Forest and Timber Insects in New Zealand No. 25

Pine twig chermes or pine woolly aphid

Based on R. Zondag 1977

Insect: *Pineus laevis* (Maskell) (Hemiptera: Aphidoidea: Adelgidae)

Fig. 1 - Stern of young radiata pine tree covered with waxy "wool" produced by *Pineus laevis*.

Type of injury

*Pineus laevis* sucks sap and can cause a setback to the health of a tree. The insects are found mainly near the ends of the shoots, but when trees are severely infested colonies occur on twigs, branches, and even the main stem. Sometimes they are present between needles and on cones. Infestations can be recognised by the waxy white threads produced by the insects (Fig. 1). These threads form a dense woolly cover over the colonies and give infested parts of the tree a greyish appearance. Attack may cause shoots to have shorter needles, which may also be discoloured. Heavily infested plants may show slight defoliation and stunting, but serious malformation seldom occurs. Trees under stress seem to be the most susceptible and in young stands, where competition is the most intense, heavily infested trees may be present amongst others which have not been attacked.

Hosts

In New Zealand *Pineus laevis* occurs only on *Pinus* (pine).

Distribution

This insect, which became established in New Zealand before 1884, is probably of western North American origin. It occurs throughout the country. It is also present in eastern Australia and in Tasmania, Chile, Europe, South Africa, Malaysia, Taiwan, and possibly Pakistan.
Overseas this insect is also known as *Pineus boerneri* Annand. In New Zealand publications it has been called *Pineus pini*, *Chermes pini*, or *Pineus strobi*.

**Economic importance**
The effect on tree growth is of little economic importance. Infestations are usually of short duration since predatory insects soon exert control,

**Description, life history, and habits**
The Adelgidae, which are closely related to the aphids, occur only on conifers. In Europe and North America most species have complicated life histories which usually involve hosts of two different genera - a primary host, *Picea* (spruce), and an alternate or secondary host which, according to the species of adelgid involved, may be either *Larix* (larch), *Pinus* (pine), *Abies* (fir), *Tsuga* (hemlock), or *Pseudotsuga menziesii* (Douglas fir). On both primary and secondary hosts several different forms of the one adelgid species can occur. Some forms are winged and migrate from one type of host to another. However, the life cycle is sometimes restricted to one genus of conifer, as in New Zealand where *Pineus laevis* is found only on pines.

The usual form of *Pineus laevis* in New Zealand is female and wingless. The adult is approximately 1 mm long, more or less rounded in shape, and strongly convex. It is purplish-brown with the head and thorax slightly darker than the abdomen. Only by using a microscope can the six legs, minute antennae, and fine hair-like mouth-parts be seen. On the top of the thorax and abdomen there are glands which produce the waxy thread-like filaments which cover the insect.

Throughout the year the wingless forms reproduce parthenogenetically. Females lay eggs which hatch and give rise to another generation of females. Males are not produced. The young, or "crawlers", which hatch from the eggs wander about, find a suitable spot to insert their mouth-parts, and start sucking sap. The insect mouls several times before it reaches adulthood. The development from egg to adult takes only a few weeks, the generations overlap, and several generations are produced in a year.

In November, December, and sometimes January, winged females are occasionally produced. Crawlers which hatch from the eggs laid by these females seem unable to become established on pines, and have not been found on any other host. Spread of infestations occurs only by crawlers produced by the wingless females, being blown by wind or carried accidentally on animals (including insects).

Usually infestations do not last for more than 2-4 years, but on trees planted on unfavourable sites, and in areas where rainfall is low, the insects may persist longer. The woolly secretion may adhere to the tree for several years after infestation has ceased. An easy way to discover if adelgids are still present is to press a finger against the woolly secretion. The amount of purple stain from the crushed insects is a rough indication of the amount of infestation. If the secretion looks ragged the number of insects is usually low.

**Control**
In the forest, predatory insects keep *Pineus laevis* under control. Larvae of the following feed on the adelgid in New Zealand:

(1) The flies *Neoleucopis tapiae* Blanchard (Chamaemyiidae), and *Syrphus novaezealandiae* Macquart (Syrphidae);
(2) The lacewings *Protobiella zelandica* Tillyard (Berothidae), *Drepanacra binocula* Newman (Hemerobiidae), and *Micromus tasmaniae* (Walker) (Hemerobiidae).

The most effective predator seems to be *Neoleucopis tapiae* which was introduced from England in 1932. The others occur naturally in New Zealand.

In nurseries and glasshouses an insecticide recommended for control of sapsucking insects can be used. A second spraying should be done within 2-3 weeks to kill crawlers which may have hatched from eggs after the first spraying.

**Note:** One other member of the family Adelgidae has become established in New Zealand. This is *Adelges nordmannianae* (Eckstein) which is found only on *Abies* (fir).

**References**

**Compiled:** 1977, limited revision 2001.