ANNUAL REPORT

June 1984 - July 1985

Aerial Survey

The survey was carried out in July of 1984. Total defoliation mapped was 315,152 acres. Gypsy Moth defoliated 308,599 acres and other insects or diseases were responsible for the remainder of the defoliation. Forty percent of the Gypsy Moth defoliation was classified as light or 0 - 30 %, twenty percent was medium or 31 - 60 % and forty percent was heavy or 61 - 100 %. (see attached map for locations.)

In June of 1985 an aerial survey for oak leaf tier - roller complex showed 355,125 acres of defoliation south of Boston. This infestation has Gypsy Moth and the tier - roller complex actively defoliating the trees together. On 173,281 of these acres the Gypsy Moth is considered the major defoliator and on the remaining 181,844 acres the tier - roller complex is the major defoliator.

Calasoma sycophanta

Collections of this important predator of the Gypsy Moth were made in Sutton, Wrentham Rehobeth and Hudson for release as a starter colony on Cape Cod. The release was made by District Supervisor Kelliher in an infestation in Falmouth where Calasoma has not been reported for many years. This release was made in June 1985. Monitoring of the site will take place in late spring and early summer of 1986 to determine if this attempt was successful.

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Following the same format as in the past several years, Cypsy Moth egg masses parasitized by Anastatus were field collected for future release in areas where the parasite is not known to be established. After the hatch and disposal of the caterpillars these egg masses were placed in infestations to allow natural emergence of the parasite which in turn will attack the newly laid egg masses of the Cypsy Moth. Egg masses were collected in Sutton, Southboro, Upton and Wrentham in the fall of 1984 and evaluated by parasite emergence to determine the optimum collection site for the following spring. Purgatory Chasm in Sutton was the major collection site chosen. A total of 3,655 parasitized egg masses were collected.

To extend the parasite emergence period and to offset local weather conditions one half of the egg masses were refrigerated an additional three weeks. The masses were divided and given to the district supervisors in Berkshire County and on Cape Cod for placement in infested areas. Eighteen sites in the Berkshires and seventeen sites on Cape Cod received 1,900 and 1,700 parasitized egg masses respectively. The average emergence of the adult Anastatus was 67 per mass or 241,200. Egg masses will be collected from these sites in the fall of 1985 and evaluated at the Stow facility for the presence of the Anastatus.

In the fall of 1984 egg masses were collected from six of the eight release sites on Cape Cod. No masses were available for collection from two sites. Anastatus did emerge from the masses collected at the other six sites. In Berkshire County no emergence took place from any of the egg masses collected.

This program will be continued in 85-86. More emphasis will be placed on Berkshire County in the coming year.

Red Pine Adelgid Survey and Evaluation

The Red Pine adelgid, Pineus boerneri was the subject of a cooperative detection survey and evaluation with the U. S. Forest Service office in Durham, New Hampshire. The reason for the concern being that the infestation is spreading toward the natural range of red pine. The purpose of the survey was to delineate the leading edge of the infestation which had bordered the Rhode Island - Connecticut state lines in the Commonwealth in 1980.

Fifty nine sites were sampled out of a potential 94 site grid. Four branches from each of five trees at each site were collected. At the Stow facility, fifty bark flakes from three year wood were removed and examined under a microscope to determine the presence of any scale or adelgids. Specimens were counted and placed in seventy percent alchol for delivery to U.S.F.S. Durham.

Fourteen sites were confirmed as having the adelgid Pineus boerneri. Many of the sites had heavy infestation of another adelgid, Pineus coloradensis, an innocuous pest of red pine. Pineus boerneri was found in samples from Ware, Shutesbury, Lancaster, Sturbridge, Spencer, Sutton, North Attleboro, Seekonk, Plymouth, Bourne, Falmouth and Barnstable. (Two sites in Ware and Sturbridge)

The red pine scale, Matsucoccus resinosae, was also a subject of this survey. No specimens of this pest were found.

Sixty four and one half days were spent in collection of samples and forty six days in specimen collection and delivery to Durham.

Mortality Study

The monitoring program for determining the mortality of host trees for the Gypsy Moth again showed a slight increase over the previous year.

Mortality Study

		1982		1983		1984			
District	#Trees	#Dead		#Dead		#Dead	3		
1 - 20 plo	ts 969	140	11.5	149	15.4	166	17.1		
2 - 14 ***	1158	212	18.4	248	21.4	227	23.4	(10 plots, 974	trees in 1984)
3 - 11 "	417	20	1.8	21	5.0	21	5.0		
4 - 10 "	341	41	12.0	67	19.6	79	24.8		
5 - 11 "	405	57	14.1	67	16.5	85	21.0		
6 - 12 "	356	29	8.2	34	9.6	35	10.1	(11 plots, 337	trees in 1984)
7 - 20 **	739	109	14.8	117	15.7	124	16.8		
8 - 14 "	137	25	18.2	27	19.7	27	19.7		

In district two and district 6 five plots were lost due to construction.

Data excludes plots in eastern Franklin County where the oak leaf tier complex infestation was heavy for several years. The mortality in that infestation has an average of 28.7 % on red oak. On the plots established statewide subject to other defoliators the average is 17.3 % mortality.

Oak Leaf Tier - Roller Complex

An aerial survey for defoliation by this complex showed visible defoliation in the south shore area only. As predicted, using Cieslas method for determining future defoliation by egg counts on 15" terminal branches, no defoliation was observed in eastern Franklin County. This prediction system has proven quite reliable over the past several years. This survey was flown in June 1984.

The fall 1984 sampling of red oaks in Franklin County and subsequent counting of the eggs by use of a microscope indicated the complex was increasing in Warwick and in Wendell. Additional samples were taken in Warwick and each indicated visible defoliation would occur in the spring of 1985. The aerial survey conducted on 6/19/85 showed defoliation in the towns of Northfield, Earwick, Wendell, Erving, Orange and Royalston for a total of 3,360 acres. Whereas the tier feeds mainly in the upper crown in lighter infestations the injury is more easily seen from the air than by ground survey.

A more perplexing situation exists on the south shore from the Mue Hills to the Atlantic. The aerial survey of 6/19/85 showed 355,125 acres of defoliation in this general area. Immediate ground survey showed proper delineation of the defoliated areas and that the tier - roller complex and the Gypsy Moth co-existed in all areas to varying degrees. Following the ground survey and discussion with the past and present district supervisors it was estimated that the Gypsy Moth caused more than fifty percent of the defoliation on 173,281 acres in this area and the tier - roller caused more than fifty percent of the defoliation on the remaining 181,844 acres. (see attached map) A leaf roller tentatively identified as Archips semiferanus (Walker) caused much defoliation and now should be considered as an equal to the oak leaf tier in the complex.

The area to be sampled and the number of sites will again be increased in the fall of 1985 to better predict the extent and severity of this problem.

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