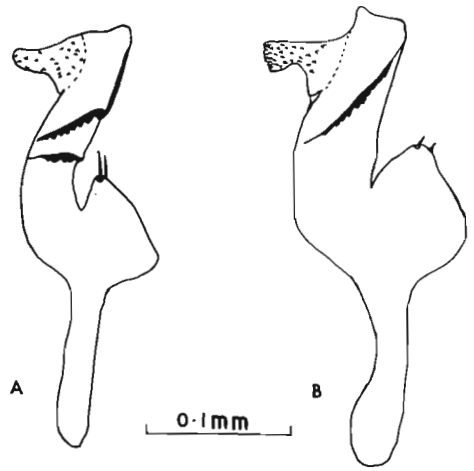
Angus, D.S. University of Queensland, Brisbane, Australia. D. quadrilineata from Mt. Maquiling, Luzon, Philippines.

The distribution of D. quadrilineata has been discussed previously (Angus 1967) from the literature without access to material - living or dead.

One of the localities from which D. quadrilineata has been recorded is Mt. Maquiling, Luzon, Philippines by Sturtevant in 1927. In February 1969 an extensive sample of living Drosophilas was obtained from Mt. Maquiling, Luzon, Philippines (Mather 1970). From this collection a culture was established from 2 females inseminated in the wild. This culture has allowed the testing of the sexual isolation between this species and the closely related D. tetrachaeta (Bisianumu, New Guinea strain) and D. pseudotetrachaeta (Cairns, Australia strain). It turned out that only rarely will D. quadrilineata cross with the other two species and that an F_1 is never produced. Thus the biological reality of D. quadrilineata is established.

The existence of extensive material from culture has allowed a detailed morphological examination leading to the conclusion that the best way to distinguish D. quadrilineata from D. tetrachaeta and D. pseudotetrachaeta is by the presence on the aedaegus of D. quadrilineata of a second transverse row of scleritized teeth not present in the other two species.



AEDAEGUS
D. quadrilineata (A) D. tetrachaeta (B)

SEXUAL ISOLATION TESTS

Females	Males	Dissected Females	Inseminated Females
D. tet.	D. quad.	104	0
D. pseudo.	D. quad.	102	6
D. quad.	D. tet.	101	2
D. quad.	D. pseudo.	107	5

Acknowledgement: This work was carried out as part of the Research Project "Evolution in the Genus Drosophila" directed by Dr. Wharton B. Mather, Head of the Genetics Laboratory, Zoology Department, University of Queensland.

References: Angus, D. 1967. Additions to the Drosophila fauna of New Guinea. Pap. Dep. Zool. Univ. Qd, 3(3): 31-42. Mather, W.B. 1970. The genus Drosophila at Mt. Maquiling, Luzon. DIS 45: 111.

Nakashima-Tanaka, E. and M. Ogaki. University of Osaka Prefecture, Japan. Chromosomal analysis of jumping behavior to light in D. melanogaster.

It was observed that the adult flies of two mutant strains (bw;st ss and bw;st;sv^n) showed an anomalous response to light (jumping up or dropping down) at the moment the light was intercepted or turned off. This response showed a negative correlation with the age of flies. On the other hand, there was no response to light in the Hikone-H wild strain. This peculiar behavior was able to discriminate very clearly between bw;st ss and Hikone-H strains. The F_1 progenies of reciprocal crosses between bw;st ss and Hikone-H strains did not show any response to light as well as Hikone-H strain. Therefore, it seems that such behavior to light is completely recessive. In order to analyze which chromosome is responsible for the jumping behavior, six special synthetic strains were made: for instance (1) 1-Hikone-H;bw;st ss, (2) 1,2-Hikone-H;st ss and (3) 1,3-Hikone-H;bw (that is, having the Hikone-H first and third chromosomes and the bw second chromosome) etc. The behavior to light of these special synthetic strains and the original bw;st ss and Hikone-H strains were tested. Only 1-Hikone-H;bw;st ss and the original bw;st ss strains responded to light but the others did not. From the above experiments the conclusion may be drawn that the jumping behavior to light in Drosophila is controlled by recessive genes. Furthermore, the multiplicative effects of the genes located on the second and third chromosomes are necessary for the positive response to light, but at least the first chromosome has no relation with the behavior.