

A NOTE ON IRRIGATION DROP STRUCTURES AS BREEDING SITES OF BLACKFLIES IN WESTERN NEBRASKA (DIPTERA: SIMULIIDAE)

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During the summer of 1953, several farmers living a few miles south of Mitchell, Nebr., on highway 86, complained to a veterinarian in Mitchell that their cattle were being greatly annoyed by attacks of biting flies. The veterinarian requested assistance from entomologists at the Mitchell Field Station of the Communicable Disease Center, U. S. Public Health Service, in the identification of these flies.

Several net collections of adult flies were made by the writer during August 1953, and two species of Simuliidae were found to be attacking the cattle. The blackflies were identified as *Simulium vittatum*

Zett., and *Simulium griseum* Coq. It was observed that these flies were most numerous around the cattle in the evening at sunset and usually attacked the ears.

It is generally known that Simuliidae are associated with swift flowing water. To find the breeding sites, a survey of water areas was made within a radius of 1 mile of the farms where the blackflies were biting. All of the water found in this area was connected either directly or indirectly with irrigation and involved canals, concrete drop structures, farm laterals, drainage ditches, and seepage areas.

Blackfly larvae and pupae were found in

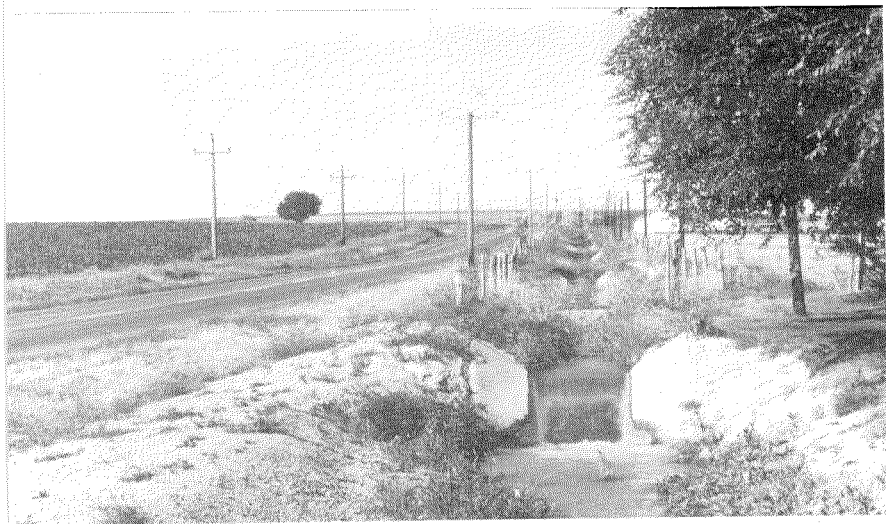


FIG. 1. The rapid flow of irrigation water over concrete drop structures, used to lower water surfaces and prevent erosion where ditch flows are carried down relatively steep slopes, provides ideal breeding sites for blackflies.

small numbers along the edges of the main canals, and in large numbers in the concrete drop structures (fig. 1). A total of 206 drop structures was located and examined in the survey area, of which 193, or 93 per cent, contained Simuliidae. Collections of *S. vittatum* and *S. griseum* larvae and pupae were made from several of the drops on July 22 and August 14, 1953.

In this particular area, irrigation water is delivered to the user under the rotation method whereby he receives water for definite periods of time and is without water during the intermediate periods. Consequently water was sometimes shut out of laterals for a period of several days. When this happened sufficient water usually remained in the concrete apron of each drop structure to permit the blackfly larvae and pupae to survive until the water was turned into the lateral again.

When water was not flowing in the lateral it was possible to estimate the density of the Simuliidae population in the concrete aprons. This was done by measuring a 1-foot square area on the side of an apron and counting the number of larvae and pupae attached to the concrete. In late August two 1-foot square areas were sampled in 10 different aprons.

The larvae and pupae in these samples ranged in number from 2 to 37 with an average of 18 per square foot. Each apron was found to measure approximately 28.5 square feet so that the breeding potential of a single drop structure was 513 Simuliidae. On this basis it is estimated that the 206 drops contained in excess of 105,000 blackflies.

The blackflies were identified by Dr. Alan Stone of the Division of Insect Detection and Identification, Bureau of Entomology and Plant Quarantine, Washington 25, D. C.

A TECHNIQUE TO FACILITATE IDENTIFICATION OF MOSQUITOES IN LIGHT TRAP COLLECTIONS

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Light traps are used extensively for sampling adult mosquito populations; however, the large catches which are frequently taken make the routine task of identifying and counting the specimens a time-consuming and tedious process. The technique described below has greatly facilitated the processing of light trap collections of mosquitoes which have been made in connection with studies undertaken in irrigated areas of several western states.

The technique involves the use of (1) a wide-field stereoscopic microscope, (2) a manually operated stage consisting of a

base plate and sliding horizontal trough and (3) a nine-unit laboratory counter. The base plate of the manual stage is constructed so that it replaces the removable glass stage on the microscope. Mosquitoes from the light trap collections are thin scattered over the bottom of the trough which operates in the center of the field. By slowly moving the trough beneath the objective the mosquitoes may be identified and recorded on the laboratory counter.

¹ #A-2030 Clay-Adams Co., Inc. The trade name is used as a means of identifying the product. Its use does not constitute endorsement by the U. S. Public Health Service.