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BUREAU OF INSECT PEST CONTROL

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The Various Aspects of Pest Control

The more the public becomes involved in the out-of-doors, the more it becomes aware of what it believes are pests. In many instances the greatest pest is man himself and is the hardest to control.

Over the past few years the list of pests to be considered by the Division of Forests and Parks has increased from insects and diseases of forest and shade trees to such things as wood ticks, poison ivy, aquatic weeds and most recently, rats.

In the Bureau, it all started around the turn of the century with the gypsy moth. The insect has retained its high pest rating to this day, although joined by many others.

The latest Division pest problems have been around for a long time but have not demanded a great deal of attention until recently. The increased interest is directly related to the increase in recreational activity. Suddenly there is a demand for clear, clean water devoid of weeds and algae. Areas are now being developed where rats have been the major inhabitants for years. People and rats are not compatible.

Numerous methods have been proposed and tried in the control of the various pests, including the last two mentioned, but up to the present time the application of chemicals has proven the most efficient. The Bureau is reasonably proficient along these lines and therefore is given the responsibility.

Island Rats

Having acquired many of the Boston Harbor Islands, the Department is

now intent on developing them for recreation. One of the problems acquired with the land masses, are colonies of the Norwegian rat which over the years have developed to sizable proportions.

Fortunately for us the U. S. Fish and Wildlife Service conducted a survey and has determined the extent of the problem on the various islands. Of immediate importance, as they are to be developed first, are Gallops, Grape, Bumpkin and Slate Islands. Thanks to the help of our friends in the Wildlife Service an Environmental Assessment Form has been drawn up requesting permission to proceed with a control effort aimed at decreasing the rat population. If all goes well it should commence during Fiscal Year 1975.

Weeds Continue To Grow

Aquatic weed and algae control is a maintenance program. This needed program has been conducted for a number of years. With the heavy use of the lakes and ponds and the human development nearby, which adds to our woes, it becomes more and more important that they be maintained. Despite some claims, the only practical means of controlling the weeds and algae is through the use of chemicals.

Plans are now underway to treat 14 bodies of water. The total to be treated will be 1016 surface acres. Hopefully the work will be completed during the summer of 1974.

Disrupted Routine

Much of the normal, routine work of the Bureau is the assistance to

cities and towns in Dutch elm diseased tree removal and scouting, the regular visitations to communities by the District Supervisors, etc. was curtailed during the past year in order to get the gypsy moth research work accomplished.

Personnel from three regions were involved in the research during the summer and early fall. District Supervisors and tree crews from Regions 2, 3, and 4 were assigned to the special gypsy moth project. Although this curtailed the Dutch elm disease assistance program somewhat, valuable assistance was rendered during the fall, winter and early spring months. Retirements and changes in the crews also tended to slow the assistance work.

In slowing down the routine assistance work to the cities and towns the only rationale has to be that the gypsy moth research work will ultimately be for the benefit of all. It is hoped that the end results will be methods to control the gypsy moth more beneficial to people and the environment.

Cooperative Research on Gypsy Moth

Results of the 1973 research project involving the aerial applications of disparlure, the synthetic sex pheromone of the gypsy moth, at the rate of 2 grams of the microencapsulated form to each of 16,000 acres were most promising. The effect of this treatment on mating of the moth was determined by monitoring one hundred 0.1 acre plots in both the treated area and in a similar nearby untreated (control) area.

In traps baited with 10 milligrams of disparlure, 2,193 males were caught in the untreated area compared with 63 in the treated area; in traps baited with virgin females, 1136 males were taken in the control

compared with only one in the treated area. This reduction in trap captures indicates that the odor-guidance system that normally leads males to females for mating was disrupted by the treatment.

Virgin females were also placed near the base of tree trunks to determine whether mating would be inhibited; mating in the treated area (relative to untreated area) was severely suppressed for the first 2½ weeks when the treatment was fresh; mating then increased as the treatment grew older but the treatment still exerted substantial disruption of mating 5 weeks after application.

Although reproduction was not eliminated in the treated area there was no substantial increase in the number of egg masses when compared with the previous year count. In the untreated area there was a three to four-fold increase as compared to the previous year.

Success Leads to Further Work

The reasonably successful experiment in 1973 led the Bureau and the U. S. Agricultural Research Service to lay plans for a logical continuation in 1974. Four square mile blocks were laid out in the area of the 1973 work. With one block reserved for a control the other three would be sprayed with various formulations of disparlure. On two of the blocks 8 grams of microencapsulated disparlure would be applied. This would be four times the rate applied in 1973.

After a discussion with M.D.C. officials at Quabbin it was agreed that the Bureau would be allowed to conduct, in 1974, extensive investigations on Mt. Zion, the largest of the Quabbin Islands. The reason for choosing the island was its isolation from the mainland and other gypsy moth infestations.

The Island was divided into three equal areas. In June of 1974 it was aerially sprayed with two applications of Sevin in order to reduce the resident population of gypsy moths to extremely low levels. Another island nearby was chosen as a control. One third of the large island was to be employed as a test to determine the usefulness of high potency traps. They were set out on a grid system at the rate of 10 per acre or an approximate total of 4,500 traps. The middle third of island will be used as a buffer zone. The upper third will be sprayed with disparlure at the rate of eight grams per acre.

The research project is underway at the time of this writing. The Bureau has been complimented on the quality of the data which it has been supplying and, hopefully, the research can continue for a number of years.

General Conditions

Gypsy Moth

Populations have continued to build across the State. The aerial survey conducted in July of 1973 indicated 43,970 acres as defoliated. The areas of most concern were Cape Cod, localized areas in Bristol and Norfolk Counties, and the towns of Brimfield, Wales, Holland, Monson and Hampden in south central Massachusetts. The total area defoliated was about double that of the previous year.

Following the advice of the Bureau (see appendix) a number of communities with the same gypsy moth problem combined their efforts under single contracts and sprayed to control the pest. Results were most gratifying and cost was held to a minimum.

Dutch Elm Disease

The biggest problem faced by communities these days is that of carrying out the most important aspect of Dutch elm disease control--the disposal of the dead and dying elm wood before it becomes a breeder of the bark beetles which play a major role in spreading the disease. Sanitary landfill has become a major problem in many cities and towns and large elm trees quickly use up available space. The only other reasonable alternative is to destroy the wood as a breeding area by burning. Although this is allowed under the outdoor burning regulations, issued by the Department of Public Health it is another thing to convince local fire chiefs and Public Health regional offices that it should be done.

Fall Webworm

Late summer of 1973 again saw a population explosion of the native pest. Outbreaks have suddenly occurred periodically in Massachusetts and as suddenly they subside. Hundreds of phone calls and letters were received regarding this pest. Many callers and letter writers were confused by this insect. Some thought it was the gypsy moth and some thought it was the eastern tent caterpillar. Many believed that it would destroy the trees.

Most of these people were relieved to learn that primarily the wild cherry was the tree species attacked and even it was not in danger of being killed. If discovered when the nests are relatively small they can be controlled by hand removal. Otherwise spraying with Sevin is effective.

Fall Cankerworm

For some reason the town of Braintree and vicinity is conducive to

buildups of fall cankerworm populations. It is a native insect which occasionally creates situations similar to those caused by the gypsy moth. Oak seems to be the favored food and the caterpillars hatch and attack at approximately the same time as the gypsy moth. And, similar to the gypsy moth, the insect seems to create more of a nuisance than to severely damage the trees.

The Town of Braintree aerially sprayed 4,400 acres with Sevin 4-Oil. Reports from the District Supervisor indicated that the project was successful.

Pine Looper

Activity of this insect increased on the Cape except in Wellfleet, Truro, and Provincetown. The towns of Bourne, Mashpee and Sandwich sprayed Sevin 4-Oil by helicopter, with apparent good results. The severity of attack seems to move from area to area.

Hemlock Looper

This insect continued in outbreak condition in Essex County. The major portion of the attack was centered in the Town of Essex, although it was also found in Rockport, Gloucester, Manchester, Beverly and Wenham. The total acreage, as determined by aerial survey, was 2,765 acres.

Periodic outbreaks of this insect occur, usually, on mature or over-mature stands of hemlock. The present outbreak is no exception. A considerable amount of hemlock has been killed in the area. Careful examination, however, reveals that much of the young hemlcok has survived.

Tree Disease Conditions

The summer of 1973 was particularly bad as far as foliage diseases were concerned. We had a wet spring which was conducive to the rapid spread of these diseases. Anthracnose was heavy on oaks and sycamores. Along the coast ash leaf rust was very noticeable on ash. Each District Supervisor reported heavy mortality from the Dutch elm disease, and, sugar maples continued to decline along city and town streets. Shoestring root rot is beginning to show up in stands of red oak that have, in the past few years, suffered from drought and insect defoliation.

Summation

It has been demonstrated now for two years that communities with the same problem can, by banding together, save themselves money and time when controlling the gypsy moth. Assistance from the Bureau in the matter of determining where the problem exists and the proper timing for the spray application together with on the spot technical advice gives the communities all they need.

If the research now underway leads us to new and useful information this too can be passed along to the cities and towns. In this manner it is hoped that the safest and most advantageous methods of control will be employed. If and when this comes about, it will make all of our present efforts worth-while. If a happy combination of research and public service can be maintained in the Bureau we will have achieved a happy balance in our relationship with the cities and towns of the Commonwealth.