

THE BROWN TAIL MOTH SITUATION IN NOVA SCOTIA

By F. C. Gilliat, Annapolis Royal, in the United Farmers' Guide.

The Brown tail moth in Europe is normally held in check by its natural enemies, as are our well known native insects, viz., canker worm, tussock moth, etc., and like these insects the brown tail moth has periodic outbreaks which cause much damage. Now we know every species is held in check, in its native home, by its natural enemies. Accordingly, when foreign insects are introduced into a new country—as the brown tail moth has been into America, conditions being favorable for development, natural enemies being absent, we have a dangerous pest before we are aware of it.

How the brown tail moth reached Nova Scotia will always be a matter of doubt, but we are assured it existed here at least a few years previous to its discovery. In April, 1907, Mr. Perry Foote, Lakeville, N. S., forwarded a cail of leaves to Dr. Fletcher, then Dominion Entomologist, who immediately identified the same as the winter web or nest of the brown-tail moth.

A number of inspectors were at once sent out from the Agricultural College, Truro. The result of their work proved the insect to be widely scattered, but the worst infested area to be between Deep Brook, Annapolis Co., and Doucetville, Digby County. The Provincial Department declared a bounty of three cents per nest to further control work. In June hand spraying was conducted in the worst infested areas, chiefly at Acacia Valley, Doucetville, North and South Range. In December of the same year, four inspectors working the badly infested areas found a marked reduction of nests, especially where the June spraying was conducted. The bounty system was again resorted to, paying as high as ten cents per nest. In all about four thousand nests were collected in this way, and the bounty paid. This was only done to interest the people, in order that as many nests as possible might be collected in the shortest time. No doubt by this system many nests were gathered which otherwise would have been left to breed again. However, it was known to be dangerous from the first; though only in force during the spring and fall of 1907 several unscrupulous persons were beginning to save nests to breed the following season in order to collect bounty.

From this time on until 1910-11, the Provincial Department of Agriculture carried on the inspection work, placing about four inspectors in the field during

winter months, and adding collegestudents for a few weeks in the spring. The end of this period showed no marked increase in most infested areas, but there was some spreading out into new territory.

In the spring of 1910, the late Dr. C. Gordon Hewitt visited the infested districts with the result that co-operation was obtained, and in the following season of 1910-11, the work was conducted jointly by the local and Dominion Depts. of Agriculture, under the supervision of the latter. The field inspection at this date was more or less unorganized. The extent of spread was not definitely known, therefore the work was carefully planned, not only to work thoroughly the old infested districts, but efforts were made to determine its outside boundaries. The completion of this season's inspection showed a slight spread west into Yarmouth Co., with very little east, as only two nests were found in King's Co. The seasons from 1910-11 to 1913-14 were favorable for the pest to increase. Although very strenuous efforts were put forth by all the inspectors, there was a steady increase both in number of nests collected, and new territory infested, especially in the western part of Kings Co. It seemed impossible at that time to prevent this increase, even with as many as twelve inspectors in the field, and we faced the problem, "Would the Brown-Tail Moth become a Permanently Injurious Pest?"

During these years there were heavy flights of moths from the New England States, and acres of the waters along the Yarmouth coast were at times white with moths, also steamers plying between St. John and Digby recorded passing through clouds of white moths. Many of

these were examined, and all proved to be males. In the summer of 1913, the flight was particularly heavy, due to very favorable winds, and there is no doubt but that some females reached Nova Scotia and deposited eggs, for in no other way can we account for the scattered nests, one in a place, all over Yarmouth and Shelbourne Counties, also along the Fundy shore in Digby, Annapolis, Kings, Hants and Cumberland Counties. The total number of nests collected during the winter after this flight totalled 24,156. Their host plants numbered 22, although of course, the larger portion were found on fruit trees. It will be seen from the accompanying table, giving total number of nests collected each year since 1907, that the season above referred to, viz., 1913-14 was the peak of the infestation for Nova Scotia.

Year	No. of Nests Collected
1906-7	6,000
1907-8	4,000
1908-9	800
1909-10	1,496
1910-11	4,462
1911-12	8,070
1912-13	11,055
1913-14	24,156
1914-15	18,254
1915-16	14,845
1916-17	10,019
1917-18	3,021
1918-19	1,269
1919-20	358

The total number of nests collected has steadily decreased since the 1913-14 season, though for a while the situation looked serious in the eastern part of Kings Co.

The well sprayed districts between

Berwick and Wolfville was considered a barrier to prevent spread, but this ceased to be, when in 1916 nests became well scattered in the eastern part of the country, particularly through Wolfville, Grane Pre, etc. Every effort has since been put forth to reduce the danger of further spread eastward with the result of a marked reduction of nests, and the situation well under control.

It is futile to attempt a definite explanation why the brown tail moth, after reaching such a maximum, should gradually decrease. There are, however, four factors which we know have, to a great measure, brought about these favorable results, viz.:

- 1.—Inspection.
- 2.—Parasites.
- 3.—Climatic conditions.
- 4.—Spraying.

1. **Inspection**—The value of the inspection work, collecting nests during the winter months cannot be overestimated. Particularly does it have its advantage over these other controlling factors, as parasites cannot yet be relied upon; climatic conditions vary and the e are so many unsprayed areas.

2. **Parasites**—The Dominion Government has spent a large amount of money in introducing and liberating natural enemies of the brown tail moth. One of these, the *Apanteles lactecolor*, a small hymenopterous parasite, is already well established in the Annapolis Valley. The small maggot or larva winters over in the hibernating brown tail moth caterpillar, and when the caterpillar resumes its activities in the spring, the parasite does likewise; finally kills its host, emerges from its body, spins a silken cocoon about

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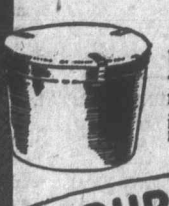
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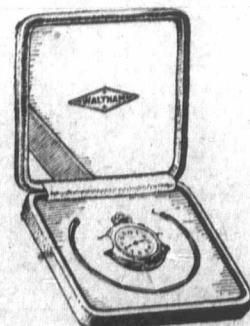
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