

THE GENUS *DROSOPHILA* (DIPTERA : DROSOPHILIDAE) IN ANDAMAN AND NICOBAR ISLANDS, INDIA

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ABSTRACT. Altogether 1276 flies, comprising eight species, were collected. One of them is new, *D. (Sophophora) andamanensis*, sp. nov. *D. ficusphila* Kikkawa and Peng and *D. gracilis* Duda are reported for the first time from India.

INTRODUCTION

During the last few years investigations into the distribution of *Drosophila* have made striking progress in our country (Parshad and Paika, 1964 ; Parshad and Duggal 1965 ; Gupta, 1969, 1970; Gupta and Ray-Chaudhuri, 1970). Until rather recently almost nothing was known of *Drosophila* species inhabiting the Andaman and Nicobar Islands, which form an arcuate chain, about 1120 kilometres long, in the Bay of Bengal. They cover a land area of over 49 square kilometres. The climate is humid tropic and the vegetation consists mostly of ever-green forest, with sparsely cultivated fields and coconut plantations. The present paper deals with the results of a survey made in these Islands during the period 20th March 1969 to 14th April 1969, yielding a total of 1276 specimens representing eight species (Table I).

TAXONOMIC ACCOUNT

1. *Drosophila (Sophophora) melanogaster* Meigen

Drosophila melanogaster Meigen, 1830, *Syst. Besch.*, 6 : 85.

This species was not very common and only a few specimens were collected over fermenting fruits.

Distribution : Worldwide.

2. *Drosophila (Sophophora) ananassae* Doleschall

Drosophila ananassae Doleschall, 1858, *Nat. Tijd. Ned. Ind.*, 17 : 128.

This was a dominating species during the period of collection and the specimens were mainly collected by means of net-sweeping over fermenting fruits and vegetation.

Distribution : Widely distributed in the tropical and subtropical regions of the world.

TABLE I. DROSOPHILID FAUNA OF ANDAMAN AND NICOBAR ISLANDS

| Name of species | Number of Specimens collected |
|---|-------------------------------|
| 1. <i>Drosophila (Sophophora) melanogaster</i> | 25 |
| 2. <i>Drosophila (Sophophora) ananassae</i> | 735 |
| 3. <i>Drosophila (Sophophora) bipectinata</i> | 435 |
| 4. <i>Drosophila (Sophophora) malerkotliana</i> | 2 |
| 5. <i>Drosophila (Sophophora) ficusphila</i> | 8 |
| 6. <i>Drosophila (Sophophora) andamanensis</i> , sp. nov. | 53 |
| 7. <i>Drosophila (Tanygastrella) gracilis</i> | 9 |
| 8. <i>Drosophila (Drosophila) nasuta</i> | 9 |
| Total | 1276 |

3. *Drosophila (Sophophora) bipectinata* Duda

Drosophila bipectinata Duda, 1923, *Ann. Mus. Natl. Hungarici*, 20 : 52.

Specimens of this species were also as abundant as those of *ananassae* and often seen over the ripe fruits.

Distribution : Japan, Formosa, India, Nepal, Borneo, Sumatra and Micronesia.

4. *Drosophila (Sophophora) malerkotliana* Parshad & Paika

Drosophila (Sophophora) sp., Okada, 1964, *Nature and Life in Southeast Asia*, 3 : 439.

Drosophila (Sophophora) malerkotliana Parshad and Paika, 1964, *Res. Bull. Punjab Univ.*, 15 (3-4) : 235.

This was an uncommon and rather a rare species during the collection period and only two specimens were captured. Our early studies indicate that this species is more abundant after the rains.

Distribution : India and Australia

5. *Drosophila* (*Sophophora*) *ficusphila* Kikkawa and Peng

Drosophila ficusphila Kikkawa and Peng, 1938, *Japan. J. Zool.*, 7 : 531.

Specimens of this species showed a very poor attraction towards fermenting fruits. Kikkawa and Peng (1938) reported that it has a special fondness for the fruits belonging to the genus *Ficus*. This species is being reported for the first time from India.

Distribution : Japan and India.

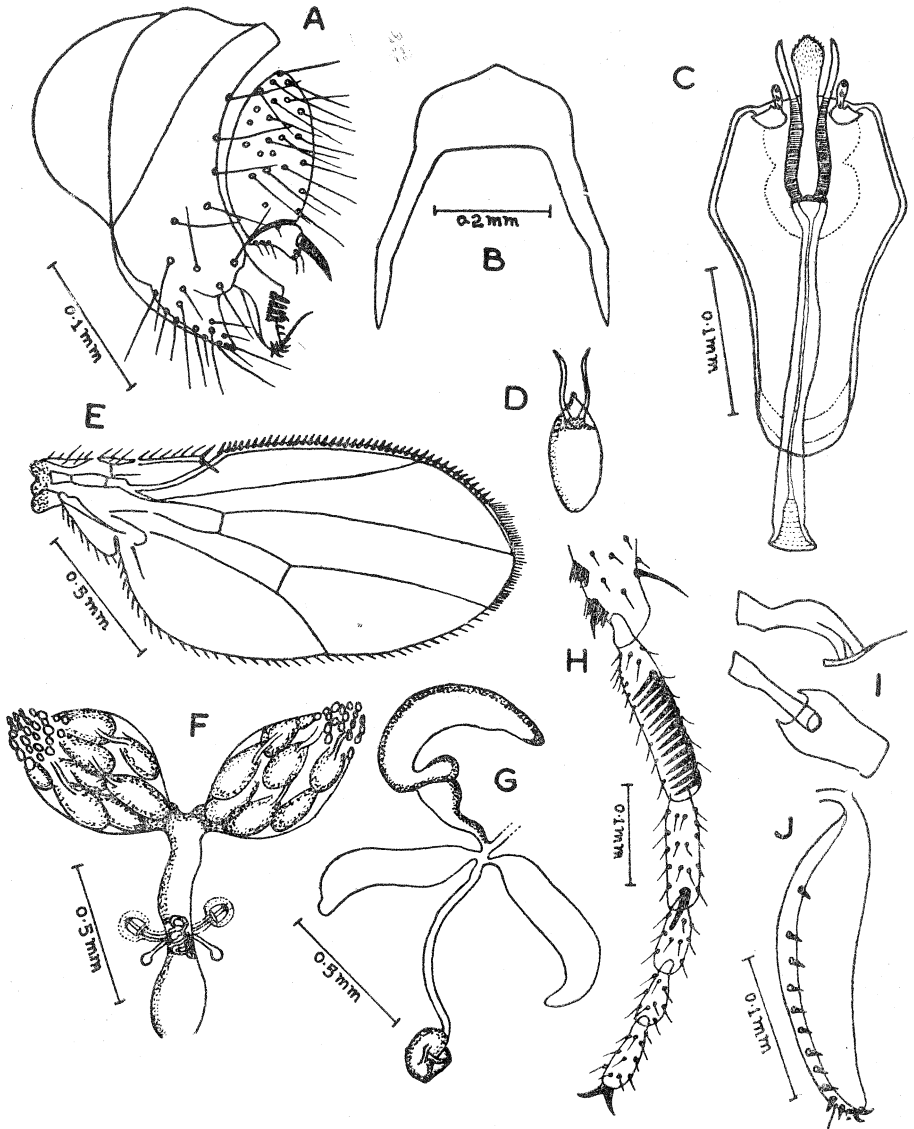
6. *Drosophila* (*Sophophora*) *andamanensis*, sp. nov. (Fig. 1)

Male and female : Arista with about 4 dorsal and 2-3 ventral branches in addition to the terminal fork. Antennae pale yellow ; third segment slightly darker. Front including ocellar triangle pale yellow. Anterior reclinate orbital thin, and about 1/2 other two. Carina yellow, narrow and high. Second oral as long as first but usually smaller than first. Palpi dull yellow, with one apical seta. Cheek yellow, the greatest width of cheek from the base of oral bristle to eye border about 1/12 greatest diameter of eye. Eyes bright red.

Acrostichal hairs regular, in 8 rows, no prescutellars. Anterior scutellars convergent. The distance from anterior dorsocentral to posterior dorsocentral about 2/5 the distance between two anterior dorsocentrals. Mesonotum pale yellow. Scutellum brownish-yellow. Thoracic pleura light brownish-yellow. Sterno-index about 0.6. Legs yellow, pre apicals on all three tibiae; apicals on first and second tibiae. Fore tarsi of male with two sex-combs; first tarsal joint with a large comb having about 12-16 dark brown pointed teeth ; second tarsal comb with a distally situated single tooth (Fig. 1H).

Wings (Fig. 1E) clear. C-index about 1.43 ; 4V-index about 2.3 to 2.78 ; 4C-index about 1.8 ; 5 X-index about 2.35. Two equal bristles at the apex of first costal section ; heavy bristles on basal about 2/3 third costal section. Halteres yellow. *Abdominal tergites* in male shining yellow, with blackish posterior band on each segment, 6th tergite completely black, 5th tergite dusky in old specimen, tergites of female with blackish bands, 6th and 7th tergites black, abdominal band becoming more extensive in middle on 3rd, 4th and 5th tergites in old specimens.

Periphalllic organs (Fig. 1A) : Genital arch with about 21-25 bristles, running from the top of posterior margin along that margin down to toe ; toe low, pointed. Anal plate nearly oval, with about 24 bristles. Clasper two ; pri-



Drosophila andamanensis, sp. nov: A, peripheral organs; B, decasternum; C, phallic organs; D, egg; E, male wing; F, female reproductive organs; G, male reproductive organs; H, male prothoracic leg; I, ejaculatory apodeme (lateral and dorsal aspects); J, egg-guide.

mary clasper with a row of 4-5 teeth, arranged in a straight row, marginal bristles 7-9, small, tough, clustered at lower tip, one bristle especially long and usually pointed upwards; secondary clasper lying just below anal plate, with one very large curved tooth and a few fine setae. *Decasternum* (Fig. 1B): Pale yellow, median piece hemispherical having two long arms posteriorly. *Phallic organs* (Fig. 1C): Aedeagus fused, apically broadened and slightly pubescent. Anterior paramere short, broad basally, with three sensilla. Posterior paramere as long as aedeagus. Novasternum without lateral processes, submedian spines and median notch. Ventral phragma oblong. *Egg-guide* (Fig. 1J): Lobe slender, yellow, weakly sclerotized, and with about 13-15 marginal teeth. Discal teeth being absent. Subterminal hair inserted between 4th and 5th marginal teeth. Basal isthmus short.

Internal structures: Proximal intestine: $C=2.0$ Rectal papillae: $R=1.6$. Malpighian tubules whitish yellow, with their common stalks rather short. Testis (Fig. 1G) yellowish, with about 1 outer and 1/2 inner coils. Ejaculatory apodeme with an elongate plate, concaved distally; stem large and stout (Fig. 1I). Spermathecae with chitinized centres. Ventral receptacle long, like a convoluted tube (Fig. 1F).

Egg (Fig. 1D): With two filaments. *Puparia* yellowish. Anterior spiracles with about 11 filaments, horns including spiracles about 1/10 length of puparium. Posterior spiracles divergent.

Male body 1.95 mm; wing: 1.65 mm.

Female body 2.26 mm; wing: 1.92 mm.

Holotype ♂, *allotype* ♀, and *paratypes* 14 ♂♂, 30 ♀♀, INDIA: South Andaman: Port Blair, Horticultural Garden, coll. B.N. Singh, iii-iv. 1969; 2♂♂ and 5♀♀ *paratypes* also from Nicobar: Kamorta Island. Near Jetty, coll. B. N. Singh, iii.iv. 1969. (Deposited in Dept. of Zoology, B.H.U.). collected over yeasted banana bait.

Distribution: Andamans and Nicobar.

Belongs to *ananassae* subgroup of *melanogaster* group of the subgenus *Sophophora*, somewhat resembling superficially *D. unipectinata* Duda in having large sex-comb on fore metatarsus of male but distinctly differs from *unipectinata* in having large spine at the tip of second tarsus of male fore leg, arista with 8-9 branches including a fork, presence of secondary clasper in male genitalia and in many other characters.

7. *Drosophila* (*Tanygastrella*) *gracilis* Duda

Tanygastrella gracilis Duda, 1924, *Arch. Naturg.*, 90A (2): 192, 215; 90 (A) (3): 253 (Java).

Drosophila (Tanygastrella) gracilis : Duda, 1926, *Suppl. Ent.*, **14** : 99 (Sumatra ; redescription with figures),

Drosophila (Tanygastrella) gracilis : Duda, 1929, *Treubia*, **7** : 420 (Buru : Moluccas).

A very few specimens of this species were collected by net-sweeping over fermenting fruits in these Islands.

Distribution : Borneo, Sumatra, Java, Moluccas and India.

Remarks : Three specimens were also examined by the authors from Kusmahi Forest, Gorakhpur and one from the old Botanical Garden, Banaras Hindu University (U. P.), and it is also a new record from India.

8. *Drosophila (Drosophila) nasuta* Lamb

Drosophila nasuta Lamb, 1914, *Trans. Linn. Soc. London*, **16** : 346 (Seychelles).

This species was found as the only representative of the subgenus *Drosophila* and mainly collected while sweeping over decaying fruits and vegetation.

Distribution : Japan, Borneo, Sumatra, Seychelles, Formosa, Moluccas, New Guinea, Fiji, Hawaii and India.

REMARKS

Although it was the object of the investigation to collect *Drosophila* from these Islands, the data are rather limited and do not furnish a complete picture of the Drosophilids of these Islands. The authors are of opinion that there are undoubtedly many more species than included here and, therefore, further surveys may disclose the existence of species of special interest and value to the taxonomists and geneticists.

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