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Gryllacridoidea, Rhaphidophorioidea and Tettigonioidea (Grylloptera)

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Abstract—Fifty-three species in six families occur in Micronesia. Kevan (1987) listed forty-three species, 20 of which were given as new but undescribed. Kevan (1990) listed eight species as introduced, seven of which were on his previous list, plus *Mecopoda elongata* (Linnaeus). Seven new species were described in the Conocephalidae, Phisidini, by Jin & Kevan (1992). Eighteen additional new species and a subspecies are described in this paper, seventeen by Vickery & Kevan and one by English & Kevan, nine in the Gryllacrididae: *Niphetogryllacris marianae*, *N. tolensis*, *Anancistrogera palauensis*, *Neanias ogasawarensis*, *Prosopogryllacris palauensis*, *P. chuukensis*, *Melaneremus marianae marianae*, *M. m. rotaensis*, *M. saiensis*, and *M. kosraensis*; two in the Rhaphidophoridae: *Rhaphidophora ponapensis* and *Stonychophora palauensis*; three in the Phaneropteridae: *Casigneta palauensis*, *Isopsera yapanese* and *I. palauensis*; one in the Mecopodidae: *Ocica ponapensis* English & Kevan; and three in the Conocephalidae: *Spinisternum palauensis*, *Macroxiphus globiceratus* and *Salomona ponapensis*. Nine species are added to the lists of Kevan (1987, 1990), including one described as new. Twenty-six species are known to be endemic in Micronesia.

Introduction

This paper completes the work on the Orthoptera (*sens. str.*) and Grylloptera [=Ensifera] of Micronesia, except for the crickets (Grylloidea). Previous papers include a preliminary list (Kevan 1987), the introduced species (Kevan 1990),

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followed by descriptions of new species of Phisidini in Jin & Kevan (1992) and the Acridoidea, Tetrigoidea and Tridactyloidea of Micronesia by Kevan, Vickery & English (1997). Included here are all of the known species of Gryllacridoidea, Rhaphidophoroidea and Tettigonioida of Micronesia, many described as new, together with descriptions, specimen locality lists and notes and comments.

The names of the new species were chosen to indicate their islands of origin. Full diagnostic data are given for the new species; distribution data and notes on identification and, for some species, comments, are given for the other species.

Dr. Kevan, before he died in 1991, had sorted the specimens and had indicated a number of new species and the names he intended to apply to them. Most of these were listed in Kevan (1987). Some of the proposed names have been changed to correspond with the current spelling of topographical names (“Truk” to “Chuuk” and “Belau” to “Palau”, “Babelthuap” to “Babeldaob”). These names have been changed throughout the specimen lists. In some cases brief handwritten notes by Kevan were found but not descriptions, many on a copy of the thesis by English. Handwritten notes on some of the other species from Micronesia also were found and used. All of the descriptions of new species, except one by English, are by Vickery. English also provided the description of a previously unknown male. The names are as proposed by Kevan in handwritten notes or by labels on the specimens.

The specimens at hand are the property of several institutions, abbreviated as follows:

- ANSP - Academy of Natural Sciences of Philadelphia, Philadelphia, PA, USA.
- BPBM - Bernice P. Bishop Museum, Honolulu, HI, USA.
- BMNH - The Natural History Museum (British Museum of Natural History), London, England.
- CASC - California Academy of Sciences, San Francisco, CA, USA.
- FMNH - Field Museum of Natural History (= Chicago Natural History Museum), Chicago, IL, U.S.A.
- ESUG (GUAM) - University of Guam, Guam, Pacific Ocean.
- KUEC - Kyushu University, Entomology Department Collection, Kyushu, Japan.
- LEMQ - Lyman Entomological Museum and Research Laboratory, McGill University, Ste-Anne-de-Bellevue, QC, Canada.
- MCZC - Museum of Comparative Zoology, Harvard University, Cambridge MA, USA
- UMMZ - Museum of Zoology, University of Michigan, Ann Arbor MI, USA.
- NHMW - Naturhistorisches Museum, Wien (Vienna), Austria.
- CNMI - College of the Northern Marianas, Saipan, Marianas Islands, USA.
- PSBD - Pacific Science Board, Washington, DC, U.S.A. - material with BPBM unless otherwise indicated.
- IEAS - Shanghai Institute of Entomology, Academia Sinica, Shanghai, China
- USNM - United States National Museum of Natural History, Smithsonian Institution, Washington, D.C., U.S.A.

USNM (NMRU) - U.S. Navy collections.

WLNC - Willemse Collection, Eigelhoven, Netherlands.

ZMHB - Zoologisches Museum, Humboldt Universit, Berlin, Germany.

Five families are represented in the tettigonioid fauna of the islands: Gryllacrididae, Rhaphidophoridae, Phaneropteridae, Mecopodidae and Conocephalidae.

Key to the Families and Subfamilies in Micronesia

- 1. Auditory organ (tympanum) present near base of fore tibia; stridulatory apparatus present at base of male tegmen; body slender to somewhat compressed; tarsi depressed with distinct aroleae; head not unusually large, usually green, greenish-brown or greenish yellow (Tettigonioidae)3
- 1'. Auditory organ (tympanum) absent; body robust; tarsi laterally compressed2
 - 2 (1'). Large, hump-backed; apterousRhaphidophoroidea; Rhaphidophoridae: *Rhaphidophoridae, Stonychophora*
 - 2'. Small to medium in size; apterous or alateGryllacridoidea: *Gryllacris, Niphetygryllacris, Anancistrogera, Neanias, Prosopogryllacris, Melaneremus*
- 3 (1). Fastigium of vertex rounded or flat, not produced forward Phanopteridae: *Elimaea, Ducetia, Platyaedia, Holochlora, Phaulula, Casigneta, Phaneroptera*
- 3'. Fastigium of vertex produced forward between antennae 4
 - 4 (3). Fastigium of vertex rounded, not produced to acute apex5
 - 4'. Fastigium of vertex produced as cone or tubercle (Conocephalidae).....6
- 5 (4). Prosternum armed with long paired spines.....Mecopodidae: *Mecopoda, Ocica, Biroa, Segestes, Sexava*
- 5'. Prosternum unarmedMeconematidae: *Xiphidiopsis, Phisis, Oceanophisis*
- 6 (4). Fastigium of vertex of head produced as a distinct cone Copiphorinae: *Euconocephalus*
- 6'. Fastigium of vertex produced as a rounded tubercle..... Conocephalinae: *Conocephalus, Spinisternum, Macroxiphus, Salomona*

GRYLLACRIDOIDEA

GRYLLACRIDIDAE

GRYLLACRIDINAE

Gryllacris Audinet-Serville

Gryllacris Audinet-Serville 1831: 138. Type species *Gryllacris ruficeps* Audinet-Serville.

Gryllacris appendiculatus Brunner von Wattenwyl

Gryllacris appendiculata Brunner von Wattenwyl 1888: 352, pl. 8, fig 41h. Type locality, New Britain; Types (ZMHB).

“*Gryllacris* n. sp. nahestehend [=near] *aurantica*”; [Brunner von Wattenwyl] in Schnee (1904:404) (Marshall Is. included).

Gryllacris appendiculata; Griffini, 1908: 8-9 [3 ♂♂, 3 ♀♀, Jaluit Island, 1 ♂, 1 ♀; Kaes I. (?), Bartels, 3 ♂♂, 4 ♀♀; 7-XI-1900; [2 ♂♂, 2 ♀♀, 2 juvs in ZMHB]; Ponape, 29-I-1904; Bergall, 1 ♂, 1 ♀ (in alcohol), [ZMHB]; Karny 1930: 106-08, figs. 109 a-i, (New Britain, Ponape and Marshall Is.); Karny, 1937: 116, Ponape & Marshall Is., 169, *Gryllacris* sp. for Marshall Is. (after Griffini); Townes, 1940: 29, Pohnpei (part) and Likiep [E. Marshall Is.]; Willemse, 1951:356 (Ponape); 1932: 64, Jaluit, Ponape, Marshall Is. [also p. 169, without using name]; English, 1978: 208 (Ponape and Marshall Islands); Kevan 1987: 306.

Gryllacris appendiculatus; Kevan 1990: 106.

“*Gryllacris* spec.”, Griffini, 1914: 336, Marshall Is., (Schnee, Wien).

Gryllacris sp., near *aurantica*; Samuelson and Nishida, 1987: 160 [Marshall Is., not Enewetak Atoll].

This species was first described from New Britain and is also known in Samoa, the Niue Islands, Wotje (Marshall Is.) and the Bismark Archipelago. In Micronesia it occurs in Pohnpei and the Marshall Islands. Samuelson & Nishida (1987) reported it in a nest of large leaves tied together with silk.

Specimens examined: *East Carolines*. Ponape; Kolonia Jokaji, 24-VII-1939, T. Esaki, 1 ♀ (KUEC); Mt. Totolom, 30-VII-1939, S. Matsushima, 1 juv. (KUEC); Kolonia, VIII-1946, 1 ♂ (LEMQ); Nr. Colonia, 8-VIII-1946, H.K. Townes, 1 very small juv. (USNM); Colonia Expt. Sta., 10-I-1953, J.F.G. Clarke, 1 juv. ♀ (BPBM); Mt. Peipalap, 600 ft. VI/IX-1950, P.A. Adams, 1 ♀ (MCZC); Toleiner, 3-XII-1986, D. Nafus, 1 ♀ in old curled leaf of giant swamp taro, leaf edges “attacked” (ESUG); *Kusaie*: Mwot, 10-IV-1953, J.F.G. Clarke, 1 juv. ♂ last instar, genitalia sufficiently well developed for determination (USNM); “Kusaie”, 1-V-1953, J.F.G. Clarke, 1 juv. ♀ (BPBM); Mt. Tafeyät, 500-800ft, 20-VIII-1946, H.K. Townes, 1 minute juv. (USNM); *Chuuk*: Moen, 6-VI-1950, [no collector], 1 ♀ (LEMQ); *Southeast Carolines*: Mortlock Is.: Mortlock Isles, 15-II-1951, (On Hau tree) [no collector], 1 ♀ (LEMQ); *Marshall Islands*: Recorded from Marshall Islands in literature; 1 very small juv., Arno Atoll, 8-VIII-1950, at light, Ira La Rivers (CASC); Townes (1946) reported a specimen from Likiep, East Marshalls (not seen).

Gryllacris modestipennis Karny

Gryllacris modestipennis Karny 1935: 49, figs. 29-30. Holotype ♀, Ponape (ZMHU); Karny 1937: 166 Ponape.

Gryllacris modestipennis; Willemse, 1942: 112, fig. 27, 1 ♀, Ponape (BPBM).

“Large species of *Gryllacris*”; Townes, 1946: 29 (part) Pohnpei.

Gryllacris sp., nr. *modestipennis*; Otte, Alexander, Flinn (1 juv, last-instar ♀; Palau Is.: Pelelieu, 19-26 Feb., 1987 (UMMZ).

Gryllacris modestipennis; Kevan 1990: 106.

This species is known only from Pohnpei, East Caroline Islands.

Specimens Examined *Ponape* [Pohnpei]: Kolonia, 9-VII-1937, S. Uchiyama, 2 ♀♀ (KUEC); Mt. Nanalaut (390m.) 1-1953, J.L. Gressitt, 1 ♂ (LEMQ); Mt. Tamatamansakir, 1400ft, VI/IX- 1950, P.A. Adams, 1 ♂, 1 ♀ (MCZC, BPBM); same but 11-VII-1950, 2 juv. ♀♀ (MCZC, BPBM); same but 23-III-1948, 1000-1500ft, (in *Pandanus* crowns), H.S. Dybas, 1 juv (last instar) ♀ (FMNH); Nanepil, Nett Dist, 27-II-[19]48, H.S. Dybas, 1 ♀ (USNM); Ponape I., 6-III-1936. Z. Ono, 1 ♀ (BPBM)

Niphetogryllacris Karny

Niphetogryllacris Karny 1937: 128. Type species *Niphetogryllacris niveivertex* Karny.

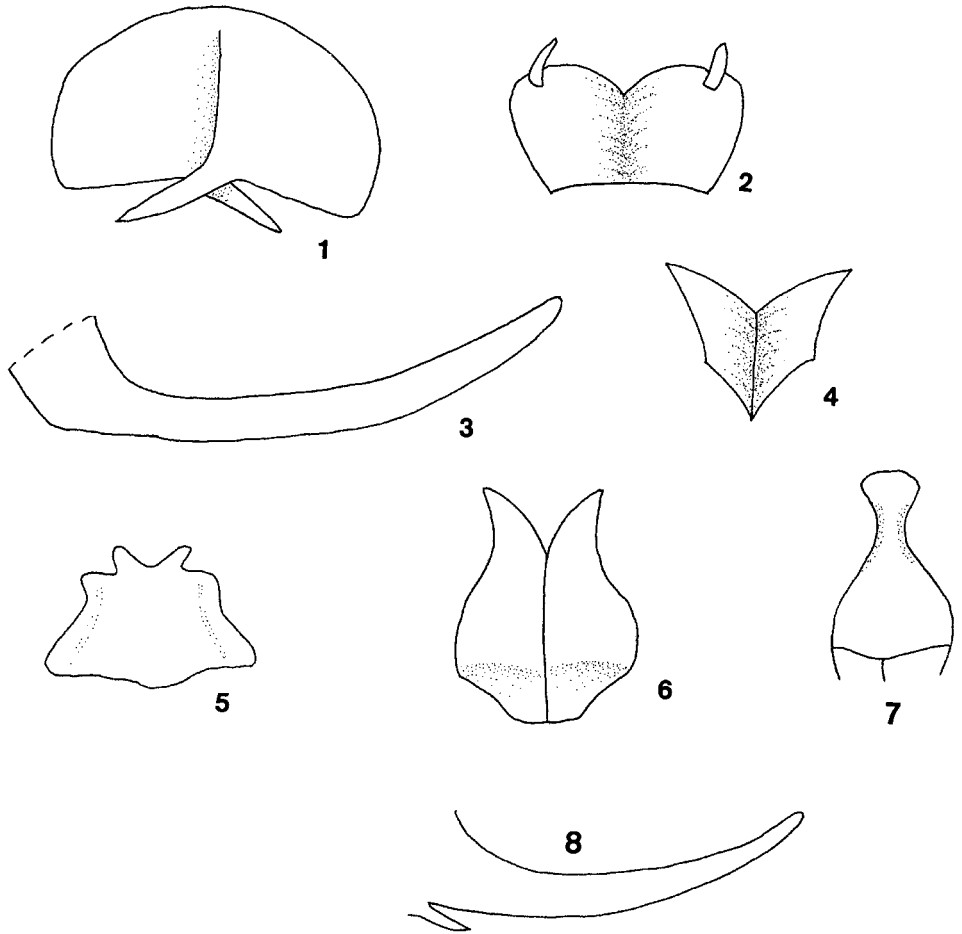
Niphetogryllacris marianae Vickery & Kevan sp. nov.

Gryllacris sp.; English, 1978: 212.

Niphetogryllacris n. sp. 1: Kevan 1987: 306.

Niphetogryllacris marianae Vickery & Kevan. Holotype, ♂, N.E. Guam: Anderson Airforce B[ase], Aug. 5, 52, N. [L.H.] Krauss. (BPBM). Allotype ♀: "Guam, on plane at Hickam Field, Honolulu, Jan. 6 '57, L.R. Crockett. 57 4034" (BPBM).

Description: holotype ♂: Body smooth, rounded, 20 mm.; *head* broad (4.1) but short (2.3), strongly convex, fastigium broadly rounded to frons, face dark brown with conspicuous pale oval between antennal sockets, this with brown dorsal and lateral borders; clypeus nearly circular; maxillary palps long, three apical segments golden yellowish, basal segment pale, apex of labial palps expanded, hollow at tips, yellowish; eyes prominent, brown with small dark brown to blackish spots, eyes do not extend beyond genae; antennae golden brown, filiform, longer than body (tips broken off), scape broad, second segment much larger than succeeding segments; *thorax*, pronotum smooth, shining, strongly convex (3.6 long and wide), lateral carinae obsolete, nearly linear anteriorly, broadly rounded posteriorly and narrowing laterally, narrow median dorsal depression from middle to 2/3 toward posterior margin; tegmina (21.5) exceeding abdomen by 8 mm; *legs*, femora sulcate beneath, convex on exterior faces, hind femur only with about 7 short spines on apical half on outer ventral carinae and 5 to 6 on inner carina; all tibiae with spines on both ventral carinae; tarsi three-segmented, each segment with distinct bilobed extensions, of apical segment nearly reaching claws," (right hind tarsus missing); fore femur 5.0, mid-femur 4.9, hind femur 9.2, fore tibia 5.2, mid-tibia 5.8, hind tibia 9.7. *abdomen* bulky, deep (3.6), pale brown at base and progressively darker toward apex; 9th tergum quadrate, bilobed apically (Fig. 1) with apical crossed elongate laterally directed processes; cerci protrude beyond



Figures 1-8. *Niphetogryllacris* species: Figs 1-5, *N. marianae*: 1, male 9th tergum, bilobed with crossed processes; 2, male subgenital plate; 3, ovipositor; 4, female, subgenital plate; 5, female presubgenital process. Figs. 6-8, *N. tolensis*: 6, female supra-anal plate; 7, female subgenital plate; 8, ovipositor.

the tergum; subgenital plate broad, bilobed with lateral styles (Fig. 2); tegminal venation is obscure (Fig. 29) as the veins disappear before reaching the apex.

Allotype ♀: uniform shining, golden brown, head distinctly black-brown on face with conspicuous pale ocelli; similar to male in most aspects; tegmen 21.5; legs: fore femur 5.2, mid-femur 5.8, hind femur 9.3, fore tibia 5.3, mid-tibia 5.6, hind tibia 9.3, supra-anal plate narrow, compressed; ovipositor bent upward from base and slightly curved upward, 9.6 long (Fig. 3); fifth sternum quadrate and shallowly U-emarginate, apically with dark tear-shaped depressions each side of middle near apex (Fig. 4); subgenital plate quadrate, upturned laterally with a median projection, this acute laterally and incurved apically (Fig. 5).

Color: Both sexes uniform pale brown; holotype, allotype and one paratype distinctly black-brown on face from fastigium to clypeus, with yellowish white spots marking the ocelli; eyes greyish, spotted; paler paratypes also have these spots.

Paratypes: 1 ♂, “Dedelo, Guam, Aug 3 [19]68”; 1 ♂, “Hestingress” [LEMQ, ex BPBM, ex A.A. La Plante collection, Bishop # 1977, 84]; 1 ♂, Barrigada, Guam, 9 Sept., 1957, D. Nafus (ESUG); 1 ♂ “wrapped in *Pipturus argenteus* leaf” (LEMQ ex ESUG); 1 ♀, Menzilia, Guam, 1957, I. Schreiner (ESUG); 1 ♂, “Barrigada, Gu[am]/ 3-17-79 [= 17-III-1979] Vincent/Mangloma” [ESUG]; 1 ♀, “Micronesia, (Guam, U.S.A.), Dededo, 25-II-1979 / Cristina Lazard / collector” (LEMQ ex ESUG); 1 juv. ♀ [last instar], Guam, Yigo, VIII-1952, N.L.H. Krauss (LEMQ); 1 ♂ (very young), Guam, Yigo, 2-VII-1946, R.G. Oakley (USNM).

This long-winged species is known only from Guam.

Niphetygryllacris tolensis Vickery & Kevan sp. nov.

Niphetygryllacris n. sp. 2; Kevan 1987: 306.

Niphetygryllacris tolensis Vickery & Kevan. Holotype ♀, Tol I., Mt. Uniböt, 4-I-1953, native forest, J.L. Gressitt (USNM).

The holotype is the only specimen known at present.

Description: holotype ♀: body smooth, shining, general color pale brown, short but quite robust, length 15.3; *head* broad 4.3, short 2.3; smooth, strongly convex, dark mahogany brown; antennae filiform, scape and segment two larger, tips of both broken off; eyes not prominent, pale brown heavily marked with darker pigment; fastigium rounded, smooth, ocelli pale, conspicuous, clypeus apically obtuse, pale with black margins and apex; palps pale except base of terminal segment of labial palps brown: *thorax*, pronotum wider 4.2 than long 3.3, smooth with median sulcus on middle third, oblique depressions from end of sulcus outward, and dorsally behind anterior margin, lateral and posterior margins thickened; tegmina 11.8, shorter than in *N. marianae*, veins prominent, shining, wings brownish, extending beyond tegmina; legs with spines similar to *N. marianae*; femora: fore 4.6, mid 5.9, hind 8.4; tibiae: fore 5.3, mid 5.5, hind 8.1; *abdomen* smooth, cerci long 2.2; supra-anal plate with crossed finger-like projections mesally at apex (Fig. 6); subgenital plate divided, forked (Fig. 7); ovipositor short 7.5, curved (Fig. 8).

This is a short-winged species, differentiated from *N. marianae* as follows: clypeus obtuse apically, not rounded; subgenital plate not wider apically, divided, forked; ovipositor curved upward, not bent at base. Color pale brown except head dark mahogany brown (except clypeus). Male unknown. At this time it is known only from Tol Island in the Chuuk Group.

The tegminal venation (Fig. 30) is complete and is similar to that of *N. aberrans* Willemse (1953, fig. 14) with this difference: the media and cubitus do not separate but continue as a single vein to the apex.

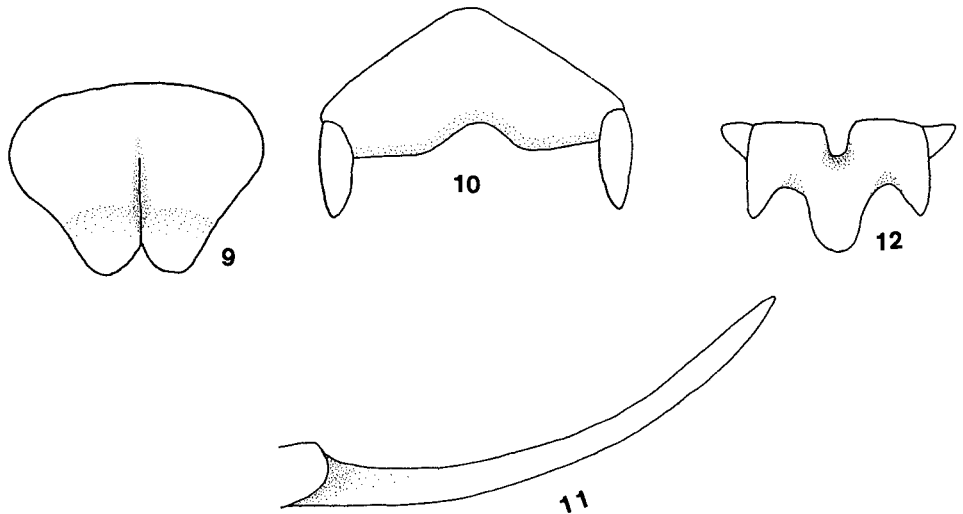
Anancistrogera Karny

Anancistrogera Karny 1937: 135. Type species *Gryllacris brachyptera* Gerstaecker.

Anancistrogera palauensis Vickery & Kevan sp. nov.

Anancistrogera palauensis Vickery & Kevan. Holotype ♂, West Carolines, Palau Is., Peleliu, II-1946 (LEMQ). Allotype ♀, same data as holotype (LEMQ).

Description: holotype ♂: Body robust 15.3, shining golden brown with darker brown infusion on face, part of dorsum of pronotum and on fore tibiae; mandibles dark brown to black; spines of hind tibiae dark brown; *head* strongly convex, bulbous, broad 4.4, short 2.3, eyes spotted, not prominent, fastigium broad, depressed above antennal bases limited by distinct ridges, strongly impressed in front between raised borders of antennal sockets, these with inner angles about 70°, clypeus pale apically, labrum narrow at base then broad and tapering to truncate apex, this notched in middle; antennae very long, about three times as long as body, filiform, each segment with narrow dark band; *thorax*, pronotum smooth, lacking carinae, rounded, with central depression from near posterior margin to middle, anterior margin slightly extended mesally, posterior margin nearly linear; tegmen 10.4, with prominent golden brown raised longitudinal veins, wing with less prominent veins, extending slightly beyond tegmina; legs, femora: fore 4.8 and middle 5.4, without spines, hind femora 8.2 with 6 short spines on external ventral carina and 7-10 on internal carina, tibiae: fore 5.3 and middle 5.6, with elongate pale spines, 4 pairs on each ventral carina, hind tibia 8.3, with 6 pairs of spines on external ventral carina and 5 pairs on the internal



Figures 9-12. *Anancistrogera palauensis*: 9, male supra-anal plate; 10, male subgenital plate; 11, ovipositor; 12, female subgenital plate.

carinae; *abdomen*, unicolorous golden brown (7th tergum twisted sideways after death), 9th tergum bent strongly downward, nearly ventral at apex, supra-anal plate ovate with paired rounded apical lobes and U-emarginate apically (Fig. 9), subgenital plate broad and narrow, broadly V-emarginate with short styles (Fig. 10); cerci tapered, incurved; tegminal venation (Fig. 31) resembles that of *Anancistrogera dubia* Willemse (1953, fig. 16) but there is only one precostal vein rather than two.

Allotype, ♀: very similar to holotype in structure and color; antennae broken, right with scape and one segment, left with scape and 4 segments, tegmina broadly rounded, wing very broad apically; ovipositor narrow not bent but curved upward 10.2 (Fig. 11); subgenital plate narrow, acute posterolaterally with median ovoid projection (Fig. 12); measurements as follows: body length 17.6; head width 4.4, length 2.5; pronotal width 4.0, length 3.7; tegmen 10.3; femora: fore 4.9, mid 5.2, hind 8.7; tibiae: fore 5.7, mid 5.7, hind 8.8.

Paratypes: 1 ♂, 2 ♀♀, Palau, Peleliu, 19/26 Feb, 1987 [also 19/26-II-1987], Otte, Alexander, Flinn, (UMMZ).

Neanias Brunner von Wattenwyl

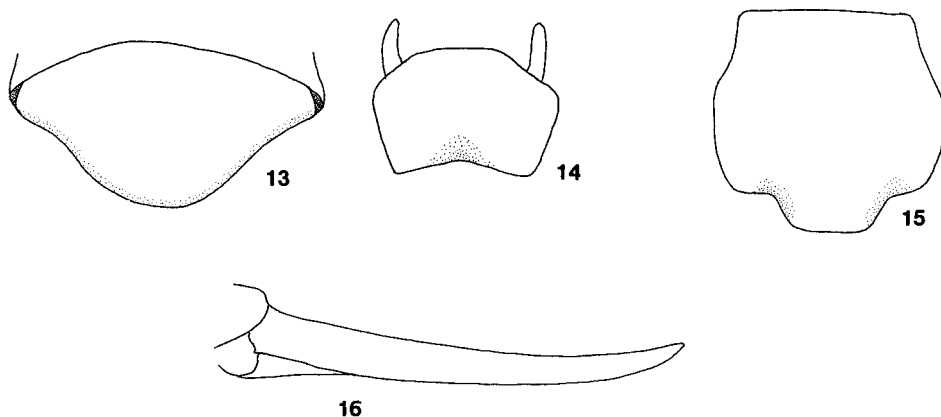
Neanias Brunner von Wattenwyl 1888: 373, Type species *Neanias squamosus* Brunner von Wattenwyl.

Neanias ogasawarensis Vickery & Kevan sp. nov.

Neanias n. sp.; Kevan 1987: 306.

Neanias ogasawarensis Vickery & Kevan. Holotype ♂, Ogasawara Archipelago, Haha-Jima, s. Ridge, Chibusa Yama, 300m, 20/22-VIII-1980, malaise trap, J.L. Gressitt (BPBM). Allotype ♀, same data as holotype (BPBM).

Description: holotype ♂: Body robust, 23.2 long; golden brown, antennae reddish brown, abdominal terga with darker brown posterior margins; *head* bul-



Figures 13-16. *Neanias ogasawarensis*: 13, male 9th tergum; 14, male subgenital plate; 15, female subgenital plate; 16, ovipositor.

bous, broad 4.8, short 2.3, fastigium broad, face triangular, mandibles pointed, maxillary palps very long, terminal two segments with brownish infusion; eyes concave on inner side in frontal view, antennae very long; *thorax*, pronotum nearly quadrate, 4.9 wide x 4.3 long, flared outward laterally; tegmina reduced to tiny lateral lobes 1.2; legs: femora: fore 6.6 and middle 6.4 sulcate beneath with fine setae on the carinae but no spines; hind femur 10.8 with 6-7 very small spines on each carina; tibiae: fore 6.9 and middle 6.7 each with elongate 0.7-0.9 spines; hind tibia with 5 or 6 very small dorsal black spines, 4 apical spurs and pair of preapical ventral spines; *abdomen*, 8th tergum broader and longer than 7th, rounded downward, 9th tergum bulbous, ventral margin reflexed, nearly obscuring supranal plate, this visible as narrow strip with median rounded extension and reflexed laterally (Fig. 13); subgenital plate broad, rounded to truncate apex with short lateral styles (Fig. 14); cerci long, tapered, incurved; spines of fore and mid-tibia long, of hind tibia very short, black; nearly apterous, tegmina represented by tiny lateral lobes (1.2 mm).

Allotype ♀: Body robust, length 20.0; generally golden brown, all femora pale brown with reddish-brown longitudinal streaks, these tapering toward apices; subgenital plate yellow with two lateral brown spots (Fig. 15); tergal bands dark brown; head very broad (5.1), short (2.3), fastigium broad, very similar to holotype; pronotum quadrate (4.5 x 4.4), tegmina very small lateral lobes; legs, femora: fore 6.4, middle 7.2, hind 10.7; tibiae: fore 6.9, middle 6.7, hind 10.0; ovipositor reddish, very gently curved upward (Fig. 16), length 11.2.

Paratypes: 2 ♂♂, same data as primary types (BPBM); 1 ♀ Bonin Is., Chichi Jima, Hills E of Okuruk, 18-VI-1949, A.R. Mead (LEMQ), the latter with dark brown Y-shaped mark on dorsum of head, tail of Y extending to level of antennae, with two large dark spots within arms of Y.

Prosopogryllacris Karny

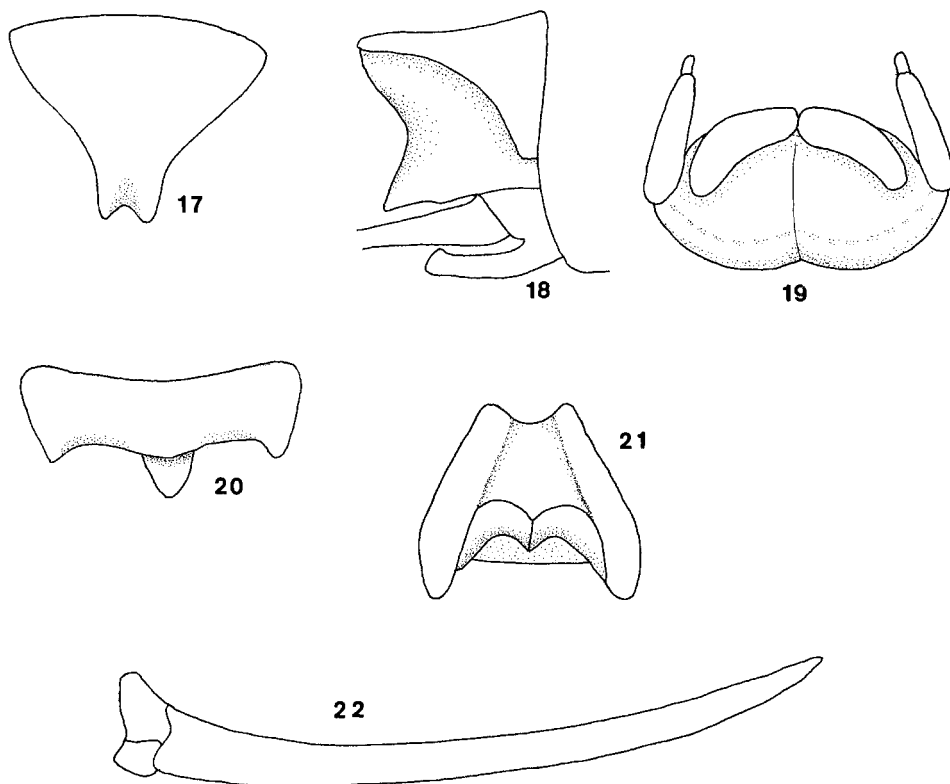
Prosopogryllacris Karny 1937: 154. Type species *Gryllacris personata* Audinet-Serville.

Prosopogryllacris palauensis Vickery & Kevan sp. nov.

Prosopogryllacris n. sp. 2; Kevan 1987: 306.

Prosopogryllacris palauensis Vickery & Kevan. Holotype, ♂, Koror I., 23-XI-1947, H.S. Dybas (USNM). Allotype ♀, Koror I., 17-XI-1947, H.S. Dybas (FMNH).

Description: holotype ♂: Body robust, length 26.7, shining, golden yellow; *head*, face, labrum and mandibles and margins of pronotum reddish, clypeus partly reddish, partly yellow; eyes pale brown mottled with darker brown; head strongly convex, broad (5.9) short (2.7), eyes not protuberant; antennae longer than body (but both broken off at mid-abdomen), fastigium rounded to strongly slanting frons; *thorax*, pronotum typically gryllacridid, width (6.1), length (5.3), anterior margin produced at middle, lateral margins nearly parallel then strongly



Figures 17-22. *Prosopogryllacris palauensis*: 17, male terminal tergum, dorsal; 18, male terminalia, lateral; 19, male subgenital plate, ventral; 20, female terminal tergum; 21, female subgenital plate; 22, ovipositor.

narrowing to rounded posterior margin; near the posterior margin two lateral protuberances, spine present at postero-lateral angles; tegmina long (13.1), wing protruding beyond tegmen by 0.9 mm, tegmen plain, veins not raised, wing with strong raised veins and three brownish arcs along crossveins; legs: fore and middle femora without spines, fore 9.1, mid 7.7, hind 13.7 with six reddish tipped spines on exterior ventral carina and three spines on internal ventral carina near apex; tibiae: fore 8.6 and middle 8.7, with long pale spines and pair of short subapical spurs; hind tibia 14.6 with six external and six internal ventral spines, three pairs apical spurs and pair of subapical dorsal spines; *abdomen*, terminal tergum strongly narrowed, rounded or with small V-shaped invagination at apex (Fig. 17) and produced ventrally (Fig. 18) obscuring supra-anal plate, lower lateral corners each with a small brown inwardly directed hook-like process; subgenital plate transverse, styles lateral, deeply impressed before paired apical enlargements (Fig. 19); tegminal venation is distinctive. The radius, media and cubitus have a

common base (R+M+Cu) (Fig. 32). The cubitus branches first from the stem, the radius and media separating more than halfway from base to apex.

Allotype ♀: body length 26.7; similar to Holotype but head distinctly reddish, bulging above pronotal level, (head width 6.1, length 3.1); *thorax*, pronotum (width 6.2, length 5.3) with pale markings, particularly outlining two lateral triangles with apices pointing to near midline; tegmen (8.4), left tegmen spread, tip broken off; left wing (spread) with five rows or partial rows of dark areas on the crossveins between the main veins; legs as for Holotype (femora: fore 8.4, mid 7.7, hind 14.3; tibiae: fore 8.6, mid 8.4, hind 16.5); *abdomen*, posterior tergum with short median projection between cerci (Fig. 20), this not symmetrical but inclined toward left side (probably not the normal condition); subgenital plate with median V-shaped notch (Fig. 21), ovipositor (8.4) very slightly upcurved (Fig. 22).

Paratypes: 1 ♂, Peleliu [1], 28-VII-1945, H.S. Dybas (FMNH); 1 ♀, Koror I., Arabakesan, 25-I-1938 (LEMQ); 1 very small juv. ♀, Arakabesan I., 18-VII-1947 [H.K.] Townes (USNM); 1 ♂, Babelthuap I., E. Ngatpang, 65m, J.L. Gressitt, (BPBM) 1 ♂, [ex alcohol], Ngardmau I., 23-IV-1957, C.W. Sabrosky (USNM); 1 ♀, Arabakesan I., 7°20'35" N, 134°27'10" E, 19/26-September, 1987, el. 1.6-5m., # 9, (Otte, Alexander, Flinn), captured in forest (ANSP).

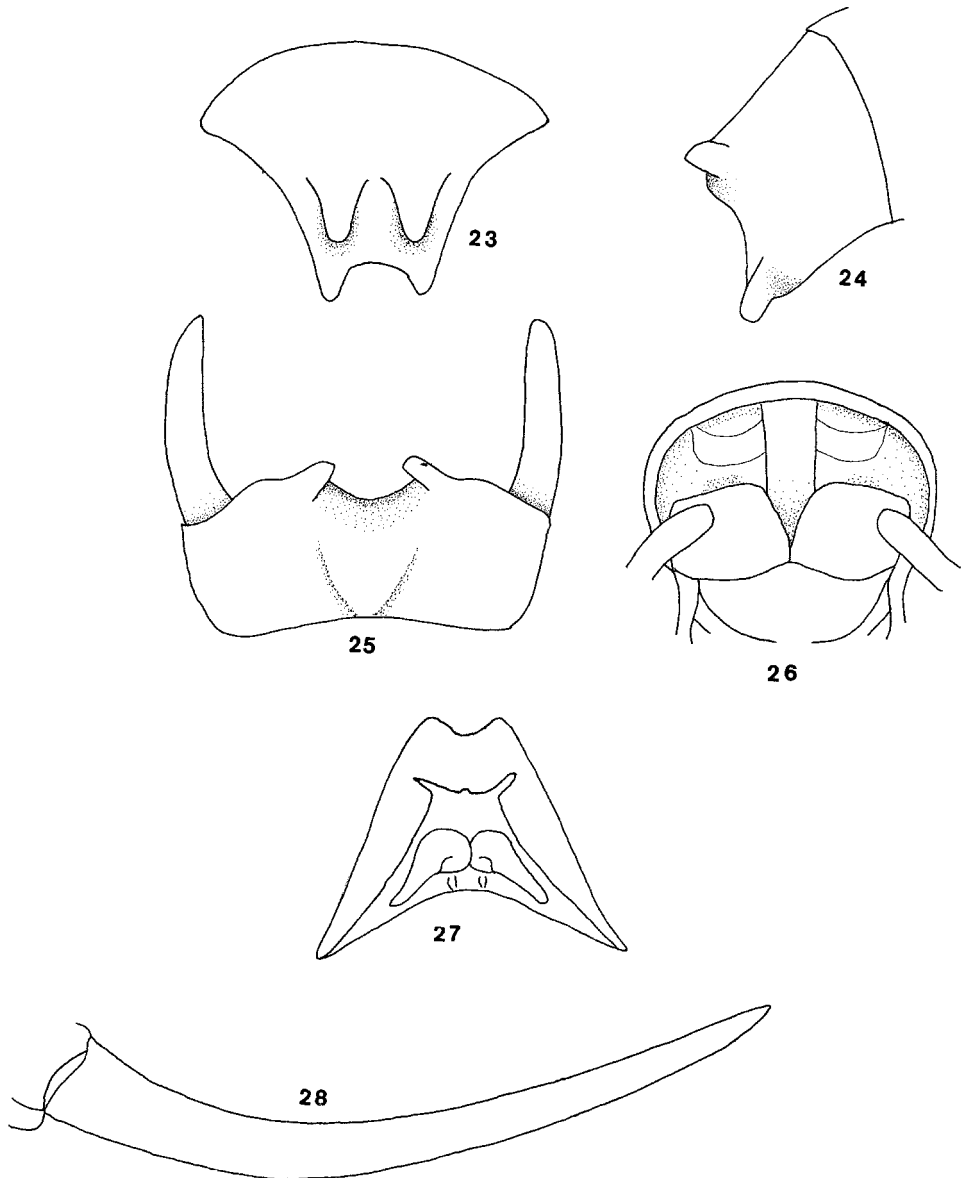
The paratype from Arakabesan has the left hind leg noticeably smaller and shorter than the right leg: left femur 12.7, right femur 15.3; left tibia 12.3, right tibia 15.7; left tarsus 4.6; right tarsus 5.7. This presumably represents regeneration. Careful examination showed that the leg had not been attached artificially. The left tibia is spineless, significant as tibial spines are key characters.

***Prosopogryllacris chuukensis* Vickery & Kevan sp. nov**

Prosopogryllacris n. sp. 1; Kevan 1987: 306.

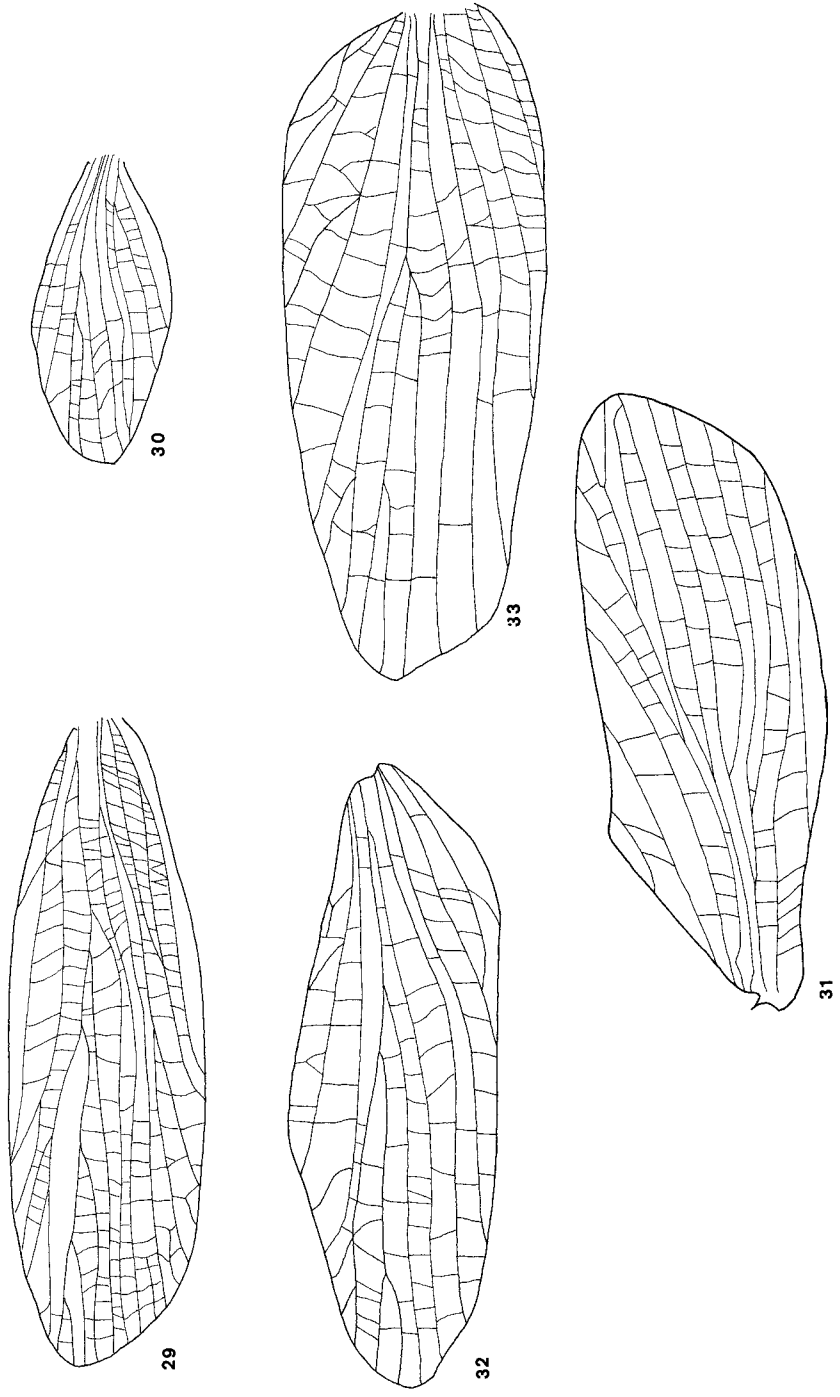
Prosopogryllacris chuukensis Vickery & Kevan. Holotype, ♂, Chuuk, Civ[il] AD[ministration] Area, 13-III-1949, R.W.L. Potts (USNM); Allotype, ♀, same data but coll. 8-III-1949 (BPBM).

Description, holotype ♂: Body robust (length 23.0), shining golden yellow, face moderately slanted; head darker yellow, brownish between fastigium and antennal sockets, clypeus and labrum pale, mandibles brown; *head* dorsally convex, broad (6.7), eyes heavily mottled with dark brown, eyes not protuberant, antennae very long (one broken), unicolorous pale, palps pale, slender, long, labial palp enlarged apically; *thorax*: pronotum wider than long (6.5 x 5.7), anterior margin very little produced at middle, posterodorsal corners with sharp spine; tegmen (17.2) plain, veins not prominent, pale; wing with prominent raised veins; crossveins in anal region with brown infusion making five or six interrupted arcs; legs, femora: fore 8.8 and middle 8.8 without spines, hind femur 14.3 with seven small, sharp reddish spines on exterior carina and five on internal carina; tibiae: fore 9.6 and middle 9.4, with four pairs of elongate pale spines and a pair of subapical ventral spurs; tarsi long, ventral processes wide; *abdomen* deep; terminal



Figures 23-28. *Prosopogryllacris chuukensis*: 23, male terminal tergum, dorsal; 24, same, lateral; 25, male subgenital plate; 26, female terminalia, posterior; 27, female subgenital plate; 28, ovipositor.

tergum with distinct dorsolateral projections (these larger than in *P. palauensis*) (Fig. 23), downturned with posterolateral extensions (Fig. 24); subgenital plate broadly U-emarginate at middle of posterior margin, styles very large and long



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Figures 29-33. Figs. 29, 30, left tegmen: 29, *Niphetogryllacris marianae*; 30, *N. tolenis*; Fig. 31, right tegmen, *Anancistrogera palauensis*; Figs. 32, 33, left tegmen: 32, *Prosopogryllacris palauensis*; 33, *P. chuukensis*.

(larger than in *P. palauensis*) (Fig. 25); tegminal venation is similar to that of *P. palauensis* but differs in that the radius and media have a common stem after the cubitus branches off (Fig. 33) and separate nearly two-thirds from the base to apex.

Allotype ♀: Similar to holotype but slightly larger (28.6); face distinctly reddish, cerci and ovipositor brownish, eyes strongly marked with blackish spots, head (6.7 wide, 3.1 long); raised rim of pronotum reddish in front; pronotum (6.6 wide, 5.3 long), central area yellow connected to paired lateral ovals, these yellow with reddish centres; left tegmen (21.0) and wing spread; brownish arcs less distinct than in male; legs with spines as in male; femora: fore 8.4, mid 8.2, hind 15.3; tibiae: fore 8.7, mid 9.2, hind 13.8; terminal tergum without median projection (Fig. 26); subgenital plate small with small U-shaped median notch (Fig. 27); ovipositor long (16.9), slightly curved upward (Fig. 28).

Paratypes: 1 ♂, same data as allotype but coll. 8-III-1949 (LEMQ); 1 ♀, Tol I., Mt. Uniböt, 1-IV-1953, native forest, J.L. Gressitt (BPBM).

Other specimens: 1 juv. ♀, [probably this species], Chuuk, Moen, 18-XII-1986, Donald Nafus (ESUG); 1 juv. ♂ [probably this species] Moen I., Mt. Teroken N, 28-XII-[19]52, J.L. Gressitt (BPBM).

The two species of *Prosopogryllacris* described here are distinguished from one another easily. The terminal tergum of males is quite different: in *P. palauensis* this structure terminates in a narrow notched projection (Fig. 17) while in *P. chuukensis* the structure terminates in paired projections (Fig. 23). The ovipositor of *P. chuukensis* is considerably longer (16.9) (Fig. 28) than in *P. palauensis* (8.4) (Fig. 22).

Melaneremus Karny

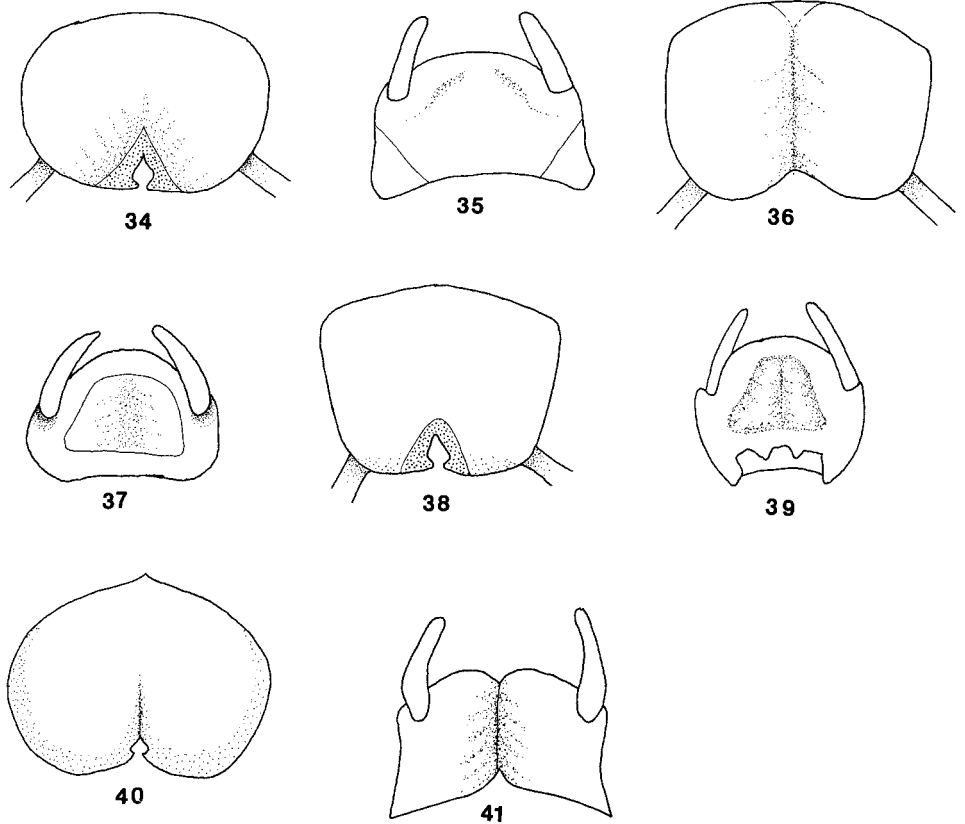
Melaneremus Karny 1937: 149. Type species *Eremus atrotectus* Brunner von Wattenwyl.

Melaneremus marianae Vickery & Kevan sp. nov.

Melaneremus n.sp. 1; Kevan 1987:306

Melaneremus marianae Vickery & Kevan. Holotype, ♂, Guam, Inajaran, 7-V-1936, O.H. Swezey (BPBM).

Description: holotype ♂: body robust, 16.2 in length; uniform yellowish brown, head darker; face blackish-brown below grading to paler brown above; antennal bases and ocelli conspicuously yellow, antennae pale, each segment darker apically (broken); *head* bulbous (5.3 wide, 2.7 long), posterior margin sinuous, eyes dark, occipital area, genae, clypeus and labrum yellow; palps pale short, slender, not expanded at apices; *thorax*, pronotum (5.1 wide, 4.1 long), anterior margin only slight produced at middle, lateral margins rounded, laterally diminishing on posterior third to linear posterior margin; effectively apterous, tegmina reduced to very tiny lateral lobes; legs: fore 5.3 and middle femora 5.5, distinctly sulcate beneath with setal hairs but without spines; hind femur 8.7, with 8 external and 5 internal small, pale spines (left leg), 8 on each on right leg, and



Figures 34-41. *Melaneremus* species. 34, 35, *M. marianae marianae*; Figs. 36, 37, *M. marianae rotaensis*; 34, 36, male terminal segments; 35, 37, male subgenital plates; Figs. 38-39, *M. saiensis*: 38, male 9th tergum; 39, male subgenital plate; Figs. 40-41, *M. kosraensis*, 40, male 9th tergum; 41, male subgenital plate.

3 pairs apical spurs plus one subapical dorsal spine; tibiae: fore 5.5, mid 6.0, hind 9.1; tarsi with broad ventral lobes (right tarsi missing); *abdomen*, 9th tergum convex, triangular, narrowing posteriorly to excised and notched margin, each side with median apical tooth (Fig. 34); subgenital plate with short styles (1.2) on lateral lobe-like extensions, depressed in middle, apical margin rounded, complete (Fig. 35).

Paratype, ♂, Guam, Agana, 13-IV-1936, E.H. Bryan, Jr. (LEMQ ex BPBM).

Other specimens, 2 juv. ♀♀, Guam, Pt. Ritidian, 28-VII-1945 & 6-VI-1945, G.E. Bohart & J.L. Gressitt (USNM).

The paratype male differs from the holotype in lacking the dark areas on the head. The antennae are broken and the left middle and hind leg and the right fore-leg are missing. The two immature females are very pale; ovipositors curved strongly upward, almost touching the three posterior terga.

Melaneremus marianae marianae Vickery & Kevan ssp. nov.

Same data as above.

Melaneremus marianae rotaensis Vickery & Kevan ssp. nov.

“Large wingless gryllacridid”, Townes, 1946: 29.

Melaneremus n. sp. 1 (2 ssp.); Kevan 1987: 306

Melaneremus marianae rotaensis Vickery & Kevan. Holotype, ♂, Rota Is., native forest nr. Sabana, VI-19-[19]46, [H.K.] Townes, 685, 1200 ft [365 m] (USNM).

Description, holotype ♂: Similar to *M. m. marianae* but mandibles, head, pronotum, meso- and meta-nota blackish brown, face with yellow median ocellus and antennal sockets, clypeus yellow, eyes white on inner sides, outer dark brownish grey; pronotum with two lateral oblique pale spots; abdominal terga with darker posterior bands. *Body* smaller than *M. m. marianae*, length 10.7; *head* strongly convex, broad 6.0, short 3.2; *thorax*, pronotum broad 5.8, length 4.7, with median depression, lateral lobes slightly incurved anteriorly, then strongly narrowed, posterior margin slightly concave; completely apterous; legs: fore and middle femora sulcate but without spines, fore 5.7, mid 6.2, hind femur 10.3 with 5 short spines on external carina only near apex; tibiae: fore 6.7 and middle 6.5, each with 4 long pale spines on each carina and one pair of apical spurs; hind tibia 8.9, with 6 short spines on each carina; lobes of tarsal segments long; *abdomen*, 9th tergum with broad median apical invagination (Fig. 36) (deeper than in *M. m. marianae*), teeth at terminal notch obscured; supra-anal plate obscured; subgenital plate broad with central depression and raised apical margin with lateral styles (Fig. 37).

The two subspecies are distinguished by the male terminalia, *rotaensis* with deeper evagination of the 9th tergum (Fig. 36) and the strongly depressed subgenital plate with strongly raised but interrupted basal margin (Fig. 37) as compared with *marianae* (Figs. 34, 35).

Melaneremus saiensis Vickery & Kevan sp. nov.

Melaneremus n. sp. 2; Kevan 1987: 306.

Melaneremus saiensis Vickery & Kevan. Holotype, ♂, Saipan, 1000ft, 20-VI-[19]46, E.Y. Hosaka (BPBM). Unique.

Description: holotype ♂: body robust (22.4), distinguished by black on head, except on labrum and adjacent edge of clypeus, mandibles black, palps slender terminal segments pale but basal segment of labial palps dark at base; pronotum dark brown with black on margins, meso- and meta-nota very dark brown; abdomen light brown to dark brown on terminal terga; pale beneath; *head*, broad (5.9), short (3.1), strongly convex; antennae very long, eyes not protuberant; *thorax*, pronotum 5.8 wide, 4.7 long, anterior margin expanded at middle, tapered posteriorly as in other species of *Melaneremus*; tegmina and wings represented only by very tiny vestiges; legs, femora: fore 6.4 and middle 5.7 femora without

spines; hind 9.8 with few very small spines apically on external carina; tegmina: fore and middle, both 6.2, with 4 pairs of elongate pale spines and pair of apical spurs; hind 9.3 with 6 external and 6 internal short black spines on right leg, only one internal spine on left leg; *abdomen*, 9th tergum nearly quadrate, tapering slightly to posterior margin with blunt tooth on each side of narrow U-shaped emargination (Fig. 38); subgenital plate broadly rounded apically, styles tapered (Fig. 39); cerci strongly upcurved tapered, about 1.2 mm.

Melaneremus kosraensis Vickery & Kevan sp. nov.

Melaneremus n. sp. 3; Kevan 1987: 306.

Melaneremus kosraensis Vickery & Kevan. Holotype, ♂, Kusaie Hill, B75, 230m, 25-II- [19]53, J.F.G. Clarke (USNM). Unique.

Description: holotype ♂: robust, large for genus 23.8; nearly uniformly brown; eyes grey, not spotted; abdominal terga with darker, shining posterior margins, abdominal segments 6-8 with median longitudinal narrow black marks, on terga 7 triangular but linear on 6 and 8; *head* broad 5.3, short 2.5, eyes elongate, nearly straight on inner margin, fastigium broad, maxillary palps elongate, antennae long, exceeding body length; *thorax*, pronotum width 5.4, length 5.1; sinuous laterally, all margins thickened; apterous; legs sulcate beneath, femora: fore 6.7 and middle 7.2 without spines but with many minute setae on both margins; hind 11.0 with small black spines, 15 on inner carina and 12 on the outer carina; tibiae: fore 7.6 and middle 7.5 each with four elongate spines on each carina; hind 10.7 with 6 short dark spines on each carina and 6 black-tipped apical spurs, 2 subapical spurs and 2 short, pale ventral subapical spines; *abdomen*, 9th tergum globular, bilobed (Fig. 40), appearing divided; supra-anal plate narrow, nearly obscured; subgenital plate bilobed with median carina, styles short, small median teeth inwardly directed (Fig. 41), cerci long and tapered.

Terminal structures like *Neanias*. Femoral spines not like other two species of *Melaneremus*.

Unfortunately, no females of these species of *Melaneremus* are known, other than the immature specimens of *M. marianae*.

**RHAPIDOPHOROIDEA
RHAPHIDOPHORIDAE
RHAPHIDOPHORINAE**

Rhaphidophora Audinet-Serville

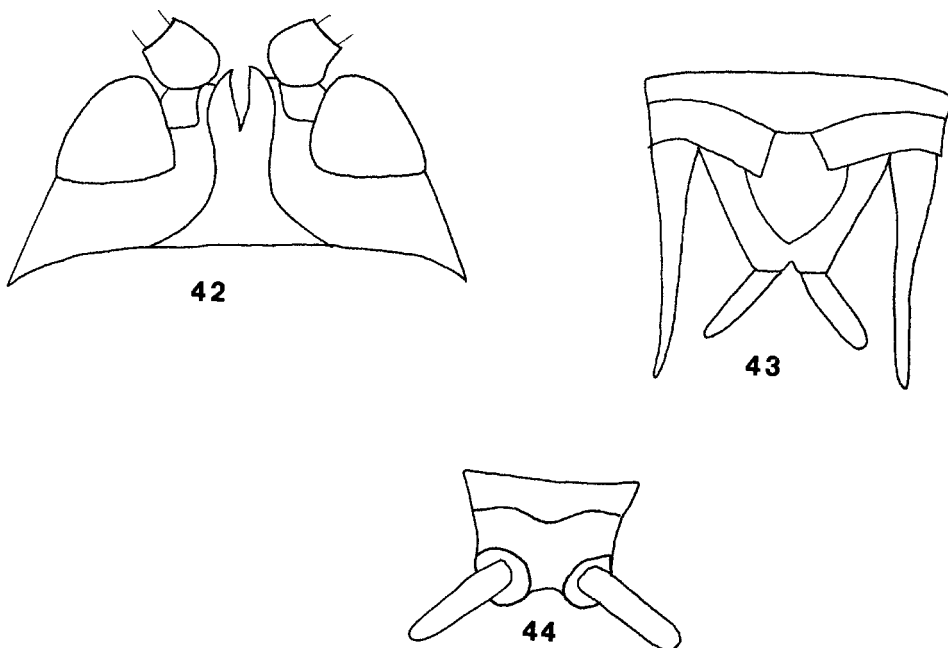
Rhaphidophora Audinet-Serville 1839: 389. Type species *Phalangopsis loricata* Burmeister.

Rhaphidophora ponapensis Vickery & Kevan sp. nov.

“A rhapsidophorine”, Townes, 1946: 29 (Pohnpei).

Rhaphidophora n. sp., nr. dehanni Karny; Kevan 1987: 306

Rhaphidophora ponapensis Vickery & Kevan. Holotype, ♂, Ponape: Mt.



Figures 42-44. *Rhabdophora ponapensis*: 42, male, head, dorsal; 43, male 9th tergum and supra-anal plate; 44, male subgenital plate.

Dolen[n]ankap, *ca.* 580 m, VIII-1946, coll.? [presumably from a cave] (LEMQ).

Towne's specimen not seen [unless the above specimen was collected by Townes, if so, holotype is unique].

Description: holotype ♂: body 16.9, pale brown, possibly due to immersion in fluid such as ethanol, slightly darker on pronotum, pale laterally; face shining white; body typically humped; labial palps much enlarged apically, apex black; mandibles brown but black at apices; *head* short 1.3, wide 4.2, projecting forward between antennal bases, divided apically (Fig. 42), antennal scapes very large, antennal segments large at base and gradually diminishing in size toward apex, tips of both antennae broken off; eyes not prominent, whitish; *thorax*, pronotum large 4.7 wide, 5.7 long, largely covering head, completely rounded without sulci or carinae; pale line mid-dorsally in front but obsolete on posterior third; legs: right fore leg missing; femora: fore 6.4 with apical depression for tibia but not sulcate, one internal apical spine, middle 6.2, similar to the fore femur but with apical spurs both external and internal, hind 13.8, with six short spines on internal ventral carina, very broad 4.6; tibiae: fore 6.4, mid 6.4, hind 10.4, sulcate beneath with continuous rows of spines on each ventral carina, distance between spines increasing from base to apex, apically with dorsal and ventral paired spurs and elongate ventral calcars 1.9; basitarsus with 2 ventral and 1 long apical spur, claws long; *abdomen*, segments short, 9th tergum with short median lobe, divided scler-

rites above lobed supra-anal plate (Fig. 43); subgenital plate small, bearing elongate styles (Fig. 44); cerci 3.5 long, slender, acute apically.

Because of the 5 or 6 (not less than 3) ventral spines on the internal ventral carina of hind femur, this comes out in Karny's (1924) key to *R. dehaani*, but it is probably nearer to *R. rechingeri* Holdhaus 1908; [type immature] as figured (adult) by Chopard (1929) [this presumably has less than 3 femoral spines]; male terminalia differ in present species which has very acute styles and also has 6 ventral spines on internal ventral carina of the hind femur.

Stonychophora Karny

Stonychophora Karny 1934: 73; Type species *Rhaphidophora fulva* Brunner von Wattenwyl.

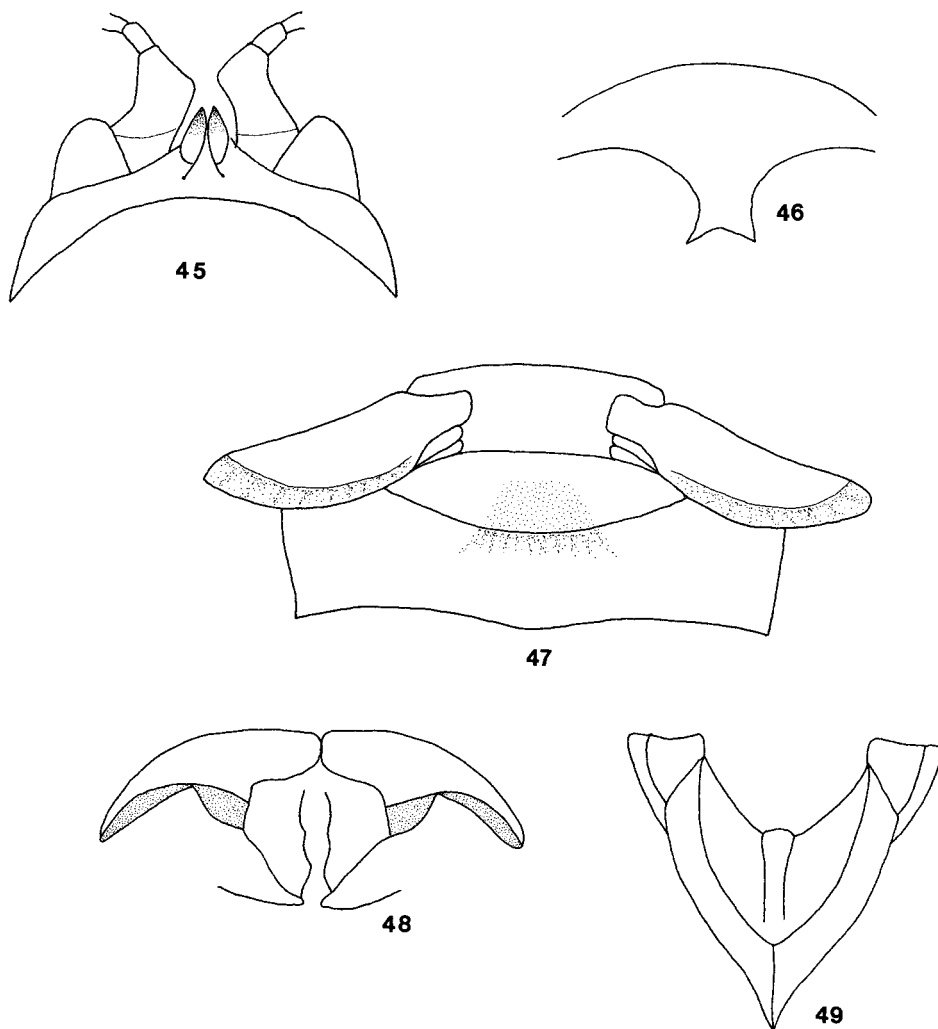
Stonychophora palauensis Vickery & Kevan sp. nov.

Stonychophora n. sp. nr papua (Brancs.); Kevan 1987: 306.

Stonychophora palauensis Vickery & Kevan. Holotype, ♂, Ngaremediu Island/ 70 Isl. [= Seventy Island] Reserve, Palau/ 8 January, 1988 / G. Wiles [printed], in or near cave. (LEMQ ex ESUG); Allotype, ♀, Caroline Is./ Palau Is., Ngaremediu I./ in cave/ I-III-1985, D. Williams, Coll (BPBM).

Description: holotype ♂: very large, 34.2 long; brown above, pale brown beneath and on legs, antennae dark brown; *head* broad 8.8, short 2.7, divided median projection between antennal bases reaching only to one fourth of scape (Fig. 45); eyes dark grey, not prominent; face pale, labrum dark, circular with small V-emargination apically; palps very long, slender, pale; mandibles dark brown; *thorax*: pronotum 8.7 wide, 11.2 long, strongly convex dorsally, with anterior and posterior margins rounded, carinae obsolete; apterous; mesonotum and metanotum similar to pronotum but shorter, mesonotum 5.2, metanotum 5.3; legs: elongate, fore femur 17.8, smooth, spineless except for single ventral internal apical spur; middle femur 16.0, smooth, spineless except for paired ventral apical spurs; hind femur 32.9, smooth but deeply grooved between ventral carinae, one short spine at one quarter from apex on internal carina and one short internal apical spur; tibiae: fore 16.5, not sulcate ventrally but with 3 external and two internal elongate spines and pair of ventral apical spurs; middle tibia 17.0, smooth but with very fine hairs, two pairs of spines dorsally and two pairs ventrally, one pair ventral apical spurs and a single dorsal spur; hind tibia 30.9, sulcate ventrally, each carina with short closely-spaced posteriorly directed spines; apically with paired elongate calcars 8.2; tarsal segments long, basal one spined ventrally, each segment with projection extended beneath the next segment, claws long, arolium absent; *abdomen*: 7th tergum with short median projection, this apically truncate with acute extended corners (Fig. 46); supra-anal plate elongate, triangular; cerci 6.7; subgenital plate narrow, styles large, club-shaped (Fig. 47).

Allotype ♀: large, body robust, 29.0; very similar to male in color and general appearance; *head* 6.7 long, 2.3 wide; *thorax*: pronotum 8.7 wide, 11.2 long;



Figures 45-49. *Stonychophora palauensis*: 45, male, head, dorsal; 46, male terminal tergum; 47, male subgenital plate; 48, female 9th tergum; 49, female subgenital plate.

legs with spines as for male; femora: fore 14.1, mid 14.5; hind 31.3; tibiae: fore 162., mid 16.3, hind 29.7; right front tarsus missing, right rear tibia broken off at middle: *abdomen*: ninth tergum U-emarginate mesally, apicolateral corners with small inward facing hooks (Fig. 48); subgenital plate V-shaped, narrow (Fig. 49); ovipositor 16.9, plain, margins not serrated, cerci very slender, long 30.3.

Paratype, ♀, same data as holotype (ESUG), description as for allotype.

The calcaria of the hind tibiae are very long, longer than metatarsi, ovipositor flat and curved.

Dr. Ilse Schreiner of the University of Guam kindly provided notes [to Kevan] on the large wingless crickets from the Ngerukeuid Islands, Palau, collected by Gary J. Wiles and Paul J. Conry; "Crickets were observed inside caves during the day. They perched solitarily or in aggregations of up to 50-100 animals on cave walls in dark areas. They also were present in the crevices of rock outcrops and rock faces and perhaps hollow trees. A large whip-scorpion (?) was present in these caves and could be a possible predator on the crickets.

"Crickets emerged from the caves at dusk and were seen mainly on the ground and on rock faces. They were abundant in many locations. They were present in both limestone forest and beach strand forest. We used sticky traps or glue boards to catch lizards but caught mainly crickets. They were caught on 13 of 25 sticky traps set on the ground in the limestone forest but only on 1 of 35 traps placed on tree trunks and in *Pandanus* crowns. Four or 5 crickets were often caught on the same trap".

Note: "In a BBC "Native" film on Pelau [Palau] Islands (seen 1984—?1983 production) what appears to have been the same species was shown in large numbers in a cave. No specimen seems to have been collected by these ardent naturalists. No one in BMNH knew of the film" (Kevan, handwritten note, dated 1989).

PHANEROPTEROIDEA
MECOPODIDAE
MECOPODINAE

Mecopoda Audinet-Serville

Mecopoda Audinet-Serville 1831: 154. Type species *Gryllus (Tettigonia) elongatus* Linnaeus.

Mecopoda elongata (Linnaeus)

Gryllus (Tettigonia) elongatus Linnaeus 1758, *Syst Nat.* 10: 429. *Mecopoda elongata*; Karny 1926: 129; Kevan 1990: 107.

This species presumably was introduced to Guam from the Philippines, though it could have come from any part of southeast Asia. Kevan (1990) said it seemed to be well established in Guam. Willemse (1953) reported it from Bougainville, Solomon Islands and from Sumba Island, Indonesia.

Specimens examined: 1 ♂, Guam, Mangilao, 20-X-1984, D. Nafus (LEMQ ex ESUG); 1 ♀, Guam, Tanming, 26-X-1984, D. Nafus (ESUG).

Additional records from the University of Guam, courtesy of Dr. Ilse Schreiner, October, 1986: [all captured on Guam: 1 ♂, Santa Rita, Jan., [19]75, R. Muniappan; 1 ♂; Yigo, Feb. 10, [19]75; 1 ♂, Gorco (Santa Rita), host - grass, 16 Feb., [19]79, G. Watson; 1 ♀, lawn, 5/2/79 [=2-V-1979], Juan Flores; 1 ♂, Gorco, host grass, 16 Feb, 1979, J. Castro; 1 ♀, Mangilao, 10-10-1975, K. Donaldson; 1 ♀, Toto, March 17, 1979, Lou Bamba; 1 ♀, Mongmong, host - wall, 4-29-76 [=29-IV-1976], J. Duenas; 1 ♀, Yigo, iv-8-74 [8-IV-1974] DeSoto; 1 ♀, Sumay, April 21, 1976, T. Pangelinan; 1 ♀, Inarajan, 1 Feb., 1981, Frank Meno.

Biroa Bolívar

Biroa Bolívar 1903: 163. Type species, *Biroa carinata* Bolívar.

Biroa zimmermani Willemse

Pseudophyllinae" [sic] sp.; Townes, 1946: 30.

Biroa zimmermani Willemse, 1951: 337, 338, 356, pl. x, fig. 13. Holotype, 11, Palau Islands, Melekeiok (BPBM).

Biroa zimmermani; Beier, 1966: 308; Kevan 1987: 307.

Biroa zimmermanni [sic]; English, 1978:126; Kevan 1987: 303.

Willemse (1951) lists *Biroa* in the Listrocelinae (Conocephalidae).

Specimens examined: *Caroline islands*, Palau Group: 1 ♀, 1 juv. ♂, Arakabesan I., 7°20'35" N, 134°27'10" E, 19/26-II-1987, el. 0-5m, #9 (Otte, Alexander, Flinn), collected in forest (ANSP); 1 ♂, 1 ♀, Palau Group, Peleliu, 6°59'25" N, 134°14'45" E, 19/26-Feb, 1987. loc. # 2 (Otte, Alexander, Flinn), captured in forest (ANSP); 1 sex not known, Peliliu, Ashiasu, 6-III-1936, T. Esaki (KUEC); 1 ♀, Koror, 22-VII-1946, H.K. Townes (USNM); 1 ♂, Koror, 14-VIII-1949, M. Ross (BPBM); 1 nymph, Palau Is., Arakabesan, 18-VII-1946, H.K. Townes (USNM); 2 ♂♂. Angaur I., 5-II-1948, H.S. Dybas (1 USNM, 1 FMNH); 1 ♂, Babeldaob, Ngaremeskang, 25m., 20-XII-1952, J.L. Gressitt (BPBM); 1 ♀, Peleliu, E. Coast, 26-I-1948, H.S. Dybas (BPBM); 1 nymph, Koror I., 18-XI-1947, H.S. Dybas (FMNH). [3 kept in LEMQ]

Ocica Walker

Ocica Walker 1869: 245. Type species *Ocica lutescens* Walker.

Ocica ponapensis English & Kevan sp. nov.

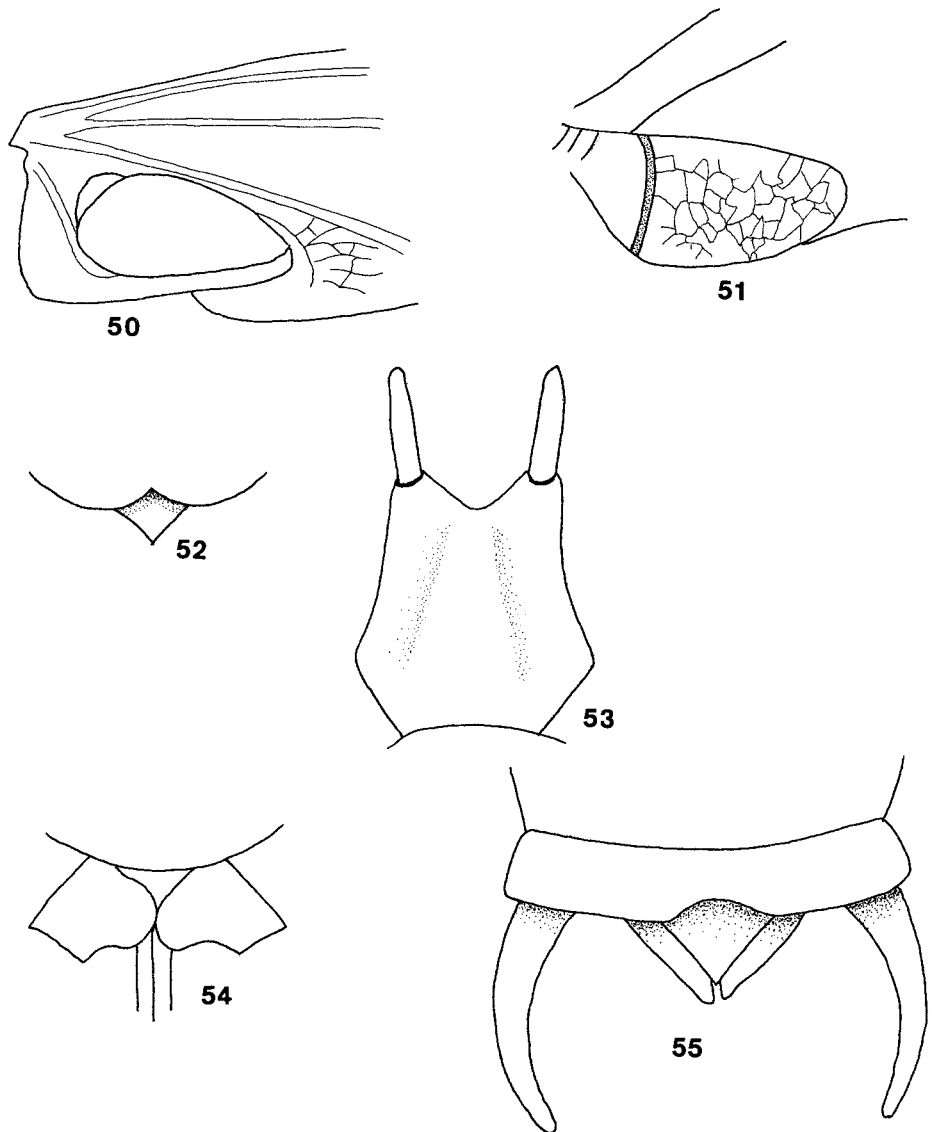
?“Pseudophyllinae [sic - sp (4)]; Townes, 1946: 30.

Ocica ponapensis; English 1978: 152 [manuscript name in thesis].

Ocica n. sp.; Kevan 1987: 307, table 3 (b).

Ocica ponapensis English & Kevan. Holotype ♂, Mt. Nanalaut, alt 770m, 13-I-1953, ex *Pandanus*, J.L. Gressitt (BPBM); Allotype ♀, same data as Holotype.

Paratypes: Ponape, Mt. Nanalaut, 19-III-1949, 1500-2000', H.S. Dybas, 6 ♂♂, 5 ♀♀, 1 ♂ and 1 ♀ nymphs (2 USNM, 2 FMNH, 2 BPBM) 3 ♂♂, 2 ♀♀ in LEMQ; same but 18-III-1949, 5 ♂♂, 6 ♀♀, 1 ♂ and 1 ♀ nymphs (3 USNM, 5 FMNH, 5 BPBM); same but 17-III-1949, 1000', 2 ♂♂, 1 ♀ (1 USNM, 1 FMNH, 1 BPBM); same but 16-III-1949, 1000', 2 ♂♂, 1 ♀ (1 USNM, 1 FMNH, 1 BPBM); Mt. Nanalaut [= Nanalaut], June-Sept, [19]50, P.A. Adams, 3 ♂♂, 3 ♀♀ (2 USNM, 2 MCZC, 2 BPBM); Mt. Beirut, 220', June-Sept, [19]50, P.A. Adams, 1 ♂ (MCZC); Mt. Tamatamanskir, 1400–1500', June-Sept-[19]50, P.A. Adams, 1 ♂, 1 ♀ (1 MCZC, 1 BPBM); Mt. Ninani, 14-I-[19]53, 770', J.L. Gressitt, 1 ♂ (ex *Pandanus*) (BPBM); Mt. Ninani, 16-VIII-[19]49, S.F. Glassman, 1 ♂ (USNM); Ant Atoll [SW of Ponape], Kili Dist., Mt. Totolom, 10-VIII-1949, S.F. Glassman,



Figures 50-55. *Ocica ponapensis*: 50, male stridulatory apparatus, right tegmen, dorsal; 51, same, left tegmen, ventral; 52, male supra-anal plate; 53, male subgenital plate; 54, female supra-anal plate; 55, female subgenital plate. (50, 51 from English 1978)

2 ♂♂, 1 juv. ♀ (USNM, 1 ♂ to LEMQ); Nanue I., June-Sept-[19]50, P.A. Adams, 1 ♂ (BPBM); Mt. Tolenkiup, 2300', June-Sept-[19]50, P.A. Adams, 12 ♂♂, 3 ♀♀ (5 USNM, 5 MCZC, 5 BPBM); Metalanim, 11-I-1938, Teiso Esaki (KUEC); Koronia [=Colonia], 9-VII-[19]37, S. Uchiyama, 1 ♂ (KUEC) Colonia, 14-I-

1953, F.G. Clarke, 1 ♂ nymph (USNM); Mt. Dolennankap, 1700–2000', 10-VIII-[19]46, H.K. Townes, 1 ♂ nymph (BPBM); same data as holotype, 1 ♂ nymph (USNM).

Description [from English 1978]: holotype ♂: Body shiny, slender, somewhat fusiform; *head*: little more than half length of pronotum, antennal scrobes reach slightly beyond fastigium of vertex; antennae slender, more than four times body length, second antennal segment less than twice as long as pedicel; eyes prominent, small, globular; fastigium of vertex produced forward as small triangular process, sulcate above and divided apically into two tubercles; frons smooth, broader than high; palps long and slender, apical segment of maxillary palps slightly more than twice length of fourth segment, apex obtuse; apical segment incrassate at apex, truncate; *thorax*: pronotum slightly less than head length, flat dorsally, smooth, narrowing slightly anteriorly; metazona coarsely punctured near posterior margin; metazona curved upward in lateral aspect; anterior margin of pronotum convex, posterior margin concave and produced; median carina absent, lateral carinae present as only slight indication on metazona; two transverse sulci present, anterior one concave anteriorly, posterior sulcus more concave, produced forward at middle; lateral lobes wider than deep, lower margin rounded and anterior and posterior angles rounded; prosternum with two long spines; *wings*: tegmina and hind wings reaching middle of hind femora; tegmen three and a half times longer than broad, anterior margin somewhat convex, posterior margin narrowly rounded; costal vein absent, subcosta distinct, radius distinct, forked at mid-tegmen, medius absent, cubitus and first anal vein closely associated and stretching along anterior margin of stridulatory field ending one-third along posterior margin, second anal vein passes before stridulatory field and connects with lower anterior margin of field; stridulatory field of right tegmen with pear-shaped mirror”) (Fig. 50); left tegmen with irregular veinlets (Fig. 51), file with approximately 60 teeth; hind wings hyaline, a little shorter than tegmina, principal veins apparent; *legs*: fore femur with 5 to 7 minute spines on inner, lower margin, genicular lobes of all legs with 2 small spines on each side; median femur with 4 to 7 spines on outer lower margin; posterior femur with row of 6 to 7 spines on inner lower margin and 10 to 11 spines on outer lower margin; hind tibia with 12 - 14 spines on lower inner margin and 14-16 spines on outer margin; upper inner margin with 25-26 spines and outer margins with 22-24 spines, two apical spines present; *abdomen*: supra-anal plate small and triangular, broader than long (Fig. 52). Cercus slightly incrassate, curved inward, with short apical spine; subgenital plate nearly quadrate (Fig. 53); styles somewhat incrassate.

Allotype ♀: Similar to but larger than male, differing as follows: fastigium of vertex less sulcate viewed from above; pronotum with indication of median carina on metazona; tegmen and wings reaching slightly past middle of hind femora, tegmen about three and one-half times as long as wide; cubitus convex anteriorly, anal veins indistinct; cercus slender, tapering to apex, curved upward and inward, extending beyond supra-anal plate); subgenital plate cordiform with

median ridge (Fig. 54); ovipositor rather broad, curved upward in apical third, upper margin crenulate on apical quarter, surface smooth.(Fig. 55).

Color: generally yellowish-brown or greenish-brown; head and pronotum generally unicolorous in female, usually with dark brown dorsal stripe in male; tegmina with posterior margin bordered by dark stripe along entire length, with long oval or irregular clear spot at middle; hindwings slightly tinged with reddish; legs yellowish-brown or greenish-brown, hind knee black; abdomen yellowish-brown ventrally and laterally, dorsally dark reddish-brown to yellowish-brown.

Other specimens examined (by Kevan and/or Vickery): "Ponape, N. end Takai Mwas Ridge above Lukhe, ca. 350m, 6°55'08" N, 158°12'03" E, 26 Feb/6 Mar 1987, loc. # 15, (Otte, Alexander, Flinn)", "captured in forest", 1 ♂ (ANSP); as above but 350m, 6°56'38" N, 158°15'00" E, 26-II/5-III-[19]87, Otte, Alexander, Flinn, loc # 16, 3 ♂, 1 ♀ ANSP); Ponape Isl., gauging station on west-most branch of Pilen Kiepw River, s. of Kolonia, ca. 120m, ca 120m, 6°55'05" N, 158°12'03" E., 20 Feb/6 Mar., loc # 15, Otte, Alexander, Flinn, captured in forest, 3 ♂♂, 1 ♀ (ANSP); Ponape, N end Takai Mwas Ridge above Lukhe, ca. 350m, 26-II/5-III-1987, 6°20'30" N, 158°15'00" E. (Otte, Alexander, Flinn), 1 juv. ♂, 1 juv. ♀ (UMMZ).

Ocica species were not reported in Micronesia prior to the work of English (1978), followed by Kevan (1987).

Ocica karschi (Karny)

Dasyphleps karschi Karny 1920: 122-123; Holotype [in good condition, right wings spread], labelled as follows: (1) Carolinen Finsch.; (2) 6 23/II 80 (with double black border); (3) 6222; (4) Kushai (Carolinen-Inseln); (5) Dr. Otto Finsch (23/II 1880); (6) *Dasyphleps* nov. gen. [last three cut from copy of Karsch's (1891) paper in which he describes the genus in a key] (ZHMB).

Pseudophyllinae [sic - sp. (2)]; [H.K.] Townes, 1946: 30 ("a large striking species common among ferns in the Kusaie mountains").

Ocica sp. near *O. ponapensis*; English 1978: 162 (Kusaie Island).

Ocica karschi; Kevan 1987: 307 (table 3(b)).

Specimens examined: *Carolines*, Kosrae [formerly Kusaie] Island: Mt. Matante, 580m, II-1953, J.F.G. Clarke, 4 ♂♂, 1 ♀ (2 USNM 2 BPBM, 1 ♂ to LEMQ); same, 26-III-[19]53, 1 juv. ♀ (BPBM); Tafunsak, 1m, 2-II-1953, J.F.G. Clarke, 1 ♀ (BPBM); Kusaie Hill 541, 265m, 31-I-1953, J.F.G. Clarke, 1 last instar juv. ♀ (USNM); Malem, 1m, 26-II-1953, J.F.G. Clarke, 1 ♂ (BPBM); Mt. Tafeyat, 21-VIII-1946, [H.K.] Townes, 1 ♂ (USNM). Not seen, (Dr. Ilse Schreiner *in litt.*, 8-IX-1986): Kosrae, Malem, 23-XI-1984, D. Nafus, 1 ♂ (ESUG).

This species is very different from *O. ponapensis* in several respects but is similar in others. The space between the antennal scrobes is wider in *O. karschi* and the fastigium of the vertex is more pronounced; the male sun genital plate is triangularly excised in *karschi* but roundly excised in *ponapensis*. The body color of both male and female of *O. karschi* is green but in *O. ponapensis* males are

generally brown and females are usually brown or greenish-brown. The stridulatory mirror of *O. karschi* is slightly broader.

A juvenile male from the Marshall Islands (Kwalein Atoll, 16–VII–[19]46, Townes 1689) is at hand. It is labelled *Ocica* sp. nov., nr. *karschi* Karny, D.K.McE. Kevan 1986. This is the only specimen of the genus seen from the Marshall Islands.

Segestes Stål

Segestes Stål 1877: 45. Type species *Segestes vittaticeps* Stål.

Segestes unicolor Redtenbacher

Segestes unicolor Redtenbacher 1892: 199; holotype ♀, “Pelew Inseln” (Palau) coll. Brunner von Wattenwyl (NHMW)

Segestes unicolor: Kirby 1906: 359; 1916: 12; Karny 1924: 150; Kastner 1934: 48; Esaki 1943: 841, 842, fig. 37; C. Willemse 1951: 342, 356; Oakley 1953: 182 Palau, minor damage to coconuts); Dumbleton 1954: 69 (on coconut in Carolines); C. Willemse 1961: 108; Lever 1969: 26 (Palau Is., damaging coconuts); Owen 1971: 1 (on coconut in Trust Territory); F. Willemse 1977: 230; Kurian et. al, 1979: 46 (pest of coconuts); Kevan 1987: 307.

Specimens examined: *W. Caroline Is.*, Palau Islands: 1 ♀, Angaur, southern part, II-1938, T. Esaki (KUEC); 1 ♂, Koror Ngarmid, 22-27-VIII-1949, A.R. Mead (BPBM); 1 ♂ Babeldaob, Ngaremediu - Emertao, 12-II-1938, T. Esaki (KUEC); 1 ♀, Babeldaob - Ngaremediu, 30m, 21-XII-1952, J.L. Gressitt (BPBM); 1 juv. ♀, Koror, at light, 8-III-1949, K. Maehler (USNM); 1 very small juv. ♀, Babeldaob I., XI-1951, J.L. Gressitt (BPBM); 1 small juv. ♀, Babeldaob I., E. Ngatpang, 65m., 10-III-1952, J.L. Gressitt (BPBM); 1 ♀, Koror I., 28-XI-[19]53, on banana (LEMQ); 1 ♂, Koror I., 30-VIII-1953, J.W. Beardsley (BPBM); 1 ♂, Koror I., 29-VII-1952, at light (BPBM); 1 ♀, Koror I., 17-VII-[19]53, sugarcane, (LEMQ); 1 ♂, Koror I., 14-XII-[19]53, at light, J.W. Beardsley (BPBM); 1 ♀, Angaur I., 12-XII-1951, J.L. Gressitt (BPBM); 1 ♀, Angaur I., IV/V-1949, D.B. Langford (LEMQ); 1 ♂, [badly damaged], Kayangel Atoll, ex *Halycon gizzard*, 25-XI-1951, J.L. Gressitt (BPBM); 1 ♂, 1 ♀, 2 juv. ♂♂, 1 juv. ♀, Arakabesan I., Palau Pacific Resorts, 19/26-II-1987, Otte, Alexander, Flinn (UMMZ); 1 ♂, Koror, 20-X-1971 (WLNC); 1 ♂, Koror, 1-XII-1971, M.R. Lundgren (WLNC); 1 ♀, Palau I., Ogiwal, 10-IV-1936, Z. Ono (BPBM); 2 ♂♂, Koror I., 20-VII-1946, R. Oakley (1 BPBM, 1 USNM).

PHANEROPTERIDAE

PHANEROPTERINAE

Phaulula Bolívar

Phaulula Bolívar 1906: 307 (Replacement name for *Phaula* Brunner von Wattenwyl 1878: 167 [Type species *Phaula laevis* Brunner v. W.]; preoccupied by *Phaula* Thompson 1857: 303.

Phaulula trukensis Willemse

“Other Phaneropterinae”; Townes, 1946: 30 Part, [Marianas, Palau Is., [part] Kusaie).

“Phaneropterinae; Beller 1948: pt. I, p. 4 [=p. 7] Guam, on *Terminalia Catappa* Linne, attributed to Oakley, 1946 not seen.

Phaulula trukensis Willemse 1951: 332, 333, 356, pl IX, figs. 3-5; Holotype ♂, Allotype ♀, Truk Island, Dublon, 25-XII-1935, coll. Z. Ono (BPBM).

Phaulula trukensis; English 1978: 170 (Truk Island).

Phaulula trukensis: [emended name]; Kevan 1987: 307, (table 3 b): (Marianas, W. Carolines, Palau Is., C. Carolines (Truk).

Name emended as Willemse used “Truk” not “Trukk” as name of island.

Specimens examined: *West Caroline Is.*, Palau Is: Peleliu, Amiangal Mt., 23-XII-[19]52, J.L. Gressitt, 1 ♂, 1 ♀ [♂ with R1 and R2 having common stem on right tegmen (BPBM, ♂ to LEMQ); Koror I., at light, 13-VIII-[19]52, J.W. Beardsley, 2 ♂♂ (BPBM, 1 to LEMQ); Kayangel Atoll, 15-XII-[19]52, sweeping, J.L. Gressitt, 1 ♂ (USNM); Koror (NE) 40m, limestone ridge, 14-XII-[19]52, J.L. Gressitt 1 ♂ (BPBM); Auluptágel (Aurapushekaru) I., IX-1952, N.L.H. Krauss, 1 ♂ (BPBM); Koror I., 24-II-1953, J.W. Beardsley, 1 ♀ [small] (BPBM); Koror I., 1-X-[19]52, J.W. Beardsley, 1 ♀ [small] (BPBM); Koror I., 15/25-III-1948, K.H. Maehler, 1 ♀ [small] (USNM); Koror I., IX-1952, N.L.H. Krauss, 2 ♀♀ [small] (BPBM); Koror I., ex *Terminalia*, 22-XI-[19]52, J.W. Beardsley, 1 ♀ [small] (BPBM); Koror I., 8/14-II-1952, M.M. Ross, 1 ♀ [small] (LEMQ); Koror I., 26-XI-[19]47, H.S. Dybas, 1 ♂, 1 ♀ [small] (FMNH); Koror I., IV/V-2949, D.B. Langford, 2 ♂♂ [very poorly preserved] (LEMQ); Koror I., 15/25-III-1948, K.L. Maehler, 1 ♀ (LEMQ); Koror I., 17-VII-[19]46, Townes, 1 ♀ (USNM); same, 20-VII, 1 juv. ♂ (USNM); Angaur I., 3-II-1948, H.S. Dybas, 1 ♂ (BPBM); Angaur I., 4-II-1948, H.S. Dybas, 1 ♀ (FMNH), 1 ♀ (LEMQ); Angaur I., Saipan/southern cape, 11-III-1936, T. Esaki, 1 ♀ (LEMQ); Babeldaob I., Ulimang, 11-XII-[19]47, H.S. Dybas, 1 ♀ (USNM); Peleliu, E coast, 31-I-1948, H.S. Dybas, 1 ♂ (LEMQ); Babeldaob I., Ngiwal [?], XI-[19]51, J.L. Gressitt (BPBM); Babeldaob [-thuap] I., Ngarard-Ngarasumao [?], 7-II-[19]38, T. Esaki (KUEC); Babeldaob I., 20-VII-[19]46, Townes 2 ♂♂ (USNM); Arakabesan, 18-VII-[19]46, Townes, 1 ♂, 1 ♀ (USNM); *Mariana Is.*, Guam: Mt. Akfan [= Ajayan ?], IV-1946, N.H.L. Krauss, 1 ♂ [small] (BPBM); Guam I., Mt. Lamlam, II-[19]58, N.H.L. Krauss, 1 ♀ (BPBM); Guam I., 1924 Hornbostel coll, 1 ♀ [small] (BPBM); Guam, 11-XI-[19]52, J.W. Beardsley, 1 ♀ (BPBM); Guam, Oca Point, 5-VI-[19]45, H.S. Dybas, 1 juv. ♀ (FMNH); Guam, Pitidian P[oin]t, 22-IV-1936, E.H. Bryan Jr., 1 ♂ (BPBM); Rota I., Rota, 10-VI-[19]46, Townes, 1 ♀ (USNM); Rota I., Rugi [?], 29-VI-[19]46, R.G. Oakley, 1 ♀ (USNM); Agiguan I., 7/9-VIII-[19]54, C.J. Davis, 1 ♀ (BPBM); Tinian I., 9-VI-[19]46, H.K. Townes, 1 ♀ (USNM); Saipan I., Donni-Sadog Tase, 7-V-1940, Yasu & Yoshi 1 ♀ (KUEC); Tinian, 11-XI-1952, at light, J.W. Beardsley (BPBM, 1 ♀ ex kept LEMQ); Orote Pen[insula], 27-IX-[19]36, O.H. Swezey, 1 ♂ (BPBM);

Saipan, Prasan [= Puntan ?], 15-VI-[19]36, R.L. Usinger, 1 ♀ (BPBM); *Kusai* [=Kosrae] Is. Mt. Talefeayat, 90m., 7-II-[19]53], J.F.G. Clarke, 1 ♀ [both tegmen with R1 & R2 having common base - RARE] (USNM); same, 1 ♂ [tegmina normal] (LEMQ ex PSBD); Matanluk (Yapan), 23-I-1953, alt. 25-50m, J.L. Gressitt, 1 ♂ (BPBM); Wakap. 290m, 17-IV-1953, J.F.G. Clarke, 1 ♀ (BPBM); Lele I., Lele Harbor, 21-VIII-[19]46, Townes, 1 ♂ [rt. tegmen, R1 = R2 with common stem] (USNM); Lele I., 20-VIII-[19]46, Oakley, 1 ♂, 1 juv. (USNM); Lelu, 22-XI-1984, D. Nafus, 1 ♂ (ESUG); Malem, 20-XII-1937, T. Esaki, 1 ♂ (KUEC); *Chuuk Is.*, Udot Is., Chuuk Atoll, 25-V-[19]46, H.K. Townes, 1 ♂ (USNM); Dublon, Chuuk Atoll, 10-II-[19]48, K.L. Maehler, 1 ♀ [very small [topotype] (USNM); Moen, 24-IV-1949, R.W.L. Potts, 1 ♀ very small] (CASC).

Most of the series have separate R1 and R2 but a small number of both sexes have right or left (2 ♀♀ have both) tegmen with R1 and R2 having a common stem, as in Karny's 1928 genus *Dichrophaula* (known only by ♂♂ - if Willemse's *D. inexpectata* which is a *Platycaedica*) is excepted.

The type of *Dichrophaula*, *D. longipes* Karny 1928, has a short excised bilobed supra-anal plate, not one that is produced into a process (often elaborate) as in *Phaulula*. Exceptions are "*D.* *galeata* (Hebard 1922) and "*D.* *leefmansii* Karny 1928, which should be removed from the genus [leaving *longipes*, *gracilis* (Brunner von Wattenwyl), *habroides* Karny 1928, *sumatraia* (Brunner von Wattenwyl 1891) and ? *cornuta* (Brunner von Wattenwyl 1891). *Phaula peregrina* Brunner von Wattenwyl 1891 was also only dubiously placed here but would seem to be Polynesian - no need to rename it for *Phaula* (= *Phaulula*) as ♂ subgenital plate is produced (Brunner's key says branched radius). *Ph. gigantea* Key ? 1923 was also put in *Dichrophaula* but we have not yet seen this reference.

The material of *Phaulula trukensis* makes it obvious that the forked R1 (i.e., common base for R1 and R2) is not a valid generic character even if it usually can be so considered, so either *Dichrophaula* falls in synonymy OR remains only for species with bilobed supra-anal plate [? ♀ always with venation character though possession of it is no criterion]. The latter course is adopted here as a whole revision is needed.

Now, with the anomalously veined *Ph. trukensis* we have something very like *Dichrophaula* [now *Phaulula*] *leefmansii* from the Talaud Islands [virtually the nearest to the Palaus to the southwest]. This is said to occur also in Timor and furthermore, if the ventral character is omitted, *leefmansii* is very like *Ph. laevis* from the Philippines. *Ph. laevis* has a less down-curved ♂ supra-anal plate than either *leefmansii* or *trukensis* and a bit stouter end of plate than the latter. *Ph. leefmansii* has a shorter end to ♂ supra-anal plate (at least in view shown, but it curves down almost as much). *Ph. malayica*, from Riau Islands [Selat, Indonesia], is somewhat similar in ♂ but plate in that species is virtually not curved down and is more slender (though one small ♂ from Chuuk is unusually slender) and does not have the angles at the tip (not brought out in Willemse's figure).

We will continue to treat them separately for now: borders of radial vein differ in proximity to each other and in obliqueness to the same extent. There is considerable variation in size, a few specimens from Chuuk being unusually small (in comparison with others from Chuuk) as are some from the Marianas. We think there is no need (no real cause) to invoke subspecies.

Phaulula carolinensis Willemse

Phaulula carolinensis Willemse 1951: 333-356, pl. x, figs. 6-9. Holotype ♂, Ponape Island, Pounaran - Neipip, 3-VII-1936 (BPBM); allotype ♀, same but Reitae, 3-VII-1936 (BPBM); paratype ♀. same, Shikere, 15-3-36, coll. Z. Ono. [localities not found, given as in Willemse, 1951].

Phaulula carolinensis; Kevan 1987: 307.

Willemse (1951) says that ♂ supra-anal plate is like that of *Ph. ensifera* (Philippines) but rather shorter - it is in fact much shorter as in that species it is very exaggerated, - neither is it curved downward as here. We believe it is nearest to *Ph. rugulosa* from the Philippines but the cerci differ.

Specimens examined: *Ponape I.*, Colonia, 8-III-[19]48, nr. sea level, at light, H.S. Dybas, 1 ♂ (FMNH); Colonia, 14-I-1953, J.F.G. Clarke, 1 ♂ (BPBM); Auak, 12-VIII-[19]46, Townes, 1 juv. ♀ (USNM). Kolonia, Mt. Sankak, 14-VII-1939, [no collector name], 1 ♀ (LEMQ); Nanponmd, 11-I-1953, J.F.G. Clarke, 1 ♂ (USNM); Mt. Tamatamanasakir, 15-I-1953, light trap, J.L. Gressitt, 1 ♂ (BPBM), 1 ♂ (LEMQ); "Ponape Isl., N. end of Ponape, Takai Mwas Ridge above Lujka, ca. 350 m, 6°56'38" N, 158°15'00" E., 26 Feb.- 6 Mar. 1987, loc. # 16 (Otte, Alexander, Flinn)", "captured in forest", 1 ♂, 1 ♀ (ANSP).

Phaulula malayica (Karny)

Phaulula malayica Karny 1928:

There is 1 ♂ in USNM with the Micronesian specimens, labelled simply "Quarantine Pearl" [presumably = Pearl Harbor, O'ahu, Hawai'i] det A.B. Gurney, "*Platycaedica* sp." [but is not that genus as R1 is not forked]. Male terminalia agree very closely with figures of *Ph. malayica* Karny from the Riau Archipelago. The specimen is rather similar to the type of that species, but as its origin is unknown, we need say no more.

Phaulula phaneropteroides Brunner von Wattenwyl

Phaula phaneropteroides Brunner von Wattenwyl 1891: 81.

Described from Manila. It is included here as it was mentioned in a questionable handwritten note by Kevan. No data were included. No additional information has been found and the presence of *Phaulula phaneropteroides* in Micronesia must be considered as possible but doubtful.

Platycaedica Hebard

Platycaedica Hebard 1922: 167. Type species *Platycaedica obiensis* Hebard.

Platycaedica inexpectata (Willemse)

Phaula [sp.]; Esaki, 1943: 843 (from Palau Is.)

“Other Phaneropterinae”: Townes, 1946: 30 (Palau Is., (part).

Dichophaula inexpectata Willemse 1951: 335-337, 356, pl. X, figs. 10-12.

Holotype ♂, Caroline Islands, Kusaie Island - Mt. Wakapp, 2-1-36 [=1-II-1936] (BPBM); paratype, Palau Is., iv-8-36 [=8-IV-1936], Z. Ono (BPBM).

Dichophaula inexpectata; English 1978: 174 (endemic to Micronesia, found on Kusaie and Palau).

Platycaedica inexpectata; Kevan 1987: 307 (table 3b) (Palau Islands).

“*Dichophaula inexpectata* Willemse” was recorded by English (1978) but no specimens were listed.

Specimens examined: *Palau Is.*, Koror I., 12-VIII-1952, at light, J.W. Beardsley, 1 ♀ (BPBM); Koror I., 13-VIII-1952, at light, J.W. Beardsley, 1 ♂ (BPBM); Koror I., 15/25-III-1948, K.L. Maehler, 1 ♂ (LEMQ); Koror I., Ngarmid, 23/27-VIII-1949, A.R. Mead, 1 ♀ (BPBM); Koror I., 18-XI-[19]47, H.S. Dybas, 1 ♂ (FMNH); SW Koror I., 25m, 12-XII-1952, light trap, J.L. Gressitt, 1 ♀ (USNM); Koror I., 20-VII-1946, Oakley, 1 ♂ (USNM); Korror [sic], Arabaketsu, 11-XII-1937, Shiro Murakami, 1 ♂ (KUEC); Arakabesan, 18-VII-1946, Townes, 1 ♀ (USNM); Babeldaob I., E. Ngatpang, 65m, 7-XII-[19]52, J.L. Gressitt, 1 ♂ (BPBM); same, 8-XII-[19]52, 1 ♂ (LEMQ); same 9-XII-[19]52, 1 ♂ (LEMQ); NW Auluptagel, 25m, 13-XII-[19]52, J.L. Gressitt, 1 ♂ (USNM); Babeldaob I., Ngiwal, 26/29-X-1951, J.L. Gressitt, 1 ♂ (BPBM); Babeldaob I., 12-XII-1947, H.S. Dybas, 1 ♂ (FMNH); Babeldaob I., Ulimang, 11-XII-1947, H.S. Dybas 1 ♀ (BPBM); Babeldaob, 26-VII-1946, Townes, 1 ♀ (USNM); Angaur I., 11/12-VIII-1945, H.S. Dybas, 1 ♀ (FMNH), 1 ♀ (LEMQ); Peleliu I., 12-VIII-[19]45, collected at light, E. Hagen, 1 ♂ (BPBM); Peleliu I., E. coast, 31-I-[19]48, H.S. Dybas, 1 ♂ (FMNH); same, 26-I-[19]48, 1 ♀ BPBM); Peleliu, 31-VII-1945, at light, H.S. Dybas, 1 ♂ (LEMQ); Palau: Peleliu, 19/26- Feb 1987, Otte, Alexander, Flinn, 1 juv ♀ (UMMZ); Peleliou [sic], Akarokuru, 12-VIII-1939, T. Esaki, 1 ♀ (KUEC); “Palos (Peleio) Inseln 577” [no collector, no date] 1 ♂ (ZMHB).

Dichophaula Karny (1928) was described from males only and differed from *Phaula* (= *Phaulula*) in R1 being branched or, more precisely, R1 and R2 having a common stem, but the exterior tympanum is closed.

Platycaedia Hebard (1922) was described from female only; it also has R1 branched but the exterior tympanum is open.

Dichophaula wisfliarte, [described from a male], now known from both sexes, and the female has a very short ovipositor similar to *Caedica* and *Platycaedica*. There is no median projection of the supra-anal plate of the males like in most species of *Dicophaula*. The outer tympanum in that genus is couchi-

form (covered) but here it is open as in *Platycaedica*. Hebard included, besides the type species of *Platycaedica*, *P. obiensis* Hebard 1922, also *Caedica major* Brunner von Wattenwyl from Cape York, Australia and *Caedica hespes* Brunner von Wattenwyl from Amboina.

Note: *Dichophaula leefmansii* [only the male is known] is a *Phaulula* in the form of its supra-anal plate. Most of the species of the genus have short supra-anal plates. They should remain in *Dichophaula* but *leefmansii* should be moved to *Phaulula* - it will be necessary to modify the description to take in the forked R1 in some because 2 females of *Phaulula trukensis* have forked R1, though all the rest have not.

Elimaea Stål

Elimaea Stål 1874: 11, 27. Type species *Phaneroptera subcarinata* Stål.

Elimaea punctifera (Walker)

Phaneroptera punctifera Walker 1871: 40.

Elimaea punctifera: Kevan 1987: 307.

This species is an accidental introduction, 1 female, Mariana Islands, Guam Island, 28-VII-195-, at light, A.J. Cruz, in the Bishop Museum, Honolulu. It came, presumably, by air from Hawaii where it is an established introduced species. Kevan (1990) considered that it reached Guam from Hawaii rather than directly from southeast Asia. It is not known at this time if it became established and is still present on Guam.

Holochlora Stål

Holochlora Stål 1874: 17, 38. Type species *Holochlora venosa* Stål.

Holochlora fuscospinosa Brunner von Wattenwyl

Holochlora fuscospinosa Brunner von Wattenwyl 1891: 92-93.

Holochlora fuscospinosa; Kevan 1987:307.

The Lyman Museum has specimens from Luzon (Los Baños, P.I., Elev. 100m., 4-VII-[19]62. R.C. Canicosa, 1 ♂, 1 ♀) and the specimens listed below have been compared with them [by Kevan]. Kevan (1990) reported this species as established in Guam, Marianas Islands.

Specimens examined: *Guam*: 1 ♀, "Mangilo, Guam, 1.5.1972 [5-I-1972]/R. Muniappan, collector/ Host unknown/ Ex A.A. Laplante Collection, BISHOP MUSEUM, Acc. # 1977.84"; 1 ♀, "Yigo, Guam, 2.15.72 [15-II-1972]/ Dr. Sato / Host light / A.A Laplante Collection BISHOP MUSEUM Acc. # 1977.84"; 1 ♂, same as second female. [Note: the first listed female has been retained in the Lyman Museum].

Holochlora nawae Matsumura and Shiraki

Holochlora nawae Matsumura and Shiraki 1908: 17.

Holochlora nouas [sic]; Matsumura 1914: 119 (Bonin Islands)

Holochlora nawae; Furukawa 1930: 232 (Bonin Islands).

No specimens of this species were examined.

Casigneta Brunner von Wattenwyl

Casigneta Brunner von Wattenwyl 1878: 63. Type species *Locusta* (*Phaneroptera*) *loliifolia* Haan.

Casigneta palauensis Vickery & Kevan sp. nov.

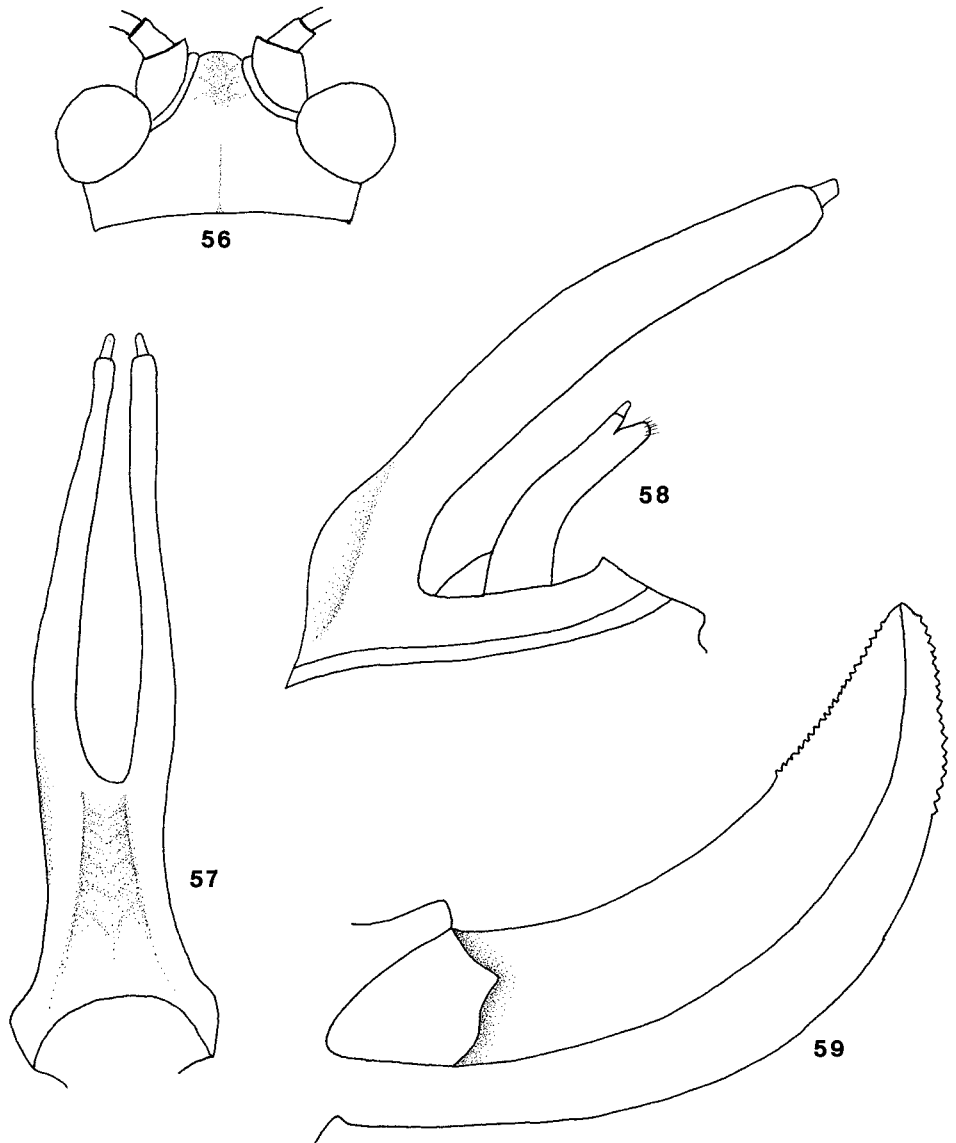
Casigneta n. sp., "near *cochleata* Br. v. W."; Kevan 1987: 307.

Casigneta palauensis Vickery & Kevan. Holotype ♂, "Palau Is., Koror I., Aug. 1952. J.W. Beardsley (BPBM); Allotype ♀, same data as holotype; (BPBM).

Description: Holotype ♂: Body robust (14.6); yellowish green; *head* width 3.1, length 1.6; eyes protruding, very prominent (Fig. 56), brownish black; antennae very long, left entire, right broken, filiform, segments nearly four times longer than wide, unicolourous; face straight, at right angles with dorsum, palps pale, slender; lateral ocelli pale, facing laterally, each on raised tubercle, these with elongate groove between; *thorax*: pronotum width 3.4, length 4.6, plain dorsally with U-shaped sulcus at middle on posterior third, not reaching downward bend, bend cricket-like, nearly 90°; lateral carinae obsolete; anterior margin nearly straight, posterior margin broadly rounded; laterally with anterior margin expanded below, ventral margin broadly rounded to deep incision at base of tegmen; tegmina long, 32.3, pale green, densely reticulated, dorsally with brownish infusion at stridulatory apparatus; stridulatory vein oblique 1.5; wings extend 2 mm beyond tegmina; legs: right foreleg missing beyond femur, all other legs broken off but both middle legs and right hind leg glued to card (on pin); femora: fore 6.1, mid 8.8, hind 21.2; tibiae: fore 8.0, mid 10.3, hind 24.7; *abdomen*: short, deep, pale except brownish beneath and on elongate subgenital plate (7.3mm), subgenital plate bifurcate for much of the length (Fig. 57), truncated apically, each part with a small truncated conical style; cerci thick, hairy, apically with finger-like projection (Fig. 58).

Allotype ♀: Similar to male but larger (20.0), uniform yellowish green, tegmina pale green, abdomen and legs brownish; *head* 3.1 wide, 1.6 long; both antennae broken; *thorax*: 3.4 wide, 4.6 long; tegmen 33.0; legs, femora: fore 6.7, mid 9.3, hind 23.5; tibiae: fore 7.7, mid 10.7, hind 27.5; left hind leg missing; *abdomen*: ovipositor broad, not bent but strongly curved upward (6.3) (Fig. 59), armed with very fine teeth on both margins near apex.

This species agrees reasonably well with the brief description of *cochleata* but it differs from Karny's (1926) description and figures the even longer bifurcation of the male subgenital plate (with truncated ends to the bailes - not rounded) and the more definite, much reduced style. Nor does it fit with any other species listed in Karny (1928).



Figures 56-59. *Casigneta palauensis*: 56, male head; 57, male subgenital plate, ventral; 58, male subgenital plate, lateral; 59, ovipositor.

The male cerci are quite peculiar, each ending in a finger-like ventrolateral projection - not bidentate as mentioned by Brunner von Wattenwyl (and not mentioned at all by Karny 1926).

Paratypes: *Palau*, Koror I., V-1949, [no collector], 1 ♀ (LEMQ); Koror, 15/25-III-1948, K.L. Maehler, 1 ♂ [rather small - ex alcohol] (USNM); Koror I.,

20-VII-1946, Oakley, 1 ♂ [ex alcohol] (USNM); Koror I., 18-XI-1947, H.S. Dybas 1 ♂ [very poor specimen, teneral and discoloured] (FMNH); “Malakal Isl., Palau/ Caroline Islands / 28 Nov. 1986 / Donald Nafus”, (ESUG). Arakabesan I., 7°20'35" N, 134°27'10" E, 19-26 Feb. 1987, el. 0-5m. # 9 (Otte, Alexander, Flinn), captured in forest , 1 ♀ (ANSP).

Ducetia Stål

Ducetia Stål 1874: 11, 26. Type species *Locusta japonica* Thunberg.

Ducetia japonica (Thunberg)

Locusta japonica Thunberg 1815: 282.

Ducetia japonica; Matsumura 1914: 119 (Bonin Islands); Kevan 1987: 307

Ducetia japonica [sic]; Furukawa 1930: 232 (Bonin Islands).

No specimens seen.

Isopsera Brunner von Wattenwyl

Isopsera Brunner von Wattenwyl 1878: 22, 218. Type species *Isopsera pedunculata* Brunner v. W

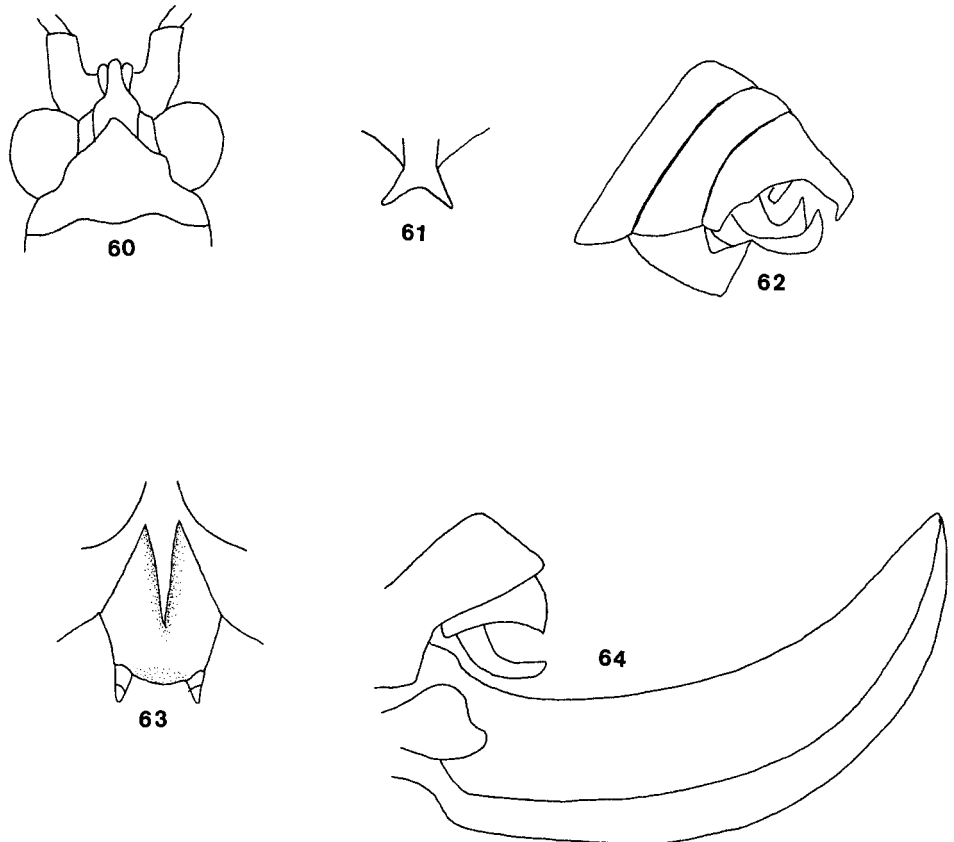
Isopsera yapensis Vickery & Kevan sp. nov.

Isopsera n. sp. 1; Kevan 1987:307.

Isopsera yapensis Vickery & Kevan; Holotype ♂, Yap I. Yap, Hill behind Yaptown, 50m, Dec 22, 1952”; Light trap, Pac. Sci. Bd., J.L. Gressitt (USNM); Allotype ♀, Yap I., Yap Grp, Carolines, Oct. 1952. N.L.H. Krauss (BPBM)

Description: Holotype ♂: small (12.9), pale brown tinged with green on tegmina; *head*: eyes prominent, protruding, dark mauve, pale behind, 2.5 across eyes, 1.3 between eyes, antennae filiform, broken; fastigium narrow ridged, with median channel (Fig. 60), frons convex, antennal sockets ringed with circular ridge; palps long, slender, pale; *Thorax*: pronotum marked only by small V-shaped median sulcus at posterior third; pronotum 1.8 wide, 2.7 long, laterally diverging to rounded posterior margin, lateral lobes rounded, dorsal sinus deep; tegmina 19.6, stridulatory vein small, oblique, densely reticulated, main longitudinal vein conspicuously green; wings barely surpassing apices of tegmina; legs: fore and middle femora not sulcate, spineless; hind femur with short posteriorly directed spines on apical half on both carinae; femora: fore 3.7, mid 5.5, hind 11.5; tibiae: fore 4.0, mid 5.8, hind 12.7 (left hind leg missing; *abdomen* unicolourous pale brown or with few darker spots; supraanal plate drawn out as process divided to two acute apices (Fig. 61); cerci curved overlapping, bulbous preapically with acute hooked apices (Fig. 62); subgenital plate distinctive, folded sharply upward with paired conical projections (Fig. 63); basally divided, elongate V-shaped.

Allotype ♀: Similar in most respects to male but larger (18.4); faded to pale brown, probably due to alcohol immersion; *head* 2.9 across eyes, these prominent,



Figures 60-64. *Isopsera yapensis*: 60, male, head, dorsal; 61, male supra-anal plate, dorsal; 62, male terminalia, lateral; 63, male subgenital plate; 64, ovipositor.

narrow, 1.2 between eyes, short 1.5, with fastigial furrow; *thorax*: pronotum 2.3 wide, 3.2 long; tegmen long 24.1; legs, femora: fore 5.2, mid 6.2, hind 13.8; tibiae: fore 5.3, mid 7.3, hind 14.6; *abdomen*: ovipositor 6.2, strongly curved upward, serrated on both upper and lower valves on apical third (Fig. 64).

Paratypes: 1 ♂, *Caroline*, Yap, Dugor-Rumu, 10m, 29-XI-, J.L.Gressitt (LEMQ); 1 ♀, same data as holotype (LEMQ); 1 ♀, (ex alcohol) Yap, Gagil Is., 14-VII-46, R.G. Oakley (BPBM); 1 ♀ (ex alcohol), Yap, Yap I., 13-VII-46, R.G. Oakley (BPBM); 1 ♂, “Colonia, Yap/ Caroline Isl. / 15 Nov. 1986 / Donald Nafus” (ESUG).

The female paratype is similar to the allotype in nearly all respects, except that the tegmina are brown at base with broad brown incursion medially, the remainder pale green. The antennae and hind tibiae also are green.

This is a small species with the male subgenital plate bearing processes but not styli, as in *I. astyla* Karny 1926, from East Java. The male supra-anal plate is

very characteristic, drawn out as a process. The tympana are fully open on both sides and the ovipositor is normal as in other *Isopera*. The fore and middle tibiae, however, are not really quadrate or grooved.

Isopera palauensis Vickery & Kevan sp. nov.

Isopera n. sp. 2: Kevan 1987: 307.

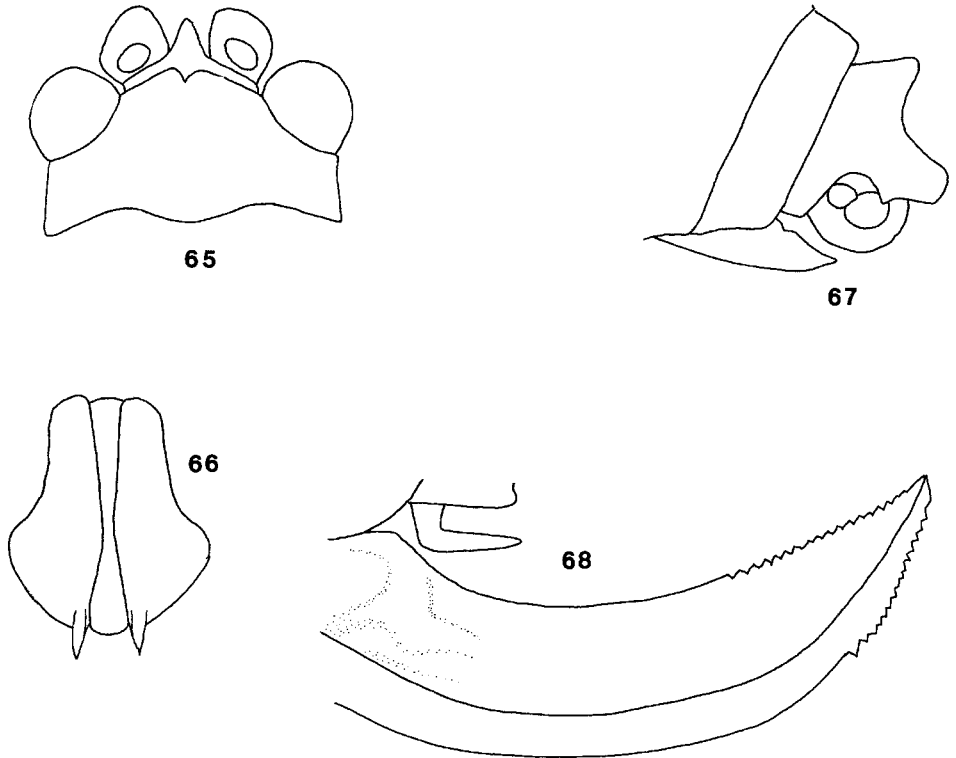
Isopera palauensis Vickery & Kevan; Holotype ♂, (1) "Peleliu I., north central Pelew [=Palau] Islands, VII.31.45 [=31-VII-1945]; (2) col. and pres. by Henry S. Dybas Lot 2388"; (3) "At light" (FMNH); Allotype ♀, Babeldaob [sic] Palau/ Caroline Islands/ 22 Nov. 1986/ Donald Nafus (LEMQ).

Description: Holotype ♂: body length 12.3 but longer when alive as abdomen badly shrivelled; entirely pale brown, but probably faded due to immersion in ethanol or other preservative; *head* convex, extended forward between antennal bases (Fig. 65), width 2.6, length 1.3; eyes large, protuberant. reddish brown, frons slightly convex, pale, median ocellus orange, palps slender, brownish, maxillary palps have small dark apical knobs; antennal bases enclosed by strong internal and ventral ridge; *thorax*: pronotum elongate, length 2.7, width 1.9, not wider posteriorly; incurved anteriorly, broadly rounded posteriorly, lateral lobes rounded, tegminal sinus nearly right-angled; tegmina long, 20.6, with very fine reticulation, principal vein pale; legs; fore and mid tibiae not sulcate, fore 5.3 and middle 6.2 tibiae with few small ventral spines but no apical spurs, fore tibiae with elongate open spiracles on both faces; hind femur elongate 12.3, with few very short ventral spines near apex, hind tibia 14.9, has short spines throughout and two very small apical spurs; tarsi short; *abdomen*: supra-anal plate deep, extended apically, concave and narrow apically (Fig. 66), ventrally strongly concave on basal half (Fig. 67); subgenital plate divided as two elongate triangles with small apicoventral projections.

Allotype ♀: similar to holotype but slightly larger, body length 15.2; pale brown with tiny irregularly shaped red dots on pronotum, abdominal terga and few on hind femora near base, and very few widely scattered spots on other femora; tegmina green dorsally and apically; *head*, length 1.6, width 2.8; *pronotum*, 2.3 wide, 3.4 long, tegmen 23.5, legs; femora: fore 4.3, mid 6.6, hind 14.0; tibiae: fore 5.3, mid 7.3; hind 16.9, wing extends beyond tegmina by 1.9; *abdomen*, supra-anal plate short, sinuate; cerci short, curved; subgenital plate triangular, ridged; ovipositor evenly curved upward 6.4 (Fig. 68).

Paratypes: Koror I., 1 ♂, Palau Islands, 15-II-[19]48; Pacific Sci Board Ent. Surv. of Micronesia, H.S. Dybas leg (USNM); 1 ♂, Peleliu I., Palau Islands, N.E. coast, 28 Jan. 1948; Pacific Sci. Board Ent. Surv. of Micronesia, H.S. Dybas leg (BPBM). 1 ♀, teneral, mangled, Micronesia, Caroline Isl., Palau Group, Peleliu, 6°59'21" N; 134°14'45" E. 19-26 Feb. 1987, loc. # 12, (Otte, Alexander & Flinn), captured in forest, (ANSP).

Note: All females have the tiny red spots as described for the allotype. The male (holotype) does not have such spots.



Figures 65-68. *Isopsera palauensis*: 65, male, head, dorsal; 66, male supra-anal plate, dorsal; 67, male terminalia, lateral; 68, ovipositor.

Phaneroptera Audinet-Serville

Phaneroptera Audinet-Serville 1831: 413. Type species *Gryllus falcata* Poda

Phaneroptera furcifera Stål

Phaneroptera furcifera Stål 1860: 318.

Phaneroptera furcifera; Dumbleton 1954: 69; Johnston 1964: 3; Kevan 1987: 307; 1990: 106

Specimens examined: *Volcano Is.*: [BPBM unless indicated otherwise], *Iwo Jima*, 10-VI-[19]58, F.M. Snyder, 4 ♂♂, (1 ♂, (LEMQ); *Mariana*: [all BPBM unless indicated otherwise] *Guam*, Guam I., Hornbostel, 1923, 1 immature 1 ♂, 1 ♀, 9 juv.; Talofofu Bay, 10-V-1945, J.L. Gressitt, 1 ♂; Talofofu, 4-VIII-[19]45, H.S. Wallace, 2 ♀♀; Tumon Bay, IV-1946, N.L.H. Krauss, 1 ♀; Park below Is[land] Command Area, Agana, 30-VI-[19]45, H.S. Wallace, 2 ♀♀; Barrigada, 26-XI-[19]52, J.L. Gressitt, 1 ♂, 1 ♀; Pt. Ritidan, 6-VI-1945, G.E. Bohart & J.L. Gressitt, 2 ♂♂, 1 ♀ (USNM); Pt. Ritidan, X-1952, N.H.L. Krauss, 1 ♂, 1 ♀; Pt. Oca, 1-VI-[19]45, light trap, G.E. Bohart, J.L. Gressitt, 2 ♂♂, 1 ♀ (USNM); Pt. Oca, 3-VI-1945, G.E. Bohart, J.L. Gressitt, 1 ♂, 2 ♀♀; Pt. Ritidan, X-1952,

N.L.H. Krauss, 1 ♀; N.E. Anderson Airforce Base, VIII-1952, N. Krauss, 1 ♂, 1 ♀; Agana, 15-VII-[19]45, H.S. Wallace, 2 ♂♂, 2 ♀♀; Agat, 12-VI-[19]45, J.L. Gressitt, 1 ♀; Guam [only], 1-IV-1945, Rollin H. Baker, 1 ♀ (USNM); Guam [only], I-1945, R.M. Bohart, Rollin H. Baker, 1 ♂ (USNM); Apra area, II-1958, N.L.H. Krauss, 1 ♂; Tutujan, 22-XI-1958, J.L. Gressitt, 1 ♂; Mt. Santa Rosa, 15-V-1945, J.L. Gressitt, 1 ♂; Mt. Lamlam, X-1952, N.L.H. Krauss, 1 ♂; Merizo, X-1957, N. Krauss, 1 ♀ (BPBM), 1 ♀ (LEMQ); nr. Harmon Field, 29-I-1949, R.H. Baker, 1 ♀ (LEMQ); “Island of Guam” [n. loc., n. d. but would be 1911], No. 1294, D.T. Fullaway, 1 ♀, [det. Swezey [1946] as *P. brevis*]; Piti, 28-V-1936, O.H. Swezey, 1 ♀; Piti, 3-XI-1936, in garden, O.H. Swezey, 1 ♀; Piti, 30-IV-1936, R.L. Usinger, 1 juv. ♂, 1 juv. ♀; Piti, 30-IV-[19]36, O.H. Swezey, ex grass, (det. Swezey as *Ph. brevis*) 1 ♂; Piti, 17-IX-1936, O.H. Swezey, 1 ♀; Piti, 10-V-[19]36, R.L. Usinger, 1 ♀ (det. Swezey as *Ph. brevis*); Inarajan, 14-V-[19]36, ex rice, O.H. Swezey, 1 ♂; Inarajan, 8-VI-1936, ex rice, O.H. Swezey, 1 ♀; Ritidian Pt., 22-IV-[19]36, E.H. Bryan, Jr., 2 ♀♀; Machanau, 30-VI-1936, ex tobacco, O.H. Swezey, 1 juv. ♀; Orote Pen[insula], 1-IX-1936, O.H. Swezey, 1 ♀; Santa Rosa Pk., 19-III-[19]36, O.H. Swezey, 1 juv. ♀; nr. Agbayah, 28-III-[19]36, E.H. Bryan, Jr., 1 ♀. *Guam* (cont’d) [all BPBM]: Inarajan, 6-VIII-[19]36, on rice, O.H. Swezey, 1 ♀; Mt. Tenjo, 3-V-[19]36, ex *Leucaenia*, O.H. Swezey, 2 ♀♀; Inarajan, 3-V-[19]36, R.L. Usinger, 1 ♂; Piti, 11-V-[19]36, O.H. Swezey, 1 ♀; Piti, 24-VIII-[19]36, 1 ♂; Piti, 25-VIII-[19]36, 1 ♀; Machanao, 30-VI-[19]36, ex tobacco, O.H. Swezey, 1 ♀; Orote pen[insula], 1-X-[19]36, E.H. Bryan, Jr., 1 ♀; Magua, 31-III-[19]36, E.H. Bryan Jr., 1 ♂; Yigo, 13-V-[19]36, E.H. Bryan Jr., 1 ♂; Guam [only], 25-VIII-1945, R. Chaffee, 1 ♂, 1 ♀; same but 13-VIII-1945, 1 ♂; same but 30-VI-[19]45, 1 ♂. *Guam* (cont’d, deposited as indicated): Warman, IX-1984, D. Nafus, 1 ♀, ESUG); Barrigada, III-1983, Joan Borja, 1 ♂ (CNMI); *Rota*: Teleto, 8-XI-1937, Teiso Esaki, 1 ♂ (KUEC); Rota I., 22-VII-[19]26, Hornbostel, 2 ♂♂, 1 ♀ (BPBM); Rota I., 18-VI-1951, R.M. Bohart, 1 juv. ♀ (BPBM); *Saipan*: Saipan, 22-XI-1944, E. Hagen, 1 ♀ (LEMQ); Chalan Kanoa, 8-I-1958, E. Hagen, 1 ♂ (LEMQ); Chalan Kanoa, II-[19]46, N.L.H. Krauss, 1 ♀ (BPBM); Chalan Laulau, 26-IV-[19]46, N.L.H. Krauss, 1 ♂ (BPBM); Kagman Agr. Sta., 16-VIII-1977, J.A. Tenorio, 1 ♂ (BPBM); Charan Kanoa, 24-VIII-1944, in sugar cane field, D.G. Hall, 1 ♂ (det. F.X. Williams as *Ph. brevis*) (BPBM); Ainguan, 3-VI-[19]52, R.P. Owen, 1 ♂ (BPBM); As Mahetog area, 17-XI-[19]44, 21-XI-[19]44, 18-XI-[19]44, 25-XI-[19]44, H.S. Dybas, 3 ♂♂; 8 ♀♀ (FMNH, BPBM); 26-IV-1945, at light, H.S. Dybas, 1 ♂, 1 ♀ (FMNH); 2-V-1945, at light, H.S. Dybas, 1 ♂ (LEMQ); Achugau area, 7-I-[19]45, H.S. Dybas, 5 ♂♂, 3 ♀♀ (BPBM); 1.2 mi. [1.93 km], E of Tanapag, 20-XI-1944, S. Edgar, 1 ♂ (FMNH); Donni-Tarohoho, 3-VII-[19]39, Teiso Esaki, 1 ♂ (KUEC); Oleai-Hinashisu-Charankanoa, 1-XI-1937, T. Esaki, 2 ♂♂ (KUEC); Garapan, 20-XII-1937, Yoshio Aoki (KUEC); Aftna Point, 27-VI-[19]46, [H.K.] Townes, 1 ♀ (USNM); Magicienne Bay, 25-II-[19]49, Maehler, 1 ♂, 1 ♀ (USNM); native settlement, 18-VI-[19]46, R.G. Oakley, 1 ♂ (ex alcohol) (USNM). *Tinian*: Loderon

Dago, 12-V-1985, C. Bjork, 1 ♂ (CNMI); Jones Beach area, 24-XI-1984, C.D. Bjork, 1 ♂ (CNMI). Marpo Valley, 8-VI-[19]46, R.G. Oakley, 2 ♂♂, 3 ♀♀ (BPBM); Mt. Lasso, 12-VI-[19]46, H.K. Townes, 1 ♂ (USNM); Hagoya L., 10-VI-[19]46, H.K. Townes, 1 ♀ (USNM); nr. Guguan Point, 10-IV-[19]45, H.S. Dybas, 1 ♀ (BPBM); 8-VI-[19]46, [H.K.] Townes, 3 ♂♂, 1 ♀, 2 juv ♀♀ (BPBM); Tinian I., 2-III-1946, F.C. Hadden, 4 ♂♂, 1 juv. ♂ (BPBM); Same, except 6-III-1946, 5 ♂♂, 4 ♀♀ (BPBM); Tinian I., 21-VII-[19]49, A.R. Mead, 1 ♀ (BPBM); Tinian I., 11-XI-1952, J.W. Beardsley, 1 ♀ (BPBM); Tinian I., 26-II-1946, F.C. Hadden, 1 ♀ (BPBM). *Palau*: Koror I., IX- [19]52, N.L.H. Krauss, 1 ♀ (BPBM); Koror I., ex. *Cassia mimosoides*, 3-IX-1952, J.W. Beardsley, 3 ♂♂, 2 ♀♀ (BPBM); *Marshall*, Lib I., 23-X-1953 [no collector name], 1 ♀ (LEMQ); *Kwajalein Atoll*, 31-XII-[19]52, J.F.G. Clarke, 11 ♂♂, 2 ♀♀ (USNM); same, 10-IX-[19]53, C.F. Clagg, 3 ♂♂, 1 ♀ (BPBM); same, 21-III-[19]53, C.F. Clagg, 1 ♀ (BPBM); same, 19-II-[19]58, N.H.L. Krauss, 3 ♂♂, 1 ♀ (BPBM); *Kwajalein*, 31-XII-1952, J.F.G. Clarke, 1 juv. [abdomen eaten by dermestids] (USNM). *East Caroline: Pohnpei* (no data, *in litt.*, Ilse Schrenier, June, 1988).

Kevan (1990) stated that early records reported as *Phaneroptera brevis* were misidentifications but this species does occur. See below.

Phaneroptera brevis Audinet-Serville

Phaneroptera brevis Audinet-Serville 1839: 418.

Phaneroptera brevis; Swezey, 1946: 5 (Guam); Beller 1948: Pt. I, p. 4. [= p. 7].

Guam on grass and rice. [see note above]

Phaneroptera furcifera [nec Stål]; Dumbleton, 1954: 69, on plant in Marianas; Samuelson & Nishida, 1987: 160 (Marshall Islands but not Enewetak).

CONOCEPHALIDAE

CONOCEPHALINAE

Conocephalus Thunberg

Conocephalus Thunberg 1815: 214. Type species *Xiphidium bituberculatum* Redtenbacher

This genus has been subdivided into several subgenera. All of the species found in Micronesia are placed in the subgenus *Anisoptera*. Pitkin (1980) listed only one species of *Conocephalus* from Micronesia, *Conocephalus longipennis* (Haan). There are, however, several species of the genus occurring within the area covered by the present work, some known by few specimens and others with peripheral distribution. One species, *C. upoluensis* (Karny) is represented by many specimens. Although Pitkin (1980) included this species from other Pacific localities, she did not include it from Micronesia.

Conocephalus (Anisoptera) saltator was recorded from Wake I., one immature specimen (Kevan 1990). It is not known from Micronesia.

Conocephalus upoluensis (Karny)

Xiphidion modestum upoluense Karny 1907: 92, 95. (Samoa) "Another species of *Conocephalus*"; Townes, 1946: 29 (Palau Is.). *Conocephalus maculatus* [nec Willemse, 1942: 99. (Palau)]. *Conocephalus upoluensis*; Kevan 1987: 308.

Specimens examined: *West Caroline:* (BPBM, unless otherwise indicated): Ulithi Atoll: Asor I., 6-X-1952, N.L.H. Krauss, 1 ♀; Yap Group: Yap I. 8-VII-[19]54, J.L. Gressitt, 1 juv. ♂ (BPBM); Yap I., IX-[19]52, N.L.H. Krauss, 1 ♀; Gagil I., 14-VII-[19]46, R.G. Oakley, 2 ♂♂ (USNM); Yap I., central, VII-VIII-[19]50, R.J. Goss, 1 juv. ♂, 3 juv. ♀♀ (MCZC); Central Yap, 3 ♂, 2 ♀♀ (PSBD), 2 ♂♂, 1 ♀ (LEMQ); Yap I., 1 ♂, 1 minute juv. ♂; S. Yap I., 11 ♂♂, 5 ♀♀, 1 minute juv. ♀; Ruul Dist., Yap I., 10 ♂♂, 7 ♀♀, 2 juv. ♂♂, 3 juv. ♀♀, 5 v. small juvs.; E. Map I., 3 ♂♂, 2 ♀♀, 1 minute juv. ♂; S. Map I., 1 juv. ♂; Yap I., Colonia, 2 ♂♂, 4 juv. [minute ♂♂]; S. Rumung I., 7 ♂♂, 1 ♀; Central Map I., 10 ♂♂ (1 ♂ LEMQ), 5 ♀♀ (1 ♀ LEMQ); Yap, 8-VII-1951, J.L. Gressitt, 1 ♂; "Jap, Karolinen, Volkens, S." "Dez. '99", 1 ♂, 1 ♀, (ZMHB); "April, 1900, 2 ♂♂ (ZMHB); *Palau:* Auluptagel I., 10-I-1953, J.W. Beardsley, 1 ♂ (BPBM); Islet nr. Koror I., IX-1952, N.L.H. Krauss, 1 ♂ (BPBM); Koror I., 3-IX-1952, ex grass, J.W. Beardsley, 2 ♂♂, 1 ♀ (BPBM, 1 ♂, 1 ♀ to LEMQ); Babeldaob, E. Ngatpang, 7-XI-1952, J.L. Gressitt, light trap, 2 ♂♂ (BPBM, 1 ♂ to LEMQ); E. Ngatpang, 65m, 10-XII-[19]52, J.L. Gressitt, 1 ♂ (BPBM); Auluptagel (Aurapukesharn) I., IX-1952, N.L.H. Krauss, 1 ♂, 2 ♀♀ (BPBM); Koror I., 15-IV-1957, C.W. Sabrosky, 1 ♂ (USNM); SW Koror, 25m, III-IV-1954, D. Osborne, 1 ♂ (BPBM); *Saipan,* South Cape, 11-III-1936, T. Esaki, 1 ♂ (KUEC); Koror, Koror-Arabaketsu, 28-V-1938, Shiro Murakami, 1 ♀ (KUEC); Babeldaob [=Babelthuap] Ngarmijukan Emertao, 12-II-1938, T. Esaki, 1 ♀ (KUEC); Koror I., 17-VII-[19]46, Townes, 1 ♂ (USNM); Koror I., 18-VII-[19]46, Oakley, 2 ♀♀ (USNM); Arakabesan I., 18-VII-[19]46, Townes, 1 ♂, 2 ♀♀ (USNM); Koror, 15-25-III-1948, K.L. Maehler, 1 ♂ (USNM); Koror I., 2-V-1957, C.W. Sabrosky, 1 juv. (minute ♂) (USNM); Peleliu I., east coast, 1-VIII-[19]45, at light, H.S. Dybas, 2 ♂♂ (FMNH); same, 4-VIII-[19]45, 1 ♂, 1 ♀ (FMNH); Peleliu I., ridge N end, 30-I-[19]48, H.S. Dybas, 1 ♂ (FMNH); Babeldaob I., Ulimag, 9-X-[19]47, H.S. Dybas, 1 ♂ (LEMQ); Pelileu I., E coast, 26-I-1948, H.S. Dybas, 1 ♂, 1 ♀ (BPBM); Babeldaob I., 22-XI-[19]47, H.S. Dybas, 1 ♀ (FMNH), 1 ♀ (LEMQ); Peleliu I., 28-VII-[19]45, H.S. Dybas, 1 ♀ (FMNH); Koror I., 24-XI-[19]47, H.S. Dybas, 1 ♀ (USNM); Babelthuap I., Ngaremeskang, 20-XII-1952, 25m, J.L.Gressitt, 1 ♀ (BPBM); Peleliu, Amiangal Mt. 23-XII-1952, J.L. Gressitt, 1 juv. ♀ (BPBM); "Palao Is", Gukipp [?], 20-IV-1936, Z. Ono, 1 ♀ [det. Willemse as *C. maculatus*] (BPBM); Babeldaob, on W side nr. Aimeliik, 7°26'30" N, 134°31'00" E, 19-26 Feb. 1987, in forest (Otte, Alexander, Flinn) 3 ♂♂, 4 ♀♀ (ANSP); Arakabesan I., 7°20'35" N, 134°27'10" E, 0-5m, 19-26 Feb, 1987, # 9, in forest (Otte, Alexander, Flinn) 1 ♂ (ANSP); *Yap I.,* Tora, 15-XI-1975, M.L. Lundgren, 1 ♀ (BPBM); same 14-I-1976, 1 ♀ (BPBM).

Conocephalus longipennis (Haan)

Xiphidium longipenne Haan, 1842: 189. (No type designated).

Localities—Padang (Sumatra) and Banjarmassing (Borneo)

Xiphidium spinipes Stål 1877: 47.

Xiphidium longicorne Redtenbacher, 1891: 513 “Locustina”; Schnee, 1904: 404 (Marshall Is.).

Anisoptera longipenne; Kirby, 1906: 278.

Xiphidium (*Xiphidion*) *longipenne*; Karny, 1907: 92.

C[onocephalus] (*X[iphidion]*) *longipennis*; Karny, 1912: 11, (Carolines).

Xiphidion longipenne; Karny, 1921: 608 (Philippines).

Conocephalus sp. ; Esaki, 1940:

Conocephalus longipenne; Willemse, 1942: 96, 98, figs. 5, 11.

Conocephalus carolinensis Willemse 1942: 98.

Conocephalus carolinensis form *macroptera* Willemse, 1942: 99.

Conocephalus longipennis; Townes, 1946: 29 (“abundant in south Marianas”)

Conocephalus species; Beller, 1948: 4 [= p. 7]. (Guam, on rice).

Xiphidion longipenne; Beller, 1948: 4 [= p. 7].

Conocephalus longipenne: Oakley, 1953: 176, 184, (Ponape, Chuuk, Ulithi, Rota, Tinian (on rice, also attacks egg-plant).

Conocephalus longipennis: Dumbleton, 1954: 69 (on rice in Marianas and Carolines); Kevan 1987: 308 (West Marshalls).

Anisoptera longipenne; Johnston 1962: 2 (on rice, U.S. Trust Territories).

Schnee (1904), in keeping with the usage of the time, for “Locustina” would have meant Tettigonioidea. It would be interesting to suppose that Schnee was indicating an early introduction of *Phaneroptera furcifera*, but the evidence is against this. The nearest known locality is too remote from the Marshall Islands to support the idea of anything but a more recent introduction there. The fact that the insect has a native vernacular name would suggest that it is native. This appears to be the first published record of *Conocephalus* from the Marshalls, though its presence there was not confirmed until much later.

Specimens examined: *Caroline: East Carolines:* Ponape I., Colonia, VI/IX-1950, P.A. Adams, 8♂♂, 7♀♀, 1 juv. (damaged by dermestids) (4 USNM, 6 MCZC, 6 BPBM); Colonia, VII-1949, S.F. Glassman, 2♀♀ (BPBM); Colonia, 7-I-1953, J.F.G. Clarke, 13♂♂, 4♀♀, 3 juv. ♂♂, 1 juv. ♀ (11 USNM, 10 BPBM); Colonia, 8-VII-1949, R.P. Owen, 4♂♂, 2♀♀, 2 juv. (BPBM), 1♂, 1♀ (LEMQ); Colonia, 8-VIII-1946, Townes, 2♂♂, 5♀♀ (USNM); Colonia, 13-VIII-[19]46, R.G. Oakley, 1 minute juv. ♂ (USNM); Kolonia (on corn), 27-V-1984, D. Nafus, 1♂, 1♀ (ESUG); Ponape, north end, Takai Mwas ridge above Lukhe, ca. 350m, 26-II/5-III-[19]87, (Otte, Alexander, Flinn) (ANSP); Metalanium, 11-VIII-1946, R.G. Oakley, 1♂ (USNM); Palikir-Ronkiti, 17-VII-1939, T. Esaki, 1♂ (KUEC); “Mikronesia, Karolinen, Ponape, 1904, Berg, S.G.”, 2♂♂, 3♀♀ (ZMHB); Ponape Group: Jokaj I., 26-II-1948, H.S. Dybas, 1♂ (USNM); Ponape, Palang. w. coast, 15m., 10-I-1953, low hill near man-

groves, [J.L.] Gressitt, 1 ♂ (BPBM); Ponape Mt. Tamatanansakir, 180m., 18-I-1953, light trap, [J.L.] Gressitt, 1 ♀ (BPBM). *Kusaie*: Mt. Fenkol, 100m, 24-I-1953, J.L. Gressitt, 1 ♂, 1 tiny juv. ♂ (BPBM); Lelo, 10-XII-1937, T. Esaki, 1 ♂ (KUEC); Malem, 1-XII-1937, T. Esaki, 1 ♂ (head missing) (KUEC); nr. Lele Harbor, 21-VIII-[19]46, Townes, 3 ♂, 5 ♀♀ (USNM); Tahonsaku, 19-VIII-[19]46. Townes, 1 ♂, 1 ♀ (USNM); Lele I., 20-VIII-[19]46, Oakley, 1 ♀ (USNM); Lele I., 19-VIII-[19]46, Oakley, 1 ♂, 3 minute juvs. (2 ♂♂, 1 ♀) (USNM); Sensrik [?], 1m, 21-IV-1953, J.F.G. Clarke, 4 ♂♂, 7 ♀♀ (BPBM); Mutunlik, 22m, 1-II-[19]53, J.F.G. Clarke, 2 ♀♀, 1 minute juv. ♂ (BPBM); Mwot, 8-IV-[19]53, J.F.G. Clarke, 1 ♂ (BPBM); Tafeayat River, 90m, 9-II-[19]53, J.F.G. Clarke, 1 ♂ (BPBM); Kusaie [only], 17-I-[19]53, J.F.G. Clarke, 3 ♂♂, 1 ♀, 1 juv. ♀ (USNM); same, 1-V-[19]53, 1 ♀ (USNM); Kosrae, Lele, 20-XI-1984, D. Nafus, 1 ♀ (ESUG); Kosrae, Melem, 29-V-1989, (on corn), I. Schreiner, 1 ♀ (ESUG); [Type series of *C. carolinensis* Willemse]: Mutunlik, 27-I-1953, J.F.G. Clarke, 2 ♂♂ 1 ♀ (BPBM); same but 1-II-1953, 2 ♀♀ (BPBM); same but 15-II-1953, 2 ♂♂, 3 ♀♀ (USNM); same but 1-V-1953, 1 ♀ (USNM); Mwot, Kusaie, 8-IV-1953, J.F.G. Clarke, 1 ♂ (BPBM); *Central Caroline, Chuuk*, Pata, Sabota-Epin, 10-IV-1940, Yasu. & Yoshi, (KUEC); Moen, Civilian Admin Area, 4-III-19[49], R.W.L. Potts, 1 ♀ (CASC); same 25-IV-19[49], R.W. Potts, 1 ♂ (CASC), 1 ♂ (LEMQ); same, 15-III-1949, 1 ♀ (BPBM); same, 10-II-1949, 1 ♂ (very small) (CASC); same, 5-II-1949, 1 ♀ (CASC); Tol, Olej-Foup [?], 6-IV-1940, Yasu & Yoshi, 1 ♀ (KUEC); Chuuk, north basin, Mt. Chukumong, 31-III-19[49], R.W.L. Potts, 1 ♂, 1 ♀ (USNM); Tol I., Mt. Uniböt, 30-XII-1949, J.L. Gressitt, 1 minute juv. ♂ (BPBM); same, 31-IX-1952, 1 ♂, 1 ♀ (BPBM); Moen, 400ft, 23-V-1946, Townes, 1 ♂, 2 ♀♀ (USNM), 1 ♂ (LEMQ); Fefan, 27-V-[19]46, Townes, 1 ♂, 1 ♀ (USNM), 1 ♀ (LEMQ); Dublon I., 17-X-1952, J.W. Beardsley, 1 ♀ (BPBM); Moen, 10-VIII-1985, D. Bowden, 1 juv. ♀ (ESUG); 7-II-1948, K.L. Maehler, 1 ♀ (USNM); *West Central Carolines*: Ifaluk Atoll, Ifaluk, 6-IX-1953, (in “lowel” (tar pit)), Marston Bates, beating Colocasia, 2 ♂♂ (USNM, BPBM); same but 4-X-1953, 2 ♀♀ (BPBM); Woleai Atoll, Woleai I., 19-IX-1952, [no collector], 1 juv. ♀ (BPBM); Woleai Atoll, Woleai I., 8-II-1953, J.W. Beardsley, 2 ♂♂ (BPBM), 1 ♀ (LEMQ); Utagal I., 20-IX-1952, Krauss, 1 v. small juv., ♂ (BPBM); same, 28-VII-[19]46, Townes, 2 ♂♂, 3 ♀♀ (USNM), 1 ♂, 1 ♀ (LEMQ); same, 28-VII-[19]46, R.G. Oakley, 2 ♂♂, 3 ♀♀ (USNM); Falas I., 3-II-1953, J.W. Beardsley, 1 ♂ (BPBM); Ngulu Atoll, Ngulu I., 3-X-1952, N.L.H. Krauss, 1 juv. ♀ (BPBM); Faraulep Atoll, Faraulep I., 4-II-1953, J.W. Beardsley, 1 ♀ (BPBM), 1 ♂ (LEMQ). *Central Carolines*: Satawal Atoll, 6-II-1953, J.W. Beardsley, 1 ♂ (BPBM); *West Carolines: Palau Is.: Yap Group*: Map I., East, VII/VIII-[19]50, R.J. Goss, 1 ♀ (small) (MCZC); Rumung I., VII-VIII-1950, R.J. Goss, 2 ♂♂, 1 ♀ (USNM, MCZC), 1 ♂ (LEMQ); Yap I., central, 2 ♂♂ [damaged by dermestids] (MCZC), 1 ♂ (LEMQ); Ruul Dist., VII-VIII-1950, R.J. Goss, 1 ♂, 4 ♀♀, (MCZC, BPBM); Yap I. S., 2 ♂♂ (1 very small), VII-VIII-1950, 1 ♂

(USNM); Dugor, VII-VIII-1950, R.J. Goss, 1 ♂ (MCZC); Gagil dist. [=Is.], VII-VIII-1950, R.J. Goss, 1 ♂, 1 ♀ (MCZC); Yap, hill behind Yaptown, 50m, 3-XII-1952, J.L. Gressitt, 1 ♀ (BPBM); Mt. Gillifitz, 150m, 29-XII-1952, J.L. Gressitt, 1 ♂ (BPBM); Yap I. [only], IX-1952, N.L.H. Krauss, 1 ♂ (BPBM); Yap, Dugor-Karif-Rul, 2-IX-1939, T. Esaki, 1 ♂ (KUEC); Kolonia, 28-III-1954, J.W. Beardsley, 1 ♂ (BPBM); Map I., 22-X-1952, N.L.H. Krauss, 1 ♀, (BPBM); Yaptown, 12-VII-[19]46, Townes, 3 ♂♂, 4 ♀♀ (USNM), 1 ♂ (LEMQ); Gagil, 14-VII-[19]46, R.G. Oakley, 1 ♀ (USNM); Weloy [Woleai ?], at light, 20-V-1957, C.W. Sabrosky, 1 ♀ (USNM); "Mikronesia, W. Karolinen, Yap, 6-VII-1905, Semft S", 6 ♂♂, 8 ♀♀, 1 juv. ♂ (ZMHB); "Jap, Karolinen Volkens S", "Dec. 19", 1 ♂, "Jan, 1900" 2 ♀♀ (ZMHB); *Ulithi Atoll*: Potangeras Atoll, 10-XI-1947, H.S. Dybas, 5 ♂♂, 2 juv. ♂♂ (FMNH, BPBM) 1 ♂ (LEMQ); Mogmog, 11-VII-[19]46, Townes, 4 ♂♂, 1 ♀ (USNM), 1 ♀ (LEMQ); Mogmog, 7=II-[19]46, Oakley, sweet potato [mounted from alcohol] 3 ♂♂, 1 ♀ (USNM). *Palau Is.*: Koror I, SW., III/IV-1954, D. Osborne, 1 ♂ (BPBM); Koror I., 18-VII-[19]46, R.G. Oakley, 1 ♂, 1 juv. ♀ (USNM). Babeldaob, Ngardok-Ngarmisukan [?], 11-II-1938, T. Esaki, 1 ♂ (KUEC); Arakabesan I., 18-VII-1946, Townes, 2 ♂♂, 1 ♀, 1 juv. ♂ (USNM); Peleliu I., at light, 28-VII-[19]45, E. Hagen, 1 ♂, 2 ♀♀ (FMNH); Peleliu I., I/IV-[19]45, E. Hagen, 2 minute juv. ♂♂ (same) 10-VIII-[19]45, 1 ♀ (FMNH); Peleliu I., north central, 28-VII-[19]45, H.S. Dybas, 4 ♂♂, 1 ♀ (FMNH, 1 ♂ to LEMQ); same except 10-VIII-[19]45, 1 ♀ and 31-VII-[19]45, 1 ♀ (BPBM); Peleliu I., east coast, 1-VIII-[19]45, H.S. Dybas, 1 ♂, 1 ♀ (LEMQ); Peleliu I., E. 29-I-[19]48, 1 ♀ (USNM); same, 15-II-[19]53, 4 ♂♂, 5 ♀♀, 1 juv. ♂ (USNM); *Marshall Is.*: Namorik Atoll, Namorik I., 29-IX-1953, J.W. Beardsley, 1 ♂, 1 juv. ♀ (BPBM); *Mariana Is.*: *Guam*: Pago Bay, 2-VI-1945, H.S. Dybas, 1 ♂, 1 ♀ (FMNH); Agana, 600 yds SW, 1-VI-1945, H.S. Dybas, 1 juv. ♀ (FMNH); Mt. Santa Rosa, 16-V-1945, G.E. Bohart, J.L. Gressitt, 1 juv. ♂ (USNM); Mt. Santa Rosa, 15-V-1945, J.L. Gressitt, 2 ♀♀ (LEMQ); Agaña, 7-VII-[19]45, H.S. Wallace, 2 ♂♂ (BPBM), 1 ♂ (LEMQ); Orote, 2-VIII-[19]45, H.S. Wallace, 1 ♂ (BPBM); Park below Island Command Area, nr Agaña, 30-VI-[19]45, H.S. Wallace, 3 ♂♂, 1 ♀ (BPBM), 1 ♀ (LEMQ); Barrigada, 8-VIII-1945, H.S. Wallace, 2 ♂♂, 1 ♀ (BPBM); same but 23-VI-1945, 2 ♀♀ (BPBM); Fonte River, 12-VIII-[19]45, H.S. Wallace, 1 ♂, 2 ♀♀ (BPBM); Guam [only], 13/18-VII-1945, R. Chaffee, 2 ♀♀ (ANSP); Guam [only] I/IV-1945, R. H. Baker, 2 ♂♂ (BPBM); Agat, 12-VI-1945, J.L. Gressitt, 2 ♀♀ (BPBM); Pt. Oca, 15-V-1945, 2 ♂♂ (BPBM, 1 to LEMQ); Pt. Oca (USNM (NAMRU) 2) [Naval Medical Research Unit], 9-V-1945, G.E. Bohart, J.L. Gressitt, 1 ♂, 1 ♀ (USNM); Sumay R[iver], 12-V-1945, G.E. Bohart, J.L. Gressitt, 1 ♂ (BPBM); Mt. Alutoum, 18-V-[19]46, Townes, 3 ♂♂, 1 ♀ (USNM); *Marianas other than Guam*: Rota I., Shinaparu, 19-VI-1946, Townes, 4 ♂♂, 1 ♀ (USNM); Rota I., SE part, 22-X-[19]45, W.L. Necker, 1 ♂ (BPBM); Anatchan I., 26-VIII-1951, R.M. Bohart, 1 ♀ (CASC); *Saipan*: U.S.C.C. farm, 17-VI-[19]46, R.G. Oakley, 1 juv. ♀ (USNM); Achugau area, 7-I-[19]45, H.S. Dybas,

1 ♂ (FMNH); Fangam, 12-V-1940, Yasu & Yoshi, 1 _ (KUEC); Charankeja, 3-II-1936, T. Esaki, 1 ♀ (KUEC); Kobler [Air] Field, -III-1958, N.L.H. Krauss, 1 ♂, 2 ♀♀ (BPBM); Chalan Laulau, 26-IV-1946, N.L.H. Krauss, 1 ♂ (BPBM).

Conocephalus maculatus (Le Guillou)

Xiphidium maculatum Le Guillou 1841: 294.

Xiphidium maculatum; Matsumura, 1906: 14 (Bonin Is.); 1913:233 (Bonin Is.); 1914:119 (Bonin Is.); Esaki, 1930: 224 (ref. to Matsumura)

Conocephalus maculatus: Furukawa 1930: 233 (Bonin Is.): Willemse, 1942: 99-100 [1 ♀, misidentified = *C. upolensis*]; Willemse 1951: 356 (Palau); English, 1978: 192 (Palau); Kevan 1987: 308.

This species is known also from the Canary Islands; LEMQ has one female: "Grand Canary, Guis, IX-1894 [no collector name]. There is in the same collection a male: "Bonin Is., Ogasawara Haha [Jima] 1931, Mutoiro & Ise, coll." *Conocephalus maculatus* does not seem to have been reported from the Canary Islands before (nor has any other member of the genus).

Conocephalus oceanicus (Le Guillou)

Xiphidium oceanicum Le Guillou 1841: 294 (Samoa).

Conocephalus oceanicus; Kevan 1987: 308.

Pitkin (1980) records this species from many Pacific areas but no nearer Micronesia than the Ellice (Tuvalu) Islands. LEMQ has one male "Ellice Islands, Funafuti [Atoll] Is., 7-VIII-1956, E.S. Brown". This museum also has specimens from New Guinea, Solomon Islands, Bismark Archipelago and the Philippines; Makin, 14-VII-1955, J.W. Enke, 1 ♀.

Micronesian Records: *Gilbert Is.*, Butaritari Atoll, Butaritari I., XII-1957, N. Krauss, 5 ♂♂, 1 minute nymph (BPBM), 1 ♂ (LEMQ); Marakei Atoll, 1 minute ♂, 2 juv. ♀♀ (BPBM) [presumably this species];

Conocephalus redtenbacheri (Bolívar)

Xiphidium redtenbacheri Bolívar 1905: 389.

This species has not previously been recorded from Micronesia.

Specimens examined: *Southwest Carolines*: Tobi I., 12-IX-1952, N. Krauss, 1 ♂ (BPBM); same, 2 juv. ♂♂, 1 juv. ♀ (BPBM) [presumably this species]; Pulo Anna I., 13-IX-1952, N. Krauss, 3 tiny juvs. (1 ♂, 2 ♀♀) [presumably this species] (BPBM); Merir I., 11-IX-1952, N. Krauss, 1 tiny juv. ♀ (BPBM) [also presumably this species].

Conocephalus semivittatus vittatus (Redtenbacher)

Xiphidium vittatum Redtenbacher 1891: 513 (Aru Is.)

Conocephalus semivittatus semivittatus (Walker) is known from Australia and New Zealand (Pitkin 1980). *Conocephalus s. vittatus* occurs widely in the Pacific region but had not been reported previously from Micronesia.

Specimens examined: *Southwest Carolines*: Tobi I., 12-X-1952, N. Krauss, 1 ♂ [brachypterous], 1 juv. ♀ (BPBM).

COIPHORINAE

Within the limits of Micronesia this subfamily comprises only one genus, *Euconocephalus*. Five species have been named but all are now considered to be synonyms of or refer to *E. nasutus* (Thunberg).

Euconocephalus Karny

Euconocephalus Karny 1907: 39. Type species *Locusta acuminata* Fabr

Euconocephalus nasutus (Thunberg)

C[onocephalus] nasutus Thunberg 1815: 273.

"*Conocephalus differens* Audinet-Serville"; Schmeltz & Pöhl 1877: 21 ("Palau-Inseln")

Conocephalus lineatipes Bolívar, 1890: 225. Type locality, Angola, Banyures, coll. Bolívar

Conocephalus insulanus Redtenbacher 1891: 146 (Borneo, Singapore, British Straits Settlements), syn. Hebard 1922

Conocephalus lineatipes: Redtenbacher 1891: 382, 409. (Angola - after Bolívar); Borneo; Australia (Melbourne - K.K. Hofsmuseum, Vienna), Queensland (coll. Brunner von Wattenwyl, Vienna); New Caledonia; Fiji Islands (coll. Brunner von Wattenwyl, Vienna); Tahiti; Yap (ZMUH); Kirby 1906: 249 (listed from Angola, Borneo, Australia)

Conocephalus pallidus Redtenbacher 1891: 383, 414-415 (East Indies, Silhet, Calcutta, Ceylon, Burma, Tonkin, Penang, Singapore, Java, Borneo and Philippines (types and type locality not stated).

Conocephalus pallidus: Kirby, 1906: 250 (India and Java).

Conocephaloides gracilis Kirby 1906: 250 (Penang and Borneo).

Caulopsis gracilis: Karny 1907: 21 (In a key).

Conocephalus gracilis; Holdhaus 1908: 11 (repeats earlier records [Yap and Palau].

Conocephalus acuminatus [nec Fabr.], Matsumura & Shiraki 1908: 40; Matsumura, 1910a: 45; 1910b: part I, p. 25, pl. xxix m. & part II: 177; Esaki, 1930: 207 [Bonin Is.]

Euconocephalus lineatipes: Karny, 1912: 34; 1914: 447 "West Karolinen (Yap)"; Willemse 1942: 87, Loyalty Islands, Yap and Chuuk; Bryan, 1948: 16; English 1978: 196

Euconocephalus insulanus; Karny, 1912: 35 {Borneo and Singapore}; *Euconocephalus insulanus* (?); Swezey, 1946: 4; Beller, 1948: Pt. I p. 4 [= p. 7], Guam.

Euconocephalus pallidus; Karny, 1912: 35: 139; Hebard 1922: 241; Furukawa, 1930: 233 (Bonin Islands); Willemse 1942: 88.

Euconocephalus gracilis; Karny 1912: 35, “Karolinen, Yap, Pelew”; Karny 1921: 607; Hebard 1922: 241; Willemse 1951: 356 (Yap and Palau); English 1978: 197-198 (Penang, Java, Borneo, Philippines and in Micronesia from Yap and Palau)

Euconocephalus nasutus; Hebard 1922:240 (Philippines, Bonin Is.).

Conocephalus thunbergi [*nec* Stål], Esaki, 1930: 224 [Bonin Is.].

“Grasshoppers, 3 or 4,”: Swezey, 1941:40 (part) [on rice in Guam].

Euconocephalus sp.; Oakley, 1946: 11, (rice — Rota, Guam); Gressitt 1954: 186 (refers to Oakley and Swezey); Owen 1971: 1, (on rice, Trust Terr., and Ponape Island];

“? *Euconocephalus insulanus* (Redtenbacher)”; Van Zwaluwenberg, 1947: 19, (Iwo Jima [Volcano Is.]

[No latin name]; Hasezawa, 1968: 14 [Bonin Is.].

Euconocephalus insulanus; English 1978: 194 (Guam ?).

All previous records of *Euconocephalus* species in Micronesia are referable to *E. nasutus*.

The general distribution seems to extend from Malaysia, Thailand and China, at least to the Philippines. It is probably the Japanese species recorded as *Euconocephalus pallidus* (Redtenbacher) [= *thunbergi* Stål, *nec* Montrouzier (*C. Thunbergi* Mont., which was probably a *Salomona*, as he stresses the quadrate mirror of the male tegmen. Some *Salomona* have the same, if small). Stål’s name is an homonym and is so recognized by Furukawa (1930) for Bonin Islands specimens.

Euconocephalus nasutus is apparently the only species of the genus known from Micronesia, extending from the Bonin Islands (Esaki 1930) in the northwest to Tobi in the southwest and eastwards to Chuuk (but not beyond except for one odd Wake Island record). Hebard (1933) says the only species in Oceania is *E. robertsi*, described from Samoa and known to us from the Solomon Islands to Fiji. Hebard forgot *E. remotus* (Walker), endemic to the Hawaiian Islands [has short fastigium], probably a *Ruspolia* (see photos in Zimmerman). It is apparent that this has been recorded under various names from the latter, from The Friendly Islands (Tahiti) and the Marquesas (Hebard stresses the longer narrow fastigium of the vertex in material from the latter). That species also differs in the stridulatory file being narrower in the middle (i.e., teeth are not so transverse). Walker’s (1869) *C. insularis*, described from “Navigator’s Isle” [Samoa] (and Sandwich Is.=Hawaiian Is.) is a synonym of *robertsi* (cf. Kirby 1906).

Kirby, in effect, selected the Navigator I. specimen as lectotype as he makes no mention of the Sandwich Islands (Hawai’i). Walker’s species, presented by Captain Beechey, probably got data mixed up with the *remotus* material collected by the same person and there is no evidence of *robertsi* in Hawai’i, though it is conceivable that it could be found there, especially as the delay in lining up *remotus* was considerable (Zimmerman 1948).

The Wake Island record is not *remotus* and it is not *robertsi*. It is presumably an abnormally long-winged *nasutus* but, being a single female, and very remote

from any other material it should be noted specially and could be different, but likely not.

Specimens examined: *Bonin Is.:* Chichi Jima, Omura, 25-VI-[19]49, A.R. Mead, 5 ♂♂ (USNM, BPBM) 1 ♂ (LEMQ); Chichi Jima, Miyanojima, "Jack Wm's" Beach, 12-V/9-VI-1958, F.M. Snyder, 1 ♂ (LEMQ); Hahajima Okimura, 26-IV-[19]58, F.M. Snyder, 6 ♀♀ (BPBM); Chichi Jima, Futami-ko, 10-V-[19]56, C. Clagg 1 ♀ (BPBM); Haha Jima, Miyanojima, "Jack Wm's" Beach, 12-V/9-VI-1958, F.M. Snyder, 1 ♂ (BPBM); Chichi Jima, Omura, 'Camp beach' 5-V/9-VI-1958, F.M. Snyder, 1 ♀ (BPBM); Chichi Jima, 10-VII-1951, R.M. Bohart, 1 ♂ (CASC); Muko I., 17-VII-[19]51, R.M. Bohart, 1 ♀ (CASC). Also, ANSP has specimens [no data given] determined as follows: Izu, 7 ex., det. *nasutus*; 1 ex., det. *formosus* [which is a synonym according to Furukawa 1930], 2 ex., det. *pallidus*, which also is a synonym of *nasutus*; *Volcano Is.:* Iwo Jima, 1/5-IX-1945, Henry S. Dybas, 1 ♂, 1 ♀ (FMNH), 1 ♂ (LEMQ); Iwo Jima, 11-XII-[19]45, R.E. Bertram, 1 ♂ (BPBM); same, -XII-[19]45, 1 ♂, 1 juv. ♀ (BPBM); *Mariana Is.:* *Saipan I.:* As Mahetog area, 28-XI-[19]44, H.S. Dybas, 2 ♂, 2 ♀♀ (FMNH) 1 ♀ (LEMQ); same, 18-XI-[19]44, H.S. Dybas, 13-XII-[19]44, 1 ♂ (BPBM), 1 ♀ (LEMQ); same, at light, 22-XI-[19]44, H.S. Dybas, 4 ♂♂, 2 ♀♀ (FMNH), 2 ♀♀ (LEMQ); Saipan [only], 29-VI-[19]51, R.M. Bohart, 2 ♂♂ (CASC), 1 ♂ (LEMQ); As Mahetog, 25-XI-[19]44, H.S. Dybas, 1 ♀ (FMNH); same, 18-XI-[19]44, S. Edgar, 1 ♀ (LEMQ); same except H.S. Dybas, 2 ♀♀ (BPBM); same, at light, 2-V-[19]45, H.S. Dybas, 1 ♀ (FMNH); same, 30-IV-[19]45, H.S. Dybas, 2 ♀♀ (FMNH); same, 8-V-[19]45, H.S. Dybas, 1 ♀ (BPBM); same, 28-XI-[19]44, 1 ♂ (FMNH); Donni-Sadog Tase, 7-V-1940, Yasu. & Yoshi, 1 ♂ (KUEC); Kagman Agric. Sat. (Papaya Plt.), 22-VIII-[19]77, Malaise trap, M. Ali, 1 ♂ (BPBM); same 16-VII-[19]77, sweeping grass, J.A. Tenorio, 1 juv. ♀ (BPBM); 22-I-1944, E. Hagen, 1 ♀ (BPBM); III-[19]58, N.L.H. Krauss, 1 juv. ♀ (BPBM); 22-XI-[19]44, E. Hagen, 1 ♂ (FMNH); 10-X-1971, at light, R. Muniappan, 1 ♂ (ESUG); *Rota I.:* 27-VI-[19]46, Oscilita, coll., 2 ♂♂, 1 ♀ (USNM); Rota, coll. at light, Townes, 20-VI-1946, 2 ♂♂ (USNM); same, 23-VI-1946, Townes, 1 ♀ (USNM); 22-VI-1952, Y. Kondo, 1 ♀ (BPBM); 18-VI-[19]51, R.M. Bohart, 1 ♂ (LEMQ); *Tinian I.:* 8-VI-[19]46, H.K. Townes, 1 ♀ (USNM); CNMI, Puntan Lamanibot, 8-I-1985, C.J.P. & D.B.[jork], 1 ♂ (CNMI); CNMI, dump area, 24-II-1984, C.D. Bjork, 1 ♀ (CNMI); Pagan [I.], Songsong, 25-IV-1940, Yasu & Yoshi, 1 ♀ (KUEC); Mt. Lasso, 10-VI-[19]46, Townes, 1 ♂ (BPBM); Tinian [only], 6-III-[19]46, at light, F.C. Hadden, 2 ♂♂, 2 ♀♀ (BPBM); same, 11-XI-1952 coll ?, 1 ♂ (LEMQ); Pagan, 18-VIII-1954, G. Corwin, 1 ♀ (BPBM); *Guam I.,* Mt. Alutom, 22-I-[19]45, H.S. Wallace, 1 ♂ (very small) (BPBM); Guam, Palae [?], 3-X-1936, O.H. Swezey, on cane, 1 ♂ (LEMQ); Island of Guam, n.d., D.T. Fullaway, 1 ♂ (small) (BPBM); Tarague, 17-V-1936, O.H. Swezey, 1 ♂ (BPBM); Guam [only], 28-IV-[19]45, J. Conover, 2 ♂♂ (BPBM); Dededo, 7-IX-1930, O.H. Swezey, 1 juv. ♀ (BPBM); Nimitz Hill, 6-III-[19]58, N.L.H. Krauss, 1 ♀ (BPBM); Barrigada, 24-VI-1936, R.L. Usinger, 1 ♀ (BPBM); Agana, 3-VIII-

[19]45, H.S. Wallace, 1 ♀ (BPBM); Mt. Alifan, 26-V-1936, R.L. Usinger, 1 ♂ (BPBM); Agana Airport, 15-VIII-[19]45, H.S. Dybas, 1 ♂ (PSBD); Mangilao, 26-III-1908, light trap, N.R. Spencer, 1 ♂ (BPBM); Pt. Oca, 13-VII-[19]45, G.E. Bohart, J.L. Gressitt, 1 ♂ (USNM), 1 ♀ (LEMQ); Guam [only], 23-VII-1945, R. Chaffee, 1 ♀ (ANSP); Piti, 19-V-1936, R.L. Usinger, 1 ♀ (BPBM); Piti, 7-IX-[19]36, at light, O.H. Swezey, 1 ♂ (LEMQ); Inarajan, 6-V-19[36], R.L. Usinger, 1 ♂, [det. O.H. Swezey, *E. insularis*], (BPBM); Piti, 23-V-1936, O.H. Swezey, 1 ♀ (BPBM); Yona, 27-X-1984, D. Nafus, 1 ♂ (ESUG); Agana, 20-VII-1971, A.A. Laplante, 1 ♀ (ESUG); Merizo, 23-VI-1971, light trap, 1 ♀ (ESUG); *Palau Is.: Koror I.*: SW, 25m, 12-XII-[19]52, light trap, J.L. Gressitt, 1 ♂ (BPBM); XI-[19]51, J.L. Gressitt, 1 ♂ (BPBM); 31-VI-[19]51, J.L. Gressitt, 1 ♀ (BPBM); 29-X-[19]51, J.L. Gressitt, 1 ♀ (BPBM); 15/25-II-1948, K.L. Maehler, 1 ♀ (USNM); NE cor[ner], 20-VII-[19]46, Townes, 2 ♀ ♀ (USNM); 18-VII-[19]46, Oakley, 1 ♀ (USNM); Koror-Arabaketsu, 21-IV-1938, Shiro Murakami 1 ♂ (KUEC); IV/V-1949, D.B. Langford, 1 ♂ (LEMQ); 10-I-[19]54, J.W. Beardsley, 1 ♂ (very small, brown) (BPBM, to LEMQ); 3-IX-1952, tall grass, J.W. Beardsley, 1 ♂, 1 ♀ (BPBM); 31-VIII-[19]52, tall grass, J.W. Beardsley, 2 ♀ ♀ (BPBM); 15-IV-1957, [no collector], 1 ♀ (LEMQ); Ngarmid, 23/27-VIII-[19]49, A.R. Mead, 1 ♀ (BPBM); *Angaur I.*: 11/12-VIII-[19]45, Henry S. Dybas, 1 ♂ (FMNH); 30-VII-[19]51, J.L. Gressitt, 1 ♂ (LEMQ); 5-II-[19]48, H.S. Dybas, 1 ♀ (LEMQ); *Peleliu I.*: ex *Oryctes* coconut stump, 2/3-IX-[19]51, J.L. Gressitt, 1 juv. ♂ (BPBM); 28-VII-[19]45, H.S. Dybas, 1 juv. ♀ (PSBD); 10-VIII-[19]45, H.S. Dybas, 1 ♂ (LEMQ); 31-VII-[19]48, H.S. Dybas, 1 ♀ (USNM); E. coast, 26-I-[19]48, H.S. Dybas, 2 ♀ ♀ (FMNH); 31-I-[19]48, H.S. Dybas, 1 ♂ (BPBM); 19/26-II-1987, (Otte, Alexander, Flinn) 2 juv., 1 ♂, 1 ♀ (UMMZ); Akalokul, 22-I-1938, Shiro Muralami, 1 ♂ (KUEC); *Ngeregong I., Pandanus*, 18-XI-[19]51, J.L. Gressitt, 1 ♂ (BPBM); Melekeiok, 6-IV-1936, Z. Ono, 1 juv. ♀ (BPBM); *Arakabesan I.*, 18-VII-[19]46, [H.K.] Townes, 1 ♂, 3 ♀ ♀ (2 small to very small) (USNM), 1 ♀ (LEMQ); 19/26-II-1987, (Otte, Alexander, Flinn), 1 ♂ (UMMZ); *Babeldaob I.*, Airai, 20-I-[19]48, H.S. Dybas, 1 ♀ (LEMQ); 26-VII-1946, H.S. Dybas, 1 ♀ (very small) (USNM); 20-VII-[19]46, [H.K.] Townes, 1 ♀ (USNM); Babeldaob, Ngiwal-Ngaraard, 6-II-[19]38, T. Esaki, 1 ♂ (KUEC); *Malakal I.*, 2-V-1957 [no collector], 1 ♂ (LEMQ); *Others*, “Palau Group” [only], 19-VII-[19]46, Oakley, 1 juv. ♀ (USNM); Kayangel Atoll, Ngariungs, 16-XII-1949, A.R. Mead, 1 ♀ (BPBM); “Palos (Peleig) [= Palau] Ins[eln], 577” [no collector or date], 1 ♀ (ZMHB); *Tobi I.* 12-IX-1952, N.L.H. Krauss, 1 juv. ♂ 1 juv. ♀ (BPBM); *Chuuk I.*: Moen, Civ. Ad. Area, 18-IV-[19]49, R.W.L. Potts, 1 ♂, 1 ♀ (CASC); 1-III-[19]49, R.W.L. Potts, 1 ♂ (BPBM); 2-IV-[19]49, 1 ♂ (CASC); 13-III-[19]49, R.W.L. Potts, 1 ♂ (LEMQ); 5-III-[19]49, R.W.L. Potts, 1 ♀ (BPBM); 16-IV-[19]49, R.W.L. Potts, 1 ♀ (LEMQ); 30-III-[19]49, R.W.L. Potts, 1 juv. ♀ (CASC); Fefan, 500ft, 27-V-[19]46, Townes, 1 juv. ♀ (USNM); Moen, 18-VII-1985, A. Bowen, C. Nigat, 1 ♀ [ovipositor very short] (ESUG); Moen, 400ft, 23-V-[19]46, Townes, 1 ♂ (USNM); Moen, 100ft, at light, 2-VI-[19]46, Townes, 1 ♂

(USNM); same, 2-V-[19]46, Townes, 1 ♂ (USNM); Moen I, X-1952, J.W. Beardsley, 1 ♂, 1 juv. ♂ (BPBM); 5/9-II-1948, K.L. Maehler, 1 juv. ♀ (BPBM); 27-XII-1935, Z.Ono, 1 ♂, 1 ♀ [det. *E. pallidus* by Willemse], (BPBM); Tol I., Mt. Uniböt, 25-V-[19]46, H.K. Townes, 1 ♂ (LEMQ); Clej-Foup [?], 11-IV-1940, Yasu & Yoshi, 1 ♂ (KUEC); Pata, Sabote-Epin, 10-IV-1940, Yasu & Yoshi, 1 juv. ♂ (KUEC); Colonia, 17-V-1984, I. Schreiner, 1 ♂ (ESUG); *Yap Group*: Yap, Gagil, 14-VII-[19]46, R.G. Oakley, 1 ♂ (small) (USNM); Yaptown, 18-VII-[19]46, Townes, 1 ♀ (very small) (USNM); Ruul-Nif, 3-IX-1939, T. Esaki, 1 ♂ (very small) (KUEC); hill behind Yaptown, 1-XII-1952, 50m, light trap, 1-XII-[19]52, J.L.Gressitt, 1 ♀ (very small) (BPBM); Yap I., IX-1952, N.H.L. Krauss, 1 juv. ♂ (BPBM); Yap I., VII/VIII-1950, R.J. Goss, 1 ♂ (LEMQ); Yap, Colonia, 17-V-1984, I. Schreiner, 1 ♀ (ESUG); Yap I., Colonia, VII/VIII-1950, R.J. Goss, 1 ♂ (small), 1 small juv. ♂ (MCZC); same, 1 ♂ (BPBM); Yap I., Rumung I., 22-X-1952, N.H.L. Krauss, 1 ♂ (LEMQ), 1 small juv. ♀ (BPBM); Map I., VII/VIII-1050, R.J. Goss, 1 small juv. ♀ (MCZC); Rumung I., VII/VIII-1950, R.J. Goss, 1 ♀ (small) (MCZC); Tora, 25-II-1976, M. Lundgren, 1 ♂ (BPBM); Tora, 13-II-[19]76, M. Lundgren, 1 ♂ (BPBM); Tora, 11-I-[19]75, M. Lundgren, 1 ♂ (BPBM); Dinay, 15-XI-[19]75, M. Lundgren, 1 ♀ (BPBM); Dinay [?], 27-XI-[19]75, M. Lundgren, 1 ♀ (BPBM); Dinay [?], 17-VII-[19]76, black light, M. Lundgren, 1 ♀ (BPBM); Dinay [?], 24-V-[19]76, black light, M. Lundgren, 1 ♀ (BPBM); *West Caroline Is.*: Woleai Atoll, Woleai I., 8-II-[19]53, J.W. Beardsley, 1 ♀ (very small) (BPBM); Ulithi Atoll, Mogmog I., 6-X-1952, N.H.L. Krauss, 1 ♂ (BPBM); *Central Caroline Is.*: Ifaluk I., 9-IX-1953, Marston Bates, 1 small juv. ♀ (BPBM). *Wake Island*: Taloa [?] (village), 8-XII-1958, coll. ?, 1 ♀ (LEMQ).

Tegmina 54 mm long., hind femur 26 mm, ovipositor 24 mm. The specimen has exceedingly long tegmina and otherwise is very similar to *nasutus*, including a rather more narrow pointed fastigium of the vertex than usual (not exceptional). The nearest specimens of the species are from Chuuk, and are quite normal (including the stridulatory file of a male a little shorter than average).

AGRAECIINAE

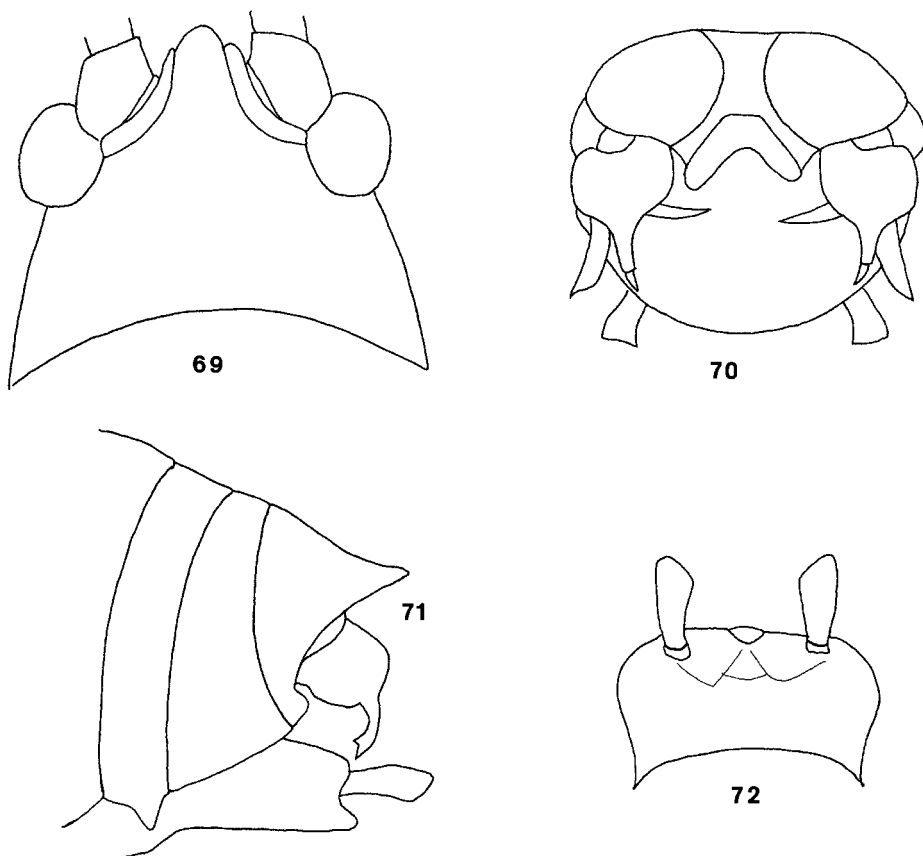
Macroxiphus Pictet

Macroxiphus Pictet 1888: 52. Type species *Macroxiphus nasicornus* Pictet. Karny (1926, Treubia 9) lists some species of *Macroxiphus*.

Macroxiphus globiceratus Vickery & Kevan sp. nov.

Macroxiphus globiceratus Vickery & Kevan; Holotype ♂, (1) "Yap: Dinay [?], 17-VII-1976, Black light"; (2) "M. Lundgren Collector"; type unique (BPBM).

Description: holotype ♂: body length 23.2, uniform shining golden brown except mandibles dark brown to black, face darker than body, tegmina with scattered small darker spots; *head* narrow in front, increasing in width 4.8 toward occiput, length 3.1, median projection extends between antennal bases (Fig. 69);



Figures 69-72. *Macroxiphus globiceratus*: 69, head, dorsal; 70, male supra-anal plate, dorsal; 71, male terminalia, lateral; 72, male subgenital plate.

antennae very long, $2\frac{1}{2}$ times as long as body, filiform; eyes small but prominent, purplish-brown; *thorax*: pronotum 5.5 wide, 6.5 long, without carinae, rounded to lateral lobes, these shorter posteriorly, dorsally with posterior margin extended, principal sulcus at anterior third, curved toward anterior but not reaching margin; tegmina long, 36.7 broader toward apex, veins prominent; wings not projecting beyond tegmina; legs, femora: fore 6.4 with 3 small spines on each ventral carina, larger on internal carina; middle 6.9 has 4 spines on external carina (right), 6 on external (3 very close together) and 2 small spines on internal carina (left); hind 16.0, elongate, slender, external ventral carina with 8 spines (basal 2 very small) on apical half, internal carina with 4 very small spines; tibiae: fore 6.7, tympana open on both sides, each ventral carina with 4 spines; middle, 7.2, 8 external and 5 internal spines on apical half; hind 15.7, square in section with spines on all 4 carinae, many dorsally, fewer ventrally; tarsal segments with flat pads extending beneath next segment, apical pads broad, whitish; *abdomen*:

supra-anal plate bilobate, deeply V-emarginate between acute lobes (Fig. 70); cerci with remarkable globular expansion near base, apically very acute with small acute tooth near apex, globule with opening inward-facing with elongate filament (Fig. 71); subgenital plate broad, base incurved with blunt projections at basal corners, apically nearly truncate with short, club-like styles (Fig. 72).

This is a small species.

Spinisternum Willemse

Spinisternum Willemse 1942: 1. Type species *Spinisternum insularis* Willemse

Spinisternum palauensis Vickery & Kevan sp. nov.

Spinisternum palauensis Vickery & Kevan; Holotype ♂, Palau Is. [as Pelew Is.] [= Palau Is.], Peleliu I., east coast, 4-VIII-1945, col. & pres. S. Dybas, Lot 24342 (FMNH); Allotype ♀, Palau Is., Babeldaob, Ngarekeai Airai, 11-XII-1956 *Pandanus*, H.A. Tehlmann (BPBM).

Description: holotype ♂: body length 17.6; medium brown, shining, head, fastigium and frons with diverging orange-brown lines, these meeting at projection of fastigium; palps very slender, pale but labial palps brown apically; pronotum pale posterior to transverse sulcus; abdomen dark laterally with very pale dorsal areas of abdominal terga, except terminal segment, legs brownish, tibiae apically and terminal segment of tarsi black; *head*: wide 4.6, width between eyes 1.7, head length 2.6; face distinctly slanting, narrow in front, projecting between antennal bases, eyes pale, not protuberant, head fitted closely into pronotum; *thorax*, pronotum extended posteriorly, 5.7 wide, 7.7 long, cut by sulcus crossing behind middle and extending forward obliquely on lateral lobes, these wider, flaring behind (Fig. 73); all sternae spined laterally; tegmina short, mostly concealed by pronotum, stridulatory vein concealed but mirror exposed; legs long; fore and middle tegmina sulcate beneath, fore femur without spines, middle femur with with four posteriorly directed sharp spines; hind femur broad with spines on external carina near apex; fore tibiae with tympanal enlargements but tympana apparently closed or lacking; fore and middle tegmina have seven spines on external carina and nine spines on internal carina without apical spurs; hind tibia has 14 external and 11 internal spines ventrally and eight external and seven internal spines dorsally and three pairs of apical spurs; leg lengths, femora: fore 6.2, mid 6.2, hind 6.5; tibiae: fore 6.1, mid 6.5, hind 6.4; *abdomen*: supra-anal plate with apical margin slightly bilobed (Fig. 74); cerci thick, with small preapical appendages; subgenital plate broad, scoop-like with short styles on posterolateral protuberances (Fig. 75).

Allotype ♀: similar to male but larger (26.9); head width 4.6, width 2.3, between eyes 1.5; pronotum 5.7 at widest point, length 8.2; meso- and metasternae with sharp lateral spines; tegmen 2.4; ovipositor 10.7; legs; femora: fore 3.4, mid 3.5, hind 8.7; tibiae: fore 3.7, mid 3.8, hind 8.3; face strongly slanted; colour as in male but pronotum with dark anterior transverse band, palps pale, very long;

antennae about as long as body; tegmina not reaching 2nd abdominal tergum; all femora with paired lateral apical spurs; tympana closed; ovipositor curved, lacks serrations (Fig. 76); subgenital plate broad, with rounded elevated unattached lobes laterally (Fig. 77).

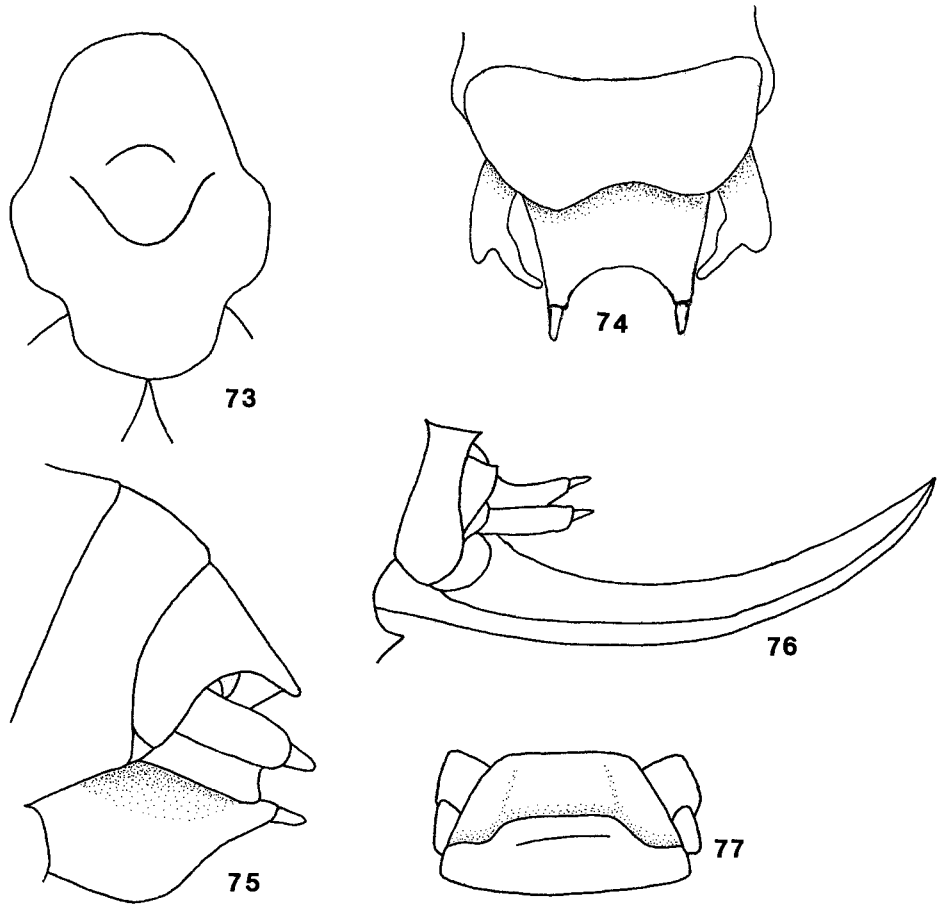
Paratypes: Babeldaob I., E. Ngatpang, 63m, 9-IX-1952, 1 ♂ (LEMQ); Koror I., 30-X-1951, J.L. Gressitt, small ♂ [looks like juv. but is mature] (BPBM); "Palau Group, Babeldaob on W side near Aimeliik, 7°26'30" N, 134°31'00" E, 19/26-February, 1987 (Otte, Alexander, Flinn) # 11", 1 ♀ (ANSP); "Palau Group, Peleliu, 6°59'25" N, 134°14'45" E, 19/26-Feb 1987 (Otte, Alexander, Flinn), loc. # 12", "captured in forest", 1 ♂, 1 ♀ (ANSP, ♀ to LEMQ); "Palau Group, Koror, 2 miles N. of airport, ca. 7°23'N, 134°32'E, 19/26 Feb. 1987, in forest (Otte, Alwxander, Flinn), # 13", 1 ♂ (ANSP)

Male cerci and female subgenital plate distinct as is color pattern on dorsum of abdomen. The poerior margin of the pronotum is rounded and extended in the female. Spines on inner carinae of fore femora are as in *Gonatacanthus* Karny (1907), which seems very similar, except for the mesosternum and mesonotum (in *Gonatacanthus* it is triangular). In the present species the mesosternum also is raised and dentate as in the type species of *Spinisternum* which is also raised and dentate to some degree.

Note: *Gonatacanthus* may have to be restricted to type species *G. werneri* Karny 1907, from Sri Lanka and *G. [ex Oxystelus] pulcher* (Bol, 1900) from south India, though the latter has short pratenal spines. *G. inexpectatus* Willemse 1953, from Sumba may belong in *Spinisternum* (see below). It may be alright but the sternum was not described and the fore femora have rounded inner lobes. There are also *G. griffini* (see below) and *G. decipiens* Karny 1926, from New Guinea which may belong in *Spinisternum* (see below) but description of the sternum is lacking though ovipositor is here seen to be widest in middle, which is less so in *Spinisternum*. *Spinisternum* is actually compared only with the Australian *Psacadonotus* by Willemse (1942) (not with *Gonatacanthus*) presumably on the basis of the spini-form meso- and metanota. The type species of *Spinisternum* is *S. insularis* from the Solomon Islands. It has larger tegmina. Another species of *Spinisternum*, *S. castaneipictus* Willemse from NE New Guinea has sterna as in the present species but the female subgenital plate differs. The Lyman Museum (LEMQ) has 1 ♀ from New Guinea: Tunakau (Girii) ca. 55-65 km WSW Okapa, 7-IV-1973, K. Ströder, which may be *Gonatacanthus griffini* Karny 1911 [descr. Finschhafen]. This female is apterous. It also has mesosternal lobes raised and parted at sides (but not bidentate) and the metasternal lobes raised (but only slightly tuberculate) apically. The ovipositor is not really wider at middle but the subgenital plate fairly characteristic. This MAY be a *Spinisternum* and take with it *G. griffini*.

Hexacentrus Audinet-Serville

Hexacentrus Audinet-Serville 1831: 145. Type species *Hexacentrus unicolor* Audinet-Serville



Figures 73-77. *Spinisternum palauensis*: 73, male pronotum, dorsal; 74, male supra-anal plate, dorsal; 75, male terminalia, lateral; 76, ovipositor; 77, female subgenital plate.

Hexacentrus mundus (Walker)

Piura mundus Walker 1869: 282.

This species seems to be new for Micronesia. It has not been reported before and was not listed by Kevan (1987). The insect is rather conspicuous and if present should have been reported before. It is known from the Phillipines and could have been introduced recently from that source.

Two male specimens are known: data is as follows: (1) Micronesia, Caroline Isl's, Palau Group: Peleliu 6°59'25" N, 134°14'45" E, 19-26 Feb 1987, loc. # 12 (Otte, Alexander, Flinn), (2) captured in forest (1, LEMQ; 1, ANSP).

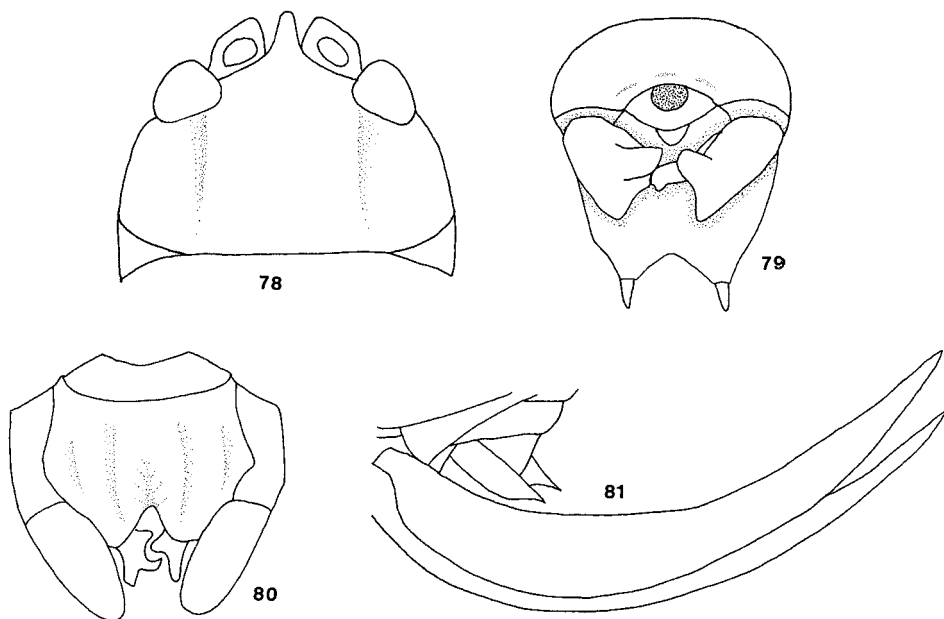
Salomona Blanchard

Salomona Blanchard 1853: 361. Type species *Salomona marmorata* Blanchard

Salomona ponapensis Vickery & Kevan sp. nov.

Salomona ponapensis Vickery & Kevan; Holotype ♂, (Latroune Islands = Caroline Is.), Ponape I., Nanpil Dist., 25-II-1948 (LEMQ).

Description: holotype ♂: Robust, body length 46.4; dark brown, darker than other *Salomona guamensis* and *S. dublona*; head broad 9.2, length 6.6, projected forward between and slightly exceeding antennal bases, apex acute (Fig. 78), face strongly slanting in profile, eyes small, paler brown than body, dorsum with sulci from internal border of eye diverging to occiput; antennae half as long again as body length; thorax: pronotum distinctly saddle-shaped, 9.3 wide, 10.7 long; principal sulcus slightly behind middle angled forward laterally but not reaching lateral margins, second sulcus at anterior fifth curved forward toward but not reaching anterior margin; lateral convoluted, and extended laterally as blunt projections behind middle; tegmina long 34.6, purplish brown with strongly contrasting white veins, extending slightly beyond apex of abdomen; mirror and probably stridulatory vein covered by posterior extension of pronotum; legs, fore coxae with long sharp spine; femora: fore 11.0, with short black-tipped spines on both ventral carinae; middle 10.3, similar to fore; hind 19.4, with 9 spines on internal carina only; tibiae: fore 10.0, 6 spines on internal carina, 5 on external carina, tympana open on internal face only; middle tibia 11.5, spines as on fore tibia; hind tibia square in section with spines on each carina; abdomen: apical tergum strongly U-emarginate; cerci very large with internal-facing overlapping pro-



Figures 78-81. *Salomona ponapensis*: 78, male head, dorsal; 79, male terminalia, posterior (to show cerci); 80, male subgenital plate; 81, ovipositor and female cerci

jections (Figs. 79); subgenital plate elongate, extended V-emarginate apically with short styles on terminal projections (Fig. 80)

The cerci are larger than those of *S. dublona* but smaller than those of *S. guamensis*, not acute apically as in *S. dublona* or very blunt as in *S. guamensis* (See Figs. 84, 87, 90).

Paratype, one immature female: Caroline Is., Senyavin Is., Ponape Isl, gauging station on west-most branch of Pilen Kiepw River, S. of Kolonia, 120 m, 6°55'08" N, 158°12'03" E., 6 Feb - 6 Mar, 1987, Loc # 15 (Otte, Alexander, Flinn). (ANSP), retained in LEMQ. Robust, 43.1 in length, shining, similar to the male in general shape and colour; face dark brown; tegmen blackish 8.2; head 8.3 wide, 6.2 long, pronotum 9.3 wide, 9.3 long, shape as in male; legs, femora: fore 11.3, mid 9.8, hind 18.4; tibiae: fore 9.2, mid 10.7, hind 18.4, ovipositor curved upward (Fig. 81); cerci very sharply pointed; posterior tergum deeply emarginate; supra-anal plate small, nearly square.

Also seen (juvenile specimens): 2 juv. ♀♀, same data as last (1 - last instar, LEMQ, 1 - 2nd before last ANSP); Ponape I., Mt. Tolorahkeit Metalamm Dist [?], 3-VII-1949, C.F. Glassman, 1 juv. ♂, antipenultimate instar (BPBM); Ponape (N.), SE Hanponmel [?], alt. 70-80m, 7-I-1952, J.L. Gressitt, 1 juv. ♂ (penultimate instar) (BPBM); Ponape, Mt. Tamatanansakir, 100m., 1-I-1953, J.L. Gressitt, 1 small juv. ♂ (BPBM)

The name previously used for the Pohnpei specimens, *S. godeffroyi* seems to belong to a species that is confined to New Guinea and the Bismark Archipelago. *S. solida* was described from Raoul I. in the Kermadec group between Fiji and New Zealand—as Sunday Island, Anotaken and “Sundaw” Island, New Zealand (Walker 1869). How widely this is distributed is a moot point but we think that anything west of New Caledonia is suspect. Willemse’s Key Is. specimens may have an available name—*albipes* Willemse, which he used as a “voucher” name.

This species has much in common with *Salomona guamensis* but that species has the basal process broader and more under the “central” one. Also the general colouration is paler in *S. guamensis*. The frons is uniformly black or blackish even to the top of the frontal ridge, but the fastigium is pale. In this it differs from *S. “sansugei”* of Fiji and the Loyalty Islands. The frons of this species is more like that of *S. truncatum* than other species. It is rather evenly and strongly granulate (a “bit” more than in *S. saussurei*). There is some resemblance to *S. “vespifia”* Willemse from New Hebrides, but frontal sculpturation of that species differs - as do the male cerci.

Salomona guamensis Hebard

Salomona guamensis Hebard, 1922: 232. (Guam).

Salomona [spp.]; Townes, 1946: 30 (Guam, Rota).

Salomona guamensis; Willemse, 1959: 104, 105, 115, Pl. 22, fig.1; Beller 1948: p. 4 [=p. 7] (Guam); Kevan 1987: 308 (table 3 c)

Distinguished from *Salomona ponapensis* and *S. dublona* (See Figs. 89-91).

Specimens examined: *Mariana Is., Guam:* Mt. Lamlam, XII-1958, N.L. Krauss, 1 juv. ♀ (BPBM); same, X-1957, N.[L.H.] Krauss, 1 ♀ (BPBM), 1 ♀ (LEMQ); Guam I., 1924, Hornbostel coll, 1 ♀ (BPBM); Guam, [no date], D.T. Fullaway, Collector, Det. O. Swezey, 1 ♀ (BPBM); Guam, Baniseda Heights [?], 18-VII-1986, on *Mylemus thompsoni*, I. Schreiner, 1 juv. ♀ (ESUG); Paasan [?], 15-VI-[19]36, R.L. Usinger, 1 ♂ (ANSP); Yigo, 15/16-VII-1969, Ivan de Soto, 2 ♀ ♀ (BPBM); *Rota I.* 13/16-III-1969, P.M. Davis, 1 ♂ (ESUG); Rugi [?], 29-VI-1946, R.G. Oakley, 1 ♂, 2 juv. ♀ ♀ (USNM).

Salomona truncata Redtenbacher

Tapeina truncata Brunner von Wattenwyl 1891: 74 [*nomen nudum*].

Agroecia truncata; Schmeltz & Pohl, 1877: 21 (Palau Inseln).

Salomona truncata Redtenbacher 1891: 471, 475, 476. Holotype ♀, Palau Is., [MNHW]

Salomona truncata; Brongniart 1897: 137, 151, figs. 16-18 (female); Griffini 1899: 9 (female)

S[alomona] Truncata; Kirby 1906: 266 (part - Pelew I. only).

Salomona truncata: Karny 1907: 73; 1912: 21; 1912: 33, pl. 7, fig. 4

Salomona [spp.]; Townes 1946: 30 (part - Palau Is.).

Salomona carolina Willemse 1951: 356, pl XI, figs. 18-20; syn. Willemse 1959: 94

Salomona carolina; Gressitt, 1953: 98 [+ index p. 150] as *carolina*, *Salomona*, p. 155; 1954: 160, table 12 [as a Gryllacridid [herbivore] in rain forest on *Pandamus*, Palau's]; also, p. 184, [given as a gryllacridid]

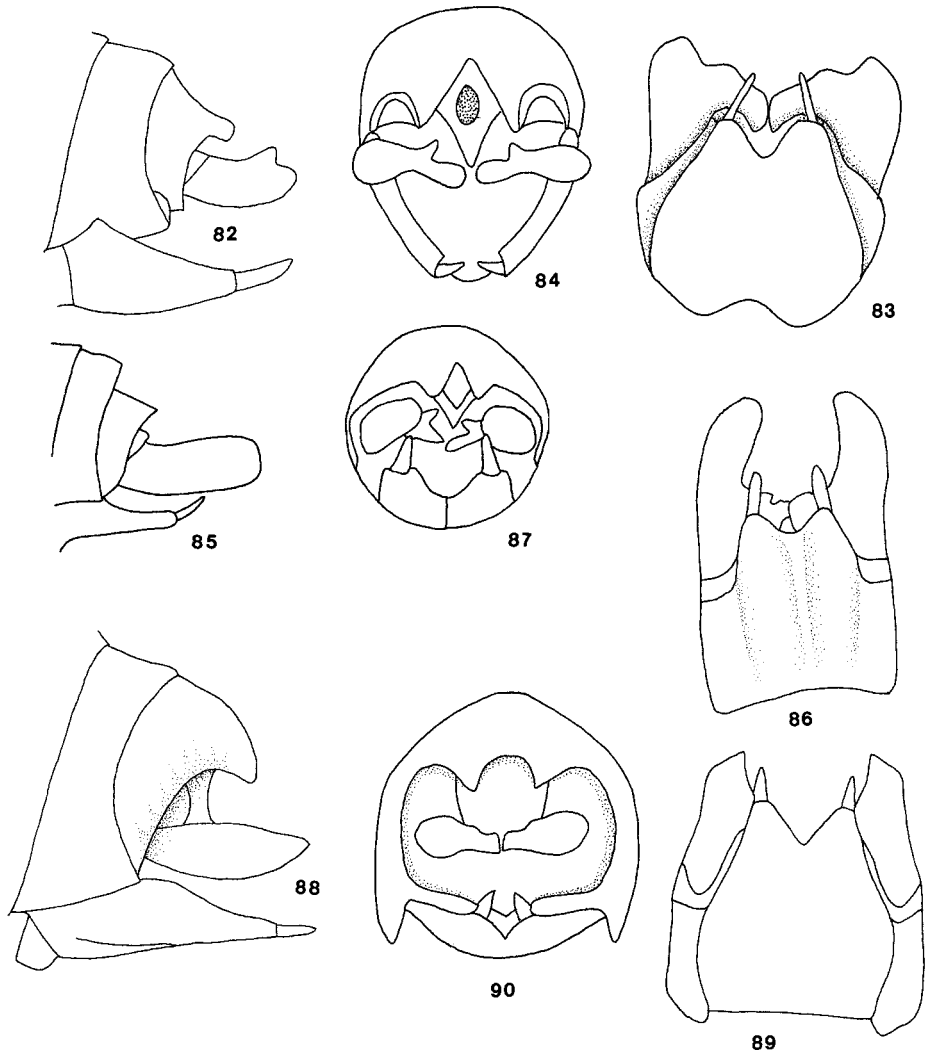
Salomona truncata: Willemse 1959: 94-96, pl. 38, fig. 1.

Salomona carolina: Owen 1971: 1 [on *Pandamus*, as Gryllacrididae, from Trust Territories of the Pacific Islands]

Salomona truncata; English 1978: 131 [descr. of prev. unknown ♂, Palau Islands]; Kevan 1987: 308, Table 3(c)

Description: (previously unknown male, from English, 1978) *Body:* size medium, form robust. *head:* unlike female, as broad or broader than pronotum viewed from above; frons and anterior area of genae distinctly punctate; narrow band in middle of frons evenly granular; frons with 4 pairs of regular, distinct, impressed areas; first pair above clypeus more distinct; post-clypeus with series of narrow, incomplete ridges somewhat concentric and elliptical; posterior part of genae slightly rugose; vertex almost smooth with few punctures arranged in rows; fastigium of vertex slightly curved upwards but not reaching beyond antennal scape, apex compressed laterally; base of frontal margin in profile with short, obtuse tooth roundly excised; *thorax:* pronotum almost smooth, nearly quadrate from above with impressed punctures, anterior margin rounded, truncate; posterior margin produced behind, obtuse angulate; two transverse sulci present, anterior one slightly deeper on lateral lobes, shallow on pronotal disc; posterior sulcus at middle, very deep on lateral lobes, much shallower above but deeper than ante-

rior sulcus; lateral lobes distinctly longer than deep, lower margin somewhat concave, posterior margin at humeral angle subconcave as in female; anterior margin of metasternum with obtuse spine, mesosternal lobes each with short obtuse posterior spine; *wings*: tegmina reaching middle of hind tibia, basal third narrowing apically; costa absent, subcosta nearly straight with indistinct apical branching,



Figures 82-90. *Salomona* species. Figs. 82-84, *S. guamensis*: 82, male terminalia, lateral; 83, male subgenital plate; 84, male terminalia, posterior (to show cerci); Figs. 85-87, *S. truncata*: 85, male, terminalia lateral; 86, male subgenital plate; 87, male terminalia, posterior (to show cerci); Figs. 88-90, *S. dublona*: 88, male terminalia, lateral; 89, male subgenital plate; 90, male terminalia, posterior (to show cerci).

radius branching indistinctly near apex, radial sector bifurcate on apical third, median straight with distinct apical branch, cubitus short, anal veins absent; hind wing with costa short, subcosta simple, radius simple and bifurcate near apex to form radial sector, media close to radius near base, bifurcate in basal quarter; stridulatory apparatus with irregular ovoid mirror, file with approximately teeth; *legs*: femora and tibiae minutely spinose; fore femur with six pairs of spines on lower margin, unarmed above, only inner genicular lobe armed with strong spine; median femur with one or two spines basally on lower inner margin, upper margin unarmed, one small spine on inner genicular lobe; hind femur with seven to eight spines on lower inner margin, upper margin unarmed; anterior tibia with six pairs of spines on lower margin, median tibia with six spines on lower inner margin and ten spines on lower outer margin, hind tibia with six to seven spines on lower inner margin with one apical spine, upper inner margin with eleven spines, eight to nine spines on upper margin and one apical spine; *abdomen*: penultimate tergum short (Fig. 85), posterior margin excised; supra-anal plate small, triangular, apex rounded, disc sulcate in middle, this narrowing posteriorly; cerci thick, granulose, apex obtusely rounded curving inward near apex, large blunt tooth near base and a lobe just behind it (Fig. 87); subgenital plate longer than broad, lateral margins converging for half the length, then margins parallel to posterior margin, anterior margin convex, posterior margin triangularly excised (Fig. 86); *color*: brown to yellowish brown; eyes brown with irregular black markings, upper margins yellowish; antennae reddish brown; frons, anterior part of genae and clypeus reddish-brown, latter with lower margins yellowish, labrum black with upper margin reddish-brown and lower margin yellowish, vertex with two black stripes that converge from pronotum to inner margins of eyes; pronotum brownish-yellow with yellow lateral margins; tegmina brown, veins yellowish; all legs reddish-brown with black genicular areas; abdominal terga with two dark brown spots on each side; cerci, supra-anal plate and subgenital plate brownish

Willemse (1951) described females of *Salomona carolina* [= *truncata*].

Specimens examined: *Western Caroline*, Palau Islands: Garakayo Island, VIII-1945, H.S. Dybas, 2 ♂♂ [in dry folded *Pandanus* leaf], 1 juv. ♀, 1 juv. ♀ (FMNH, BPBM); Palau, Arakabesan I., Palau Pacific Resorts, 19/26-Feb. 1987, Otte, Alexander, Flinn 1 ♂, 1 ♀ (UMMZ); Micronesia, Caroline Is., Palau Group: Peleliu, 6°59'25" N, 134°14'45" E, 19-26 Feb 1987, loc # 12, (Otte, Alexander, Flinn), captured in forest, (all pointed), 1 ♂, 1 ♀, 1 juv. ♂ (ANSP); Urukthapel I., 8-IX-[19]49, Y. Kondo, coll., 1 ♀, 1 juv. ♀ (BPBM); Pelelui [sic] I., IV/V-1949, D.B. Langford, 2 ♂♂, 2 ♀♀, 1 juv. ♀ [ex alcohol] (BPBM); Peleliu I., [no date or collector], 1 ♀ (LEMQ); Angaur I., IV/V-1949, D.B. Langford, 1 small juv. ♀ [ex alcohol], (BPBM); Peliliou [sic], Akarakoro- Ashiasu- Garudoruko, 11-VIII-1939, T. Esaki, 1 juv. ♂ (KUEC); Angaur I., Saipan-Kitamura, 26-II-1938, T. Esaki, 1 juv. ♂ (KUEC); Koror I., 18-IX-1947, H.S. Dybas, 1 juv. ♂ (USNM); Koror, 22-I-1948, limestone ridge S. of inlet, H.S. Dybas, 1 juv. ♀ (FMNH); Angaur I., 5-II-1948, H.S. Dybas, 1 juv. ♀ (FMNH); Peleliu, ridge N. end, 30-I-

1948, low shrubs at night; song - soft rasping twice per second, H.S. Dybas 2 ♂♂, 1 ♀ (1 ♂ FMNH, 1 ♂, 1 ♀ LEMQ); Ngeregong I., *Pandanus*, 18-XI-1951, J.L. Gressitt, 1 ♂, 1 ♀ (BPBM)

In addition, several paratypes of *Salomona carolina* were examined by Kevan, as follows: (1) Caroline Islands; (2) Angaur I. [no dates]; (3) Z. Ono coll'r; (4) *Salomona carolina* nov. sp. Det C. Willemse; (5) Paratype [black bordered on red]; (6) Paratype [printed], 1751 [hand] on yellow; 2 ♀♀ (BPBM); also a ♀ labelled same but coll."IV-17-36"; another ♀ labelled "Cotype". Willemse (1951) implied that all 7 paratypes had the same data as the holotype, "Angaur Isl., 17-4-36, coll. Y. Kondo" but they differ in collector and date. His table of measurements is labelled "♂" but all of his specimens were females and the male was at that time unknown.

Salomona dublona Willemse

Salomona suturalis [nec Redtenbacher 1891]: Holdhaus, 1908: 11 [wide geographical range given incl. "Karoline"; type locality was Samoa; Willemse 1951 could not place it - type lost].

Salomona [spp.]; Townes 1946: 30 [part].

Salomona dublona Willemse 1951: 334, 356, pl,11, fig. 21. Holotype ♀, Dublon Island (BPBM).

Salomona dublona: Willemse 1959: 103-104; English, 1978: 142; Kevan 1987: 308 [Table 3 (c) (southwest and southcentral Carolines)].

Salomona sp., near *S. truncata*: English, 1978: 147 (Yap Island).

Specimens examined: *Central Caroline Is., Chuuk:* Tol Island, Mt Uniböt, light trap, 31-XII-1952, J.L. Gressitt, 1 ♀ (BPBM); *Yap Is.:* no date], T. Esaki, 1 ♀ (LEMQ); "Chuuk Atoll, Mt Toloman, Toleas [?], VII.17.46 [17-VII-1946], [no collector], 1 ♂ (LEMQ); Moen, Civ. Ad[*min.*] Area, 2-IV-1949, R.W.L. Potts, 1 very young juv. ♀ (CASC).

See Figure 90, compared with *S. guamensis* (Fig. 84), *S. ponapensis* (Fig. 79) and *S. truncata* (Fig. 87).

Salomona solida (Walker)

Agroecia solida Walker 1869: 295, 299.

Reported by Karny (1914: 448) "Karolinen (Ponape)". We have not found specimens of this species from Ponape or any of the other islands. Willemse (1959: 86) listed it, followed by Kevan (1987: 308, table 3 c), based upon Karny's earlier report.

MECONEMATIDAE

Meconematinae

Xiphidiopsis Redtenbacher

Xiphidiopsis Redtenbacher 1891: 333, 531. Type species *Xiphidiopsis fallax* Redtenbacher.

Xiphidiopsis lita Hebard

Xiphidiopsis lita Hebard 1922: 345.

One female, presumably of this species, from isolated Ocean Islands (Banaba Island), -XII-1957, N. Krauss, is in the Bishop Museum. Also, a small female from Ponape Island, is in the collection of the U.S National Museum (Agric. Experiment Station, 7V/X-1950, P.A. Adams).

This species is parthenogenetic; it could have been brought to these places from Hawai'i. It is generally distributed in the Society Islands, the Marquesas and the Hawaiian Islands.

Specimens examined: *French Polynesia, Moorea I.*, Opunohu Bay, s. end, 6-X-1958, D.E. Daleston (USNM); *Cook Is.:* Rarotonga Is., Avatiu, 0-200m, XI-1979, N.L.H. Krauss 3 ♀♀ (BPBM); same, Avatiu Valley, 0-150m, III-1979, N.L.H. Krauss, 1 ♀ (BPBM); same, XII-1977, 3 ♀♀ (BPBM); Rarotonga, Tokokoitu, 0-20m, 25-II-1977, N.L.H. Krauss, 1 ♀ (BPBM); Rarotonga, 6-X-1934, 1 ♀ (LEMQ); *Austral Is.*, Tubuai I, i-1923, Eugene Doom, 1 ♀ (LEMQ); *Fiji Is.:* Nananu-I-Ra-I, 3-VIII-1969, G.S. Robinson, 1 ♀ (LEMQ).

PHISIDINI*Kevanophisis* Jin

Kevanophisis Jin (in Jin & Kevan 1992): 71. Type species (monotypic) *Kevanophisis ponapensis* (Kevan). [Kevan, in manuscript had described this species as *Phisis ponapensis*. After his death in 1991, Jin erected this new genus for it. It differs from other genera of the Phisidini in male abdominal terminalia and epiphallus and also it possesses front coxal processes and a middle dorsal sub-basal spur. Jin placed the species in the subtribe Phisidina].

Kevanophisis ponapensis Kevan

Kevanophisis ponapensis Kevan [*in* Jin & Kevan 1992]: 73.

Specimens examined: Holotype ♂, Mt. Nanalaud, PONAPE [= Pohnpei] I., alt. ca. 2000 ft., 18 Mar. 1948, H.S. Dybas (BPBM); Allotype -Nanpil Nett Dist., Ponape I.; Paratypes all from Ponape Island localities (Mt. Dolenmankap (2000m); Mt. Tolenkiup (700m); Mt. Ninani (in *Pandanus*); Patapat).

This species is known only from Eastern Carolines, Pohnpei Island.

Phisis Stål

Phisis Stål 1861: 324. *Locusta pectinata* Guérin.

Phisis holdhausi Karny

Listroscelis pectinata [*nec* Guérin-Méneville], Stål 1861, as type species of *Phisis*; actual specimen misidentified [see Kevan 1986: 306-307].

Phisis holdhausi Karny 1926, Treubia 9 (1-3): 174, 176, fig. 165. Type locality, Vanuatu, New Hebrides [Type apparently lost]. *Neallotype* ♂, *Neallotype* ♀:

(1) NEW HEBRIDES/ESPIRITO SANTO/Santo, 21-31.VII.[19]58 [printed]; (2) Borys Malkin/ collector/ Bishop Museum [printed; (BPBM); Jin & Kevan 1992: 100.

Phisis pectinata [nec Guérin-Ménéville]: Dumbleton 1954: 69.

Ph[isis] holdhausi; Jin, 1987: 283-290; 1990: 63.

Phisis holdhausi; Kevan, 1987: 308, 313, 316, 317, 319.

Specimens examined: for complete distribution, all localities, see Jin and Kevan 1992, pp. 100-104; Micronesian records as follows: *Caroline Is.*: Kapingamarang A., Werua I., 2-VII-[19]54, W.A. Niering, 1 ♂ (BPBM); Taringa I., 23-VII-1954, W.A. Niering, 1 ♂ (BPBM); Sorol, 4-X-1952, N.L.H. Krauss, 2 ♂♂ (BPBM); Guilifez R., Ruul, 8-IX-1939, T. Esaki, 1 ♀ (LEMQ); *Palau Is.*: Arakabesan, 18-VII-1946, Townes, 1 ♀ (USNM); Babelthuap I., 20-VII-1946, Townes, 1 ♀ (USNM); Kayangel, 15/16-IX-1951, J.L. Gressitt, 1 ♀ (BPBM); Koror, 6-VI/19-VII-1953, J.W. Beardsley, 1 ♂, 1 ♀ (BPBM); Koror, at light, XII-1952, J.L. Gressitt, 1 ♀ (USNM); Koror, sweeping, 15/25-III-1948, R.L. Maehler, 1 ♀ (LEMQ); Ngulu, 3-X-1952, N.L.H. Krauss, 1 ♀ (BPBM); Palau, Ulebeehel I., beach, 24-IV-1957, C.W. Sabrosky, 1 ♂ (USNM); Peleliu (ex *Oryctes* Coconut stump), 2/3-IX-1951, J.L. Gressitt, 1 ♂ (BPBM); Peleliu, Amiangel, 22-XII-1952; J.L. Gressitt, 1 ♀ (BPBM); Peleliu, 4-VIII-1945, E. Hagen, 1 ♂ (FMNH); Peleliu, 22-VI-1972, M.R. Lundgren, 1 ♂ (CASC); Pulo Anna, 13-IV-1952, N. Krauss, 1 ♂ (BPBM); Sonsorol, 13-IX-1952, N. Krauss, 1 ♂ (BPBM); Ulimang, 21/24-XII-1947, H.S. Dybas, 1 ♂ (LEMQ); Yap I., 8-IV-1939, T. Esaki, 1 ♀ (LEMQ).

Phisis vittata Kevan

Phisis vittata Kevan 1992 (in Jin and Kevan): 105. Holotype ♂, Ponape Island, Mt. Nanalaud, alt. 1000-2000ft, 19-III-1948, H.S. Dybas (USNM); Allotype ♀, Kusaie Is., Mt. Tafeyat, 1000-2000-ft, 20-VIII-1946, H.K. Townes (BPBM); Paratype ♀, Ponape I., Patapat, 15/30-X-1913, Ledermann (ZMHB).

No other specimens are known at this time.

Phisis willemsei Kevan

Phisis willemsei Kevan 1987: 296, 308n, 314.

Specimens examined: Caroline Islands, Ponape I., 14-III-1936, Z. Ono, *Phisis* sp., det Willemse, *Phisis willemsei* n.sp. Kevan, 1986, (BPBM) holotype ♂; allotype, ♀, same data as holotype but collected 6-III-1936; Paratypes, 4 ♂♂ same data as holotype (S. Otomo coll., BPBM). All the following were listed by Kevan 1987, but they were not, at that time called paratypes: *Caroline Is.*: Palau Is.: Babelthuap I., Ulimang, 24-XII-1974, H.S. Dybas, 1 ♀ (FMNH); Fais I., 5-X-1952, N.L.H. Krauss, 1 ♀ (BPBM); Nomwin I., 17/18-II-1954, J.W. Beardsley, 1 ♂ (BPBM); Sorol Atoll, Sorol I., 4-II-1952, N.H.L. Krauss, 1 juv. ♀ (BPBM); Ulithi Atoll, Fassarai I., 10-VII-1946, H.K. Townes, 1 ♂ (ex alcohol) (USNM); same, R.G. Oakley, 1 juv. (small, damaged) (USNM); Mogmog I., 11-VII-1946,

H.K. Townes, 1 ♀ (USNM); same R.G. Oakley, 1 ♀ (ex alcohol) (LEMQ); Woleai Atoll, Utagal, 28-VII-1946, H.K. Townes, juv. ♀ (USNM); Ifaluk [=Ifalik] Atoll, Ifaluk [=Ifalik] I. 23-VII-1953, Marston Bates, 1 ♀ (USNM), 1 ♀ (LEMQ); same but 9-VIII-1953, 1 ♀ (BPBM); Chuuk Group, Ruck [sic], V-1896, 1 ♂ (NHMW); Moen, Civil Administration Area, 5 -II-1949, R.W.L.Potts, 1 ♂ (LEMQ); same but 4-III-1949, 1 ♂ (LEMQ); same but 10-III-1949, 1 ♂, 1 ♀ (BPBM); same, 15-III-1949, 1 ♀ (LEMQ); same, 20-III-1949, 1 ♂ (LEMQ); same, 15-II-1949, 1 ♀ (LEMQ); same, 25-III-1949, 1 ♂ (BPBM); same, 24-IV-1949, 1 ♂, 1 ♀ (BPBM); Moen, 1-XII-1970, M.R. Lundgren, 2 ♀♀ (CASC); Moen, porch light, 13-VII-1985, A. Bowden-Kloss, 1 ♀ (ESUG); *Senyavin Is.: Kosrae* (formerly Kusaie) *Group*: Malem [=Malam], 19-XII-1937, T Esaki, 1 ♀ (KUEC); Matanluk (Yepan), 16m, light trap, 23-I-1953, J.L. Gressitt, 1 ♂ (BPBM); Funaupes, 29-I-1953, J.F.G. Clarke, 1 ♀ (small) (BPBM); Tafeyat River, 95m, 9-II-1953, J.F.G. Clarke, 1 ♂ (USNM); Pukusrik, 14-II-1953, J.F.G. Clarke, 3 ♀♀ (BPBM); Matunluk, 22m, 15-II-1953, J.F.G. Clarke, 1 ♂ (USNM); same, 1 ♂ (LEMQ); same, 18-III-1953, 1 ♂ (LEMQ); same 1 ♀ (BPBM); Mt. Matante, 580m, 4-III-1953, J.F.G. Clarke, 1 ♂ (USNM), 1 ♂ (LEMQ); Hill 541, 165m, light trap, 11—1953, J.F.G. Clarke, 1 ♂, 4 ♀♀ (BPBM); same, 19-III-1953, J.F.G. Clarke, 1 ♂, 1 ♀ (USNM); same, 24-IV-1953, 1 ♀ (LEMQ); same, 31-I-1953, 1 ♂, 1 ♀ (BPBM); Wakap, 290m, 7-IV-1953, J.F.G. Clarke, 2 ♀♀ (USNM); Matante, 380m, light trap, 22-IV-1953, 1 ♀ (LEMQ); Malem, 29-V-1984, on corn, D. Nafus, 1 ♀ (ESUG); Lele I., “Leilo”, 5-XII-1937, Teiso Esaki, 1 ♂ (KUEC); Lele, 21-VIII-1946, R.G. Oakley, 1 juv. ♂ (USNM); Lele, 20-IX-1984, D. Nafus, ♂ (ESUG); Pingelap Atoll, Pingelap, 26-I-1953, J.L. Gressitt, 1 ♀ (USNM); *Pohnpei* (formerly *Ponape*) *Group*: Manuae I., VI/IX-1950, P.A. Adams, 1 ♀ (MCZC); Pohnpei I., Ponape, 1986, [no collector], 1 ♀ (BMNH); Ponape, 1904, Berg, 1 ♂, 1 ♀ (ZMHB); Ponape, Patapat, 30-X/15-XI-1913, Ledermann, 1 ♂, 1 ♀ [traced from Berlin Museum reference number “4971”, the only data on the specimens] (ZHMB); “Koronia [=Kolonía or Colonia], 9-VII-1927, S. Uchicham[a], 1 ♂ (BPBM); Kolonia [=Colonia], 6-I-1938, T. Esaki, 1 ♀ (KUEC); Kolonia, 20-I-1938; Ken Kuya, 1 ♂ (KUEC); Colonia, 8-VIII-1946, R.G. Oakley, 2 ♂♂ (USNM); same, 13-VIII-1946, 1 ♂ (USNM); Colonia, nr. sea level, 24-II-1948, H.S. Dybas, 1 ♀ (FMNH); same, 29-II-1948, 2 ♂♂ (BPBM) 1 ♀ (LEMQ); same, 6-III-1948, 1 ♂ (IEAS ex PSBD); same, 8-III-1948, 1 ♂ (LEMQ), 1 ♀ (IEAS); same, 9-III-1948, 1 ♀ (LEMQ), 1 ♀ (IEAS); same, 14-III-1948, 1 (LEMQ); Ponape [only], on *Metalanum* plant, 15/26-XII-1948, D.B. Langford, 1 ♀ (BPBM); Ponape [only], 7/31-I-1949, K. Maehler, 2 ♂♂, 1 ♀ (USNM); Kolonia, VII-1949,, S.F. Glassman, 2 ♀♀ (BPBM); Colonia, Ag. Exper. Sta., VI/IX-1950, P.A. Adams, 1 ♂, 2 juvs. [very small] (MCZC); Colonia, VI/IX-1950, P.A. Adams, 1 ♂ (BPBM); Ponape Airfield, VI/IX-1950, P.A. Adams, 1 ♀, 1 juv. [only head left] (MCZC); Colonia, Agric. Exper. Sta., 6-I-1953, J.L. Gressitt, 1 ♂ (BPBM); Ponape (N.), SE of Nanponmal, ex *Hibiscus tiliaceus*, 7-I-1953, J.L. Gressitt, 1 ♂ (BPBM); Colonia, 12-I-1953, J.F.G. Clarke, 1

♂ (USNM); *Marshall Is.*: *Ralik Chain, Ailinglapalap Atoll*: Bigatyelang I., 25-VIII-1946, H.K. Townes, 1 ♂ (USNM); same, sweeping, 15-XI-1948, D.B. Langford, 3 ♂♂, 2 ♀♀ (USNM), 1 ♂ (LEMQ); Ebon Atoll, Ebon I., 27-IX-1953, J.W. Beardsley, 2 ♂♂, 1 ♀ (BPBM); *Eniwetak Atoll*: Eniwetak I., 5-VI-1946, J.P.E. Morrison, 1 ♀ (USNM); Engebi I., Bogombogo, on “leave” of Hanpaku Bean (*Scaveola*), 30-XII-1950, Y. Ôshiro, 1 ♂ (BPBM); Eniwetak A[toll], 30-XII-1951, Y. Ôshiro, 1 ♂ (LEMQ); Eniwetak [I.], 15-V-1946, Townes, 1 ♂ (USNM); Igurin I., 20-VIII-1956, L.D. Tuthill, 1 ♂, 2 juv. (BPBM), 1 ♀ (LEMQ); Japtan I., 17-V-1946, H.K. Townes, 1 ♀ (USNM); Japtan I., 27-VIII-1955, L.D. Tuthill, 1 juv. ♀ (BPBM); same, 30-VIII-1956, 1 ♂ (LEMQ); Kirinian I., beating *Scaveola*, 6-I-1951, Y. Ôshiro, 1 ♀ (LEMQ); Jaluit Atoll: Jaluit [only], no date, Steinbach, 2 ♂♂, 6 ♀♀, 1 juv. ♂ (ZMNH); Jaluit [only] X-[18]79, Dr. O. Finsch, 2 ♂♂ [1 lacks abdomen] (ZMNH); same, 6-II-1880, 2 ♂♂ (ZMNH); same, 7-II-1880, 2 ♂♂ [1 lacks abdomen] (ZMNH); same, 8-II-1880, 1 ♂ (ZMNH); Imrodj I., 23-III-1946, H.K. Townes, 3 ♂♂, 1 ♀ (USNM, 2 ♂♂, LEMQ 1 ♂, 1 ♀); same, 24-VIII-1946, 1 ♂ (USNM); Imrodj I., 23-VIII-1946, R.G. Oakley, 1 ♂ (USNM); Jabor I., 27-XI-1937, Teiso Esaki, 1 ♀ [abdomen lost] (KUEC); Jabor, ex *Ipomoea*, 24-IV-1958, J.L. Gressitt, 1 juv. ♀ [very small] (BPBM); Jabor I., 1-V-1958, J.L. Gressitt, 1 ♂ (BPBM); Kinajon I., 29-IV-1958, 1 juv. ♂ [very small] (BPBM); Lejrok I., 30-IV-1958, J.L. Gressitt, 1 ♀ [head only] (BPBM); Medyado I., 24-VIII-1946, R.G. Oakley, 1 ♀ (USNM); *Kwajalein Atoll*: Ennylabegan Islet, sweeping, 21—X-1969, B.B. Sugerman, 1 ♂ (LEMQ); (Enbuj) Islet, sweeping, 9-XI-1969, B.B. Sugerman, 1 ♀ (LEMQ); Illegini Islet, sweeping, 11-XI-1969, B.B. Sugerman, 1 ♂ (LEMQ); Kwajalein I., 31-XII-1952, J.F.G. Clarke, 1 ♀ [small] (USNM); Loi I., Loi, 12-II-1945, H.S. Wallace, 1 ♂ (BPBM); same, 17-II-1945, 1 ♀ (LEMQ); same, 19-II-1945, 1 ♂ (BPBM); same, 5-III-1945, 2 ♂♂, 2 ♀♀ (BPBM); *Lae Atoll*: Lae I., 14-X-1953, J.W. Beardsley, 1 ♂ (LEMQ); *Namorik Atoll*: Namorik I., 30-IX-1953, J.W. Beardsley, 1 ♀ (BPBM); *Wotho Atoll*: Wotho I., 20-X-1953, J.W. Beardsley, 1 ♀ (BPBM); *Arno Atoll*: Arno I., 4-X-1953, J.W. Beardsley, 1 ♀ (BPBM); Bikarej I., 15-VII-1950, Ira LaRivers, 1 ♀ (CASC); Ine I., 18-VI-1950, R.L. Usinger, 2 ♀♀ (BPBM); same, 20-VI-1950, 1 ♂ (BPBM); same, 9-VI-1950, 1 ♂_ (BPBM), 1 ♀ (LEMQ); same, 24-VII-1950, 1 ♀ (LEMQ); same, 8-VII-1950, 1 ♂, 1 ♀ (BPBM); *Bikini Atoll* [pre atomic bomb explosion]: Airy I., 17-IV-1946, L. Schultz, 1 juv. ♀ (USNM); Bikini I., 16-III-1946, J.P.E. Morrison, 1 ♂ (USNM); same 22-III-1946, 1 juv. ♀ (USNM); Namu I., 25-VIII-1947, F.M. Boyer, 1 juv. (USNM).

Note: Specimens assigned to *Phisis willemsi gilbertensis* Kevan, by Kevan (1987), *Kiribati* [formerly Gilbert Is.]: holotype ♂, Butaritari Atoll [Makin], Butaritari I., XII-[19]57, N[H.L.] Krauss; allotype ♀, same data; other specimens [paratypes]: *Onotoa Atoll*: [all collected by E.T. Moul - all BPBM, unless specified (LEMQ)]: Butaritari I., camp area, 13-VII-1951, 1 ♂; 14-VII-1951, 1 ♂, 1 ♀; Camp, 22-VII-1951, 1 ♂, 1 juv. ♂; 25-VIII-1951, 3 ♀♀; 27-VII-1951, 2 ♂♂, 2 ♀♀; same, 2 ♂♂, 1 ♀ (LEMQ); on *Scaevola*, 28-VII-1951 1 ♀; 7-VIII-1951, 1

♂ (LEMQ); 8-VIII-1951, 1 ♂, 2 ♀♀ (LEMQ); 9-VIII-1951, 2 ♂♂, 2 ♀♀, 2 juv. (USNM), (1 ♂ (LEMQ); 10-VIII-1951, 4 ♂♂, 3 ♀♀; on fig leaf, 18-VII-1952, 2 juv. ♂♂ [1 very small]; North I., Camp area, 25-VII-1951, 1 ♀; 9-VIII-1951, 1 ♀ (LEMQ), 1 juv. ♀ (BPBM); Onotoa I., 7-VIII-1951, 2 ♂♂ (BPBM), 1 ♂ (LEMQ); same 8-VIII-1951, 4 ♂♂, 2 ♀♀ (USNM), 1 ♂, 2 ♀♀ (LEMQ); *Tarawa Atoll* [all collected by N.H.L. Krauss unless noted otherwise]: Bairiki I., XI-1957, 2 ♂♂, 3 ♀♀; same XII-1957, 7 ♂♂, 5 ♀♀ (BPBM), 1 ♂, 2 ♀♀ (LEMQ); Bioto I., I/XI-1957, 1 ♂; same, 0-5m, I-1970, 1 ♂; Bikenibeu I., XI-1957, 2 ♂♂: Eret I., XII-1957, 1 ♂ (LEMQ); Naanikai I., XI-1957, 2 ♀♀: Tarawa I., III-1951, R. Catala coll., 1 ♂ (BPBM), 1 ♂ (LEMQ); *Nauru Atoll*: Kagman I., 25-X-1953, [no collector] 2 ♂♂ (LEMQ).

There are other specimens, from the Bismark Archipelago that may or may not belong to this species, indicated in a table 3(b), p. 307) by Kevan (1987).

Kevan (1992) reviewed the collections and names used for specimens from Micronesia. He synonymised the subspecies *gilbertensis*, as he found like characters in specimens from several of the Caroline Islands and no real gap between populations having like characteristics.

Phisis willemsei is widely distributed and common in the islands, on understory vegetation, among *Scaevola*, beans, sandy beaches, etc.

Phisis tolensis Kevan

Phisis sp.; Willemse 1951: 339-341 (5 ♂♂, 1 ♀, Ponape); Sugerman 1972: 275 (Kwajalein Atoll, Marshall Islands).

Phisis pectinata [*nec* Guérin-Méneville]; Dumbleton 1954: 69 (as “pest of coconuts”, Mariana, Caroline and Marshall Islands); Johnston 1965: 5 (“leaf”).

Phisis pallida [*nec* Walker]; Hinckley, 1969

Phisis sp., nr. *pallida*; English 1978: 200.

Phisis sp. no. 32 Jin 1987: 283.

Phisis sp. no. 4 Kevan 1987: 308.

Phisis tolensis Kevan (in Jin & Kevan) 1992: 114.

Specimens examined: Chuuk, Tol I., Mt. Uniböt, 3-II-1953, light trap, alt. 390m., J.L Gressitt; holotype ♂ (BPBM); allotype ♀, same data as holotype (BPBM); in addition to the primary types there is one male paratype: Chuuk Is., Tol I., IV-1949 (BPBM).

According to Kevan (1992) this species seems to be confined to Tol Island and to have evolved in isolation at “a fair” altitude from the widely distributed *Phisis willemsei*. “The occurrence of species of very restricted distribution within the range of widespread species seems to be a not unusual feature of the Micronesian fauna.” Another example seems to be *Ph. minor*.

Phisis parva Kevan

Phisis n. sp. 2; Kevan 1987: 308.

Phisis n. sp. 34; Jin, 1987: 283.

Phisis parva Kevan (in Jin & Kevan) 1992: 116.

Specimens examined: Mariana Is., Saipan I., Kanat e Eddot, 27-IV-1946, Townes, holotype ♂ (USNM); allotype ♀, same data as holotype (BPBM); 3 ♀ ♀ paratypes, same data as primary types (2 ♀ ♀ (USNM), 1 ♀ (LEMQ)); Tinian Is., Mt. Lasso, 12-VI-1946, H.K. Townes, 1 ♀ (BPBM); Guam, Pt. Ritidian, X-1952, N.L.H. Krauss, 1 ♀ (BPBM).

Description: Body small, length *ca.* 10mm; orifices of tympanal organs small; fore legs with femoral spurs 5/4, tibial spurs 6/6; middle leg with femoral spurs 4/1, tibial spurs 6/6; dorsal sub-basal spur absent; ♂ epiproct long, rectangular, wider at apical margin, this convex; paraprocts round with two ventrally-directed pointed processes, posterior one longer; cerci cylindrical, incurved without basal teeth; epiphallus “coat-hook like” with comparatively long neck; ♀ epiproct small; paraprocts scarcely visible; subgenital plate tapering, unusually narrow apically. It differs from *Phisis willemsei* by the larger, longer male epiproct, absence of inner basal teeth on cerci; long-necked male epiphallus and very narrow female subgenital plate.

Phisis minor Kevan

Phisis n. sp. 3; Kevan 1987: 308.

Phisis n. sp. 35; Jin 1987: 283.

Phisis minor Kevan (in Jin & Kevan) 1992: 117.

Specimens examined: Type series only: holotype ♂, Yap I., X-1952, N.L.H. Krauss (BPBM); allotype ♀, same data as holotype (BPBM); Paratype 1 ♂, Yap I., 1-XII-1952, J.L. Gressitt (LEMQ).

Description: small, body length 10-12 mm; orifices of tympanal organs relatively small; foreleg with femoral spurs 5/4; tibial spurs 7/7; middle leg with femoral spurs 3/1, tibial spurs 6-7/7; dorsal sub-basal spur present; male epiproct almost square, a little longer than paraprocts, these irregularly rounded each with obliquely directed ventral processes at about the middle; cerci cylindrical, incurved without inner basal teeth, epiphallus coat-hook-like, with rather long basal lobe; female epiproct small, paraprocts scarcely visible, subgenital plate nearly triangular with narrowly rounded apex.

Phisis minor differs from *Ph. parva* by the shorter male epiproct and triangular female subgenital plate.

Oceanophisis Jin

Oceanophisis Jin 1992: 212. Type species *Oceanophisis (Oceanophisis) forficata* Jin.

Oceanophisis (Curtipenna) Jin

Oceanophisis (Curtipenna) Jin 1992: 219. Type species *Oceanophisis (Curtipenna) kororensis* Kevan.

Oceanophisis (Curtipenna) kororensis Kevan

Ph[isis] sp. n. 47, Jin 1987: 283.

Phisis sp. n. 7, Kevan 1987: 308.

Oceanophisis (Curtipenna) kororensis Kevan in Jin and Kevan 1992: 220.

Specimens examined: (type series only): Koror I., Palau Is. Mar. 8, 49, (Hawai'i 5196, K. Maehler, M. 3080/49-8389; 1 ♂ (USNM) [holotype]; E. Ngatpang 66m/ Babeldaob I., Palau ? Dec 7, 1952, light trap, J.L. Gressitt, 1 ♀ [allotype] (BPBM); Palau, Garakayo I., 7-viii-1954, Henry Dybas, 1 ♂ [paratype] (FMNH).

The description of this small species was prepared by Kevan before his death. The species was placed in the genus and subgenus by Jin (1992).

Discussion

The distribution of the species of orthopteroids in Micronesia was discussed by Kevan (1987) and in part by English (1978). The introduced species are discussed by Kevan (1990) and the non-saltatorial species are covered by Kevan & Vickery (1998). There are many endemic species as well as introductions from neighboring islands. Eighteen of these are described in this work, seventeen by Vickery & Kevan and one by English & Kevan. Eight others were described recently by Kevan for a total of twenty-six newly described endemic species. Others were described earlier by Hebard (*Salomona guamensis*) and by Willemse (*Phalula trukensis* and *P. carolinensis*). Kevan & Vickery (in Kevan, Vickery & English 1997) described two species of Tetrigidae.

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