

The *Drosophila immigrans* Species-group of the Subgenus *Drosophila* (Diptera: Drosophilidae) in Yunnan, China

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ABSTRACT—A total of 22 species of the *Drosophila immigrans* species-group are reported from Yunnan, China, with description of 4 new species, redescription of 2 known species and new records of 14 known species from China.

INTRODUCTION

The *Drosophila immigrans* species-group consists of four subgroups: the *immigrans*, *nasuta*, *hypocausta* and *quadrilineata* subgroups [1–3]. This species-group comprises the greater part of the drosophilid fauna in the Oriental Region [4–6]. Up to the present, 6 species of this group, *D. immigrans* Sturtevant, 1921, *D. nixifrons* Tan, Hsu et Sheng, 1949, *D. hexastriata* Tan, Hsu et Sheng, 1949, *D. annulipes* Duda, 1924, *D. spuricurveps* Zhang et Gan, 1986 and *D. ruberrimoides* Zhang et Gan, 1986, have been reported from China [7, 8]. Based upon collections from Yunnan, this paper adds 4 new and 14 known species to the faunal list of this group in China. The 14 species new to China are *D. formosana* Duda, 1926, *D. shwezeyana* Toda, 1986, *D. burmae* Toda, 1986, *D. ruberrima* Meijere, 1911, *D. pentafuscata* Gupta et Kumar, 1986, *D. metasetigerata* Gupta et Kumar, 1986, *D. albomicans* Duda, 1924, *D. sulfurigaster albostrigata* Wheeler, 1969, *D. kohkoa* Wheeler, 1969, *D. siamana* Ikeda et al., 1983, *D. notostriata* Okada, 1966, *D. flavitibiae* Toda, 1986, *D. obscurinervis* Toda, 1986 and *D. quadrilineata* Meijere, 1911. *D. immigrans* and *D. annulipes* were also collected from Yunnan. In total, 24 species of the *immigrans* group (11 spp. of

the *immigrans* subgroup, 4 spp. of the *nasuta* subgroup, 1 sp. of the *hypocausta* subgroup, and 8 spp. of the *quadrilineata* subgroup) have been recorded from southern China. This number is the largest on the world, followed by Burma (18 spp.), Taiwan (17 spp.), India (17 spp.), Borneo (15 spp.), Malaya (12 spp.) and Sumatra (11 spp.), suggesting that the southwestern part of China is an evolutionary center of this species-group, especially the *immigrans* and *quadrilineata* subgroup.

Two known species which were originally described in Chinese [8] are redescribed here in English, along with 4 new species. All holotypes and paratypes are deposited in the Kunming Institute of Zoology, Academia Sinica, China. The diagnoses of the subgenus, species-group and species-subgroups were previously given by Toda [3].

D. IMMIGRANS SPECIES-SUBGROUP

Drosophila (Drosophila) spuricurveps Zhang et Gan
(Figs. 1–4)

Drosophila (Drosophila) spuricurveps Zhang et Gan, 1986 [8]: 359.

♂, ♀. Body ca. 4.0–4.5 mm wing ca. 4.0–4.5 mm in length.

Head: Eye purple red, with thin pile. Second joint of antenna yellow, with 2 stout setae; 3rd joint yellow. Arista with 4 dorsal, 1 ventral branches and moderate terminal fork. Palpus yellow, with 2 stout bristles and a few small hairs.

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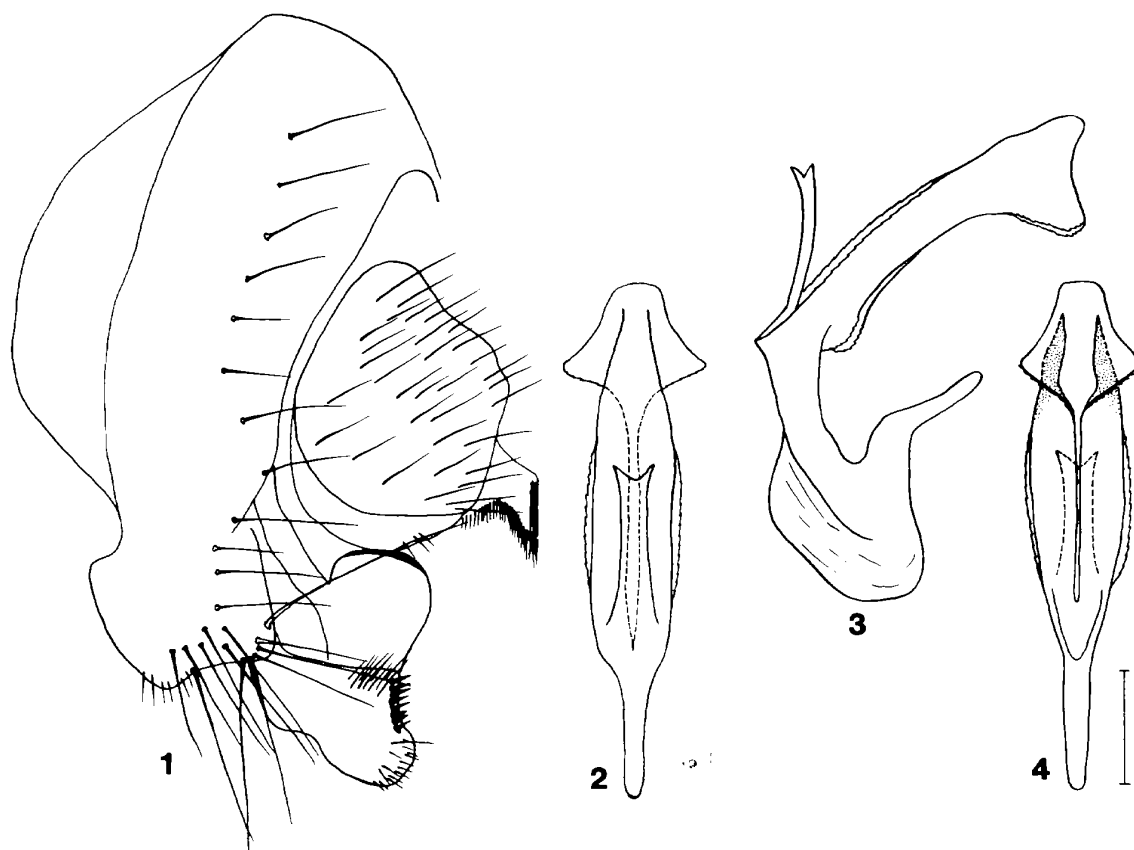
Ocellar triangle black, with a few hairs; ocellars long. Periorbit yellowish. Frons orange yellow. Clypeus dark brown. Frons *ca.* $1/2$ as broad as head, with a few frontal hairs. Face brownish. Carina low and short, without sulcus. Cheek yellow, black at base of vibrissa, *ca.* $1/5$ as broad as greatest diameter of eye. Posterior reclinate orbital nearer to proclinate than to inner vertical. Anterior reclinate orbital *ca.* $2/5$ length of posterior reclinate; proclinate *ca.* $4/5$ length of posterior reclinate. Vibrissa long, stout and black, 2nd oral *ca.* $1/5$ length of vibrissa.

Thorax: Mesoscutum dark brown, with 6 obscure black longitudinal stripes; median 2 stripes between dorsocentrals, sometimes fused to each other at anterior part; 2 stripes running along line of dorsocentrals; outer 2 stripes from transverse suture. Scutellum brownish black, paler at anterior corner and tip. Thoracic pleura brown, with 3 obscure black longitudinal stripes; upper one narrow, short from lower part of episternum to base of wing; middle one broad, slightly fused anterior-

ly with upper one, running from upper part of propleurite to base of haltere; lower one broad, running through nearly entire length of sternoeplis-ternum. Sometimes thoracic pleura entirely dark brown. Humeral plate brownish; humerals 2, upper one longer. Acrostichal hairs in 6 rows. Anterior dorsocentral *ca.* $0.6-0.7$ length of posterior; cross distance of dorsocentrals *ca.* 2.0 length distance. Anterior scutellars parallel, as long as posterior; posteriors convergent and crossed. Sterno-index *ca.* $0.5-0.6$.

Legs yellow. Fore femur with row of *ca.* 10 spinules. Preapicals on all tibiae; apicals on fore and mid tibiae. ♂ fore tarsus neither modified nor ornamented. Mid and hind tarsi without row of minute cuneiform bristles on underside. Fore metatarsus as long as 2 succeeding tarsal joints together; mid and hind metatarsi slightly shorter than rest together. Apical 2 tarsi brown.

Wing hyaline. Veins brown; anterior cross vein slightly cloud; posterior cross vein cloud; R_{4+5} and M parallel. C_1 -bristles 2, subequal.



FIGS. 1-4. *Drosophila (Drosophila) spuricurviceps* Zhang et Gan, 1986. 1:Periphalllic organs. 2: Aedeagus (dorsal view). 3: Ditto (lateral view). 4: Ditto (ventral view). Scale-line=0.1 mm.

Wing indices: C *ca.* 4.0–4.5, 4V *ca.* 1.6, 4C *ca.* 0.6, 5x *ca.* 1.3, Ac *ca.* 1.8, C3F *ca.* 1/3–1/4. Haltere milky white.

Abdomen: ♂ tergites black, except yellow 1st tergite. ♀ tergites yellow, each with uninterrupted caudal black band. Sternites pale yellow.

Periphallic organs (Fig. 1): Epandrium in upper part dark brown, with 8 bristles; in lower 1/3 pale yellow, with *ca.* 16–17 bristles; ventrally truncate. Surstylus with slightly concave row of *ca.* 8 primary teeth on middle margin; lower part convex, with small bristles; upper part strongly convex, bare; medio-inner surface with small bristles. Cercus setigerous except ventral margin, brown except anterolateral (black) and ventral (yellow) margins, caudo-ventrally with flap bearing V-shaped row of stout bristles on ventral margin.

Phallic organs (Figs. 2–4): Aedeagus round at tip, apicoventrally with 1 pair of marginally serrate flaps, dorsomedially and ventrobasally serrate on lateral margins. Dorsal process elongated and flattened flap, apically bifid. Apodeme broad in lateral view. Novasternum nearly quadrate; hypandrial plate triangular, with 1 pair of small submedian spines.

Ovipositor yellow, apically broad and round, with *ca.* 22 marginal but no discal teeth.

Specimens examined. China: 6♂, 1♀, Kunming, Yunnan Province, 21.II.1987 (M. J. Toda).

Distribution. China: Yunnan.

Relationships. This species is closely related to *D. curviceps* Okada et Kurokawa, 1957, but differs from the latter in the morphology of aedeagus, surstylus and carina. Zhang and Gan [8] regarded the presence of V-shaped row of stout bristles on caudoventral expansion of cercus as an important diagnostic character by which the present species is distinguished from *D. curviceps*, based on the ignorance of similar character in the original description of the latter species [9]. However, one of us (M. J. T.) confirmed the presence of the similar structure, i.e. caudoventral expansion with numerous stout bristles, in Japanese specimens of *D. curviceps*.

Drosophila (Drosophila) ruberrimoides Zhang et Gan
(Figs. 5–8)

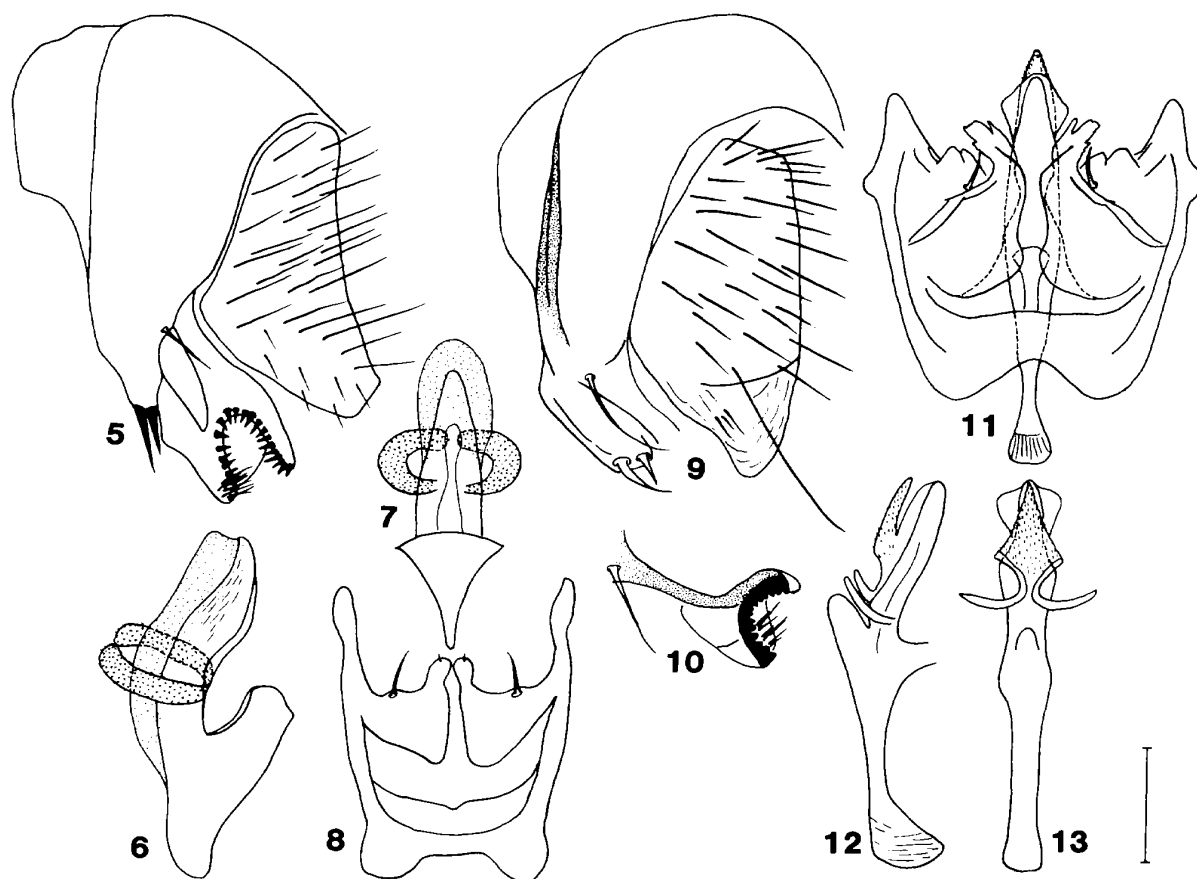
Drosophila (Drosophila) ruberrimoides Zhang et Gan, 1986 [8]: 360.

♂. Body *ca.* 4.0–4.5 mm, wing *ca.* 4.0–4.5 mm in length.

Head: Eye tannish red, with thick pile. Second joint of antenna dark brown, with 3 stout setae; 3rd joint yellow. Arista with 6 dorsal, 4 ventral long branches and moderate terminal fork. Palpus yellow, with 2 long stout bristles at tip and a few small hairs. Ocellar triangle black, with silvery-white shinning on outside margin of ocelli in frontal view, with a few small hairs; ocellars long and divergent. Periorbit shinning silvery-white in frontal view. Frons brownish yellow in frontal view but shinning silvery-white in lateral view, anteriorly orange-yellow. Clypeus brown. Frons *ca.* 1/3 as broad as head, with a few frontal hairs. Face brown. Carina high, wider in lower part. Cheek yellow, *ca.* 1/7 as broad as greatest diameter of eye. Occiput medially black. Posterior reclinate orbital nearer to proclinate orbital than to inner vertical. Anterior reclinate orbital *ca.* 1/3 length of posterior reclinate; proclinate *ca.* 3/4 length of posterior reclinate. Vibrissa and 2nd oral stout, black and long; 2nd oral as long as vibrissa; other orals small.

Thorax: Mesoscutum yellow. Scutellum brownish yellow, quadrate. Thoracic pleura yellow. Humerals 2, subequal. Acrostichal hairs in 8 rows. Anterior dorsocentral *ca.* 2/5 length of posterior; cross distance of dorsocentrals *ca.* 3.0 length distance. Anterior scutellars divergent; posteriors convergent. Anterior scutellar as long as posterior. Sterno-index *ca.* 0.6; mid sternopleural nearly equal to anterior.

Legs yellow. Fore femur thick, with row of *ca.* 13–17 spinules. Preapicals on all tibiae, apicals on mid tibia. ♂ fore proximal 2 tarsal joints thin and short, each with thick hair tuft on inner side and 1 black, long bristle at distal end. Mid and hind tarsi each with row of minute cuneiform bristles on underside. Fore metatarsus shorter than 2 succeeding tarsal joints together; mid and hind metatarsi slightly shorter than rest together.



FIGS. 5-8. *Drosophila (Drosophila) ruberrimoides* Zhang et Gan, 1986. 5: Periphallallic organs. 6: Aedeagus (lateral view). 7: Ditto (ventral view). 8: Novasternum (ventral view). Scale-line=0.1 mm.

FIGS. 9-13. *Drosophila (Drosophila) serraprocessata* sp. nov. 9: Periphallallic organs. 10: Surstylus. 11: Phallic organs (ventral view). 12: Aedeagus (lateral view). 13: Ditto (dorsal view). Scale-line=0.1 mm.

Wing hyaline. Veins yellow; anterior cross vein clear; posterior cross vein cloud; R_{4+5} and M parallel. C_1 -bristles 2, subequal. Wing indices: C *ca.* 2.5-2.6, 4V *ca.* 1.4, 4C *ca.* 0.8-0.9, 5x *ca.* 0.8, Ac, *ca.* 2.5, C3F *ca.* 4/5. Haltere yellowish white.

Abdomen: Tergites yellow; 2nd to 5th tergites each with medially interrupted, caudal, dark brown band; 6th tergite almost entirely dark brown.

Periphallallic organs (Fig. 5): Epandrium black, paler in lower part, with 1 bristle near base of surstylus; toe narrow, with 2 stout black teeth. Surstylus brown, bell-shaped, with black, stout primary teeth arranged in U-shaped row. Cercus slightly oval, black, with many bristles.

Phallic organs (Figs. 6-8): Aedeagus black, slightly curved ventrad; dorsal process articulated

with aedeagus, with many small spinules on surface; membranous structure surrounding aedeagus, with small warts on surface. Anterior paramere fused to hypandrium, with 1 sensillum. Novasternum with 1 pair of stout submedian spines.

Specimens examined. Holotype ♂, China: Kunming, Yunnan Province, 1.VII.1984 (W. X. Zhang). Paratype, 1 ♂, same data as holotype.

Distribution. China: Yunnan.

Relationships. This species belongs to the *D. immigrans* species-subgroup, because of having a characteristic dorsal process on aedeagus, resembles somewhat *D. ruberrima* in body color and ♂ fore metatarsus, but differs from the latter in the structure of ♂ genitalia.

***Drosophila (Drosophila) serraprocessata* sp. nov.**
(Figs. 9–13)

♂. Body *ca.* 3.0–3.5 mm in length.

Head: Eye tannish red, with pile. Second joint of antenna yellow, with 3 stout setae; 3rd joint yellowish. Arista with 7 dorsal, 3 or 4 ventral long branches and moderate terminal fork. Palpus yellow, with 1 long stout bristle at tip and a few small hairs. Ocellar triangle yellow, black on inner margins of ocelli, with a few small hairs; ocellars long. Periorbit yellow. Frons yellowish red; periorbit and anterior part of frons shining silvery-white in lateral view. Clypeus medially yellow, laterally brown. Frons *ca.* 1/2 as broad as head, with a few frontal hairs. Face brownish. Carina high, upper narrow and lower wide. Cheek yellow, brown at base of vibrissa, *ca.* 1/9 as broad as greatest diameter of eye. Posterior reclinate orbital nearer to inner vertical than to proclinate orbital. Anterior reclinate orbital *ca.* 3/7 length of posterior reclinate; proclinate *ca.* 9/10 length of posterior reclinate. Second oral as long as vibrissa.

Thorax: Mesoscutum brownish yellow. Scutellum brownish yellow. Thoracic pleura yellow. Humeral 3; upper one smallest. Acrostichal hairs in 8 rows. Anterior dorsocentral *ca.* 1/2 length of posterior; cross distance of dorsocentrals *ca.* 2.4 length distance. Anterior scutellar as long as posterior. Sterno-index *ca.* 0.7.

Legs yellow. Fore femur with row of *ca.* 11–12 spinules. Preapicals on all tibiae; apicals on mid tibia. ♂ fore tarsus anteriorly with long recurved hairs; proximal 2 tarsal joints with thick hair tuft on inner side. Mid and hind tarsi each with row of minute cuneiform bristles on underside. Fore metatarsus shorter than 2 succeeding tarsal joints together; mid and hind metatarsi as long as rest together.

Wing hyaline. Veins brownish yellow; anterior cross vein clear; posterior cross vein cloud; R_{4+5} and M nearly parallel. C_1 -bristles 2, upper one larger. Wing indices: C *ca.* 2.8, 4C *ca.* 0.75, 4V *ca.* 0.65, 5x *ca.* 1.0, Ac *ca.* 2.6, C3F *ca.* 6/7. Haltere yellowish.

Abdomen: Tergites yellow; 2nd to 5th tergites each with narrow, not sharply demarcated, medial-

ly interrupted, caudal dark brown band; 6th tergite entirely yellow.

Periphallic organs (Figs. 9 and 10): Epandrium brown and shining, with 1 bristle at base of surstylus and 2 black stout teeth on toe. Surstylus (Fig. 10) with *ca.* 14 black primary teeth in concave row on entire distal margin. Cercus large, oval, brown, with many long bristles; ventral part paler, with *ca.* 3 short bristles.

Phallic organs (Figs. 11–13): Aedeagus brown, subapically somewhat dilated, dorso-medially with knob; dorsal process membranous, hairy on upper half surface, basally with 1 pair of recurved, thin, bare branches. Hypandrial process with deep incision and serration on apical margin. Novasternum nearly quadrate, with 1 pair of submedian spines near bases of hypandrial processes.

Holotype ♂, China: Meng-long, Meng-la Country, Yunnan Province, 3.X.1985 (W. X. Zhang).

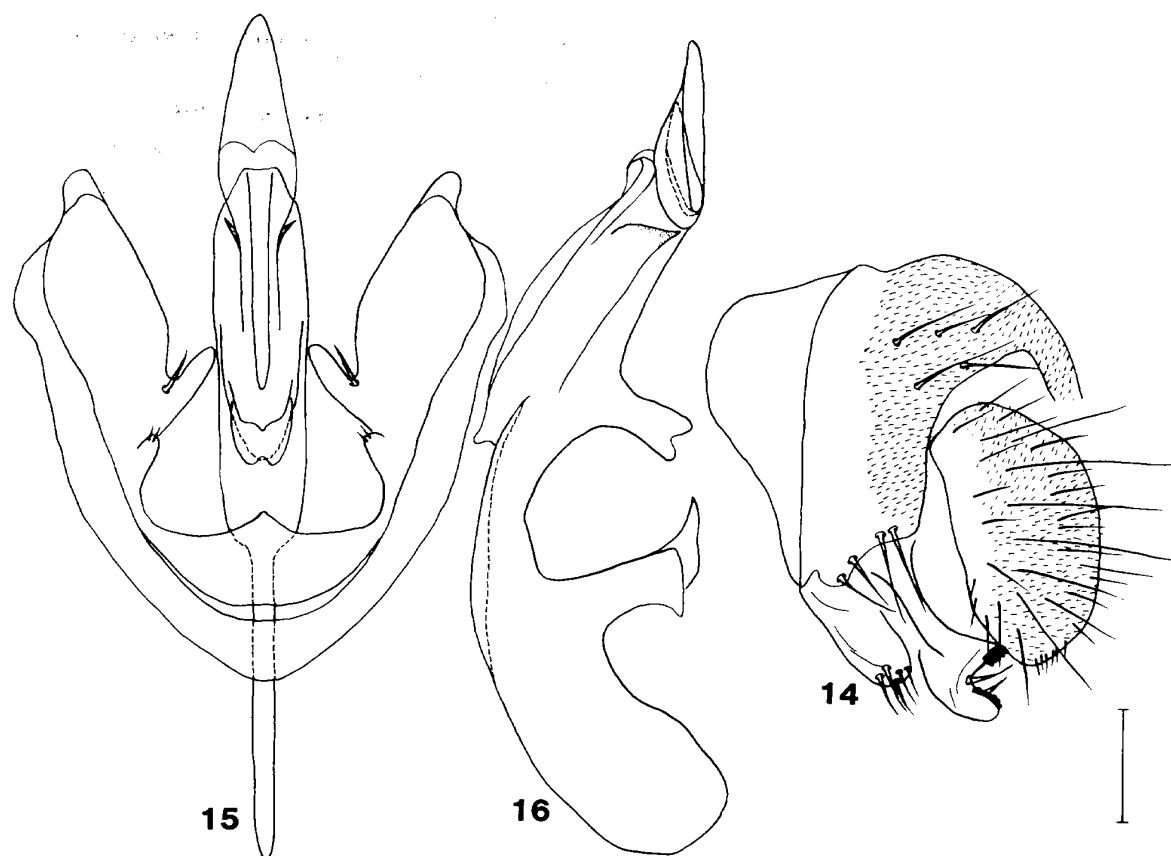
Distribution. China: Yunnan.

Relationships. This species somewhat resembles the foregoing species, *D. ruberrimoides*, in the morphology of aedeagus and epandrium, but differs from the latter in hypandrial process and surstylus.

***Drosophila (Drosophila) parustulata* sp. nov.**
(Figs. 14–16)

♂. Body *ca.* 3.5–4.0 mm in length.

Head: Eye tannish red, with thick pile. Second joint of antenna yellow, with 2 stout setae; 3rd joint yellowish. Arista with 7 dorsal, 5 ventral branches and small terminal fork. Palpus yellow, with *ca.* 3 or 4 long stout bristles and a few hairs. Ocellar triangle yellowish red, with a few small hairs; ocellars long. Periorbit yellow. Frons yellowish red. Clypeus medially yellow, laterally brown. Frons *ca.* 1/2 as broad as head, with a few frontal hairs. Face yellow. Carina high, wider in lower part. Cheek yellow, *ca.* 1/7 as broad as greatest diameter of eye. Posterior reclinate orbital nearer to proclinate orbital than to inner vertical. Anterior reclinate orbital *ca.* 1/3 length of posterior reclinate; proclinate *ca.* 2/3 length of posterior reclinate. Vibrissa and 2nd oral long and



FIGS. 14–16. *Drosophila (Drosophila) parustulata* sp. nov. 14: Periphallic organs. 15: Phallic organs (ventral view). 16: Aedeagus (lateral view). Scale-line=0.1 mm.

stout, 2nd oral *ca.* $3/4$ length of vibrissa; other orals short and thin.

Thorax: Mesoscutum and scutellum yellowish red. Thoracic pleura yellow. Humerals 2, subequal. Acrostichal hairs in 8 rows. Anterior dorsocentral *ca.* $5/7$ length of posterior; cross distance of dorsocentrals *ca.* 2.4 length distance. Anterior scutellars convergent, *ca.* $3/4$ length of posterior; posteriors convergent and crossed. Sterno-index *ca.* 0.65.

Legs yellow. Fore femur with row of *ca.* 13–14 spinules. Preapicals on all tibiae; apicals on mid tibia. ♂ fore tarsus without thick hair. Mid and hind tarsi each with row of minute cuneiform bristles on underside. Fore metatarsus as long as 3 succeeding tarsal joints together; mid and hind metatarsi as long as rest together.

Wing hyaline. Veins brownish yellow; anterior cross vein clear; posterior cross vein cloud; R_{4+5} and M nearly parallel. C_1 -bristle 1. Wing indices: C *ca.* 4.9, 4C *ca.* 0.4, 4V *ca.* 1.1, 5x *ca.* 0.5, Ac *ca.* 1.4, C3F *ca.* 5/9. Haltere yellowish.

Abdomen: Tergites yellow; 2nd to 5th tergites each with narrow, caudal dark brown band.

Periphallic organs (Fig. 14): Epandrium pubescent dorsocaudally, with *ca.* 6 bristles in upper part and *ca.* 4 at base of surstylus, ventrally narrow and with *ca.* 5 short bristles. Surstylus deeply concave on distal margin, with *ca.* 5 teeth on upper distal margin, *ca.* 7 smaller teeth on lower distal margin and 2 long bristles. Cercus pubescent, with many bristles and tuft of several short bristles at caudoventral corner.

Phallic organs (Figs. 15 and 16): Aedeagus distally membranous and expanded like trumpet, laterally with 1 pair of acute, sclerotized projections, medioventrally with apically bifid, flattened appendage. Hypandrial process narrow. Novasternum large, V-shaped, with 1 pair of submedian spines near bases of hypandrial processes. Anterior parameres attached to lateral corners of novasternum, apically with 2 sensilla.

Holotype ♂, China: Meng-men, Meng-la County, Yunnan Province, 1.X.1985 (W. X.

Zhang).

Distribution. China: Yunnan.

Relationships. This species somewhat resembles *D. ustulata* Takada, Momma et Shima, 1973 in the shape of phallic organs, but differs from the latter in having hypandrial process, aedeagus laterally with 1 pair of acute sclerotized projections and medioventrally with an appendage, and surstylus with different arrangement of primary teeth.

D. QUADRILINEATA SPECIES-SUBGROUP

Drosophila (Drosophila) nullilineata sp. nov.

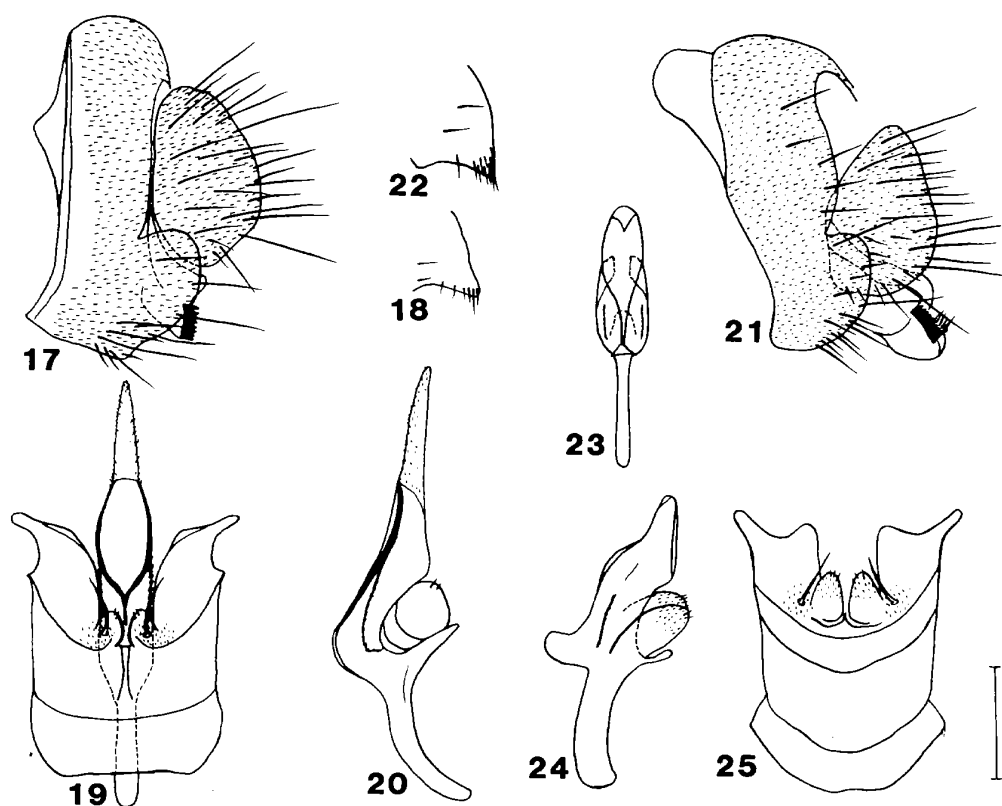
(Figs. 17–20)

♂, ♀. Body length ♂ *ca.* 2.5–3.0 mm. ♀ *ca.* 3.0–3.5 mm.

Head: Eye tannish red, with thin pile. Second joint of antenna yellow, with 2 stout setae; 3rd joint yellowish. Arista with 5 dorsal, 2 ventral branches and moderate terminal fork. Palpus yellow, with 2 long stout bristles apically and

subapically and a few hairs. Ocellar triangle yellow, brownish on inner margins of ocelli, with a few small hairs; ocellars long. Periorbit yellow. Frons yellowish red, with a few hairs in anterior part. Clypeus brownish. Frons *ca.* 1/2 as broad as head width. Face yellow. Carina high and narrow. Cheek yellow, *ca.* 1/6–1/7 as broad as greatest diameter of eye. Posterior reclinate orbital nearer to proclinate orbital than to inner vertical. Anterior reclinate orbital *ca.* 1/2 length of posterior reclinate; proclinate *ca.* 4/7 length of posterior reclinate. Vibrissa long, stout and black; 2nd oral *ca.* 1/2 length of vibrissa.

Thorax: Mesoscutum entirely yellow without stripes. Scutellum yellow. Thoracic pleura yellow with 2 brownish longitudinal stripes; upper one from upper part of propleurite to base of haltere; lower one running through nearly entire length of sternoepisternum. Acrostichal hairs in 6 rows. Anterior dorsocentral *ca.* 5/8 length of posterior; cross distance of dorsocentrals *ca.* 1.8–1.9 length distance. Anterior scutellars divergent, posteriors



FIGS. 17–20. *Drosophila (Drosophila) nullilineata* sp. nov. 17: Periphallallic organs. 18: Caudoventral apex of cercus. 19: Phallic organs (ventral view). 20: Aedeagus (lateral view). Scale-line=0.1 mm.

FIGS. 21–25. *Drosophila (Drosophila) flavimedifemur* sp. nov. 21: Periphallallic organs. 22: Caudoventral apex of cercus. 23: Aedeagus (ventral view). 24: Ditto (lateral view). 25: Novasternum. (Scale-line=0.1 mm.)

convergent and crossed; anterior *ca.* 1.2 length of posterior. Sterno-index *ca.* 0.7.

Legs yellow. Fore coxa brownish in proximal part and inner margin. Fore femur with row of *ca.* 9–10 spinules. Preapicals on all tibiae; apicals on fore and mid tibiae. Fore metatarsus as long as 3 succeeding tarsal joints together; mid and hind metatarsi as long as rest together. Mid and hind tarsi without row of minute cuneiform bristles.

Wing hyaline. Veins yellow; anterior and posterior cross veins clear; R_{4+5} and M slightly convergent; R_{2+3} slightly curved to costa at tip. C_1 -bristles 2, upper one larger. Wing indices: in ♂ C *ca.* 3.6, 4C *ca.* 0.7, 4V *ca.* 1.8, 5x *ca.* 1.75, Ac *ca.* 3.0, C3F *ca.* 1/3; in ♀ C *ca.* 4.4, 4C *ca.* 0.6, 4V *ca.* 1.7, 5x *ca.* 1.6, Ac *ca.* 2.4. Haltere yellowish.

Abdomen: Tergites yellow; 2nd to 5th tergites each with medially interrupted, laterally narrowing, dark brown caudal band and 1 pair of spots on lateral margins.

Periphallic organs (Figs. 17 and 18): Epanthrium entirely pubescent, broad especially in subapical part, with *ca.* 12 bristles in middle to lower part. Surstylus with straight row of *ca.* 7 or 8 primary teeth on middle to lower distal margin; upper half strongly convex and bare. Cercus oval, pubescent, separate from epanthrium, with many long bristles and *ca.* 5 short bristles at caudoventral apex (Fig. 18).

Phallic organs (Figs. 19 and 20): Aedeagus slender, longer than apodeme, apically tapering, transparent and with small spines, serrate on ventrosubmedial margins. Anterior paramere broad, oval in lateral view, separate from novasternum, with *ca.* 2 sensilla. Posterior paramere absent. Novasternum quadrate, pubescent around bases of 1 pair of submedian spines.

Holotype ♂, China: Shang-yong, Meng-la County, Yunnan Province, 27.IX.1985 (W. X. Zhang).

Allotype ♀, same data as holotype.

Distribution. China: Yunnan.

Relationships. This species certainly belongs to the *D. quadrilineata* species-subgroup because of having genitalia characteristic to this species-subgroup, but is unique in having mesoscutum without longitudinal stripes.

Drosophila (Drosophila) flavimedifemur sp. nov.
(Figs. 21–25)

♂. Body *ca.* 4.0–4.5 mm in length.

Head: Eye tannish red, with thick pile. Second joint of antenna brown, with 2 stout setae; 3rd joint paler. Arista with 4 or 5 dorsal, 2 ventral branches and moderate terminal fork. Palpus apically brownish, basally yellow, with 1 long stout bristle at tip, 1 in subapical part and a few hairs. Ocellar triangle yellow, black on inner margins of ocelli, with a few small hairs; ocellars long. Periorbit yellow. Frons yellow with 2 anteriorly convergent brown stripes, with a few frontal hairs on anterior part of stripes. Clypeus brown. Frons *ca.* 1/2 as broad as head width. Face yellow. Carina high, not so wide, brown in lower part. Cheek yellow, brown at base of vibrissa, *ca.* 1/6 as broad as greatest diameter of eye. Posterior reclinate orbital nearer to proclinate orbital than to inner vertical. Anterior reclinate orbital *ca.* 2/3 length of posterior reclinate; proclinate *ca.* 7/9 length of posterior reclinate. Vibrissa long, stout and black; 2nd oral *ca.* 1/2 length of vibrissa.

Thorax: Mesoscutum yellow, with 7 brown longitudinal stripes; medial stripe wider, including 2 rows of acrostichal hairs, and running through nearly entire length of mesoscutum; inner pair of stripes starting slightly posteriorly, running along line of dorsocentrals, and continuing to stripes on scutellum; middle pair paler, from transverse suture to base of inner postalar; outer pair from anterolateral corner just above humerus to base of outer postalar, interrupted at transverse suture. Scutellum yellow, with 1 pair of brown longitudinal, posteriorly convergent stripes. Thoracic pleura yellow, with 3 brown longitudinal stripes; upper one short, from upper part of episternum to base of wing; middle one broad, long from upper part of propleurite to base of haltere; lower one broad, running through nearly entire length of sternoepisternum. Humeral 2, upper one longer. Acrostichal hairs in 6 rows. Dorsocentrals 2 pairs; anterior *ca.* 3/5 length of posterior; cross distance of dorsocentrals *ca.* 2.0 length distance. Anterior scutellar slightly longer than posterior; anteriors parallel, posteriors crossed. Sterno-index *ca.* 0.5.

Legs yellow. Fore coxa brown in proximal part;

mid and hind coxae partly brown. Fore femur brown on outside; mid femur yellow; hind femur slightly brownish on outside. Fore femur with row of *ca.* 11 stout spinules. Preapicals on all tibiae; apicals on fore and mid tibiae. Fore metatarsus as long as 3 succeeding tarsal joints together; mid and hind metatarsi slightly shorter than rest together. Mid and hind tarsi without row of minute cuneiform bristles.

Wing hyaline. Veins brownish yellow; anterior cross vein clear; posterior cross vein slightly cloud; R_{4+5} and M nearly parallel. C_1 -bristles 2, subequal. Wing indices; C *ca.* 4.4, 4C *ca.* 0.5, 4V *ca.* 1.35, 5x *ca.* 1.2, Ac *ca.* 2.1, C3F *ca.* 1/4. Haltere milky white, with dark brown stalk.

Abdomen: Tergites yellow; 1st tergite with medially uninterrupted, dark brown caudal band and 1 pair of dark brown spots on lateral margins; 2nd to 6th tergites each with medially interrupted, dark brown caudal band and 1 pair of spots on lateral margins; lateral spots sometimes fused to caudal band.

Periphallic organs (Figs. 21 and 22): Epanthrium pubescent, broad especially in subapical part, with *ca.* 17 bristles. Surstylus broad, with straight row of *ca.* 9 primary teeth on submedial margin and a few small setae on inner surface; upper and lower apical part bare. Cercus oval, pubescent, separate from epanthrium, with many long bristles and *ca.* 10 short bristles at caudoventral apex (Fig. 22).

Phallic organs (Figs. 23–25): Aedeagus slender, apically not so round in ventral view, serrate on ventrosubmedial margins. Anterior paramere broad, oval in lateral view, fused to novasternum, apically pubescent and with *ca.* 3 sensilla. Posterior paramere absent. Novasternum quadrate, submedially pubescent, with 1 pair of submedian spines on inner margins.

Holotype ♂, China: Kunming, Yunnan Province, 21.II.1987 (M. J. Toda).

Distribution. China: Yunnan.

Relationships. This species is similar to *D.*

flavitibiae or *D. clarinervis* Toda, 1986 in the coloration of body, but distinguished from the latter in having entirely yellow mid femur, short mid sternopleural and different structure of ♂ genitalia.

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