57	2012		
supersedes 57		94	EXT
57		93	EXT

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THE BROWN-TAIL MOTH, by P H Sterling, Department of Zoology, South Parks Road, Oxford

Summary

Brown-tail moth epidemics have periodically affected trees in urban and sub-urban areas of south-east England. The problem, pest status, life cycle and control measures are discussed.

Introduction

1. The Brown-tail moth (*Euproctis chrysorrhoea L.*) was first reported as a pest species in Britain in 1720 by the naturalist Albin. Since then numbers of the insect have fluctuated irregularly, with perhaps one or two major outbreaks per century. Outbreaks have always been confined to south-east England, usually on the coast, up the Thames Valley and into London itself. However, the insect has been found inland in West Sussex, Hampshire, Oxfordshire and Hertfordshire. The 1984 epidemics were in the Portsmouth area, Bognor Regis, Newhaven, Dungeness, the Isle of Sheppey and in some boroughs in Central and east London. The moth is, however, endemic along the remaining areas of the south coast to the east of the Isle of Wight.

The Moth and its Life Cycle

2. i) Adults emerge in July and mate. Both sexes have bright white wings with a brown body; the females have a bulbous mass of barbed brown hairs (hence "Brown-tail") on the tip of the abdomen.

ii) Eggs are laid in August in a single batch, 1-3cm long, on a twig or the underside of a leaf, covered with a thick mat of brown hairs from the abdomen of the female. The number of eggs within a batch varied from 50 to 500.

iii) Caterpillars (=Larvae), which feed on the upper leaf surface until leaf-fall, are at first highly gregarious, dark brown with two small orange warts. During this period the larvae construct a conspicuous white silk tent, which is usually found on an exposed branch of the food plant. From 50 to 2000 individuals overwinter in each tent. In spring the larvae are less gregarious, much brighter in colour, covered with light brown hairs and have two white lines of hair tufts on their backs.

iv) Pupae, which are formed in June, are often gregarious and in a loose mass of brown silk, covered with larval hairs chewed off during cocoon construction.

Effects

3. Brown–tail moths cause two problems:

i) The larvae carry minute barbed hairs which can cause skin and eye irritation, affecting some people severely. One large larva may carry up to two million of these hairs. Some hairs do break

off the larvae and irritation can be caused without direct contact with the insect. The hairs on the adults, especially the females, can be equally irritating if they come into contact with humans.

ii) On re-emerging in the spring the larvae eat the buds and young leaves, especially of Rosaceous trees and shrubs, but most other broadleaved trees may also be attacked, causing complete defoliation in a matter of days or weeks depending on the caterpillar density. They then disperse freely on silk threads or crawl to find new food sources. Damage caused to healthy trees is generally visual and only temporary as a new flush usually occurs in July or August. Trees stressed, whether for example by drought, disease, or several consecutive years of defoliation (eg. By Brown-tail moth) may die.

Control of the Brown-tail moth

4. Chemical control may be limited by:

i) the proximity of infestations to urban areas limiting the number of insecticides that can be used;

ii) in the autumn only about 10% of the larvae (progressively more in the spring) leave the tent to feed at any one time, reducing the efficacy of shirt-lived, contact insecticides;

iii) insecticides which must when ingested to kill are largely wasted when applied to highly infested trees in early spring because of the sparseness of foliage. In late spring and early summer it is difficult to ensure adequate coverage of the fully expanded foliage;

iv) larvae at all stages of development retreat under leaves when disturbed, or in the absence of leaves and in bad weather they retreat into the nest where they can remain for several weeks before re-emerging to feed.

5. Several chemicals and one biological insecticide are available and approved for use against Brown-tail moth (see Appendix). In general the larvae are most susceptible to the biological control agents and to the insecticide diflubenzuron (see Appendix) when young. These should therefore be applied in the autumn. If necessary, spring applications of other insecticides may be made but they may be less effective.

6. The Brown-tail moth is affected by a naturally occurring virus (Nuclear Polyhedrosis Virus-NPV) which can cause considerable population decline in the wild. As far as is known, this NPV is specific to the Brown-tail moth but is not commercially available.

7. During the winter the silk tents may be clipped off and incinerated or buried. Although labour intensive, this method gives relative freedom from the irritating effects of the larval hairs. The public could be advised to remove tents where possible.

Notes:

i. When removing tents during the winter plastic or rubber gloves should be worn.

ii. If infested trees must be worked on during the summer it is essential to wear only impervious, and preferably disposable boiler suits, a full face respirator and rubber boots as well as plastic or rubber gloves.

8. **Treatment of Irritation caused by the insect**.
In general skin irritation only lasts a few hours but this varies depending on the sensitivity of the person affected. A warm bath, calamine lotion and antihistamine cream help ease the itching, but if in doubt or in severe cases, medical advice should be sought immediately. Avoidance is far better than cure in the case of Brown-tail moth.

Before using a pesticide always read carefully the manufacturers instructions on the label (including any accompanying leaflet) and apply the product for the use, at the rate and by the method recommended, paying particular attention to aspects of safety.

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Appendix – treatments for Brown-Tail Moth
(Arboricultural Research Note 57)

A. Treatments for professional use.

The following products are listed on the Pesticides Safety Directorate (PSD) date-base as being suitable for use against caterpillars including those of Brown-tail moth (*Euproctis chrysorrhoea*). As the 'approval' status, availability and marketing company of chemicals changes from year to year always check to ensure that approval is in place for the intended use before applying any treatment. There are three sources of information:

1. HSE website (www.pesticides.gov.uk)
2. The Pesticide and Registered Database(User Guide)
3. CAB and BCPC annual UK Pesticide Guide, and
4. the manufacturers label.

Treatment of Ornamental Trees, Fruit Trees and Shrubs

Biological Agent	Product	Marketing Company
Bacillus thuringiensis Var. kurstaki (top fruit)	DiPel DF (off label)	Fargro Ltd
Chemicals		
Cypermethrin (top fruit)	Permasect C	Nufarm UK Ltd
Diflubenzuron	Dimilin Flo	Certis

Treatement of Hedges

Diflubenzuron	Dimilin Flo	Certis

B. Treatment for Amateur Use

None of the above approved chemicals is available for amateur use.

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