Band, H.T. Dept. of Zoology, Michigan State University, E. Lansing, MI 48824. Changes in mating duration in *Chymomyza amoena* stocks over time.

Band (1995) reported that duration of copulation (DC) in *C. amoena* populations was not species specific. Laboratory populations established from flies bred from substrates collected in Virginia (acorns, apples) and from apples collected in E. Lansing, Michigan, had an average DC of 17 to 20.5 minutes. A laboratory population established from flies bred from apples collected at Iron Mountain, MI, had a significantly shorter DC, 14.7 ± 3.4 minutes. Laboratory populations established from *C. amoena* from the Maggia Valley, Canton Ticino, Switzerland, showed similar heterogeneity in DC. The stock established from flies bred from nuts had a DC of 22.0 ± 7.1 minutes, but the stock established from flies coming to bait at the same site had a significantly shorter DC, 16.0 ± 2.8 minutes. Results, however, paralleled the early reports of Wheeler (1947) and Spieth (1952) on mating duration in *C. amoena* of 14 minutes and 21 minutes, respectively.

The fact that DC was significantly shorter in one population from each of two different countries also suggested that a genetic basis for the polymorphism might exist. Data included in Band (1995) had been completed by May, 1994. It was necessary to determine that DC remained significantly more rapid in one or both stocks. Work was undertaken in October 1995 on the Swiss stock and in November and December 1995 on the Iron Mountain, MI, stock. Single pair matings were used.

Table 1. Duration of copulation (DC) observed in laboratory stocks of *Chymomyza amoena* from Iron Mountain, MI, USA and the Maggia Valley, Switzerland in Oct.-Dec. 1995. Time in minutes. Minimax values also given.

Population	N	Duration of copulation Mean ± SE	Min.	Max.	Pairs not mating
Iron Mountain	8	20.2 ± 1.9	15	32	16
Maggia Valley-B	13	18.1 ± 1.4	11	28	4

As shown in Table 1, the average DC increased in both stocks. Minimum and maximum duration has also increased from previously reported values (Band, 1995; Table 2), although only half as many matings have been scored per stock in the current trials.

There were more nonmating than mating pairs among the Iron Mountain, MI, flies. Individually, five females given new males mated; five females given new males still did not mate. Also, whereas termination of copulation and separation had been abrupt in the early work, in the later experiments individual females showed more evidence of restlessness and attempts to dislodge the male before pairs finally separated.

DC has been argued to be controlled by the male. Difficulty in separation would certainly add to the increased length in observed mating duration. Neither laboratory stock now approaches the lower DC found by Wheeler (1947) for this species, but are at or below the mean DC observed by Spieth (1952) and in other *C. amoena* populations (Band, 1995).

References: Band, H.T., 1995, Mitt. Schweiz ent. Ges. 68: 23-33; Spieth, H.T., 1952, Bull. Am. Mus. Nat. Hist. 99: 395-474; Wheeler, M.R., 1947, Univ. Texas Publ. 4720: 78-115.

Amador, A., and E. Juan. Department de Genètica, Universitat de Barcelona, Diagonal 645, 08071 Barcelona, Spain. Morphology of mouth hooks and anterior spiracles during larval development of *D. funebris*.

The characteristics used to stage larvae in *Drosophila* are the morphology of mouth parts and the presence and appearance of anterior spiracles (Bodenstein, 1950). The interspecific variability in these characteristics makes it necessary to describe them for each single species. Studies of temporal gene regulation in *D. funebris* require the exact staging of larvae along development.

Flies were allowed to lay eggs on ethanol-acetic acid agar-medium (1.4%) seeded with live yeast for 6 hours, and 10 drops of a 10% glucose solution were added daily until first instar larvae appeared. Further larval development on this medium is delayed so larvae older than two days were collected from bottles with cornmeal-sugar agar-medium previously seeded with 100 eggs. The development took place at 23°C.

Larvae hatched at about 18 hours after the eggs were laid. The mandibular hooks of first instar larvae usually had 3 teeth of uniform size (Figure 1A), although approximately 20% of individuals presented 4 teeth. The first moult occurred three days later. At this time anterior spiracles were apparent but had no papillae; hooks had doubled in size and showed 3 teeth. The second tooth was longer and sharper than the other two (Figure 1C). Two days later, the second moult took place, the size of hooks had doubled again and two big sharp teeth were observed (Figure 1D). At this time

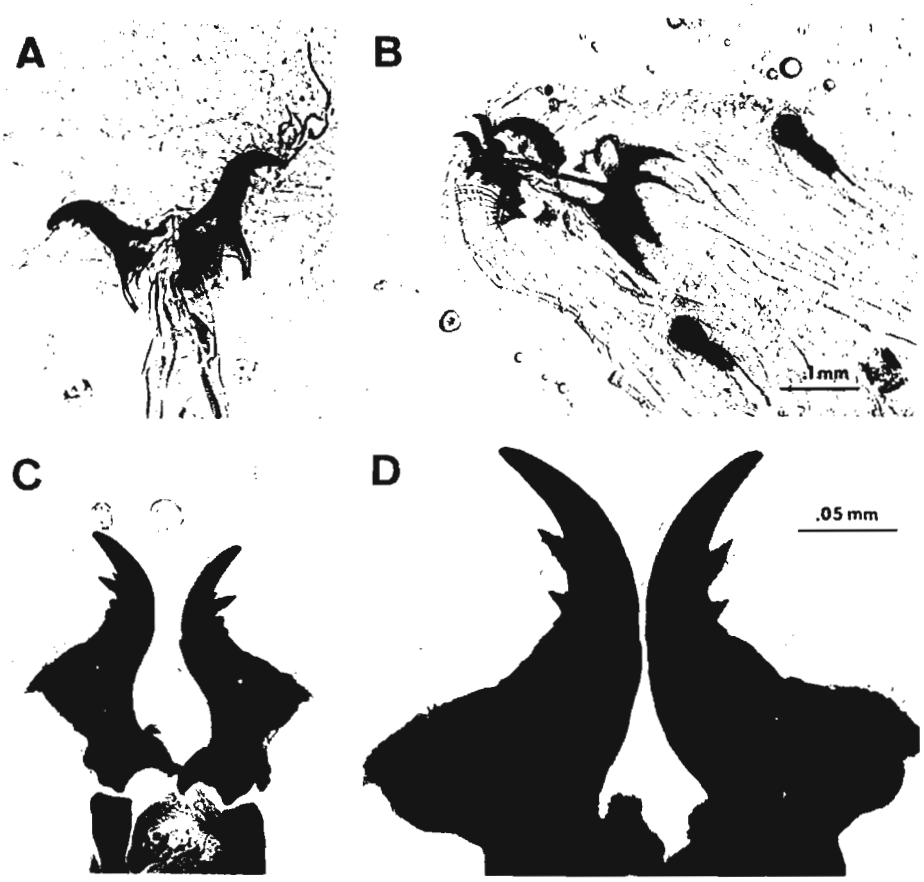

Figure 1. Larvae were squashed between a slide and a coveslip in a drop of water and viewed under a Zeiss microscope. **A,**. First instar larvae. **B,**. Transition from first instar to second instar. **C,**. Second instar larvae. **D**, Third instar larvae. A, C and D at a magnification of 400×, B at 160×.

spiracles showed finger-like papillae. Eight days after hatching, pupariation began, and five days later began eclosion. The shortest life cycle from egg to adult was 14 days at 23°C.

References: Bodenstein, D., 1950, In: *Biology of Drosophila.* Demerec M. (ed.), JohnWiley and Sons, p. 275.

Kosuda, Kazuhiko, and Akira Sekine. Biological Laboratory, Faculty of Science, Josai University, Sakado, Saitama, Japan 350-02. The viability reduction as a correlated response to selection for body weight in *Drosophila melanogaster*.

Artificial selection experiments for light and heavy adult body weight in *Drosophila melanogaster* were carried out for eight generations. The egg to adult viability was also examined as a correlated response to selection for body weight. It was shown that the genetic variations which decrease and increase body weight have deleterious effects on viability.

Flies from a natural population in Katsunuma, Yamanashi, Japan, were used for the present selection experiment. Two replicate selection lines were made in both directions (HA and HB for high lines and LA and LB for low lines). Random samples of 50 virgin female and male flies were taken and maintained in yeast-sugar-molasses medium separately for two days. Then they were weighed at the age of two days old every generation. Five pairs of females and males with the extreme body weight were selected for parents of the next generation in each selection line. These selected flies were transferred to fresh vials with the medium every one or two days in order to avoid a high larval density. These selection procedures were repeated for eight successive generations. The control line was also maintained from five pairs of flies which were randomly taken each generation.

For measuring the egg to adult viability, the following procedure was employed. A glass slide with culture medium on its surface was inserted into a large plastic vial. Female and male flies from each line were put together into the vials and were allowed to lay eggs. After several hours, portions of the medium with 50 eggs were transferred to