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### THE TRIBE CENCHREINI WITH SPECIAL REFERENCE TO THE CENCHREA COMPLEX (HOMOPTERA, DERBIDAE).

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At present the generic complex of *Cenchrea* and related groups is on dubious ground. The contemporary workers' knowledge is limited to the fact that *Herpis* Stål is characterized by a median facial carina, *Cenchrea* Westwood by a short subcostal cell, and *Phaciocephalus* Kirkaldy by a long cell. It would be a gross exaggeration to assume that this is even half the story or that the set up is thus simple. No one can be sure whether two or a half dozen generic groups are involved.

No person should have had a clearer concept of this complex than Frank Muir. Not only had he seen a wealth of material but he was privileged to have examined many of the historic types. It is hoped that this paper may make a little clearer the generic concepts held by Muir since interpretation of genera and species herein contained are based on a study of his material and types available in the H. Osborn collection. All types are tentatively retained by the writer unless stated to the contrary in the script.

Until proved different I cannot see how any one can dispute the statement that *Herpis* Stål and *Syntames* Fowler are the same.<sup>1</sup> *Herpis* Stål represented by *Syntames sufflavus* Muir and *S. chiri-quensis* Fowler (*nigrolineatus* Muir) both have a median facial carina, but not necessarily for full length, and the lateral carinae are thin and delicate. The medius is five- or six-branched and the veins Cu<sub>1</sub> and Cu<sub>1+2</sub> may or may not join before the wing margin. The aedeagus is bilaterally symmetrical, the medio-ventral process of the male pygofer is simple and usually small, and the forceps do not possess an acute inner basal tooth. Belonging in this group

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<sup>1</sup> Muir, F., Proc. Ent. Soc. Wash., No. 1, 26: 16, 1924.

are *fusco-vittata* Stål, *delicatus* Fowler, *chiriquensis* Fowler, *sufflavus* Muir, and *albidus* Metcalf, and possibly *fuscus* Metcalf but this species may belong elsewhere since no mention is made of a median facial carina.

Muir evidently had some doubt that *Cenchrea* Westwood was distinct from *Phaciocephalus* Kirkaldy but never, as far as I can find, differentiated the two other than to state that the former had a short subcostal cell and the latter a long cell. Unfortunately such a key character by itself permits one wing of a species to fall in one genus and the other wing in another genus. After examining "*P. ? bipunctata*" Muir I am also at loss to know just what constitutes a long or short cell.

*Phaciocephalus* Kirkaldy represented by *parishi* Muir (and *P. ? bipunctata* Muir) has a rather narrow and deeply incised crown and face with the lateral carinae heavily pustulate. The aedeagus appears to be bilaterally symmetrical. (The genitalia were not cleared but the forceps in both types are spread enough to permit a relatively good view of the aedeagus.) Perhaps the best description is obtained from Kirkaldy<sup>2</sup> by following the key characters since the original description is nil. "Last segment of labium annuliform. Anal vein of tegmen granulate. Pronotum laterally laminate, sinuate, recurved, partly enclosing antennae; vertex not truncate anteriorly. Lateral keels of frons flattening out apically." *Basileocephalus* is differentiated by having the lateral keels of frons continuing to apical margin. Kirkaldy's figures of the type species *vitiensis* (Pl. XIX, Figs. 12-14) show crown and facial characters very similar to *parishi* Muir. On the same plate (Fig. 20) is figured the entire specimen of *miltodia* which gives some idea of the wing venation. The first claval vein (Anal vein of tegmen) appears granulate. The text figure (No. 3, 3a, p 166) of the elytra of *vitiensis* is according to "F. Muir, 4/3/17" in a note to H. Osborn, in error and should read "*Suva koebelei*." Thus from the evidence presented by Muir and Kirkaldy we have to conclude that some American and South Pacific species are congeneric until such time as a study of the phallic characters should prove otherwise. Unfortunately the present conception of *Phaciocephalus* as represented in the Western Hemisphere contains at least three distinct generic groups.

The first represented by *parishi* Muir with rather narrow and

<sup>2</sup> Kirkaldy, Report of the work of the Experiment Station of the Hawaiian Sugar Planters' Association—Leafhoppers—Supplement. Bull. No. 3, pp. 163-164, 1907.

deeply incised crown and face and possessing a symmetrical aedeagus.

The second represented by *fuscus* Metcalf with rather broad, smooth, slightly transversely convex face, and crown scarcely incised, and possessing a symmetrical aedeagus.

The third represented by *uhleri* Ball with crown and face separated by a more or less distinct ridge and the lateral margins elevated and heavily pustulate, and possessing an asymmetrical aedeagus.

#### *Herpis fusco-vittata* Stål (Pl. I, Figs. I, A, & B)

This specimen tentatively determined as Stål's species is similar in appearance to *delicatus* Fowler but the fuscous markings are broader and the placement is different. There is a fuscous dash present between the claval veins, another along the cubitus extending a little beyond the fork thence proceeding diagonally to the costal and apical margins. The apex of the cubitus is also broadly fuscous. The median facial carina may be too prominent to be this species after Muir's statement of a faint carina.

Unique male from Coroico, Bolivia (H. Osborn collection).

#### *Contigucephalus* n. gen.

Vertex deeply incised caudad, flattening cephalad. Lateral carinae of frons very thin, elevated, contiguous in basal half, separating and flattening apically, sharply incurved to clypeus. Clypeus weakly tricarinate. A small rounded papilla present on side of face below apical margin of eye. Pronotum tricarinate just caudad of vertex; with antennal foveae well developed. Mesonotum appearing tricarinate. Elytra and wing of equal length; clavus closed, subcostal cell very short; venation similar to *P. ? bipunctata*. Aedeagus of male bilaterally symmetrical.

Type: *Contigucephalus rubravenosus* n. sp.

*C. rubravenosus* n. sp. (Pl. I, Figs. 5, A-D)

Length 4.5 - 5 mm. General color light yellow to white with black eyes. A scarlet stripe present basad across elytra and mesothorax, another stripe present across furcation of main veins, and a large scarlet spot present at apex of clavus extending almost half way across the elytra. Apical veins broadly red and a stigmal-like spot present in the apex of the fifth or sixth medial cell.

Lateral margins of male pygofer cut away basad; medio-

ventral process very small. Forceps with basal tooth appearing to arise from dorsal margins. Aedeagus symmetrical. Caudal flap of female pregenital plate roundedly produced.

Male holotype and female allotype from Costa Rica (P. Schild). H. Osborn collection.

*Phaciocephalus* Kirkaldy  
"fuscus group"

*P. minutianus* n. sp. (Pl. I, Figs. 2, A-C)

Length 5.5 mm. Head and pronotum light yellow; mesonotum deep yellow; elytra light fuscous with veins broadly white. Female darker than male.

Crown and face broad, smooth; lateral carinae thin, not prominent. Subcostal cell long.

Anal segment of male very small. Medio-ventral process of pygofer large, rectangular. Forceps long, slender, with two processes on ventral margins within. Aedeagus symmetrical. Caudal flap of female pregenital plate semicircular.

Male holotype from B. Esperanza, Guatemala, 12-14-25 (M. F. 892, Dampf), female allotype from Vergel, Chiapas, 6-19-36 (M. F. 4503, Dampf).

"uhleri group"

*P. uhleri* Ball (Pl. I, Figs. 4 & A, Pl. II, Figs. 1, A-C)

The basal spurs of the male forceps are serrate. The medio-ventral process of the pygofer is simple and rounded. Habitat southern U. S. from Georgia to Kansas.

*P. brunneus* McAtee (Pl. I, Figs. 8 & A)

Related to *uhleri* in that the basal spurs of the male forceps are serrate; however the medio-ventral process of the pygofer is ornate. Dr. R. I. Sailer of the U.S.N.M. has kindly sketched the ventral aspect of the holotype male genitalia and furnished the following data: U.S.N.M. type #27359. Baker #1785 Medellin State, A. Th. Heyde, 1895; #27359 Vera Cruz, Mex., H. Heyde, summer 1896.

*P. mcateeii* Dozier (Pl. II, Figs. 2, A-C)

This species is at present separated from *fulva* Van Duzee, which probably belongs in the "parishi group," by its smaller size. The genitalia are distinct. Drawing of specimen from Georgia (P. W. Fattig).

*P. texanus* n. sp. (Pl. II, Figs. 3, A-C)

Length 3.5-4.5 mm. Head and thorax orange; elytra yellowish with two subapical black spots along costa.

Anal segment of male with rather long acute preapical flaps ventrad. Medio-ventral process of pygofer rectangular, slightly notched apically. Basal process of forceps simple, acute. Pregenital plate of female with rectangular caudal flap.

Male holotype, 5-8-35 (J. N. Knull) female allotype 8-8-37 (D. J. & J. N. Knull), and paratypes on both dates from Brownsville, Texas. Types in Ohio State University, Columbus, Ohio.

*P. triatus* n. sp. (Pl. II, Figs. 4, A-C)

Length 4-4.5 mm. Head and pronotum light yellowish; mesonotum deep orange with apex lighter caudad; elytra broadly white along costal margins thence suddenly fading to light smoky along inner margins, this fuscous stripe diffusing near the apex; apex of elytra in the females narrowly fuscous.

Medio-ventral process of male pygofer with apex trifurcate, outer extensions acute, median extension broadly rounded.

Male holotype, female allotype, and paratypes from Belice, British Honduras, 9-6-25 (M. F. 671, Dampf).

*P. quadrispinosus* n. sp. (Pl. II, Figs. 6, A & C)

Length 3.5 mm. Head and pronotum lighter yellow than mesonotum. Elytra milkish, apical margins infuscate; subcostal-radial stem black, remainder of veins yellowish.

Anal segment of male with a pair of large, acute, preapical flaps.

Male holotype from Huixtla, Chiapas, 6-5-35 (M. F. 4452, Dampf).

The female associated with this male is much larger, measuring 5 mm., but the markings are identical. B. Esperanza, Guatemala, 12-14-25 (M. F. 892, Dampf).

*P. nigripennis* n. sp. (Pl. II, Figs. 5, A-C)

Length 4.5-5 mm. Head except frons, pronotum, and legs yellow; remainder fuscous. Female darker than male with only lateral carinae of crown and face, and auricular cavities of pronotum yellow.

Anal segment of male greatly produced ventrad before acute apex. Medio-ventral process of pygofer ornate, flat apically. Basal process of forceps simple, acute. Pregenital flap of female broadly rounded.

Male holotype, female allotype, and paratypes from Jesus Carranza, Veracruz, 10-14-41 (DeLong, Good, Caldwell, & Plummer), male paratype from Tamazunchale, San Luis Potosí, 11-5-38 (Caldwell), male paratype Finca Aurora, Chiapas, 6-13-25 (M. F. 4552, Dampf), and one paratype Huétamo, Michoacán, 8-22-33 (M. F. 3100, Dampf).

*P. nigripennis* var. *flavipennis* n. var.

Appearing dusky-yellow over all with orange mesonotum. Aedeagus of male differing from variety *nigripennis* by one process being of different shape and size.

Male holotype and female allotype from Tamazunchale, San Luis Potosí, 8-29-39 (F. M. & D. M. DeLong). Paratypes from Finca Aurora, Chiapas, 6-18-35 (M. F. 4552), Finca Belém, Chiapas, 7-24-35 (M. F. 4628), El Dorado, Sinaloa, 1-22-30 (M. F. 1565) and 12-23-28 (M. F. 269), Potrero, Veracruz, 10-28-24 (M. B. 100) and San José, Guatemala, 10-19-25 (M. F. 736, Dampf); Tehuantepec, Oaxaca, 10-13-41 (DeLong, Good, Caldwell & Plummer), and Escuintla, Guatemala, 3-8-42 (Plummer).

*P. anastomosus* n. sp. (Pl. II, Figs. 7, A-C)

Length 4 mm. Fuscous over all, slender.

Anal segment of male with knob-like preapical projections on ventral margins. Medio-ventral process of pygofer scarcely ornate. Basal process of forceps simple, acute. Aedeagus with six or more processes.

Holotype male, Lake Petén, Guatemala, 11-19-25 (M. F. 811, Dampf).

*P. punctus* n. sp. (Pl. II, Figs. 8, A & C)

Length 4.5 mm. Head and pronotum light yellow, remainder of thorax orange. Elytra whitish becoming dusky apically, apical cells next to costa fuscous.

Anal segment of male long, scarcely produced on ventral margins before apex. Medio-ventral process of pygofer simple, slightly enlarged apically. Basal spur on forceps simple. Caudal flap of pregenital plate of female appearing truncate apically.

Male holotype from Tamazunchale, San Luis Potosí, 9-25-41 (DeLong, Good, & Caldwell), female allotype same locality, 9-14-39 (DeLong), one doubtful female from Santa Engracia, Tamaulipas,

11-11-38 (Caldwell), and one from Veracruz, 10-9-41, (DeLong, Good, Caldwell & Plummer).

*P. dubius* n. sp. (Pl. II, Figs. 9, A-C)

Length 6-7 mm. Head and pronotum light. Lateral carinae of face black. Mesonotum orange. Elytra whitish with costal margin broadly infuscate, especially apically.

Anal segment of male straight, long. Basal spurs of forceps rather large, scarcely acute apically. Aedeagus asymmetrical, with basal processes. Caudal flap of female pregenital plate elongate, truncate.

Holotype male from Finca Victoria, Chiapas, 6-25-35 (M. F. 710), female allotype and female paratypes from Vergel, Chiapas, 6-4-35 (M. F. 4430), 6-25-35 (M. F. 4642), 5-13-35 (M. F. 4152), 5-20-30 (M. F. 4223) and Finca Vergel, Chiapas, 6-29-35 (M. F. 4351, Dampf).

This species differs from the others in the *uhleri* group by the much larger size, the crown is scarcely differentiated from the face, the anal segment of the male lacks the subapical swellings on the ventral margins, the basal processes on the forceps are less basal and not acute, and the aedeagus while asymmetrical is of different form.

*Cedusa* Fowler

The genus *Cedusa* Fowler and members of the "*uhleri* group" are as far known the only *Cenchreini* in the Americas possessing asymmetrical aedeagi; however *Cedusa* is well defined by possessing subantennal processes on the cheeks and lacking antennal foveae on the pronotum.

*C. neodigitata* n. sp. (Pl. I, Figs. 6, A-C)

Length 4 mm. Dark over all. Face very broad, scarcely narrowed between the eyes.

Forceps of the male deeply notched on inner margins; apex scarcely hooked; latero-dorsal margin with long, curved, acute process arising near the base and extending apically the entire length of the forcep. Aedeagus with small subbasal spur in addition to the apical processes.

Holotype male "Reventazón, Costa Rica," Osborn collection.

*Persis* Stål

*Persis* Stål represented by *fuscinervis* Muir has the antennal foveae truly vestigial while *stali* Muir has the ventral margins of

the foveae quite raised and the dorsal margins distinct. They both agree in having the face much narrowed and cleft and the head acutely angled in profile. The aedeagus in both is symmetrical. There can be no doubt that these two are congeneric; therefore the presence or absence of antennal foveae on the pronotum is, in this case, scarcely a pertinent generic character. The following species has the antennal foveae more prominent than *stali* but less so than in the *Phaciocephalus*. It is possible that this species may be no more than a variety of *stali* as there is only a damaged female available for comparison.

**P. foveatis** n. sp. (Pl. I, Figs. 7, A-C)

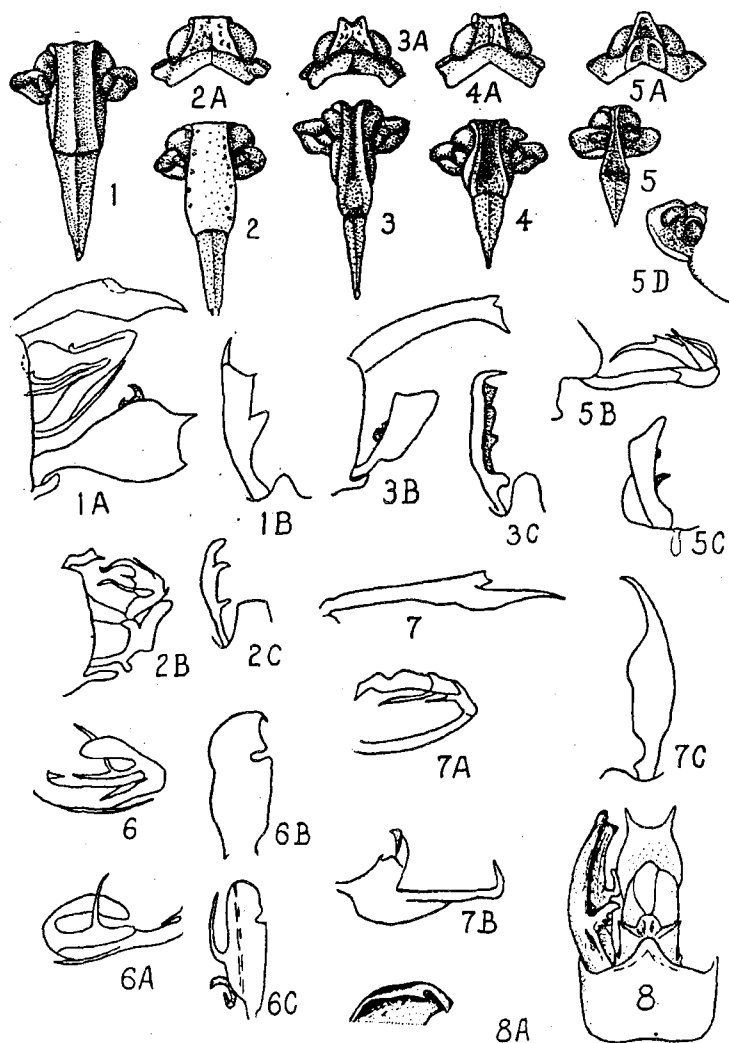
Length 7.5-8.5 mm. General color of body orange. Vertex, center of pronotum, median of mesonotum, and antennal foveae white. Lateral carinae of face narrowly black. Elytra and veins white with median portion of cells fuscous.

Anal segment of male long, slender, deeply bifid apically. Medio-ventral process of pygofer small. Forceps with apical third long, slender; inner margins with small but blunt basal processes; dorsal margins greatly produced dorsad. Aedeagus symmetrical. Caudal flap of female pregenital plate sub-spherical.

Holotype male, allotype female, and paratypes from Jesus Carranza, Veracruz, 10-14-41 (DeLong, Good, Caldwell & Plummer), male paratype from Huixtla, Chiapas, 9-3-37 (M. F. 2740, Dampf) and female paratypes from Sochilapa, Oaxaca, 10-13-41 (DeLong, Good, Caldwell & Plummer).

PLATE I

- Fig. 1. *Herpis fusco-vittata* Stål. Face.  
 Fig. 1-A. Profile of male genitalia.  
 Fig. 1-B. Ventral aspect of forcep and medio-ventral process.  
 Fig. 2. *Phaciocephalus minutianus*. Face.  
 Fig. 2-A. Dorsal aspect of crown and pronotum.  
 Fig. 2-B. Profile of male genitalia.  
 Fig. 3-C. Ventral aspect of forcep and medio-ventral process.  
 Fig. 3. *Phaciocephalus parishi* Muir. Face.  
 Fig. 3-A. Same as 2-A.  
 Fig. 3-B. Same as 2-B.  
 Fig. 3-C. Same as 2-C.  
 Fig. 4. *Phaciocephalus uhleri* Ball. Face.  
 Fig. 4-A. Same as 2-A.  
 Fig. 5-A. *Contigucephalus rubravenosus*. Face.  
 Fig. 5-A. Same as 2-A.  
 Fig. 5-B. Same as 2-B.  
 Fig. 5-C. Same as 2-C.  
 Fig. 5-D. Profile of face.  
 Fig. 6. *Cedusa neodigitata*. Left view of aedeagus.  
 Fig. 6-A. Right view of aedeagus.  
 Fig. 6-B. Ventral aspect of left forcep.  
 Fig. 6-C. Lateral aspect of left forcep.  
 Fig. 7. *Persis foveatis*. Left side of male anal segment.  
 Fig. 7-A. Left side of aedeagus.  
 Fig. 7-B. Left side of left forcep.  
 Fig. 7-C. Ventral aspect of right forcep.  
 Fig. 8. *Phaciocephalus brunnea* McAtee. Ventral aspect of holotype male genitalia. (R. I. Sailer).  
 Fig. 8-A. "Apex of right pygofer." (Probably apex of forceps?) (R. I. Sailer.)



## PLATE II

- FIG. 1. *Phaciocephalus uhleri* Ball. Left side of aedeagus.  
 FIG. 1-A. Right side of aedeagus.  
 FIG. 1-B. Medio-ventral process. (Also basal process of forcep.)  
 FIG. 1-C. Left side of male anal segment.  
 FIG. 2. *Phaciocephalus mcateeii* Dozier. Same as 1.  
 FIG. 2-A. Same as 1-A.  
 FIG. 2-B. Same as 1-B.  
 FIG. 2-C. Same as 1-C.  
 FIG. 3. *Phaciocephalus texanus*. Same as 1.  
 FIG. 3-A. Same as 1-A.  
 FIG. 3-B. Same as 1-B.  
 FIG. 3-C. Same as 1-C.  
 FIG. 4. *Phaciocephalus triatus*. Same as 1.  
 FIG. 4-A. Same as 1-A.  
 FIG. 4-B. Same as 1-B.  
 FIG. 4-C. Same as 1-C.  
 FIG. 5. *Phaciocephalus nigripennis*. Same as 1.  
 FIG. 5-A. Same as 1-A.  
 FIG. 5-B. Same as 1-B.  
 FIG. 5-C. Same as 1-C.  
 FIG. 6. *Phaciocephalus quadrispinosus*. Same as 1.  
 FIG. 6-A. Same as 1-A.  
 FIG. 6-C. Same as 1-C.  
 FIG. 7. *Phaciocephalus anastomosus*. Same as 1.  
 FIG. 7-A. Same as 1-A.  
 FIG. 7-B. Same as 1-B.  
 FIG. 7-C. Same as 1-C.  
 FIG. 8. *Phaciocephalus punctus*. Same as 1.  
 FIG. 8-A. Same as 1-A.  
 FIG. 8-C. Same as 1-C.  
 FIG. 9. *Phaciocephalus dubius*. Same as 1.  
 FIG. 9-A. Same as 1-A.  
 FIG. 9-B. Same as 1-B.  
 FIG. 9-C. Same as 1-C.

