faster with fewer breaks between bursts of stroking.

As the speed and intensity of stroking increases, the male pauses in stroking and flicks one wing rapidly forward 90°. The extended wing vane is parallel to the substrate. As courtship continues, both wings are simultaneously flicked forward 90°. Wing flicking reciprocates rapidly with stroking so that just prior to mounting, it is difficult to temporally separate these two courtship elements.

A receptive female spreads her wings 90°. Infrequently, (27% of all observations) after this acceptance signal is given, the male quickly places his head close to the terminalia of the female, extends his proboscis and rapidly licks the genitalia once or twice prior to mounting. In 9.1% of the observed courtships, males mounted females which had failed to give an acceptance signal.

The male mounts the female by crawling forward up onto her dorsum. The hindlegs of the male remain on the substrate. The midlegs are curved around the lateral surfaces of the abdomen with the tarsi resting on the midlegs of the female. The forelegs of the male rest on tergites one and two with the tarsi curved over the dorsal surface of the wing halteres of the female. While mounting, the male curls his abdomen under and thrusts forward and up until genitalic contact is make. The now coupled flies turn in a circle for several seconds and stop.

Prior to completion of copulation, the female, using her hindlegs, kicks back at the area of genitalic contact. Copulation is terminated however, by the male straightening his abdomen and breaking contact. The male then backs off the dorsum without turning, after which both flies begin cleaning movements beginning at the terminalia and ending at the head.

Non-receptive females kick back with their hindlegs, flutter their wings, depress their abdomen or decamp. Males court one another and countersignal by fluttering.

Of the 66 observed courtships, 48 resulted in copulation; of these 48 pairs, 43 of the females were inseminated as determined by microscopic examination of the seminal receptacles and/or spermathecae for the presence of motile sperm. Both males and females used in these observations were virgin, six day flies. Mean courtship time was 39.8 seconds with a range from 4 to 177 seconds. Mean copulation time was 5 minutes 11 seconds with a range from 3 minutes 29 seconds to 14 minutes 22 seconds.

Reference: Spieth, H.T. 1952 Bull. Amer. Mus. Nat. Hist. 99:395-474.

Palabost, L. Université Paris, France. The influence of density on the larval viability of Drosophila melanogaster.

The influence of density on the larval viability was studied in two strains of Drosophila melanogaster, either in pure culture or in competition. The two strains were a wild one, M68 CA, and the mutant rosy scarlet (ry st). They were grown on a rich nutrient medium and on a medium deficient in both proteins and vitamins, at 20 and 25°.

The following results were obtained on a rich medium, where there is no competition for nutrients; the larval viability of the wild strain is density independent, for all tested densities from 25 to 1000 larvae. The mean hatching percentage is 81.5 ± 0.6% at 25° and 72.8 ± 0.6% at 20°. The larval viability of ry st is density-dependent, with a threshold at 400-500 larvae. This sudden fall of viability, in the absence of larval competition, depends on the excretion of auto-toxic products by the ry st larvae. The ry st larvae have no influence on the viability of the wild ones; neither have the wild ones on those of ry st.

On a medium deficient in proteins and vitamins which involves larval competition, I observed the following results; the larval viability of the wild strain is density independent, but lower than on the rich medium at 25°; while it is density-dependent at 20°. The larval viability of ry st is density-dependent both at 25° and at 20° and lower than on the rich medium. The ry st larvae have no influence on the viability of the wild ones, but living wild larvae reduce the viability of ry st larvae. On the contrary, when the ry st larvae are grown on a medium conditioned by the excretory products of wild larvae, their viability is higher; in other words there is facilitation.

These results prove that when two strains are in competition, three situations are possible: 1) no interaction, 2) inhibition, 3) facilitation.