

A NOTE ON THE *FLAVOPILOSA* GROUP OF SPECIES OF *DROSOPHILA* IN RIO GRANDE DO SUL, BRAZIL, WITH THE DESCRIPTION OF TWO NEW SPECIES (DIPTERA, DROSOPHILIDAE)¹

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(With 11 text-figures)

The *flavopilosa* group of species of *Drosophila*, subgenus *Drosophila*, was established by Wheeler, Takada & Brncic (1962) to include *D. flavopilosa* Frey and thirteen new species from the Neotropical region. According to Wheeler *et al.* (1962), "With few exceptions the species are entirely or mostly all dull yellow; they are of small to medium size, have a rather high costal index, a single strong oral bristle, an arista formula of 3/2 (the number of dorsal and ventral branches, excluding the terminal fork, expressed as a fraction), and six acrostichal rows. Females have unusually strongly spined ovipositors, and most of them have apical caps on the spermathecae. The male genitalia are of characteristic structure (see figures): lower portion of genital arch usually with two long bristles; "toe" strongly bent forward, usually elongate and narrow, not covering clasper; anal plate oblong and fused with genital arch; primary clasper broad, its under margin basally convex. Penis slender and long, curved ventrally and with a pair of apical lobes; hypandrium simple; anterior gonapophyses usually lacking or fused with hypandrium; posterior gonapophyses apparently absent; phallosomal index more than 4.0 (ratio of penis length and length of its apode-

me; see Okada, 1953, Zool. Mag. (Japan) 62: 278-293.)"

The species of the *flavopilosa* group both feed and breed in living flowers (Wheeler *et al.* 1962, Pipkin *et al.* 1966), and some of them have been found associated exclusively with the flowers of *Cestrum* (Solanaceae) (Brncic, 1966). In Chile, preadult stage of *D. flavopilosa* have been observed in flowers of *C. parqui* L'Her. In Argentina the same species have been found also in flowers of *C. euanthes* Schlecht. In Colombia, near Bogotá, larvae of two other species of the group (*D. acroria* Wheeler and Takada, and another form not yet determined) were found inside the flowers of *C. tomentosum* Sandwith (Brncic, 1966).

In searching for the *drosophila* living in flowers in Rio Grande do Sul, Brasil, it was discovered that four different species of the *flavopilosa* group feed and breed in the flowers of *C. parqui* and *C. calycinum*. Two of these species were identified as *D. flavopilosa* Frey, and *D. incompta* Wheeler and Takada, and the other two represent new species that are described in the present report.

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Drosophila flavopilosa Frey
(Figs. 4, 5, 9-11)

1918. Mitteilungen über südamerikanische Dipteren. Finska Vetenskaps Societets Fördh-

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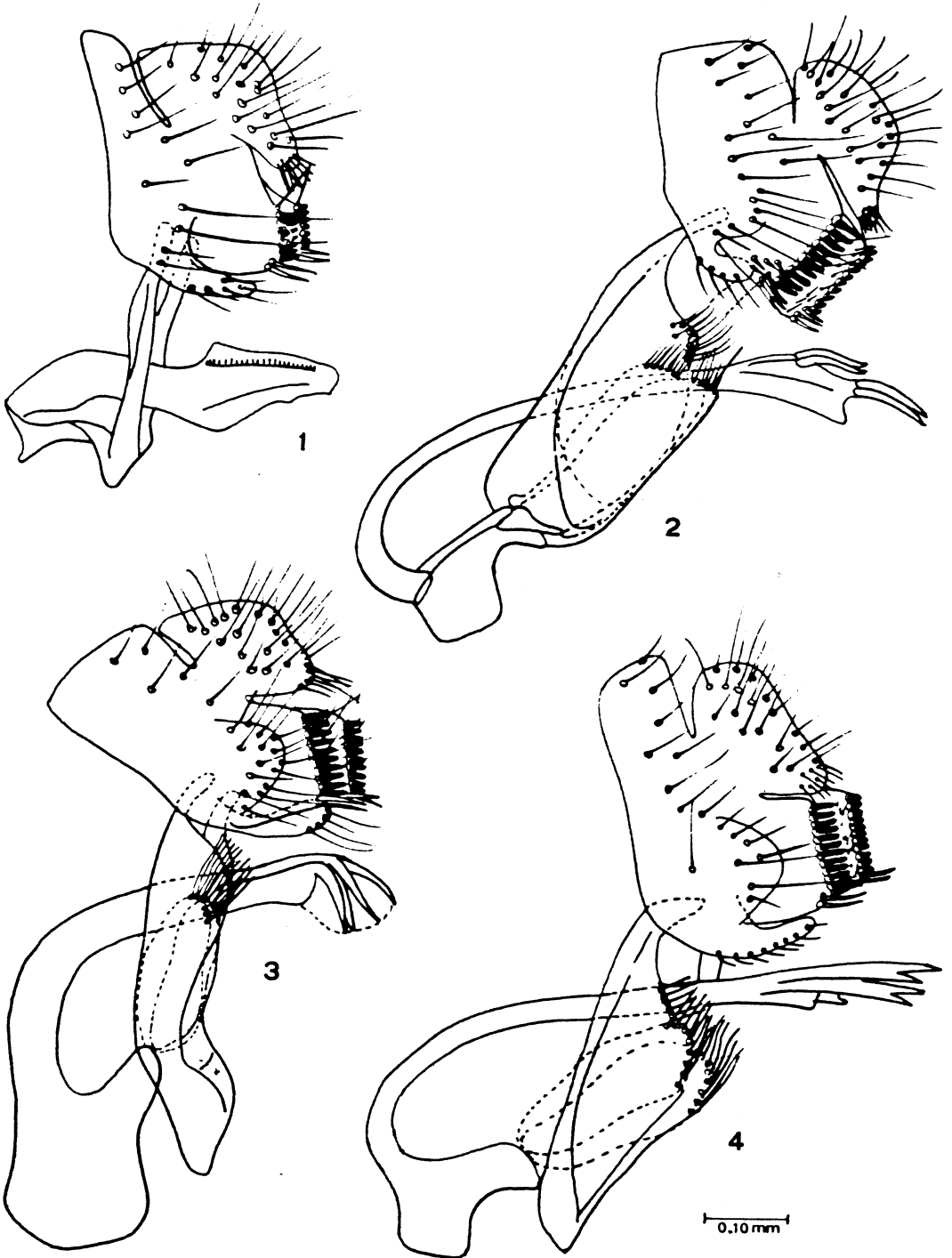
andlingar. Bd. LX, Afl. A, No. 14:14. Type, from Valparaiso, Chile, in Zoological Museum, Helsinki, Finland.

= *dentata* Duda 1927. Arch. f. Naturg. 91 A12 (1925): 201; not *dentata* Duda 1924. Arch. f. Naturg. 90 A3: 204; 242.

= *dentata* Wheeler 1959. Univ. Texas Publ. 5914: 183.

= *dentata* Duda, Malloch 1934. Dipt. Patag. S. Chile, VI (5): 441; 444.

= *flavopilosa* Frey. Wheeler, Takada and Brncic 1962. Texas Publ. 6205; 397.



Semilateral view of the male genitalia of the following species - Fig. 1: *D. incompta*; fig. 2: *D. cestri*; fig. 3: *D. cordeiroi*; fig. 4: *D. flavopilosa*.

A few males and females of *D. flavopilosa* were found developing in flowers of *Cestrum parqui* L'Her. brought to the laboratory from "Morro da Polícia", Porto Alegre, R. S. (Brazil) in October 1976.

Distribution — Chile: Valparaíso, reported by Frey (1918); Los Andes, reported by Duda (1927); Los Andes, Casa Pangué, Angol, reported by Malloch (1934); numerous localities in central part of the country (Brncic, 1966). Argentina: Buenos Aires, reported by Malloch (1934) and Brncic (1966). Peru: Cuzco, reported by Duda (1927). Bolivia: La Paz, reported by Duda (1927). Uruguay: Montevideo, six, labelled "So Amer. Paras. Lab., Xii-24-42; Host *Sestrium* (sic) sp.; "Silveira" (USNM). Brazil: Porto Alegre, R. S., this report. Males and Females from the Brazilian localities were deposited by the present author at the Museu de Zoologia, Univ. S. Paulo, Brasil.

Drosophila incompta Wheeler and Takada

(Figs. 1, 8, 9, 11)

1962. Wheeler, Takada and Brncic. Univ. Texas Publ. 6205:408.

Easily separable from the other species of the group by the use of male and female genitalia (see Figures).

Distribution — Wheeler, Takada & Brncic (1962), give the following distribution for the species: Panama: Almirante, Bocas del Toro. Dominica: Antrim. Mexico: Cordoba, Vera Cruz. Colombia: Villavicencio, Meta. Brasil: The present author found the species well represented in all samples of flowers of *Cestrum parqui* and *Cestrum calycinum* brought to the laboratory from Porto Alegre (Morro da Polícia), R. S. (Sept. 1976, 1977; Oct. 1976, 1977); El Dorado (Oct. 1976); Montenegro (Jul. 1977); Sapucaia (Sept. 1977). Reference material deposited at the Museu de Zoologia, Univ. S. Paulo, Brasil.

Drosophila cordeiroi n. sp.

(Figs. 3, 6, 11)

External characters of imagines:

Head (Male and Female) — Arista usually with 7 branches (3 dorsal, 2 ventral, and the terminal fork). Antennae entirely pale yellow; third joint pilose. Front, base of the orbital and vertical bristles, and space between ocelli, pale yellow.

Anterior orbital bristle (proclinate) about 5/6 the posterior one; middle orbital about 1/3 the length of the anterior. Only one prominent oral bristle, very long, the second one about the same length the other hairs. Face pale yellow; carina prominent, narrow above and flattened below; faintly sulcate. Cheeks pale yellow with tannish brown pollinosity, their greatest width about 1/6 to 1/5 the greatest diameter of the eyes. Eyes bright red, clothed with thick pilosity. Palpi pale yellow, haired.

Thorax (Male and Female) — Acrostical hairs in six irregular rows. No prescutellars or extra dorsocentrals. Anterior scutellars divergent. Mesonotum, scutellum and pleura wholly pale tannish yellow. Sterno index about 0.5. Legs pale yellow; apical bristles on first and second tibiae, preapicals on all three.

Abdomen (Male and Female) — Pale yellow. Posterior margins of the tergites without any definite darkening.

Wings (Male and Female) — Transparent; veins tannish yellow; bristles brown; pilosity tannish. Apex of first costa section with two prominent bristles of equal length; third costal section with heavy bristles on its basal 1/3. Costal index about 5; 4th vein index about 1.7; 5 x index about 1.4; 4c index about 0.6.

Internal characteres of imagines:

Anterior malpighian tubules free; posterior fused, apparently with a continuous lumen. Testes pale yellow with about 2 inner and 2 1/2 outer coils. Spermatheca spherical, tannish brown, chitinized, with an apical cap (Fig. 11).

Other characteristics, relationships, distribution, ecology:

Eggs — 2 rudimentary protuberances instead the filaments (Fig. 10).

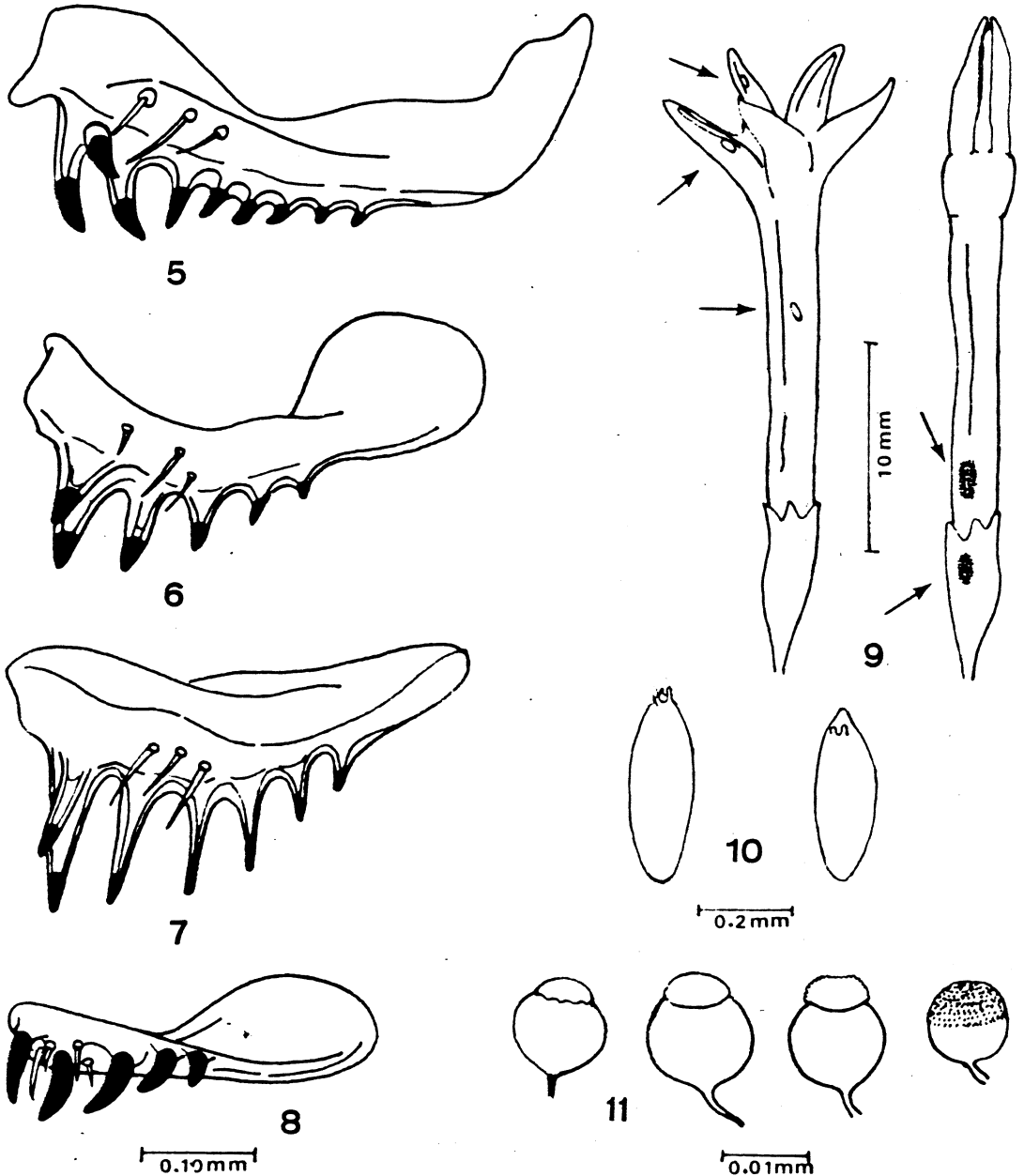
Puparia — Tannish brown; horn index about 1x9; anterior spiracle with 6-8 branches.

Body length (Male and Female) — About 2.5 mm.

Relationships — The presence of an apical cap on the spermatheca in females, and the existence of anterior gonapophyses bearing bristles in the males, permit to include the species in the *flavopilosa* sub-group (Wheeler *et al.*, 1962), near to *D. flavopilosa*, *D. lauta*, *D. acroria* and *D. crossoptera*, but it is easy to recognize through the analysis of the genitalia (See figures).

Distribution and Types – This species was found in different localities of Rio Grande do Sul – Brazil: Porto Alegre – Morro da Polícia (September and October 1976 and 1977), Sapucaia (September 1977), Montenegro (July 1977). This

species appeared in flowers of *Cestrum parqui* and *Cestrum calycinum* brought into the laboratory. Type locality: Morro da Polícia, Porto Alegre, R. S. Types deposited at the Museu de Zoologia, Univ. S. Paulo, Brazil.



Lateral view of the ovipositor of – Fig. 5: *D. flavopilosa*; fig. 6: *D. cordeiroi*; fig. 7: *D. cestri*; fig. 8: *D. incompta*. Fig. 9 – Flowers of *Cestrum* indicating the oviposition places of the females; in the figure at the left, the arrows indicate the eggs of *D. incompta* laid in an open flower; in the figure at the right, the arrows indicate the scarifications made by the female ovipositor of *D. flavopilosa* and *D. cestri* for egg attachment or to induce floral bleeding in an unopened flower. Fig. 10 – Eggs of *D. flavopilosa* (left) and *D. cestri* (right). Fig. 11 – From left to right: inner spermathecal capsula of *D. flavopilosa*, *D. cestri*, *D. cordeiroi* and *D. incompta*.

Note — It is a pleasure to name this species after Professor Antonio R. Cordeiro, who was responsible for the foundation of the *Drosophila* genetic studies in Rio Grande do Sul.

Drosophila cestri n. sp.
(Figs. 2, 7, 9-11)

Wholly pale yellowish species. Body length up to 2.5 mm. Separable from *D. cordeiroi* by the use of male and female genitalia (See figures). The inner spermathecal capsule is black and has an apical cap (Fig. 11). The following external characteristics are useful for diagnosis: Prescutellars faintly indicated. Posterior cross vein of wing sinuate. Costal index about 4.5; 4th vein index about 2; 5x index about 1.3; 4c index about 0.6. Third costal section with heavy bristles in its basal 1/3.

Relationships — Belongs to the *flavopilosa* sub-group of the *flavopilosa* group.

Distribution Ecology and Types — Brazil: Rio Grande do Sul, Morro da Polícia, Porto Alegre (Sept. 1976, 1977), Montenegro (Jul. 1977), Sapucaia (Sept. and Oct. 1977). Found in *Cestrum parqui* and *Cestrum calycinum*. Type locality: Sapucaia, R. S. Types deposited at the Museu de Zoologia, Univ. S. Paulo, Brasil.

SUMMARY

Drosophila cordeiroi n. sp. (Type-locality: Morro da Polícia, Porto Alegre, R. S., Brazil) and *Drosophila cestri* n. sp. (Type-locality: Sapucaia, R. S., Br.), belonging to the *flavopilosa* group of the genus *Drosophila* (subgenus *Drosophila*) are described. References are given for two other species of the *flavopilosa* group: *D. flavopilosa* Frey 1918, and *D. incompta* Wheeler and Takada 1962, found for the first time in Brasil (Rio Grande do Sul).

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