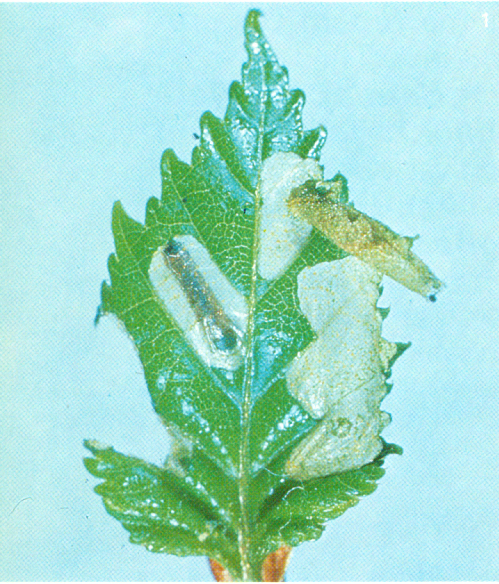


Birch Casebearer

by
René Martineau



The birch casebearer, *Coleophora serratella* (L.), was found for the first time in North America at Bar Harbour, Maine, in 1927. It has since spread throughout the northeast of the North American Continent; in Canada it is now found from Newfoundland to northwestern Ontario, but as yet it has caused damage only in the eastern part of the country. In Quebec, the insect was discovered for the first time in 1955 in the Matapédia and Bonaventure counties, Gaspé Peninsula, and until 1963 only a moderate defoliation of white birch in that sector had been recorded. The infestation then began to increase in size and spread to the Lower St. Lawrence and the North Shore regions where, since 1968, the population has varied between moderate and high. In the rest of the province, the insect population is still low. The two most affected species are the white birch, *Betula papyrifera* Marsh., and the speckled alder, *Alnus rugosa* (Du Roi) Spreng.; the insect is also found on various other hardwood species, such as the grey birch, *B. populifolia* Marsh., the yellow birch, *B. alleghaniensis* Britt., the alternate-leaved dogwood, *Cornus alternifolia* L.F.

- Fig. 1. A. Caterpillar in the leaf mining stage.
B. The case in which the caterpillar lives until the end of the larval stage.
- Fig. 2. A group of casebearers before the leaves fall.
- Fig. 3. Severely defoliated white birch crown.

DESCRIPTION

The birch casebearer, a Lepidoptera, belongs to the Coleophoridae family. It is found in four different forms: egg, larva, pupa, and adult.

Egg

Oval-shaped and slightly concave, is orange-yellow when laid and gets darker as the embryo develops; length 0,5 mm.

Larva

At this stage has the form of a small naked caterpillar and is found either between the two layers of leaf epidermis or on the surface of the leaf blade, hidden in a case. The larva is translucent yellow, its body gradually takes on the colour of the chlorophyll of the leaves it feeds on, but the head is black; when full grown, the larva measures approximately 5 mm long.

Pupa

The pupa is wedge-shaped and wrapped in the larval case which is usually attached to the branches, sometimes to any object. Length: 4,25 mm.

Adult

At this stage it is a small grey-brown moth with fringed wings. Length: 6,5 mm.

LIFE CYCLE AND HABITS

The birch casebearer is a solitary insect with only one generation in 12 months. Its development begins in the summer of one year and is completed in the following summer. The eggs can easily be seen through the abundant pubescence along the main rib of the birch leaves. The incubation period of the egg lasts about 20 days, but since the emergence of adults is spread over a long period they can be found from the end of June to early August.

When it hatches, the young larva immediately burrows between the two leaf blade epidermis and remains concealed for about 18 days, going through the first larval instar and part of the second. It then cuts out the epidermis covering the mine and turns it into a tube called a "case" to conceal itself for protection. The larva, hidden in its case, wanders over the leaves looking for food and continues to grow until about 10 days before the leaves fall. It then abandons the leaves and attaches itself to the bark of a branch for the winter. At about the end of April the larva, which has reached the third instar travels to the buds to begin its feeding again. At the end of May the original case is too small for the larva and it then builds a new one in which it completes its growth.

The larva transforms itself into a pupa in mid-June after having permanently attached its case for the 20 day pupal stage. When the moth emerges from the case, it copulates and the life cycle starts over again.

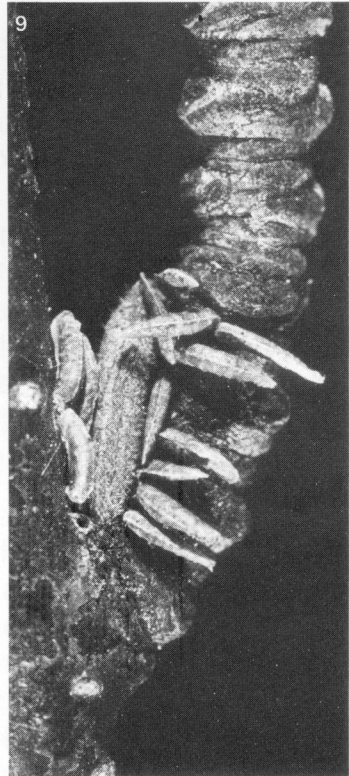
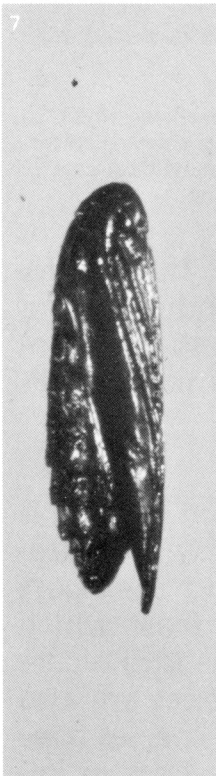
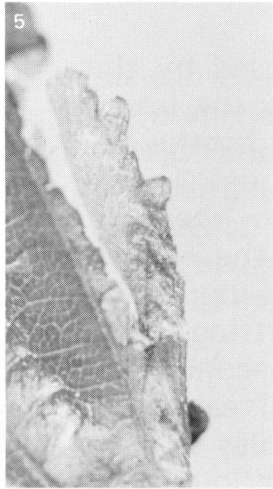
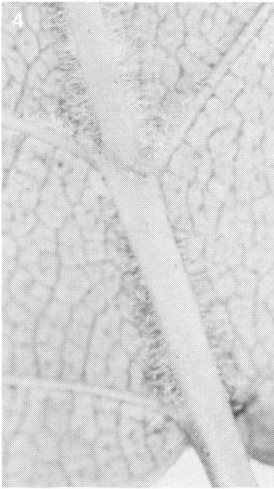


Fig. 4. Midrib of a leaf where the eggs are often laid.
Fig. 5. The edge of a leaf cut by the larva to make its case.
Fig. 6. Typical casebearer damage. A casebearer is visible in the center of the photo.
Fig. 7. Pupa (outside its case).
Fig. 8. Moth.
Fig. 9. Several casebearers during winter.

DAMAGE

The damage caused by the insect is limited to the leaves and is caused only by the larva. The damage includes: 1) the burrowing between the two leaf epidermis; 2) the cutting out of the leaf to build the case; 3) a second cutting of the leaf to make the second case; and 4) the normal eating by the larvae that riddles the leaves with holes of various sizes, especially noticeable when larvae are in great numbers. Consequently the build up of dead tissue gives a burnt appearance to the tree top. Sometimes they are completely bared of leaves. In such cases small branches may die but the tree usually survives. If the defoliation is very severe, the tree may produce a new crop of leaves; such leaves are smaller, less abundant and are often grouped in bunches (epicormic growth).



Fig. 10.

A partially refoliated white birch in August showing epicormic growth following almost total defoliation.

NATURAL ENEMIES

The main natural enemy of this insect in Quebec is the weather. Since the larvae spend the winter attached to the branches, they are exposed to the rigors of the climate, in particular, to glazed frost which brings them to the ground when it breaks into pieces by the effect of the wind or thaw. Parasites are also part of its natural enemies and at least 25 species have been recorded. Among its predators the first in importance are spiders, which contribute to the decrease in population by attacking the eggs, followed by the ants which attack the larvae within their case.

CONTROL

On small trees, the cases can be picked by hand or brushed off from the small branches in the fall, winter or early in the spring. Insecticides can also be used during the first week of larval activity in spring or around the third week of August. Sevin 50W, Malathion 50EC, or Cygon EC may be used. These contact or systemic insecticides should be sprayed on the foliage.

REFERENCE

Gillespie, A. 1932. The birch case bearer in Maine. Bull. No. 7, Maine Forest Service, Augusta, Maine

WARNING

All pesticides are toxic substances that can unfortunately be absorbed through the skin or by the respiratory system. For this reason, before using an insecticide it is important to carefully read and follow the manufacturer's instructions. Usually, the product is to be applied in calm weather. If, by accident, pesticide comes into contact with the skin, the affected areas must be immediately washed with soap and water. Pesticides must be stored out of reach of children and animals in a cool and well-ventilated space.

For additional information, please contact:

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