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New or Little Known Species of the Genera *Liodrosophila* DUDA and *Sphaerogastrella* DUDA (Diptera, Drosophilidae) from Papua New Guinea and S. E. Asia

Toyohi OKADA (1992)

Gotokuji 2–30–18, Setagaya-ku, Tokyo, 154 Japan

Abstract Seven new species of the genus *Liodrosophila* DUDA (*crescens**, *viridifrons*, *xanthosoma*, *basisternata*, *striatifrons*, *maculipennis**, *melanostoma*) and two new species of the genus *Sphaerogastrella* DUDA (*granulosa**, *angustifrons*) (Diptera, Drosophilidae) are described from Papua New Guinea and S.E. Asia*. The male of *S. scutellaris* OKADA et CARSON is recorded for the first time.

Key words: *Liodrosophila*; *Sphaerogastrella*; Drosophilidae; New Guinea; S.E.Asia; taximetry.

This article is an additional contribution to the fauna of the genera *Liodrosophila* DUDA and *Sphaerogastrella* DUDA (Diptera, Drosophilidae) from Papua New Guinea and S. E. Asia (OKADA, 1974; OKADA & CARSON, 1983). The material is obtained from the collections of various investigators including myself and from the B. P. Bishop Museum collection, borrowed by the courtesy of the late Dr. J. L. GRESSITT and Dr. W. A. STEFFAN. The type specimens are deposited in the B. P. Bishop Museum, Honolulu (BPBM) and the National Science Museum, Tokyo (NSMT).

I am much obliged to Dr. and Mrs. H. L. CARSON and Dr. D. E. HARDY of the University of Hawaii, Honolulu, Dr. F. HIHARA of Ehime University, Matsuyama, Drs. T. C. MAA, J. SEDLACEK, W. A. STEFFAN and the late Dr. J. L. GRESSITT of the B. P. Bishop Museum, Honolulu, Dr. K. KANMIYA of Kurume University, Fukuoka, Dr. S. SHINONAGA of Tokyo Medical and Dental University, Tokyo, and Drs. Y. TOBARI and E. TAKANASHI of Tokyo Metropolitan University, Tokyo, for providing me with material.

Liodrosophila crescens OKADA, n. sp.

(Fig. 1 A–C)

♂, ♀. Body about 2.2 mm in length, glossy black. Head slightly broader than thorax. Eye dark red, bare. Antenna yellowish gray, anteriorly darker. Arista with about 5 upper and 2 lower long branches. Palpus black. Periorbit glossy black. Frontal shield quadrate, glossy black, anteriorly orange brown. Clypeus black. Cheek brownish black, narrow, about 1/10 as broad as eye length. Anterior reclinate orbital fine. Second oral half vibrissa. Mesoscutum glossy black. Scutellum velvety black, twice as broad as long. Thoracic pleura glossy black. Humeral 1. Acrostichal hairs in about 6 rows. Lateral scutellars short,

divergent; apicals slightly nearer to laterals than to each other. Legs grayish brown; fore femur black, with about 15 spicules; mid and hind knee joints black. Wing (Fig. 1A) hyaline. C-index 1.4–1.8; 4V-index 1.0; 4C-index 1.5; 5x-index 1.8; Ac-index 2.0; C3-fringe 0.6. Halter yellowish gray. Abdominal tergites black. Periphallic organs (Fig. 1B) black, broad; surstylus crescent (thus the specific name), distally with about 12 teeth. Aedeagus (Fig. 1C) robust, fusiform.

Holotype: ♂, Wuduwarakella, Kandy, Sri Lanka, 22. VII. 1988 (KANMIYA). Allotype ♀, 2 ♀ paratypes, same data as holotype; 1 ♂ paratype, Ella, Sri Lanka, 14. VII. 1989 (KANMIYA). Types in NSMT.

Relationships. This species resembles *L. varians* DUDA in the shape of male genitalia, but differs by the absence of lateral claw of aedeagus.

Liodrosophila viridifrons OKADA, n. sp.

(Fig. 1 D–F)

♂. Body about 1.5–2.0 mm in length, deep black. Eye bare, dark red. Antenna with 2nd joint orange brown, 3rd gray brown. Arista with 3–5 upper and 2 lower branches and a large fork. Palpus brownish black. Ocellar triangle black. Periorbit glossy black, narrow especially anteriorly. Frontal shield granulose, glossy bluish black (thus the specific name), anteriorly orange brown and broader than median length. Face brownish black, medially with a paler longitudinal line. Carina half face length, high. Cheek brownish black, very narrow. Clypeus black. Anterior reclinate orbital fine; proclinate 2/3 posterior reclinate, close to the latter. Second oral long. Mesoscutum shiny black, fine granulose. Scutellum velvety black, gray pruinose, apically rounded. Thoracic pleura glossy black. Humeral 1. Acrostichal hairs in 2 rows. Anterior dorsocentral as long as posteriors; length distance of dorsocentrals slightly shorter than cross distance. Sterno-index 0.6. Lateral scutellars short, convergent, half apicals, which are nearer to each other than to laterals. Legs yellow; femora black, apically yellow; hind femur with basal half white; fore femur thick. $F=t_{2-4}$. Wing (Fig. 1F) hyaline. C-index 1.4; 4V-index 1.4; 4C-index 1.5–1.7; 5x-index 2.0–2.5; Ac-index 3.5; C3-fringe 0.5. Halter yellowish white. Abdominal tergites glossy black. Periphallic organs (Fig. 1 D) mostly black. Surstylus with a slightly concaved row of about 10 teeth. Phallic organs (Fig. 1 E) mostly black; aedeagus mediolaterally constricted. Submedian spine rather long.

Holotype: ♂, Wau, Papua New Guinea, 26. IX. 1977 (OKADA). Allotype: ♀, same data as holotype. Paratypes: 33 ♂, 7 ♀, same place as holotype, 22. VIII–10. X. 1977 (OKADA); 1 ♀, same place, 8. I. 1974 (SHINONAGA); 1 ♂, Bulolo, Papua New Guinea, 18. IX. 1977 (OKADA). Types in BPBM, some paratypes in NSMT.

Relationships. This species resembles *L. globosa* OKADA in the shape of phallic organs, smooth frons, and acrostichal hairs in 2 rows, but differs by having surstylus teeth row not divided, mesoscutum glossy black and not densely punctured.

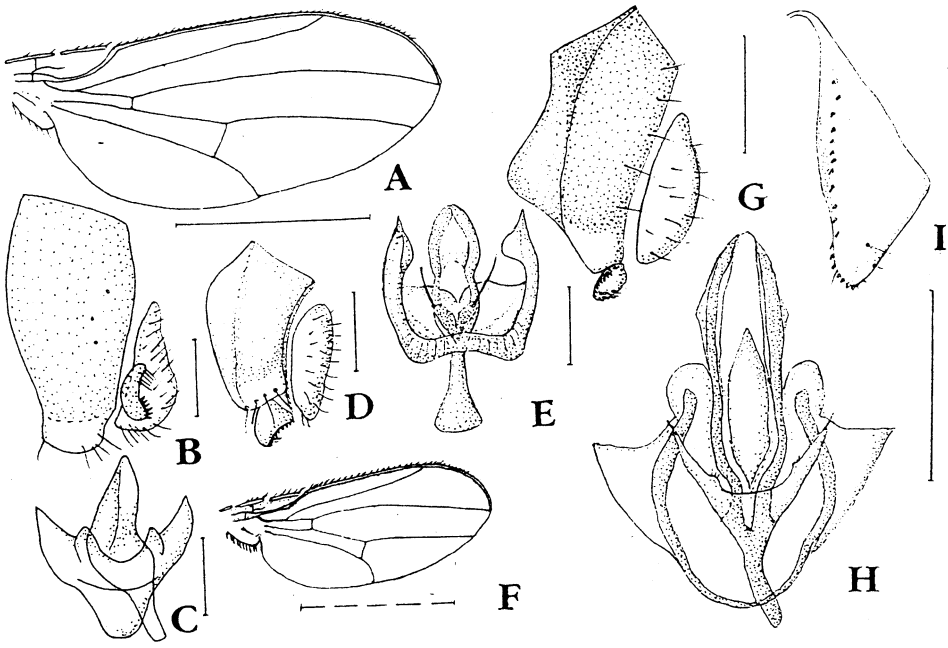

Fig. 1. A–C, *Liodrosophila crescens*; D–F, *L. viridifrons*; G–H, *L. xanthosoma*; I, *L. basisternata*. —— A, F, Wing; B, D, G, periphallic organs; C, E, H, phallic organs; I, ovipositor. Scale 1.0 mm for wing, 0.1 mm for others.

Liodrosophila xanthosoma OKADA, n. sp.

(Fig. 1 G–H)

♂, ♀. Body about 1.2 mm in length, glossy brown. Eye bare. Antenna with 2nd joint yellowish orange, 3rd gray. Arista with about 5 upper and 2 lower branches. Palpus brown, with 2 stout setae. Ocellar triangle black. Periorbit brownish black. Frontal shield quadrate, glossy brownish black, anteriorly somewhat narrowing and orange brown. Face glossy brown. Carina short. Clypeus brownish black. Cheek yellowish gray, about 1/5 as broad as eye length. Anterior reclinate orbital fine. Second oral 1/3 vibrissa. Mesoscutum glossy brown. Scutellum mat velvety black. Thoracic pleura pale brown. Humerals 2. Acrostichal hairs in 2 rows. Lateral scutellars divergent, half as long as apicals. Sternoindex 0.7. Legs yellow; fore femur with about 15 spicules; fore metatarsus shorter than succeeding two tarsal joints; mid and hind metatarsi as long as succeeding two tarsal joints. Wing hyaline. C-index 1.3; 4V-index 2.2; 4C-index 1.8; Ac-index 3.3; C1-bristles 2, upper shorter. C3-fringe 2/5. Halter yellow. Abdominal tergites glossy black. Periphallic organs (Fig. 1 G) mostly black; surstylus small, with about 10 marginal teeth. Phallic organs (Fig. 1 H) with aedeagus robust and

cylindrical; submedian spines short.

Holotype: ♂, Wau, Papua New Guinea, 8. X. 1971 (OKADA). Allotype: ♀, same data as holotype. Paratypes: 24 ♂, 8 ♀, Wau, Papua New Guinea, 21. VIII–19. IX. 1971 (OKADA); 2 ♂, 2 ♀, Bulolo, Papua New Guinea, 23–24. VII. 1981 (TOBARI & TAKANASHI). Types in BPBM, some paratypes in NSMT.

Relationships. This species resembles the foregoing species, *viridifrons*, in the shape of aedeagus, but body is paler, submedian spine is shorter and surstylus is smaller.

Liodrosophila basisternata OKADA, n. sp.

(Fig. 1 I)

♀. Body about 2.5 mm in length. Head as broad as thorax. Eye dark purple black, bare. Arista with about 6 upper and 3 lower branches and a moderate fork. Palpus black, with many short setae. Ocellar triangle black; ocellars inside triangle. Periorbit broad, glossy black, slightly blue shining. Frontal shield trapezoid, glossy bluish black, anteriorly narrowing; outside shield mat black. Face glossy black. Cheek glossy black, narrow; postgena whitish. Carina flat above. Postverticals fine. Mesoscutum glossy black, purple shining. Scutellum mat black, fine granulose, basally broader than long. Thoracic pleura glossy black; basisternum of prothorax white (thus the specific name). Acrostichal hairs in about 4 rows. Anterior dorsocentrals slightly shorter than posteriors; length distance of dorsocentrals equal to cross distance. Sternopleural one. Lateral scutellars divergent, 1/7 as long as apicals, which are convergent and nearer to laterals than to each other. Legs yellow; fore and hind coxae, fore tarsus and bases of femora and tibiae white; distal 1/3 of femora and fore tibia black; mid and hind tibiae with subbasal black rings. Wing slightly fuscous. R_{2+3} straight. C-index 3.3; 4V-index 1.5; 4C-index 0.7; 5x-index 1.5; Ac-index 2.0; C1-bristle 1, C3-fringe 4/9. Halter white, knob black above. Abdomen glossy black, slender, somewhat shining blue. Ovipositor (Fig. 1 I) pale yellowish brown, triangularly pointed, with about 18 teeth ventrally.

Holotype: ♀, Kaindi, Wau, 2,300 m, Papua New Guinea, 8. VIII. 1977 (CARSON) (in BPBM).

Relationships. Unique among the congeners in having white basisternum of prothorax.

Liodrosophila striatifrons OKADA, n. sp.

(Fig. 2 A–B)

♂. Body about 2 mm in length. Head as broad as thorax. Eye dark red, bare. Antenna with 2nd joint orange brown, 3rd gray. Arista with 4 upper and 2 lower branches and a large fork. Palpus black. Periorbit bluish black, anteriorly

narrowing. Frontal shield broad, quadrate, bluish black, with longitudinal shrinks (thus the specific name). Face glossy orange gray. Carina high, half as long as face. Cheek dark brown, narrow. Clypeus black. Anterior reclinate orbital minute, nearer to proclinate than to posterior reclinate, which is slightly longer than proclinate. Vibrissa long; 2nd oral 2/3 vibrissa. Mesoscutum subshining black, granulose and pruinose. Scutellum short, velvety black. Thoracic pleura glossy black. Humerals 3, median longest. Acrostichal hairs in 4 rows. Anterior dorsocentrals slightly shorter than posteriors; length distance of dorsocentrals half cross distance. Lateral scutellars short, parallel; apicals equally apart from each other and from laterals. Legs yellowish brown; femora black; fore femur with about 15 spicules on distal half; hind femur with proximal half white. $F_1=t_{2-3}$, $F_{2,3}=t_{2-4}$. Wing hyaline; R_{2+3} nearly straight. C-index 1.5; 4V-index 2.2; 4C-index 1.5; 5x-index 1.6; Ac-index 3.5; C1-bristles 2; C3-fringe 1/2. Halter yellowish brown. Abdominal tergites glossy black; 1–2T slightly granulose. Epandrium (Fig. 2 A) broad, black, pale and truncate below; surstylus black, broader than long, with about 10 teeth in somewhat concave row. Aedeagus (Fig. 2 B) robust, conical. Hypandrium with short submedian spines.

Holotype: ♂, Bulolo, Papua New Guinea, 15. IX. 1977 (OKADA) (in BPBM).

Relationships. This species resembles *L. rufa* OKADA in the shape of male genitalia, but body darker, eye bare, and acrostichal hairs in 4 rows (6 in *rufa*).

Liodrosophila maculipennis OKADA, n. sp.

(Fig. 2 C–E)

♂, ♀. Body about 2 mm in length, glossy black. Eye dark red, bare. Head slightly broader than thorax. Antenna with 2nd joint dark brown, 3rd black. Arista with 5 upper and 4 lower branches and a small fork. Palpus slender, yellowish brown, with a long terminal seta. Ocellar triangle small, black. Periorbit glossy brownish black, broad, reaching anterior margin of frons. Frons anteriorly half head width; frontal shield quadrate, glossy brownish black. Face black, laterally concaved. Carina narrow, half as long as face. Cheek glossy black, 1/8 as broad as eye length. Clypeus black. Second oral thin, half as long as vibrissa. Mesoscutum subshining gray, tuberculose, gray pubescent. Scutellum velvety black, short, somewhat trapezoid, not upright but slightly convexed, basally broader than median length. Thoracic pleura glossy black. Humeral 1. Acrostichal hairs absent. Anterior dorsocentrals half posteriors; L=1/2 C. Legs slender; femora black except proximally; fore femur with about 10 spicules; fore tibia black; fore tarsus white; mid and hind tarsi yellowish white. $F_1=t_{2-4}$; $F_2=t_{2-5}$; $F_3=t_{2-5}$. Wing (Fig. 2 E) slender, fuscous, with faint white patches (thus the specific name). R_{2+3} straight. C-index 2.0; 4V-index 2.2–2.9; 4C-index 1.6; 5x-index 3.0; Ac-index 3.5. C1-bristle 1, minute; C3-fringe 1/2–3/5. Halter brownish black, basally pale. Abdomen slender, glossy black, 1T grayish. Ep-

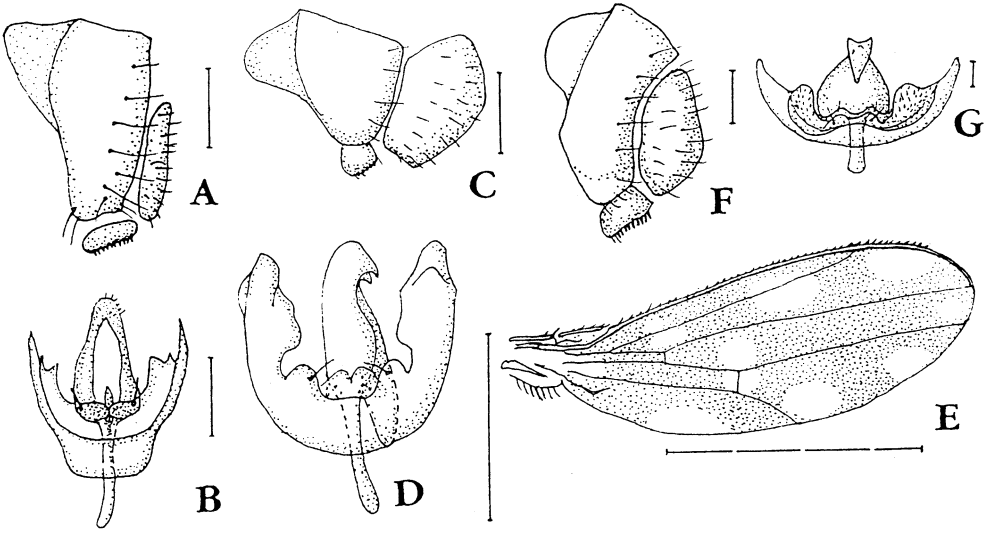

Fig. 2. A–B, *Liodrosophila striatifrons*; C–E, *L. maculipennis*; F–G, *L. melanostoma*. —— A, C, F, Periphallic organs; B, D, G, phallic organs; E, wing. Scale 1.0 mm for wing, 0.1 mm for others.

andrium (Fig. 2 C) broad above; cercus large; surstylus conical, with a row of about 5 teeth. Aedeagus (Fig. 2 D) robust, distally with two recurved hooks.

Holotype: ♂, Kuala Lumpur, Malaya, 24–28. VII. 1971 (OKADA). Allotype: ♀, Nabire, S. Ceelvink Bay, 0–30 m, West Irian, 20. VII. 1962 (GRESSITT & SEDLACEK). Paratypes: 1 ♂, Vogelkop, Sucumi Camp, near head of Ransiki R., 300 m, West Irian, 6. VIII. 1957 (HARDY); 1 ♀, Comeantung Caves, British North Borneo, 22–26. XI. 1958 (MAA). Holotype in NSMT, others in BPBM.

Distribution. Malaya, West Irian, N. Borneo.

Relationships. This species resembles *L. ornata* OKADA in having maculated wing and bifurcated aedeagus, but differs by having distal marginal pale spot of wing, black femora (yellow in *ornata*) and smooth frons (granulose in *ornata*).

Liodrosophila melanostoma OKADA, n. sp.

(Fig. 2 F–G)

♂, ♀. Body about 2.3 mm in length. Eye dark red, bare. Head as broad as thorax. Antenna with 2nd joint dark brown, 3rd darker. Arista with about 7 upper and 3 lower branches and a short fork. Palpus black, with a long terminal seta. Ocellar triangle brownish black. Postverticals present, fine. Periorbit glossy brownish black, anteriorly broader. Frons glossy brownish black, anteriorly as broad as half head width. Frontal shield trapezoid, marginally orange brown.

Face brown, broader than long. Clypeus large, shining black (thus the specific name). Carina brown, short but high, flat, truncate below. Cheek narrow, black, caudally yellow, about 1/10 as broad as eye length. Anterior reclinate orbital absent; proclinate slightly shorter than posterior reclinate. Vibrissa strong, other orals fine. Mesoscutum shiny brownish blue black, finely tuberculated, pale along suture. Scutellum shiny brownish black, blue iridescent, shorter than broad. Thoracic pleura brown, with a black longitudinal stripe above. Humeral 1. Acrostichal hairs absent. Anterior dorsocentrals slightly shorter than posteriors. Dorsocentrals equally apart from each other. Lateral scutellars about 1/3 apicals, slightly divergent; scutellars equally apart from each other. Sternopleural only one. Legs yellow, slender. Fore femur with about 12 spicules at middle; fore tarsus white. $F_1=t_{2-4}$, F_2, $F_3=t_{2-5}$. Wing hyaline, elongate. R_{2+3} long, straight; R_{4+5} and M parallel. C-index 3.0; 4V-index 1.7; 4C-index 0.8; 5x-index 2.0; Ac-index 2.5; C1-bristle 1, weak; C3-fringe 2/5. Halter dark brown. Abdominal tergites glossy brownish black, with caudal bands black. Epandrium (Fig. 2 F) black, pale gray and triangular below; surstylus quadrate, with a straight row of about 12 black teeth on distal margin. Aedeagus (Fig. 2 G) robust, conical, black. Hypandrium short but broad.

Holotype: ♂, Mt. Kaindi, Morobe, 2,120 m, Papua New Guinea, 14. X. 1977 (M. S. CARSON). Allotype: ♀, same data as holotype. Paratypes: 1 ♂, Mt. Giluve, 2,500–3,000 m, S. E. New Guinea, 2. VI. 1963 (SEDLACEK); 1 ♂, Wau, Papua New Guinea, 1,400 m, 16. VI. 1961 (GRESSITT), ex fresh human excrement; 1 ♂, ibid., 1,250 m, 14. V. 1963 (SEDLACEK), malaise trap. Types in BPBM.

Relationships. This species resembles *Sphaerogastrella* species in the shape of phallic organs and in the absence of acrostichal hairs, but inner vertical, humeral and sternopleurals are present as usual in the genus *Liodrosophila*.

Sphaerogastrella granulosa OKADA, n. sp.

(Fig. 3 A)

♀. Body (Fig. 3 A) about 2.3 mm in length. Eye bare. Antenna dark brown; arista with 3 upper and 3 lower branches. Palpus black. Periorbit glossy black, anteriorly narrowing. Frontal shield quadrate, broad, glossy dark brownish black. Face broad, velvety orange brown. Carina acute. Clypeus black. Cheek broad. Mesoscutum glossy black. Scutellum granulose black (thus the specific name), broader than long. Thoracic pleura glossy black. Anterior dorsocentrals half posteriors; cross distance of dorsocentrals subequal to length distance. Legs yellowish brown, femora black. Wing hyaline. C-index 2.1; 4V-index 1.6; 4C-index 1.7; 5x-index 1.5; Ac-index 3.0; C3-fringe 0.4. Halter yellow. Abdomen globular, tergites glossy black.

Holotype: ♀. Sandakan, Sabah, 1. II. 1979 (HIHARA *et al.*) (in NSMT).

Relationships. This species resembles *S. rostralis* OKADA in having granulose

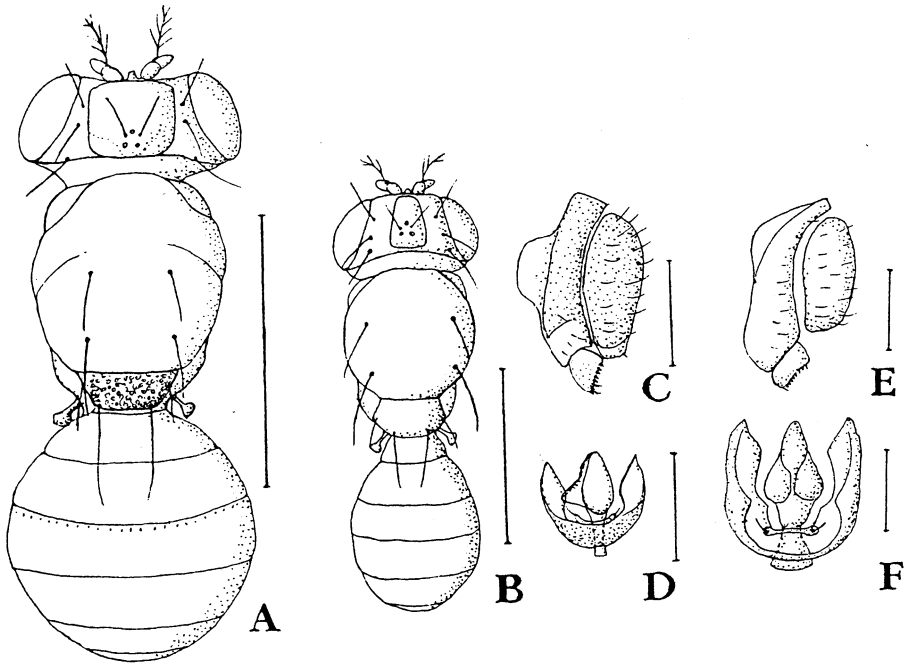

Fig. 3. A. *Sphaerogastrella granulosa* ♀; B–D, *S. angustifrons* ♂; E–F. *S. scutellaris* ♂. —— A, B, Body; C, E, periphallic organs; D, F, phallic organs. Scale 1.0 mm for body, 0.1 mm for others.

scutellum, but it is not pubescent, different from the latter.

Sphaerogastrella angustifrons OKADA, n. sp.

(Fig. 3 B–D)

♂. Body (Fig. 3 B) about 2.0 mm in length. Antenna gray, with black patches. Arista with 2 upper and 1 lower branches. Palpus black. Periorbit broad, dark brownish black. Frontal shield narrow (thus the specific name), anteriorly narrower, dark brownish black. Face black. Carina acute. Clypeus black. Cheek broad, black. Mesoscutum subshining black, somewhat purplish. Scutellum mat black, apically gray. Thoracic pleura brownish black. Anterior dorsocentrals half posteriors. Lateral scutellars short, divergent; apicals twice as long as laterals, parallel. Fore leg dark brown, femur black; mid and hind legs brown, femora black, proximal half white. Mid tibia black. Wing hyaline. C-index 2.4; 4V-index 1.5; 4C-index 1.0; 5x-index 1.1; Ac-index 2.1; C3-fringe 0.4. Halter yellow. Abdominal tergites glossy black. Surstylus (Fig. 3 C) quadrate, with about 8 distal teeth. Aedeagus (Fig. 3 D) rhombic, with a large conical ventral process.

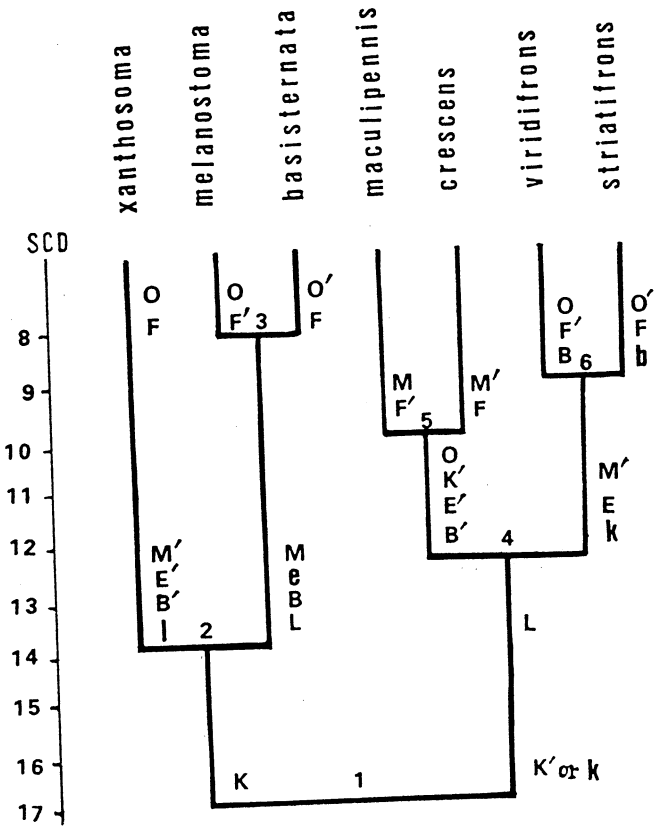

Fig. 4. A dendrogram of relationships of *Liodrosophila* species treated in this paper, basing on sum of character difference (SCD) proximity analysis and UPGMA cluster analysis. Numerical figures at the branches of dendrogram, orders of key couplets; alphabetical signs at the branches, character states selected from the original $t \times n$ (taxa × character) matrix.

Holotype: ♂, Snake River, Papua New Guinea, 30. VIII. 1979 (CARSON) (in BPBM).

Relationships. This species resembles *S. hypsela* OKADA et CARSON in having narrow frontal shield, but differs from the latter by having not upright scutellum.

Sphaerogastrella scutellaris OKADA et CARSON

(Fig. 3 E–F)

Sphaerogastrella scutellaris OKADA et CARSON, 1983, Kontyû, Tokyo, **51**: 372.

♂. Described for the first time. Periphallic organs (Fig. 3 E) mostly black. Surstylus quadrate, with a slightly concaved row of about 8 teeth distally. Aedeagus

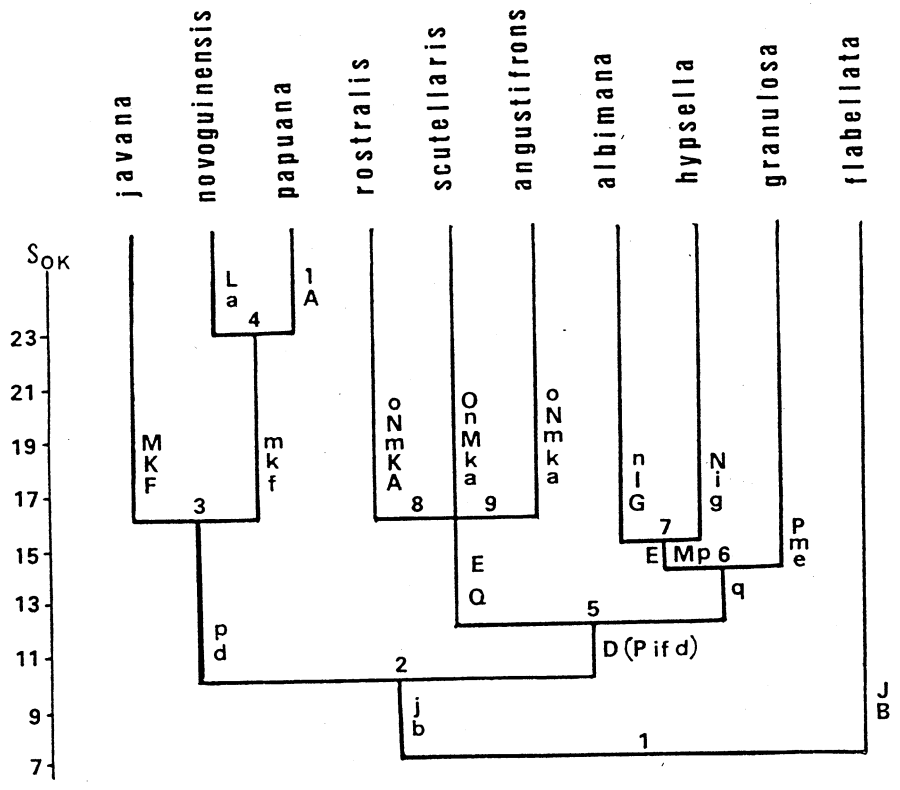

Fig. 5. A dendrogram of relationships of *Sphaerogastrella* species of the world, basing on S_{ok} proximity analysis and UPGMA cluster analysis. For other explanations see Fig. 4.

(Fig. 3 F) rhombic. Submedian spines short.

Specimens examined. 1 ♂, Kunai Creek, Mt. Kaindi, Papua New Guinea, IX. 1977 (CARSON); 1 ♀, Mt. Kaindi, 1,900 m, Papua New Guinea, 19. X. 1977 (CARSON).

Relationships. This species resembles *S. javana* (MEIJERE) in the shape of male genitalia, but differs by narrower frontal shield and black face.

Taximetrical analyses

Taximetrical analyses are made for the seven species of *Liodrosophila* treated above using SCD (sum of character differences) proximity analysis and UPGMA cluster analysis (Fig. 4) and for ten species of *Sphaerogastrella* of the world using S_{ok} proximity analysis and UPGMA cluster analysis (Fig. 5). The character used in the analyses are as in OKADA (1974) for *Liodrosophila* and in OKADA and CARSON (1983) for *Sphaerogastrella*. Key to the species of both genera are automatically constructed from the dendrograms.

Key to *Liodrosophila* Species

1. Hind femur yellow (K). 2
— Hind femur brown to black (K′ or k); R_{2+3} stratight (L). 4
2. R_{2+3} curved to costa (1); parafrontalia moderate in breadth (B′); 2nd oral about 1/3 vibrissa (E′); C-index about 1.5 (M′); mesoscutum smooth (F); 5x-index about 2.0 (O). ..... *xanthosoma*
— R_{2+3} straight (L); parafrontalia broad (B); second oral fine (e); C-index about 1.0 (M). 3
3. Mesoscutum punctured (F′); 5x-index about 2.0 (O). ..... *melanostoma*
— Mesoscutum smooth (F); 5x-index about 1.5 (O′). ..... *basisternata*
4. Parafrontalia moderate in width (B′); second oral about 1/3 vibrissa (E′); hind femur brown or distally black (K′); 5x-index about 2.0 (O). 5
— Second oral as long as vibrissa (E); hind femur black (k); C-index about 1.5 (M′). 6
5. Mesoscutum pubescent (F′); C-index about 1.0 (M). ..... *maculipennis*
— Mesoscutum smooth (F); C-index about 1.5 (M′). ..... *crescens*
6. Parafrontalia broad (B); mesoscutum punctured (F′); 5x-index about 2.0 (O). ..... *viridifrons*
— Parafrontalia narrow (b); mesoscutum smooth (F); 5x-index about 1.5 (O′). ..... *striatifrons*

Key to *Sphaerogastrella* Species

1. Posterior reclinate orbital present (B); apical scutellars long (J). ..... *flabellata*
— Posterior reclinate orbital absent (b); apical scutellars short (j). 2
2. Second oral absent (d); tarsus of fore leg white (p). 3
— Second oral present (D), if absent tarsus of fore leg not white (P if d). 5
3. Mesoscutum glossy black (F); femora yellowish brown (K); C3-fringe about 1/2 (M). ..... *javana*
— Mesoscutum glossy bluish black (f); femora black (k); C3-fringe about 1/2 (m). 4
4. Anterior reclinate orbital absent (a); wing basally not black (L). ..... *novoguinensis*
— Anterior reclinate orbital present (A); wing basally black (l). ..... *papuana*
5. Lateral scutellars half apicals (Q); vibrissa present (E). 8
— Lateral scutellars less than 1/3 apicals (q). 6
6. Vibrissa absent (e); C3-fringe about 1/3 (m); tarsus of fore leg not white (P). ..... *granulosa*
— Vibrissa present (E); C3-fringe about 1/2 (M); tarsus of fore leg white (p). ..7
7. Scutellum normal, trapezoid (G); lateral scutellars present (I); halter black (n). ..... *albimana*

— Scutellum abnormal, upright (g); lateral scutellars absent (i); halter yellow (N). ..... *hypsela*

8. Anterior reclinate orbital present (A); femora yellowish brown (K); C3-fringe about 1/3 (m); halter yellow (N); aedeagus with ventral process (o). ..... *rostralis*

— Anterior reclinate orbital absent (a); femora black (k). 9

9. C3-fringe about 1/2 (M); halter black (n); aedeagus without ventral process (O). ..... *scutellaris*

— C3-fringe about 1/3 (m); halter yellow (N); aedeagus with ventral process (o). ..... *angustifrons*

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