

population levels and defoliation. Although pupal counts were made in the fall of 1960, there was no way of determining if the numbers found represented a potentially dangerous population. Because of the reduced population in the spring of 1961 it was not feasible to develop a method for sampling eggs.

A number of natural control factors contributed to the decrease of the population. Larval parasites, although not numerous enough to exert any great degree of control, were present in appreciable numbers. Pupal parasitism accounted for about 30 per cent mortality in the overwintering population, but does not account for the heavy pupal mortality and the resulting low moth emergence. *Cordyceps* is an unknown factor, but could have played a significant role in the collapse of the outbreak.

One of the aspects in the outbreak which is difficult at this time to explain is the severe tree mortality on Villaverde Island. Aerial surveys, supported by ground observations, indicate that tree mortality was relatively light on Bligh Island, although it is near Villaverde Island and also received heavy defoliation.

The nature of the recent infestation points out one of the great difficulties in dealing with looper outbreaks. The population started to increase throughout most of Vancouver Island (in fact throughout most regions of the Vancouver Forest Dis-

trict) in 1958, and reached a level in 1959 which must now be regarded as dangerously high. Populations remained high or increased in 1960 only in isolated localities along the west coast of Vancouver Island; elsewhere the number of larvae dropped. Defoliation heavy enough to be observed from the air occurred in 32 localities, totalling less than 23,000 acres, scattered along 80 lineal miles of inaccessible coast line. Of this area only 4,640 acres were heavily defoliated, and over three-quarters of the total tree mortality of 2,400,000 cu. ft. occurred on a few small islands of only 260 acres. If future outbreaks follow a similar pattern very comprehensive and detailed surveys would be required to detect and take action to prevent such heavy mortality from occurring again on other small islands or inlets along the coast.

Summary

The green-striped forest looper which started to increase in 1957 reached severe outbreak proportions in 1960 in a large number of small separate localities along the west coast of Vancouver Island. The population decreased to a low level in 1961. Tree mortality, up to the fall of 1961, was estimated at 2,400,000 cu. ft. of western hemlock.

This species must be added to the growing list of defoliators capable of causing damage to forests in British Columbia.

Note on the reference collection of inflated larvae at the Forest Entomology Laboratory, Vernon, B.C.

Over the past few years the reference collection of inflated larvae of lepidopterous and hymenopterous tree defoliators has been expanded greatly. The collection is chiefly used as a reference aid in identifying larvae taken in Survey collections or submitted by persons in forest industry and related fields.

Represented in the collection are:

| | Lepidoptera | Hymenoptera |
|----------------|-------------|-------------|
| Families | 34 | 6 |
| Genera | 209 | 20 |
| Species | 350 | 23 |

The collection contains most common and many uncommon defoliators found in the forests of interior British Columbia. The lepidopterous families are represented by a varied number of species; for example, the collection contains 130 species of Geometridae, 75 species of Noctuidae and 15 species of Notodontidae. The total number of inflated larvae is about 1,530.

This note is published to make local entomologists aware of the existence of the collection and to invite them to use it.

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