

4th November, 1964.

H.E. Paterson Esq.,
University College of Rhodesia and Nyasaland,
Zoology Department,
Private Bag 167H,
Salisbury,
Southern Rhodesia.

Dear Mr. Paterson,

I enclose a copy of a paper I was invited to contribute to the coming number of the Rivista di Malariologia. In it you will see I have now come to your conclusion that all five mating-types should be considered full species - this after hearing about your discussions in Rome and after consideration of Garnet Mason's findings. However, I think we must recognise from Coz's findings and those of Marchal, E. (1959) Bull. de I.F.A.N. Ser. A 21(1), 180-203, that hybridization does occur on occasion, not only between A and B, but also between melas and A (or ?B). Perhaps such hybridization occurs when high densities of the two forms overlap at certain times of the year.

The article I wrote in September last year ("Anopheles gambiae A Complex of Species"), a copy of which I sent to you, still lies in Geneva awaiting publication. I have now sent a postscript to this article pointing out that evidence accumulated since it was written now points to all the forms being full biological species and referring the reader to more recent accounts of the situation to appear in the coming issue of the Rivista.

I also enclose a copy of a brief outline of the proposed chapter for the WHO Monograph on Vector Genetics. I think this covers all aspects but would value any comments from you.

I am most grateful to you for the three batches of eggs from Chirundu you sent in August last. After a considerable number of crossings between the three colonies raised and our known strains here I conclude all are C but confusion has arisen because of normal sex ratios appearing where excesses of males were expected. The following results show the sex ratios obtained (your colonies were called P/1, P/2 and P/3).

<u>Parents</u>		<u>F₁ Generation</u>	
<u>Male</u>	<u>Female</u>	<u>Male</u>	<u>Female</u>
A	P/1	111	149
A	P/2	78	70
B	P/1	37	0
B	P/2	46	25
B	P/3	24	19
<u>merus</u>	P/1	34	39
<u>merus</u>	P/3	43	53
P/1	A	99	118
P/2	A	15	14
F/1	B	41	44
P/2	B	89	86

As you can see, of the crosses between A and B males and C females, only one B male x P/1 female) gave the expected sex ratio, though B male x P/2 female also gave an excess of males in the F₁.

The testes of the males from the crosses A male x C female were very difficult to diagnose microscopically as sterile or fertile so a number of artificial matings were carried out between these males and virgin A females and with their own hybrid females. The result was small hatches from some of the egg-batches laid though most failed to hatch. The testes of the males from the crosses B male x C female also proved difficult though less so than those from A male x C female. Attempts to mate these

with virgin females produced no viable eggs. The reciprocal crosses presented no difficulty.

Thus the conclusion is that all 3 colonies are C. We lost one of them but are now crossing the other two to establish interfertility and will then keep a single combined colony.

I might mention that I have also found normal sex ratios on occasion from crosses between A and B males and merus and melas females.

To complete observations on species C we have now backcrossed hybrid females from crosses between A or B and C to parent males and shown them to produce viable offspring in normal sex ratios.

We are busy at present typing material from WHO teams in West Africa. Most has proved to be A, so far.

Kind regards,

Yours sincerely,

G. Davidson
Reader in Entomology
as Applied to Malaria.