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Currently Existing Mosquito Control Programs in Minnesota

ARTHUR H. MASON and DOREE A. MASER*

ABSTRACT — Mosquito Control in Minnesota is governed by three statutes: Local Pest Control 18.021-18.022, Mosquito Abatement 18.041-18.161, and Mosquito Control 473.701-473.717. Of these only two are actively utilized, 18.021-18.022 in outstate Minnesota and 473.701-473.717 in the seven county metropolitan area. Local Pest Control Statutue 18.021-18.022 governs the control of many pests including mosquitoes. The statute is enforced by the Municipal Pest Control Section of the Division of Plant Industry in the Minnesota Department of Agriculture. Pesticides are generally applied to kill adult mosquitoes upon citizen demand.

Introduction

Mosquito control programs in Minnesota fall into two very distinct and contrasting categories: The Metropolitan Mosquito Control District and the rest of the state. This paper deals exclusively with the second — regions outside the metropolitan area. Although we focus on mosquitoes, we should remember other biting flies such as gnats (blackflies), deerflies, or biting midges can be of more significance in some parts of the state. For the purposes of this paper, however, we will consider only the mosquito control issue.

Before describing existing mosquito control programs in rural Minnesota, a brief historical review is presented. The review gives the reader some insight into why we have existing statutes and perhaps why they are not fully utilized.

Historical Review

Mosquito Control in Minnesota is governed by three major statutes: Local Pest Control 18.021-18.022; Mosquito Abatement 18.041-18.161; and Mosquito Control 473-701-473.717 (1). Of these three only the Local Pest Control statute is currently used and enforced in Minnesota outside the Metropolitan Mosquito Control District.

The Mosquito Abatement statute 18.041-18.161 provides for governmental units in the state to enter into sophisticated mosquito control districts such as we have in the Twin Cities area. No governmental unit to date has elected to enter such a program. Some may believe this is unfortunate since it would allow for good, environmentally sound, cost effective programs in sparsely populated areas of the state. However, such a program is simply too expensive to support with current technologies.

The Mosquito Control statute 473.701-473.717 is part of the Metropolitan Government Laws and governs the Metropolitan Mosquito Control District. This paper will not consider this statute further.

The Local Pest Control statute 18.021-18.022 governs existing mosquito control activities in Minnesota. This statute was initially established in 1935 following an extensive, 4-year, state-supported grasshopper control effort. The control activity, not unlike what happens today, took people away from regular assignments to deal with an emergency situation. A. G. Ruggles, state entomologist at that time, proposed a municipal pest act (2). Key provisions in the early act provided the following (in summary):

1. The County Board may appropriate money for the control of insect pests, plant diseases, bee diseases, and rodents.
2. The board may appoint a supervisor.
3. The board is to fix the supervisor's salary.
4. The monies appropriated may be used for the salary of the supervisor, mileage expenses, and the purchase and transportation of materials and equipment.
5. The County Board must be completely organized before the money is expended.
6. The County Board and the county supervisor are to supervise the work being done.
7. The landowners and renters are to organize for pest control.
8. Any person who prevents, obstructs, or interferes with the county authorities or their agents, or any person who neglects to comply with the rules and regulations, will be deemed guilty of a misdemeanor.

In 1953, with a heavy forest tent caterpillar population, and in response to the changing governmental structure in the rural areas, the law was amended to give cities, villages, boroughs, and towns, in addition to the counties, the authority to appropriate money for local pest control. At the same time, the law also gave these governmental units the authority to invoke tax levies to defray the pest control costs. The tax levies were limited to 2 mills but not to exceed 50¢ per capita. The taxes collected were to be deposited in a separate fund. If emergencies arose and money was needed before the tax was collected, the governmental unit could issue certificates of indebtedness in anticipation of the collection of the taxes but not to exceed 9% of the levy.

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In 1965, the law was once again amended to give communities the authority to remove diseased trees from public or private places and to place a lien on, or add a special assessment against, a property. The term "rodents" was changed to "destructive or nuisance animals."

In 1967, the mill rate was increased from 2 to 4 mills, not to exceed $1 per capita. European elm bark beetle, native elm bark beetle, and forest tent caterpillar were added to the list of pests. In 1975, Dutch elm disease was in the forefront of municipal pest concerns. Subdivision 9 was added to the law allowing the county commissioner to adopt rules and regulations prescribing control measures to be used to prevent the spread of shade tree diseases. This included establishing: a) the definition of a shade tree, b) the qualifications for tree inspectors, c) the methods for identifying diseased shade trees, d) the procedures for giving reasonable notice of inspection of private real property, and e) the measures for the treatment and removal of any diseased shade trees.

Mosquito Control Status — 1984

The Municipal Pest Control Section of the Division of Plant Industry in the Department of Agriculture enforces Chapter 18.021-18.022. Technical advice and counsel, with program approval, is provided to those cities initiating mosquito control. In early spring the division mails questionnaires to all cities engaged in some form of mosquito control and to any city that expresses an interest in mosquito control. The questionnaires are designed to determine what kind of mosquito control is planned or what problem might exist.

Judging from the responses to questionnaires mailed out early in 1984, the year started atypically. The returns of completed questionnaires indicated intended mosquito control activity was 36% higher than in 1983. This could be explained by the higher populations of mosquitoes throughout the state during 1983 and 1984. In 1984 alone the abundance of *Aedes vexans,* thought to be our worst man-biting mosquito, was double the numbers usually encountered. To make matters worse, the mosquitoes *Coquillettidia perturbans* were 2½ times normal levels. In addition to all this, in 1983 tremendous numbers of *Culex tarsalis* (vector for the Western Equine encephalitis virus) prompted a very extensive aerial spray project.

In 1984, 240,612 people were reported living in the cities where local mosquito control was intended (3). These cities had budgeted $93,330 for mosquito control at a cost of 17¢ per person. This can be compared to 1980 when 208,066 people were in a mosquito control program costing $59,305 or 29¢ per person (4). While the figures may suggest mosquito control was becoming more cost effective, there were approximately 20 cities that used mosquito control for the first time in 1984 with no planned budget. Considering this increase, the program theoretically projected 14% more people.

Nearly all state mosquito control outside the metropolitan area is directed at adult mosquitoes. Methods of pesticides application and chemical use vary. In 1984, 28% of the respondents intended to use fixed-wing aircraft, 26% mist blowers (usually truck mounted), 23% Ultra Low Volume (ULV) equipment, 18% foggers, and 4% hydraulic spray equipment. In 1984, for the first time we know of, one of the communities used a helicopter. In contrast, in 1980, 33% of the communities used ULV equipment, 25% used a mist blower, 19% used a fogger, 17% used fixed-wing aircraft, and 5% used hydraulic equipment. Fixed-wing aircraft may have become more popular for a number of reasons: 1) they are available on a fairly short notice, 2) the pilot takes the responsibility for spraying, and 3) there is no investment in equipment or training for the community.

Malathion has been the most commonly used chemical during the last five years of pesticide use. The reported use of the various pesticides in 1984 is as follows: Malathion 55%, Chlorpyrifos (Dursban) 28%, Cythion 10%, Pyrethrums 5%, Fenthion 1%, Naled 1%, and Methoxychlor 1%. In contrast, in 1980 it was Malathion 47%, Cythion 16%, Pyrethrums 13%, Chlorpyrifos (Dursban) 8%, Naled 5%, Fenthion 3%, Methoxychlor 3%, Carbaryl 3%, and Dichlorvos 3%. Based on informatin provided by respondents, the price of the chemicals seems to have remained fairly stable over the past five years. Prices start at $13 per gallon for Methoxychlor and go as high as $50 per gallon for Pyrethrums. Most communities, but not all, report that they are satisfied with the level of mosquito control they are obtaining with their spray programs.

Discussion

Mosquito control in outstate Minnesota is, for the most part, directed only at adult mosquitoes. The decision to spray or not spray is made for the sake of convenience or when public discomfort demands it. The chemicals are selected either by economics or according to what was used before. Much basic work needs to be done to define the real problems and prescribe the appropriate course of action at a price citizens can afford.

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