A Survey of the Distribution and Activity of *Drosophila*

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A survey of the distribution of *Drosophila* species in five collecting areas and preliminary observations of their activity cycle was undertaken. All specimens were preserved to be keyed later.

Two types of traps were used in the study. The first consisted of a coffee tin with a large funnel inserted through a plastic lid. The second was a paper cup, either suspended from a branch by a wire or lying at a 45° angle on the ground. The coffee tin trap was unsuccessful, probably because it was too air tight. Paper cup traps worked well in either of the two positions. Flies were removed from the paper cup traps with an oatmeal carton fly collector adapted from the collector described by Spencer (1950). Both ends were removed from the cylindrical carton and a single layer of fine cheesecloth placed over one end. With this collector, several cups could be emptied before it was necessary to transfer the captured flies to vials. The cylinder also served as an anaesthetizer: a large cotton plug was used to localize the flies at the cheesecloth while a second piece of cotton, soaked in ether, was placed on the cheesecloth and temporarily covered with a layer of plastic.

Five areas were designated as collecting sites:

1. Research Station (general vicinity; river bank, picnic area, etc.)
2. Colter Bay Dump
3. Moose Island (North end)
4. Base of Signal Mountain (East end)
5. Lupine Meadows (South end, near Lake trail)

The results of trapping at each of these sites were as follows:

Area	Number of Lures	Total Flies Collected
Research Station	30	45
Colter Bay Dump	25	1
Moose Island	15	0
Signal Mountain, Base	25	28
Lupine Meadows	25	397

Area five yielded the greatest number of flies, whereas four separate days of collecting in Area three yielded no flies.

Activity Cycles

Drosophila activity, as measured by collecting success, was greatest on warm days between 4:30 and 7:30 PM (M.S.T.) in all four study areas which yielded specimens. From mid-July to mid-August, one day of the week was devoted to a careful study of the trap yield at hourly intervals between 6:00 AM and 8:00 PM in Area 1. The only successful collections were those made between five and seven in the evening. No flies appeared in the traps on cold or rainy days. For this reason, few flies were collected during the month of June, and August was the peak month for collecting. The marshy portion of Lupine Meadows (Area 5) consistently produced the largest single collections occuring when the area was warm, but still muddy and wet. Toward the end of August, success decreased as the area became progressively drier. During August, six collections were made in Area 5 at varying times between 1:00 PM and 8:00 PM MST. Following is a tabulation of these collections with average temperatures indicated:

Collection Time (MST) all PM	Average Temperature, °F Dry Bulb	Wet Bulb	Total No. *Drosophila*
1:00	78	68	10
1:30	78	62	1
2:00	78	62	4
2:30	77	61	6
3:00	77	61	4
4:30	79	66	24
5:00	75.5	62	26
5:30	74.5	63	22
6:00	71.6	59.6	58
6:30	69	61.5	47
7:00	66.3	58.5	47
7:30	66	59	59
8:00	--	--	4
8:30	--	--	1

Although overall collecting success was clearly related to temperature, the precise relation is not clear. Light intensity, humidity, wind velocity, and other factors are also implicated.

A more comprehensive study would be required to investigate the parameters of this activity peak and its relation to specific behavior. If adequate collections could be made during July, for instance, the relative importances of light intensity, temperature, and humidity might be more clearly revealed.

The species composition of collections and the species distribution among collections will be the concluding portion of this study. The classification to species of all collections has not been completed at this writing.

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