

Acridoidea and Related Orthoptera (Grasshoppers) of Micronesia

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Abstract—The species of grasshoppers of the superfamilies Acridoidea, Tetridoidea, and Tridactyloidea of Micronesia are discussed with complete data on Micronesian distribution. Two new species of Tetrigidae, *Carolinotettix palauensis* and *Hydrotettix carolinensis*, are described.

Introduction

Preliminary studies towards this contribution to our knowledge of the orthopteroid fauna of Micronesia are in an unpublished thesis by the third author (English 1978). Over the years, a considerable amount of additional information has been accumulated and two relevant papers published by the first author. In addition, there is a paper by the first author, in press, that deals with non-saltatorial orthopteroids.

The first of the above publications (Kevan 1987) gives a preliminary survey of virtually all of the saltatorial orthopteroids (grigs) known to occur in Micronesia, as well as defining the limits of the region and giving a brief review of the relevant literature on the insects concerned. It also discusses some important points relating to the nomenclature of some of them.

The second publication (Kevan 1990) is concerned with the same groups of insects, but confines its attention, more or less, to known or suspected introduced species (including Acridoidea) and their probable origins. A few non-saltatorial orthopteroids are also mentioned in passing.

Another paper (Kevan unpublished²) deals very fully with all groups of orthopteroids other than members of the saltatorial orders (termites and earwigs included), mainly as recorded in the literature, which is extensively reviewed. It also deals with the orders concerned as they relate to what are termed “fringing” island groups, extending from the Talaud Islands in the west to the northern and central Line Islands in the east.

It is therefore unnecessary to present here a lengthy introduction, as the papers mentioned were intended largely to act as such. The present paper lists the

¹Corresponding author. This paper was begun by Professor Kevan before he died July 9, 1991; it is based in part on an M.Sc. thesis by M.-L. (Stanford) English, a former graduate student with Professor Kevan; the unfinished work was completed by Vickery.

²This paper will be published in a future issue of *Micronesica*.

species of Acridoidea, Tetridoidea and Tridactyloidea known from Micronesia, with bibliographic references, previously published records, and an account of the specimens of each known species that have been examined. Two new species of Tetridoidea, *Carolinotettix belauensis* and *Hydrotettix carolinensis* are described.

The records listed below under each species are geographically arranged more or less as for the non-saltatorial species given in Kevan (in press), roughly from west to east. The spelling of the names of island groups and individual islands is standardized as much as is practical, as in Kevan (unpublished), but localities on individual islands or atolls are mostly given as written on data labels. Where the spellings of names in the literature references differ significantly from the standardized forms, the latter follow the originals in square brackets. The repositories of specimens listed are indicated by appropriate abbreviations, almost all of which have been standardized by Hepner & Lamas (1982) as noted below. If no such indication is given, "BPBM" may be assumed.

INSTITUTIONS FROM WHICH SPECIMENS WERE STUDIED

- AMNH: American Museum of Natural History, New York, New York, U.S.A.
ANSP: Academy of Natural Sciences of Philadelphia, Philadelphia, Pennsylvania, U.S.A.
BMNH: The Natural History Museum—formerly British Museum (Natural History)—London, England, U.K.
BPBM: Bernice P. Bishop Museum, Honolulu, Hawai'i, U.S.A.
CAS: California Academy of Sciences, San Francisco, California, U.S.A.
UCB: Department of Entomology, University of California, Berkeley, California, U.S.A.
CNC: Canadian National Collection of Insects, Agriculture Canada, Ottawa, Ontario, Canada.
CUNY: Department of Entomology, Cornell University, Ithaca, New York, U.S.A.
FMNH: Field Museum of Natural History, Chicago, Illinois, U.S.A.
GUAM: Guam University Agricultural Faculty Entomology Collection, Mangilao, Guam, U.S. Pacific Dependencies.
KUEC: Kyushu University Entomology Department Collection, Kyushu, Japan.
LEM: Lyman Entomological Museum and Research Laboratory, McGill University, Macdonald Campus, Ste-Anne-de-Bellevue, Quebec, Canada.
NHME: Naturhistorisches Museum, Maastricht, Netherlands (Willemse Collection).
NHMW: Naturhistorisches Museum, Wien (Vienna), Austria.
NREA: Naturhistoriska Riksmuseet, Stockholm, Sweden.
PSBD: Pacific Science Board, Washington, D.C., U.S.A.—material with BPBM unless otherwise indicated.
RMNH: Rijksmuseum Natuurlijke Historie, Leiden, Netherlands.
TTPI: United States Trust Territory of the Pacific Islands, Headquarters, Koror, Belau Islands—material with BPBM.
USNM: United States National Museum of Natural History, Washington, D.C., U.S.A.

ZMAS: Zoologicheskii Institut, Akademiya Nauk SSSR, Leningrad, U.S.S.R.

ZMHB: Zoologisches Museum der Humboldt Universität, Berlin, Germany.

ZMUH: Zoologisches Museum der Universität, Hamburg, Germany.

ACRIDOIDEA
PYRGOMORPHIDAE
PYRGOMORPHINAE

Atractomorpha psittacina psittacina (Haan, 1842)

Acridium (Truxalis) psittacinum Haan, 1842: 142 (part), 143, 146, 149 (case change); 1844: pl. 23, fig. 2 (not 1) [*Acridium p.* only].

Atractomorpha psittacina; Bolívar 1884: 64, 68, 495.

Atractomorpha psittacina psittacina; Kevan & Chen 1969: 146, fig. 4, 150, fig. 20, 23, 151, fig. 31, 152, fig. 33, 159, 161, 191, 194, fig. 79, 195, 198, pl. 7 fig. H.

Previous Micronesian records:

?*Atractomorpha sinensis*, nec Bolívar, 1905; Owen 1971: 1 ("Trust Territory of the Pacific Islands"; see comment below); C.O.P.R. 1982: 72, 73 ("introduced in Caroline Is., . . . , Mariana Is., Marshall Is.); see comment below)

Atractomorpha psittacina psittacina; Kevan 1987: 311, 316 (Marianas, introduced); Kevan 1990: 110, 119 (Guam, introduced).

This species is common throughout much of southeastern Asia, including the Philippines (Kevan 1987). It was introduced into the Mariana Islands, probably from the latter, some time before 1968, though the first substantiated report of its occurrence there (Guam) is much more recent (Kevan 1987, 1990). Prior to this record, and briefly noted by Kevan (1987), there was an ambiguous reference by Owen (1971) to the occurrence of *A. sinensis [sinensis]* Bolívar, 1905 [in the "Locustidae" (*sic*) from the [United States] "Trust Territory of the Pacific Islands"]. The species was recorded as a pest of sugar-cane. This was followed (with an incorrect source reference) by the Centre for Overseas Pest Research (C.O.P.R. 1982), which, without justification, gave the distribution as "introduced in (?) Caroline Is., Line Is., Mariana Is., Marshall Is.". In fact, as indicated by Kevan (1990), it seems that both Owen's and the C.O.P.R.'s references really only applied to the occurrence of *A. sinensis sinensis* in the Line Islands, where it is known to occur—the original published record being attributable to Krauss (1953), who reported it under the synonym *A. ambigua* Bolívar, 1905, from Palmyra Atoll (on sugar-cane) in February, 1948. One cannot, however, be absolutely sure, in view of the ambiguity of the Owen (1971) reference, that Micronesia was not intended.³ All Micronesian records of *Atractomorpha* known to us are for *A. p. psittacina* and all are from Guam. The earliest and latest dates on specimens are 18-vi-1968 and 22-i-1981 respectively, though the species must have been taken subsequently also. It

³Although Palmyra Atoll, in the Line Is., accommodated a United States naval station, it was not, at the time, part of the "Trust Territory of the Pacific Islands". That term referred to the Mariana

seems to have become well established and might be expected to make its way to other islands. It has the potential to become injurious to various crops, but it is not known to be of much economic significance elsewhere (C.O.P.R. 1982).

MATERIAL EXAMINED:

MARIANA IS. *Guam*: Talofofo, 18-vi-1968, N. R. Spencer, 1♂; Santa Rosa, on melon, 13-vii-1972, R. Muniappan, 1♂; Mangilao, light trap, 4-i-1974, R. Muniappan, 1♂; Mangilao, grass, i-1975, R. Muniappan, 2♂♂; Asan, on lettuce, 19-i-1976, V. Santos, 1♂; Yigo, on eggplant, 10-iv-1976, J. Flores, 1♂; Yigo, Anderson A[ir] F[orce] B[ase], tall grass, 1-v-1976, J. Beaudoin, 1♂; Sinajana, on Wong-bok Chinese cabbage, T. R. Blas, -iv-1978, 1♀; Dededo, 5-ii-1979, Cristina Lazaro, 1♂; Agana Springs, 15-iv-1979, M. Pohl, 1♂; Toto, 22-iv-1979, Lou Bamba, 1♀; Mangilao, on grass, 22-iv-1981, Jaime Lacson, 1♂, ♀. All GUAM except last ♀, LEM.

ACRIDIDAE OXYINAE

Oxya hyla intricata (Stål, 1861)

Acridium intricatum Stål, 1860[?]: 335.

Oxya intricata; Stål 1873: 82; Willemse 1951: 357.

Oxya universalis; C. Willemse 1925: 21, fig. 12, 13.

Oxya insularis C. Willemse 1925: 34, fig. 32, 33.

Oxya siamensis C. Willemse 1925: 37, fig. 36–38.

Oxya moluccensis Ramme 1941: 214.

Oxya rammei, nec Tsai 1931; Mishchenko 1951: 168, fig. 305, 308; 1952: 160, fig. 240, 243.

Oxya sp.; Oakley 1946: 50, 51, 52.

Oxya acuminata, nec C. Willemse 1925; C. Willemse 1955: 152.

Oxya multidentata, nec C. Willemse 1925; C. Willemse 1955: 152.

Oxya hyla intricata; Hollis 1971: 275, figs 15–17, 19, 20, 278, 280, 284, figs 33–40, 47–53, 285, fig. 54 (map), 286, 287, 288, incl. figs 55–60, 289.

See Hollis (1971) for full synonymy.

Islands (excluding Guam), the Caroline Islands (including Palau) and the Marshall Islands, though it may be that Owen's (1971) report covered the Line Islands also. C.O.P.R. (1982), it would seem, merely assumed that Owen meant what he implied in the title of his paper and further, unjustifiably, assumed that all the various archipelagos were involved. Why the introduced status should be suggested with a query only for the Caroline Islands is inexplicable except on the basis of complete confusion; after all, C.O.P.R., in error, gave Swezey (1907) as the source! That author did, in fact, publish notes on *A. s. sinensis*, misidentified as *A. crenaticeps* (Blanchard 1853), shortly after its introduction into the Hawaiian Islands (Oahu), which occurred a little before 1900 (Zimmerman 1948). He also suggested that it had been introduced thither from Australia (where *A. crenaticeps* is now known not to occur), though he did mention New Guinea (where it, though not *A. sinensis*, is found). There is no tangible evidence that *A. s. sinensis* has ever been found in Micronesia, though its potential for introduction by human agency is probably quite strong.

PREVIOUS MICRONESIAN RECORDS:

Oxya intricata; Schmeltz & Pöhl 1877: 22 (Palau-Inseln [Palau Is.]); Townes 1946: 5, 30 (part) (high Micronesian islands and some Caroline atolls, also Jaluit in Marshall Is.; potentially, but not actually, injurious to crops); Oakley 1946: 41 (Chuuk, on sugarcane).

Oxya sp.; Oakley 1946: 50–52 (Pohnpei; on maize, rice, sugar-cane; serious damage to rice, minor to other crops).

Oxya intricata; C. Willemse 1951: 346, 357 (Palau Is., Yap, Chuuk [Atoll, Dublon], Pohnpei); Mishchenko 1951: 168 (“Karolinskie o-va”); Mishchenko 1952: 158, 159 (“Karolinskie ostrova”); Oakley 1953: 175, 176 (Pohnpei, Chuuk; slight damage to maize and sugar-cane, damage to rice); Gressitt 1954: 187 (Chuuk; on sugar-cane, cf. Oakley 1946); Dumbleton 1954: 67 (Caroline Is.; on rice, maize, sugar-cane).

Oxya sp.; Gressitt 1954: 186, 187 (Pohnpei; on rice and sugar-cane, cf. Oakley 1946).

Oxya intricata; Johnston 1962b: 1 (“U.S. Trust Territories”; on rice); Mishchenko 1963: 177 (“Carolines”); 1965: 134, 135 (Caroline Is.); Owen 1971: 1 (“Trust Territory of the Pacific Islands”; on sugar-cane).

Oxya hyla intricata; Hollis, 1971: 285, fig. 54 (map), 289 (Palau Is.); C.O.P.R. 1982: 216 (Caroline Is., “U.S. Trust Territories”); Roffey 1979: 48, incl. fig. 21 (as *O. hyla* only), 49, fig. 28 (as last), 50, fig. 35 (Caroline Is., p. 50); Kevan 1986: 480, 480n (Micronesia incl. Palau, Caroline, and Marshall Is.); Kevan 1987: 311 (Palau, W., C. and E. Caroline Is., W. Marshall Is.); Samuelson & Nishida 1987: 160 (Micronesia generally, Marshall Is. generally); Kevan 1990: 110, 117[–118] (Palau, W & C Carolines, incl. Yap, E Carolines incl. Pohnpei & Kosrae, Marshall Is., incl. Jaluit).

Oxya hyla is very widely distributed from tropical Africa to eastern Asia and Oceania. The subspecies *intricata* occurs in the Oriental region east of the Indo-Burmese border (Hollis 1971). In Micronesia, it is distributed widely in the Palau, Caroline, and Marshall Islands (Kevan 1987). It can be injurious to crops.

MATERIAL EXAMINED:

PALAU. *Babeldaob*: Ngardok—Ngarmisukan, 11-ii-1938, Teiso Esaki, 1♀ (KUEC); Babelthuap Island [only], 10, 16, 21 & 22-xii-1947, H. S. Dybas, 1♀, 1♀, 1♂, 1♂, 1♂ (all PSBD); Ulimang, 19-xii-1947, H. S. Dybas, 1♀ (PSBD); E. Ngatpang, 65m, J. L. Gressitt, 1♂, 1♀ (PSBD); Iwang, 8m, 18-xi-1952, J. L. Gressitt, 1♀ (PSBD); Ngaremeskang, 25m, 20-ii-1952, J. L. Gressitt, 1♀ (PSBD); W side near Aimaliik, 7°26'30"N, 134°31'00"E, captured in forest, 1926-ii-1987, Otte, Alexander & Flinn, 5♂♂, 3♀♀ (ANSP). *Arakabesan*: Arakabesan Island, 18-vii-1946, [H. K.] Townes, 1♂, 2♀♀ (USNM). *Koror*: Koror—Arabaketsu, 18-ii-1936, Teiso Esaki, 1♂ (KUEC); Arabaketsu, 16-xii-1937, Shiro Murakami, 1♂ (KUEC); NE corn[er], 17, 22 & 27-vii-1946, Townes, 3♂♂, 4♀♀ (UNSM & LEM) (1♂, 1♀), 2♀♀, 1♂ (all USNM); Koror Island [only], 21 & 22-xi-1947, H. S. Dybas, 3♂♂, 1♀ &

2♀♀ (PSBD); 15-25-iii-1948, K. L. Maehler, 1♀ (USNM); 29-viii, 3-ix, & ix-1952, J. W. Beardsley, 2♂♂, 2♂♂ & 1♀, 1♀; ix-1952, N. L. H. Krauss, 1♀ (PSBD); SW Koror Island, ii-v-1954, D. Osborne, 1♀. *Peleliu*: Peleliu Island [only] 28-vii-1945, H. S. Dybas, 1♂ (LEM), 2♀♀, (PSBD); E coast, 1-viii, H. S. Dybas, 1♀ (PSBD); Peleliu Island [only], 7 & 14-viii-1945, H. S. Dybas, 2♀♀, destroyed, & 1♀ (LEM); 26 & 29-i-1948, H. S. Dybas, 2♂♂, 1♀ (PSBD); E coast, 31-viii-1948, R. H. Baker, 1♀; Amiangol Mt., 22-xii-1952, J. L. Gressitt, 1♀; loc. #12, 6°59'25"N, 134°14'45"E, captured in forest, 19 26-ii-1987, Otte, Alexander & Flinn, 1♂, 1 juv. (♀) (ANSP). *Angaur*: Angaur Island [only], 5-ii-1948, H. S. Dybas, 1♀ (PSBD).

CAROLINE IS. (WESTERN). *Yap Gp.*: "Jap" [only], 6-vii-1905, Seuft, 13♂♂, 9♀♀ (ZMHB); Yap I., Kolonie, 6-iii-1936, Z. Ono, 1♂; Yap I., Kolonie-Kodai, 18-v-1936, 1♀; Map [I.] Rumung [I.], 12-ix-1939, Teiso Esaki, 1♀ (KUEC); Yap I., Mt. Matade, 12.VII.1946, Townes, 1♂, 1♀, USNM; Yap I., Ruul, 12-vii-1946, Townes, 1♂ (USNM); Gagil I., 14-vii-1946, R. G. Oakley, 3♂♂, 1♀ (USNM); Yap I., Colonia, 1/8-iii-1949, K. L. Maehler, 1♀ (USNM); Yap I. [only], vii-viii-1950, R. J. Goss, 2♂♂, 10♀♀, 8 juv. (4♂♂, 4♀♀ LEM) & (1♂, 2♀♀ PSBD); C Yap I., vii-vii-1950, R. J. Goss, 2♂♂ (PSBD); S Yap I., vii-viii-1950, R. J. Goss, 4♂♂, 3♀♀ (LEM) & 1♀ (PSBD); Yap I., Colonia, vii-viii-1950, R. J. Goss, 3♂♂, 2♀♀, 2 juv. (♀♀) (PSBD); Yap I., Ruul Dist., vii-viii-1950, R. J. Goss, 4♂♂, 6♀♀, 9 juv., 5♂♂, 4♀♀ (LEM) & 1♂ (PSBD); the same, S, 1♀ (PSBD); Yap I., Tomil Dist., vii-viii-1950, R. J. Goss, 14♂♂, 22♀♀, (LEM 1♂, 2♀♀) remainder (PSBD); Map I., E, C & S, vii-viii-1950, R. J. Goss, 2♂♂, 3♀♀, 1♂, 2♀♀ & 1♂, respectively (PSBD); Rumung I., S, vii-viii-1950, R. J. Goss, 1♂ (PSBD); the same, lacking "S", 2♂♂ (PSBD); Yap I. [only], 8-vii-1951, J. L. Gressitt, 2♀♀; Yap I. [only], viii, ix & x, 1952, N. L. H. Krauss, 3♂♂, 1♀, 1♂, 1♀ & 1♂, 2♀♀, respectively, (all BPBM) except 1 of last ♀♀ (LEM); Map I., 22-x-1952, N. L. H. Krauss, 1♀ (LEM); Rumung I., 22.X.1952, N. L. H. Krauss, 1♂, 2♀♀; Yap I., Mt. Gillifitz, 150m, 29-xi-1952, J. L. Gressitt, 3♂♂, 2♀♀ (PSBD); Yap I., Dugor Rumu, 10m, 29-xi-1952, J. L. Gressitt, 2♂♂ (PSBD); Yap I., hill behind Yaptown, 50m, light trap 1-xii-1952, J. L. Gressitt, 1♀ (PSBD); the same, but no light trap, 4♂♂ (LEM 1♂) & (PSBD 3♂♂); Yap I., Mt. Matade, 2-xii-1952, J. L. Gressitt, 1♂ (PSBD); Yap I., Kolonia, 28/31-iii-1954, J. W. Beardsley, 2♂♂, 1♀.

CAROLINE IS. (CENTRAL). *Chuuk*: Dublon I., 20 & 22-xii-1935, Z. Ono, 1♀ & 1♂, 1♀; as last but no collector, 25-xii-1935, 4♂♂; Natsu I. [Natsujima], 29-xii-1935, Kusamura, 1♂; Dublon I., 3, 9, 13 & 25-i-1936, Z. Ono, 1♀, 2♀♀, 1♂ & 1♂; Moen I., 400 ft., 23-v-1946, Townes, 1♂, 1♀ (USNM); Fefan I., 27-v-1946, H. K. Townes, 2♀, ♂♂; Dublon I., sugar-cane, 28-v-1946, Oakley, 4♀♀; Moen I., 5/9-ii-1948, K. L. Maehler, 1♂ (USNM); Moen I., grass, 7-ii-1948, K. L. Maehler, 2♂♂ (USNM); Moen I., 5-ii-1949, R.W.L. Potts, 2♂♂, 2♀♀, 1 juv. (♀) (LEM 1♂), others (PSBD); as last, 1-iii-1949, 1♂, 4.III.1949, 1♂, 2♀♀, 1 juv. (♀), 15-iii-1949, 2♀♀, 19-iii-1949, 1♂, 20-iii-1949, 4♂♂, 1♀, 25-iii-1949, 2♀♀ (1 ex *Ipomoea*), 30-iii-1949,

1♂, 2♀ ♀, 18-iv-1949, 1♂, 24-iv-1949, 1♀, 25-iv-1949, 1♂ (LEM), 5.II, 1♂, 20-iii-, 1♂, 30-iii-, 1♀, 24-iv, 1♀ (PSBD); Moen I., x-1952, J. W. Beardsley, 1♂, 1♀; Tol I., Mt Unibot, 30-xii-1952, J. L. Gressitt, 1♀ (PSBD).

CAROLINE IS. (EASTERN) = SENYAVIN IS. *Kosrae*: Tahonsaku, 19-viii-1946, Townes, 1♀ (USNM); Lele I., 19 & 20-viii-1946, Oakley, 1♂ & 1♀; near Lele Harbor, 21-viii-1946, Townes, 9♀ ♀ (LEM) (1) & USNM; Mt. Fenkol, 300m, 24-i-1953, J. L. Gressitt, 1♀ (LEM); Tafeayat River, 90m, 9-ii-1953, J. F. G. Clarke, 6♀ ♀, CASC; Sensrik, 1m, 21-iv-1953, J. F. G. Clarke 4♂ ♂, 2♀ ♀ (LEM 1♂, 1♀) & (CAS 3♂ ♂, 1♀); Songkosra, 23-iv-1953, J. F. G. Clarke, 1♀ (CAS); Lele, 14 & 15-xi-1984, D. Nafus, 1♀ & 1♂ (GUAM); Kosrae, 1984 (only), 1♂, 1♀ (GUAM). *Pohnpei*: Ronkiti, 4-ii-1936, Z. Ono, 1♀; Sharakutu [?], 6-ii-1936, Z. Ono, 1♂; "Ponape" I. (only), 6-iii-1936, Z. Ono, 1♂, ♀; "Ponape" I. (only), 14-iii-1936, Y. Kondo, 2♂ ♂, 3♀ ♀; Colonia [as Koronia] 9-vii-1937, S. Uchiyama, 3♂ ♂, 3♀ ♀, 3 juv. (1♂, 2♀ ♀), (LEM 1♂, 1♀), remainder (BPBM); Paliker—Kolonia, 30-xii-1937, Teiso Esaki, 1♀ (KUEC); Ronkiti—One, 18-vii-1939, Teiso Esaki, 1♂ (KUEC); Nipit—Kapiro—Reitao, 21-vii-1939, Teiso Esaki, 1♀ (KUEC) Colonia, 8-viii-1946, Townes, 13♂ ♂, 14♀ ♀, (LEM 2♂ ♂, 2♀ ♀), remainder (USNM); Colonia, 9-viii-1946, R. Oakley, 2♀ ♀ (BPBM ex USNM); Madolenihm ["Metalanium"], 11-viii-1946, R. G. Oakley, 1 juv. (minute, ? ♂) (USNM); Colonia, near sea level, 29-ii-1948, H. S. Dybas, 2♂ ♂, 1♀, (LEM 1♂), remainder (PSBD); Colonia, on corn, 8-vii-1949, R. P. Owen, 1♂, 3♀ ♀; the same, but by sweeping grass, 1♀; Airfield, vii-ix-1950, P. A. Adams, 1♂, (PSBD); Mt Beirut, vi-ix-1950, P. A. Adams, 1♀, 1 juv. ♀ (PSBD); Colonia, vi-ix-1950, P. A. Adams, 4♂ ♂, 9♀ ♀, 7 juv. (4♂ ♂, 3♀ ♀); Nanue I., vi-ix-1950, P. A. Adams, 1 juv (small ♀) (PSBD); Napali I., vi-ix-1950, P. A. Adams, 1♂ (PSBD); Mt Tamataaman-sekir, 1400 ft., vi-ix-1950, P. A. Adams, 1 juv. (♂), (PSBD); Tolotom, vi-ix-1950, P. A. Adams, 5♂ ♂, 1♀ (PSBD) Colonia Agric. Exper. Sta. 6-i-1953, J. L. Gressitt, 1♀ (PSBD); Colonia, 7-i-1953, J. F. G. Clarke, 9♂ ♂, 11♀ ♀ (LEM 2♂ ♂, 2♀ ♀), remainder (CAS); SE [of] Nanpomal, 7.I.1953, J. L. Gressitt, 1♂ (PSBD); Palang, W. coast, 15m, 10-i-1953, J. L. Gressitt, 1♂, (PSBD); Colonia, 13-x & 4-xi-1953, J. W. Beardsley, 1♂, 4♀ ♀; Kolonia, viii-1956, Calvin Ward, 3♂ ♂, 2♀ ♀ (LEM 1♂, 1♀), remainder (PSBD); "Metalanym", viii-1965, F.A. Bianchi, 4♂ ♂, 4♀ ♀; Kolonia Agric. Sta., 11-ii-1967, W. C. Mitchell, 1♂; "Metalinim", 15-ii-1967, W. C. Mitchell, 1♂, 1♀; Kolonia, on corn, 27-v-1984, D. Nafus, 1♂, 2♀ ♀, GUAM; S of Kolonia, gauging station on west-most branch of Pilen Kiepw River, ca. 120m, 6°55'08"N, 158°12'03"E, loc. #15, captured in forest, 26-ii to 6-iii-1987, Otte, Alexander & Finn, 1♀ (ANSP); N end, Takai Mwas Ridge above Luhka, 6°56'38"N, 158°14'00"E, ca. 350m, captured in forest, 26-ii to 6-iii-1987, Otte, Alexander & Flinn, 1♂, 3♀ ♀ (ANSP).

MARSHALL IS. (RALIK CHAIN). *Jaluit*: Imrodj I., 23-viii-1946, R. G. Oakley, 1♂ (USNM); Jaluit I., 23-viii-1946, Townes, 1♂ (USNM); Sydney Pier, 23-viii-1946, R. G. Oakley, 1♀ (LEM); Pinlep I., 28-iv-1958, J. L. Gressitt, 1♀.

Oxya japonica japonica (Thunberg, 1824)

Gryllus japonicus Thunberg, 1824: 429.

Oxya japonica japonica; Hollis 1971: 280, 281, 302, (303), 304, figs 117–129, 305, figs 130–133, 306(–307), 308, fig. 138 (map).

See Hollis (1971) for full synonymy.

PREVIOUS MICRONESIAN RECORDS:

Oxya intricata, nec (Stål); Townes 1946: 5, 30 (part).

Oxya gavisa, nec Walker, 1870; C. Willemse 1951: 345, 357 (Palau Is.); Kevan 1968: 77 (part—"Caroline Is.", based on C. Willemse, 1951, but not so stated).

Oxya japonica japonica; Hollis, 1971: 306, 308, fig. 138 (map) (Palau Is.); Roffey, 1979: 52 (Palau Is. noted; p. 48, fig. 27, 49, fig. 31, 32 also, but as *O. japonica* only).

Oxya japonica, typical subspecies; Kevan 1986: 479 (Palau Is.).

Oxya japonica japonica; Kevan 1987: 311, 316 (Mariana Is., introduced, and Palau Is.; *O. japonica* s.l. also noted p. 313); Kevan 1990: 110, 118 [as *O. japonica* only], 120, 121 (Palau Is. [also as *O. gavisa* as synonym], Marianas, incl. Saipan, Tinian, but not Guam).

Oxya japonica is very widely distributed in eastern Asia and the western Pacific region, the typical subspecies occurring from Japan in the north to the Moluccas and westwards to Sri Lanka (Hollis 1971, Kevan 1987). In Oceania, it was introduced into the Hawaiian Islands a considerable time ago, where it was long mistakenly known as *O. chinensis*. Kevan (1986) has discussed this and other matters relating to the species. It is almost certainly *O. j. japonica* that was introduced into the Line Islands of the central Pacific (presumably from the Hawaiian Is.); Krauss (1953: 218) reported it (as *O. chinensis*) from Palmyra I. In Micronesia, it may be native to Palau, but it is probably an introduction in the Mariana Is. (Kevan 1987, 1990). It can be injurious to crops, particularly rice.

MATERIAL EXAMINED:

MARIANA IS. *Saipan*: Saipan (only), on grass, 10-x-1971, R. Muniappan, 1♀, GUAM [not seen; Dr. I. Schreiner, *in litt.*, 1986]. *Tinian* [all GUAM except as indicated]: Banaderon Lemai, 22-ii-1984, L. Ellis-Neill, 1♀, LEMQ; Hogoi, 23-xi-1984, L. Ellis-Neill, 1♂, 1♀; Inai Chulu, 4-i-1985, J. A. Tenorio, 1♀; Puntan Diablo, 6-i-1985, J.A. T—, 1♂; Puntan Laminabot, 8-i-1985, C. J. Bjork & C.D. B—, 1♂; Peipeinigul-2, 11-v-1985, C. Bjork, 1♂; Puntan Adgidun, 11-v-1985, C. Bjork, 2♂♂, LEM & GUAM; Puntan Jamanibot, 11-v-1985, C. Bjork, 1♂, LEM; Jones Ranch, pasture, 13-v-1985, C. Bjork, 1♂. *Guam*: None yet found (Dr. I. Schreiner, *in litt.*, 1986).

PALAU. *No island*: "Palao Isls.", 8-iv-1936, Z. Ono, 1♂, 1♀ [det. C. Willemse as *O. gavisa*—see Willemse, 1951]. *Babeldaob*: Kaishar—Ngardok—Ngiwal,

15-viii-1939, Teiso Esaki, 1♀ (KUEC); Babedaoab I., 16 & 22-xii-1947, H. S. Dybas, 2♂♂ & 1♀ (PSBD); [as "Babeltraup", 15/25-iii-1948, K. L. Maehler, 1♂ (USNM); Ngiwal, 5-xi-1951, J. L. Gressitt, 1♀; on W side near Aimeliik, 7°26'30"N, 134°31'00"E, captured in forest, 19-ii-1987, Otte, Alexander & Flinn, 2♀♀ (ANSP). Arakabesan: 18-vii-1946, Townes, 1♀ (USNM). Koror: Koror I., 18-vii-1946, Oakley, 1♀, 1 juv. ♀ (USNM); NE cor[ner], 22-vii-1946, Townes, 1♂ (LEM); Koror I., 18-xi-1947, H.S. Dybas, 1♀ (LEM); ix-1952, J. W. Beardsley, 1♀; SW, iii-v-1954, D. Osborne, 1♀, 1 juv. (?); on corn, 14-v-1984, D. Nafus, 1♀ (GUAM). Peleliu: 28-vii-1947, H. S. Dybas, 1♂ (LEM), 1 juv. ♀ (PSBD).

Oxya japonica vitticollis (Blanchard, 1853)

Acridium vitticolle Blanchard, 1853: 373, pl. 1, fig. 10.

Oxya japonica vitticollis; Hollis 1971: 279, 281, 304, fig. 122, 305, figs. 134–137, 307, 308, fig. 138 (map), (309, 310).

See Hollis (1971) for full synonymy.

PREVIOUS MICRONESIAN RECORDS:

"Other species of *Oxya*" (part); Townes 1946: 5 (Kapingamarangi Atoll).

"Grasshopper not yet identified"; Oakley 1946: 44 (Hare I., Kapingamarangi Atoll; attacking leaves of young coconut palms, minor damage).

Oxya japonica vitticollis; [C.O.P.R. 1982: 217 (Caroline Is.) in error, incorrectly citing Kumashiro (1935)—see Kevan (1987: 316n)]; Kevan 1987: 311, 316 (SC Caroline Is.).

This subspecies is found typically in the Melanesian region of the South Pacific (Hollis 1971, Kevan 1987). Due to some confusion, it was reported from the Caroline Islands by C.O.P.R. (1982), as indicated above, but, at that time, there was no published record for those islands that identified it. Roffey (1979), who referred to the distribution of *O. j. vitticollis*, did not mention Micronesia. Kevan (1987), who commented on the earlier error, recorded it from the south-central Carolines on the basis of the material listed below.

MATERIAL EXAMINED:

CAROLINE IS. (SOUTH-CENTRAL). *Kapingamarangi*: Hare I., viii-1946, R. G. Oakley (*cf.* Oakley, 1946), 1♂, 2♀♀ (USNM) except (LEM 1♀); Tangawaka I., ex *Scaveola* leaves, 14-vii-1954, W.A. Niering, 1 small juv. (?); Hare I. ex undergrowth, lagoon side, 23-vii-1954, W. A. Niering, 1♂, 1 small juv. (?); Werua I., undergrowth often in grassy areas, 27-vii-1954, W. A. Niering, 1♀; Werua I., over grassy areas in breadfruit [plantation], 30-vii-1954, W. A. Niering, 1♂ (LEM), 5 small juvs. (2♂♂, 3♀♀); Hare I., ex low vegetation, 8-viii-1954, W. A. Niering, 1(♀); Hare I., ex *Vigna* & *Ipomoea* along lagoon shore, 9-viii-1954, W. A. Niering, 2 small juvs. (♂♂).

Gesonula mundata zonocera (Navás, 1904)

Gesonia zonocera Navás, 1904: 136.

Racilia okinawensis Matsumura, 1910a: 102 (*nomen nudum*); 1910b: part 1, p. 3, p1. IV, fig. 7, part 2, p. 6; Shiraki, 1910: 58, pl. I, fig. 9; Matsumura, 1911: 130. [The priority of publication here follows that of C. Willemse (1956).]

Gesonia punctifrons (Stål, 1860) (part): Tinkham 1940: 297—incorrect synonymy of *Racilia okinawaensis* (*sic*) Shiraki (*sic*); C. Willemse 1956: 161, incorrect synonymy following Tinkham 1940, above.

Gesonula mundata zonocera; Rehn 1952: 131; C. Willemse 1956: 164; Rehn 1959: 110. [Synonymizes *Racilia okinawensis* with this; that nominal species attributed to Shiraki, 1910, not to Matsumura, 1910b, apparently in ignorance of prior adequate description and figure by the latter, to which C. Willemse (1956) gave priority]; Kevan 1990: 121.

Note: Karny (1915: 60, 61, 86) listed *Gesonia punctifrons* and *Racilia okinawensis* as separate species occurring in Taiwan. Bolívar (1918: 14, 42) suggested that the latter was almost certainly a *Gesonia* (i.e., *Gesonula*) species, but it was Tinkham (1940: 297) who synonymized the two genera, unfortunately making *R. okinawensis* a synonym of *G. punctifrons*. In this he was followed by Willemse (1956). The correct synonymy and distributions were given by Rehn (1959). The C.O.P.R. (1982) erroneously still listed the two nominal species as synonymous, but it gave the correct distribution for the latter. Although Kevan (1986) discussed the distribution and some of the synonymy of *Gesonula* species and subspecies, the “ins and outs” of the *Racilia* confusion (and the Taiwan-Ryukyu part of the distribution of the present subspecies) were not discussed. Kevan (1990) indicated that, whereas subsp. *zonocerus* was found in Taiwan, subsp. *punctifrons* was the one that seemed to occur in the Ryukyus. Kevan (1968: 77) indicated that the subspecies found in the Talaud Is. is *sanguinolenta* Krauss but *sanguinolenta* was described by Brunner and was reported only from the Moluccas (Jambon) (see Krauss 1902: 760, 769).

PREVIOUS MICRONESIAN RECORDS:

Gesonula mundata zonocera; Kevan 1987: 311, 316 (Marianas; introduced); Kevan 1990: 105, 111, 119, 121 (Guam, introduced). The distribution of *G. mundata* and its subspecies is summarized by Kevan (1986). The species extends from Malaya and northern Thailand to Australia (eastern Queensland). *G. m. zonocera* is well known from the Philippines (Kevan 1986), whence it seems to have gained access to the Marianas (Kevan 1987, 1990), though, so far, it is known there only from Guam. As noted above, it also appears to be the subspecies present in Taiwan, but not in the Ryukyu Islands (Kevan 1990). In the Philippines it can be a minor pest of taro, *Calocasia esculenta* (Linnaeus), and it could conceivably prove to be a potential pest of the same crop in Micronesia (Kevan 1990).

MATERIAL EXAMINED:

MARIANA IS. *Guam*: Latte Heights, 18-iii-1971, J. Castro, 1♂ (LEM); Toto, 22-iv-1979, Lou Buruba, 1♀ (GUAM). There is also an additional known female without locality or date ("Hasti shrub"), no collector, in the GUAM collection (Dr. I. Schreiner, *in litt.*, 1986). *G. m. zonocera* has been sought fairly recently (since its identity was established), but it had not been found again by mid 1988 (Dr. I. Schreiner, *in litt.*, 1988).

CATANTOPINAE

Stenocatantops splendens (Thunberg, 1815)

Gryllus splendens Thunberg, 1815: 236.

Catantops splendens; Stål, 1873: 71; Kirby 1910: 482 (Celebes, Amboina and Philippines); Willemse 1931: 268; 1932: 49 (Amboina); Willemse 1938: 226 (Sumatra).

Stenocatantops splendens; C. Willemse 1923: 357; Dirsh 1956: 123; Kevan 1987: 311 (Marianas Islands).

Catantops (*Stenocatantops*) *splendens*; Willemse 1957: 469.

PREVIOUS MICRONESIAN RECORDS:

Stenocatantops splendens; Kevan 1987: 311 [*splendens* (*sic*)], 316 (Marianas, introduced); Kevan 1990a: 42 (Guam, introduced); Kevan 1990b: 111, 119, 121 (Guam, introduced).

This species is widely distributed in southeastern Asia from southern China to Taiwan, the Philippines and Indonesia, including northwestern New Guinea; it is also known (probably as an introduction) from the Solomon Islands (F. Willemse 1968, Kevan 1987, *in press*). It seems to be fairly readily transported by human agency (Kevan, *in press*). It was probably introduced in recent times from the Philippines into the Marianas (Guam), where it has potential as a crop pest and where it is now said to be one of the commonest acridid grasshoppers (Kevan 1990).

MATERIAL EXAMINED:

MARIANA IS. *Guam* [all GUAM unless otherwise indicated]: Dandan, on cucumber, 15-iv-1984, C. Pruski, 1♂, 1♀; Mangilao, 15-iv-1984. C. Saruwatari, 1♂ (LEM); Mangilao, grass, 5-vii-1984, C. Pruski, 3♂♂; Mangilao, D.O.A. [= Department of Agriculture], 10-vii-1984, C. Pruski, 1♂, 1♀; Harmon, 7-ix-1984, D. Nafus, 1♂, 1♀; Yona, 27-x-1984, D. Nafus, 1♀; Mangilao, on corn, 22-v-1985, N. Dumaliang, 1♀ (LEM); Barrigada, 18-x-1985, D. Nafus, 1♂, 1♀.

Dr. Ilse Schreiner (*in litt.*, October, 1986) from the University of Guam (Mangilao), wrote, in respect of *S. splendens* on Guam that it "is extremely abun-

dant now, [but] does not appear in our collection prior to 1984. Considering that the bulk of the collection is material collected by [N.R.] Spencer in 1968 and by Muniappan and students in the mid seventies, this is probably significant. In the rainy season which followed the "El Niño" drought [of 1984], we had extraordinary numbers of grasshoppers and many complaints from farmers. Some of the large numbers of grasshoppers were *Valanga excavata* [see later], but I think some of the problem may have been [because of] *Stenocatantops splendens* in its first major outbreak." Dr. Schreiner also noted that it was originally thought that the 1984 drought had "triggered some upset" ecologically to cause the grasshopper problems, but that, since there are no preserved specimens of *S. splendens* prior to 1984, "perhaps this dates the new introduction".

CYRTACANTHACRIDINAE

Nomadacris (Patanga) guttulosa guttulosa (Walker, 1870)

Cyrtacanthacris guttulosa Walker, 1870: 570.

Cyrtacanthacris exacta Walker, 1870: 570 (part).

Acridium exactum & *Acridium guttulosum*; Finot 1907: 278, 326, 339, 350.

Cyrtacanthacris illepedida [nec Walker, 1870]; Sjöstedt 1920: 61.

Acridium illepedidum [nec (Walker, 1870)]; Sjöstedt 1921: 267, 268 (part).

Austracris guttulosa; Uvarov 1923a: 37.

Austracris guttulosa guttulosa; Uvarov 1924: 2, 3, 4.

Austacris [sic] (*Acridium*) *guttulosa guttulosa*; Sjöstedt, 1930: 3, 28.

Nomadacris (Patanga) guttulosa guttulosa; Kevan 1987: 311, 313, 316.

See Willemse (1957) for further synonymy. Kevan (1987: 296, 313n, 320) has notes on the use of the generic name.

PREVIOUS MICRONESIAN RECORD:

Nomadacris (Patanga) guttulosa guttulosa; Kevan (1987: 311, [Palau]), 313 (with full data as given below under material examined).

The distribution of this, the nominotypical subspecies of *Nomadacris*, includes eastern Indonesia (with western New Guinea), northern Australia, the Admiralty Islands, the Solomon Islands, the New Hebrides (Vanuatu), the Loyalty Islands, New Caledonia, Fiji and Tonga (Willemse 1957, Kevan 1987). As there is but a single record from Micronesia, and that from the southwest, not too far distant from Halmahera and western New Guinea where the species is also known, it could be that the specimen was a migrant, for the species is a strong flier.

MATERIAL EXAMINED:

PALAU IS. *Babeldaob*: Ngerelelong [= Arekelong Peninsula], 9-ix-1932, no collector, 1 ♀ (LEM).

Nomadacris (Patanga) succincta (Linnaeus, 1763)

Gryllus Locusta succinctus Johansson in Linnaeus, 1763: 398.

Gryllus succinctus; Herbst 1786: 195, pl. 54, fig. 2.

Acridium succinctum; Olivier 1791: 215.

Acridium assetator Fischer von Waldheim, 1846: 235, pl. XII, fig 2.

Cyrtacanthacris fusilinea, *Cyrtacanthacris inficita*, *Acridium rubescens* & *Acridium elongatum* Walker 1870 (3): 464, 465, 586; Walker 1871 (4): 636.

Acridium Zehntneri Zehntner, 1897: 299 [cf. Willemse 1957: 299n].

Patanga succincta; Uvarov 1923b: 346, figs. 8A,B, 364, 365, 366 [wrongly paginated 367]; Dirsh 1966: 235.

The synonymy of this genus and species has become very complicated (see Jago 1981, Key & Jago 1986, Kevan 1987), but it need not be discussed here.

The species can be of major economic significance over a wide area from southern India eastwards. Its distribution includes various remote islands in the eastern Indian Ocean (such as the Cocos Keeling Islands) and in the western Pacific. It has not been recorded for Micronesia, but it is a powerful flier and it is not impossible that it could reach its western extremities. The reason for including it here is that it has been recorded under the name *Patanga succincta* as being injurious in the southern DAITO IS. (Minami-Daito) by Yashiro (1939: 128). Although these islands lie closer to, and are administered from, the Ryukyu Archipelago and are not part of Micronesia, they lie considerably to the east of the Ryukyus and are separated from them by a deep ocean trench. They might thus reasonably be grouped topographically more appropriately with the remoter Kazan (Volcano) Islands which are considered to be a part of Micronesia.

Genus Valanga Uvarov, 1923

Dirsh (1966) synonymized this genus with *Cyrtacanthacris* Walker, 1870, but this has not found general acceptance. As all the taxa recorded for Micronesia are endemic, at least at the subspecies level, the synonymous and previous Micronesian references will be combined. *Valanga* was indicated by Esaki (1943: 843), in general terms, as being Micronesian. Kevan (1987) clarified the taxonomy and nomenclature of the genus as it affects Micronesia.

Valanga excavata (Stål, 1860)

Acridium excavatum Stål, 1860: 326 (Guam); Finot 1907: 321 (no location); Sjöstedt 1921: 263 [*Acr. excavato* (case change)], 318, pl. 17, fig. 6b (♂ cercus of holotype).

Valanga excavata; Uvarov 1923b: 349, 356 (Guam); Sjöstedt 1931b: 22, 23 (Guam).

Acridium excavatum (Gen. *Valanga*); Sjöstedt 1932: 38 (Guam) [also as *excavatum* (*Acridium* (*Valanga*)), p. 76.]

Orthacanthacris sp.; Swezey 1940: 167, 181 (Guam; on banana leaves, corn, cotton, tobacco, banyan, *Pipturus*, *Glophidium*, *Thespesia* and morning glory vines); Swezey 1941: 40 (Guam; on banana).

Valanga excavata; Esaki 1943: 843; Rehn 1945: 4 (Guam); Townes 1946: 4, 30 (southern Marianas incl. Tinian & Saipan, destructive to bananas, sugar cane, okra, figs, etc.); Oakley 1946: 9, 14 (on all Marianas surveyed—Guam, Tinian, Saipan, Rota; Tinian banana plantations); Bryan 1949: 27, 34 (Guam); Beller 1948: Pt. I, p. 3 [= 6] (Guam: on fig, cotton, *Thespisia*, *Pipturus*, maize, yam, *Glochidium Marianum*).

“*Valanga* species (*excavata* (Stål?))”; Beller 1948: Pt. I, p. 3 [= 6] (Guam; on *Vigna sinensis*).

Orthacanthacris species; Beller 1948: Pt. I, p. 4 [= 7] (Guam; on various named plants).

Valanga excavata; Gressitt, 1954: 171, 181 (S. Marianas, on maize, etc.); Dumbleton 1954: 68 (Marianas; on bananas and maize); Johnston 1965: 4 (U.S. Trust Territory of the Pacific, here meaning Marianas; on coconut palms); Owen 1971: 1 (as last, also on maize); Kurian et al. 1979a: 46 (as last two, on coconut); Kurian et al. 1979b: 211 (as last); C.O.P.R. 1982: 327, 333 [? error in indexing, p. 665, ref. to *V. gilbertensis*, below], (Guam, Marianas; on crops); Kevan 1987: 302, 311 (Guam, Marianas, W. Caroline Is.—for last, see below).

This species seems to be endemic to the Marianas and Minamitorishima. The labelling of a specimen allegedly from the Yap Group (W. Carolines) is suspect.

MATERIAL EXAMINED:

MINAMITORI IS. *Marcus*: 1/5-v-1952, F.S. Sakagami, 1♂, 2♀ ♀ (LEM 1♀, others BPBM).

MARIANA IS. *Agrihan*: 17 & 18-vii-1949, A.R. Mead, 1♂ & 1♂, 1♀ (BPBM) & (LEM latter ♂). *Pagan*: Songsong-Regusa, 23-iv-1940, Yasu & Yoshi, 1♀ (KUEC); Soñgsoñg, 26-iv-1940, Yasu & Yoshi, 1♀ (KUEC). *Saipan*: Donni, 10-ii-1936, Teiso Esaki, 1♂ (KUEC); As Mahetog area, 21-iv-1944, S. Edgar, 1♀ (LEM); nr. Lake Susupe, 30-xi-1944, H. S. Dybas, 1♀ (LEM); 1–2 mi. E of Tanapag, 16-xii-1944, H. S. Dybas, 1♀ (PSBD); Kalabera area, 20-i-1945, H. S. Dybas, 1♂ (PSBD); Sadog Talofofo, 13-ii-1945, H. S. Dybas, 1♀ (LEM); Achugau area, 22-v-1945, H. S. Dybas, 3♂♂, 1♀ (LEM 1♂) (PSBD 2♂♂); Saipan [only], 29-vi-1951, R. M. Bohart, 1♀. *Tinian*: “Tenien Rap, Southsea Islands of Nippon”, 30-vii-1940, Dengo Matusita, 1♂ (LEM); Mt. Lasso, NW slope, 17-iii-1945, H. H. Dybas, 1♂, 1♀ (PSBD); Tinian Harbo[u]r, 20-iii-1945, H. S. Dybas, 1♂ (PSBD); Tinian [only], 6-iii-1946, F. C. Hadden, 3♀ ♀ (LEM 1), (BPBM); Marpo Val[ley], 8-vi-1946, R. G. Oakley, 1♀ (USNM); Tinian I. [only], 8-vi-1946, Townes, 1♀, 1 small juv. ♂ (BPBM ex USNM), also 1 juv. (♂) without day; Tinian [only], 11-xi-1952, J. W. Beardsley, 1♀; Tinian [only], in grass, 14-vi-1952, G. D. Peterson, 1 juv. (♀); Carolinas, 5/6-i-1985, J.A. T- & C.T. B[jork], 2♂♂, 3♀ ♀ (GUAM). *Agiguan*: iv/vi-1952, R. P. Owen, 2♂♂, TTPI; SW side, 23.V. & 4-vi-1952, Y. Kondo, 1♂ & 1♂, 1♀; in grass; 7-vi-1952, G. D. Peterson, 1♀. *Rota*: South coast, 5-ii-1936, Teiso Esaki, 1♂ (KUEC); Tetête—Tatacho—Sonson, 5-xi-1937, Teiso Esaki, 1♀ (KUEC); Tetête, 8-xi-1937, Teiso Esaki, 1♀ (LEM);

Rota [only], 20-vi-1946, Townes, 1♀ (USNM) *Guam*: Guam, Kin[berg], [probably near Umatac harbor, 27/28-xi-1852 (see Persson, 1971)], 1♂ (NREA) (holotype); Guam [only], 1923, Hornbostel, 1 juv. (♂); Guam [only], 5-iii-1924, 1♂; Guam [only, 1920's, det. O. H. Swezey], D. T. Fullaway, 1♀ (LEM); Talofofo, 17-v-1936, O. H. Swezey, 1♀; Inarajan, 27-vii-1936, O. H. Swezey, 1♀; Orote Pt., 29-ix-1936, O. H. Swezey, 1♂, 1♀; Piti, 12-x-1936, O. H. Swezey, 2♀ ♀ (rather small); Guam [only], 22-i-1945, G.Z. Grether Wallace, 1♀; Ordot, Naval Med[ical] Research 2, on beans, 19-v-1945, G. E. Bohart & J. L. Gressitt, 1♂ (LEM) 1♀ (BPBM); Pago, 19-v-1945, J. L. Gressitt, 1♀; Pt. Oca, 3-vi-1945, G. E. Bohart & J. L. Gressitt, 1♂ (LEM); park below Is[land] Command Area nr. Agana, 30-vi-1945, H. S. Wallace, 1♀, (LEM); hill south of Is. Command Area near Agana, 1-vii-1945, H. S. Wallace, 1♀; hill S of Is. Command barracks, 1-vii-1945, H. S. Wallace, 1♀; Agana, 4-vii-, 7-vii & 5-viii-1945, H. S. Wallace, 1♂, 1♀ & 1♀; Mt. Bolanos, viii-1952, N. L. H. Krauss, 1♀; Mt. Lamlam, x-1952, N.H.L. Krauss, 1♂ (PSBD); Talofofo, 16-ii-1976, V. Santos, 1♀ (GUAM); "AGAT", 2-v-1985, N. Dumaliang, 2♀ ♀ (GUAM).

?CAROLINE IS. (WESTERN). *Yap Gp.*: Rumung I., vii-viii-1950, R. J. Goss, 1♂ (PSBD) [possibly mislabelled].

This species seems to have been injurious to crops on Guam in 1984—see under *Stenoctantops splendens*, above.

Valanga geniculata (Stål, 1877)

Acridium geniculatum Stål, 1877: 53.

Valanga geniculata; Uvarov 1923b: 348, 356.

This Indonesian-Philippine species is not known from Micronesia, but it is included here because it has been reported from the "fringing" Talaud Is. and the neighbouring Sangihe Is. (Kalshoven 1950: 117; Willemse 1957: 287, 295). It might conceivably be found in the southwesternmost outliers of Palau.

Valanga gilbertensis F. Willemse, 1971

Valanga sp., and tentatively *Valanga isloata* [F.] Willemse [*nomen nudum*]; Plant Protection Commission S.E. Asia and Pacific, 1969: 5, Beru, Gilbert Is. [Kiribati]; damaging coconut palms); 1970 [*Rev. appl. Ent. (A)* 58]: 830 (as last).

Valanga gilbertensis F. Willemse, 1971: 99, figs 1, 2, 100, figs 3- 10, [101] (Beru, Gilbert Is. [Kiribati]; damaging coconut palms); Manser 1974: iii, 4 (as last); Kurian et al. 1979b: 121 (Gilbert Is. [Kiribati]; damaging coconut palms).

Valanga isolata [F.] Willemse [*nomen nudum*]; Kurian et al. 1979b: 113 (allegedly from Ellice Is. [Tuvalu], but reference given is to Plant Protection Commission, above, referring to Beru I. only; on coconut palms).

Valanga gilbertensis; C.O.P.R. 1982: 333 [there seems to be an error in index, p. 662] (Gilbert [Kiribati]) Is.; on coconut palms); Kevan, 1987: 303, 311, 314, 314n, 317 (Gilbert Is. [Kiribati] and ? Banaba I.).

The uses of the *nomen nudum* and the erroneous record for the Ellice (Tuvalu) Islands, as listed above, are noted by Kevan (1987: 314n). The species is known for sure only from the Gilbert Islands (Kiribati), but it seems to occur also in the Ocean Group (Kevan 1987).

MATERIAL EXAMINED:

- KIRIBATI. Beru: Beru I., feeding on coconut leaflets, xii-1969, R.N. Bryden, 5♂♂, 4♀♀, 3 juvs (USNM), (♂ holotype, ♀ allotype, 2♂♂, 2♀♀ paratypes, juvs) & (NHMW 2♂♂, 1♀ paratypes).
 OCEAN GP. Banaba: [as S.] Ocean I., xii-1957, no collector, 1 juv. ♀ (LEM) (see Kevan 1987: 314n)—presumably this species.

Valanga gohieri (Le Guillou, 1841)

- Acrydium Gohieri* Le Guillou, 1841: 295.
Acridium carenicolle Blanchard, 1853: 353, Orth. pl. II, fig. 7.
Cyrtacanthacris nigrovaria Walker, 1870: 566, 590.
Acridium Gohieri; Finot 1907: 281.
Aegyptium Gohieri; Finot 1907: 348.
Cyrtacanthacris Carenicollis & *Cyrtacanthacris Gohieri*; Kirby 1910: 447.
Valanga nigricornis gohieri; Uvarov 1923b: 349, 355.
Valanga conspersa gohieri; Sjöstedt 1931: 3, 6, 15, 16, 17
Valanga gohieri gohieri; Rehn & Rehn 1941: 262.
Valanga gohieri-gohieri; Willemse 1957: 262, 264, 265, 287—291, [295].
Valanga gohieri; Kevan 1968: 77.

This species has not been recorded from Micronesia, but it is included here because it occurs in the “fringing” Talaud Is. (Willemse 1957: 295, Kevan 1968: 77) and it might therefore possibly turn up in the southwesternmost Palau Islands.

Valanga nigricornis carolinensis Sjöstedt, 1931

- Valanga irregularis carolinensis* Sjöstedt, 1931b: 4, 8, 21, [22] (“Ins. Carolinen” Chuuk, as “Ruck”).
Valanga viridipes Sjöstedt, 1931b: 8, 22, [23] (“Ins. Carolinen”, Chuuk, as “Ruck”).
Valanga irregularis carolinensis; Esaki 1943: 843 (Chuuk).
Valanga viridipes; Esaki 1943: 843 (Chuuk); Bryan 1948: 27 (Chuuk); C. Willemse 1951: 357 (Chuuk).
 “A similar or possibly the same species” [of *Valanga* as on Yap, Ulithi and Palau]; Townes 1946: 5, 30 (Chuuk).
Valanga irregularis carolinensis; Bryan 1949: 27 (Chuuk).
Valanga nigricornis carolinensis and f. *viridipes*, with synonyms; Kevan 1987: 296, 302, 311, 318 (Caroline Is., Chuuk; also intermediate to subsp. *ornata* from Fais I., eastern W Carolines).
 “A subspecies of *Valanga nigricornis* (Burmeister)” ; Kevan, 1987: 316 Chuuk [as Truk].

Kevan (1987) has indicated the synonymy and distribution of this (and other) subspecies of *V. nigricornis* (Burmeister, 1848) in Micronesia. He transferred subsp. *carolinensis* from the Australian *V. irregularis* (Walker, 1870) to that species and observed that *viridipes* was but a colour form—seemingly the more usual one. The holotypes (δ and φ , respectively) of Sjöstedt's two taxa were in ZMUH, but they have not been re-examined in the course of this study. It is not known if they are still extant. This subspecies seems to be restricted virtually to the central Caroline Islands, though intermediates to subsp. *ornata* (below) are known from the easternmost of the western Carolines (Kevan 1987). "*Valanga irregularis carolinensis*", as recorded by C. Willemse (1951: 357) from the islands of Ulithi Atoll in the western Carolines, belong to *V. n. ornata* (see below).

MATERIAL EXAMINED:

CAROLINE IS. (CENTRAL) [all f. *viridipes* except as indicated]. Chuuk Gp: "Karolinen, Truk Ins., Prof. Krämer", 1 φ (typical form) (ZMHB); Dublon I., 22-xii-1935, Z. Ono, 1 δ (ex alcohol, typical form); Wela, vii-1939, H. Ohba, 1 φ (LEM); Wela, 29-vii-1939, Teiso Esaki, 1 φ (KUEC); Moen [I.], 400 ft., 23-v-1946, Townes, 1 δ (USNM); Udot I., 25-vi-1946, H. K. Townes, 1 φ , (USNM); Dublon I., 28-v-1946, R. Fosberg, 1 φ (red hind tibiae), (LEM); Dublon [I.], 12-ii-1948, K. L. Maehler, 1 δ , 1 φ (USNM); Moen [I.], Civ[il] Ad[ministration] Area, 1-ii-1949, R. W. L. Potts, 1 δ (LEM); the same, 6-ii-1949, 1 φ (PSBD); the same, 13-ii-1949, 2 δ δ (LEM & PSBD); the same, 4-iii-1949, 1 δ (PSBD); the same, 24-iv-1949, 1 juv. δ (PSBD); Moen Island, x-1952, J. W. Beardley, 1 φ ; Moen I., Mt. Teroken, north, 6-ii-1953, J. L. Gressitt, 1 δ (PSBD); Penia Udot, 6-vii-1985, A. Bowden-K., 1 φ (atypical hind femur pattern with whole dorsal surface except extreme base dark brown, ventral surface dark only distally, outer face without dark bands), (GUAM).

CAROLINE IS. (WESTERN) [intermediates to subsp. *ornata*, below, but closer to the present subspecies; hind tibiae reddish]. Fais: Fais I., 5-x-1952, N. H. L. Krauss, 3 δ δ , 1 φ (LEM 1 δ), remainder (BPBM); Fais I., 28-iv-1954, [no collector,] 1 φ (LEM).

Valanga nigricornis ornata Ramme

Valanga ornata Ramme, 1941: 150, Type locality "Karolinen" [= Carolines]. Holotype male, "Typus I", Allotype female, "Alloty whole body but not "Holotypus II" and "Allotypus II".

Valanga ornata; C. Willemse 1951: 357.

Valanga nigricornis alleni Rehn, 1945: 3-12, 8 figs. [all figs. mislabelled as *Valanga melanocornis alleni*]. Type locality Ulithi Atoll. Synonymy, Kevan (1987: 318).

Ramme (1941) described *ornata* as a new species but including two different forms and, although he did not name the two forms, he listed two holotypes and two allotypes. The No. I types apply only to the subspecies *ornata* (Kevan 1987).

Distribution (Nonstriped Form): Yap I., Dugor Rumu, 10 m. 29-xi-1952, Pacific Sci. Board Micronesian Survey, J. L. Gressitt, 1 ♀ (PSBD); Yap I., YAP GRP, Colonie, vii-viii-1950, R. J. Goss 1 ♀ (LEM); Yap I., YAP GRP, Carolines, x-1952, N. L. H. Krauss, 1 ♀ (PSBD); Tomil Dist, Yap Grp, vii-viii-1950, R. J. Goss 1 ♂ (LEM); (**Striped Form:**) Ulithi, 31-v-1948, Langford coll., H.S.P.A. Collection 1 ♂, 2 ♀ ♀ (PSBD); Yap, 1928, Carolines, Yap 1 ♀ (PSB); Yap I., Yap Grp, ix-1952, N. L. H. Krauss 1 ♂ (PSBD); Yap Group, vii-viii-1950, R. J. Goss 2 ♂ ♂, 2 ♀ ♀ (LEM 1 ♂, 1 ♀) (1 ♀ PSBD); Ruul Dist., Yap I., Yap Group, vii-viii-1950, R. J. Goss 2 ♀ ♀ (PSBD); Ruul Dist., Yap I., Yap Group, vii-viii-1950, R. J. Goss 2 ♀ ♀ (PSBD).

Valanga nigricornis ornata occurs in two color forms, one with a distinct median dorsal pale stripe and one that lacks the dorsal stripe, known colloquially as "striped" and "nonstriped" forms.

Valanga nigricornis rammei Kevan

Valanga nigricornis rammei Kevan, 1987: 302, 311 (Table 5 (a), 318, 319. Holotype and allotype designated as Ramme's (1941) "Typus II" and "Allotypus II" (Kevan 1987).

Paratypes: 4 males, 4 females, were in Kevan's posession and were labeled by him *Valanga nigricornis rammei*, Det D.K. McE. Kevan, 1985: Peleliou, Ashiasu, 6-III-1936, Teiso Esaki; Micronesia coll. Entomological Lab. Kyushu Univ., Fukuoka, Japan, 1 ♂; Angaur I., Palau Islands, 3-II-1948. Pacific Science Board Survey of Micronesia, H. S. Dybas, "on coconut frond", 1 ♂, 1 ♀ (PSBD). Garakayo, Pelew Islands, 8-viii-1945, R. B. Page 1 ♂ (PSBD); Peleliu Is., Palau Is., 7-ii-1946, Oakley #1313. 1 ♂ (LEM); Kayangel Atoll, Kgajangel, Palau, 15-xii-1957, sweeping, Caroline Is., Pac. Sci. Bd., J. L. Gressitt 1 ♀ (PSB); Palau Islands, Koror I., 28-vi-1957, C. W. Sabrosky 1 ♀ (LEM); Peleliu, Palau Islands, N. E. Coast, 28-i-1848, Pac. Sci. Bd. Surv. Micronesia, H. S. Dybas 1 ♀ (PSBD).

The following descriptions were made by the second author, based upon the paratypes. They agree with the "Typus II" of Ramme (1941) and are provided for convenience.

DESCRIPTION, *Male*

Head: smooth, frontal costa broad, narrowing but little toward vertex; narrow between eyes but width across eyes greater than pronotal width; eyes prominent, protruding; antennae filiform, dark.

Prothorax: pronotum with anterior margin projecting, obtuse-angled medially; posterior margin broadly rounded, lateral margins diverging only on metazona; lateral carinae absent; prozona rugose cut by two sulci ahead of principal sulcus, all three sulci deeply impressed; metazona tuberculate but not rugose; tegmina unicolourous, not spotted. **Legs:** hind femur with distinct herring-bone pattern, this surrounded by narrow depression; hind tibia with

spines on ventral carinae; fore and middle tibiae with few very small black spines.

Abdomen unspecialized, genitalia of two specimens dissected and in vial; subgenital plate triangular, produced to very acute apex.

Color: Uniform yellowish to yellowish-olive; median dorsal yellow stripe extends from between eyes to 2/3 or more of length of scapular area of tegmina, this broader and brighter than in *Vn. ornata*; yellow stripe bordered with black on head, face bright yellow with few darker spots on frontal costa; grey stripe extends from bottom of eye downward across gena. Pronotum strongly mottled with black, especially adjacent to pale stripe; tegmina dark olive, not spotted; median femur olive, strongly mottled with black; middle tibia dark with olive base nearly obscured; tarsus olive, pretarsus black with black tipped claws, arolium elongate dull olive; hind femur dark yellow with black surrounding the herringbone pattern, banded, preapical yellow band on inner face but obscured by black on outer face, dorsally, outer face marked with two black bands; hind tibia uniformly shining olive-black with black tipped yellow spines and spurs. Abdomen uniformly yellowish with brownish at margins of segments.

Female: similar to male but larger and color brighter. Median dorsal pale stripe bright yellow and extending 3/4 or more toward apex of tegmina. Head and pronotum yellow overlaid with brown; face yellow with few dark spots; band beneath eye brownish; eye yellow with distinct paler pattern (like tree branch); pronotum with alternate yellow and olive-green on posterior and postero-lateral margins; tegmina with yellow veins, not spotted; fore femur with large greyish spots, tibia brownish; middle femur and tibia yellow with brown spots; hind femur yellow with black surrounding herringbone pattern (as in ♂), dorsally with apical and two more blackish bands, basal band incomplete on outer face; inner face yellow, crossed by the blackish bands; hind tibia shining dark olive with black tipped yellow spines and spurs, tarsi brown; abdomen uniformly yellow, ovipositor valves yellow to brownish, dark olive at apices.

Measurements (mm) (means and ranges). *Males:* body length 44.2 (43.8–45.2); pronotal length 10.2 (9.4–1.5); tegmen length 40.6 (36.3–43.7); hind femur length 25.1 (24.0–26.2). *Females:* body length 56.6 (52.3–63.2); pronotal length 12.0 (10.3–143.0); tegmen length 51.6 (47.2–57.0); hind femur length 30.5 (28.6–33.0).

The measurements of *Valanga nigricornis rammei* are very similar to the measurements of *Vn. ornata*. The two subspecies differ in the following respects: the pronotum of *Vn. ornata* is more rugose and the metazona is more densely punctate with larger punctations, the anterior two sulci are less deeply impressed and the sulci are not blackened as in *Vn. rammei*; in both sexes the contrast of light and dark colors is more distinct in *Vn. ornata*; in *rammei* the tegmina have yellow veins but in *ornata* the male tegmen is brownish with brown veins and in the female is black near the base with veins becoming paler toward the apex; in

rammei the hind tibiae of both sexes is shining olive brown, in *ornata* the tegmen of the male is pale brown and of the female black.

All females are similar in having the distinct median dorsal yellow stripe. One female, that from Kayangel Atoll, is considerably smaller than the other females. One male has a distinct dorsal stripe; on the other two the stripes are confined to the head and pronotum. This subspecies has "striped" and "nonstriped" forms as does *V.n. ornata*.

Locusta migratoria manilensis (Meyen, 1835)

Locusta migratoria manilensis Meyen

Tohasu [Tonosama] bat'ta [=Flying or Migratory Locust], Kuwana 1905: 53–90
[full account of damage];

Pachitylus danicus; Matsumura 1906: 15 (Bonin Is.).

Pachytalus danicus; Matsumura 1914: 118 (Bonin Is.).

Pachytalus [sic] *migratorioides*, Matsumura 1917: 267 (Bonin Is.); Matsumura 1920: 268 (Bonin Is.).

Locusta migratoria danica (atypical); Hebard 1924: 215 [Ogasawara (= Bonin) Is.; Oakley 1946: 9 (Guam, Tinian, Saipan, defoliating corn; Van Zwalenberg 1947: 19 (Iwo Jima);

Locusta migratoria migratorioides [nec R. & F.]; Yashiro 1939: 129 (S. Daito Island); Samuelson & Nishida 1987: 160 (Micronesia and Marshall Is. generally).

Locusta danica; Esaki 1943: 843 (Marianas); Swezey 1946: 4; Potts 1949: 9 (not recognized from Chuuk); Samuelson & Nishida 1987: 60 (damage generally).

Locusta migratoria [only] Oakley 1946: 12 (feeding on sugar cane on Tinian); Oakley 1953: 175 (Chuuk, Guam, Rota, Saipan, Timor, Kwalein [destroyed corn and damaged sugar cane]); Dumbleton 1954: 67, on maize and sugar cane, Guam, Marianas, Carolines, and Marshall Is.; Sugerman 1972: 275 (Kwalein, Roi-Namur & Gugeegue Islets).

Locusta migratoria manilensis; C. Willemse 1951: 345, 357 (Palau Is.); Roffey, 1979: 25 (not fig. 23), 126, 127, map 17, 128–132 (Marianas only); Samuelson & Nishida 1987: 160 (Marshall Is. but not Enewetak Atoll).

The Migratory Locust is now known to be widespread in Micronesia but only the solitary phase has been reported from the region.

DISTRIBUTION (MANY BUT NOT ALL SPECIMENS EXAMINED).

VOLCANO IS.: Iwo Jima, xii-1945, R. E. Bertram, 1 ♂, 1 ♀.

BONIN IS.: Chichi Jima, vi-viii. 1949, D. B. Langford, 1 ♂, 1 ♀ (LEM); Omura, vi-1949, A. R. Mead, 1 ♀; Omura, 5-v to 9-vi-1958, vii-1951, R. M. Bohart, 1 ♂, 1 ♀; F. M. Snyder, 2 ♂♂, 1 ♀.

MARIANAS. *Pagan*: Songsong-Regusa, 24-iv-1940, Yasu et Yoshi, 1 ♂, 1 ♀; loc. not specified, 18-viii-1954, G. Corwin, 1 ♂. *Saipan*: loc. not specified, S. Uchiyama, 1 ♂; loc. not specified, Oleai-Hinashisu-Charanka, 1-xi-1937 Teiso Esaki, 1 ♂; Inai Haguman, 6-vii-1939, Teiso Esaki, 1 ♂; Mahetong area, xi-

1944, S. Edgar, 1 ♂; Mahetong area, H. S. Dybas, 21-xi-1944, 2♂♂; same, 18-xi-1944, 2 ♀♀; same, 17-xi-1944, 4 ♀♀; same, 28-xi-1944, 2 ♂♂; same, 25-xi-1944, 2 ♂♂; Mahetong area, 18-i-1945, H. S. Dybas, 1 ♀ (at light); same, 16-v-1945, 1 ♂, 1 ♀ (in copulo); same, 20-v-1945, 1 ♂, 1 ♀ (in copulo); Achugau area, v-1945, H. S. Dybas, 1 ♂, 1 ♀; Garapan, iv-1946, N. L. H. Krauss, 1 ♂; USCC farm, 17-vi-1946, R. G. Oakley, 2 ♂♂, 1 ♀, 1 juv. ♀; loc. not specified, 22-vii-1951, R. M. Bohart, 1 ♂; loc. not specified, iii-1958, N. L. H. Krauss, 1 ♂; unspecified locality, 1913, A. Leber, 4 ♂♂ (all very small) (ZMHB); Chalan Laulau, 18-vi-1946, Oakley, 1 ♀, 1 juv. ♀ [faded green—feeding on corn] (BPBM). *Tinian*: Sonson-Carolinas, 21-iii-1936, T. Esaki, 1 ♂ (KUEC); Sonson, 2-xi-1937, T. Esaki, 1 ♂, 1 ♀ (KUEC); Marupo-Hagoi, 3-xi-1937, T. Esaki, 3 ♂♂, 4 ♀♀ (KUEC); Ridge 1 mi. N. Tinian Harbor, 18-iii-1945, H. S. Dybas (PSBD.) [+ 2 juvs. (♂ & ♀) (BPBM); loc. not specified, 6-iii-1946, F. C. Hadden, 2 ♀♀ (LEM 1 ♀), same, 25-ii-1945, 1 ♂, 1 ♀; Marpo Val[ley], 8-vi-1946, R. G. Oakley, 1 ♀ (USNM); Mt. Lasso, 12-vi-1946, H. K. Townes, 1 ♀ (USNM); Jon's Ranch, 7-i-1985, J. A. & C. D. Biele, 1 ♂ (GUAM); Puntan Adgidium, 11-v-1985, C. Bjork, 1 ♀ (GUAM); (GUAM has 1 more ♂ and 3 more ♀♀ from Tinian); *Faralon de Madinilla* [N. of Saipan], 23-ii-1974, J. Sundberg, 1 ♂ (very small)⁴ (LEMQ); 2-vii-1984, C. Pruski, 1 ♂ (small); *Rota*: Rota, 20-vi-1946, Townes, 1 ♂ (USNM); loc. not specified, 22-vi-1952, Y. Kondo, 1 ♂. *Guam*: Talofofo, 4-viii-1945, H. S. Wallace, 1 ♂, 1 ♀; Piti, 4-vii-1945, H. S. Wallace, 1 ♀; Umatac, 10-v-1945, G. E. Bohart & J. L. Gressitt, 1 ♂ (PSBD); Agana, 15-vii-1945, H. S. Wallace, 1 ♂, 2 ♀♀; loc. not specified, open fields, viii, 1923. & 1923, Hornbostel, 2 ♀♀; 10 ex. from Guam det. *L. migratoria* only (ANSP); Mt. Tenjo, 1-iv-1936, E. H. Bryan, jr., 1 ♀ [brownish] (BPBM); Umitao, 28-iii-1936, E. H. Bryan, jr., 1 ♀ [greenish] (BPBM); Inarajan, 25-vii-1936, O. H. Swezey, 1 ♂ [brown] (BPBM); 14-vi-1936, 1 ♀ [greenish] (BPBM); Sumay, 15-vi-1936, O. H. Swezey, 1 ♀ [brown] (BPBM); Mt. Chuchao, 16-v-1936, R. L. Usinger, 1 ♂ [brown] (LEM); Dandan, 17-vii-1936, O. H. Swezey, 1 ♂ [greenish] (BPBM); Mt. Alifan, 26-v-1936, R. L. Usinger, 1 ♀ [greenish]; Piti, 13-vi-1936, O. H. Swezey, 1 ♀ [green] (BPBM); Inarajan, 7-vi-1930, E. H. Bryant, jr., 1 juv. ♀ (BPBM); Inarajan, 2-vii-1984, C. Pruski, 1 ♂ [small] (GUAM); Mangilao, Univ. Guam Campus, 10-iv-1981, M. Sukulbach, 1 ♂ [very small]⁵ (LEM); University of Guam has 6 more ♂♂ and 4 more ♀♀ from Guam.

CAROLINES. *Yap Is*: Map-Rumong, 12-ix-1939, T. Esaki, 1 ♀; Map Island, vii/viii-1950, R. J. Goss, 2 ♀♀ (PSBD); S. Rumung Island, vii/viii-1950, R. G. Goss, 1 ♀ (PSBD); Yap Island, vii-1950, R. J. Goss, 7 ♂♂, 6 ♀♀ (PSBD); Yap Island, x-1952, N. L. H. Krauss, 2 ♂♂, 2 ♀♀; Yap Island—Yap Hill behind Yaptown, 50m, xii-1952, J. L. Gressitt, 2 ♂, 1 ♀ (PSBD); island

⁴This very small specimen has the following measurements: body length—25, pronotum length—4.8, tegmen length 24, hind femur length 17.0, hind tibia length—15.5 (all in mm).

⁵This small specimen has the following measurements: body length—26, pronotum length—5, tegmen length—25, hind femur length—17.5, hind tibia length—16 (all in mm).

not specified, vii-viii.1950 R. J. Goss, 1 ♂. *Palau*: Koror, viii-ix-1949, D. B. Langford, 1 ♂ (LEMQ); Koror, 3-iii-1953, J. W. Beardsley, 1 ♀; Babedaob I., Uliamang, 20-xii-1947, H. S. Dybas, 1 ♂ (PSBD); Babedaob I., Ngerechelong, 9-ix-1952, J. W. Beardsley, 2 ♂♂ (i juv.); Babelthaup I., Ngatpang, 65 m, 7-xii-1952, J. L. Gressitt, 1 ♂; same 10-xii-1952, 1 ♀; Meloteiok, 7-iv-1936, Z. Ono, 1 ♀ [det. Willemse] (BPBM); Goldok, 8-iv-1936, Z. Ono, 1 ♀ [det. Willemse] (BPBM); Airai Koiger, 20-iv-1936, Z. Ono, 1 ♂ [det. Willemse] (BPBM). *Chuuk*: Moen, x-1952, J. W. Beardsley, 1 ♂.

MARSHALLS. *Kwajalein Atoll*: Kwajalein Island, 16-viii-1946, Townes, 4 ♂♂, 3 ♀♀ (USNM); same, 17-viii-1946, 2 ♀♀; island not specified, 31-xi-1952, J. F. G. Clarke, 3 ♂♂, 3 ♀♀; island not specified, 18-iii-1953, C. E. Clagg, 2 ♂♂ (1 juv.), 2 ♀♀; same 10-ix-1953, 1 ♂, 1 juv. ♀; island not specified, 19-ii-1958, N. L. H. Krauss, 1 ♂; Kwajalein, 2-ix-1965, F. A. Bianchi, 2 ♀♀ [green] 7 1 juv. ♀ (BPBM); same, 24-viii-1965, 1 ♀ [brown]; Ebeye I. [or] dist., 8-xi-1972, D. O. Otobed, 1 ♂ (GUAM); *Majuro Atoll*: Airfield, 27-viii-1946, Townes, 2 ♂, 2 ♀♀; Majuro Island—Delap, 27-iii-1946, R. G. Oakley, 1 ♂ (USNM); Majuro Island, 27-vi-1950, I. LaRivers, 4 ♂♂, 3 ♀♀; same 2-vii-1950, 2 ♀♀; Uliga, 6/7-ix-1953, J. W. Beardsley, 1 ♀ (GUAM).

Discussion

This subspecies exhibits certain trends across its range in Micronesia but the ratios of tegmen length/ hind femur length; hind femur length/ head width; and pronotum length/ head width vary only slightly, suggesting that no further subspeciation is involved. There is a detectable reduction in length for certain characters from south-east to north-west. Specimens from Saipan, Tinian and Guam have appreciably longer femora than those from Kwajalein and Majuro. Tegmen length is variable and does not exhibit a trend.

CATANTOPINAE

Heteropternis obscurella (Blanchard, 1853)

Oedipoda obscurella Blanchard, 1853: 375.

Oedipoda obscura Blanchard, 1853: pl. 3, fog. 10.

Heteropternis obscurella; Saussure 1884: 129, 130; Kirby 1910: 220; C. Willemse 1951: 345, 357.

Heteropternis resplendens; Townes 1946: 30 [Chuuk, Ulithi, Yap, Palau I.]

Distribution: This species occurs on Banda Island in the Moluccas, in Australia, New Guinea, Borneo, Ceram and Amboina. In Micronesia it has been recorded from Pohnpei, Yap and Palau, as follows:

CAROLINES. *Yap*: Yap Island, vii-viii-1950, R. J. Goss, 4 ♂♂, 8 ♀♀ (PSBD); same, 8-vi-1951, J. L. Gressit, 1 ♂ (BPBM); same, ix & 8-vii-1952, N. L. H.

Krauss, 1 ♂, 1 ♀ (BPBM); Yap Group, 28-iii-1954, J. W. Beardsley, 1 ♂ (BPBM); Tormil Dist., vii-viii-1950, R. J. Goss, 2 ♂♂, 2 ♀♀ (PSBD); Map Island, vii-viii-1950, R. J. Goss, 1 ♂, 2 ♀♀ (PSBD); Rumung Island, [n.d.] R. J. Goss, 1 ♂, 1 ♀ (PSBD); Map—Rumung, 12-ix-1939, T. Esaki, 2 ♂♂ (KUEC). *Palau*: Koror & Prabaketsu, 24-xii-1937, S. Murakami, 1 ♂ (KUEC); Koror I. [NE corner], 22-vii-1946, Townes, 5 ♂♂, 8 ♀♀ (USNM); Koror I., 19-ix-1947, H. S. Dybas, 2 ♂♂ & 24-ix-1947, 1 ♀ (PSBD); Koror I., iv-v-1949, D. B. Langford, 1 ♀ (BPBM); Koror Island SW, iii-v-1954, D. Osborne, 1 ♀ ((BPBM)); Koror Island, 29-viii-1952, J. W. Beardsley, 1 ♀, & 1-x-1952, 1 ♂ (BPBM); Peleliu [Island], Akorokuru, 10-viii-1939, T. Esaki, 1 ♂ (KUEC); Peleliu Is. Akorokuru—Ashiasu—Garudoroko, 11-viii-1939, T. Esaki, 1 ♀ (KUEC); Peleliu Island, 28-vii & 1-viii-1945, H. S. Dybas, 5 ♂♂ (PSBD); Peleliu Island, 28-vii-1945, E. Hagen, 1 ♂, 1 ♀ (BPBM); Peleliu Island, 29-i & 1-ii-1945, H. S. Dybas, 1 ♂, 2 ♀♀ (PSBD); Babeldaob [Island] Ngardok-Ngarmisukan, 11-ii-1938, T. Esaki, 1 ♂, 1 ♀ (KUEC); Babeldaob Island, 20-xii-1952, J. L. Gressitt, 1 ♀ (PSBD); Babeldaob Ulimang, 10-xii-1947, H. S. Dybas, 1 ♀ (PSBD); Angaur Island, 4-ii-1948, H. S. Dybas, 1 ♀ (PSBD); Angaur [Island], Saipan/South cape, 11-iii-1936, T. Esaki, 1 ♂ (KUEC); Angaur [Island], 4-ii-1948, H. S. Dybas, 1 ♀ ((PSBD)); Angaur I[sland], 24-i-1953, J. W. Beardsley, 1 ♂ (BPBM). *Ulithi Atoll*: Mogmog Island, 1-vii-1946, Townes, 1 ♂, 1 ♀ (USNM); Mogmog Island, 6-x-1952, N. L. H. Krauss, 1 ♀ (BPBM); Falalop Island, 30-iv-1952, J. W. Beardsley, 1 ♂ (BPBM). *Chuuk*: Fefan Island, 27-v-1946, Townes, 4 ♀♀ [1 juv.] (USNM); Dublon, 11-ii-1948, K. L. Maehler, 1 ♂ (USNM); Dublon, Kuchua, 7-viii-1949, A. R. Mead, 1 ♀ (BPBM); Dublon, 17-x-1952, J. W. Beardsley, 1 ♀ (LEM x-BPBM); Moen Island, 1-ii-1949, R. W. L. Potts, 1 ♂; same 25-iii-1949, 1 juv. ♀; same 30-iii-1949, 2 ♀♀ (PSBD); Moen Island, xi-1952, J. W. Beardsley, 1 ♀ (all PSBD); Tol Island, 10-iv-1949, R. W. L. Potts, 1 ♂ (PSBD); Moen, 10-viii-1985, A. Bowden-K., 1 ♀ (GUAM).

Heteropternis obscurella has been a minor pest of crop plants in the Western Caroline Islands of Micronesia.

Trilophidia annulata (Thunberg, 1815)

Gryllus annulata Thunberg 1815: 234. [Type locality not stated].

Gryllus bidens Thunberg, 1815: 235. [Type locality not stated, presumably S.E. Asia].

Acridium (Oedipoda) vulneratum Haan, 1842: 163, pl 21, fig. 13. [Type localities Japan and Padang].

Oedipoda cristella Stål, 1860: 344.

Epacromia aspera Walker, 1870: 775.

Epacromia turpis Walker, 1870: 775.

Epacromia nigricans Walker, 1870: 776.

Trilophidia annulata var. *ceylonica* Saussure, 1884: 158.

Trilophidia annulata var. *japonica* Saussure, 1888: 54.

Trilophidia annulata var. *mongolica* Saussure, 1888: 54.

Trilophidia annulata: Hollis 1965: 250–253, Figs, 2–4, 8, 12, 17–19, 26; Kevan 1987: 312; 1990: 111.

DISTRIBUTION:

Trilophidia annulata occurs widely in the Oriental and eastern Palaearctic regions. It was not recorded previously from Pacific Islands but is now known from the southern Marianas.

S. MARIANAS. *Guam*: Agana, 10 & 14-vii-1945, H. S. Wallace, 2 ♂♂ [1 juv.] (BPBM); same, viii-1945, 1 ♂ (BPBM); Yona, x-1952, N. L. H. Krauss, 1 ♂ (BPBM); Barrigada, 30-ix-1945, H. S. Wallace, 1 ♂ (BPBM).

Male specimens of this species closely resemble specimens from Taiwan. The limits of variation in genitalic structures is stated by Hollis (1965) "to vary within narrow limits and can serve for positive identification". Examination of the genitalia of specimens from Guam and from Taiwan, compared with the figures of Hollis (1965: figs. 5–8) (by M.-L. E., fig. 6) reveals that the variation is considerably greater than indicated by Hollis, those from Guam being much the same as Hollis' figure 6.

Aiolopus thalassinus tamulus / dubius intermediates

Gryllus thalassinus Fabricius, 1781: 367.

Gryllus tamulus Fabricius, 1798: 195.

Epacromia rufostriata Kirby, 1888: 550 [synonymy by Hollis, 1965].

Aiolopus tamulus; Yashiro 1939; Townes 1946: 4, 5, 30; Oakley 1946: 8; Sakagami 1953: 26;

Aeolopus [sic] *dubia* Willemse, 1923: 100 [Type locality: New Caledonia, Loyalty Islands, New Hebrides. Lectotype ♂ designated by Hollis (1968) (Maastricht Museum); Hinckley 1969: 10.

Aiolopus thalassinus tamulus; Oakley 1953: 176; Dumbleton 1954: 67; Sugerman 1972: 276; Roffey 1979: 133, 134, fig. 74; COPR 1982: 413, 414; Samuelson & Nishida 1987: 149.

DISTRIBUTION

MARIANAS. *Pagan*: 27-vii-1951, R. M. Bohart, 2 ♂♂, 2 ♀♀ (PSBD); *Saipan*: xi-1944, H. S. Dybas, 9 ♂♂, 4 ♀♀; 1-v-1945, H. S. Dybas, 16 ♂♂, 11 ♀♀ (PSBD) [incl. 1 ♀, 1–2 mi. E Tanapag, 14-v-1945]; vi-1946, USCC farm, R. G. Oakley, 2 ♀♀ (USNM); 29-vi & 28-viii-1951, R. M. Bohart, 4 ♂♂, 2 ♀♀ (PSBD); ii & iii-1958, N. H. L. Krauss, 2 ♂♂, 2 ♀♀. *Kagman Agr. Sta.*, 25-viii-1977, M. Ali (on taro, tapioca, squash, taken in Malaise Trap), 14 ♂♂, 8 ♀♀ (BPBM); *Kagman Agr. Sta.* (papaya pit), 22-viii-1977, J. A. Tenorio & M. Ali, 3 ♂♂, 2 ♀♀ (BPBM); *Kagman Agr. Sta.* (sweeping grass), J. A. Tenorio, 1 ♂, 1 ♀ (BPBM); *Kagman Agr. Sta.*, on egg plant and canteloupe, 23-viii-1977, M. Ali, 5 ♂♂, 5 ♀♀ (BPBM). *Rota*: 6-xi-1937, T. Esaki, 1 ♂ (KUEC);

27-x-1945, W. L. Necker, 5 ♂♂, 1 ♀ (PSBD); vi-1951, R. M. Bohart, 1 ♂, 2 ♀♀ (PSBD); *Guam*: Agana, vii-1945, H. S. Wallace, 5 ♂♂, 3 ♀♀; Agana, 8-v-1945, G. E. Bohart & J. L. Gressitt, 1 ♂ (PSBD); Agana airport, 15-viii-1945, H. S. B., 2 ♂♂ (PSBD); Agana, 19-x-1952, N. L. H. Krauss, 4 ♂♂, 1 ♀ (PSBD); park below island common, nr. Agana, H. S. Wallace, 3 ♂♂, 2 ♀♀; same, 1-vii-1945, 1 ♂; nr. Agana, 15-vii-1945, 4 ♂♂, 3 ♀♀; same 10-vii, 2 ♂♂, H. L. Wallace (BPBM); Cocos I., x-1957, N. H. L. Krauss, 1 ♀; nr. Yona, iv-1946, N. H. L. Krauss, 1 ♂; Pago River, 26-v-1945, G. E. Bohart & J. L. Gressitt, 1 ♂ (PSBD); Pt. Ritidian, 5 & 7-viii-1945, J. L. Gressitt, 2 ♀♀; Pago, 9-v-1945, G. E. Bohart & J. L. Gressitt, 1 ♀ (PSBD); Pt. Oca, 15-v-1945, 1 ♀, 16-v-1945, 1 ♀, 29-vi-1945, 2 ♀♀, 5-vi-1945, 1 ♂, J. L. Gressitt (PSBD); Pt. Oca, 29-vi-1945, G. E. Bohart, 1 ♀ (BPBM); Pt. Oca, 19-v-1945, G. E. Bohart & J. L. Gressitt, 2 ♂♂, same but coll. J. L. Gressitt, 3 ♂♂ [pit trap] (BPBM); Talofofo, 4-viii-1945, H. S. Wallace, 1 ♀; Talofofo, x-1957, N. H. L. Krauss, 1 ♀; Talofofo Bay, 4-viii-1945, J. L. Gressitt, 1 ♀ (PSBD); Mt. Santa Rosa, 14-v-1945, Bohart & Gressitt, 1 ♀ (PSBD); Santa Rita, x-1957, N. H. L. Krauss, 1 juv. ♀; Mt. Lamlam, 27-xi-1952, J. L. Gressitt, 1 ♂ (PSBD); Mt. Lamlam, ii-1958, N. H. L. Krauss, 1 ♀; Umatac, v-1945, Bohart & Gressitt, 1 ♂ (PSBD); Mt. Tenjo, 7-vii-1945, Bohart & Gressitt, 1 ♂ (PSBD); Mt. Tenjo, 31-vii-1945, H. S. Wallace, 1 ♂, 2 ♀♀; Amantes Pt., 25-viii-1945, H. S. Wallace, 2 ♀♀; Oroti, 2-viii-1945, H. S. Wallace, 2 ♀♀; Inarajan, x-1957, N. L. H. Krauss, 1 ♂; Mt. Alutom, 22-vii-1945, H. S. Wallace, 3 ♂♂, [1 juv.]; same, 22-i-1945, 1 ♂; Barrigada, x-1957, 23-vii & 8-viii-1945, 2 ♂♂; area not specified, 1-v-1956, C. F. Clagg, 2 ♀♀; Airforce base, x-1957, N. L. H. Krauss, 1 ♂; Atantano, 3-ix-1936, O. H. Swezey, (on rice seedlings) 1 ♀ (BPBM); Ritidian Pt., 15-iv-1936, E. H. Bryan, 1 ♀ (BPBM); Piti, 10-viii-1936, (at light), O. H. Swezey, 1 ♂ (BPBM); Piti, 6-i-1936, R. L. Usinger, 1 ♀ (BPBM); Piti, 5-vii-1936, O. H. Swezey, 1 ♂ (BPBM); Upi trail, 5-v-1936, O. W. Swezey, 1 ♂ (BPBM); Merizo, x-1936, O. H. Swezey, 1 ♀ (BPBM); Piti, 28-v-1936, O. H. Swezey, 1 ♀ (BPBM); Asan, 14-iii-1974, V. Santos, 1 ♀ (GUAM); Mangilao, 1-ix-1971, A. La-plante, 1 ♂ (GUAM). *Tinian*: ridge 1 mi. N. of Tinian, 18-iii-1945, H. S. Dybas, 7 ♂♂, 5 ♀♀ (PSBD); 26-ii-1946, 1 ♀, & 6-iii-1946, 6 ♂♂, 1 ♀, F. C. Hadden; vi-1946, R. G. Oakley, 2 ♀♀ (USNM); 14-vi-1952, G. D. Peterson, 1 ♂, 1 ♀; 11-xi-1952, J. W. Beardsley, 1 ♂, 1 ♀; s. end Bemida green, 11-vi-1946, Townes, 1 ♂, 2 ♀♀ (BPBM); Jones Ranch, pasture, 12-v-1985, C. Bjork, 1 ♀ (GUAM); same, 13-v-1985, C. Bjork, 1 ♀ (GUAM); Uhai Dong Kulo, 1-x-1985. DJF & CDB, 1 ♀ (GUAM); Inai Chulu, 4-i-1985, J. A. Tenorio, 1 ♀ (GUAM); also 6 more ♂♂ and 2 more ♀♀ (GUAM). *Agiguan*: 7-vi-1952, no coll. name, 1 ♀ (USNM); v-1962, G. D. Peterson, 1 ♂ (GUAM); 3-vi-1952, R. P. Owen, 1 ♂ [Tr. Tembly of the Pacific].

CAROLINES. *Yap*: Yap Island, 8-vii-1951, J. L. Gressitt, 1 ♂ (BPBM); Yap, vii-viii-1950, R. J. Goss, 1 small juv. ♂. *Tobi Island*: 12-ix-1952, N. H. L. Krauss, 1 ♂ (BPBM); Tokobei Island, 3°0'30" N, 131°10'30" E, 14-i-1938, Shirô Murukami, 1 ♂. *Chuuk*: Moen, 19-ii-1948, H. S. Dybas, 1 ♂ (PSBD);

Civ. Ad. Area, ii/iii-1949, R. W. L. Potts, 5 ♂♂, 7 ♀♀ (PSBD); Moen, x-1952, J. W. Beardsley, 2 ♀♀; Dublon, 17-x-1952, J. W. Beardsley, 1 ♀; Tol, Mt. Uniböt, 4-i-1953, J. L. Gressitt, 1 ♀.

MARSHALLS. *Enewetak Atoll:* Japtan Island, 29-viii-1956, L. D. Tuthill, 7 ♂♂, 1 ♀; Japtan I. 31-i-1957, L. D. Tuthill, 1 ♂, 1 juv. ♂, 1 ♀; Saptan [= David] 8-ix-1975, L. Cheng, 1 ♂ (BPBM). I. Igurin Island, 20-viii-1956, L. D. Tuthill, 2 ♂♂, 1 ♀; Parry Island, 18-viii-1956, L. D. Tuthill; Aniyaanii Island, 25-viii-1956, L. D. Tuthill, 1 ♀; Engebi Islet, 18-v-1946, R. G. Oakley, 1 ♂ (USNM); Aomon Island, 16-v-1946, H. Townes, 1 ♂ (USNM); Enewetak, 20-xii-1950, Y. Oshiro, 1 ♂; Enewetak I., 15-ix-1975, (on sedge), L. Cheng, 2 ♀♀ (BPBM) Ebeye, 22-ii-1967, W. C. Mitchell, 1 ♀ (BPBM). *Ailinglaplap:* Ailinglapalap Island, D. B. Langford, 3 ♂♂, 2 ♀♀. *Bikini Atoll:* Bikini Island, vii-1956, C. Ward, 1 ♂, 2 ♀♀ (USNM). *Rongelap Atoll:* Rongelap Island, 21-x-1953, J. W. Beardsley, 2 ♂♂, 1 ♀; Rongelap Island, viii-1956, C. Ward, 2 ♂♂, 2 ♀♀ (USNM). *Rongerik Atoll:* Enewetak Island, viii-1956, C. Ward, 2 ♂♂, 1 ♀ (USNM). *Kwajalein Atoll:* Kwajalein Island, 16-viii-1946, Townes, 3 ♂♂, 1 ♀ (USNM); Kwajalein Island, 17-vii-, R. G. Oakley, 3 very small ♂♂ (USNM); Kwajalein Island, 4-v-1958, J. L. Gressitt, 1 ♂ (BPBM); Kwajalein, 24-vii-1965, F. A. Bianchi, 2 ♂♂, 3 ♀♀ (BPBM); same, 2-ix-1965, F. A. Bianchi, 1 ♀, 1 juv. ♀ (BPBM); Kwalok Island, vi-1951, E.T. Moul, 1 ♀ (PSBD); islet not specified, 31-xii-1952, J. F. C. Clarke, 5 ♂♂, 1 juv. ♂, 6 ♀♀; islet not specified, 18/23-iii-1953, C. F. Clagg, 5 ♂♂, 2 juv. ♂♂, 5 ♀♀, 2 juv. ♀♀; Eru Island, 30-x-1953, J. W. Beardsley, 2 ♂, 1 ♀; Ebeye Island, 12-x-1953, J. W. Beardsley, 2 ♀♀; islet not specified, 19-ii-1958, N. H. L. Krauss, 1 ♀. *Wotho Atoll:* Wotho Island, 20-x-1953, J. W. Beardsley, 3 ♂♂. *Namu Atoll:* Kaginen Islet, 25-x-1953, J. W. Beardsley, 1 ♀. *Ujae Atoll:* Ujae Islet, 15-x-1953, J. W. Beardsley, 1 ♂, 1 ♀. *Lib Island:* 23-x-1953, J. W. Beardsley, 1 ♂. *Majuro Atoll:* 29-vi-1950, I. LaRivers, 5 ♂♂, 1 ♀ (PSBD); Uliga Island, 24-ix-1953, J. W. Beardsley, 1 ♂, 6/7-ix-1953, 1 ♂, 10-x-1953, 1 ♀; Uliga Is[land], vii-1956, C. Ward, 2 ♂♂, 1 juv. ♂, 2 ♀♀ (USNM).

WAKE ATOLL. Wake Island, C.R. Joyce, 15-xi-1953, 1 ♂, 1 ♀, 16-xi-1953, 5 ♂♂, 1 juv. ♂, 3 ♀♀, 19-xi-1953, 1 ♂, 1 ♀ (BPBM); 21-xi-1959, E.J. Ford, 1 ♂ (BPBM); 10-i-1953, J. L. Gressitt, 1 ♀ (BPBM); same, 10-vii-1954, P.A. Arnaud, jr., 1 juv. ♀; xi-1957, N. L. H. Krauss, 2 ♀♀ (BPBM); Peale Island, xi-1957, N. L. H. Krauss, 1 juv. ♀ (BPBM); 1-xi-1957, Wilkes, 1 juv. ♀.

This intermediate form is represented by specimens from widely scattered islands in Micronesia and probably will be found on other island groups, particularly in other Caroline Islands and also in the Gilbert Islands. This will bridge the gap in Polynesian populations of *Aiolopus thalassinus*. The entire group of specimens exhibit characters that are peculiar to Indo-Malayan populations of *A. thalassinus tamulus* at one extreme and the Polynesian populations of *A. t. dubius* at the other.

Micronesian populations show persistence in narrowing of the fastigial foveolae anteriorly, as in *tamulus* of Indo-Malaysia, whereas in Polynesian *dubius* pop-

ulations these are rectangular, a condition not found in Micronesian specimens. The convergence of the frontal ridge at the fastigium of the vertex is not as narrow as in *tamulus* and not as wide as in *dubius* but is intermediate between them. The red color of the hind tibia is like *tamulus* in the west but is faded in many specimens from the eastern islands. The concealed genitalia also differ from each of these subspecies: endophallic apodemes are recurved; the epiphallus also is different but is constant across Micronesia; the lophus is longer and the arcus distinctly curved in the Micronesian specimens (Fig. 1).

Erroneous Record

Gastrimargus subfasciatus (Haan)

Acridium (Oedipoda) subfasciatum Haan 1842: 159, 161, pl. 21, fig. 12. From “Poeloe-Samoe” = Timor.
Oedaleus (Gastrimargus) subfasciatus; Saussure 1884: 110, 115; 1888: 39.
Gastrimargus subfasciatus; Kirby 1910: 228 [“Peleu Isl.”].

“*Acridium (Oedipoda) subfasciatum* de Haan, 1842”; Sjöstedt 1928: 47, pl. 12, figs. 7,8; Willemse 1928a: 14; Richie 1982: 242, 245, 256, 257, Figs 16–19, 258, 261, 316, 318, fig. 120, (map), 323, fig. 125, 379.

Willemse (1928a) gives the locality as “Poeloe Samoa”, a small island near Timor. He notes that Saussure gave Peleo in error. Sjöstedt (1928a) gives locality as Pelew u. Samoa.

Ritchie (1982) records this species only from Timor and notes that Saussure (1888) “gives an incorrect type-locality”. He does not refer to Sjöstedt but he corrects the name of the island to “Seman I. (Poeloe Samoe)”. Haan says “Poeloe-Samoe (poope Timor)”. Saussure (1888, p. 40) actually gives “Insulae Pelew et Samoa”. (Saussure 1884: 115 actually says “Insulae sandarium TIMOR (mili ignoba)”; p. 116 “Pelew” only but Willemse says “Poeloe” means [=Pulu] Island.



Figure 1. Epiphallus of *Aiolopus thalassinus tamulus/dubius* intermediate: Guam (after M.-L. English thesis, fig 12a).

TETRIGOIDEA
TETRIGIDAE
TETRIGINAE

Carolinotettix montanus Willemse, 1951

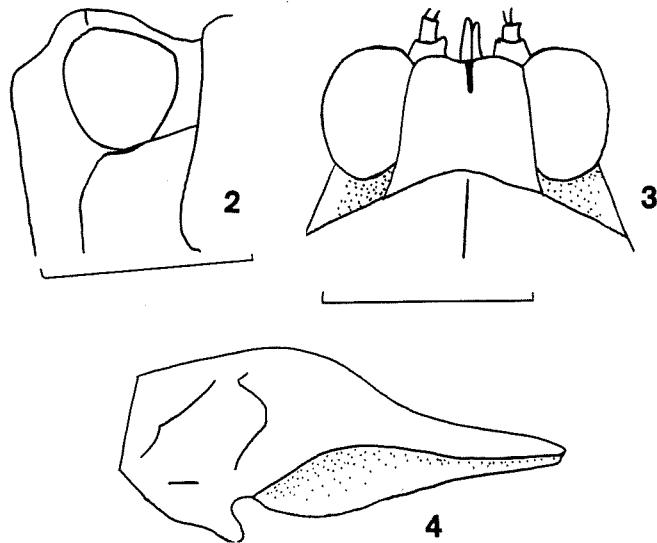
Carolinotettix montana C. Willemse, 1951: 348, 357, figs. 22–24. Holotype female, Pohnpei, Mt. Nanalaut, 7-iii-1936 (BPBM).

The male of this species has not been described so the following description prepared by M.L. English is included here.

DESCRIPTION

Male Body: slender; pronotum granulate; mid and hind femora slightly rugose.

Head: excised (Fig. 2); antennae slender, flagellum 16-segmented, slightly thicker basally, about twice as long as head, scape with lower margin inserted between lower margins of eyes; frontal ridge prominent, obtusely angulate between antennal sockets; eyes globulose, extending very slightly above fastigium; fastigium (Fig. 3) distinctly broader than eye and only slightly converging anteriorly to truncated front, lateral margins raised anteriorly, median carina distinct only anteriorly. *Thorax:* pronotum (Fig. 4) not quite reaching abdomen; truncate anteriorly and posteriorly; median carina distinct but compressed in lateral view, anterior half raised and convex then suddenly lower behind middle; lateral carina also compressed, anteriorly bent downward toward coxa of middle leg, posteriorly almost parallel with median carina; lat-



Figures 2–4. *Carolinotettix montanus* Willemse (after M.-L. English thesis):
 2, head, lateral; 3, head, dorsal; 4, pronotum, lateral.

eral lobe oblique with lateral sinus acute-angulate. *Wings*: tegmina and hind wings absent. *Legs*: anterior femur compressed with a ridge on upper margin, lower margin with three obtusely angular teeth; median femur compressed with ridge on upper margin, lower margin with three teeth as in fore femur; posterior femur with upper margin terminating in a sharp spine, a second spine behind this directed posteriorly with apex extending slightly beyond genicular lobe; upper and lower margin minutely serrated; outer and inner genicular lobes with a small spine; hind tibia sulcate with 9 to 10 pairs of minute spines and a pair of larger apical spines on each side. *Abdomen*: cercus awl-shaped; supra-anal plate triangular with apex acutely angular; subgenital plate simple, longer than broad, in profile curved toward apex.

Color: generally dark brown but abdomen cream-colored beneath; antenna annulated with darker and lighter brown; anterior and median tibia light brown with two darker brown bands; hind tibia with paler brown basal ring.

Two males were examined: 1, Mt. Nanalaut, 300m, I-1953, J. L. Gressitt (BPBM); 2, Mt. Dolehhankap, 1700–1800 ft., VIII.1946. H. K. Townes (LEM).

Carolinotettix palauensis Kevan & Vickery sp. nov.⁶

HOLOTYPE, ♀, labelled as follows: 1) Caroline Islands; 2) Peleliu I.; 3) Z. Ono, coll'r; 4) prob. 1936; 5) HOLOTYPE [red, printed]; 6) *Carolinotettix belauensis* n. sp., Det. D.K.McE. Kevan, 1985; 7) *Carolinotettix belauensis* Kevan & Vickery; deposited in BPBM.

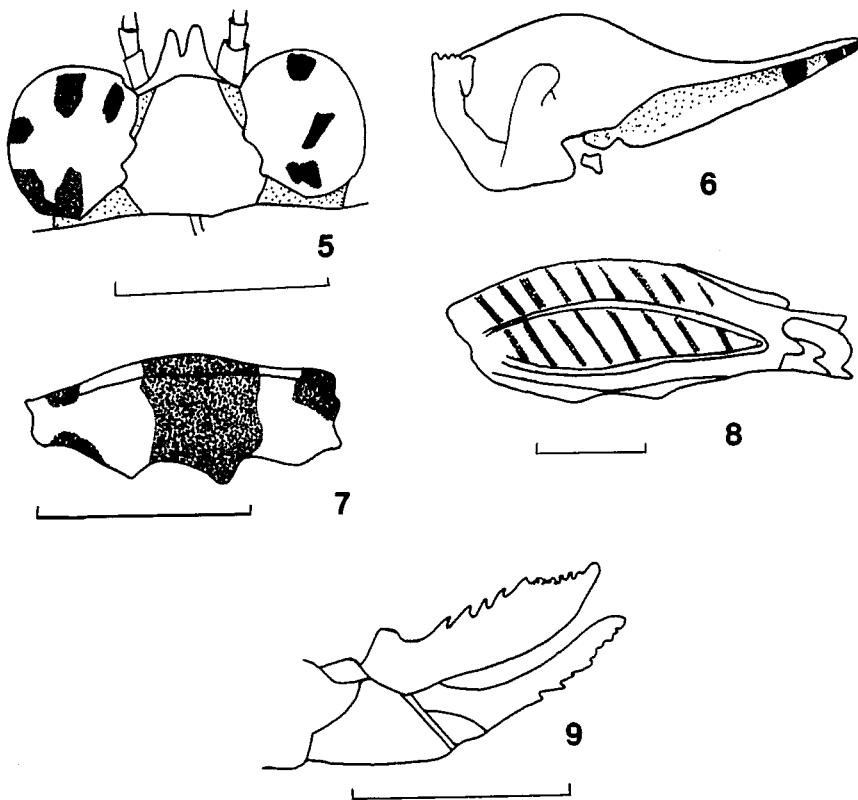
Head: broad, large in proportion to body; eyes large, spotted and protruding (Fig. 5); frontal costa broad, tapering upward, touching margins of lateral ocelli, becoming single above ocelli; antennae missing.

Prothorax: pronotum with distinct dorsal hump (Fig. 6); wingless but with small pads in humeral sinus representing tegmina; lateral carinae extend only from anterior margin to humped region of median carina, converging posteriorly. *Legs*: left fore-leg is only leg attached to body (Fig. 7), right fore-leg, right middle leg and left hind leg in vial on pin; hind femur broad, with inner ventral carina but lacking outer carina; hind tibia with 4 small spines on inner carina and 6 on outer carina, apical spurs—2 external, 3 internal; tarsus broken off; hind femur as in Fig. 8, inner face of femur with 2 strong longitudinal carinae; both fore and middle femora with obtuse projections on ventral margins; middle femur with dark areas at base, over middle third and at apex.

Abdomen: strongly tapered to apex; ovipositor short with teeth on both valves (Fig. 9).

Color: Generally light brown heavily overlaid with black markings; anterior area between lateral carinae, base of abdomen and underside of thorax brown; legs

⁶This species was found to be undescribed and the Holotype was selected by Kevan in 1985. He had not described the species before his death in 1991. Subsequently the species was described by Vickery. See also footnote 7.



Figures 5–9. *Carolinotettix palauensis* Kevan and Vickery: 5, head, dorsal; 6, pronotum, lateral; 7, fore femur; 8, hind femur; 9, ovipositor.

with pale and broad dark rings; ovipositor pale yellowish-brown, upper valve marked with black.

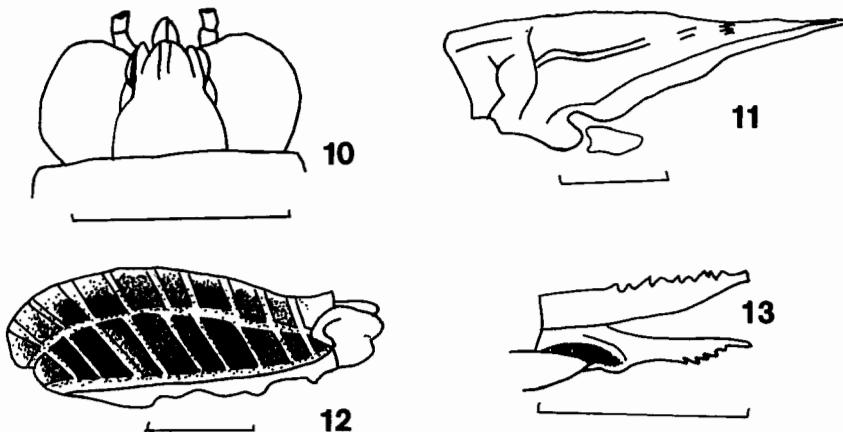
Measurements (mm): body length [excluding ovipositor] 5.2; head width across eyes 1.6, width between eyes 0.9; pronotum: length 3.9, width 2.4, height 1.7; fore-leg: femur 1.4, tibia 0.7; middle leg: femur 1.6, tibia 0.7; hind leg: femur length 3.8, width 1.4, tibia 3.3; ovipositor: upper valve 1.3, lower valve 1.0.

The second author has seen only the holotype. There may be additional specimens that were not available.

Hydrotettix carolinensis Kevan and Vickery sp. nov.⁷

HOLOTYPE ♀, labelled as follows: 1) Tolenkiup, 1200 ft, Ponape I., June–Sept. 1950, P.A. Adams; 2) HOLOTYPE [red]; 3) *Hydrotettix carolinensis* n. sp.

⁷As with the previous species, the holotype was labeled and set aside by Kevan and was subsequently described by Vickery.



Figures 10–13. *Hydrotettix carolinensis* Kevan and Vickery: 10, head, dorsal; 11, pronotum, lateral; 12, hind femur; 13, ovipositor.

HOLOTYPE, Det. D.K. McE Kevan, 1985; 4) *Hydrotettix carolinensis* Kevan & Vickery. Deposited in BPBM.

Head: narrow (Fig. 10); face distinctly slanting; width between eyes slightly less than width of an eye; eyes prominent, protruding; branches of frontal costa nearly parallel except diverging at median ocellus; frontal carina projecting in dorsal view; antennae gone.

Prothorax: pronotum broad but shallow; median carina low but complete (Fig. 11), lateral carinae present only near anterior margin; humeral sinus deep; apex broadly rounded. Legs: hind femur with 6 external and 5 internal spines and 2 external and 3 internal apical spurs; broad with obtuse projections on ventral carina, 8 distinct rows of small protuberances on outer face (Fig. 12); fore and middle femora also with projections on ventral carina.

Abdomen: broad throughout, dorsally appearing cristate [probably an artifact due to drying]; with hole near anterior end made by museum pest; subgenital plate broad, apical margin slightly concave; ovipositor valves narrow, strongly toothed on dorsum of dorsal valve and on ventral margin of ventral valve (Fig. 13).

Color: uniformly pale brown with many pale protuberances on head, pronotum and legs; eyes grey; hind tibia and ovipositor paler than body; face and lower outer face of hind femur dark; fore and middle femora and tibiae brown with darker bands.

Measurements (mm): Width of eye 0.40, width between eyes 0.38; pronotum: length 3.8, width 2.2; fore leg: femur 1.0, tibia 1.1; middle leg: femur 0.9, tibia 1.0; hind leg: femur 3.2, tibia 2.6; ovipositor valves 1.0.

Paratype: probably male, labelled as follows: 1) Mt. Peialap, Ponape Is. 700–900', June–Sept., '50 [1950], P.A. Adams; 2) PARATYPE [yellow]; 3) *Hydrotettix carolinensis* n. sp., Det. D.K. McE. Kevan, 1985; 4) *Hydrotettix carolinensis* Kevan & Vickery.

Description: Similar to female but smaller; glued to card, abdomen gone; body less rugose than body of female; eyes brown, general colour brown with darker brown markings; antennae ahort with 11 segments, 3 & 4 short, terminal segments considerably longer; pronotum 3.1 mm long, 2.0 mm wide and 1.1 mm in height; hind femur marked as in female but with only 7 rows of oblique protuberances. Retained in LEM.

No other specimens were available when the description was prepared.

Paratettix pullus Bolívar

Paratettix pullus Bolívar, 1887: 172, 281.

Paratettix pullus; Günther 1935a: 202, fig. 56 (Solomons, Key Is., Buru).

Paratettix sp., Swezey 1946: 3 (Guam); Beller 1948, Pt. I, pp. 4-7 (Guam, near pools); Willemse 1951: 348, 357 (Palau).

Grouse locusts; Townes 1946: 30 (Yap, Pohnpei and S. Marianas. (tetrigid grasshoppers); Gressitt 1954: 159 (Pohnpei), 163, tab. 13.

Paratettix pullus; Kevan 1987: 312 (Marianas, W. Carolines, Palau Islands).

Description: Head: rounded in profile. Thorax: pronotum extends well beyond end of abdomen, posterior margin of lateral lobe with two projections, lower one acute-angulate and the upper one obtusely rounded. Legs: hind femur with one spine on upper margin anterior to genicular lobe; the second spine posterior to the genicular lobe very much reduced.

MATERIAL EXAMINED:

PALAU. Peleliu Island: East Coast, 27-i-1948, H. S. Dybas, 5 ♂♂, 1 ♀ (PSBD); 1-ii-1948, H. S. Dybas, 1 ♂, 1 ♀, 2 juv. ♀♀ (PSBD); same but 2-viii-1945, 1 ♂ (PSBD); same but 4 -viii-1945, 1 ♂ (PSBD); East coast, 3-viii-1945, R.H. Baker, 2 ♂♂, 1 ♀, + 2 small juvs. (BPBM); West coast, 2-ii-1948, H. S. Dybas, 1 ♂ (PSBD); ridge road nr. E end, 30-i-1948, H. S. Dybas, 1 ♂ (PSBD); north-central, 7-vii-1945, H. S. Dybas, 1 ♂, 1 ♀ (PSBD); same but 29-vii-1945, 1 ♂, 1 ♀ (PSBD); same but 30-vii-1945, 2 ♂♂ (PSBD); Peleliu, 29-vii-1945, E. Hagen, 1 ♀ (Smallish) (PSBD); same, 30-vii-1945, 3 ♂♂, 1 ♀ (PSBD); same, 4-viii-1945, 1 ♂ (PSBD); Atarokuru, 10-vii-1939, T. Esaki, 1 juv. ♀ (KUEC); Babeldoab, Ngiwae-Ngarord, 16-viii-1939, T. Esaki I ♀ (KUEC). Peleliu, 23-vii-1946, Townes, 1 ♂, 1 ♀ (USNM). Koror Island: Continental Hotel, 10-viii-1976, M. Lundgren, 2 ♂♂ (PSBD); same, 11-viii-1976, 1 ♀ (PSBD); same, 12-viii-1976, 2 ♀♀ (PSBD); same 9-viii-1976, 1 ♂ (PSBD); Altai Koiger, 20-iv-1936, Z. Ono, 1 ♂ (PSBD); Melekeiok, 6-iv-1936, Z. Ono, 2 ♀♀ (PSBD); Koror I., xi-1951, J. L. Gressitt, 4 ♂♂, 1 ♀ (PSBD); Koror, 18-xi-1947, H. S. Dybas, 1 ♂ (PSBD); same, 30-xi-1947, 6 ♂♂, 4 ♀♀ (at light) (PSBD); same, 21-xi-1947, 1 ♀ (PSBD); Koror I., 26-iv-1957, C. W. Sabrosky, 2 ♀♀ (BPBM); same, 18-iv-1957, 1 ♂, 2 ♀♀, 2 juv. ♀♀ (BPBM); same, 29-vi-1957, 3 ♂♂ (BPBM); same, 19-iv-1957, 4

$\delta \delta$ (BPBM); same, 2-v-1957, 1 δ , 3 ♀♀ (BPBM); same, 13-iv-1957, 1 ♀ (BPBM); same but (N.E.) limestone ridge, 28-iv-1957, 1 ♀ (BPBM); Koror, 18-vii-1946, R. C. Oakley, 1 δ , 1 ♀ (BPBM); Koror, 3-ix-1952, J. W. Beardsley, 1 ♀ (USNM from BPBM); same, 29-viii-1952, 3 $\delta \delta$ (USNM); same, 9/10-v-1953, 1 ♀ (at light) (USNM); Koror, Koror-Arbaketsum 2-vi-1938, S. Murakami, 1 ♀ (BPBM); Urukthapel, 21-ii-1936, T. Esaki, 1 δ (BPBM). *Babeldaob I.*: Ngiwol, 3-viii-1951, J. L. Gressitt, 1 δ (PSBD); same, 15-viii-1951, 1 δ (large) (PSBD); same, 9-ix-1951, 1 δ (large) (PSBD); same, 26/29-ix-1951, 1 ♀ (PSBD); same, 20-x-1951, 1 δ (PSBD); Ngaremeskang, 30 m., 21-xii-1952, J. L. Gressitt, 1 ♀ (PSBD); Ulimang, 10-xii-1947, H. S. Dybas, 1 δ (PSBD); same, 19-xii-1947, 1 ♀ (PSBD); same, 20-xi-1947, 1 δ , 2 ♀♀ (PSBD); same, 21-xii-1947, 1 δ , 1 ♀ (PSBD); same, 31-i-1948, 1 juv. ♀ (PSBD); Ulimang, 25-xii-1947, H. S. Dybas, 1 ♀ (PSBD); Angaur, 5-ii-1948, H. S. Dybas, 2 $\delta \delta$ (PSBD); Ngaremeskang, 30 m., 21-xii-1950, J. L. Gressitt, 1 δ (BPBM); Ngerehelong, 6-v-1957, C. W. Sabrosky, 3 $\delta \delta$, 1 ♀ (BPBM); Ngiwal, 21-v-1957, C. W. Sabrosky, 1 δ , 1 ♀ (BPBM); Imoliik, Netong, 5-vi-1957, C. W. Sabrosky, 1 δ (PSBD); Ngardman, 10-v-1957, C. W. Sabrosky, 1 δ , 1 ♀ (PSBD); Babelthaup, 20-vii-1946, Townes, 2 $\delta \delta$, 4 ♀♀ (USNM); Ngeredelong, 9-ix-1952, J. W. Beardsley, 1 ♀ (USNM); Angaur, 19-i-1953, J. W. Beardsley, 2 ♀♀ (USNM).

CAROLINES Yap: Welwoy, 20-vi-1957, C. W. Sabrosky, 3 $\delta \delta$ (very small—all at light) (BPBM); Gilman, 12-vi-1957, C. W. Sabrosky, 8 $\delta \delta$ (in taro patch) (BPBM); same, 11-vi-1957, 1 ♀ (very small) (BPBM); same, 10-vi-1957, 1 δ (BPBM); Rumung I., 19-vi-1957, C. W. Sabrosky, 1 δ (BPBM); Yap Island, 28-iii-1954, J. W. Beardsley, 1 δ (small) (BPBM); Rut-Nif, 8-ix-1939, T. Esaki, 1 δ (BPBM); Dogor-Kanif-Rul, 2-ix-1939, T. Esaki, 1 ♀ (BPBM); Mt. Matade, 12-vii-1946, Townes, 1 δ (fairly large) (USNM); Yap I., 29-iii-1954, J. W. Beardsley, 1 δ (BPBM); Dinay, 26-vi-1976, M. Lundgren, 1 δ (black light) (BPBM); same, 28-vi-1976, 2 ♀♀ (BPBM); same, 24-v-1976, 3 $\delta \delta$, 2 ♀♀ (BPBM); same, 24-vii-1976, 3 $\delta \delta$, 4 ♀♀ (BPBM); same, 3-x-1976, 3 ♀♀ (BPBM); High Soh, 29-x-1975, M. Lundgren, 3 $\delta \delta$, 2 ♀♀ (1 δ and 1 ♀ very small) (BPBM); Keng, 26-x-1975, M. Lundgren, 2 $\delta \delta$ (BPBM); Tora, 15-xi-1975, M. Lundgren, 2 $\delta \delta$ (BPBM); same, 5-xi-1975, 1 ♀ (very small) (BPBM); S. Map. I., vii/viii-1950, R. J. Goss, 1 δ (PSBD); C. Yap. I., vii/viii-1950, R. J. Goss, 1 ♀ (very small); S. Yap Island, vii/viii-1950, R. J. Goss, 3 ♀♀ (1 ♀ very small) + 1 juv. ♀ (PSBD); Yap. I., vii/viii-1950, R. J. Goss, 3 $\delta \delta$ (1 very small), 3 ♀♀ (1 very small) (PSBD). *Colonia*: vii/viii-1950, R. J. Goss, 4 $\delta \delta$, 1 ♀ (PSBD); *Ulithi Atoll*: Falalop, 26-ix-1952, B. McDaniel, 1 δ , 1 juv. ♀ (sweeping grass) (BPBM); Mogmog, I., 11-vii-1946, Townes, 1 juv. ♀ (USNM); Fassaraii, 11-vi-1946, R. C. Oakley, 1 ♀ (very small).

MARIANAS ISLANDS. *Guam*: Mangilao, 6-viii-1971, A. LaPlante, 1 δ (BPBM); same, 10-viii-1971, 1 ♀ (BPBM); Piti Hills, 7-vi-1936, O. H. Swezey, 1 δ (very large) (BPBM); Piti, 22-vii-1936, O. H. Swezey, 1 ♀ (BPBM); same, 25-x-1936, 2 $\delta \delta$ (very large) (BPBM); same, 30-iv-1936, 1 δ , 1 juv. ♀ (BPBM); Piti, 31-v-1936, R. L. Usinger, 7 $\delta \delta$, 7 ♀♀ (BPBM);

Piti, 3-v-1936, O. H. Swezey, 1 ♂ (ANSP); same, 7-x-1936, 1 ♀ (ANSP); Piti Point, 13-iii-1948, K. L. Moehler, 1 ♀ (USNM); Oca Point, 2-vi-1945, H. S. Dybas, 1 ♂ (BPBM); Pt. Oca, nr. Agana, 15-v-1945, Bohart and Gressitt, 1 ♂ (at light) (PSBD); Pt. Oca, 27-vi-1945, Bohart & Gressitt, 1 ♀ (BPBM); same, 4-vi-1945, 1 ♀ (at light) (BPBM); same, 15-v-1948, 1 ♀; Agana Swamp, 5-viii-1945, H. S. Wallace, 3 ♂♂, 2 ♀♀, 5 juv. ♂♂, 1 juv. ♀ (BPBM); Agana, 10-viii-1945, H. S. Wallace, 1 ♂ (BPBM); Agana, 3-v-1936, O. H. Swezey, 1 very small juv. (BPBM); Agana, 4-v-1936, R. L. Usinger, 1 juv. ♂ (BPBM); Agana, 4-v-1936, R. L. Usinger, 4 ♂♂, 2 ♀♀ (ANSP); Orote, 27-ix-1936, O. H. Swezey, 1 ♀ (BPBM); Upi trail, 5-v-1930, O. H. Swezey, 1 juv. ♂ (BPBM); Inarajan, 25-vii-1936, O. H. Swezey, 1 ♂ (BPBM); Inarajan, ix-1957, N. H. L. Krauss, 1 ♂, 2 ♀♀ (1 ♀ very small) (BPBM); Guam, ii-1957, N. H. L. Krauss, 1 ♂, 4 ♀♀ (1 ♀ very small and short) + 3 juvs (2 ♂♂, 1 ♀) (BPBM); Metizo, x-1957, N. Krauss, 4 ♂♂ (all small to very small) (BPBM); Mt. Lamlam, x-1957, N. Krauss, 4 ♂♂, 1 ♀ (all very small) (BPBM); Mt. Alifan, x-1957, N. Krauss, 1 very small juv. (BPBM); same, iv-1946, N. H. L. Krauss, 1 ♂ (BPBM); Mt. Alutom, 18-vi-1946, Townes, 2 ♂♂ (USNM); Amantes Pt., 25-vii-1945, H. S. Wallace, 1 ♂, 1 ♀, 2 juv. ♂♂, 1 juv. ♀ (BPBM); Umatac trail to Agat, 28-v-1936, R. L. Usinger, 1 ♂ (BPBM); Sumay, 21-v-1936, [O. H. Swezey], 1 ♀ (BPBM); Machanao, 2-vi-1936, O. H. Swezey, 1 juv. ♀ (sweeping) (BPBM); Guam [only], 22-i-1945, G. L. Grether, 1 ♂ (BPBM); My Yona, iv-1946, N. H. L. Krauss, 1 ♂ (PSBD); 1 mi SE Asan[a], 2-iv-1945, R.H. Baker, 1 ♂, 2 ♀♀ (ANSP-labelled [Ex Bishop Museum]); Machanao, 2-vi-1936, O. H. Swezey, 1 ♀ (ANSP); Talofofo, 18-xi-1936, O. H. Swezey, 1 ♀ (ANSP); Inarajan, 7-v-1936, E. H. Bryan, jr., 2 ♂♂ (ANSP); Tigo, 13-xi-1936, 1 ♂, 1 ♀ (in corn field) (ANSP); Umatae, 4-ii-1948, K. L. Moehler, 3 ♂♂, 1 ♀ (on taro) (USNM); Mt. Santa Rosa, 23-xii-1947, K. L. Moehler, 1 ♂ (USNM); Piti, 3-iii-1948, K. L. Moehler, 1 ♂ (on grass) (USNM); Guam, ii-1954, O.N. Linning, 2 ♂♂ (USNM). *Saipan*: Saipan, 28-viii-1951, R. M. Bohart, 1 ♂ (PSBD); 1-2 mi E of Tanapag, 25-xi-1944, H. S. Dybas, 1 ♂, 3 ♀♀ (PSBD); E of Tanapag, 1-i-1945, H. S. Dybas, 5 ♂♂, 4 ♀♀ (at light) (PSBD); Maketog area, 23-xii-1944, H. S. Dybas, 1 ♀ (PSBD); same, 22-xi-1944, 1 ♂, 1 ♀ (PSBD); Mt. Tagpochau, 1 mi. NNE of summit, 22-xi-1944, S. Edgar, 1 ♂, 2 ♀♀ (PSBD); Saipan, 23-xi-1944, S. A. Edgar, 3 ♂♂, 3 ♀♀ (PSBD); Saipan I., 8-ii-1945, N. S. Ducott, 1 ♂, 1 ♀ (PSBD); Achugau area, 7-i-1945, H. S. Dybas, 1 ♂ (rather large) (PSBD); Abo delta, 1-v-1945, 1 ♂ (large) (PSBD); same 24-iv-1945, 1 ♂, 1 ♀ (PSBD); same, 9-xii-1944, 1 ♀ (PSBD); same, 17-xii-1944, 1 ♂, 3 ♀♀ (PSBD); Oleni-Hinoshisu-Charanka, 1-xi-1937, T. Esaki. (BPBM); Garapan, 10-v-1940, Yasu et Yoski, 1 ♂ (BPBM); I[nsel] Saypan, viii-1894, Fritz S. 2 ♀♀ (ZMHB). *Tinian*: Funton Laminibot, 8-i-1985, C. J. P. & C. D. B[jork], 1 ♂ (BPBM); Sabenettan, Chiget, 22-xi-1984, C. J. Bjork, 1 ♂ (very small and short) (PSBD); center section, 25-iii-1945 H. S. Dybas, 1 ♂ (PSBD). *Rota*: Tetête-Tacúcho-Sonson, 5-xi-1937, T. Esaki, 1 ♀ (BPBM); Sabana, 19-vi-1946, Townes, 1 ♂ (ANSP).

Paratettix vexator Günther

This species was described by Klaus Günther (1938). One specimen in MNNH, determined as *P. vexator* by Klaus Günther, is labelled as follows: "Karolinen, leg. Ledermann" (K. K. Günther, personal communication, 1992). No additional information is available.

Paratettix species

This species is represented by a single specimen that is in such poor condition that it cannot be described.⁸

Euparatettix personatus (Bolívar)

We did not see specimens of this species in the current study. K. K. Günther (personal communication) advised that MNHB has seven specimens labelled "Karolinen, leg. Ledermann"; one specimen labelled "Palau-Inseln, leg. Semper", all determined by Klaus Günther.

Euparatettix histricus (Stål)

One specimen labelled "Karolinen, leg. Ledermann", determined by Klauss Günther, is in MNHB (K. K. Günther, personal communication).

TRIDACTYLODEA
TRIDACTYLOIDEA
TRIDACTYLIDAE
TRIDACTYLINAE

Xya Latreille, 1809

Xya riparia (Saussure, 1877)

Tridactylus] riparius Saussure, 1877, Mém. Soc. Phys. Hist. nat. Genève, 25: 47
[*riparius* and in key], 48, pl. 11, fig. iv, 11.

Tridactylus japonicus Haan, Chopard, 1925: 506 [synonym of *riparius*].

"A Tridactylus"; Townes 1946: 30 [Belau Is. (=Palau), Arakabasau]. [*Xya*] *riparia*; K.K. Günther 1980, Dtsch. ent. Z. (N.F.): 71. "A species of Tridactylus, possibly *Xya riparia* (Saussure); Kevan 1987: 31 [ref. to Townes (about Palau)]

Described from Bauka, Sunda Islands, Indonesia. It is also known from southern India (see Blackith & Blackith 1979, and K.K. Günther 1980, for records) and from the Philippines (see K.K. Günther 1980).

This could be a junior synonym of *Xya nigraenea* (Walker, 1871).⁹

⁸Vickery did not see this specimen as Kevan had returned it to BPBM. Nishida (pers. comm., 1991) stated that it was in very poor condition.

⁹Cat. Derm. Salt. 5, suppl. 1, as *Tridactylus nigraeneus* [index p. 93, spelled it *nigroaeneus*] nec Chopard, 1925, Ann. Mag. nat. Hist. (9) 15: 506 [who also spells it *nigroaeneus*] see Blackith & Blackith (1979: 199).

MATERIAL KNOWN FROM:

PALAU: OISCA, Babelthaup [sic] Belau, Carolina Is., s.l., 28, Nov., 1986, Donald Nafus, 1 ♂, 1 ♀ (GUAM—♂ to LEM).

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