

Patterned-wing Species of *Drosophila* (*Scaptodrosophila*)
of Southeast Asia and New Guinea
(Diptera, Drosophilidae)

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Abstract The patterned-wing species of *Drosophila* (*Scaptodrosophila*) of Southeast Asia and New Guinea are reviewed with descriptions of three new species from Papua New Guinea.

The drosophilid flies having their wings black-patterned have been known to occur in various genera, especially in *Eostegana*, *Stegana* (*Pseudostegana*), *Leucophenga*, *Dettopsomyia*, *Hypselothyrea*, *Collessia*, *Pseudiasata* and *Tambourella*. Among the genus *Drosophila*, they are frequent in the Hawaiian species, less so in the *melanogaster* species group of the subgenus *Sophophora*, and rare in the subgenera *Hirtodrosophila* and *Scaptodrosophila*. Although BOCK and PARSONS (1978) considers that the patterned-wing species of *Hirtodrosophila* appear to be endemic to Australia (*mycetophaga* MALLOCH, *polypori* MALLOCH, *hannae* BOCK et PARSONS), there are examples also from other regions (*macromaculata* KANG et LEE from Korea and Japan, *fascipennis* OKADA from Japan and Taiwan, *elliptosa* OKADA from Japan).

Concerning *Scaptodrosophila* with patterned wing, BOCK and PARSONS (1978) enumerates 2 species: *pictipennis* KERTÉSZ and *fumida* MATHER. DUDA (1927) counts 4 species of patterned-wing *Paradrosophila* (= *Scaptodrosophila*): *sigmoides* LOEW, *flexa* LOEW, *paradoxa* LAMB and *inversa* WALKER, but they are now in the subgenus *Siphlodora* (former 2 species) and the genus *Cladochaeta* (latter 2). DE MEIJERE (1916) enumerates 5 species of patterned-wing *Drosophila*: *quadripunctata* DE MEIJERE (now in *Leucophenga*), *ustulata* DE MEIJERE (subgenus *Drosophila*), *undulata* GRIMSHAW (now in *Engiscaptomyza*), *pictipennis* and *punctipennis* (VAN DER WULP), the latter 2 being *Scaptodrosophila*.

The present work treats 7 species of patterned-wing *Scaptodrosophila* of Southeast Asia and New Guinea with descriptions of 3 new species from Papua New Guinea. The types of new species are deposited in the Bishop Museum, Honolulu.

Drosophila (*Scaptodrosophila*) *lurida* WALKER

(Fig. 1 A-C)

Drosophila lurida WALKER, 1860. Proc. Linn. Soc., 4: 169 (Celebes).

Drosophila (*Paradrosophila*) *lurida*: STURTEVANT, 1927: 370 (Philippines, Java, Celebes).

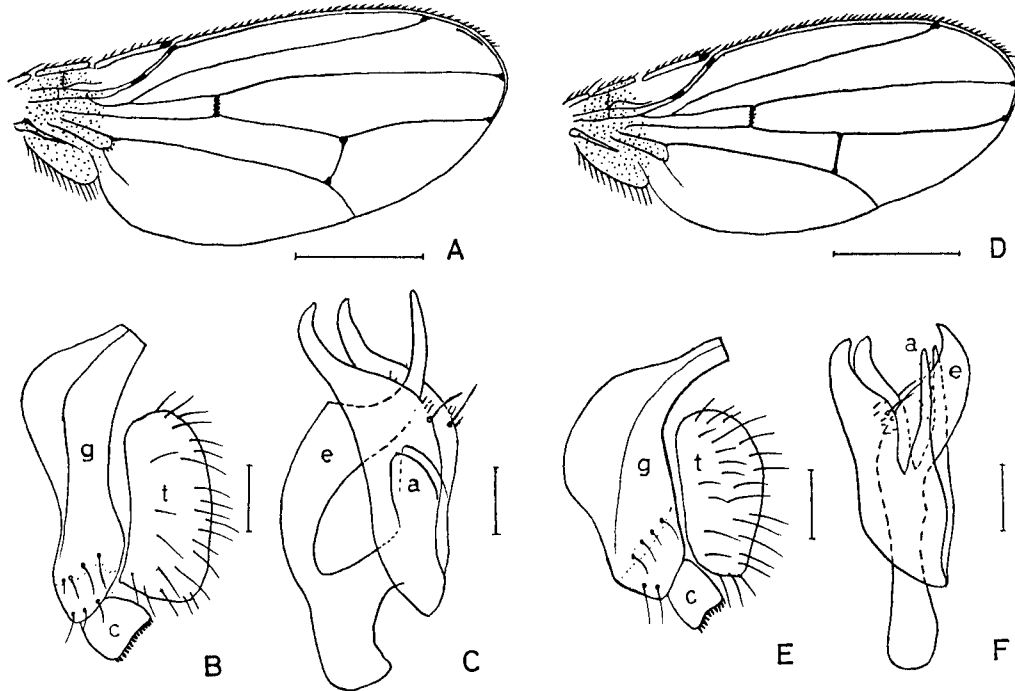


Fig. 1. A-C, *Drosophila (Scaptodrosophila) lurida*; D-F, *D. (S.) parapunctipennis*. A, D, Wing; B, E, periphallallic organs; C, F, phallic organs. a, Anterior paramere; c, surstylus; e, aedeagus; g, epandrium; t, cercus. Scales 1 mm in wings, 0.1 mm in other figures.

Drosophila (Scaptodrosophila) lurida: OKADA, 1976. *Makunagi*, (8): 4 (Sumatra, Singapore, New Guinea* etc.).

Disomyza punctipennis VAN DER WULP, 1886. *Dipt. Midd.-Sumatra Exped.*, 4 (9): 56 (Sumatra).

Drosophila punctipennis: DE MEIJERE, 1908. *Tijdschr. Ent.*, 51: 152 (Java; syn. of *lurida* WALKER).

Drosophila (Paradrosophila) punctipennis: DUDA, 1926. *Suppl. Ent.*, (14): 75 (Singapore).

Wing (Fig. 1 A; DUDA, 1924, pl. 4, fig. 58) basally black, with black spots at the ends of long veins and a black streak at the end of cell R_{2+3} ; anterior crossvein black; posterior crossvein black at both ends; R_{4+5} and M nearly parallel; 4V-index about 1.0 (DUDA, 1924). Surstylus (Fig. 1 B) with about 15 teeth; aedeagus (Fig. 1 C) distally much narrowing; anterior paramere short and conical.

Specimens examined. 1 ♂, Tugu, near Bogor, Java, 27-30. VII. 1971 (OKADA); 1 ♀, Pekambaru, Sumatra, 2-4. VIII. 1971 (OKADA).

Distribution. Celebes, Philippines, Java, Sumatra, Singapore. OKADA (*loc. cit.**) erroneously recorded it from New Guinea.

Drosophila (Scaptodrosophila) parapunctipennis DUDA

(Figs. 1 D-F)

Drosophila (Paradrosophila) parapunctipennis DUDA, 1924: 205; 1926. *Suppl. Ent.*, (14): 75 (New Guinea).

Drosophila (Scaptodrosophila) parapunctipennis: OKADA & CARSON, 1982: 409 (New Guinea).

Wing (Fig. 1 D) basally black, spotted at the ends of long veins as in the preceding species, but without black streak at the end of Cell R_{2+3} ; anterior and posterior crossveins black on entire length; M somewhat bending to R_{4+5} distally; 4V-index 2.0 (DUDA, 1924). Surstylus (Fig. 1 E) with about 10 teeth; aedeagus (Fig. 1 F) broad, apically shortly pointed; anterior paramere slender, as long as epandrium.

Specimens examined. 3 ♂, Wau, Papua New Guinea, 14. IX. 1977 (OKADA), in banana traps; 8 ♂, 4 ♀, Lae, Papua New Guinea, 27–29. IX. 1977 (OKADA), ex flowers of torch ginger, *Nicolaia elatior*.

Distribution. New Guinea.

Remarks. CARSON (in OKADA & CARSON, 1982) reared 13 specimens from the inflorescence of torch jinger in Lae. Lectotype was designated by BÄCHLI (1984: 36).

Drosophila (Scaptodrosophila) pictipennis KERTÉSZ

(Figs. 2 A–F)

Drosophila pictipennis KERTÉSZ, 1901. Termes. Fuzetek., 24: 421 (New Guinea).

Drosophila (Paradrosophila) pictipennis: DUDA, 1923. Annls hist.-nat. Mus. hung., 20: 43; 1924: 206 (New Guinea).

Drosophila (Scaptodrosophila) pictipennis: BOCK & PARSONS, 1978: 342 (Australia).

The peculiar wing pattern of this species has been figured by KERTÉSZ (1901), DUDA (1924) and BOCK and PARSONS (1978). Periphalllic organs (Fig. 2 A) pale, surstylus with about 7 teeth; cercus somewhat constricted and bristly below. Phallic organs (Fig. 2 B) pale; aedeagus oblong; anterior paramere elongate; submedian spines long and stout. Posterior branches of Malpighian tubules (Fig. 2 D) apposed at tips. Testis (Fig. 2 E) simple; parovaria (Fig. 2 F) short, with big rounded heads; ventral receptacle short.

Specimens examined. 3 ♂, 28 ♀, Wau, Papua New Guinea, 27. VIII.–23. IX. 1977 (OKADA), mostly ex wet cloths at lodge; 6 ♀, Lake Kutsuba, 1,000 m, SE Papua New Guinea, 7. II. 1978 (KANO).

Distribution. New Guinea, Australia.

Remarks. According to BÄCHLI (1984) the type material of this species is not found in the Hungarian Natural History Museum, Budapest. Since STURTEVANT (1927: 367) designated this species as the type species of the subgenus *Paradrosophila* DUDA, discussions have been made about the taxonomic status of *Paradrosophila* by WHEELER (1957: 80) and WHEELER and TAKADA (1964: 185). Final settlement of the problem seems to be done by the present finding of the male specimens of *pictipennis*, which clearly shows the characteristics of *Scaptodrosophila*.

In Wau, the flies were found sitting on wet cloths hanging on the handrails of a house in rainy morning, with their wings alternatively waving as do the species of *Chymomyza* and Sepsidae. They were apt readily to flee by slight disturbance.

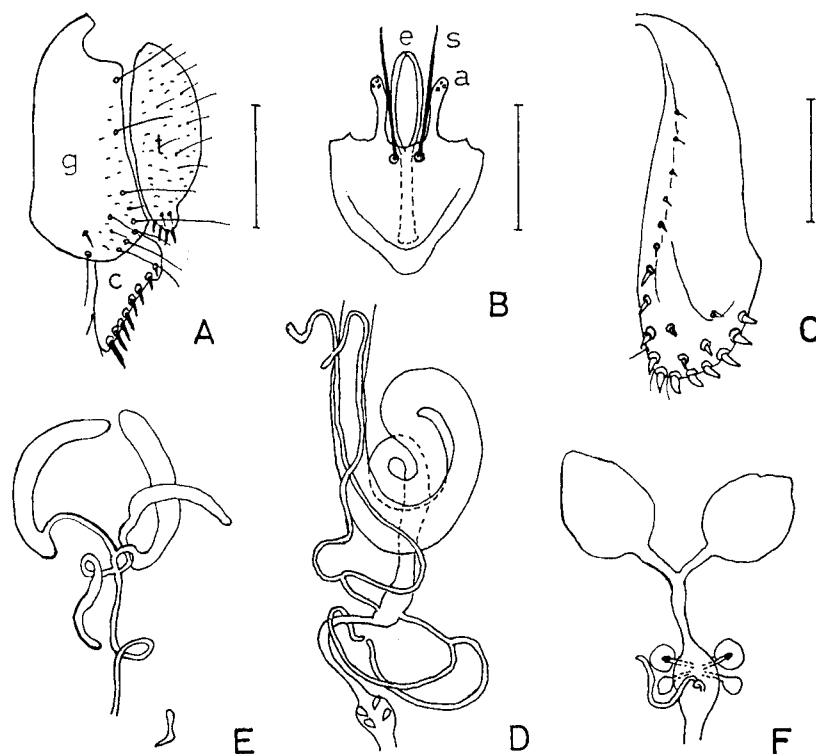


Fig. 2. *Drosophila (Scaptodrosophila) pictipennis*. A, Periphallallic organs; B, phallic organs; C, ovipositor; D, digestive system; E, ♂ internal reproductive organs; F, ♀ internal reproductive organs. Scales and signs as in Fig. 1.

Similar habit of waving wings is known also in *Cladochaeta nebulosa* COQUILLET and *Drosophila (Sophophora) nebulosa* STURTEVANT (DUDA, 1927).

Drosophila (Scaptodrosophila) gressitti n. sp.

(Fig. 3 A-C)

♂, ♀. Body about 2.5 mm in length. Eye bright red, bare. Antenna orange brown; arista with 4 upper and 2 lower branches and a moderate fork. Palpus glossy black, with a few strong setae below. Frons parallel-sided, mat black including periorbits and ocellar triangle, anteriorly orange and broader than long. Face orange. Carina yellow, rounded below, broad and flat above. Cheek orange gray, half as broad as greatest diameter of eye, buccal margin black. Clypeus mat brown, pruinose. Postverticals well developed. Proclinate orbital half as long as posterior reclinate, anterior reclinate orbital fine; 3 orbitals close together at middle of periorbit. Vibrissa strong, other orals very fine. Thorax glossy black; mesoscutum swollen above; scutellum pruinose. Scutellars equal in length and in mutual distances. Humerals 2, long. Prescutellars thin and long, slightly shorter than anterior dorsocentrals. Dorsocentrals long, anteriors 3/5 length of posteriors,

which are relatively widely apart from scutellum. Sterno-index 0.8. Legs slender, yellow; fore and mid femora except apices and fore tibia black; fore metatarsus as long as lest of tarsal joints; mid and hind metatarsi longer than lest of tarsal joints. Wing (Fig. 3 A) with prominent broad black stripes along costa, medially narrowing and apically broadened to reach M. R_{2+3} straight; R_{4+5} and M parallel. C-index 1.6; 4V-index 1.4; 4C-index 1.0; 5x-index 1.3; Ac-index 2.7. C1-bristles 2, strong; C3-fringe 9/10. Halter black, stalk yellow. Abdomen relatively long, tergites glossy black. Periphallalic organs (Fig. 3 B) yellowish brown; epandrium truncate below; surstylus with about 8 teeth. Phallic organs (Fig. 3 C) yellowish brown; aedeagus slender; anterior paramere slender, with sensilla scattered along its entire length; submedian spines 2, longer than anterior paramere.

Holotype ♂ (B282), 1 ♂, 1 ♀, 1 ex paratypes, Cyclops Mts., 200–1,000 m, W. Sentani, Hollandia area, Neth. New Guinea, 16–18. VII. 1955 (GRESSITT).

Distribution. New Guinea.

Remarks. The specific name is dedicated to the memory of the late Dr. J. Linsley GRESSITT.

This species resembles *D. pictipennis* in wing coloration and periphallalic organs, but body is black, wing has no black patch on posterior crossvein, R_{4+5} and M are slightly divergent and C-index is smaller.

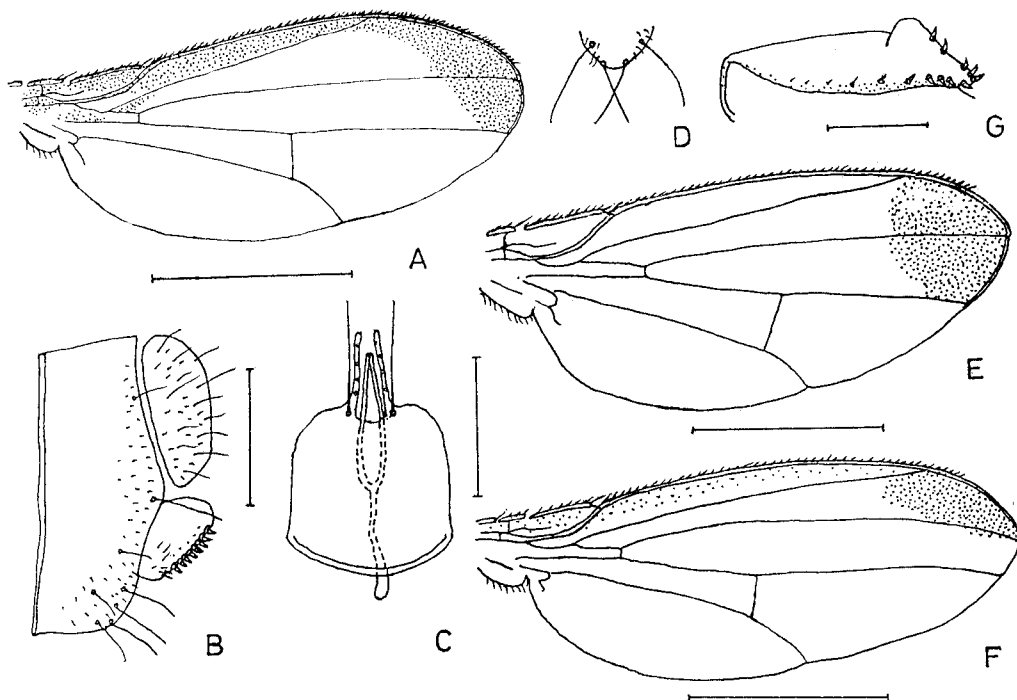


Fig. 3. A–C, *Drosophila (Scaptodrosophila) gressitti*; D, E, *D. (S.) hamptoni*; F, G, *D. (S.) puncteluta*. A, E, F, Wing; B, periphallalic organs; C, phallic organs; D, scutellum; G, ovipositor. Scales as in Fig. 1.

Drosophila (Scaptodrosophila) hamptoni n. sp.

(Fig. 3 D, E)

♂♀. Body about 2.5 mm in length. Eye red, with pile. Antenna orange yellow, 3rd joint twice as long as 2nd. Arista with 4 upper and 3 lower branches and a moderate fork. Palpus yellow, with a few setae below. Ocellar triangle subshining grayish brown. Periorbit subshining grayish brown, half as long as frons. Clypeus yellowish gray. Frons mat orange yellow, paler below. Face grayish white. Carina broad above. Cheek yellow, about 1/8 as broad as greatest diameter of eye. Vibrissa strong, other orals fine. Mesoscutum and scutellum mat yellowish orange; scutellum (Fig. 3 D) laterally setigerous. Thoracic pleura yellowish orange. Humerals 2. Propleurals present. Acrostichal hairs in 8 rows. Anterior dorsocentrals half as long as posteriors; length distance of dorsocentrals 2/5 cross distance. Lateral scutellars divergent, as long as apicals, which are nearer to each other than to laterals. Legs yellow; metatarsi as long as lest of tarsal joints. Wing (Fig. 3 E) with a large apical black patch, which extends below to reach M. R_{2+3} straight; R_{4+5} and M divergent distally. C-index 2.5; 4V-index 1.4; 4C-index 0.8; 5x-index 1.0; Ac-index 1.5. C3-fringe 1/2. Halter yellowish orange. Abdominal tergites yellowish orange, each with a pair of large black triangular spots. Epandrium truncate below; submedian spines of hypandrium 2, stout and long.

Holotype ♂, Headshump forest near Bulolo, 910 m, Papua New Guinea, 17. IX. 1977 (CARSON).

Distribution. New Guinea.

Remarks. The specific name is dedicated to Dr. Hampton L. CARSON.

This species is characteristic in having scutellum laterally setigerous as in the species of *Paraleucophenga* HENDEL. A large black wing spot is also peculiar among the subgenus.

Drosophila (Scaptodrosophila) puncteluta n. sp.

(Fig. 3 F, G)

♀. Body about 2.5 mm in length. Eye dark purple black, with pile. Antenna with 2nd joint orange brown, black above; 3rd gray, slightly longer than 2nd. Arista with 4 upper and 2 lower branches and a moderate fork. Periorbit subshining gray. Frons mat yellowish gray, anteriorly orange, with a pair of anteriorly convergent broad brownish black longitudinal stripes; anteriorly orange and 1/3 as broad as head width, posteriorly wider. Face grayish white. Carina narrow, long and high. Cheek yellowish gray, 1/3 as broad as greatest diameter of eye. Anterior reclinate orbital 1/3 as long as proclinate, nearer to proclinate than to posterior reclinate. Vibrissa strong, 2nd oral thin, 1/3 as long as vibrissa. Mesoscutum mat dark orange, with 4 straight narrow brownish longitudinal stripes along

entire length. Scutellum mat brownish black, pruinose. Thoracic pleura dark orange. Humeralis 2. Propleurals present. Prescutellars shorter than anterior dorsocentrals. Acrostichal hairs in 6 rows. Anterior dorsocentrals $2/3$ as long as posteriors; length distance of dorsocentrals half cross distance. Lateral scutellars divergent, shorter than apicals, which are equally apart from laterals and from each other. Sterno-index 0.7. Legs yellow; fore metatarsus as long as succeeding 3 tarsal joints; mid metatarsus slightly longer than and hind metatarsus much longer than last of tarsal joints. Wing (Fig. 3 F) fuscous below costa, with a large black spot apically in cell R_{2+3} . R_{2+3} nearly straight; R_{4+5} and M parallel. C-index 2.7; 4V-index 1.8; 4C-index 0.9; 5x-index 2.0; Ac-index 3.0. C1-bristles 2, unequal; C3-fringe $1/5$. Halter orange. Abdominal tergites mat black; 1T orange brown. Ovipositor (Fig. 3 G) yellowish brown, apically pointed.

Holotype ♀ (90302), 1 ♀ paratype, Mt. Kaindi, Wau, Papua New Guinea.

Distribution. New Guinea.

Remarks. This species resembles the foregoing species, *D. hamptoni*, in having a large black wing spot, which is, however, smaller, scarcely extending below R_{4+5} , and scutellum is not setigerous. Mesoscutum is striped as in *D. (Sc.) eluta* WHEELER et TAKADA, thus the specific name is based on this.

Drosophila (Scaptodrosophila) pilicrus DUDA

Drosophila (Paradrosophila) pilicrus DUDA, 1926. Suppl. Ent., (14): 74 (Sumatra).

Drosophila (Scaptodrosophila) pilicrus: OKADA, 1966. Bull. Br. Mus. nat. Hist., Suppl., (6): 67 (Nepal).

This species has black wing base as figured by DUDA, 1926.

Specimens examined. 1 ♀, Tugu, Java, 27. VII. 1971 (OKADA).

Distribution. Indonesia, Nepal.

Key to Patterned-wing *Scaptodrosophila* Species of Southeast Asia and New Guinea

1. Wing with large black patches along costa at least distally. 2
- Wing without large black patches along costa. 5
2. Costal black patch extended to wing base. 3
- Costal black patch not extended basally. 4
3. Posterior crossvein covered with a large black patch. *pictipennis*
- Posterior crossvein clear. *gressitti*
4. Costal black patch extended below to reach M. *hamptoni*
- Costal black patch not extended below R_{4+5} *puncteluta*
5. Wing black only at base. *pilicrus*
- Wing black at base and at the tips of long veins. 6

6. Cell R_{2+3} apically with a black streak along costa; R_{4+5} and M nearly parallel
 *lurida*
 — Cell R_{2+3} apically without black streak; M distally somewhat curved to R_{4+5} .
 *parapunctipennis*

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