

DESCRIPTION OF TWO NEW SPECIES OF THE MERCATORUM  
SUBGROUP OF DROSOPHILA (Dipterae):  
*D. PSEUDOMERCATORUM* AND *D. PARAMERCATORUM*<sup>1</sup>

LUIZ EDMUNDO DE MAGALHÃES, CHANA MALOGOLOWKIN-COHEN \*

Departamento de Biologia, Instituto de Biociências, Universidade de São Paulo

(With 10 text-figures)

(1974)

The mercatorum subgroup was first described by Wharton, 1944 when *D. pararepleta* Dobzhansky and Pavan, 1943 was considered as a subspecies of *D. mercatorum*. Patterson and Wheeler, 1942. The subgroup consisted of 3 species *D. m. mercatorum*, *D. m. pararepleta* and *D. peninsularis*.

Patterson and Stone, 1952 redefined the subgroup with the exclusion of the species *D. peninsularis* while, *D. paranaensis*, Barros, 1950 was included in it.

Cytological studies in this subgroup have been carried out by Wasserman, 1954; Wasserman and Wilson, 1957 and Wasserman, 1962.

According to Patterson and Stone, 1952, *D. m. mercatorum* has a very wide distribution, being found in South of USA, Central America and Hawaii; whereas *D. m. pararepleta* and *D. paranaensis* occur only in Brazil. According to Wasserman, 1962 *D. paranaensis* is also found in Central America and *D. m. pararepleta* is found in Chile.

A study of the esterase electrophoretic pattern of the subgroup was made with flies collected in Campo Grande, Mato Grosso, Brazil (to be published where). To identify the collected flies a taxonomic study of the strains was done. Two new species were found among them and are here described.

*Acknowledgements* — We wish to acknowledge and to thank Mrs. Sueli P. Ferreira for collecting the flies and handing them to us for study.

#### MATERIAL AND METHODS

About 80 strains, each one of them derived from one single female were examined. Females were collected near Campo Grande, state of Mato Grosso, Brazil.

Chitinous parts of the genitalia were diaphanized for two-three hours and dissected directly in phenol and passed to creosote. Drawings were made with the aid of camera lucida at the same magnification (40.1.8) by one of us (CMC).

*Drosophila pseudomercatorum*, sp. nov.

EXTERNAL CHARACTERS OF IMAGINES.

♂ *Arista* with 8 branches. *Antennae* greyish

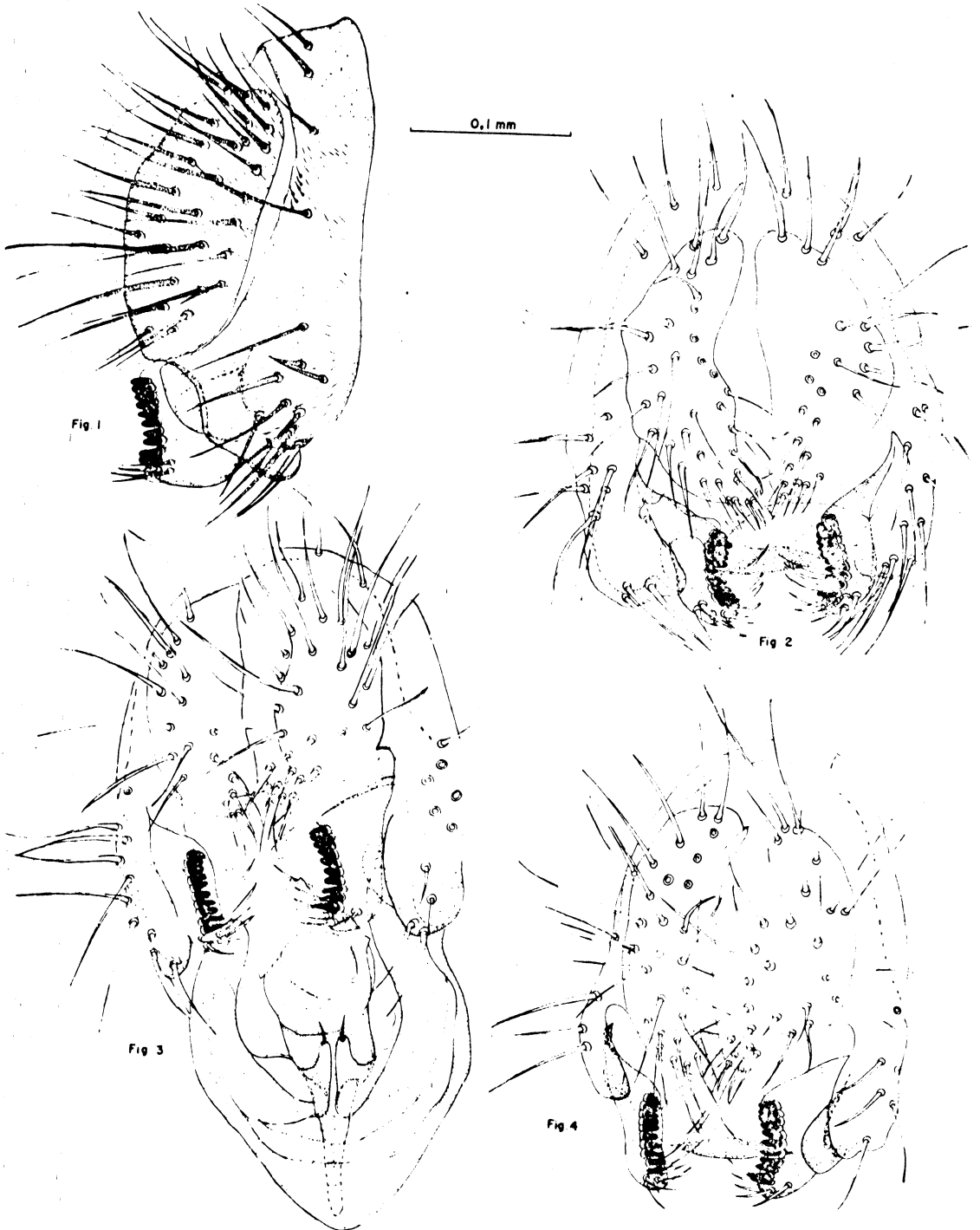
<sup>1</sup> Received for publication May, 17, 1974.

Supported by grant from FAPESP.

\* Fellow from CNPq.

brown; third segment darker than the other two, second segment with an anterior dark spot. *Front* brown, pollinose.

Middle of ocellar area and a narrow median area lighter, pollinose. Orbital lines yellowish brown. Dark spots at base row of



*D. paramercatorum* — Fig. 1: side view of male genital arch; fig. 2: External view of male genital arch. *D. pseudomercatorum* — Fig. 3: Ventral view of male genitalia, including genital arch, hypandrium and penis; fig. 4: External view of male genital arch.

8 short hairs in front anterior orbitals, at base posterior orbitals, anterior verticals, around ocelli; posterior ocellar spots extending to base posterior vertical bristles. Anterior and posterior orbitals same length; middle orbital  $2/5$  other two. One long oral bristle; second thinner,  $1/3$  length of first. Carina yellowish brown, pollinose, trapezoid, slightly sulcate. Palpi and proboscidae yellowish. Face yellowish grey. Cheeks greyish, pollinose, their greatest width about  $1/4$  greatest diameter of eyes. Eyes red with short black pile.

Acrostichal hairs in 8 slightly irregular rows; 4 enlarged hairs in prescutellar position. Anterior scutellars convergent. Mesonotum yellowish brown, pollinose; bristles and hairs arising from dark brown spots, some of them irregularly fused. Scutellum yellowish brown, pollinose with dark brown "X" pattern fused with dark spot at base posterior bristles. Pleurae yellowish pollinose; three dark longitudinal stripes, one from humeri to base of wing, second from base 1st leg to base of halteres; third crossing sternopleural bristles. First sternopleural bristle slightly smaller than third; middle one very small. Legs yellow with one dark spot at end femura, another at beginning tibia; coxae first pair with dark brown longitudinal stripe in inner ventral part. Apical bristle only on second tibiae, preapicals on all three.

Abdomen dark yellow second to fifth tergites with black marginal bands expanded and broadly interrupted in middle. Second to fifth tergites deflected towards anterior margin, far from lateral angle; margin posterior angle with black bands and yellow lateral spot between marginal bands; band of 6th tergite without deflection, lateral spot not well delimited.

Wings clear. Costal index about 2.2; 1st vein index about 2.0; 5 x index about 1.3. Apex of first section blackened, without prominent bristles. Third costal section with heavy bristles on its basal  $4/5$ .

Length body about 3 mm; wings 2.5 mm.

♀ Abdominal bands from 2nd to 5th tergites as in male; 6th with dark band not as large as in male, with yellow lateral area. Hypopigium yellowish with dark brown basal band.

INTERNAL CHARACTERS OF IMAGINES: Anterior Malpighian tubes free; posterior apposed. Testes yellow  $2\ 1/2$  coils. Epermathecae spherical as in Fig. 9.

OTHER CHARACTERISTICS RELATIONSHIP AND DISTRIBUTION: Eggs: with 4 smooth filaments, Fig. 10. Puparia: yellowish brown; anterior spiracle long with 10-12 branches. Relationship: Belongs to the mercatorum subgroup of the repleta group, subgenus *Drosophila*. Does not cross with other members of the subgroup.

Distribution — Description is based on the progenie of one single female collected in Campo Grande, Mato Grosso, Brazil, by Sueli P. Ferreira.

### *Drosophila paramercatorum*, sp. nov.

EXTERNAL CHARACTERS OF IMAGINES: ♂, Arista with 7-8 branches. Dark line around ocelli; without posterior ocellar spots extending to base posterior vertical bristles.

Only one long oral bristles. Cheeks greatest width about  $1/5$  greatest eye diameter.

Acrostichal hairs in 8 slightly irregular rows; two middle enlarged hairs in prescutellar position. Scutellum yellowish brown, pollinose with brown spots at base anterior bristles expanded and fused; brown spot at base posterior bristles. Pleurae yellowish gray, pollinose; three brown longitudinal stripes, one from humeri to base of base of wing, second from base of first leg to base of halteres, third crossing 1st sternopleural bristles. Legs yellow with one dark spot at end of femora, another beginning at tibia of second and third pairs

only; coxal first pair with narrow dark brown longitudinal stripe on inner ventral part.

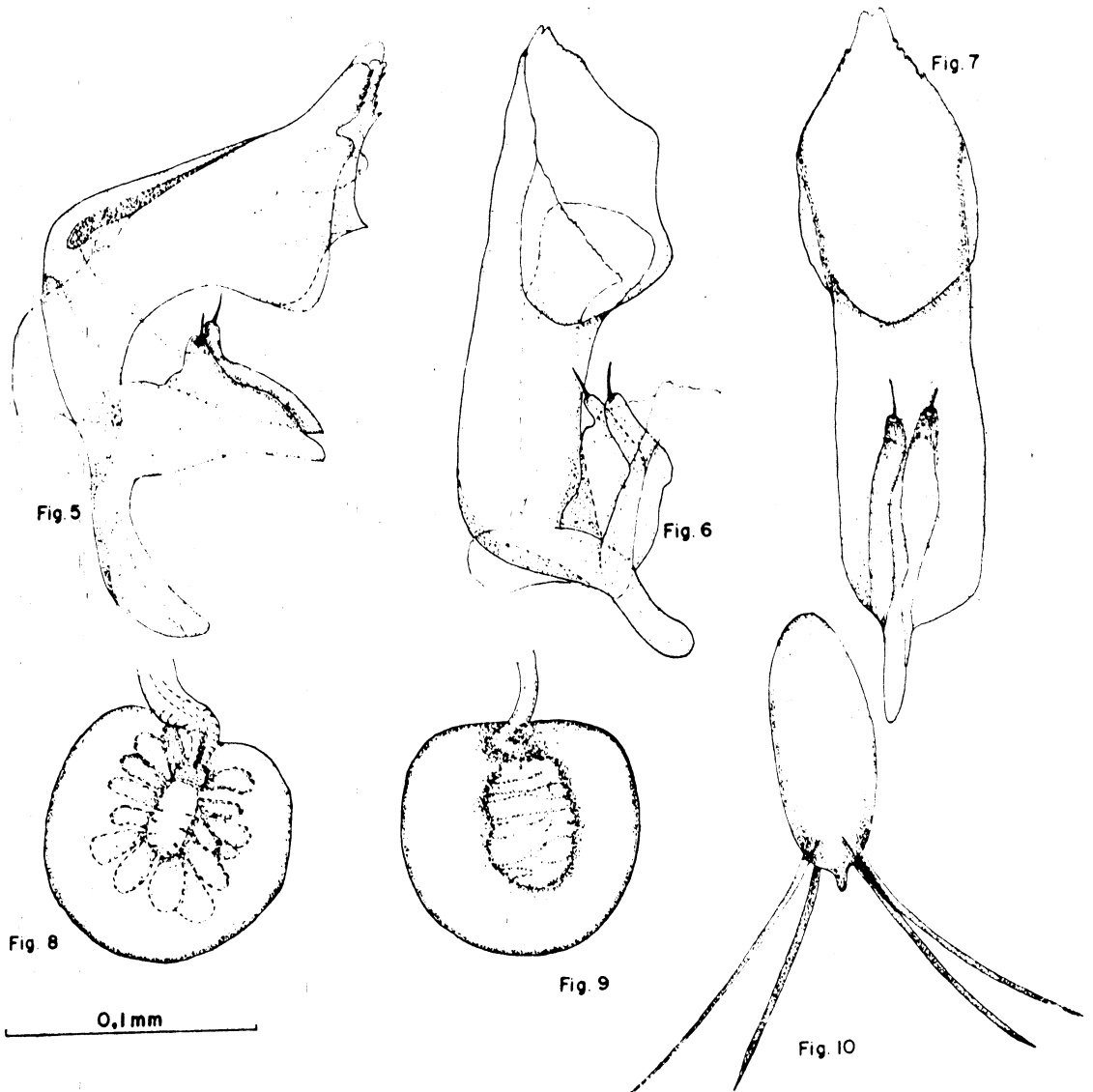
*Wings* clear; apex of first costal section not black, with two prominent bristles. Costal index about 2.1, 4th vein index about 1.1; 5 x index about 1.3.

*Abdomen* yellow. Band pattern as in *D. pseudomercatorum*. Body length about 2.5 mm; wing length about 2 mm.

♀ *Abdomen* similar to *D. pseudomercatorum*; sixth tergite with dark band not as large as in male, with interrupted narrow lateral bands. Hypopigium yellowish with dark brown basal band broader than in *D. pseudomercatorum*.

**INTERNAL CHARACTERS OF IMAGINES**  
*Testes* pale yellow 2 1/2 coils; *Spermathecae* spherical as in Fig. 8.

**OTHER CHARACTERISTICS, RELATIONSHIP AND DISTRIBUTION:** *Eggs* as in *D. pseudomercatorum*.



*D. paramercatorum* — Fig. 5: Side view of penis and anexas. *D. pseudomercatorum* — Fig. 6: Side view of penis and anexas; fig. 7: Ventral view of penis and anexas. *D. paramercatorum* — Fig. 8: spermatheca. *D. pseudomercatorum* — Fig. 9: spermatheca; fig. 10: egg.

*catorum*. *Puparia*: Anterior spiracle with 18-20 branches.

*Relationship*: Belongs to the mercatorum subgroup of the repleta group, subgenus *Drosophila*. Does not cross with other members of the subgroup.

*Distribution*: Description is based on the progenie of one single female collected in Campo Grande, Mato Grosso, Brazil, by Sueli P. Ferreira. Holotype and paratype placed at Museo de Zoologia, Universidade de São Paulo, Brazil.

### DISCUSSION

The two new species here described belong to the mercatorum subgroup. They cannot be distinguished by their external characters only. Male genitalia has to be used for this purpose (Figs. 1-7), as well as the spermatheca of females (Figs. 8-9).

A more detailed study of the male genitalia of this subgroup will be published elsewhere .

To check the identify of each species the following test-crosses were done:

*D. m. pararepleta* X *D. pseudomercatorum*

*D. m. pararepleta* X *D. paramercatorum*  
*D. pseudomercatorum* X *D. paramercatorum*

No hybrids were found. Interspecific copulation was not studied yet. Sexual behaviour in this cluster of species is under study.

### REFERENCES

- DOBZHANSKY, TH. & PAVAN, C., 1943, Studies on Brazilian Species of *Drosophila*. *Bol. Fac. Fil. Cien. Letr. Univ. S. Paulo*, n.º 36: *Biologia Geral*, 4: 7-72.
- PATTERSON, J. T. & WHEELER, M. R., 1942, Description of new species of the subgenera *Hirtodrosophila* and *Drosophila*. *Univ. Texas Publ.*, 4213: 67-109.
- PATTERSON, J. T. & STONE, W. S., 1952, Evolution in the genus *Drosophila*. The Mcmillan Co., 610 pp.
- WASSERMAN, M., 1954, Cytological studies of the repleta group. *Univ. Texas Publ.*, 5422: 130-152.
- WASSERMAN, M., 1962, III Cytological studies of the repleta group of the genus *Drosophila*. III. The mercatorum subgroup. *Univ. Texas Publ.*, 6205: 63-71.
- WASSERMAN, M. & WILSON, F. D., 1957, Further studies on the repleta group. *Univ. Texas Publ.*, 5721: 132-156.
- WHARTON, L., 1944, Interspecific hybridization in the repleta group. *Univ. Texas Publ.*, 4445: 175-193.