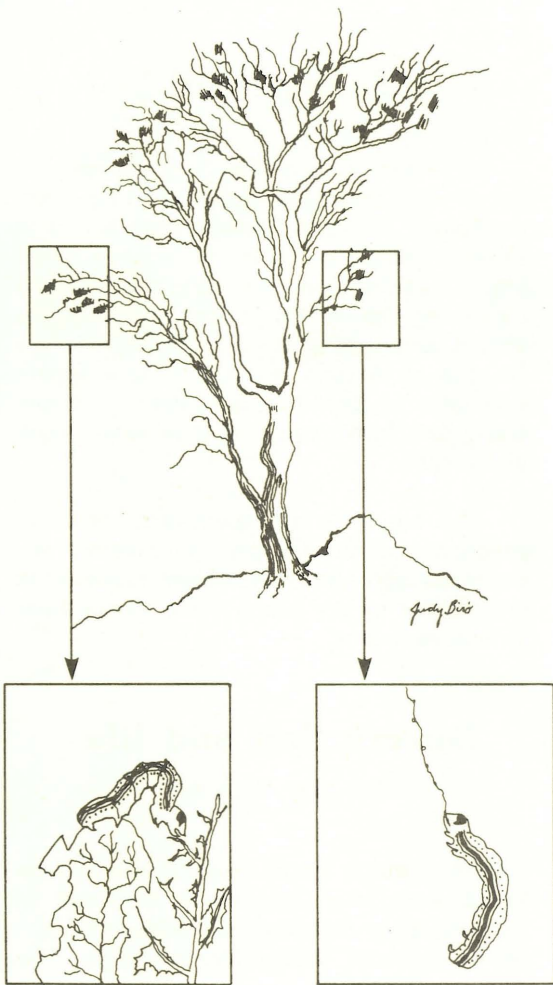


The Winter Moth on Vancouver Island



The Winter Moth on Vancouver Island

Notice to home gardeners

To help prevent the accidental introduction of winter moth to unfested areas do not take plants from southern Vancouver Island to other parts of British Columbia

Background

In recent years a pest from Europe, the winter moth, has been epidemic on southern Vancouver Island in Greater Victoria and at several locations north to Sidney. This insect was first encountered in North America during the 1930s in the Maritime provinces and was first collected in western Canada at Victoria in 1972. It is a severe defoliator of broad-leaved plants, notably Garry oak, fruit trees, and ornamental trees and shrubs.

The native Bruce spanworm, which is practically identical to the winter moth in appearance and habits, has been replaced in importance by the winter moth on southern Vancouver Island.

Description and life history (see Fig. 1)

Adult winter moths (Figs. 2 & 3) may be found from late October to the end of January. Both sexes are drab-grey or grey-brown, without distinctive markings. The

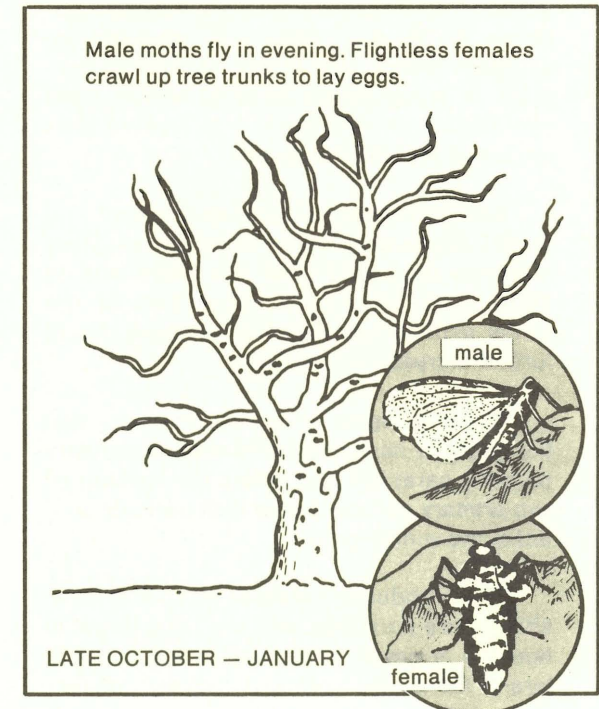
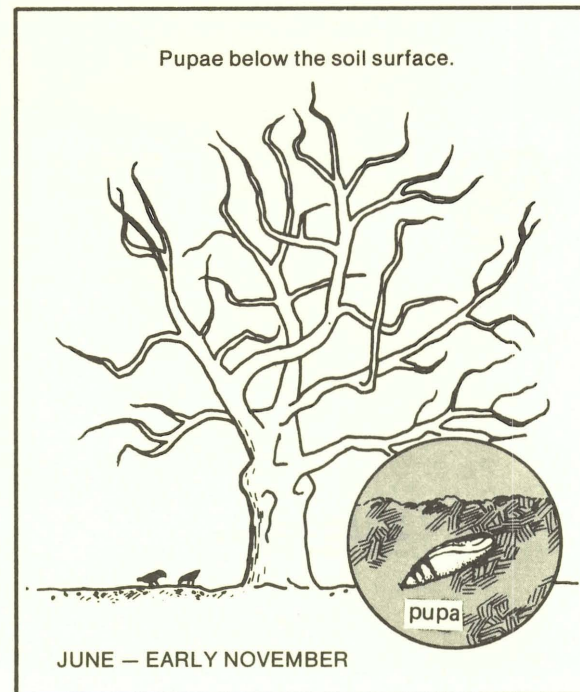
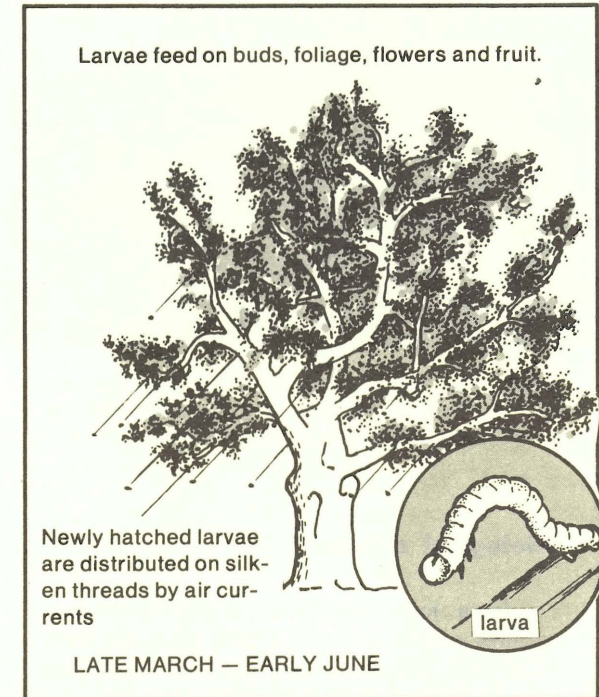
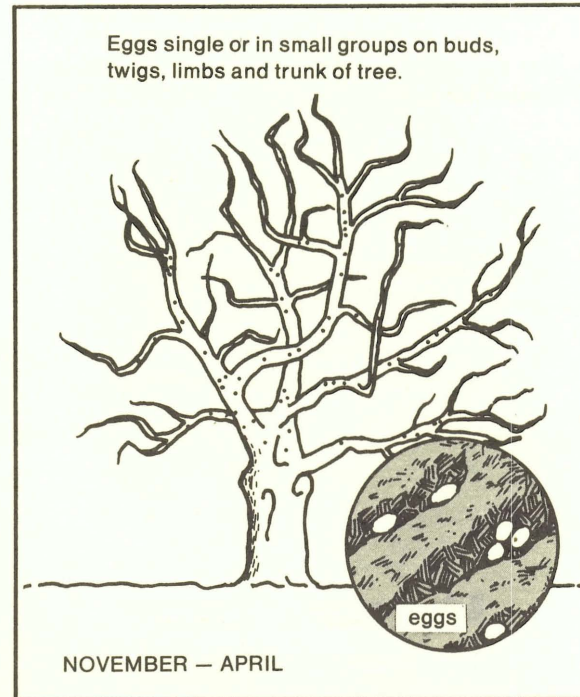


Fig. 1. Seasonal cycle of winter moth.

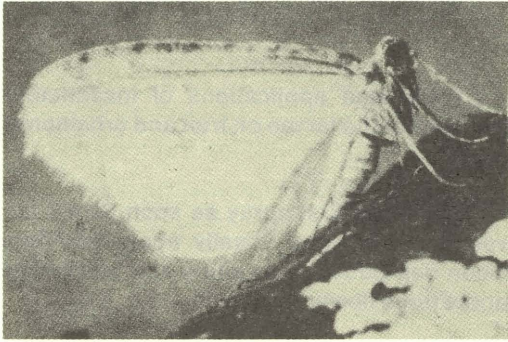


Fig. 2. Male adult winter moth.

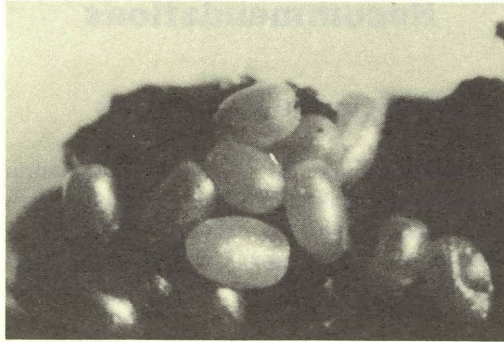


Fig. 4. Eggs.

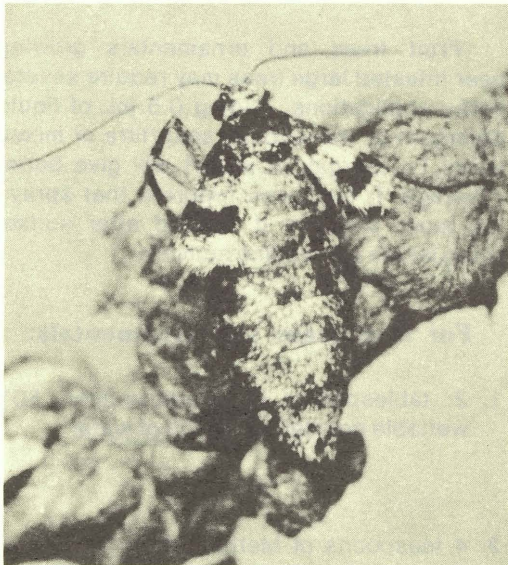


Fig. 3. Flightless female winter moth.

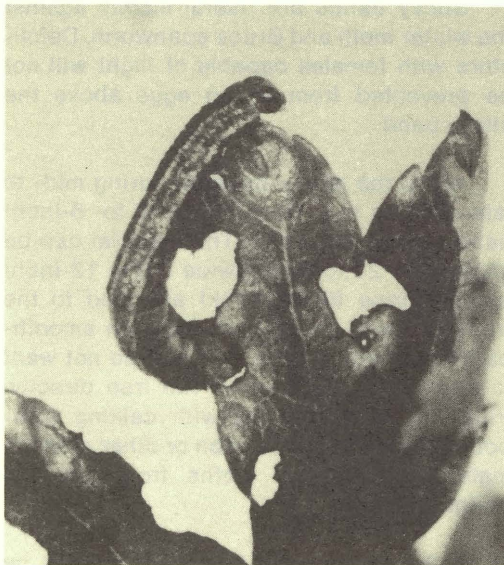


Fig. 5. Larva.

male moths fly in the evening. The flightless females crawl over the ground and climb up the tree trunks. **Eggs** (Fig. 4) are laid singly or in small clusters under lichens or in crevices on any part of the tree. The eggs are pale green at first, gradually changing to bright orange. They hatch from late March until about mid-April. The young **larvae** frequently drop from the twigs on silken threads and are borne a considerable distance on air currents. Larvae commonly known as inch-worms or loopers feed on the

swelling buds of host trees, and on foliage, flowers and developing fruit until about the first week in June. The full-grown larvae (Fig. 5), which are green with whitish, longitudinal lines, drop to the ground and pupate 2-5 cm (1-2 inches) below the soil surface. The reddish brown **pupae** remain quiescent in the soil where some are devoured by birds and soil-inhabiting predators. The moths emerge from the pupae usually begins after the first "hard" frost in late October or early November.

Recommendations

Trunk banding to trap females

Applications of "Tanglefoot" bands around tree trunks have been used for years to prevent flightless female moths from climbing up to lay eggs. This method is most effective against winter moth on isolated trees. If there are untreated trees nearby infestation may occur from larvae dispersed on air current.

Sticky bands are useful mainly against the winter moth and Bruce spanworm. Defoliators with females capable of flight will not be prevented from laying eggs above the sticky band.

Apply the sticky material during mid- to late-October in a 10 to 15 cm (5 to 6-inch) band around the trunk. The material can be painted on 25 to 30 cm wide (10 to 12-inch) plastic strips (6 mil thick) attached to the trees to avoid possible damage on smooth-barked or young trees, or if you do not want to apply it to the bark of the tree directly. Plug the bark crevices with calking compound, fiberglass insulation or other suitable material to prevent moths from crawling under the bands.

If the sticky band becomes covered by debris or with large numbers of moths so that females may cross without being trapped the sticky material should be "combed" occasionally or the plastic with the sticky band replaced with a new one. Tests by the Pacific Forest Research Centre have shown that when sticky bands or plastic with sticky band is properly applied it is slightly more effective than strip of fiberglass tied around the tree and sprayed with the commercially available Raid® every 4 to 5 days. Fibreglass strip alone is not effective in preventing females from crawling over it and laying eggs above the band.

Sprays against larvae

Well-timed applications of insecticides will control the larvae on fruit and ornamental trees.

Apply the first spray as soon as the larvae begin to feed, usually about mid-April when oak buds are swelling and just before apple trees flower.

A second spray about 2 weeks later is advisable. To avoid killing bees do not use insecticides when trees are in bloom.

Fruit trees and ornamentals growing near infested large trees may require several spray applications. Adding 0.5 mL of liquid detergent or insecticidal soap/litre of mixed spray (½ tsp/gal. of water) will give better coverage. It has been reported that sprays are more effective if applied after sunset when larvae are feeding actively.

For fruit trees and ornamentals:

1. 2 tablespoons of Methoxychlor 50% wettable powder per gallon of water

OR

2. 4 teaspoons of Methoxychlor 25% emulsifiable concentrate per gallon of water

For ornamentals only:

- 1½ tablespoons of Orthene (acephate) Insect Spray (15.6% emulsifiable concentrate) per gallon of water.

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For convenience of the public, brand or trade names are used in this pamphlet. This does not constitute an endorsement of the product nor a suggestion that like products are not effective.

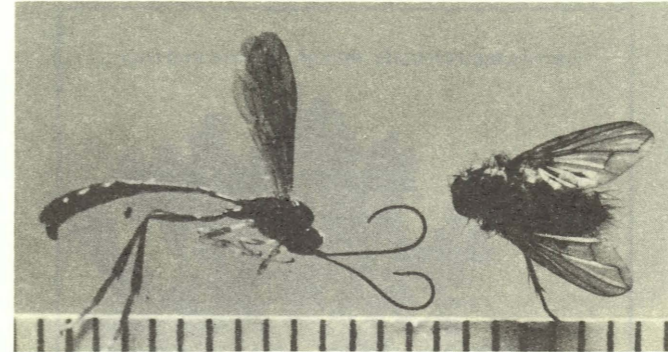


Fig. 6. The two imported parasites are *Agrypon flaveolatum* (left) and *Cyzenis albicans* (right). (Distance between lines is 1 mm.)

Biological control

In a joint provincial-federal biological control program over 17 000 parasitic flies (*Cyzenis albicans*) and 10 000 parasitic wasps (*Agrypon flaveolatum*) (Fig. 6) were imported from Europe and Nova Scotia between 1979 and 1982 and released on southern Vancouver Island. A similar program in Nova Scotia brought winter moth populations under control 5 to 7 years after the parasites were released.

Both parasites became established and readily reproduced in the Victoria area. Their numbers increased over the years and in 1984, they parasitized about 50% of the winter moth larvae. Parasite numbers should further increase in the future.

There is some concern, however, that the negative impact of two native, secondary (hyper-) parasites that attack the introduced two primary parasites may limit parasite control of the winter moth.

The introduced parasitic wasp and parasitic fly are harmless, and are not a threat to humans or crops. They only attack caterpillars of the winter moth and its close relative,

the Bruce spanworm. The parasites spend the winter in the pupae of the winter moth in the soil, and emerge in the spring to attack the winter moth.

Prepared by

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