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Distribution and Population Constitution of *Drosophila* in Southeast Asia and Oceania

III. The Genus *Zygothrica* with Description of Three New Species^{1,2)}

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Synopsis Descriptions are given for three new species of the genus *Zygothrica* under the names of *Z. fijiana* from Fiji, *Z. malayana* and also *Z. flavofinira* from West Malaysia. They differ from the closely related Samoan species, *Z. samoensis* MALLOCH, not only in their distributions but also in structural details of male genitalia and some external characters of imagines.

About 60 species of the genus *Zygothrica* are largely confined to Central and South America, although MALLOCH (1934) described a typical member from Samoa. However, *Zygothrica asiatica* (OKADA, 1965), from Okinawa, Japan, is presumably misidentified for *Lissocephala asiatica* OKADA, as described in 1964 from Amami Is., Japan, by himself. Then, this genus was discovered for the first time in the Oriental Region by the author.

Collecting trips were made twice in Southeast Asia and Oceania from June 25 to August 31 in 1972, and June 22 to August 31, 1973, to explore the drosophilid flies. Consequently, any results of this surveys in these areas would be a matter of special interest and value. The *Zygothrica* flies were captured by means of sweeping a net over many whitish fungi growing on some of cut trees, and occasionally using vials directly for flies on the fungus cap. This genus seems to be related to the subgenus *Hirtodrosophila* and, like that group, is attracted to fungi and flowers. All the type-specimens are deposited at the Biological Laboratory, Sapporo University.

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Genus *Zygothrica* WIEDEMANN

Zygothrica WIEDEMANN, 1830, Achiás Dipt., Genus 16: 3.

1) This paper is dedicated to Professor Eizi MOMMA, Zoological Institute, Hokkaido University, Japan, in honor of his sixtieth birthday, October 5, 1975.

2) This work was supported in part by a grant received by Dr. E. MOMMA, from the Scientific Research Fund of the Ministry of Education.

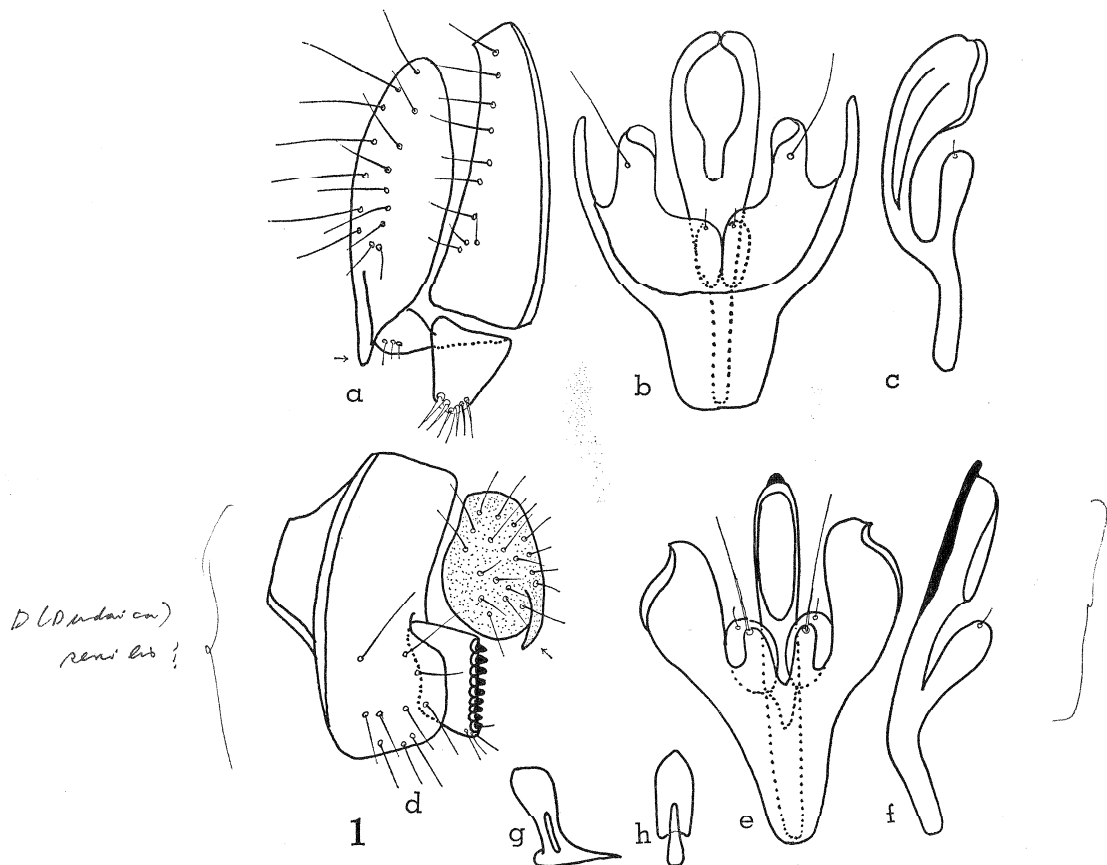


Fig. 1. — a-c. *Zygothrica samoensis* MALLOCH; a, peripheral phallic organs; b, ventral aspect of phallic organs; c, lateral view of phallic organs. — d-h. *Zygothrica malayana* n. sp.; d, peripheral phallic organs; e, ventral aspect of phallic organs; f, lateral view of phallic organs; g, ejaculatory apodeme (lateral aspect); h, do. (ventral aspect). Arrow indicate a protruding tip of anal plate (Analplattenschnabel by BURLA, 1956).

Type-species: *Z. disper* (WIEDEMANN), from Brazil.

Zygothrica samoensis MALLOCH

(Figs. 1 a-c; 3 b; 4 b)

Zygothrica samoensis MALLOCH, 1934, London Brit. Mus. (Nat. Hist.): 278. — WHEELER & KAMBYSELLIS, 1966, Univ. Texas Publ., (6615): 563.

Male. Body about 2.8 mm, wings about 2.4 mm in length. Arista with 4 branches above, one below, besides a large fork. Antennae yellow, third joint brown. Carina yellow and high. Clypeus and cheek black. Ocelli yellowish

amber. Orbital bristles in the ratio 8:7:7. Palpi black with several long setae. Mouth part black, stout and slender. Front coffee brown, anteromedially yellow; periorbit yellow.

Mesonotum and scutellum blackish brown; acrostichal hairs in 8 irregular rows; prescutellars present. Anterior dorsocentrals short, near posterior ones. Humerals two, long; humeral callus blackish brown at upper half. Thoracic pleura and legs yellow. Sterno-index about 0.5. Abdominal tergites yellow; 2T to 6T with blackish large bands covering the tergites centrally; 7T medially black. Halteres yellow.

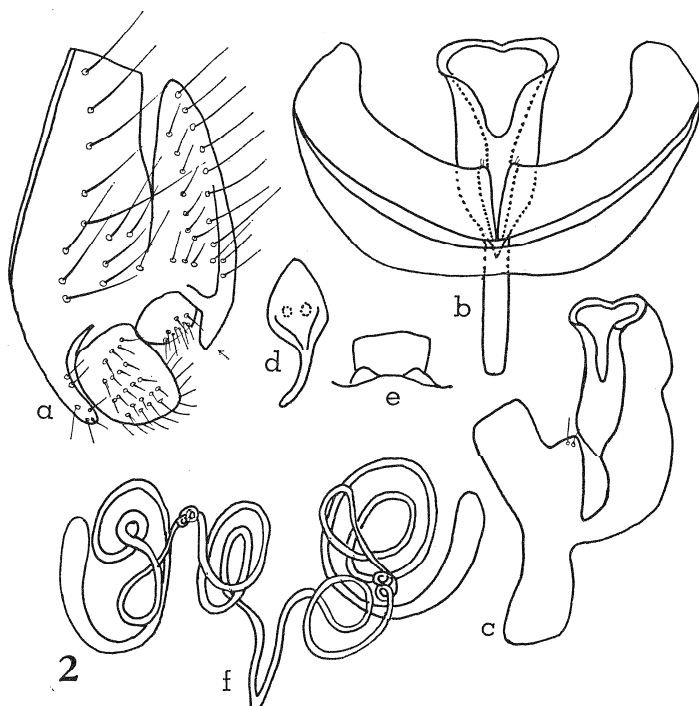


Fig. 2. *Zygothrica fijiana*, n. sp. — a, Peripheral organs; b phallic organs (ventral aspect); c, do. (lateral view); d, ejaculatory apodeme (ventral aspect); e, bridge connecting the claspers; f, male reproductive organs. Arrow indicates a protruding tip of anal plate of male.

Wings dusky; C-index about 2.0; Ac-index about 3.0. Phallosomal index about 2.0. Tip of anal plate protruding (Analplattenschnabel of BURLA, 1956).

Specimens examined. 2 males, caught from Polyporaceae fungus (*Ganoderma* sp.) by means of a net, at Aloa Pond, Apia, West Samoa, July 13, 1973 (TAKADA).

Distribution. Samoa.

Zygothrica fijiana TAKADA, n. sp.

(Figs. 2; 3 a, c; 4 a, c; 5)

Male & female. Body about 3.5 mm, wings about 3.0 mm in length. Arista with 4 branches above, two or one below, besides a fork. Third antenna large and oval, dark brown. Carina high and narrow, yellow. Vibrissa single. Labrum of mouth part black, strong. Proboscis exceptionally long when extended, black. Front coffee brown, longer than wide; periorbit yellowish orange. Orbital bristles in the ratio 4:2:3. Ocelli yellowish amber; ocellar triangle convex. Palpi large and oval, with few setae. Lateral view of eye elliptical oblique.

Mesonotum and scutellum brownish black; acrostichal hairs in about 10 rows. Anterior dorsocentrals small, near posterior ones. Humeral two, slender. Humeral callus blackish brown at upper half, convex. Anterior sternopleuralis yellow and thin; sterno-index about 1.0. Thoracic pleura pale yellow. Legs yellow; 4th and 5th tarsi dark brown, tapering. Abdominal tergites yellow; 2T to 6T with large black bands covering the tergites centrally. Knobs of halteres brown.

Wings dusky and strong, veins stout, anal vein distinctly; C-index about 1.8; 4V-index about 2.1; 4C-index about 1.3; 5x-index about 1.0; Ac-index about 4.3; C3 fringe on basal half.

Periphallallic organs: Tip of anal plate protruding (Analplattenschnabel of BURLA, 1956). Hypandrium without paramedian spine and the median projection (Mittlehorn of BURLA, 1956). Phallosomal index about 3.0.

Holotype: male, Draiba Village, Levuka, Fiji, July 29, 1973 (TAKADA).

Allotype: female, collected together with holotype.

Paratypes: 10 males and 5 females, collected together with holotype.

Distribution. Fiji.

Relationships. Closely related to *Zygothrica samoensis* MALLOCH, but differ from it in having brown knob of halteres (yellowish in *Z. samoensis*) and in the shapes of male genital organs.

Feeding behavior. The males are often extremely aggressive toward other flies that come flying within their immediate vicinity on the white fungus (Fig. 5). They fly very fast and straight. The aggressors have been observed to lose their aggressive actions when they move to the underside of fungus cap. No courtships or copulations were observed on fungi. Specimens were caught by a vial at the underside of fungi caps.

Zygothrica malayana TAKADA, n. sp.

(Figs. 1 d-h; 3 e; 4 e)

Male. Body about 1.5 mm, wings about 1.6 mm in length. Arista with 6 branches above, 2 below, besides a terminal fork. Head broader than long. Antennae and front milky white. Carina white and high. Cheeks white. Palpi small and white. Vibrissa single. Orbital bristles in the ratio 2:1:4; anterior

? D. (Rudaria) penili?
 { but palpi small, not large?
 ? real. not divergent, not terminal?
 halter white
 1. Thor? }

recline at outside from orbital row. Mouth part stout and brown.

Mesonotum milky white; acrostichal hairs in 6 rows, stout. Anterior dorso-centrals short, near posterior ones. Thoracic pleura brown; humerals two, humeral callus white at upper half. Scutellum milky white, broad; anterior and posterior scutellars divergent. Halteres white. Abdominal tergites pale brown, with apical brown bands from 2T to 6T, interrupted at middle. Legs pale brown, tarsal segments rather short.

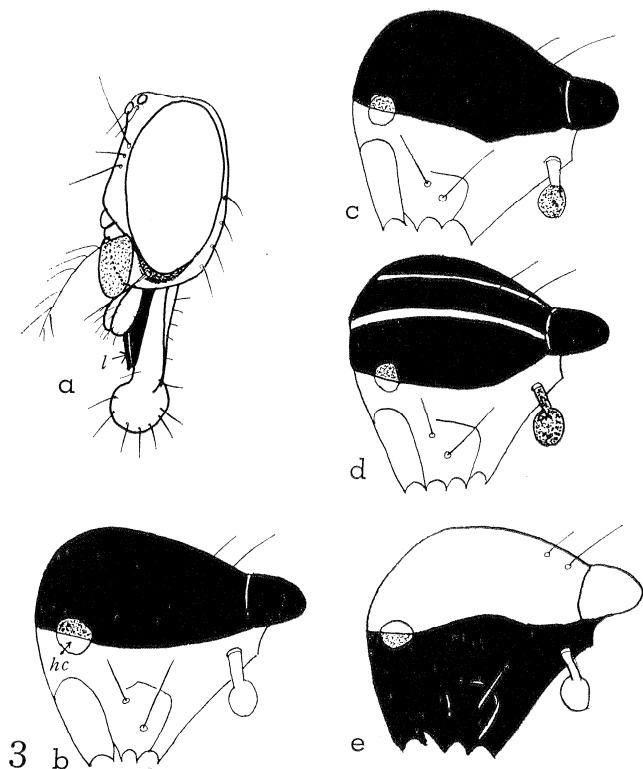


Fig. 3. — a. Head of *Zygothrica fijiana*, n. sp. l, Arrow indicate labrum of mouth part.
— b-c. Thoracic pleura and mesonotum; b, *Z. samoensis*; c, *Z. fijiana*; d, *Z. flavofinira*; e, *Z. malayana*. hc, humeral callus.

Wings dusky, anal vein stout and long; 1st costal section with distal bristles two, one long, other short; C-index about 1.6; 4V-index about 1.9; 4C-index about 1.4; 5x-index about 2.0; Ac-index about 3.5; C3 fringe on basal 5/7. Tip of anal plate protruding. Phallosomal index about 3.0.

Holotype: male, a tropical rain forest by stream in gully near Kuala Lumpur, West Malaysia, July 3, 1972 (TAKADA).

Paratype: one male, collected together with holotype.

Distribution. West Malaysia.

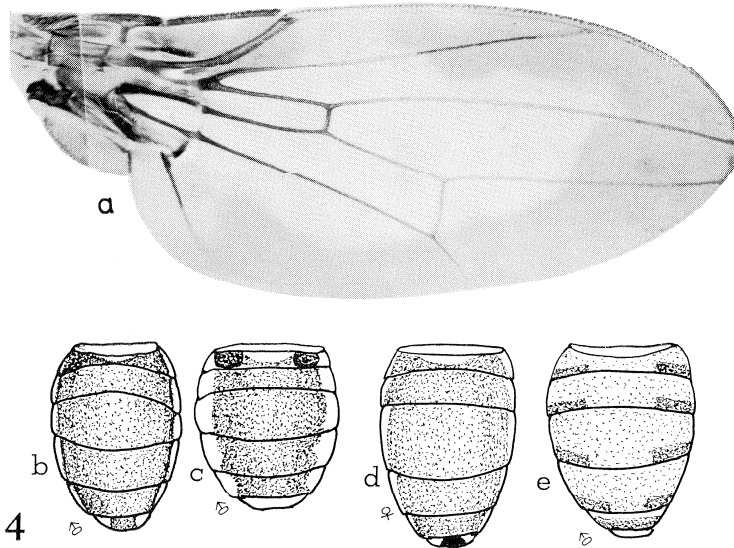


Fig. 4. — a. Wing of *Zygothrica fijiana*, n. sp., 3.0 mm in length. — b-e. Abdominal tergites; b, *Z. samoensis*; c, *Z. fijiana*; d, *Z. flavofinira*; e, *Z. malayana*.

Zygothrica flavofinira TAKADA, n. sp.

(Figs. 3 d; 4 d)

Female. Body about 2.8 mm, wings about 2.5 mm in length. Arista with 4 branches above, one below, besides a large terminal fork. Front coffee brown, longer than broad; just frontal part of ocellar triangle yellow. Periorbit yellow. Vibrissa single. Cheeks and mouth part black. Carina high and tan. Palpi black with several long setae.

Mesonotum coffee brown, slightly convex with 2 longitudinal brownish stripes; acrostichal hairs in 6-8 irregular rows. Thoracic pleura and legs yellow. Upper half of humeral callus brown. Halteres brown. Abdominal tergites yellow; 1T to 5T with large brown bands covering the tergites centrally; 6T with medioapical brown patch.

Wings with golden tint, anal vein stout; C-index about 2.1; 4V-index about 1.9; 4V-index about 1.1; 5x-index about 2.0; C3 fringe on basal 7/9. Egg-guide long and slender, rounded at tip.

Holotype: female, Gombak, near Kuala Lumpur, West Malaysia, July 3, 1972 (TAKADA).

Distribution. West Malaysia.

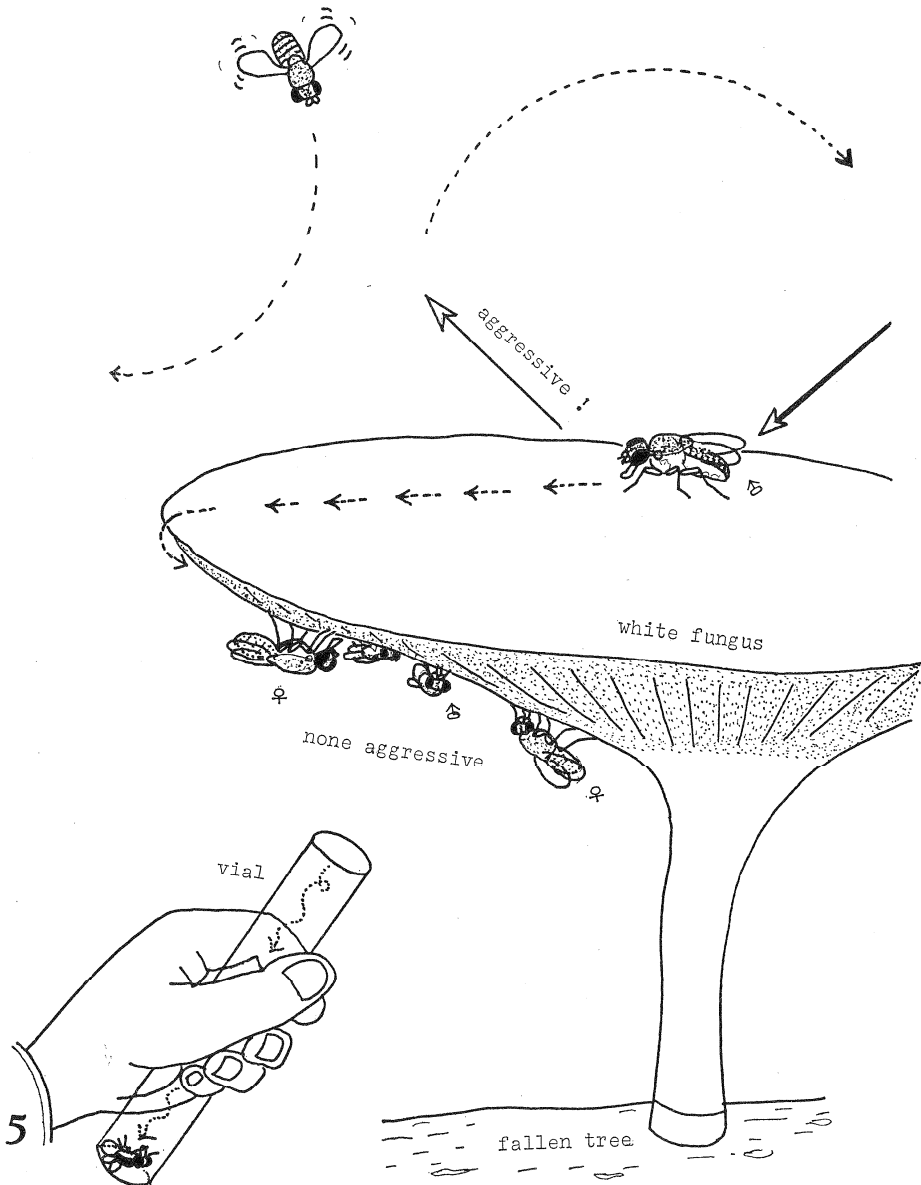


Fig. 5. Behavior of aggressive actions and feeding postures of *Zygothrica fijiana*, n. sp. at Levuka Is., Fiji, 1973.

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