Abstract—The Micronesian fauna of 3 subfamilies, Sciapodinae, Medeterinae and Sympycninae (part) (Diptera: Dolichopodidae) comprises 29 species of which 15 are newly described: Chrysosoma guamense, C. yapense, C. townesi, C. kusaiense, C. agrihan, C. clarkei, C. mariana, C. pelagica (also from the Philippines), Krakatauia micronesiana, Amblypsilopus sabroskyi, A. ponapensis, A. belauensis, A. trukensis, Medetera babelthaup, and Syntormon boninense. Keys are provided, and the key to Chrysosoma includes all described Micronesian, Polynesian, and eastern Melanesian species.

Introduction

The family Dolichopodidae is well represented in collections from Micronesia, and more than 3,000 specimens are available for study. The fauna is rich and comprises both endemic and widespread species.

Proper study of the Micronesian fauna requires a good knowledge of the described Australasian and Oriental faunas. However, many dolichopodid species cannot be identified without ready access to type material. As well, genera within many subfamilies are poorly defined. For these reasons, the family will not be considered as a whole as is customary for the “Insects of Micronesia.” Only 3 subfamilies (Sciapodinae, Medeterinae, Sympycninae (in part)) are treated here. These have been the subject of recent regional revisions (Bickel 1987, 1994) or comprise well-defined genera in the region (Negrobov, 1975). The remaining Sympycninae and the subfamilies, Diaphorinae, Dolichopodinae, and Hydrophorinae, will be treated in a future work (I have not seen Micronesian Babinellae).

Materials and Methods

This study is based on Micronesian Sciapodinae, Medeterinae, and Sympycninae housed principally at the Bishop Museum and the National Museum
of Natural History. I have examined the extant primary type material for most described species except where noted.

Label data are condensed. Gressitt’s (1954) excellent introduction to this series provides extensive background information and collecting history. Since “Insects of Micronesia” is a faunal series, discussions of nomenclature and higher relationships are confined only to new information. Some Sciapodinae are redescribed and figured to establish their identity. I have expanded the Chrysosoma key to include related Melanesian and Polynesian species not found in Micronesia. Not only does this key place the Micronesian fauna in a regional context, but it serves as a convenient set of diagnoses for this complex group. Many of these species are keyed here for the first time.

I have followed descriptive procedures and abbreviations used in Bickel (1987). In describing the hypopygium, “dorsal” and “ventral” refer to morphological position prior to genitalic rotation and flexion. Thus, in figures showing a lateral view of the hypopygium, the top of the page is morphologically ventral, while the bottom is dorsal. Measurements are in mm. Podomere ratios for each leg are given in the formula: trochanter + femur; tibia; tarsomere 1/2/3/4/5. The abbreviation “MSSC” stands for “male secondary sexual character(s),” (those nongenitalic characters found only on the male body). Similarly, “FSSC” stands for “female secondary sexual character(s).”

Island groups are listed under their modern political affiliation and follow the “The Catalog of Australasian and Oceanian Diptera” (Bickel and Dyte 1989). Localities follow the gazetteer in Gressitt (1954). The term “Micronesia” is used for the entire region covered in this work as delimited by Gressitt, while the term “Federated States of Micronesia” is always used for that group of islands forming the modern political association.

Key to the Subfamilies of Micronesian Dolichopodidae, and the Genera in this Monograph

This key treats the dolichopodid subfamilies known to occur in Micronesia, and the genera included in this monograph. A complete revised key to the dolichopodid subfamilies and genera of Micronesia will be included in the second part of this revision, currently in preparation.

1. **Vein M branched; vertex usually strongly excavated laterad of ocellar tubercle; usually bright metallic green** .....Subfamily Sciapodinae .....2
2. **Vein M unbranched; vertex almost flat across top of eyes in anterior view** .................................................................5

2(1). Frons highly polished and bare; male scape swollen and vase-like; CI usually with 3–7 strong lateral spine-like setae, especially in females; 1st flagellomere conical with apical arista; male arista with apical flag; lateral scutellars absent ......................Plagiozopelma (15. P. flavipodex) Frons with pruinosity or abundant hairs; male scape normal; CI without strong lateral spine-like setae; other characters various ..................3
Table 1. Distribution of Micronesian Dolichopodidae (Sciapodinae, Medeterinae, Syntormon)

<table>
<thead>
<tr>
<th>Micronesian Island Groups</th>
<th>Bonai/Volcano</th>
<th>S. Mariana</th>
<th>Palau</th>
<th>Yap</th>
<th>Caroline Atolls</th>
<th>Chuuk</th>
<th>Pohnpei</th>
<th>Kosrae</th>
<th>Marshall</th>
<th>Kiribati</th>
<th>Other Localities</th>
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<td>2. C. guamense*</td>
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<td>3. C. leucopogon</td>
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<td>15. Plagiocolema flavipodex</td>
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<td>16. Krakataus evolutatum</td>
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<td>26. M. grisescens</td>
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<td>28. Syntormon boninense*</td>
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*Described as new
3(2). Male frons flattened with dense pale lateral hairs; $M_1$ and $R_{4+5}$ strongly converging and meeting at apex; TI almost bare of strong setae; arista varying from dorsal to dorsoapical; cercus with large ventral clavate arm and short distal digitiform projection.......................... 
Micronesica Krakatauia 
Male frons with only few lateral hairs or none; $M_1$ and $R_{4+5}$ generally join apex separately, but if converging, TI with strong setae............4

4(3). Arista always apical (except sometimes dorsoapical in females); FI usually with strong pale ventral setae; TI usually with strong dorsal and/or ventral setae; lateral scutellars usually strongly developed; It, often flattened, and with pale ventral pile; male arista sometimes with apical flag; crossvein m-cu usually sinuous.............................. 
Chrysosoma 
Arista usually dorsal (if apical, then TI devoid of major setae); femora with only weak ventral hairs; TI bare, without strong setae; lateral scutellars present as weak hairs or absent; It, rarely flattened; male arista never with apical flag; crossvein m-cu always straight...Amblypsi/lopus

5(1). Femora II and III with distinct anterior preapical seta ..........6
Femora II and III lacking strong anterior preapical seta ..................6

6(5). Mesonotum not flattened; male genital capsule relatively small and partially enclosed by posterior abdominal segments.................................
Posterior mesonotum distinctly flattened, almost concave; male genital capsule large and external or pedunculate...........................................7

7(6). Dorsal postcranium strongly concave; vein $M_b$ bowed with respect to vein $R_{4+5}$; small, length less than 3.0.... Subfamily Medeterinae.... Medetera 
Dorsal postcranium convex; distal vein $M$ strongly bent towards vein $R_{4+5}$; male genitalia large but not as strongly pedunculate; larger, length more than 4.0............................................Subfamily Neurigoninae

8(5). Antennal scape with dorsal setae; male genitalia large and pedunculate. ..........................................................Subfamily Dolichopodinae
Scape dorsally bare ............Subfamily Dolichopodinae

9(8). Postvertical setae located on occiput, not in line with postocular setae; crossvein m-cu equal to or longer than distal section of vein CuA, and/or abdomen dorsoventrally flattened........Subfamily Hydroporinae 
Postvertical setae located on top of vertex, in line with postocular setae; crossvein m-cu shorter than distal section of vein CuA, and abdomen not dorsoventrally flattened........Subfamily Sympycninae ..........10

10(9). Pedicel protruding thumblike onto 1st flagellomere; dorsal postcranium convex .......................................................Syntormon
Pedicel not protruding into 1st flagellomere ............ other Sympycninae

Subfamily SCIAPODINAE

Genus CHRYSOSOMA Guérin-Méneville

Chrysosoma Guérin-Méneville, 1831: pl. 20, fig. 6. Type species; Chrysosoma fasciata Guérin-Méneville, 1831, by subsequent designation of Enderlein (1912: 373).
Agonosoma Guérin-Méneville, 1838; 293 (unnecessary new name for Chrysosoma Guérin-Méneville, 1831). Type species: *Chrysosoma fasciata* Guérin-Méneville, 1831, automatic. [Preoccupied by Laporte, 1832.]

*Chrysosoma* is a large genus of the Old World tropics. It is treated extensively in Bickel (1994) where major species groups are defined. Of the Micronesian fauna, 1 species belongs in the *lacteimicans* Group, 1 in the *arrogans* Group with the remaining 12 species in the *leucopogon* Group:

1. The *leucopogon* Group, Assemblage I: *C. patelliferum*, *C. guamense*, *C. leucopogon*, *C. yapense*, *C. townesi*, *C. kusaiense*, *C. agrihan*, *C. mariana*, *C. clarkei*, and *C. complicatum*.
2. The *leucopogon* Group, Assemblage IIA: *C. mutilatum* and *C. ludentis*.
3. The *arrogans* Group: *C. pelagica*.
4. The *lacteimicans* Group: *C. molestum*.

The *leucopogon* Group is particularly diverse and well represented in Micronesia. *Chrysosoma leucopogon* itself has an extensive range, from the western Indian Ocean to the eastern Pacific, including many oceanic islands.

**Key to Male *Chrysosoma* of Micronesia, Polynesia, and Melanesia (exclusive of New Guinea)**

This key includes all described extralimital species (placed in brackets) from the central Pacific, which might be confused with Micronesian species or could potentially occur in Micronesia.

1. Male TIII with distinct swollen callus at 1/5 which is posteriorly excavated.................................................................................................................. 2
   Male TIII unmodified, without callus.................................................. 21
2(1). Arista with flattened lanceolate or ovate apical flag ......................... 3
   Arista simple, without apical flag....................................................... 13
3(2). Aristal flag entirely white .................................................................. 4
   Aristal flag black and white or entirely black.................................. 6
4(3). ITI, pale yellow but white in distal 1/3, and with row of short crocheted setae; ITII with flattened white hairs forming dorsal crest; TI without subapical pv seta; (Fig. 1b) (Yap Group).................. 4. *C. yapense*, n. sp.
   Tarsus II entirely yellow to brown, without distinct white bands or segments; TI and ITI, covered with short erect setae; hypopygium (Fig. 1a).......................................................................................................................... 5
5(4). All coxae and femora black; aristal flag narrow and lanceolate; TI with 4 dorsal setae to 1/2, increasing in size distally; ITI, with loose ventral comb of short black setae (Guam)........ 1. *C. patelliferum* (Thomson) CI and all femora yellow; aristal flag longer, broader and ovate; TI with only short weak dorsal at 1/2; ITI, without loose comb (Guam)........
   ........................................................................................................ 2. *C. guamense*, n. sp.
6(3). Aristal flag entirely black, large and with hirsute apex; TI with 3 dorsal setae and lacking ventrals; TI and ITI, with ventral row of crocheted seta (Vanuatu)...........................[*C. provocans* Parent]
   Aristal flag black basally and white distad ........................................ 7
Abdominal segments 6, 7, and 8 with long pale lateral and ventral hairs in addition to normal black setae; TII and IIIt covered with short erect black setae; base of TII with strong dorsal seta (Samoa, Tonga, Fiji)

Abdomen with usual black setae.................................................................................. [C. ferriferum Lamb]

CI, all femora and tibiae mostly yellow; aristal flag with distinctly deflexed white apex; It, with pale ventral pile and 2 strong dorsal setae; IIIt with white hairs forming dorsal crest; cercus (Fig. 2e) (Samoa, Tonga, Fiji, Carolines, Marshall, Kiribati, Nauru and Wake I)................................................................. 10. C. complicatum Becker

All coxae and femora mostly black ................................................................................. 9

IIIt covered with white hairs; IIIt yellow but white in distal 1/4; TI with 3 black dorsal setae, and long pv at 9/10, which is more than half length of TI; cercus with apical spatulate pedunculate seta and lateral arm which bears 2 short apical blade-like setae (Fig. 2a) (Kosrae) ............ 6. C. kusaiense, n. sp.

IIIt black ......................................................................................................................... 10

IIIt with striking white flattened annuli at base and apex, TI with very long subapical pv seta Marquesas Is, Society Is, Niue I)................................................................. [C. tuberculicorne (Macquart)]

IIIt unicolorous ................................................................................................................. 11

TI with long ventral seta at 5/6, more than half the length of TI; aristal flag with narrow digitiform deflexed apex; cercus tapering, setose, and with short median arm bearing apical blade-like seta (Fig. 2b) (Marianas Is)................................................................. 7. C. agrihan, n. sp.

TI without long ventral seta at 5/6; aristal flag without deflexed apex

Aristal flag with narrow spike-like apex; It, with 2 dorsals; TI with 3 dorsal seta and 3 ventral setae in apical 1/4 (Solomon Is).......................... [C. pagdeni Parent] 12

Aristal flag with whitish tip and distinctive striated appearance; TI with 3 dorsal setae, but lacking ventrals; TII and IIIt with short erect setae (China, Ryukyu Is, Hawaiian Is, Midway, Laysan, and Kure Is).............. [C. globiferum Wiedemann]

Legs almost entirely black............................................................................................... 14

At least TI and TII yellow .......................................................................................... 15

IIIt yellow with curved anterior setae; It, with strong dorsal seta (Solomon Is).......................... [C. disparitarse Parent]

IIIt black with a dorsal row of 8–10 evenly spaced capitate setae (Solomon Is, Bougainville)........................................................................ [C. obscuripes Parent]

CI yellow .......................................................................................................................... 16

All coxae black ............................................................................................................... 17

CII and CIII black; CI with entirely pale anterior setae (Solomon Is)........................................... [C. leveri Parent]
CIII yellow, CII infuscated; CI with 3 black distolateral setae (Samoan Is) .................................................................. \[C. parvicucullatum\] Lamb

17(15). II\(_{t_4,5}\) or II\(_{t_4,5}\) with flattened whitish setae which often form crest........ 18 
II\(_{t_4,5}\) black, unmodified .................................................................................. 20

18(17). TII and II\(_{t_1}\) covered with short porrect hairs but without av setae; It\(_{i}\) dorsally bare; It\(_{i}\) only a grey-white color; cercus forked, and with 2 ventral arms, each bearing apical blade-like seta (Fig. IIc) (Kosrae) .... 
................................................................................................................................. 9. \[C. clarkei\], n. sp.

II\(_{t_1}\) with row of somewhat curved av setae; It\(_{i}\) with dorsal setae; II\(_{t_4}\) white, and II\(_{t_3}\) at least pale colored .......................................................... 19

19(18). Wing with anterior membrane darkened and smokey; TI with 2-3 short basal and 2 stronger distal dorsal setae; It\(_{i}\) with posterior row of black curved setae; II\(_{t_4}\) with white hairs forming flattened posterior crest, II\(_{t_3}\) yellowish; cercus elongate with shallow fork at 3/4, and with apical arms bearing long curved setae (Fig. 2f) (Pohnpei)................................. 
................................................................................................................................. 5. \[C. townesi\], n. sp.

Wing hyaline; TI usually with 3 strong distal dorsal setae, although setation somewhat variable; It\(_{i}\) without posterior black curved setae; II\(_{t_4,5}\) both with flattened white hairs forming distinct dorsal crest; cercus with 2 short thick subequal arms (Palau; widespread Orient, Australasia).................................................................................................................. 3. \[C. leucopogon\] (Wiedemann)

20(17). TI with 2–3 subapical pv setae; It\(_{i}\) with 2 dorsal setae; TII and II\(_{t_1}\) without porrect hairs but II\(_{t_2,3}\) with row of dorsal setae; lateral frons with pale hairs (Solomon Is) .............................................................................. [C. salomonis\] Parent 
TI without subapical pv setae; It\(_{i}\) bare; TII and II\(_{t_1}\) with short porrect hairs; lateral frons with black hairs; cercus tapering, setose, with projections bearing apical setae (Fig. 2c) (Mariana Is) ................................................................. 8. \[C. mariana\], n. sp.

21(1). Scape vase-shaped and pedicel reduced to narrow ring; 1st flagellomere and arista fused, broad at base, and long, tapering, projecting back over entire body (Oriental and Australasian tropics; Solomon Is, Ryukyu Is) ................................................................................................................................................................... [C. crinicorne\] (Wiedemann)

Scape and pedicel normal; 1st flagellomere and arista not fused and tapering ........................................................................................................................................................................ 22

22(21). Arista with flattened apical flag ........................................................................ 23

Arista simple, without apical flag ........................................................................ 27

23(22). Lateral scutellars reduced to tiny pale hairs; CI, femora, and tibiae yellow; arista flag very narrow; surstylus lobate; cercus digitiform, with basoventral projection .................................................................................................................. 24

Lateral scutellars about 1/3 length of medians; all coxae and femora black ................................................................................................................................. 26

24(23). Wing of male with large dark brown maculation Solomons, New Guinea) .................................................................................................................................................................. [C. eminens\] Parent, \[C. excellens\] Parent

Wing hyaline ........................................................................................................ 25
25(24). Aristal flag black; IIIt with anterior brush of short black hairs in basal 1/5; TI without ventral setae but with 2 subapical pv setae; It, dorsally bare and with row of long curved posterior to 1/2; cercus with 3 strong adjacent basoventral bristles (Fig. 4b) (Philippines, Guam).......................... 13. *C. pelagica*, n. sp.

Aristal flag black with white tip; IIIt, bare; TI with ventral seta at 3/5 and 2 subapical pd setae; It, with single dorsal seta and with row of long curved posterior setae along entire length; cercus with basoventral projection bearing bladelike apical hooks (Solomon Is, Bougainville).........

................................................................................................................................................. [C. arrogans Parent]

26(23). Aristal flag entirely black; palp and proboscis black TII and IIIt covered with short porrect setae; cercus (Fig. 2d) (Solomon Is, Caroline Is)....

................................................................................................................................................. 11. *C. mutilatum* Parent

Aristal flag black basally with white apex; palp and proboscis yellow; TI with long subapical ventral seta (Society Is).......[C. pacificum Parent]

27(22). IIIt with single long projecting ad apical seta; TII and IIIt, covered with short porrect hairs; 4 pairs strong ac present; lateral scutellars absent; CI, femora, tibiae, It, and It, yellow; CII and CIII, CI with 3 black distolateral setae; cercus setose, with long digitiform distal projection and ventral projection (Fig. 4a) (Vanuatu, Kiribati)..............................

................................................................................................................................................. 14. *C. molestum* Parent

IIIt normal......................................................... 28

28(27). Antenna, coxae and femora black; TI with strong subapical ventral seta; cercus comprising 2 elongate setose parallel arms (Fig. 4c) (Marshall Is, Solomon Is, PNG)............................................. 12. *C. ludens* Parent

Antenna, CI and and femora yellow; TI bare; M, and R, joined at apex (Solomon Is) .................................................[C. maculiventre Parent]

1. *Chrysosoma* *patelliferum* (Thomson)

*Psilopus* *patellifer* Thomson 1869: 507.

*Psilopus macropus* Thomson, 1869: 508.

**Description.** Male: length: 4.7; wing: 4.6 × 1.3.

**HEAD:** vertex, frons, clypeus metallic blue-green with dusting of pruinosity; lateral slope of frons with 2–3 pale hairs (MSSC); face bulging (MSSC); palp yellow with black setae; proboscis yellowish; antenna black; pedicel with strong dorsal and ventral setae; 1st flagellomere tapering; arista black, about 2/3 body length; arista with white narrow lanceolate apical flag (MSSC).

**THORAX:** metallic blue-green with some pruinosity; 3–4 pairs strong ac present; 2 strong posterior dc, with 4 weak hairlike anterior dc (MSSC); lateral scutellars about 1/3 length of medians.

**LEGS:** coxae, FI and FII to knees and all leg III dark brown to black; TI, TII and It, yellow, remaining tarsomeres dark brown; CI and CII with pale anterior setae; CIII with pale lateral setae; I: 8.5; 8.0; 7.0/2.0/2.0/1.5/1.0; FI with 4–5 long pale ventral setae, decreasing distally; TI with 4 dorsal setae, increasing to midlength; It, bare of setae but with pale ventral pile (MSSC); II: 10.5; 16.0;
Bickel: Diptera: Dolichopodidae

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10.0/ 4.0/ 3.0/ 1.5/ 1.0; TII without strong setae; TII and Ilt, covered with short porrect hairs and Ilt, also with loose ventral comb of short black setae (MSSC); III: 12.0; 17.5.; 12.0/ 9.0/ 4.0/ 2.0/ 1.0; TIII with black callus at 1/5, smooth but excavated on posterior surface (MSSC); IIII, basoventrally with 5–6 pale curled setae (MSSC).

WING: hyaline; R₄·₅ and M₁ converging at apex; M₂ reaching margin as fold; m-cu sinuous; lower calyptery yellow with dark brown rim, with fan of pale setae; halter yellow with dark brown club.

ABDOMEN: metallic blue-green with matte brown bands at tergal overlap and with silvery pruinosity laterally; hypopygium entirely dark brown (as in Fig. 1a); epandrium subrectangular; hypandrial arm arising beyond midlength; 2 epandrial setae present; epandrial lobe with strong apical bristle and shorter subapical bristle; surstylus with dorsoapical hook subtended ventrally by strong apical setae; cercus forked with distal arm bearing long spical seta, with setose arms as figured.

Female: similar but lack MSSC and as noted: 2 strong posterior dc and 3–4 strong but shorter dc anteriad; CI, all femora, TI, and TII yellow; TIII brownish; FI with only 2 long basal pale ventral setae; TI with 3 strong black dorsal setae to 1/2, and with strong ventral just beyond 1/2; It₁ with strong dorsal at 1/2; TII with 3 strong av-pv pairs.

Type material. The types of Psiopus patellifer and P. macropus (both in NRS) are the male and female, respectively, of the same species. Chrysosoma patelliferum is endemic to Guam although both Thomson species have been misinterpreted as occurring elsewhere in the Oriental and Australasian regions. Becker (1922) incorrectly figured the aristal flag as black and white (it is entirely white).


Distribution. Guam.

Remarks. Chrysosoma patelliferum and C. guamense, n. sp., are closely related Guam endemics and have almost identical hypopygia. The 2 species occur sympatrically, at least on Mt. Lamlam. Females cannot be reliably separated although those of C. guamense, n. sp., possibly have more infuscation on the apices of FIII. C. patelliferum shows strong leg color sexual dimorphism while the legs of both sexes of C. guamense, n. sp., have a similar yellow coloration.

2. Chrysosoma guamense Bickel, n. sp.

Fig. 1a

Description. Male: length: 4.7; wing: 4.6 × 1.3; similar to C. patelliferum except as noted.

HEAD: white apical aristal flag longer, broader, ovate; apex of flag often curled (MSSC).

LEGS: CI, all femora, TI, and TII yellow; CII and CIII dark brown; TIII yellowish with brown callus; FI with only 2 long basal pale ventral setae; TI with only short weak dorsal at 1/2; It₁, bare but also with pale ventral pile (MSSC); TII and Ilt₁, also covered with short porrect hairs (MSSC); Ilt₁, without loose
ventral comb of short black setae; TIII also with black callus at 1/5 (MSSC); IIIt, basoventrally also with tuft of 5–6 pale curled setae (MSSC).

ABDOMEN: hypopygium and cercus almost identical to that of *C. patelliferum* (Fig. 1a).

**Female:** similar female *C. patelliferum*.

**Type material.** Holotype ♂ (BPBM 15,081), paratypes, 3♀, 6♂, GUAM: no locality or date, [1911], Lot No. 1227, D. T. Fullaway (all BPBM).

**Additional material.** GUAM: Mt Lamlam, X.1957; Talofofo, VIII.1952; Mt Alifan, IV.1946; Mt Santa Rosa, VI.1945; Pt Ritidian, VIII.1945; Pago Bay, VI.1945; Pt Oca, VI.1945 (3♀, 10♂, all BPBM).

**Distribution.** Guam.

**Remarks.** See remarks for *C. patelliferum*. The year of collection of the holotype was determined by collecting records in BPBM.

3. *Chrysosoma leucopogon* (Wiedemann)

*Dolichopus leucopogon* Wiedemann, 1824: 40.

*Psilopus apicalis* Wiedemann, 1830: 227.
**Bickel: Diptera: Dolichopodidae**

*Psilopus conicornis* Macquart, 1846: 120.

*Psilopus curviseta* Thomson, 1869: 508.

*Chrysosoma loewi* Enderlein, 1912: 378.

**Diagnosis.** Male: length: 5.9–6.1; wing: 6.0 × 2.0.

**HEAD:** arista bare.

**LEGS:** coxae, basal FI, all FII and FIII, It_{2–5}, IIt_{2–5}, and IIt black; femoral “knees” I and II, tibiae, It, and IIt yellow; TI with 3–4 black dorsal setae, but lacking ventrals (see also remarks below); It, with some whitish ventral pile and 1–3 short dorsals (MSSC); IIt, mostly yellow but white in distal 1/5 with row of curved av setae; II_{2–3} black, with crocheted setae (MSSC); IIt_{4,5} distinctive, with flattened white hairs forming distinct dorsal crest (MSSC); TIII with black callus at 1/5 (MSSC); IIt, basoventrally with tuft of pale curled hairs.

**ABDOMEN:** surstylus without strong apical seta; cercus with long base, dorsal and ventral arms subequal; dorsal arm with 2 long apical setae, with dense whitish pubescence; ventral arm with 3 strong apical setae subtended by stout curved apical seta, external seta-bearing prominence, and median projection.

Female: lacks MSSC and as noted: all femora yellow; TI with 3–4 strong dorsal and 2 strong ventral setae; It, with 2 strong dorsal setae; TII with 2 strong av and 3 strong ventrals; TIII with offset ad-pd pair at 1/5, strong dorsal at 2/3.


**Distribution.** Widespread across Orient, Indian Ocean, and Australasia, including eastern African coast, Madagascar, India, Sri Lanka, SE Asia, Taiwan, Indonesia, Aldabra, Reunion, Mauritius, Rodriguez, Seychelles, Cocos-Keeling I, Christmas I, New Guinea, tropical Australia, New Caledonia, Belau, Samoan Is and Tahiti.

**Remarks.** *Chrysosoma leucopogon* is a widespread and common paleotropical tramp species, which is fairly constant in morphology across its entire range. However, some intraspecific variation is evident in body size, density of pubescence on the cercus, and length and development of male IIt crocheted hairs. The leg I chaetotaxy is also somewhat variable, with the male TI and It, setae varying somewhat in number and strength. However, none of this variation is sufficient to warrant designation of additional species since such variation may be present within a series or even between the right and left legs of the same individual. The following species, *C. yapense*, n. sp., is very close to *C. leucopogon* in its distinctive leg II MSSC.

4. *Chrysosoma yapense* Bickel, n. sp. Fig. 1b

**Description.** Male length: 5.0; wing: 4.3 × 1.4; similar to *C. patelliferum* except as noted:

**HEAD:** arista with narrow white lanceolate apical flag (MSSC).

**LEGS:** coxae brown, although CI yellowish distally; basal FI, all FII and FIII, It_{2–5}, IIt_{2–5}, and IIt brown; femoral “knees” I and II, tibiae, It, and IIt yellow, also see following; FI with 2 long pale basal setae and 3 shorter pale distal
ventral setae; TI with 3 dorsals in basal 1/2, but lacking ventrals; It, with some whitish ventral pile and 2 short dorsals (MSSC); TII with strong ad setae at 1/6, 1/2 and with ventrals at 1/5 (long) and 3/4 (short); II1, pale yellow but white in distal 1/3, with row of short crocheted setae (MSSC); II1–3 dark brown; II4 with flattened white hairs forming dorsal crest (MSSC); II5, black; TIII with black callus at 1/5, smooth but excavated on posterior surface (MSSC).

WING: halter pale yellow.

ABDOMEN: hypopygium entirely dark brown (Fig. 1b); epandrium subrectangular; hypandrial arm arising beyond midlength; 2 epandrial setae present; epandrial lobe with strong apical bristle, shorter subapical bristle; surstyli with dorsoapical hook subtended ventrally by strong apical setae; cercus forked with distal arm bearing long spical seta, with ventral arm bearing external bladelike seta and other setae as figured.

Female: similar but lack MSSC and as noted: with 2 strong posterior dc and 3–4 strong but shorter dc anteriad; CI, all femora, TI, TII, IT1, and II1 yellow; TIII and remaining tarsomeres brownish; FI with 2 long basal and 2 shorter distal ventral setae; TI with 3 strong black dorsal setae to 1/2, with strong ventral at 2/5 IT1 also with 2 strong dorsal setae.

Type material. Holotype ♂ (USNM), paratypes, 4♂, 1♀, FEDERATED STATES OF MICRONESIA: Yap Group: Giliman, 10 to 12.VII.1957, C. W. Sabrosky (BPBM).

Additional material. Yap Group: Giliman, Kolonia, Dugor, Mt Madaade, North and South Map, Gadgil, Tomil, Ruul, VII to VIII.1950, XI to XII.1952, III.1954, VI.1957 (7♂, 1♀, all BPBM).


Remarks. Chrysosoma yapense is very close to C. patelliferum and C. guamense in cercal structure and in sharing a white apical flag, but is close to C. leucopogon in leg II MSSC.

5. Chrysosoma townesi Bickel, n. sp. Fig. 2f

Description. Male: length: 6.5; wing: 6.0 × 2.0; similar to C. patelliferum except as noted:

HEAD: vertex, frons, clypeus metallic blue with dusting of pruinosity; arista simple.

THORAX: dark metallic blue with silvery pruinosity on pleura.

LEGS: coxae, femora and all leg III black; femoral knees and tibiae I and II, IT1, and II1 yellow; distal tarsomeres I and II most black but for leg II, also see below; FI with 2 long pale basoventral setae; TI with 2–3 short dorsals basally, 2 stronger dorsal setae at 2/5 and 3/5, without ventral setae; IT1 not strongly flattened, with whitish ventral pile and posterior row of black curved setae (MSSC), with 2 dorsal setae; TII with 4 short dorsal setae; TII yellow but white in distal 1/4; II1 brown but white in distal 1/4; II4 covered with short porrect hairs (MSSC), with row of about 30 outstanding curved av setae (MSSC); II1–3 black; II4 with white hairs forming flattened posterior crest (MSSC); II5, yellow-
ish; TIII with excavated callus at 1/5 (MSSC); IIIt, with basoventral tuft of 5-6 pale curled setae (MSSC).

WING: with anterior membrane darkened and smoky; halter yellow with brown club.

ABDOMEN: distal margin of tergum 7 with pair of long black setae; hypopygium dark brown (Fig. 2f); cercus elongate with shallow fork at 3/4, with apical arms bearing long curled setae.

Female: similar but lacks MSSC and as noted: CI black, becoming yellowish distad; CII and CIII black; all femora, TI, TII, IIIt, and IIIt, yellow; TIII reddish brown; remaining tarsomeres dark brown; TI with 3 strong black dorsals to 1/2, with strong ventral at 1/2; IIIt with 2 strong dorsals; TIII with 4 strong ad, strong ventrals at 1/5 and 4/5; wing membrane also smokey.

**Type material.** Holotype ♂: FEDERATED STATES OF MICRONESIA. Pohnpei: Mt Dolokatar, 1700-1900 ft, 13.VIII.1946, H. K. Townes (USNM); Paratypes, 29: Colonia, hydroelectric plant, 9.VII.1949 (USNM).

**Distribution.** Pohnpei.

**Remarks.** *Chrysosoma townesi* is a relatively large species with darkened wings. TII and IIIt are white in the distal 1/4 (MSSC), giving an effect of 2 white leg bands. A similar double banding occurs on *C. tuberculicorne* from French Polynesia, but with both bands on TII.

6. *Chrysosoma kusaiense* Bickel, n. sp.  
**Description.** Male: length: 5.4–5.6; wing: 4.7 × 1.6; similar to *C. patelliferum* except as noted:

- **HEAD:** vertex and frons bright metallic blue-green; lateral slope of frons with pale hairs (MSSC); 1st flagellomere elongate, tapering; arista long, about 2/3 body length, with apical lanceolate flag, black with white tip (MSSC).
- **LEGS:** coxae, FI and FIIt to “knees” and all of FIIt black; femoral “knees” I and II, tibiae, and basal tarsomeres I and II yellow; all IIIt dark brown (also see below); CI and CII with pale anterior hairs; CIII with tuft of pale lateral hairs; femora with pale ventral hairs; I: 9.0; 9.0; 7.0/ 1.0/ 1.0/ 0.5/ 0.5; FI with long pale ventral setae decreasing in size distad; TI with 3 black dorsals, long pv at 9/10, which is more than 1/2 length of TI (MSSC); IIIt swollen with pale ventral pile (MSSC), and with 2 dorsal setae; II 9.0; 13.0; 12.0/ 3.0/ 2.0/ 1.0/ 0.5; TII with dorsals at 1/8 and 5/6, and strong ventral at 1/5; IIIt, yellow but white in distal 1/4 (MSSC); IIIt2-3 black; IIIt4-5 covered with white hairs, not unlike that of *C. leucopogon* (MSSC); III 13.0; 19.0 12.0/ 3.0/ 2.0/ 1.0/ 1.0; TIII with strong dorsal at 3/4; TIII with callus at 1/5 (MSSC).
- **WING:** halter yellowish with brown club.
- **ABDOMEN:** hypopygium dark brown (Fig. 2a); epandrium subtriangular; cercus with apical spatulate pedunculate seta and with longer lateral arm which bears 2 short apical bladelike setae.

Female: similar but lack MSSC and as noted: all coxae and femora brown; tibiae yellowish and tarsi brownish to dark brown; FI with 2 long basal pale ventral setae; TI with 3–4 strong dorsal setae to 1/2, and with 2 strong ventrals,

Distribution. Caroline Islands: Kosrae
Remarks. *Chrysosoma kusaiense* is very close to *C. callosum* Parent and *C. pseudocallosum* Bickel (both from Australia and New Guinea), and the 3 species share similar cercal structure, leg I chaetotaxy, and aristal flag. However, female *C. kusaiense* have dark coxae and femora unlike the yellow-legged females of the other 2 species. In addition, the white male II₄₋₅ (MSSC) is similar to that of *C. leucopogon*.

7. *Chrysosoma agrihan* Bickel, n. sp. 

Description. Male: length: 4.2; wing: 3.3 × 1.2; similar to *C. patelliferum* except as noted:

- HEAD: vertex, frons, and clypeus metallic blue-green, shining; arista with apical flag, black basally, with narrower digitiform white apex, usually deflexed (similar to that of *C. complicatum*).
- THORAX: dark metallic blue-green.
- LEGS: coxae and femora dark brown to black; femoral “knees”, tibiae, I₁, and I₁ yellow; remaining tarsomeres dark brown; I₁: 7.0; 6.0; 6.0/1.2/1.0/0.8/0.5; FI with 4 long pale ventral setae; TI with 3 strong dorsal setae, increasing in size to beyond 1/2, with long ventral seta at 5/6, more than 1/2 length of TI (MSSC), with shorter subapical ventral which projects posteriad (MSSC); I₁ slightly flattened with whitish ventral pile, with posterior row of black curved setae (MSSC), bare dorsally; II: 8.0; 9.5; 8.0/2.5, remainder of leg missing; leg II without evident MSSC; III: 11.0; 15.0; 7.0, remainder of leg missing; TIII with black callus at 1/5, excavated on posterior surface (MSSC).
- WING: halter yellow.
- ABDOMEN: hypopygium dark brown; cercus tapering, setose, with short median arm bearing apical bladelike seta (Fig. 2b).

Female: similar but lacks MSSC and as noted: CI, femora, and tibiae yellow; basal tarsomeres yellowish, distal tarsomeres brown; TI with 3 strong black dorsal setae to 1/2, with 2 strong ventral setae at 1/2 and 3/4; I₁ with single dorsal seta; TIII with 3 strong dorsal and strong subapical ventral.

Type material. Holotype δ and paratype 9, NORTHERN MARIANAS ISLANDS: Agrihan, 26.VII.1951, R. M. Bohart (both in CAS).

Distribution. Marianas Islands.

Remarks. *Chrysosoma agrihan* shows strong sexual dimorphism in leg color.

8. *Chrysosoma mariana* Bickel, n. sp. 

Description. Male: length: 5.2; wing: 4.8 × 1.3; similar to *C. patelliferum* except as noted:

- HEAD: lateral slope of frons with black hairs (MSSC); arista simple, about 2/3 body length.
- LEGS: coxae, FI to 1/3, FII to 2/3, and all leg III dark brown to black; TI, TII, I₁, and I₁, yellow, remaining tarsomeres dark brown; podomere ratios similar; FI with 2 long pale basoventral setae; TI with 3 dorsal setae, at 1/8, 1/4, and 1/2; TI without ventral seta; I₁, with whitish ventral pile and posterior row of short curved setae (MSSC), dorsal setae absent; TII with short ad at 1/8; TII
and IIt, covered with short porrect hairs (MSSC); TIII with black callus at 1/5, excavated on posterior surface (MSSC).

WING: halter yellow with brown club.

ABDOMEN: hypopygium dark brown (Fig. 2c); cercus tapering, setose, with short distal projection with long apical setae and median arm with apical seta.

Female: similar but lacks MSSC and as noted: CI, trochanter I, all femora, TI, TII, It, and IIt, yellow; TIII brownish; CII, CIII, and remaining tarsomeres dark brown: TI with 3 strong black dorsal setae to 1/2, with strong ventral at 1/3; It, with strong dorsal at 1/2; TII with 2 strong ad and 1 short pd setae.


Distribution. Marianas Islands.

Remarks. Chrysosoma mariana is close to C. agrihan and also shows strong sexual dimorphism in leg color.

9. Chrysosoma clarkei Bickel, n. sp.

Description. Male: length: 5.0; wing: 4.7 × 1.6; similar to C. patelliferum except as noted:

HEAD: arista simple, without apical flag.

LEGS: coxae, FI, and FII to knees and all FIII dark brown; tibiae yellow, although TIII becoming infuscated distally; tarsi brown (but see also below); I: 9.0; 9.0; 8.5/ 2.0/ 2.0/ 1.5/ 1.0; FI with 2 long distal pale basoventral setae; TII with 3 dorsal setae, increasing in size to 1/2; It, relatively long and slightly flattened with whitish ventral pile (MSSC), without dorsal setae; II: 10.5; 16.0; 11.0/ 4.5/ 2.5/ 1.5/ 1.0; TII with dorsal seta at 1/10, otherwise bare; TII and IIt, covered with short porrect hairs (MSSC); IIt, white in distal 1/4 (MSSC); IIt, gray-white (not strong white as in C. leucopogon); III: 14.0; 18.5.; 9.0/ 4.0/ 2.5/ 1.0/ 1.0; TIII with black callus at 1/5, smooth but excavated on posterior surface (MSSC).

WING: halter yellow with brown club.

ABDOMEN: hypopygium entirely dark brown (Fig. 1c); cercus forked with short distal arm bearing long spical setae, with 2 ventral arms, each bearing apical bladelike seta.

Female: similar but lacks MSSC and as noted: CI brownish, becoming yellow distally; femora and tibiae mostly yellow, tarsi brownish; FI with 2 pale ventral setae; TII with 3 strong black dorsal setae to 1/2, with strong ventral at 1/2; It, with single strong dorsal at 1/2; TII with 3 strong av-pv pairs.

Type material. FEDERATED STATES OF MICRONESIA: Kosrae: Holotype ♂ (BPBM 15,079), paratype 9♀, Mutunlik, 22m, 6.II.1953, J.F.G. Clarke. Paratypes, 2♂, 9♀, Hill 1010, 300 m, 13.IV.1953; Lele I, 160m, 2.II.1953; Wakap, 390 m, 13.IV.1953; Mt Matante, 11.II.1953 (all BPBM).
Additional material: Kosrae: Mt Tafeyat, 500–800 ft.; Mt Buache, 19.VII.1946 (169, all BPBM).

Distribution. Caroline Islands: Kosrae.

Remarks. Female *Chrysosoma clarkei* have a ventral seta on TI and a dorsal on It., both of which are lacking on males. *C. clarkei* is close to the sympatrically occurring *C. kusaiense*, but also shows genital similarity to the larger and darker Solomon Islands *C. disparitarse*.

10. *Chrysosoma complicatum* Becker

*Chrysosoma complicatum* Becker, 1922; 159.

*Chrysosoma leucochirum* Bezzi, 1928; 64.

Diagnosis. Male: length: 5.0–5.3; wing: 4.3 × 1.3.

HEAD: arista with apical flag, black basally, with distinctly narrower digitiform white apex, usually deflexed.

THORAX: metallic green with bronze reflections; 4 pairs strong ac present; lateral scutellars weak, about 1/4 length of medians.

LEGS: CI, all femora, tibiae, It, and IIt, yellow; coxae and trochanters II and III, distal tarsomeres II (see also below) and IIt dark brown; FI with 3 pale ventral setae; TI with 3–4 dorsal setae, increasing in size to 1/2; It, with pale ventral pile (MSSC) and 2 strong dorsal setae; TII with strong subapical ventral seta; IIt, pale yellow, IIt, black, IIt, with white hairs forming dorsal crest (MSSC), IIt, pale yellow; III with black callus at 1/5.

ABDOMEN: hypopygium dark brown; cercus (Fig. 2e) forked, with distal arm bearing long apical setae, flattened median projection with long curved seta and bladelike seta, ventral projection bears long apical setae.

Female: similar but lacks MSSC and as noted: with similar leg coloration but IIt entirely brown; TI also with 3 black dorsal setae and It, also with 2 dorsals.

Type material. The types of *Chrysosoma complicatum* from Jaluit, Marshall Islands (ZMHB, examined) and *C. leucochirum* from Fiji (BMNH, examined) are identical.

Figure 3. *Chrysosoma complicatum* Becker, Likiep Atoll, Caroline Is. Scale = 1 mm.

Distribution. American Samoa, Western Samoa, Tonga, Fiji, the Caroline, Marshall, and Gilbert groups, Tuvalu, Nauru, Wake I, and Palmyra Atoll.

Remarks. *Chrysosoma complicatum* is a characteristic element of the Micronesian-western Polynesian fauna and is found on many isolated atolls. The leg coloration and bent digitiform apex of the aristal flag (MSSC) are distinctive.

11. *Chrysosoma mutilatum* Parent


Description. Male: length: 5.0; wing: 4.8 × 1.4; similar to *C. patelliferum* except as noted:

**HEAD:** vertex, frons, and clypeus dark metallic blue; lateral slope of frons with 2–3 black hairs (MSSC); palp brown with black setae; proboscis brown; arista black, about 1/2 body length; arista with black lanceolate apical flag (MSSC).

**THORAX:** metallic blue-green with some pruinosity.

**LEGS:** all coxae, femora, and entire leg III black; tibiae and tarsi I and II reddish brown; CI and CII with pale anterior setae; CIII with tuft of pale lateral setae; I: 9.0; 8.5; 7.0/ 2.0/ 1.5/ 0.8/ 0.8; FI with 4 long pale basoventral setae; TI with 3 dorsal setae at 1/8, 1/4, and 3/5; II: 11.5; 13.5; 10.0/ 5.5/ 3.0/ 1.5/ 1.0; TII with dorsal seta at 1/10; TII and III, covered with short porrect setae; (MSSC); III: 13.0; 18.0; 8.5/ 4.0/ 2.5/ 1.5/ 0.8; TIII without callus; TIII with strong subapical ad seta; IIII, with basoventral seta.

**WING:** hyaline; R₄₊₅ and M₁ joining subapically; halter dark brown.

**ABDOMEN:** hypopygium entirely dark brown (Fig. 2d); epandrium sub-triangular; hypandrial arm arising beyond midlength; surstylius with dorsoapical hook subtended ventrally by strong apical setae; cercus with digitiform projection, distally with median arm forked, outer arm bearing bladelike seta, inner arm bearing 2 long apical seta, with lateral arms bearing apical bladelike seta and subapical broad seta.

Female: similar but lacks MSSC and as noted: legs entirely dark brown-black; FI also with 4 long pale basoventral setae; TI with 3 strong black dorsal setae to 1/2, and with strong ventral just beyond 1/2; II with strong dorsal at 1/2; TII with 4 strong ad and with ventrais at 1/8 and subapically; TIII also with strong subapical ad seta; IIII, also with subapical ventral seta.

Type material. The male holotype from the Solomons (BMNH, examined) is missing its postabdomen and both distal legs III.

Additional material. FEDERATED STATES OF MICRONESIA: Caroline Islands, Kapingamarangi Atoll (Ringotoru I, 25.VIII.1954, on taro leaves along lagoon; on Ipomaea, nr beach (1♀, 2♂, BPBM).

Distribution. Solomon Is (Guadalcanal, Neal I) and Kapingamarangi.

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Remarks. *Chrysosoma mutilatum* probably originated on the Solomon Islands and dispersed to Kapingamarangi, an isolated atoll to the northwest.

12. *Chrysosoma ludens* Parent

*Chrysosoma ludens* Parent, 1935b: 70.

**Diagnosis.** Male: length: 5.5–6.2; wing: 4.6 × 1.3.

HEAD: frons, face, and clypeus blue-green with dusting of pruinosity; lateral frons with 4–5 pale hairs (MSSC); palp and proboscis black; pedicel with strong dorsal and ventral setae; arista black, simple, length about 2/3 that of body.

THORAX: metallic blue-green with some pruinosity; 3 pairs strong ac present; 2 strong posterior dc, with 4 weak hairlike anterior dc (MSSC); lateral scutellars about 1/3 length of medians.

LEGS: coxae and femora black; TI and TII reddish yellow; TIII reddish yellow basally, becoming dark brown distad; tarsomerses dark brown to black; CI and CII with pale anterior setae; CIII with tuft of pale lateral setae; femora with pale ventral hairs; FI with 2–3 long pale basoventral setae; TI with 3 dorsal setae,
at 1/8, 2/5 and just beyond 1/2, increasing in size distally; TII with strong subapical ventral seta (MSSC); It, dorsally bare, slightly flattened with whitish ventral pile (MSSC); TII with 3 strong ad, single av at 1/4; TII with strong subapical ventral seta (MSSC); TII without callus.

WING: hyaline; M	extsubscript{1} gradually arching to apex, almost meeting R	extsubscript{4+5} at apex; m-cu sinuous; lower calypter yellow with fan of pale setae; halter brown.

ABDOMEN: hypopygium entirely black (Fig. 4c); epandrium subrectangular; hypandrial arm arising at 2/3, extending well beyond hood; 2 long epandrial setae; epandrial lobe with strong apical bristle, shorter subapical bristle; surstylus digitiform, lobate, with setae as figured; cercus forked with 2 elongate parallel arms covered with long pale hairs.

Female: similar but lacks MSSC and as noted: with 2 strong posterior dc and 3-4 strong but shorter dc anteriad; legs entirely brown; TII with 3 strong black dorsal setae to 1/2, with strong ventral at 2/3; It, with strong unflattened dorsal seta; TII with 2 strong ad in basal 1/3, 2 ventrals, strong subapical ventral seta.

**Type material.** The male holotype of *Chrysosoma ludens* is from the Solomon Islands (BMNH, examined).


**Distribution.** Solomon Is (Guadalcanal), Papua New Guinea (Loloata I, Central Prov; Torricelli Mts), and Marshall Is.

**Remarks.** *Chrysosoma ludens* has a distinctive cercus comprising 2 setose parallel arms.

13. *Chrysosoma pelagica* Bickel, n. sp.

**Description.** Male: Length: 5.0; wing: 4.6 × 1.3.

HEAD: vertex, frons, face and clypeus metallic blue-green; face and clypeus with gray pruinosity; lateral scope of frons with single pale hair (MSSC); face bulging (MSSC); palp yellow with black setae; proboscis yellow; antenna black; pedicel with strong dorsal and weaker ventral setae; 1st flagellomere tapering; arista black, about 2/3 body length; arista with black narrow lanceolate apical flag (MSSC).

THORAX: metallic blue-green with some pruinosity; setae black; 3 pairs strong ac present; 2 strong posterior dc, with 4 weak hairlike anterior dc (MSSC); lateral scutellars reduced to tiny pale hairs.

LEGS: CI, trochanter I, femora, tibiae and It, yellow; coxae and trochanters II and III dark brown; remaining tarsomeres yellowish, becoming brown distally; CI and CII with pale anterior setae; CIII with pale lateral setae; femora with pale ventral hairs; I: 8.5; 8.0; 6.0/ 2.0/ 1.5/ 1.0/ 0.8; FI with 2 strong pale ventral setae; TII with 3 dorsal setae, at 1/8, 1/4, and 1/2; TII with 2 subapical pv setae (MSSC); It, dorsally bare, slightly flattened with whitish ventral pile in basal 1/2 (MSSC); It, with row of long curved posterior setae to 1/2 which then continues as short posterior row along entire It (MSSC). II: 9.0; 12.0; 8.0/ 3.0/ 2.0/ 1.0/ 0.8; TII
with strong ad setae at 1/10, 1/2, and subapically, and with 5 short ventral setae; II\textsubscript{1}, with anterior brush of short black hairs in basal 1/5 (MSSC); III: 17.0, 11.0; 6.5/ 4.0/ 2.0/ 1.5/ 1.0; TIII without callus.

WING: hyaline; R\textsubscript{4+5} and M\textsubscript{1} converging at apex; M\textsubscript{2} reaching margin as fold; m-cu slightly sinuous; lower calypter yellow with dark brown rim, with fan of pale setae; halter yellow.

ABDOMEN: metallic blue-green with matte brown bands at tergal overlap, silvery pruinosity laterally; tergum 7 with external row of strong marginal setae; hypopygium entirely brown (Fig. 4b); epandrium subrectangular; hypandrial arm arising beyond midlength; epandrial lobe with 2 strong bristles; surstylus lobate, truncate, with setae as figured; cercus digitiform, tapering, with 3 distinctive strong adjacent basoventral bristles.

Female: similar but lacks MSSC and as noted: with 2 strong posterior dc and 3–4 strong but shorter dc anteriad; FI also with 2 strong basoventral setae; TI only with 3 dorsal setae, but lacking subapical pv setae; I\textsubscript{1} only with 2 dorsal setae.

Type material. Holotype \(\delta\), paratypes, 2\(\delta\), 29, PHILIPPINE IS: Manilla, XII.1924, R. C. McGregor (USNM).

Additional material. GUAM: \(\delta\), Piti, 12.IX.1936, swept from Pitheco/bium: \(\varphi\), no locale or date; \(\varphi\), Cocos I, X.1957 (BPBM).

Distribution. Philippine Is, Guam.

Remarks. The Philippine Is and Guam specimens of Chrysosoma pelagica are identical, especially noting the distinctive I\textsubscript{1}, MSSC. This species is close to C. arrogans from the Solomons and Bougainville I and the 2 species are separated in the text key.

14. Chrysosoma molestum Parent

Chrysosoma molestum Parent, 1934b: 288.

Description. Male: length: 4.7; wing: 4.2 \(\times\) 1.3; similar to C. patelliferum except as noted:

HEAD: frons metallic green with dusting of pruinosity; lateral frons bare; face and clypeus with dense silvery pruinosity; palp and proboscis black; antenna black; pedicel with only short dorsal and ventral setae; 1st flagellomere short, triangular; arista black, apical, about 1/2 body length, simple.

THORAX: 4 pairs strong ac present; lateral scutellars absent.

LEGS: CI, femora, tibiae, I\textsubscript{1}, and I\textsubscript{2}, yellow; CII and CIII, distal tarsomeres I and II, and all III\textsubscript{1} dark brown; CI and CII with pale anterior setae; CI also with 3 black distolateral setae; I; 7.0; 7.0; 6.0/ 1.5/ 1.0/ 0.5/ 0.5/ leg I devoid of significant setae; II: 8.5; 11.0; 7.0/ 4.0/ 2.0/ 1.5/ 1.0; TII with strong ad and weaker pd at 1/10; TII and I\textsubscript{1}, covered with short porrect hairs (MSSC); I\textsubscript{2} with single long projecting ad apical seta (MSSC); I\textsubscript{2}, and I\textsubscript{4}, each with short dorsoapical seta; III: 11.0; 14.0; 6.0/ 2.5/ 1.5/ 1.0/ 0.8; TIII without callus.

WING: hyaline; R\textsubscript{4+5} and M, subparallel at apex; m-cu only slightly sinuous; lower calypter yellow with dark brown rim, with fan of black setae; halter yellow.
ABDOMEN: hypopygium entirely dark brown (Fig. 4a); epandrium subrectangular; hypandrial arm arising near base of hypandrium, extending far beyond hypandrial hood; surstylus lobate with setae as figured; cercus setose, with long digitiform distal projection and ventral projection pedunculate basal setae.

Female: similar but lacks MSSC and as noted: strong vertical setae present on frons; leg II without MSSC; TII with 2 ad and 2 pd; TII with offset ad-pd pair at 1/5; m-cu distinctly straight; abdomen with base of tergum 2 yellow.

**Type material.** The types of *Chrysosoma molestum* (BMNH, examined) are from the Banks Group, Vanuatu.


**Distribution.** Vanuatu (Banks Group), Kiribati and Tuvalu.

**Remarks.** *Chrysosoma molestum* is very close to an undescribed species from the Cook Islands, which has 2 long projecting dorsal III setae instead of 1.

**Genus PLAGIOZOPELMA Enderlein**

*Plagiozopelma* Enderlein, 1912: 367. Type species: *Plagiozopelma spengeli* Enderlein, 1912 [= *Psi/opus appendiculatus* Bigot, 1890], by original designation.

The genus *Plagiozopelma* was given new status (Bickel 1994). Of particular interest is the development of distinctive female secondary sexual chaetotaxy where they have strongly developed lateral CI spines. *Plagiozopelma* is broadly distributed across the Old World tropics, from Africa to Melanesia. Only a single widespread Oriental-Australasian species, *P. flavipodex*, occurs in Micronesia.

15. *Plagiozopelma flavipodex* (Becker)

*Chrysosoma flavipodex* Becker, 1922: 156.

**Diagnosis.** Male.

HEAD: vertex, frons, and face bright shining metallic gold-green; antenna yellow; scape swollen, viselike (MSSC); 1st flagellomere strongly conical; apical aristal flag white and black (MSSC).

THORAX: 2 pairs strong ac present; 2 strong posterior dc, 3–4 weak anterior dc (MSSC); lateral scutellars absent.

LEGS: coxae and legs entirely yellow; CI with 6 strong spinelike setae.

ABDOMEN: cercus with 2 subequal arms aring from base, dorsal arm with dorsal and ventral setae, ventral arm bare except for ventral subapical tuft of hairs.

Female: similar to male except lacks MSSC and as noted: 1st flagellomere not strongly conical; 5–6 strong dc present; CI with strong spinelike setae.

**Type material.** Becker's original type material was destroyed. A neotype has been designated (ANIC) (see Bickel, in press).

**Micronesian material.** NORTHERN MARIANAS ISLANDS: Saipan, Officer's Mess, 2nd Marine Div., 3.IX.1945 (USNM). GUAM: Piti, 4.VI.1945; Mt Machanano, 30.VI.1956 (BPBM); Pt Oca, V.1945 (USNM). (1♂, 7♀).

Remarks. Plagiozetelma flavipodex is a distinctive species with a widespread distribution throughout the Indo-Pacific region. It is figured and discussed in Bickel (1994).

Genus KRAKATAUIA Enderlein

Krakatauia Enderlein, 1912: 408. Type species: Psiopus rectus Wiedemann, 1830 (as "Pilopus"), by original designation.

The division of Krakatauia into groups is discussed in Bickel (1994). The 2 species considered here are both placed in the evulgatum group, which has many species associated with littoral habitats. K. evulgatum is particularly widespread in the western Pacific and is often the only sciapodine present on isolated Micronesian atolls. K. micronesiana is very close to the widespread Oriental species, K. recta.

Key to Micronesian Krakatauia

1. M and R₄₊₅ each join wing margin separately; frons dark blue-green; palp with black setae; FI black to 2/3; It₁ with pale ventral pile (MSSC); cercus with short distal projection and large clavae ventral arm which bears strong apical setae (Fig. 5a)................................. 16. K. evulgatum

M and R₄₊₅ join internally, closing cell Rₛ before margin (Fig. 5c); frons emerald green; palp with pale setae; FI entirely black; It₁ bare; cercus 2 long subparallel ventral arms, basal arm hidden within epandrium (Fig. 5b).................................................17. K. micronesiana

16. Krakatauia evulgatum (Becker)

Sciapus evulgatus Becker, 1922: 205.
Sciapus pressipes Parent, 1929: 244.

Description: Male: length 4.4–5.0; wing: 3.5–4.0 × 1.3.

HEAD: vertex, frons, face, and clypeus metallic dark blue-green with little pruinosity; frons broad, flat, with abundant fine pale hairs on lateral slope (MSSC); clypeus free from eye margin; lower eyes with pale setae between facets; palp black; proboscis yellowish; antenna black; pedicel with strong dorsal and ventral setae; 1st flagellomere subtriangular, longer than high; arista dorsal, long as head width; postcranial with abundant pale setae.

THORAX: metallic blue-green; setae black; pleura and coxae with silvery pruinosity; 3 pairs long ac present; lateral scutellars reduced to short setae, about 1/5 length of medians.

LEG: coxae, trochanters, FI to 2/3, FII to 1/2, and all FIII black; tibiae and It₁ and IIIt, yellow; all IIIt and distal tarsomeres I and II brown; CI with pale
Figure 5. a. *Krakatauaia evulgatum*, Pohnpei; hypopygium, left lateral. b–c. *K. micronesiana*, Guam; b. hypopygium, left lateral; c. male wing, dorsal.

anterior hairs; CIII with pale lateral hairs; femora with pale ventral hairs only; I: 8.0; 8.5; 6.5/ 1.5/ 1.0/ 1.0/ 0.5; TII with dorsal at 1/5 and ventral apical seta; It, relatively long, slightly flattened, and with pale ventral pile along entire length (MSSC); II: 9.0; 11.0; 8.5/ 3.0/ 2.0/ 1.0/ 0.5; TII with short dorsals and ventrals strong av-pv apical pair; III: 12.0; 15.0; 8.0/ 3.5/ 2.5/ 2.5/ 1.0.

WING: hyaline; M, approaches R4 in broad arc, but is separate from it at wing margin; m-cu slightly sinuous; CuAx ratio: 2.2; lower calypter brown with fan of pale setae; halter yellowish to brownish.

ABDOMEN: metallic blue-violet with wide matte brown bands around areas of tergal overlap; hypopygium entirely dark brown (Fig. 5a); epandrium subtriangular; hypandrial arm arising at midlength and extending well beyond hypandrial hood; aedeagus elongate and wide, extending beyond apex of surstylus; surstylus lobate with lateral setae, with ventral lobe and dorsal curved digitiform projection; cercus with short distal setose projection bearing long curved apical setae and clavate ventral arm bearing apical hooked seta and other strong setae as figured.
Female: similar to male except lacks MSSC and as noted: frons without lateral hairs; FI black in basal 1/3 1/2, yellow distad; FIII black to 3/4, yellow distad; TI with 2 short dorsal and 2 short pv setae, but lacking ventral apical seta; It, unmodified.

**Type material.** The type material and synonymies are discussed in Bickel (1994).


**Distribution.** Bismark Arch, Caroline Is (Chuuk, Yap, Pohnpei, Caroline Atolls), Marshall Is, Solomon Is (incl. Ontong Java Atoll), Trobriand Is, Nauru, and Vanuatu.

**Remarks.** *Krakatauia evugatum* is a common and widely distributed tramp species throughout the western tropical Pacific. In Micronesia, it is found throughout the Caroline, Marshall, and Kiribati groups, including many low and isolated atolls. No specimens were seen from Belau, although it might be expected there, considering it occurs on nearby Yap.

The clavate ventral cercal arm, abundant pale hairs on the frons, and coloration are distinctive. Some intraspecific variation is evident in size, haltere color (from yellow to brown) and the extent of black coloration on basal FI.

Two related undescribed species occur in Melanesia.
17. *Krakatauia micronesiana* Bickel, n. sp.  

**Description:** Male: length 3.8; wing: 3.0 × 1.2.

**HEAD:** vertex, frons, face, and clypeus bright emerald green with little pruinosity; frons broad and flat with abundant fine pale hairs on lateral slope (MSSC); face bulging; clypeus free from eye margin; eyes ventrally with pale setae between facets; palp black with long pale setae; proboscis yellow; antenna black; scape with median extension (MSSC); 1st flagellomere subrectangular; arista dorsal, as long as head height; postcranium with abundant pale setae.

**THORAX:** metallic emerald green, scutellum blue; setae black; pleura and coxae with silvery pruinosity; 3 pairs long ac present; lateral scutellars weak, about 1/5 length of medians.

**LEGS:** coxae, trochanters, and femora black; tibiae, I, II, and IIt, yellow; all IIIt and distal tarsomes brown; CI and CII with pale anterior hairs; CIII with pale lateral hairs; femora with pale ventral hairs; I: 6.0; 6.0; 4.0/1.0/0.8/0.5/0.5; II: 6.5; 7.5; 5.5/2.0/1.5/0.8/0.5; TII with ad at 1/5 and subapically; III: 8.0; 10.5; 50/2.0/1.2/1.0/0.8.

**WING:** hyaline; M in gentle arc joining R4+5 internally, closing cell Rs before wing apex by short stalk (Fig. 5c); m-cu slightly sinuous; CuAx ratio: 2.3; lower calypters brown with fan of pale setae; halter brownish.

**ABDOMEN:** metallic blue-violet with wide matte brown bands around areas of tergal overlap; hypopygium entirely dark brown (Fig. 5b); epandrium subtriangular; hypandrial arm arising at midlength and extending just beyond apex of hypandrial hood; surstylus lobate with lateral setae, with ventral lobe and dorsal curved digitiform projection; cercus densely setose distobasally, with 2 long subparallel ventral arms, basal arm usually hidden from view within epandrium.

Female: similar to male except lacks MSSC and as noted: also with pale setae on palp; frons without lateral hairs, not as flattened; TII with short dorsal at 1/2; wing also with cell Rs closed, but M1 more strongly curved.

**Type material.** Holotype δ (FMNH), paratypes, 108, 119, GUAM: Pago Bay, 2.VI.1945, H. S. Dybas (FMNH, BPBM).


**Distribution.** Guam, Palau, Northern Marianas, Wake Atoll, and Midway Atoll.

**Remarks.** *Krakatauia micronesiana* is known from Micronesia and Midway Atoll. The closely related *K. rectum* has a similar habitus and hypopygium, but a more modified wing: M1 still joins R4+5 before the apex, but is almost straight
(MSSC) and the wing has a distinct brown apical spot with a white external border (MSSC). *K. rectum* is known for Sumatra, Borneo, Lesser Sundas, Taiwan, Philippine Is, Sri Lanka, and New Guinea, and the ranges of the 2 species appear to be mutually exclusive. Possibly *K. rectum* is derived from an ancestor similar to *K. micronesiana*.

**Genus AMBLYPSILOPUS Bigot**

*Amblypsiopus* Bigot, 1888a: xxiv [1888b: xxiv]. Type species: *Psilopus psittacinus* Loew, 1861 (as “psitacinus Fabricius”), by original designation.

*Amblypsiopus* is a diverse and complex genus of cosmopolitan distribution. It is treated in Bickel (1994) where major groups of species are defined. The Micronesian species are placed in the following groups:

1. The *pallidicornis* Group: *A. pallidicornis*, and *A. biprovincialis*.
2. The *abruptus* Group: *A. ponapensis*, *A. austerus*, and *A. belauensis*.
3. The *flaviappendiculatus* Group: *A. sabroskyi*.
4. Unplaced: *A. trukensis*.

**Key to Male Micronesian Amblypsiopus**

1. Thoracic pleura, all coxae, and abdomen mostly yellow; wing with brown anteroapical cloud; antenna yellow; arista apical; TI with curved posterior seta at 9/10; cercus elongate with distinctive ventral capitate setae .... (Guam, Palau, Hawaiian Is, Society Is, Taiwan, Seychelles) .... ................................................................. 18. *A. pallidicornis* (Grimshaw)
   Thoracic pleura, at least CII and CIII, and abdomen black; wing hyaline ................................................................. 2
   2(1). CI and femora mostly yellow; TII and IIIt without short erect hairs .... 3
   CI and femora black; TII and IIIt covered with short erect hairs ....... 6
   3(2). IIIIt ₃,₄ with flattened ventral padlike surface; abdominal tergum 5 ventrally with pair of 2–3 short black spinelike setae; 1st flagellomere either bright yellow or black; TI elongate, with pale ventral pile and with curved pale setae along posterior margin from 1/4 to 3/4; cercus long and flagelliform (Fig. 7b) (Palau) ......................... 23. *A. sabroskyi*, n. sp.
   IIIIt not flattened; tergum 5 without ventral spinelike setae ............ 4
   4(3). Hypopygium large and entirely yellow, with elongate cercus which bears expanded complex apical club (Fig. 7a); legs without significant MSSC (Chuuk) ................................................................. 24. *A. trukensis*, n. sp.
   Hypopygium with epandrium black; cercus digitiform, not apically expanded; TI with curved posterior seta at 7/8 ................................ 5
   5(4). Antenna black; II, not flattened; abdominal tergum 1 with orientated silvery pruinosity, evident in anterior view; cercus short digitiform, setose (Fig. 6a) (Pohnpei) ................................................................. 20. *A. ponapensis*, n. sp.
   Antenna yellow; II, flattened into black pinnate apical flag (MSSC); abdominal terga 1 and 2 yellow laterally and ventrally; cercus elongate,
with 3 long somewhat crooked midventral setae (Australia, Chuuk)...

6(2). Halter black; cercus digitiform, with strong outstanding ventral setae at 4/5 and subapically (Fig. 6b) (Sabah, Guam, Saipan) ................................................. 19. *A. biprovincialis*, n. sp.

19. *Amblypsiopus pallidicornis* (Grimshaw)
*Gnamptopsilopus pallidicornis* Grimshaw, 1901: 12.

**Diagnosis.** Male. length 3.0–3.5.

**HEAD:** vertex, frons, and face metallic blue with dusting of silvery pruinosity; clypeus protruding, with dense silvery pruinosity; palp and proboscis yellow; antenna yellow; 1st flagellomere short, triangular; arista apical, long.

**THORAX:** dorsum metallic green-bronze with some silvery pruinosity; pleura including metepimeron yellow; 2 pairs long ac present; 5 dc present: 2 strong posterior and 3–4 weak anterior setae.

**LEGS:** all coxae and legs yellow except as noted; CI with 3 yellow distolateral setae; CIII with black lateral seta; TI with long curved posterior seta at 9/10 (MSSC).

**WING:** hyaline but with faint brown clouding anteroapically.

**ABDOMEN:** yellow, but segments 1–5 each with distal brown band near tergal overlap; cercus elongate with distinctive ventral capitate setae (see Fig. 61h, Hardy and Kohn, 1964).

**Female:** similar to male except lacking MSSC and as noted: clypeus with dense silvery pruinosity; thorax entirely yellow with some blue metallic reflections; wing also with faint anteroapical cloud; abdomen also yellow with brown bands at tergal overlap.

**Micronesian material.** GUAM: Agat, 31.V.1936; Pago Bay, VI.1945.

**Distribution.** Hawaiian Is, Socie:y Is, Taiwan, Seychelles, Guam, and Palau.

**Remarks.** *Amblypsiopus pallidicornis* is widespread through the tropical Pacific and Indian Oceans.

19. *Amblypsiopus biprovincialis* Bickel
*Amblypsiopus biprovincialis* Bickel (1994:309)

**Diagnosis:** Male.

**HEAD:** proboscis and antenna yellow; arista dorsoapical, about 2 × head height.

**THORAX:** dorsum metallic blue-green with brown-gray pruinosity; setae black; 2 pairs long ac present; lateral scutellar setae absent.

[389]
LEGS: CI, femora, tibiae, and tarsi yellow, except as noted; CII and CIII and distalmost tarsomeres dark brown; CI with 3 strong pale distolateral setae; TI with long curved posterior pedal seta at 7/8, with subapical pale pile (MSSC); ITₜ longer than TI, slightly curved, with fine white pile ventrally (MSSC); ITₜ flattened into black pinnate apical flag (MSSC).

WING: hyaline; lower calypter yellow with brown rim and fan of pale setae; halter yellow.

ABDOMEN: bristles of epandrial lobe developed separately, each on short pedicel; surstylus lobate, with 2 strong curved apical setae; cercus elongate, with 3 long somewhat crooked midventral setae, with few dorsal setae.

Type material. See Bickel (1994) for figures and complete description.

Micronesian material. FEDERATED STATES OF MICRONESIA: Chuuk Group, Moen, Civil Administration Area, 15.IV.1947 (2♂, BPBM).

Distribution. Australia (NT, Qld) and Chuuk Group.

Remarks: *Amblypsilopus biprovincialis* was first described from Cape York Peninsula and Arnhem Land. Australian and Chuuk specimens are almost identical, especially the appearance of the surstylus and setation of the cercus. The only obvious difference is that ITₜ is not as strongly developed into a black pinnate flag (MSSC) on Chuuk males. This species possibly occurs on islands between northern Australia and Micronesia.

20. *Amblypsilopus ponapensis* Bickel. n. sp. Fig. 6a

Description. Male: length: 4.0; wing: 3.3 × 1.2.

HEAD: vertex, frons, and face below antenna metallic blue; lateral slope of vertex with 2 black setae; lower face and clypeus with silvery pruinosity; palp and proboscis yellowish; antenna black; pedicel with single dorsal and ventral setae; 1st flagellomere subtriangular; arista short, about as long as head width.

THORAX: metallic blue-green with bronze reflections; pleura with gray pruinosity; setae black; 2 pairs long ac present; 2 strong posterior dc, with 4 short, weak hairlike dc anteriad (MSSC); lateral scutellars absent.

LEGS: CI yellow but infuscated basally; trochanter I, femora, tibiae, and all tₜ, yellow; coxae, trochanters II and III, and distal tarsomeres black; CI with pale anterior hairs, with 3 strong pale setae distolaterally; CIII laterally with tuft of pale hairs; femora with pale ventral hairs; legs devoid of major setae; I: 5.0; 6.5; 5.5/ 2.2/ 1.9/ 1.0/ 1.0; TI elongate with weak curved pale posterior setae at 7/8 (MSSC); ITₜ not flattened; II: 6.5; 7.5; 7.0/ 2.5/ 2.0/ 1.0/ 0.5; IItₜ relatively long; III: 8.5; 12.5; 5.5/ 2.5/ 2.0/ 1.0/ 0.5; IIIₜₜ not flattened (MSSC).

WING: hyaline; M₁ with elbow-shaped bend; m-cu straight; CuAx ratio: 2.7; lower calypter yellow with black rim and black setae; halter yellow.

ABDOMEN: metallic green; basal 1/2 of each tergum 2–6 and narrow band on adjacent tergum matte brown; tergum 1 with oriented silvery pruinosity, evident in anterior view (MSSC); hypopygium brown (Fig. 6a); hypandrial arm relatively short; 2 short epandrial seta present on mound; epandrial lobe with 2
pedunculate bristles with membranous connection to epandrium; surstylus simple with strong dorsal seta; cercus digitiform, setose.

Female: similar to male except lacking MSSC.

**Type material.** Holotype ♂ (USNM), 2 paratype ♂, FEDERATED STATES OF MICRONESIA: Pohnpei, Colonia, 5.VII.1946, H. K. Townes (USNM); Paratype ♀, Agricultural Experiment Station, VI to IX.1950 (BPBM).

**Distribution.** Caroline Is: Pohnpei.

**Remarks.** *Amblypsiopus ponapensis* is possibly conspecific with *A. superans* from New Guinea. Both species have oriented silvery pruinosity on the 1st abdominal tergum and have similar hypopygia. However, *It*₅ is distinctly flattened on *A. superans* (MSSC), while it is unmodified on *A. ponapensis*. A number of undescribed Melanesian species, all with simple digitiform cerci, are close to *A. superans* and this complex requires further study.
*Chrysosoma austerum* Parent, 1935a: 363.  
**Description.** Male: length: 3.5; wing: 3.3 × 1.2.  
HEAD: vertex and frons metallic blue-green; lateral slope of vertex with 2–3 black hairs; face and clypeus green with silvery pruinosity; palp and proboscis brownish; antenna black; 1st flagellomere subtriangular; arista dorsoapical, about as long as head width.  
THORAX: metallic blue-green; pleura with silvery pruinosity, especially evident on notopleuron in dorsal view; setae black; 3–4 pairs ac present; 2 strong posterior dc, with 4 short, weak hairlike dc anteriad (MSSC); lateral scutellars absent.  
LEGS: coxae, femora, tarsi dark brown to black; tibiae yellow to red-brown; CI and CII with pale anterior hairs; CIII with lateral tuft of pale hairs; femora with only weak ventral hairs; tibiae without major setae; I: 6.5; 6.0; 4.5/ 2.0/ 1.2/ 0.8/ 0.5; II: 7.5; 9.0; 6.0/ 2.5/ 1.5/ 1.0/ 0.5; TII and III covered with short erect hairs (MSSC); III: 8.5; 11.0; 5.5/ 3.0/ 2.0/ 1.0/ 0.5.  
WING: hyaline; M₁ with elbow-shaped bend; M₂ weak; m-cu straight; CuAx ratio: 1.3; lower calypter black with black setae; halter black.  
ABDOMEN: metallic green, basal 1/2 of each tergum 2–6 and narrow band on adjacent tergum matte brown; hypopygium dark brown. (Fig. 6b); hypandrial arm arising at midlength and extending beyond hood; 2 short epandrial setae present; epandrial lobe apparently absent (possibly fused with surstylus); dorsal arm overlying larger ventral arm, with 2 ventral setae; cercus digitiform, with 2 strong outstanding ventral setae at 4/5 and subapically.  
Female: similar to male except lacks MSSC and as noted: with 5 strong dc; leg II without short erect hairs; halter yellow.  
**Type material.** Parent described *Chrysosoma austerum* (BMNH, examined) from Malaysia (Sabah). A male paratype (AMNH) was compared directly with the Guam specimens and they are identical in all respects.  
**Additional material.** GUAM: Piti, X.1936; Pago Bay, V.1945; Pt Oca, XI.1952; Umtac, V.1936; Agat, X.1936. NORTHERN MARIANAS ISLANDS: Saipan, VI.1945 (5♀, 49, BPBM).  
**Distribution.** Malaysia (Sabah), Guam, Saipan.  
**Remarks.** *Amblypsilopus austerus* has a distinctive cercus with 2 strong ventral setae. A record by Parent of this species from the Punjab, India (specimen in BMNH, examined) is in fact the closely related *A. pusillus* Macquart. The epandrial lobe of *A. austerus* is apparently fused with the surstylus.  

22. *Amblypsilopus belauensis* Bickel, n. sp.  
**Description.** Male: length: 4.3; wing: 3.4 × 1.2.  
HEAD: vertex, frons and face below antenna shining metallic blue-green; lateral slope of vertex bare; lower face and clypeus with silvery pruinosity; palp dark brown; proboscis brownish; antenna black; 1st flagellomere subrectangular, arista short, dorsal, about as long as head width.
THORAX: metallic blue-green with bronze reflections; setae black; 3 pairs strong ac present; 2 strong posterior dc, with 4 weak hairlike dc anteriad (MSSC); lateral scutellars absent.

LEGS: coxa and femora dark brown to knees; TI and TII yellow; TIII yellowish; tarsi brown; CI and CII with pale anterior hairs; CIII with tuft of pale lateral setae; I: 7.5; 7.0; 5.0/ 1.5/ 1.0/ 0.8/ 0.5; It covered with short erect hairs (MSSC); II: 7.0; 10.0; 6.5/ 3.0/ 1.5/ 1.0/ 0.5; TII with ad at 1/10; TII and III covered with short erect hairs (MSSC); III: 10.0; 12.0; 6.0/ 3.0/ 2.0/ 1.0/ 0.8; IIIIt not flattened.

WING: hyaline; M1 with moderate elbow-shaped bend; m-cu straight; CuAx ratio: 2.6; lower calypter yellow with black rim and pale setae; halter yellow.

ABDOMEN: metallic green, basal 1/2 of each tergum 2–6 and narrow band on adjacent tergum matte brown; hypopygium dark brown with yellow cerci (Fig. 6c); both hypandrial hood and hypandrial arm extending to apex of aedeagus; epandrial lobe with 2 bristles; surstylus with dorsoapical digitiform projection and with 3 strong lateral setae as figured; cercus tapering, subtriangular, setose.

Female: similar to male except lacks MSSC, otherwise as noted: anterior dc shorter than posterior dc, strong, not hairlike; FI dark brown only to 2/3.


Distribution. Palau Group and possibly Caroline Atolls.

Remarks. Amblypsilopus belauensis displays few distinctive MSSC, except for the short erect hairs on legs I and II. Tarsus III is not flattened. This species is placed in the Amblypsilopus abruptus Group, Assemblage II.

23. Amblypsilopus sabroskyi Bickel, n. sp. Fig. 7b

Description. Male: length: 3.7; wing: 3.4 × 1.2.

HEAD: vertex, frons, and face below antenna metallic green-brown; lateral slope of vertex bare; lower face and clypeus with silvery pruinosity; palp and proboscis yellowish; scape and pedicel black; 1st flagellomere either bright yellow or black (see remarks below); 1st flagellomere subrectangular, arista short, about as long as head width.

THORAX: metallic blue-green with bronze reflections; pleura with gray pruinosity; setae black; 2 pairs strong anterior ac; 2 strong posterior dc and 4 short, weak hairlike dc anteriad (MSSC); lateral scutellars reduced to tiny weak hairs.

LEGS: CI, femora, tibiae, and basal tarsomeres yellow; CII, CIII, and distalmost tarsomeres black; CI with pale anterior hairs; CIII laterally with tuft of pale setae; I: 7.0; 7.5; 4.0/ 1.8/ 1.2/ 0.8/ 0.5; TI slightly flattened with some ventral
Figure 7. a. *Amblypsilopus trukensis*. Chuuk; hypopygium, left lateral. b. *A. sabroskyi*, Babelthaup, Palau; hypopygium, left lateral.

pile in distal 3/4, with curved pale setae along posterior margin from 1/4 to 3/4 (MSSC); II: 7.5; 10.0; 6.0/ 2.0; 1.5/ 1.0/ 0.5; III: 8.5; 12.5; 5.0/ 2.5/ 1.0/ 1.0/ 0.5; III_{1,3} black, flattened, with ventral padlike surface (MSSC).

WING: hyaline; M, with elbow-shaped bend; m-cu straight; CuAx ratio: 2.0; lower calypter yellow with black rim and pale setae; halter yellow.

ABDOMEN: metallic green, basal 1/2 of each tergum 2–6 matte brown; segment 5 with 2–3 pairs of short black ventral spinelike setae; hypopygium dark brown with yellow cerci (Fig. 7b); epandrium subtriangular; hypandrial hood short; hypandrial arm extending almost to apex of aedeagus; 2 short epandrial setae; surstylus fused to epandrium, forked with setae as figured; dorsal lobate projection of surstylus with external setae and setose trat; cercus elongate, flagelliform, setose.

Female: similar to male except lacks MSSC, otherwise as noted: 1st flagellomere either black or yellow, as in male; 4 strong dc present.


**Additional material.** PALAU: A (all with 1st flagellomere bright yellow): Oreor (=Koror), 25m, 11–20.VII.1953 (BPBM). Babelthaup, Ngerkabesang,

Distribution. Belau.

Remarks. Amblypsilopus sabroskyi is confined to Belau and shows interesting polytypic antennal coloration. There are 2 forms, 1 with antenna entirely black and 1 with the 1st flagellomere bright yellow. They are broadly sympatric, and have been collected together throughout Belau, as indicated by the locality data. In all other respects, including MSSC and hypopygium, the 2 forms are identical. I regard the 2 forms as conspecific, since there has been no significant separation in genitalia or MSSC. A similar antennal color polyphenism is found in other dolichopodids, especially Medetera apicalis Zetterstedt (see Bickel 1985) and M. austroapicalis Bickel (Bickel 1987).

Also of interest is the presence of 2–3 pairs of short black spinelike setae ventrally on abdominal segment 5. These partially enclose the epandrium when it is pressed against the abdominal venter. Amblypsilopus sabroskyi is close to A. subtilis Becker from Taiwan.


Description. Male: length: 4.3–4.5; wing: 3.4 × 1.2.

HEAD: vertex, frons and face below antenna shining metallic blue-green; clypeus with silvery pruinosity; palp and proboscis yellowish; scape and pedicel brown to yellowish; sometimes appearing yellow; 1st flagellomere brown; pedicel with single dorsal and ventral setae; 1st flagellomere subtriangular, arista short, dorsoapical, length more than 2× head height.

THORAX metallic blue-green with bronze reflections; pleura with gray pruinosity; setae black; 2 pairs strong ac; 2 strong posterior dc, with 3 weak hairlike dc anteriad (MSSC); 1 pa, 1sa, 2 sr, 2 hm, and 2 npl; lateral scutellars absent.

LEGS: CI, femora, tibiae, and basal tarsomeres yellow; CII, CIII, and distalmost tarsomeres brown; CI with pale anterior hairs and 3–4 strong pale distolateral setae; CIII with pale lateral setae; legs without significant MSSC: 5.5; 6.0; 5.0/ 2.0/ 1.0/ 0.8/ 0.5; II: 7.0; 10.0; 7.0/ 2.0/ 1.0/ 0.8/ 0.5; III: 8.5; 13.0; 5.0/ 2.5/ 1.5/ 1.0/ 0.5.

WING: hyaline; M, with elbow-shaped bend; m-cu straight; CuAx ratio: 1.8; lower calyptery yellow with pale setae; halter yellow.

ABDOMEN: metallic green, basal 1/2 of each tergum 2–6 and narrow band on adjacent tergum matte brown; tergum 7 trapezoidal, somewhat prolonged; hypopygium large, prominent, entirely yellow-brown (Fig. 7a); epandrium almost square; hypandrial hood short; hypandrial arm long, almost reaching apex of aedeagus; 2 short epandrial setae; epandrial lobe and surstylist fused, fork-shaped, with dorsobasal bean-shape projection (2 ventrobasal setae on fused epandrial lobe-surstylus possibly homologous to epandrial lobe setae); cercus distinctive,
with ventrobasal thumblike projection with apical bladelike seta and long seta, distal arm with complex setose apical club.

Female: similar to male except lacks MSSC, otherwise as noted: arista also dorsoapical; 4 strong dc present.


**Distribution:** Chuuk Group.

**Remarks.** *Amblypsilopus trukensis* is endemic to Chuuk and appears morphologically isolated from all other described Australasian *Amblypsilopus*. The hypopygium is very large and the cercus is unusually modified. Also of interest is the development of a dorsoapical arista, not unlike that of *A. pallidicornis*.

**Subfamily MEDETERINAE**

**Genus MEDETERA Fischer von Waldheim**


*Medetera* is the only genus of Medeterinae found in Micronesia. The genus is cosmopolitan, with more than 300 described species. Adults are often found on tree trunks where they adopt a characteristic vertical upright posture, leaning out from the trunk, a life stance easily recognized by the unaided eye. In the Holarctic Region, the larvae of some *Medetera* species are predators of scolytid bark beetle larvae within their galleries, and thus important biological control agents of these forest pests.

In Micronesia, the genus is represented by 3 species, 2 wide-ranging tramp species and 1 newly described endemic. Bickel (1987) treats all previously described Oriental and Australasian species.

**Key to Micronesian Medetera**

1. Scape and pedicel yellow; 1st flagellomere black; vein M bowed posteriorly; cercus divided into articulating basal and distal sections, distal cercus expanded; TIII with strong subapical dorsal seta ..................
   .................................................................................................................. 25. *M. salomonis* Parent
   Antenna entirely black; vein M bowed anteriorly; cercus undivided; TIII without strong subapical dorsal seta ..............................................2
2. Lateral scutellars about 2/3 length of medians; thorax with 3 bronze vittae; large, length > 2.5; 4–6 strong dorsoventrals (dc) present, decreasing in size anteriorly; male IIIt, with distinct basal tooth; hypopygium pyriform, inflated basally; epandrial lobe bases fused, forming elongate collar from which the 2 setae arise; epandrial seta absent......

..............................................................................................26. *M. grisescens* de Meijere
Lateral scutellars about 1/3 length of medians; thorax unicolorous dark green; small, length <1.8; 2 strong posterior dc border mesoscutal depression, with anterior dc short; male IIIt, without tooth; hypopygium flattened; epandrial lobes free; epandrial seta present ..............27

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25. *Medetera salomonis* Parent

*_Medetera salomonis* Parent 1941: 233.


**Additional Records.** CHRISTMAS I: various locales, IV.1989 (ANIC).

**Distribution.** Solomon Is, New Guinea, Christmas I, Australia (Qld, NSW), Philippines, Vanuatu, Fiji, Samoa, French Polynesia, Tokelau, Guam, Palau, Caroline Is, and Marshall Is.

**Remarks:** *Medetera salomonis* is a widely distributed and distinctive Pacific species found on many isolated atolls. It also occurs on Christmas Island in the Indian Ocean, but has not been recorded from the Sunda Archipelago, the usual source area for this insular fauna.

26. *Medetera grisescens* de Meijere

*_Medeterus grisescens* de Meijere 1916: 259.

**Micronesian material.** BONIN IS: Chichi Jima, Omura, 2 to 25.V.1958; VOLCANO IS: Iwo Jima: 1–5.IX.1945. NORTHERN MARIANA IS: Saipan, Garapan, 29.III.1946. (8t, 5t, all BPBM).

**Distribution.** Seychelles, and widely across Oriental and Australasian regions, including eastern Australia, New Caledonia, Fiji, Samoan Is, Hawaiian Is, Ryukyu Is, Bonin Is, Volcano Is, and Saipan.

**Remarks.** *Medetera grisescens* is found only on the most northwestern Micronesian archipelagos, and probably originated from a western source area such as the Ryukyus.

27. *Medetera babelthaup* Bickel, n. sp.

**Description:** Male. Length: 1.6; wing dimensions: 1.2 × 0.5.

HEAD: frons, face, and clypeus dark metallic green with brownish pruinosity; proboscis dark brown; antenna black; arista about as long as head height.

Fig. 8a
Figure 8.  a. *Medetera babelthaup*, Babelthaup, Palau; hypopygium, left lateral. b–c. *Syntormon flexibile*, Bonin Group; b. hypopygium, left lateral; c. hypopygium, ventral; d. male antenna, right lateral. e–h. *S. boninense*, Bonin Group, e. hypopygium, left lateral; f. male antenna, right lateral; g. female antenna, right lateral; h. female head, anterior.
THORAX: dorsum dark metallic green with bronze reflections; pleura covered with brownish pruinosity; setae black; 10–12 pairs ac, increasing in length posteriorly, posteriormost equalling width of ac band; 2 strong dc bordering mesonotal depression, anterior dc as short setulae; lateral scutellars reduced to weak hairs.

LEGS: coxae and femora brownish to "knees"; remainder of legs yellow, distalmost tarsomeres darkened; relative podomere ratios as I: 1.2; 0.9; 0.4/ 0.3/ 0.2/ 0.2; II: 1.1; 1.2; 0.6/ 0.4/ 0.3/ 0.2/ 0.2; TII with single ad at 1/4; III: 1.3; 1.4; 0.2/ 0.6/ 0.4/ 0.2/ 0.2.

WING: CuAx ratio: 0.4; lower calypter yellow with fan of pale setae; halter yellow.

ABDOMEN: dark metallic green with short black setulae; hypopygium dark brown with yellowish cerci (Fig. 8a); hypandrium elongate; aedeagus elongate with curved tip and side lamellae; ventral margin epandrium straight, epandrial lobes and epandrial seta arising on apparent prominence; long epandrial seta adjacent to epandrial lobes; basal epandrial lobe distinctly longer than distal; epandrial lobe bristles strong, simple; surstylus fused to epandrium; dorsal surstylar arm curved medially, with stout setae; middle surstylar arm narrow, pedunculate, with apical seta, ventral surstylar arm tapering, with external seta; cercus stout, curved, with strong subapical dorsal seta and 3 apical bladelike setae.

Female: similar to male.


Distribution. Palau, Yap Group, and Caroline Atolls.

Remarks. Medetera babelthaup is almost identical to the widespread Oriental-Australasian M. minima de Meijere and is possibly derived from that species. The 2 species differ primarily in details of the hypopygium, with M. babelthaup having the epandrial lobes arising on a prominence, a longer epandrial seta, elongate basal epandrial lobe, and slightly different configuration of the surstylus and cercus (cf. Fig. 8a with figures in Bickel, 1987).

Subfamily SYMPYCNINAE
Genus SYNTORMON Loew

The genus Syntornon is distinguished by the thumblike projection of the pedicel onto the first flagellomere. The genus includes species in all zoogeographic regions, but most are described from the Palearctic Region.
The 2 species considered here occur only in the Bonin Islands, the northwesternmost Micronesian archipelago, and close to a Palearctic-northern Oriental influence. *S. flexibile* has a far-flung distribution, and is probably the ancestral species from which the endemic *S. boninense* was derived. The 2 species share the following characters: It, with ventroapical swelling, FII with long anteroventral setae, and IIIt2 with ventral digitiform projection (all MSSC).

Additionally, females of both species have a pair of setae projecting from the face near the flexion of the clypeus (FSSC) (Fig. 8h). The key in Negrobov (1975) indicates that females of the following Palearctic species also have such facial setae: *S. tabarkae* Becker, *S. mikii* Strobl, *S. macula* Oldenberg, and *S. setosus* Parent. The tiny *Nanomyina barbata* (Aldrich) (Sympycninae, from coastal eastern North America) has 2 rows of facial setae, but in both sexes.

**Key to Male Micronesian *Syntormon***

1. First flagellomere short; arista length about 1 1/2 head height, with distinct flattened nodes at 1/2 and apex (Fig. 8f); hypopygium (Fig. 8e)...

28. *Syntormon boninense* Bickel, n. sp.

Figs 8e–h

Description. Male: length: 3.0; wing: 2.0 × 1.0.

HEAD: frons metallic blue-black with lateral slope bare; eyes joined anteriorly along face and clypeus, face reduced to small silvery triangle beneath antennae (MSSC); palp and proboscis brown; antenna black; pedicel with long projection into center of 1st flagellomere (MSSC); 1st flagellomere short, subtriangular, with elongate arista, length about 1 1/2 head height; arista with distinct flattened nodes at 1/2 and apex (Fig. 8f)(MSSC); ventral postorbitals pale, becoming black dorsad.

THORAX: dull metallic green with dusting of gray pruinosity; posterior mesonotum slightly flattened; setae black; single row of 15 short ac; 6 strong dc, posteriormost pair laterally offset; median scutellars strong, laterals as weak side hairs.

LEGS: CI yellow with 3 short black apical setae; CII and CIII yellowish; femora, tibiae, and It and IIIt yellow; IIIIt yellow to brownish; I: 6.5; 5.0; 2.5/ 1.5/ 1.0/ 0.8/ 0.5; TI with dorsal seta and 1/2 and subapically; It, with ventroapical swelling with whitish ventral pile (MSSC); II: 6.5; 7.0; 3.1/ 1.5/ 1.0/ 1.0/ 0.5/ 0.5; FII with 5 strong pale anteroventral setae from 1/3 to 1/2, 1 of which is much longer than others (MSSC), and with anterior subapical seta; TII with dorsals at 1/4 and 4/5, ventrals at 1/2 and apically; III: 7.5; 9.0; 2.0/ 1.0/ 1.5/ 1.0/ 0.5; FIII with anterior subapical seta; IIIIt gradually expanding distad, with strong subapical dorsal seta; IIIIt, swollen, black, with pale ventral crocheted hairs (MSSC); IIIIt2
with ventral digitiform projection, with strong black anteroapical seta (MSSC); IIIt, with pale ventral crocheted hairs.

WING: hyaline; CuAx ratio: 0.8; lower calypter yellow with fan of pale setae; halter yellow.

ABDOMEN: somewhat dorsoventrally flattened; metallic blue-green with gray pruinosity; hypopygium dark brown (Fig. 8e); epandrium subrectangular; hypandrium simple; surstylus with faint suture at joining with epandrium; surstylus with 2 distinct arms, slightly weaker dorsal arm with strong external seta, larger ventral arm with setae as figured; cercus short, blunt and setose.

Female: similar to male but lacks MSSC and as noted: face wider, with distinctive pair of strong projecting black setae (Fig. 8h) (FSSC); pedicel with weaker intrusion into 1st flagellomere; 1st flagellomere shorter, arista setose (Fig. 8g); CI and CIII yellowish to brownish; It., FI, and IIIt unmodified [Females of S. flexibile and S. boninense are not clearly separable; in view of the small number of S. flexibile males, I consider all females to be S. boninense and have based this description on a female preserved in copula with male S. boninense].


Distribution. Bonin Is.

Remarks. Syntormon boninense is confined to the Bonin Islands where it seems abundant. It probably derived from the more widespread but sympatrically-occurring S. flexibile (they were collected together at the same site). The 2 species have similar leg MSSC and hypopygia, but S. boninense has a more derived male antenna.

The diagnostic male arista of S. boninense, with its flattened flags at midpoint and the apex, has not been recorded for any other Syntormon species. However, similar modifications occur in the Neotropical Sympycnus andicola Van Duzee as well as some undescribed Australian sympycnine species.

29. Syntormon flexibile Becker

Syntormon flexibilis Becker, 1922: 55.
Syntormon miritarsus Parent, 1926: 133, n. syn.
Syntormon miritarsus var. flavomaculatus Parent, 1926: 134, n. syn.
Syntormon distortitarsis Van Duzee, 1933; 338.
Syntormon mycklebusti Harmston and Miller, 1966: 90, n. syn.

Description. Male: length: 3.0; wing: 2.0 × 1.0; similar to S. boninense except as noted:

HEAD: face slightly narrowed beneath antenna; face and clypeus with dense silvery pruinosity; palp and proboscis brown; antenna black; pedicel with long projection into center of 1st flagellomere (MSSC); 1st flagellomere tapering, elon-
gate, 4× as long as basal width (Fig. 8d) (MSSC); arista dorsoapical, simple, bare, short, about 1/2 head height; ventral postorbitals pale, becoming black dorsad.

LEGS: CI yellow with 3 short black apical setae; CII and CIII dark green; CIII with black lateral seta; femora, tibiae, and It and IIIt yellow; IIIt yellowish to brownish podomere ratios similar; FI with posterior subapical seta; TI with dorsal seta and 1/2 and subapically; It, with ventroapical swelling with whitish ventral pile (MSSC); IIIF with 3 strong yellowish anteroventral setae from 1/3 to 1/2 (MSSC); IIII with anterior subapical seta; TII with dorsals at 1/4 and 4/5, ventrals at 1/2 and apically; IFIII with anterior subapical seta; TII primally expanding distad, with weak subapical and dorsal setae; IIII, swollen, flattened with subapical posterior crest (MSSC); IIII2 with ventral digitiform projection (MSSC).

ABDOMEN: metallic blue-green with gray pruinosity; hypopygium dark brown (Fig. 8b); epandrium subrectangular; hypandrium with lateral and dorsal weakly sclerotized area appearing leaflike in ventral view (Fig. 8c); surstylus with faint suture at joining with epandrium; surstylus with 2 arms, weaker dorsal arm often resting internal of larger ventral arm, setae as figured; cercus short, simple, setose.

Female: see under S. boninense.

Type material. The types of Syntormon flexibile are from Taiwan (DEI, not seen).

Parent described Syntormon miritarsus and a color form, var. flavomaculatus, from specimens collected at the mouth of the Yangtze River, China (NHMV, examined). The species (miritarsus) is conspecific with S. flexibile, and flavomaculatus is within the limits of intraspecific variation for flexibile. C. E. Dyte alerted me to these taxa.

Harmston and Miller (1966) described Syntormon myckebusti from 2 males and a female collected at Ilwaco, Washington (CAS, examined). The male was described as having the middle tibia with a “row of three long, slender black bristles at the middle on lower edge.” These are in fact on the middle femur and are brownish rather then black (P. A. Arnaud, Jr., pers. comm.). This species is here regarded as a new synonym of S. flexibile.

Negrobov described Syntormon lindneri from specimens collected in the Amur and Maritime Provinces of the Soviet Far East (Zoological Institute, Leningrad, not seen). His description and figures are identical with S. flexibile and I thus regard lindneri as a junior synonym.


Distribution. Taiwan, coastal China, USSR [former] (Amur and Maritime Provinces), Bonin Is, Hawaiian Is, Canada (B.C.), U.S.A. (Wash.), Australia (NSW), New Caledonia, and St. Helena I.
Remarks. *Syntormon flexibile* is widespread around the Pacific Basin, including oceanic islands, and also the South Atlantic Ocean. Searches for this species in littoral habitats will probably show it to be even more widespread, possibly cosmopolitan. *S. flexibile* is very close to *S. boninense* (q.v.).

Zoogeography

The 3 dolichopodid subfamilies considered here comprise 29 species, of which 14 have extralimital distributions.

I. The extralimital species show the following affinities and distribution patterns:

A. Widespread tropical Pacific. *Medetera salomonis* and *Amblypsilopus pallidicornis* are tropical Australasian species, which are found in a broad band across southern Micronesia as part of a wider east-west distribution.

B. Northern Oriental-eastern Palearctic. *Syntormon flexibile* has reached the Bonin Islands but has been unable to penetrate further into Micronesia. Although *Medetera grisescens* is a common Oriental-Australasian species whose distribution includes many Indian and Pacific oceanic islands, it also only reached Saipan and the Bonin Islands from the North, probably from the Ryukyus, where it also occurs.

C. Tropical Oriental. *Amblypsilopus austerus* is found in Sabah, Guam, and Saipan, while *Chrysosoma pelagica* occurs in the Philippines and Guam. The widespread Oriental-Australasian *C. leucopogon* probably reached Belau from the Orient or Wallacea.

D. Papuan-northern Australia. The widespread *Plagiozelma flavipodex* probably entered Micronesia from New Guinea. *Amblypsilopus biprovincialis* has the unusual disjunct distribution of northern Australia and Truk, but possibly occurs in intervening areas.

E. Eastern Melanesia. *Chrysosoma mutilatum* and *C. ludens* entered the Carolines directly from the Solomons-Bismark Archipelago region. *C. molestum* probably reached eastern Micronesia (Kiribati) from Vanuatu. *Krakataua evulgatum* is found throughout Melanesia and Micronesia, as far north as the Northern Marianas.

F. Western Polynesia. *Chrysosoma complicatum* appears to have spread across Micronesia from an eastern Fijian-Samoan source. Although extraordinarily widespread, common and found on many isolated atolls, it does not appear to have reached Belau.

II. The endemic Micronesian species show the following patterns:

A. Widespread within Micronesia. *Krakataua micronesia* is found in tropical western Micronesia, and Wake and Midway atolls.

B. Insular endemics. Most endemic Micronesian species are confined to the high islands, with Guam and Babelthaup having the richest faunas. Chuuk, Kosrae, Yap, Pohnpei, Agrihan, and the Bonin Group also have insular endemics.
Of particular interest is *Amblypsiopus trukensis* from Truk, which appears to have no close relatives in the Australasian and Oriental faunas.

C. The Micronesian low islands and atolls have no endemic species, and only maintain widespread tramp species which presumably dispersed there from more diverse habitats.

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Reference to the location of material cited in the text uses the institutional abbreviations designated below. I would like to thank the respective curators of these institutions (listed below) for information and the loan of specimens. American Museum of Natural History, New York; D. Grimaldi (AMNH); Australian Museum, Sydney; D. K. McAlpine (AMS); Australian National Insect Collection, CSIRO, Canberra; D. H. Colless, Z. Liepa (ANIC); The Natural History Museum, London; A. Pont, J. Chainey (BMNH); Bishop Museum, Honolulu; N. Evenhuis (BPBM); California Academy of Sciences, San Francisco; P. Arnaud (CAS); Deutsche Entomologische Institut, Eberswalde-Finow; B. Ewald (DEI); Field Museum of Natural History, Chicago (FMNH); Naturhistorika Riksmuseet, Stockholm; P. Persson (NRS); Naturhistorisches Museum, Vienna; R. Contreras-Lichtenberg (NHMV); National Museum of Natural History, Smithsonian Institution, Washington, D.C.; F. C. Thompson (USNM); Zoologisches Museum, Humboldt Universitat, Berlin; H. Schumann (ZMHB); Zoologisk Museum Universitets Copenhagen; V. Michelsen (ZMUC).

**References**


Bezzi, M. 1928. Diptera Brachycera and Athericera of the Fiji Islands based on material in the British Museum (Natural History). British Museum (Natural History), London. 220 p.


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