

4p maculata group

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The *Leucophenga maculata* Species Group  
(Diptera, Drosophilidae) of the Palearctic  
and Oriental Regions

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**Abstract** Thirteen species of the *Leucophenga maculata* species group of the Palearctic and Oriental Regions are reviewed with taximetical analyses.

LIN and WHEELER (1972) established the *maculata-albiceps* complex in the genus *Leucophenga* MIK, for the species with so much individual variation in color, pollinosity and abdominal pattern that the species limits are uncertain. In the present study the *maculata* species group is established for this complex, in which thirteen species of the Palearctic and Oriental Regions are included.

**The *maculata* species group nov.**

*maculata-albiceps* complex, LIN et WHEELER, 1972, Univ. Texas Publ., 7213: 248.

**Diagnosis.** Body yellowish brown; palpus usually yellow, small in both sexes; halter yellow; wing hyaline, rarely smoky; male mesoscutum silvery pollinose in cephalic view; abdominal tergites with black spots or bands.

This species group is allied to the *subpollinosa* species group in having the silvery pollinose scutum in male, but the body is more robust and wing has no black patches.

***Leucophenga maculata* (DUFOUR)**

(Fig. 1 F)

*Drosophila maculata* DUFOUR, 1939, Ann. Sci. nat., (2nd Ser.), zool., 12: 50.

**Diagnosis.** Thoracic pleura dark brown patched; legs yellow, knees pale; abdominal tergites with somewhat confluent large black spots (Fig. 1 F); scutellum brown, laterally black, apically pale.

**Specimens examined.** 1 ♂, Macassar, Sulawesi, 30.XI.1973 (SHINONAGA); Taiwan: 1 ♂, Fenchifu, Chia-i, 12.IV.1965 (SAIGUSA); 1 ♀, Kuantsuling, Tainan, 7.IV.1965 (SAIGUSA); Papua New Guinea, 1 ♂, Wau Mc Adams Park, 22.IX.1977 (OKADA).

**Distribution.** Europe, Korea, Japan, Formosa, Indonesia, Sri Lanka,

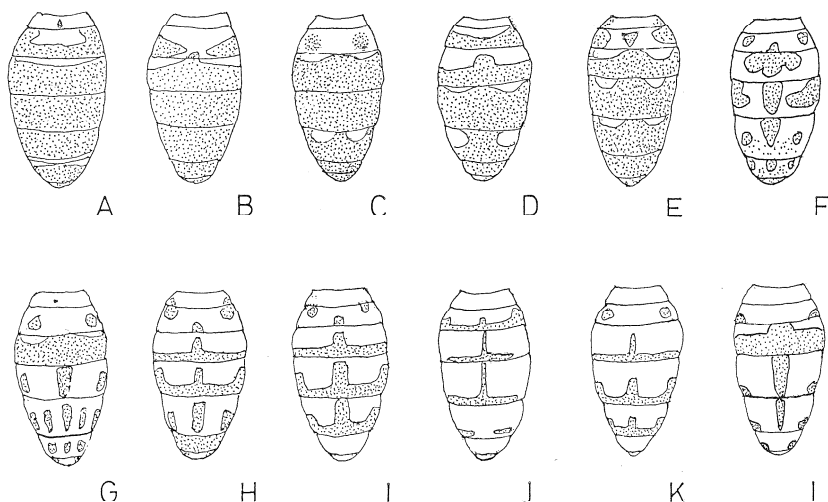


Fig. 1. *Leucophenga maculata* species group, abdominal tergite. A, *L. nigriceps*; B, *salatigae*; C, *rimbickana*; D, *confluens*; E, *meijerei*; F, *maculata*; G, *albiceps*; H, *concilia*; I, *cincta*; J, *sorii*; K, *stackelbergi*; L, *subacutipennis*. A-B, D-H. original figs.; C, I-L. from literature.

Papua New Guinea.

*subacutipennis* ?

### *Leucophenga confluens* DUDA

(Fig. 1 D)

*Leucophenga maculata* var. *confluens* DUDA, 1923, Annl. hist-nat. Mus. natn. hung., 20: 32.

*Leucophenga confluens*: LIN et WHEELER, 1972, Univ. Texas Publ., 7213: 244.

**Diagnosis.** Palpus brown; thoracic pleura with brown patches; legs pale yellow; wing hyaline; abdominal tergites mostly black, 2T with caudal black continuous bands (Fig. 1 D); scutellum dark brown, apically white.

**Specimens examined.** Formosa: 6♂, 7♀, Lishan, Taichung, 31.V.-1.VI.1971 (KANMIYA); 4♂, 2♀, Fenchifu, Chia-i, 12.IV.1965 (SAIGUSA, MIYAMOTO); 1♂, Hassenzan, Taichung, 29.V.1971 (KANMIYA).

**Distribution.** Formosa, Sri Lanka.

### *Leucophenga meijerei* DUDA

(Fig. 1 E)

*Leucophenga albiceps* var. *meijerei* DUDA, 1924, Archiv. naturgesch., 90 A (3): 240.

*Leucophenga meijerei*: LIN et WHEELER, 1972, Univ. Texas Publ., 7213: 248.

**Diagnosis.** Thoracic pleura pale, with dark patches; legs yellow; abdominal tergites mostly black; 2T yellow with 3 black spots (Fig. 1 E); scutellum black,

apically pale.

*Specimens examined.* Formosa: 4 ♀, Wulai, Taipei, 15.XII.1977 (IKEDA); 3 ♂, 4 ♀, Lishan, Taichung, 31.V-1.VI.1971 (KANMIYA); 4 ♂, 2 ♀, Fenchifu, Chia-i, 13.IV.1977 (SAIGUSA, MIYAMOTO); 1 ♀, Chiaoriping, Chia-i, 13.IV.1965 (SAIGUSA); 1 ♀, Taataka-anbu, Chia-i, 3.IV.1965 (SAIGUSA); 1 ♂, 1 ♀, Tungpu, Nantou, 10.IV.1965 (SAIGUSA); Amami Is., 1 ♀, Mt. Yuwan, 28.IV.1976 (KANMIYA).

*Distribution.* Formosa, Amami Is. (n. loc.).

*Leucophenga nigriceps* OKADA

(Fig. 1 A)

*Leucophenga nigriceps* OKADA, 1966. Bull. Brit. Mus. (Nat. Hist.) Ent. Suppl., 6: 31.

*Diagnosis.* Palpus yellow, apically black; thoracic pleura dark patched; legs yellow, with mid and hind knees black; wing hyaline; abdominal tergites mostly black (Fig. 1 A).

*Specimens examined.* Nepal (OKADA, 1966).

*Distribution.* Nepal.

*Leucophenga salatigae* DE MEIJERE

(Fig. 1 B)

*Leucophenga salatigae* DE MEIJERE, 1914. Tijdschr. Ent., 57: 260.

*Diagnosis.* Palpus black; thoracic pleura black striped; legs yellow; wing hyaline; abdominal tergites mostly black (Fig. 1 B); scutellum black, apically yellow.

*Specimens examined.* Nepal (OKADA, 1966)

*Distribution.* Java, Nepal, Africa.

*Leucophenga albiceps* DE MEIJERE

(Fig. 1 G)

*Leucophenga albiceps* DE MEIJERE, 1914. Tijdschr. ent., 57: 258.

*Diagnosis.* Palpus yellowish white; thoracic pleura pale yellowish white; wing hyaline; abdominal tergites black spotted (Fig. 1 G); scutellum dark yellowish brown, apically white.

*Specimens examined.* 1 ♂, 1 ♀, Puli, Nantow, Formosa, 19.VIII.1967 (OKADA); 1 ♂, Oozushi, Ehime, Japan, 3.VI.1973 (IKEDA).

*Distribution.* Java, Nepal, Formosa, Japan (n. loc.).

*Leucophenga concilia* OKADA

(Fig. 1 H)

*Leucophenga concilia* OKADA, 1956, Syst. Study Dros. Jpn.: 30.

*Diagnosis.* Palpus yellowish white; thoracic pleura black below; legs yellow with mid and hind knees black; wing hyaline; abdominal tergites with black caudal bands, which are protruded medially and laterally (Fig. 1 H); scutellum dark brown, apically yellow.

*Specimens examined.* 2 ♂, Sonai, Ishigaki Is., 24.VI.1971 (WATANABE); 1 ♂, Oohara, Iriomote Is., 9.VII.1974 (SHINONAGA); 1 ♀, Kamiozougawa, Saga, 10.VIII.1973 (YAMAGISHI).

*Distribution.* Japan, Korea, China.

*Leucophenga cincta* DE MEJERE

(Fig. 1 I)

*Leucophenga cincta* de MEJERE, 1911. Tijdschr. ent., 54: 395.

*Diagnosis.* Thoracic pleura yellowish brown; legs yellow; wing slightly brownish; abdominal tergites yellow, with medially protruded caudal black bands; 2T with 3 black spots (Fig. 1 I); scutellum brown, marginally yellow.

*Specimens examined.* None.

*Distribution.* Java.

*Leucophenga bezzii* STURTEVANT*Leucophenga bezzii* STURTEVANT, 1927. Phil. J. Sci., 32: 364.*Leucophenga limbickana* SINGH et GUPTA, 1981. Proc. Ind. Acad. Sci., 90: 197? (Fig. 1 C).

*Diagnosis.* Thoracic pleura yellow; legs yellow; wing smoky; abdominal tergites mostly black; scutellum reddish brown.

*Specimens examined.* None.

*Distribution.* Philippines, India(?).

*Leucophenga sorii* KANG, LEE et BAHUNG

(Fig. 1 J)

*Leucophenga sorii* KANG, LEE et BAHUNG, 1965. Annot. zool. japon., 38: 97.

*Diagnosis.* Palpus yellowish brown; thoracic pleura yellow; legs yellow; wing hyaline; 3-4T with narrow caudal black bands, which are medially protruded (Fig. 1 J); scutellum yellowish.

*Specimens examined.* None.

*Distribution.* Korea, Japan (Hokkaido).

*Leucophenga stackelbergi* DUDA

(Fig. 1 K)

*Leucophenga stackelbergi* DUDA, 1935. Die Fliegen Palaearkt. Reg., 58 G: 40.

*Diagnosis.* Thoracic pleura with blackish gray longitudinal stripe; legs yellow; wing hyaline, costa somewhat dark. 3-5T with narrow caudal bands, which are protruded medially and laterally (Fig. 1 K); scutellum mat yellowish brown.

*Specimens examined.* None.

*Distribution.* Siberia.

*Leucophenga subacutipennis* DUDA

*Leucophenga subacutipennis* DUDA, 1924. Archiv. Naturgesch., 90 A (3): 189.

*Diagnosis.* Thoracic pleura yellow; legs yellow; wing hyaline; abdominal tergites with narrow black caudal bands; scutellum mat yellowish brown.

*Specimens examined.* None.

*Distribution.* Formosa.

*Leucophenga rectinervis* OKADA

(Fig. 1 L)

*Leucophenga rectinervis* OKADA, 1966. Bul. Br. Mus. (N.H.) Ent. Suppl., 6: 33.

*Diagnosis.* Thoracic pleura yellow; legs yellowish white; abdominal tergites with black spots, 2T white, with 2 small black spots laterally (Fig. 1 L); scutellum yellowish brown, apically white.

*Specimens examined.* Nepal (OKADA, 1966).

*Distribution.* Nepal.

**Taximetric analyses**

Eight diagnostic characters (n=8, A-H) each coded in two states (0, 1) for thirteen species (t=13) are taximetrically analysed. From the n × t matrix (Table 1), a dendrogram of relationships of the species is produced by means of MCD proximity analysis and UPGMA cluster analysis (Fig. 2). A key to species is automatically established from the dendrogram.

- A. Palpus yellow (A=0) or apically black (a=1).
- B. Arista with upper branches more than 6 (B=0) or less than 5 (b=1).
- C. Thoracic pleura entirely yellow (C=0) or with dark patches (c=1).
- D. Legs yellowish white (D=0) or with knees black (d=1).

Table 1. Character (n) × Taxon (t) matrix.

t	n							
	A	B	C	D	E	F	G	H
<i>bezzii</i>	NC	0	0	0	0	1	0	1
<i>nigriceps</i>	1	1	1	1	0	1	1	0
<i>salatigae</i>	1	0	1	0	0	1	1	0
<i>maculata</i>	0	0	1	0	0	0	1	0
<i>confluens</i>	0	0	1	0	0	1	1	0
<i>meijerei</i>	0	0	1	0	0	1	1	0
<i>conclia</i>	0	0	1	1	0	0	1	0
<i>albiceps</i>	0	1	0	0	0	0	1	0
<i>cincta</i>	NC	0	0	0	0	0	1	0
<i>sorii</i>	0	0	0	0	0	0	0	0
<i>stackelbergi</i>	NC	NC	1	0	0	0	0	0
<i>subacutipennis</i>	0	0	0	1	NC	0	0	0
<i>rectinervis</i>	0	0	1	0	0	0	1	0

E. Halter pale (E=0) or with knob black (e=1).

F. Abdominal tergites black spotted or banded (F=0) or mostly black (f=1).

G. Scutellum yellowish brown (G=0) or basally black and apically yellow (g=1).

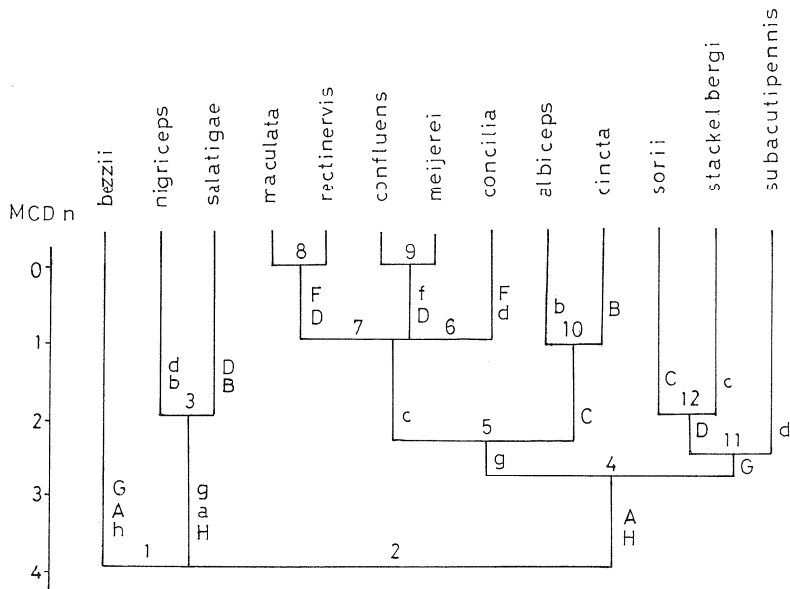


Fig. 2. A dendrogram of the species of the *Leucophenga maculata* species group. Alphabetical signs on the branches = diagnostic character states chosen from the original  $n \times t$  matrix (Table 1); numerical figures at the branching points = orders of key couplets.

H. Wing hyaline (H=0) or smoky (h=1).

### Key to the species

1. Wing smoky (h); palpus yellow (A); scutellum yellowish brown (G) ... *bezzi*  
— Wing hyaline (H). ..... 2
2. Palpus apically black (a); scutellum black or dark brown, apically yellow (g).  
..... 3  
— Palpus usually yellow (A). ..... 4
3. Arista with upper branches less than 5 (b); legs with knees black (d). .....  
..... *nigrescens*  
— Arista with upper branches more than 6 (B); legs yellowish white (D). .....  
..... *salatigae*
4. Scutellum basally black, apically yellow (g). ..... 5  
— Scutellum yellowish brown (G). ..... 11
5. Thoracic pleura with dark brown patches (c). ..... 6  
— Thoracic pleura yellow (C). ..... 10
6. Legs with mid and hind knees black (d); abdominal tergites black banded (F).  
..... *conclia*  
— Legs yellowish white (D). ..... 7
7. Abdominal tergites black spotted (F). ..... 8  
— Abdominal tergites mostly black (f). ..... 9
8. 2T with 3 black spots. .... *maculata*  
— 2T with 2 small black spots. .... *rectinervis*
9. 2T with caudal black band. .... *confluence*  
— 2T with 3 black spots. .... *meijerei*
10. Arista with upper branches less than 5 (b). .... *albiceps*  
— Arista with upper branches more than 6 (B). .... *cincta*
11. Legs with knees black (d). .... *subacutipennis*  
— Legs yellowish white (D). .... 12
12. Thoracic pleura with dark brown patches (C). .... *stackelbergi*  
— Thoracic pleura yellow (C). .... *sorii*

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**Literature**

- LIN, F-J. & M. R. WHEELER, 1972. The Drosophilidae of Taiwan I. Genera *Leucophenga* and *Paraleucophenga*. *Univ. Texas Publ.* 7213: 237-256.
- OKADA, T., 1966. Diptera from Nepal: Cryptochaetidae, Diastatidae & Drosophilidae. *Bull. Br. Mus. (Nat. Hist.) Ent. Suppl.*, 6: 1-129.