathodus incisus* Matsumura, 1902, Term. Füzetek **25**: 357, 360.

*Nesosteles hebe* Kirkaldy, 1906, Hawaiian Sugar Planters' Assoc. Exper. Sta., Ent. Bull. **1**: 343.

*Balclutha akonis* Matsumura, 1914, J. Coll. Agr. Tohoku Imp. Univ. **5**: 170.

*Balclutha breviceps* Matsumura, 1914, J. Coll. Agr. Tohoku Imp. Univ. **5**: 166.

*Balclutha ogasawarensis* Matsumura, 1914, J. Coll. Agr. Tohoku Imp. Univ. **5**: 167.

Other synonymy see Linnavuori, 1960, Insects of Micronesia **6**: 340 (under *B. hebe*).

Numerous ex.

BONIN IS. CHICHI JIMA: Futami-ko, May 10, 1956, Clagg; Okumura, Yankee Town, May 12-June 2, 1958, Snyder; Omura, Camp beach, May 5-June 9, 1958, Snyder; Sakai-ura, Bull beach, May 12-31, 1958, Snyder; Yatsuse R. (Minato-ko), Gen's beach, May 10-22, 1958, Snyder. HANA JIMA: Okimura, Apr. 26-June 9, 1958, Snyder.

S. MARIANA IS. GUAM: Apra Hgts., Jan. 2-Feb. 3, 1959, Krauss; Nimitz Hill, May 9, 1956, Clagg.

PALAU. BABELTHUAP: Ngardmau, May 10, 1957, Sabrosky; Ngerehelong, May 8, 1957, Sabrosky. KOROR: Ngerebad, Apr. 17, 1957, Sabrosky. MALAKAL I., May 2, 1957, Sabrosky. NGERKABESANG: Apr. 25, 1957, Sabrosky.

YAP. YAP: Giliman, Jun. 11, 1957, Sabrosky.

MARSHALL IS. ENIWETOK: Dec. 24, 1950, Oshiro. JALUIT: Elisabeth I., Nov. 11, 1964, Perkins.

GILBERT IS. TARAUA: Eret, Dec. 1957, Krauss.

OCEAN IS. BANABA, Dec. 1957, Krauss.

**88. *Balclutha viridinervis* Matsumura**

*Balclutha viridinervis* Matsumura, 1914, J. Coll. Agr. Tohoku Imp. Univ. **5**: 167–168.

*Balclutha flexuosa* Linnavuori, 1960, Insects of Micronesia **6**: 342.

DISTRIBUTION: Okinawa, Micronesia.

**89. *Balclutha lucida* (Butler)**

*Jassus lucidus* Butler, 1877, London Zool. Soc., Proc. **1877**: 91.

*Eugnathodus floridanus* De Long & Davidson, 1933, Ohio J. Sci. **33**: 56.

*Nesosteles marquesana* Osborn, 1934, Bernice P. Bishop Mus. Bull. **113**: 265.

*Balclutha filum* Linnavuori, 1960, Insects of Micronesia **6**: 342–343.

DISTRIBUTION: Oceania, Nearctic and Neotropical Regions.

**91. *Balclutha saltuella* (Kirschbaum)**

*Jassus (Thamnotettix) saltuellus* Kirschbaum, 1868, Nassau Ver. f. Naturk. Jahrb. **21-22**: 86.

*Gnathodus zionoensis* Matsumura, 1902, Termész. Füzet. **25**: 357, 360–361.

*Balclutha pectoralis* Matsumura, 1915, Trans. Sapporo Nat. Hist. Soc. **5**: 154, 160, 181.

*Balclutha incisa*: Linnavuori, 1960, Insects of Micronesia **6**: 343–344 *nec* Matsumura, 1902, Termész. Füzet. **25**: 357, 360.

Other synonymy see Linnavuori, 1960, Insects of Micronesia **6**: 343 (under *B. incisa*).

DISTRIBUTION: Cosmopolitan.

Many ex.

S. MARIANA IS. SAIPAN: Chalan Piao, Feb. 1958, Krauss.

PALAU. BABELTHUAP: Ngardmau, May 10, 1957, Sabrosky. KOROR: Apr. 19, 1957, Sabrosky.

MARSHALL IS. ENIWETOK: Japtan I., Aug. 26, 1958, Tuthill. KWAJALEIN: Dec. 12, 1956, Clagg.

GILBERT IS. TARAWA: Bairiki I., Dec. 1957, Krauss.

**91a. *Balclutha bifasciata* (Merino)**

*Agellus bifasciatus* Merino, 1936, Philippine J. Sci. **61**: 397.

A small species, resembling *B. saltuella*, but 3rd apical cell of elytra at least partly infumed and genitalia different (fig. 10 *b-d*).

DISTRIBUTION: Philippines.

PALAU: BABELTHUAP: 2 ex., Ngiwal, May 21, 1957, Sabrosky. NGESEBUS: 1 ex., May 29, 1957, Sabrosky.