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The Dispersion of Flies by Flight

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Abstract:

Up to very recent years it has been generally held by entomologists that flies are comparatively limited in the distances which they will go from breeding places. Dr. Parker's work in Montana indicated that the house-fly is normally migratory in habit and he succeeded in obtaining specimens nearly two miles from the point of liberation. In 1916. the authors conducted some preliminary experiments in which colored flies were liberated in the vicinity of packing houses and a considerable number of these were recovered quite promptly in traps placed in the yard of the packing establishments, a flight of about three-fifths of a mile. The flies liberated in this experiment consisted largely of blowflies of the species *Chrysomyia rnacellaria* and *Phormia regina*. Later in the same summer a series of experiments was carried out to determine the distance of flight of several species of blowflies and house-flies under rural conditions. The flies were liberated at a point near the intersection of two roads and four traps were placed at given distances in the four cardinal directions from the point of liberation. A total of 1,745 colored flies were recovered in the sixteen recovery traps and a considerable number of these were in the outer ring of traps which was approximately three miles from the point of release. Another experiment was conducted immediately following this in which the traps were moved outward in the four directions to points approximately 2, .3, 4 and 5 miles from the point of liberation. House-flies, screw-worm flies and the Anthomyid, *Ophyra leucostoma*, were recovered in some of the most distant traps.

In 1918 it was determined to make more extensive tests of the dispersion tendencies of various species of flies. The same general

plan was followed as in the previous experiment, four traps being set in each of the cardinal directions from the point of liberation at distances approximately 4 1/2 6, 7 and 8 miles. About 60,000 colored flies were liberated, approximately 58 per cent being screw-worm flies, 39 per cent house-flies and the remainder *Phormia regina*, Sarcophagids and other species. As in previous experiments the flies in the various traps were killed daily and examined carefully for marked individuals. The day following liberation a considerable number of marked house-flies and screwworm flies were recovered in several of the traps. Even in those located 8 miles in each direction from the point of release, some screw-worm flies were taken. Following this experiment the traps were removed to points east and west approximately 9 1/2, 11, 13, 15 and 17 miles, two traps to the north 13 and 17 miles, and two traps to the south 8 and 10 miles from point of release. A trap was also placed about 7 miles east of south and another about 10 miles south of west of the point of liberation. About 80,000 flies were released in this test. The greatest distance from the point of liberation at which marked flies were recovered was: House-flies, 13 miles; screw-worm flies, 15 miles; *Phormia regina*, 11 miles and *Ophyra leucostoma*, 7 miles.

It is believed that the following of vehicles by flies in these experiments was unimportant. In general the experiments suggested that there is a natural tendency toward dispersion exhibited by both sexes of all species used in the tests. Many apparently favorable feeding and breeding places were passed in the course of migration. The relationship between direction of travel and the direction of the wind appeared not to be very close.

The many practical bearings of the question of distance and rapidity of travel of flies cannot be discussed here, but are apparent to all. It might be pointed out that this is the first series of experiments in which flight studies have been made with flies other than *Musca domestica*.

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