

# PAPERS AND PROCEEDINGS OF THE 16th ANNUAL MEETING

of the

## AMERICAN MOSQUITO CONTROL ASSOCIATION

Held Jointly with the Northeastern Mosquito Control Association  
Boston, Massachusetts, March 27-30, 1960

Part II \*

### WATER MANAGEMENT IN MARSH AREAS FOR MOSQUITO CONTROL AND THE CONSERVATION OF WILDLIFE

P. BRUCE BROCKWAY, JR.

*Superintendent, Toledo Area Sanitary District*

Mosquito control groups in the Midwest have not been as actively cooperative with the various wildlife and conservation organizations as those in the East. This could be for a number of reasons, such as lack of opportunity, or perhaps because many of the agencies have not been in existence long enough, and have not made the effort. There is also the possibility that we have been on the defensive instead of the offensive on such projects. I think that the latter reason is the most common one.

Last year the Toledo Area Sanitary District was publicly criticized because we burned off an 80-acre tract of marsh and supposedly killed some rabbits, pheasants and other such forms of wildlife. Later, it was learned that the previously mentioned rabbits had been killed by dogs or other four-footed animals roving this marshland and the burning of the marsh only served to expose the bodies.

This particular marshland has been a mosquito control problem to us for a number of years, mainly because of the pollu-

tion flowing into the marshlands from the main watercourse known as Otter Creek. The marsh itself is subject to the water level changes of Lake Erie because it is within a half a mile of the lake and it is connected by Otter Creek.

As the Toledo area receives northeast winds, this area floods; as the winds reverse the water recedes. This wind change normally takes place four to eight times during the normal mosquito breeding season. Therefore, we have a major mosquito problem in this marshland as often as there is a change in the wind direction.

Cattails are the prevalent vegetation and they attain the height of six to eight feet. All these obstacles cause a major problem in controlling *Culex pipiens*, as they lay their eggs under the bent and broken cattails during periods of high water that is polluted.

In 1958, our little Hopto backhoe dug a few short canals in the marshland and our spoil material remained fairly stable in spite of the fact that it was largely organic. In 1959 our dragline cleaned the outlet of Otter Creek and the water in the marsh receded and left a bank edge approximately 18 inches high. During the same

\* The Proceedings papers included in this issue comprise the papers that had not been received in form for publication in time for the June number.

summer our backhoe was able to make considerable headway on a canal system within the marsh, and Otter Creek was, to a limited degree, diked off from the marsh itself except during flood stages.

The canal waterways are 20 feet wide and 4 feet deep (Figure 1). This happens

same watercourse. The intake will be located at the lower end of the canal system and it will discharge into the main Otter Creek watercourse. The cost of the pump was \$530.00, but this figure does not include the cost of the engine.

This is the same type of pump used in



FIG. 1.—Marsh canal under construction

to be the approximate size of the canals used by the managed duck marshes along the south Lake Erie shore. As we progressed with our water management equipment into this problem area we were impressed with the possibility of pumping the water down and within the canal banks. Originally these waterways were to be used by our air boat in our larviciding program but as progress was being made on improvement of the canals we could visualize a cooperative effort with the conservation agencies interested in duck management; therefore, the District purchased a 10-inch low head, propeller-type pump. This unit will be mounted on the dike between the marsh and the

our local duck marshes and it is designed to pump the water level down and into the canal waterway system within 18 hours of operation. The purpose of the pump is only to lower the water level to a point within the banks of the canal and not to dry out the marsh. By keeping the water within the canal system the area not only can be used by the ducks and other aquatic birds, but also our *Gambusia* minnows will be able to live and reproduce in such numbers that chemical mosquito control may not be necessary.

There is a spirit of cooperation between the state conservation agencies of Ohio and the Toledo Area Sanitary District. During the past year our District

was given the courtesy of a very fine article published in the *Ohio State Conservation Bulletin*. The author gave our District due credit for the consideration that we have given wildlife and he complimented us for our efforts in the biological control of mosquitoes. Therefore, the District is obligated to continue these efforts and it was with this in mind that the District changed its control efforts in the Otter Creek marsh. We propose to work toward cooperative efforts with the duck marsh conservation group because for the proper duck marsh management the water is pumped down during the summer and spring in order to increase vegetation growth. During the fall and winter the water is allowed to rise to the natural levels and, of course, this is the time that mosquitoes are not a problem in this area. We will maintain the banks of the canal in much the same manner as the duck marsh owners recommended and of course we can expect the same vegetation growth results.

Because we will be controlling, our water levels will be much the same as those in the duck marshes and this vegetation will assist in maintaining a solid berm. At the time of the completion of the project, we will dike off Otter Creek from the marshland and we will depend on the clean waters of the adjacent high grounds to

feed the clear water into the marsh during fall and winter.

Another opportunity that we have had to cooperate with conservation agencies is on the reduction of pollution of our streams. The Toledo Area Sanitary District does not have legally regulated control of polluted waters, but as we all know, this type of water does invite *Culex pipiens* and this species of mosquito is one of the major mosquito problems in the Toledo area. Therefore, we report pollution problems and offenders to the local and state authorities responsible for the control of water pollution.

With these concrete evidences of cooperation I believe we are on the road to a closer coordination of efforts with the local conservation and naturalist groups. I do not mean to paint a picture that we have been completely at odds with these groups in the past, but there has been a certain feeling of distrust and apprehension toward our organization caused mainly by some misleading information as well as the thought that the Toledo Area Sanitary District might misuse insecticides and the privileges of the Ohio Sanitary District Act.

I am certain that not only will this water management project be a success but it will also serve as a guide for similar future projects in the Toledo area.