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D. PARARUBIDA

A New Species of *Drosophila* from
New Guinea

BY

WHARTON B. MATHER, M.Sc., Ph.D.

DEPARTMENT OF ZOOLOGY

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I. INTRODUCTION

In the course of collecting *Drosophila* in the Territory of Papua and New Guinea in 1959 and 1960 a new member of the *immigrans* group was detected in large numbers and designated species E (Mather 1959). As this new species is of considerable genetical interest (Mather 1961a, Mather 1961b), a description follows. The techniques used are similar to Mather (1960).

II. SPECIES DESCRIPTION

Drosophila pararubida sp. nov.

General.—Thorax light brown with three longitudinal lighter stripes (Fig. 1A). Male black ventrally. First femur with a poorly developed row of spines.

Type material.—The male holotype and allotype and two paratypes of each sex have been deposited at the Queensland Museum. The type material has been taken from a type culture set up from a single female fertilized in the wild at Sogeri (Port Moresby) May, 1959. The species is very easy to maintain in culture.

Body length.—♂ 3.5 mm., ♀ 4.5 mm.

Head ♂ and ♀.—Arista with 9 branches. Orbital bristles in the ratio of 7 : 4 : 3, second oral bristle equal to first. Greatest width of cheek 0.3 greatest diameter of eye. Carina flat.

Thorax ♂ and ♀.—Light brown with three longitudinal slightly lighter stripes (Fig. 1A). Acrostichal hairs in 8 rows. Prescutellars absent. Anterior scutellars convergent. Sterno-index 0.5. Apical bristles on first and second tibia, preapicals on all three. No sex combs. First femur with a poorly developed row of spines.

Wings ♂ and ♀.—Slight clouding on posterior crossveins. Costal index 4.0, fourth vein index 1.1, 5X index 0.8, 4C index 0.5. Third costal section with heavy spines on its basal half. Length ♂ 3.0 mm., ♀ 3.1 mm.

Abdomen ♂.—First segment yellow. Second and third segments black, indented anteriorly and dorsally with yellow. Fourth to sixth segments black (Fig. 1B).

Abdomen ♀.—All segments yellow with posterior light brown but diminishing anteriorly.

Periphallalic organs.—Genital arch of uniform width, with 5 bristles placed around posterior margin, 7 bristles clustered towards toe and heel, undermargin and toe roundish. Anal plate oval, free, 27 bristles evenly distributed, tip and rear angle distinct. Primary clasper fused to decasternum, 8 marginal bristles, 7 primary teeth in a curve. Secondary clasper absent. Decasternum rectangular (Fig. 1C).

Phallic organs.—Aedeagus yellow, and blunt in lateral view (Fig. 1D). Anterior paramere fused to novosternum. Novosternum deeply notched. Ventral fragma V-shaped (Fig. 1E). Phallic formula = a b c DE f_o g_o h_o I k l MN. Phallosomal index = 1.0.

Egg guides.—Yellow, pointed with 26 teeth. Basal isthmus 1/20th length of lobe (Fig. 1F).

*Aided by a grant from the University of Queensland Research Fund.

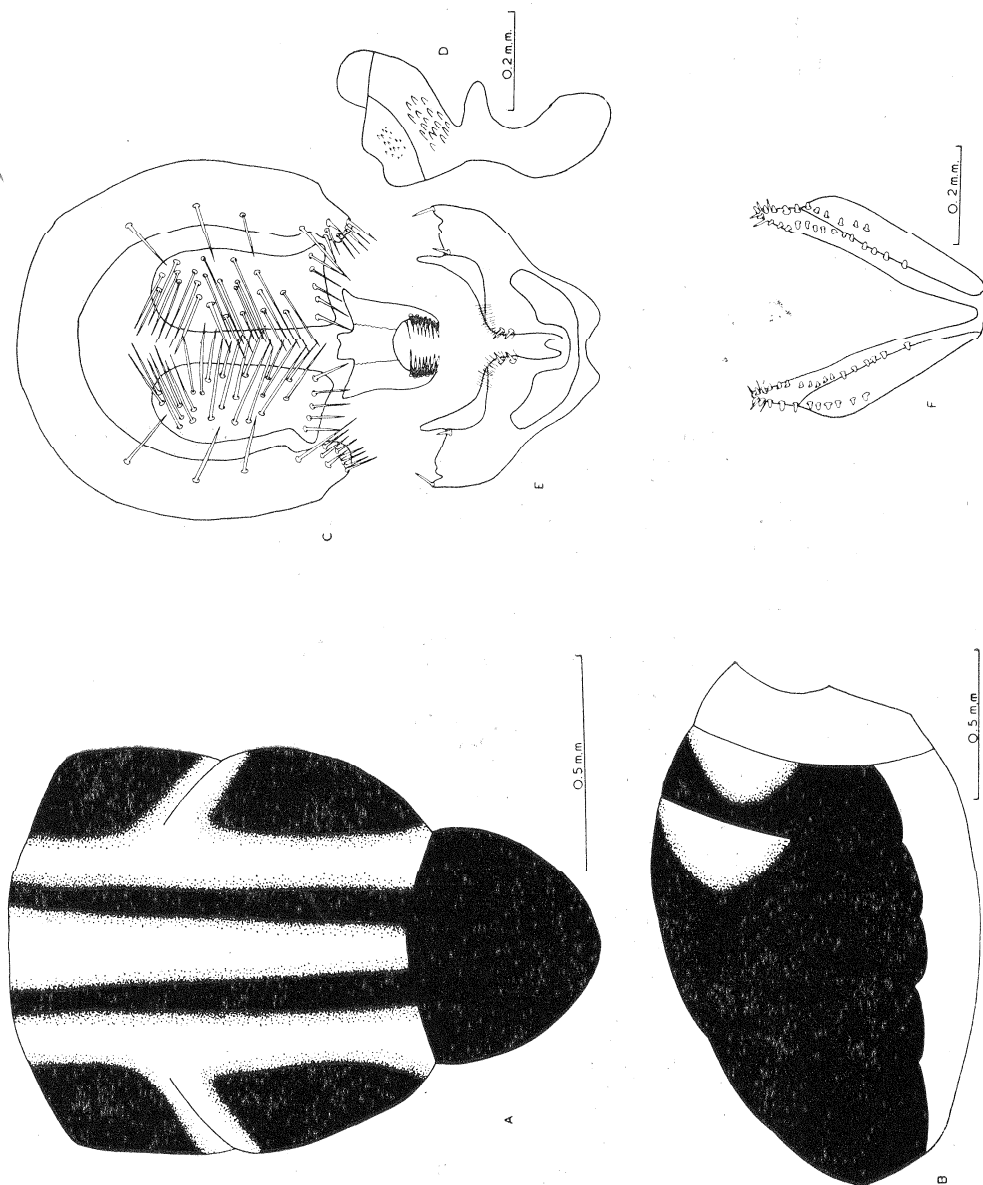


FIG. 1.—A, ♂ thorax; B, ♂ abdomen; C, peripheral phallic organs; D, aedeagus; E, phallic organs; F, egg guides.

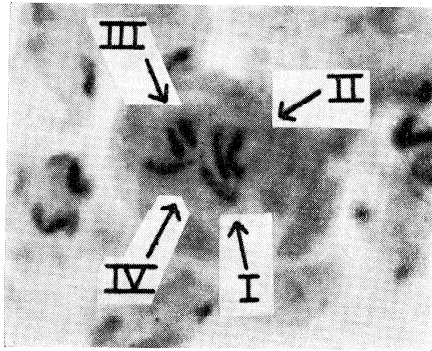


FIG. 2.—♂ Metaphase plate.

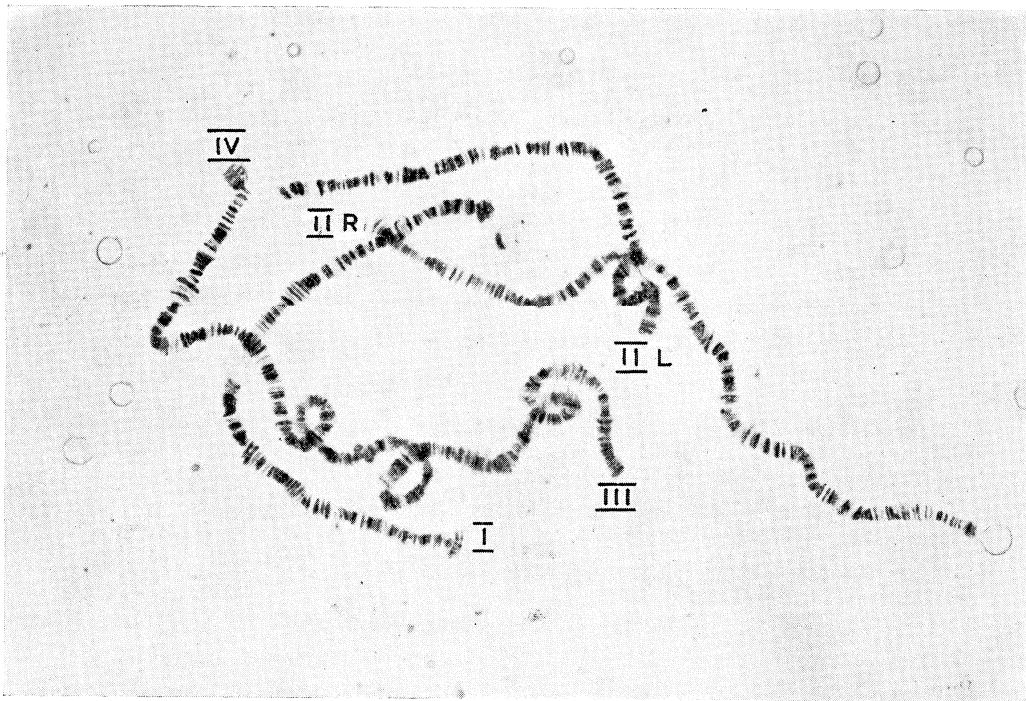


FIG. 3.—♀ Giant Chromosomes.

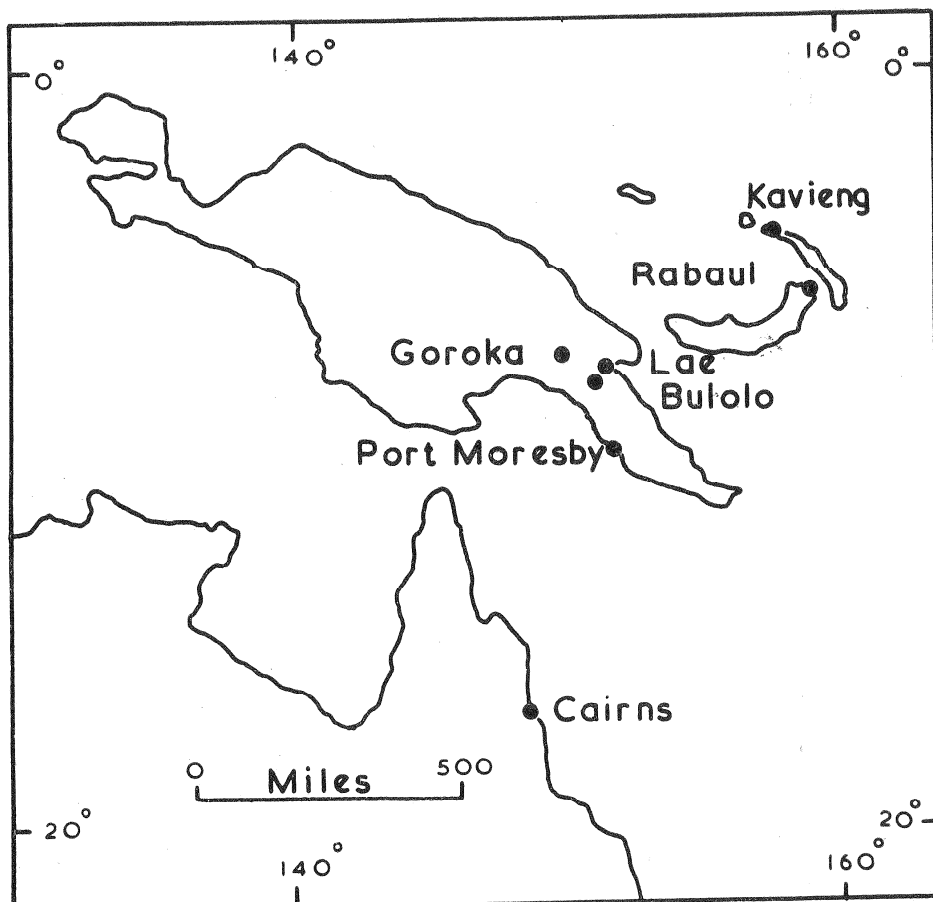


FIG. 4.—Sampling stations in Northern Australia and the Territory of Papua and New Guinea.

Internal structures ♂ and ♀.—Intestinal coiling index 3.0. Rectal index 2.0. Malpighian tubules, 2 anterior, free, common trunk 0.1 total length; 2 posterior, free, common trunk 0.1 total length, anterior and posterior of equal length.

Internal genitalia ♂.—Testes with 3 inner cream coils and 5 outer brown coils. Sperm pump with two diverticula.

Internal genitalia ♀.—Ventral receptacle very long and coiled. Spermathecae semi-spheroidal, lightly sclerotised.

Egg filaments.—4 (2 long, 2 short; long 6 times length of short).

Pupae.—Anterior spiracles with 20 branches. Posterior spiracles parallel. Pupal stalk length/pupal body length ratio = 0.3.

Chromosomes.—Larval brain figures show 1 pair V's, 2 pairs rods and a pair of dots. The giant salivary chromosomes show four long arms and one short and the arms can be readily identified by the banding of the free ends. The same designation arms has been used as that given for *D. immigrans* (Freire-Maia, et al. 1953), viz. I for the X chromosome, IIL and IIR for the arbitrary left and right arms of the pair of

metaphase V's, III for the other metaphase rod and IV for the small arm representing the metaphase dot (Figs. 2 & 3).

Salivary gland chromosomes are of good quality but the species appears to be inversion free.

Records.—Port Moresby May, 1959, 1960; Lae May, 1959, 1960; Bulolo May, 1960; Kavieng May, 1959; Rabaul May, 1959, 1960; Goroka May, 1959, 1960 (Fig. 4). The relative abundance of *D. pararubida* compared with *D. rubida* and *D. setifemur*, the other two members of the species group present is given in Table I. It will be noted that *D. pararubida* appears to be particularly attracted to rotting citrus fruit.

Relationships.—*D. pararubida* is clearly closely related to *D. rubida* Mather but can be easily distinguished by the thoracic markings. However *D. rubida* and *D. pararubida* will not hybridise.

III. ACKNOWLEDGMENTS

Acknowledgments are due to Professor Th. Dobzhansky, Zoology Department, Columbia University, who assisted in the collection of the material in Papua and New Guinea, to the Administration of Papua and New Guinea who arranged for field assistance, to Mr. D. S. Angus and Miss Rosalyne Spurway of the Zoology Department, and to the Photography Department, University of Queensland for technical assistance.

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Table 1.—Species Collection Data—*immigrans* group.

	Cairns		Port Moresby		Goroka No.	Rabaul		Rabaul Citrus		Bulolo		Lae		Kavieng	
	No.	%	No.	%		No.	%	No.	%	No.	%	No.	%	No.	%
<i>D. rubida</i>	515	87	84	16	3	30	6	3	1	83	22	11	5	20	49
<i>D. pararubida</i>	0	0	32	6	1	6	1	108	30	37	10	34	15	18	44
<i>D. setifemur</i>	77	13	425	78	0	455	93	251	69	254	68	186	80	3	7
	592		541		4	491		362		374		231		41	

This table has been constructed from collections made at Cairns in May, 1958 (Mather 1960), Kavieng, May, 1959 (Mather 1959) and the remainder of Papua and New Guinea in May, 1960. As comparable effort was expended at each station in collecting, the figures roughly show relative abundance.