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Research

Revision of the Neotropical Exoristini (Diptera, Tachinidae): The status of the genera *Epiplagiops* and *Tetragrapha*

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ABSTRACT. The monotypic genera *Epiplagiops* Blanchard, 1943 and *Tetragrapha* Brauer and Bergenstamm, 1891 are revised. Both are invalidated and synonymized with *Chetogena* Rondani, 1856. Their type-species, *Epiplagiops littoralis* Blanchard, 1943 and *Tetragrapha tessellata* Brauer and Bergenstamm, 1891, are studied, redescribed, illustrated, and transferred to *Chetogena.* A lectotype is designated for *T. tessellata.*

Key Words: *Chetogena*, Exoristinae, synonymy, combination, taxonomy

The Neotropical fauna of Tachinidae is known for being composed by many endemic, monotypic genera. The number of genera represented by only one species is difficult to estimate, and a detailed revision of them is urgently needed. Even though most of these genera are monotypic because the family is poorly studied, as evidenced by the several dozens of drawers of undescribed Neotropical species in collections around the world, it is possible that quite a few are actually represented by the only remnant of a larger ancient lineage. The artificial splitting of genera based on subtle differences, which are insignificant at any supra-specific level, may also have contributed to this situation, as very often genera are found not to be valid when their species are carefully studied and compared with species classified in allied genera.

The Neotropical tribe Exoristini includes 9 genera and 35 species. Five genera are monotypic: *Austrophorocera* Townsend, 1916 (06 species distributed throughout the Neotropical region), *Chetogena* Rondani, 1856 (22 species, widespread in the Neotropics), *Epiplagiops* Blanchard, 1943 (monotypic, Argentina/Uruguay), *Macrohoughiopsis* Townsend, 1927 (monotypic, Brazil), *Metaphorocera* Thompson, 1968 (monotypic, Trinidad), *Parasetigena* Brauer and Bergenstamm, 1891 (01 species, Chile), *Stomatotachina* Townsend, 1931 (monotypic, Chile), *Tachinomyia* Townsend, 1892 (01 species, Mexico), and *Tetragrapha* Brauer and Bergenstamm, 1891 (monotypic, Cuba).

In this article, I had the opportunity to study material of two of the monotypic genera classified in Exoristini: *Epiplagiops* and *Tetragrapha. Epiplagiops* was erected by Blanchard (1943) to include his new species, *Epiplagiops littoralis*, from material reared from *Listroderes obliquus* Klug. (Curculionidae) and collected in Santa Fé, Argentina. *Tetragrapha* was erected by Brauer and Bergenstamm (1891) for the new species *Tetragrapha tessellata*, described based on specimens from Cuba. The species was later redescribed by Aldrich and Webber (1924), who placed it within the subgenus *Parasetigena* (no longer recognized) of *Phorocera.* However, *Tetragrapha* was considered valid by Townsend (1936) and also in the Neotropical Catalog of Guimarães (1971).

In this article, I present evidence based on a detailed morphological study of *E. littoralis* and *T. tessellata* that both species belong to *Chetogena.* I also redescribe both species (including the male terminalia, with illustrations) and discuss the status of *Epiplagiops* and *Tetragrapha.*

Materials and Methods

The material examined is deposited in the following institutions: The Natural History Museum, London, UK (BMNH); Museu de Zoologia, Universidade de São Paulo, São Paulo, Brazil (MZSP); and Naturhistorische Museum Wien, Wien, Austria (NMW). The morphological terminology follows Cumming and Wood (2009) and Wood and Zumbado (2010), except for the antennal morphology, which follows Stuckenberg (1999).

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Results

Epiplagiops Blanchard, 1943. *Epiplagiops* Blanchard 1943: 450. Type-species: *E. littoralis* Blanchard, by original designation. Guimarães 1971: 158 (catalog); Ward et al. 1977: 35 (insect–plant catalog); Arnaud 1978: 200 (host–parasite catalog); O'Hara 2011: 23 (check list).

Status: Invalid name; junior synonym of *Chetogena* Rondani, 1856. **Syn. nov.**

Chetogena littoralis (Blanchard, 1943), comb. nov. (Figs. 1–6). *E. littoralis* Blanchard 1943: 451 (male and female description), 450 (host record), figs. a–e (male terminalia, abdominal sternites I–V, palpus). Syntypes, one male and three females (Museo Argentino de Ciencias Naturales "Bernardino Rivadavia," Buenos Aires *sec* Mulieri et al. 2013: 166) (not examined). Type locality: Argentina, Santa Fé. Distribution: Argentina, Uruguay, southern USA (introduced).

E. littoralis, Compere 1946: 671 (host record, USA); Parker et al. 1951: 13, 16, 19, 25 (immature stages, biology, host record, Argentina, Uruguay); Sabrosky and Arnaud 1965: 1053 (catalog, comments); Guimarães 1971: 158 (catalog); Guimarães 1977: 11, 95, 96, 101 (host–parasite catalog); Ward et al. 1977: 35 (catalog of insects associated to *Propopis*-Fabaceae); Arnaud 1978: 22, 200 (host–parasite catalog); Mulieri et al. 2013: 166 (syntypes data and location).

Redescription.

Male. Body length: 6.48 mm (6.2–6.7 mm), wing length: 4.9 mm (4.8–5.0 mm) ($n = 4$).

Coloration: Frontal vitta dark brown; face, parafacial, and gena blackish with silver pruinosity; fronto-orbital plate blackish with

ferrugineous golden pruinosity. Antenna black with scape and pedicel orange to light brown. Palpus yellow, with basal third slightly darker; proboscis dark brown. Thorax dark brown with silver pruinosity; scutum with lateral margins silver pruinose from humeral to postalar callus, and three silver pruinose stripes (alternated by four dark brown stripes), two lateral on dorsocentral rows and one median on acrostichal rows; median stripe golden pruinose after suture and toward scutellum; scutellum dark brown but becoming lighter and then reddish at apex. Wing hyaline; calypters white; halter brown, knob dark brown. Legs dark brown, with silver pruinosity on coxae and femora. Abdomen dark brown with lateral margins of tergites 1 + 2 and 3 reddish; with silver pruinosity on basal half of tergites 3 and 4, rather weak laterally and with dark brown median line on all tergites; tergite 5 dark brown with golden pruinosity on basal half (Fig. 1).

Head: Eye densely setulose, setulae slightly longer than width of arista. Six pairs of frontal setae, three below base of antenna. Two reclinate frontal setae, anterior seta stronger. Inner vertical setae strong, parallel, and slightly reclinate; outer vertical setae divergent, very weak and eventually undistinguishable from adjacent postocular setae. Fronto-orbital plate with fine pale-colored setulae from vertex (more densely) almost reaching lowermost frontal seta. Fronto-orbital plate as wide as parafacial and frontal vitta. Facial ridge with stout and erect setae almost reaching level of insertion of arista. Parafacial bare. Postpedicel 3.5x longer than pedicel, almost reaching level of vibrissa, and with margins parallel with the same width from base to apex; arista about 1.1–1.2x length of postpedicel and abruptly narrowing at the middle. Lower facial margin weakly warped forwards. Oral margin axis about 0.6 length of antennal axis. Vibrissa strong, inserted at the level of the lower facial margin. Gena height about 1/4 eye height. Genal dilation covered by fine black setulae. No black setulae posterior to postocular setulae, only the usual white setulae. Palpus filiform, enlarged on apical half; labella moderately developed, about half length of prementum, the latter slightly longer than palpus.

Thorax: Acrostichals 3 + 3. Dorsocentrals 3 + 3. Posthumerals 1, aligned with intralar row and laterad to second anterior dorsocentral seta. Presuturals 2, aligned with supra-alars, posterior one stronger. Humerals 4, three aligned and one more anterior between inner and median setae. Notopleurals 2. Intra-alars 1 + 3, presutural seta close to suture and very weak; intra-postalar weak. Postsutural supra-alars 3, but one additional short seta between second and third supra-alars; anterior most (prealar) weakly developed, about 1/5 length of strongest supra-alar and clearly shorter than first postsutural intra-alar and dorsocentral. Prosternum setulose. Proepisternum bare. Six strong anepisternal setae. Katepisternals 3. Katepimeron (barette) bare (but sometimes 1–2 setulae anteriorly). Scutellum with one basal, two lateral, one apical pairs of setae; discals weakly developed and irregularly located.

Wing: costal spine very weakly developed; base of R_{4+5} setulose dorsally from base almost up to r-m, and ventrally with about 3 setulae at base; M vein with a fold at membrane beyond the bend; r-m crossvein located medially between tips of Sc and R1, or slightly beyond (towards apex); posterior section of CuA1 about or longer than half of preceding section; and preceding section of CuA1 as long as section of M from base until the bend.

Legs: Fore tibia with anterodorsal row of setae, basal setae stronger; 2 posterior setae, submedian stronger. Mid femur with 3–4 anterior setae on median third; 3 oblique preapical setae on posterior-posterodorsal surface; posteroventral row of fine and long setae on basal 1/2. Mid tibia with 2 anterodorsal, 2 posterodorsal, and one submedian ventral setae (Fig. 2). Hind tibia with anterodorsal row of short setae (irregularly sized) but one long submedian seta; and with 3 anteroventral setae, the apical one longer; and posterodorsal row of setae at basal 2/3 but one long seta at lower end.

Abdomen: Tergite 1 + 2 with one median, and one lateral marginal pair of setae. Tergite 3 with one median and one lateral marginal pair of setae. Tergite 4 bearing marginal row of setae. Tergite 5 with discal and marginal rows. Tergites covering sternites. Terminalia (Figs. 3–6): Sternite 5 M-shaped, posterior processes well developed (Fig. 3). Cercal plate enlarged at base and strongly acuminate at apex, well attached to each other along midline (Fig. 5), apex sinuously curved in profile (Fig. 4), basal two-thirds with dense fine and long setulae. Surstyli narrowed and more sclerotized on truncate apex (Fig. 4). Pregonite slender, with strong setulae on apex and several weak setulae on posterior margin; postgonite narrow on apex (Fig. 6). Aedeagal apodeme short, less than half length of distiphallus (Fig. 6). Epiphallus absent; distiphallus robust, spinulose on anterior membrane and on anterior plate (Fig. 6).

Female: Body length: 5.6 mm (4.4–6.3 mm), wing length: 4.6 mm (3.8–5.2 mm) ($n = 3$). Differs from male by the following: one reclinate and one lateroreclinate frontal setae. Two proclinate fronto-orbital setae. Outer vertical setae divergent and distinctly developed but shorter than inner verticals. Fronto-orbital plate with sparse minuscule setulae from vertex almost to lowermost frontal seta. Fronto-orbital plate wider than parafacial and as wide as frontal vitta. Postpedicel 3X the length of pedicel.

Material examined: URUGUAY, 1 male and 1 female, 5.xi.1957, Frank Wilson leg. (BMNH). ARGENTINA, Santa Fé, 1 male and 1 female, 3.xi.1943, Parker & Silveira leg. (ex. *Listroderes*, in Montevideo, Paras. Lab) (BMNH); Santa Fé, 1 female, 29.x.1942, no collector (MZSP); Buenos Aires, Moreno, 3 males, xii.1970, M. Fritz leg. (MZSP); "Argentina, S.A.," 1 male, x.1943, F. Parker leg. (MZSP).

Hosts: Coleoptera-Curculionidae: *L. obliquus* Klug. (Blanchard, 1943), *Conotrachelus subnebulosus* (Parker et al. 1951, Guimarães 1977), *Listroderes costirostris obliquus* (Compere 1946, Parker et al. 1951, Guimarães 1977, Arnaud 1978), *Listroderes* sp. (Parker et al. 1951, Guimarães 1977); Coleoptera-Chrysomelidae: *Calligrapha polyspila* (Parker et al. 1951, Guimarães 1977).

Tetragrapha Brauer and Bergenstamm, 1891. *Tetragrapha* Brauer and Bergenstamm 1891: 351 (1891: 47). Type-species: *T. tessellata* Brauer and Bergenstamm, by monotypy. Coquillett 1910: 613 (list); Aldrich and Webber 1924: 61 (redescription of *tessellata*); Townsend 1936: 120 (key to Exoristini genera); Townsend 1940: 171 (diagnosis); Guimarães 1971: 160 (catalog); O'Hara 2011: 62 (check-list).

Status: Invalid name; junior synonym of *Chetogena* Rondani, 1856. **Syn. nov.**

Chetogena tessellata (Brauer and Bergenstamm, 1891), comb. nov. (Figs. 7–11). *T. tessellata* Brauer and Bergenstamm 1891: 351 (1891: 47) (male description). Lectotype male (NMW) (designated here). Type-locality: Cuba. Distribution: Cuba.

Phorocera (*Parasetigena*) *tessellata*; Aldrich and Webber 1924: 47, 51, 61 (key, examination of type, redecription of male).

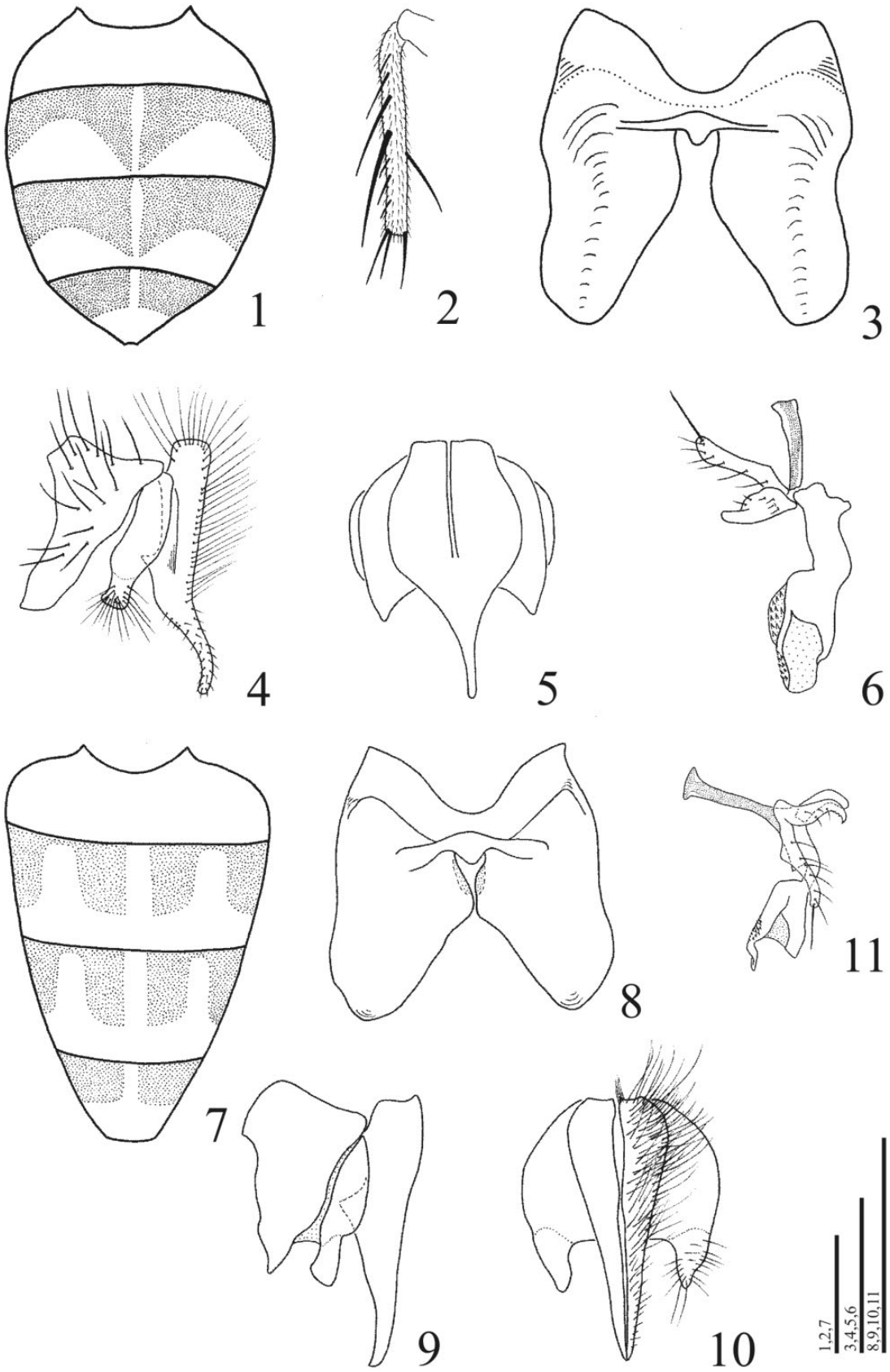
T. tessellata; Aldrich 1905: 471 (catalog); Coquillett 1910: 613 (list); Townsend 1931: 172 (data on type), Guimarães 1971: 160 (catalog).

Redescription.

Male. Body length: 8.2 mm, wing length: 6.6 mm (lectotype)

Coloration: Frontal vitta dark brown to black; face and parafacial silver pruinose; fronto-orbital plate faint golden pruinose. Antenna black. Palpus yellow, with basal third brown; proboscis dark brown. Thorax dark brown to black with silver pruinosity; scutum with lateral margins silver pruinose from humeral to postalar callus, and three silver pruinose stripes alternated by black stripes (faint golden pruinose in paralectotype), two lateral on dorsocentral rows and one median on acrostichal rows. Wing hyaline; calypters white; halter brown, knob dark brown. Legs dark brown. Abdomen dark brown but reddish on lateral margins of tergites 1 + 2 to 4 with remarkable black median band at middle of abdomen, and conspicuous pattern of silver pruinosity (Fig. 7).

Head: Eye densely short setulose. Six to seven pairs of frontal setae, three below base of antenna. Two reclinate frontal setae. Fronto-orbital plate with sparse fine and short setulae starting on vertex and hardly



Figs. 1–11. *Chetogena littoralis* (Blanchard): 1, female abdomen, dorsal view; 2, female mid tibia right, anterior view; 3, male sternite 5, dorsal view; 4, male terminalia, lateral view; 5, male terminalia, posterior view; 6, aedeagus, lateral view. *Chetogena tessellata* (Brauer and Bergenstamm): 7, male abdomen, dorsal view; 8, male sternite 5, dorsal view; 9, male terminalia, lateral view; 10, male terminalia, posterior view; 11, aedeagus, lateral view (Figs. 7–11 from male paralectotype). (Scale bars: Figs. 1, 2, 7: 1 mm; Figs. 3–6, 8–11: 0.5 mm.)

reaching level of lunula. Fronto-orbital plate as wide as parafacial and frontal vitta (paralectotype with fronto-orbital plate slightly wider than vitta). No black setulae behind postocular setulae, only the usual white setulae. Facial ridge with stout and erect setae almost reaching level of insertion of arista. Parafacial bare. Postpedicel 2.6x longer than pedicel, and rather slender, very slightly wider at apex than at base; arista elongated and slender, abruptly narrowing at middle and about 1.3x length of postpedicel. Lower facial margin weakly warped forwards. Oral margin axis about 0.8 length of antennal axis. Vibrissa strong, inserted at the level of lower facial margin. Gena height about 1/5 eye height. Genal dilation covered by fine black setulae. Palpus filiform, curved but not enlarged to apex; labella developed, half length of prementum, the latter subequal to palpus in length.

Thorax: Acrostichals 3 + 3. Dorsocentrals 3 + 4. Posthumerals 2, aligned with intralar row, posterior seta stronger and anterior located lateral to humerals. Presuturals 2, one inner and more anterior, another outer (aligned with supra-alars) and stronger. Humerals 4, three aligned and one more anterior between inner and median setae. Notopleurals 2. Intra-alars 1 + 3, presutural one very close to suture and weak; intra-postalar present, long and fine. Postsutural supra-alars 3, the anteriormost (prealar) weak, conspicuously shorter than first postsutural intra-alar and dorsocentral; with additional seta between second and third supra-alars present and very weak. Prosternum setulose. Proepisternum bare. Six strong anepisternal setae. Katepisternals 3. Katepimeron (barette) setulose anteriorly. Scutellum with one basal, two lateral and one apical pairs of setae; no discals.

Wing: costal spine very weakly developed; base of R_{4+5} setulose dorsally and ventrally, with 2-3 setulae (paralectotype with 6 setulae dorsally); crossvein r-m located halfway between tips of Sc and R_1; M vein with fold on membrane beyond the bend; posterior section of CuA_1 shorter than half of preceding section; and preceding section of CuA_1 as long as section of M from base until to the bend.

Legs: (Fore legs of lectotype missing, examined in the paralectotype) Fore tibia with anterodorsal row of short setae, basal setae stronger; 2 posterior setae, submedian stronger. Mid femur with 3 anterior setae on median third; row of anteroventral fine setae, longer at basal half and with very long submedian seta; 3 oblique preapical setae on posterior-posterodorsal surface; posteroventral row of fine setae, longer on basal 1/2. Mid tibia with 2 strong anterodorsal (the lower one longer), 2 posterodorsal (the lower one longer), and one strong submedian ventral seta. Hind tibia bearing anterodorsal row of short setae (of variable sizes) but two strong medial setae on midsection and on basal third; with 3-4 anteroventral setae (the lowermost longer); and one posterodorsal row on basal 2/3, with two strong setae on median third (the lowermost longer).

Abdomen: Tergite 1 + 2 with pair of median marginal setae and two or three lateral marginal pairs. Tergite 3 with one median and two lateral marginal pairs of setae. Tergite 4 bearing marginal row of setae. Tergite 5 with discal and marginal rows. Tergites covering sternites. Terminalia (Figs. 8–11): Sternite 5 M-shaped, posterior processes well developed (Fig. 8). Cercal plate elongate and well attached to each other along midline, tapering toward apex (Fig. 10), in profile curved inward (Fig. 9), basal two-thirds with dense fine and long setulae. Surstyli with broad and robust base that contrasts with reduced, delicate apex (Figs. 9 and 10). Pregonite directed posteriorly and strongly setulose; postgonite curved downward and pointed apically (Fig. 11). Distiphallus robust, anterior plate with spinulae on apex (Fig. 11). Epiphallus curved ventrally (Fig. 11).

Female: Unknown

Hosts: No records

Type-material examined: **Lectotype male** (NMW), by present designation, labeled "Cuba," "*tessellata*/det. B. B."; "*Tetragrapha*/*tessellata* Br. Bgst./Type"; "LECTOTYPE ♂/of *Tetragrapha*/*tessellata* B & B/designated 1982/D. M. Wood"; "LECTOTYPE ♂/*Tetragrapha tessellata*/Brauer & Bergenstamm/S.S. Nihei des. 2006" (added herewith). **Paralectotype male** (NMW), labeled "Westindien/Coll. Winthem"; "*tessellata*/det. B. B."; "*Tetragrapha*/*tessellata* Br. Bgst. /Type"; "PARALECTOTYPE ♂/of *Tetragrapha*/*tessellata* B & B/designated 1982/D. M. Wood"; "PARALECTOTYPE ♂/*Tetragrapha tessellata*/Brauer & Bergenstamm/S.S. Nihei des. 2006" (added herewith). The lectotype missing the forelegs, whereas the paralectotype missing right foreleg and right hind tibia and tarsi, and thorax damaged around the pinned portion. The paralectotype was dissected and the terminalia was illustrated.

Lectotype designation. The two type specimens examined here are labeled by D.M. Wood as lectotype and paralectotype (labels dated by 1982); that designation possibly follows Townsend (1931: 172), who considered the specimen from Cuba as the "holotype" [sic]. Aldrich and Webber (1924) mentioned that the "type" had been deposited at the USNM but Townsend (1931) corrected the location of the type as being the NMW. I herein designate the Cuban specimen formerly labeled by Wood as the lectotype.

Comments. Townsend (1927: 261) mentioned the occurrence of *Tetragrapha* in Brazil but did not give an exact locality for it. I have not found *Tetragrapha* among insect material collected in Brazil or throughout South America.

Discussion

Previous authors had already questioned the generic status of *Epiplagiops* and *Tetragrapha.* According to Sabrosky and Arnaud (1965: 1053), it is possible that *Epiplagiops* is synonym with the "*Euphorocera-Stomatomyia* complex," which is currently included in *Chetogena.* Aldrich and Weber (1924: 61) redescribed *T. tessellata* in *Phorocera*, subgenus *Parasetigena*, and observed that the species resembles *Phorocera claripennis* Macquart (now in *Chetogena*), whereas Aldrich (1924: 215) argued that it could not possibly be in a separated genus from that species.

The detailed morphological study of material representative of both *E. littoralis* and *T. tessellata* revealed that they belong to *Chetogena.* Several characters support this nomenclatural proposal, as follows: facial ridge with stout and erect setae almost reaching the level of insertion of the arista; lower facial margin only weakly warped forwards; palpus filiform; without black setulae behind the postocular setulae, only the usual white setulae; M vein with a fold on membrane beyond the bend; posterior section of CuA_1 shorter than half of the preceding section; preceding section of CuA_1 as long as section of M from base to the bend; and shape of cercal plate and surstyli.

Recently, *Prospalaea* Aldrich, 1925, formerly placed in the Exoristini, was transferred to Eryciini (Nihei 2006). With the present contribution, three monotypic genera still remain to be studied: *Macrohoughiopsis*, *Metaphorocera*, and *Stomatotachina*.

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