ANNUAL REPORT

BUREAU OF INSECT PEST CONTROL

1963

The fiscal year 1963 brought the issue "To spray or not to spray" to the front. In Massachusetts, at least, the publication of the book "Silent Spring" coincided with the peak of the current gypsy moth infestation. It became extremely difficult to distinguish between reason and hysteria. This then became the major problem of the year for the Bureau. We were in the difficult position of knowing that heavy defoliation would be forthcoming, not only as a result of the gypsy moth, but as a result of linden looper and spring and fall cankerworms. We were also convinced that the discomfort and damage created by these pests could be alleviated by means of asrial spraying with a minimum amount of damage to other forms of life.

The linder looper and gypsy moth were, for the most part, confined to western Massachusetts. The cankerworms, on the other hand, were confined to southeastern Massachusetts. The damage and problems created by all of these insects is quite similar. They all hatch at approximately the same time and feed on the same types of deciduous foliage. One other similarity exists in that each can be controlled by a low dosage of DDT properly applied.

The Dutch elm disease continued to take its toll of elms throughout the State, thus remaining one of our major problems. The problem was further complicated this year by the fact that individuals were attempting to sell to cities and towns "cures" for the disease. Eventually this sort of treatment may be the answer that will save our elms. It is felt, however, that until such a method is scientifically proven cities and towns should not expend public funds along this line. Bureau personnel were instructed to discourage this practice wherever possible.

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The following is a detailed report on each of the public nuisances for

whose control this Bureau is charged:

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Gypsy Moth - During July, an aerial survey was conducted to determine accurately those areas of the Commonwealth having been defoliated by this insect. When the survey was completed it was found that approximately 80,000 acres of woodland had been 75 - 100 percent defoliated.

In the Fall, after the leaves had fallen from the trees, Bureau personnel were sent as teams to examine the recorded, defoliated areas on the ground. Thus began the egg mass survey, the results of which determine what areas are to be recommended for control in the following Spring. Under ordinary conditions 500 to 1000 egg masses or more per acre would indicate total defoliation.

During the course of this survey Bureau personnel discovered that some of the previous defoliation had been caused by a not too common native insect called the linden looper. This fact was established when the men began discovering the wingless females crawling up the trees to lay eggs. Having had no previous experience with this insect the decision was made to determine by rough count the number of females noted per acre. From this count came the decision whether to recommend spraying or not. As this insect was known to infest the same types of woodland as the gypsy moth and the fact that it could be controlled in the same operation as the gypsy moth led us to consider it in our overall gypsy moth program.

In general it was found that the looper activity was confined to Southern Berkshire County, Hampden County and Hampshire County. The gypsy moth was found in the same areas and also in Northern Berkshire and Franklin County. The overall infestation of these two pests was in the vicinity of 400,000 acres in the four western counties. The acreage actually needing control was approximately 225,000 acres.

A request was submitted to the Legislature in the form of a deficiency

request asking for 200,000 dollars to bring these insects under control. During the winter and spring a great deal of time was consumed presenting the problem and our recommendations to Department personnel, the Legislators, and, in three public meetings, to those people living within the infested areas.

The final decision of the Legislature was to grant us 100,000 dollars to be used in spraying infested areas in Hampden, Hampshire and Franklin Counties.

Both the linden looper and the gypsy moth hatched near the predicted date of May 1. Spraying began on May 7 and was completed on May 25. A total of 109,268 acres were sprayed at the rate of $\frac{1}{2}$ pound of DDT in a gallon of fuel oil per acre. Excellent results were obtained. Most of the Bureau personnel were called from other duties to assist in this program.

Cankerworms - Early in Fiscal Year 1963 it was determined that somewhere in the vicinity of 18,000 acres were defoliated by cankerworms in the cities and towns of Braintree, Canton, Holbrook, Milton, Quincy, Randolph and Weymouth. In the spring of 1963, including that done by the M.D.C., there was a total of 10,350 acres sprayed for control of these insects. A breakdown of this figure shows 3,900 acres sprayed in Braintree, 975 acres sprayed by the M.D.C. in Braintree, Milton, and Quincy, 250 acres sprayed in Cohasset, 200 acres sprayed in Holbrook, and 6,000 acres sprayed in Weymouth. In each case the responsibility for getting the work done was left with the M.D.C. or the cities and towns. The work was supervised by Bureau personnel.

Brown tail moths - When this insect was placed in the category of public nuisance, it was indeed a public nuisance. Not only did it severely defoliate many of our shade and backyard fruit trees, but it had the obnoxious ability to cause a severe itch and rash to most people who came in contact with the larvae. Natural enemies and disease have, in recent years, reduced the browntails almost exclusively to pests of beach plum in certain coastal areas.

Infestations during the past year have been found along the sand dunes between Provincetown and Truro, in the town of Dennis, and on Plum Island.

Pine Looper - Evidence has pointed to a population increase of this insect on Cape Cod during the past two years. This fact was brought to the atatention of the U.S. Forest Service as much of the initial outbreak was on land to be taken by the National Park Service.

The decision was made by the Forest Service to aerially survey for extent of infestation last fall. The results of the survey indicate heavy areas of infestation in Provincetown, Eastham, and Dennis. Moderate areas were found in Eastham, Harwich, Dennis and Barnstable. Light infestations were noted in Truro and Wellfleet, Eastham, Barnstable, Mashpee, Falmouth, and a solit block extending from just west of Nickerson State Park to Hyannis.

Saddled prominent - The feeding of this insect takes place in midsummer as opposed to many of our other forest pests. During Fiscal Year 1963 feeding was noticeable on about 400 acres of woodland in the Savoy State Forest. No appreciable damage has been noted as yet and it apparently is not spreading. Its favored food is beech followed closely by sugar maple.

Ticks - Wood ticks are becoming more numerous on the islands of Martha's Vineyard and Nantucket and on Cape Cod. For a number of years following the large scale aerial spray operations in these areas ticks were not a problem. Recently, however, their populations have increased to a point where they again present a serious situation. Cases of Rocky Mountain spotted fever have been diagnosed recently which makes the problem all the more serious. Ticks transmit the disease to humans.

Right or wrong, the best known control remedy to date is the overall aerial spraying of large areas of infestation. This is difficult to do these days due to various types of opposition to this form of control. Further, control

are very apt to be missed by the first application as they are residing in unaccessible areas. This year Nantucket rather unsuccessfully attempted control by spraying areas commonly used by humans, such as foot paths upper edges of beaches, etc., with ground equipment.

Dutch elm disease - Progress is being made against this disease, although for the average person it is rather difficult to see. Today, as it has been from its first discovery in the United States, the best deterrent to the spread of the disease is the prompt removal and destruction of dead and dying elm wood. A diseased tree allowed to remain standing in the vicinity of healthy elms is a definite hazard to the healthy trees. Many of our cities and towns are doing an excellent job of removing diseased trees.

It has been the practice of the Bureau to suggest to all cities and towns that the recommended control measure to be taken against the disease is sanitation plus the dormant spraying of the especially valuable trees.

Although our four tree removal crews were called upon numerous times during the past year to perform duties other than removing and destroying diseased or beetle infested elms, they were still able to render valuable assistance to many cities and towns which had earned the assistance.

The crews assisted 63 cities and towns in the removal and destruction of 1,977 diseased and beetle infested trees at a Bureau cost of \$31,200. These same crews assisted 20 cities and towns in sampling 1,459 trees at a Bureau cost of \$2,520.

The Bureau assisted other State agencies as well as other Bureaus of the Department in the removal of 102 diseased trees at a cost of \$1,400 and assisted in the taking of 25 samples at a cost of \$210.

Of further interest, the Bureau, during the past Fiscal Year was involved, either directly or indirectly, in experimentation towards improving our control techniques.

Our work with Bill Sheldon in the study of the effect of pesticides on bird populations was continued this year.

In cooperation with the Northeastern Forest Experiment Station of the United States Forest Service, the University of Massachusetts, and the Pennsault Chemical Corporation, which supplied the material, the Bureau contracted for the application of various formulations of Bacillus thuringiensis, a bacteria known to affect the gypsy moth, to 300 acres of woodland in Berkshire County. Much time and effort was expended by Bureau personnel during this project. Data had to be taken before, during, and after the project. The final results will not be known until sometime in Fiscal Year 1964. Observations made recently would indicate that although the material is effective against the gypsy moth there are still difficulties to be ironed out in the method of application.

Another experiment involving the use of Bacillus thuringiensis, also in cooperation with the United State Forest Service, is the plan to aerially apply this material against the pine looper. As most of the larval activity of this insect occurs during the month of September, it is at this time that the application will be made. During the past year, however, much of the ground work has been laid through the cooperation of Bureau personnel with Forest Service personnel.

Of interest here, also, is the experiment being conducted on the Myles Standish State Park involving the release of sterile male gypsy moths. This is a carefully controlled experiment in that there is very little chance of the escape of fertile female moths into the forest. This work is being conducted by the U.S.D.A. Methods Improvement Laboratory located at Otis Air Force Base in Falmouth. Our involvement in this project is simply the fact that we supplied

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the land on which it is being carried out.

In conclusion it might be pointed out that the past year has shown certain facts to be true:

- 1. The general public has become accustomed to and demand relief from many of our insect pests.
- 2. Pesticides, as we know them, are losing favor with much of the public although most of this disfavor is unjustified.
- 3. More work must be continued towards the development and use of radically different approaches to the problem of controlling insect pests.