

# FPL 16 – Spruce Aphid

The information accessed from this screen is based on the publication: Koot, H.P. 1991. Spruce Aphid. Forestry Canada, Forest Insect and Disease Survey, Forest Pest Leaflet No. 16 4p.

## Introduction

The spruce aphid, *Elatobium abietinum* (Walker) (Homoptera: Aphididae), is a pest of spruce in coastal British Columbia ([Fig](#)). Apparently native to B.C., it was first reported here in 1916, but it was known in Europe as early as 1846.

The aphid has been a chronic pest of spruce on the Queen Charlotte Islands and the adjacent mainland since 1960. Infestations have been reported along most coastal areas of the Queen Charlotte Islands and in 1981 more than 5000 ha were severely defoliated. Tree mortality of up to 67% has occurred in spruce stands along the east coast of the islands.

There is probably more than one generation of this insect annually in B.C. Infestations on spruce occur on all tree sizes from saplings to the tallest trees in mature stands. Outbreaks on the coast are usually brief.

## Hosts and Distribution

Both native and introduced spruces are the preferred hosts for this insect pest. Sitka spruce (*Picea sitchensis* (Bong.) Carr.) ([Fig](#)), Norway spruce (*Picea abies* (L.) Karst.), blue spruce (*Picea pungens* Engelm.) and other spruces are attacked by this pest on North America's Pacific coast from Alaska to California throughout the range of Sitka spruce. It may occur rarely on some other conifers such as pines (*Pinus* spp.) and Douglas-fir (*Pseudotsuga menziesii* (Mirb.) Franco). Infestations in Sitka spruce stands appear to be restricted to the coast; none has been recorded inland.

During the period 1981-1991, spruce aphid inflicted significant damage to both natural spruce forests and to ornamentals and shelterbelt plantings. Severe short-term attack and some tree mortality was recorded at many coastal locations within the Vancouver Forest Region. Mortality of lower branches was common and widespread ([Fig](#)). Up to 10% of the trees were killed on 320 ha between Queen Charlotte City, Tlell and at Gray Bay during the early 1980s.

From 1988 to 1991, populations increased at several coastal locations including from Powell River to Langdale, on Texada Island, along the east coast of Vancouver Island, and on the lower mainland east to Hope.

Young Sitka spruce trees have been killed by the spruce aphid since the 1930s. Young ornamental trees have only rarely been killed during this period in B.C.; however, in the U.S. distribution (Alaska to California), ornamentals have been the most vulnerable.

## **Description**

The spruce aphid in British Columbia apparently has only two stages-nymph and adult ([Fig](#)).

As with most aphids, outbreaks of the spruce aphid occur from time to time and the outbreaks are difficult to predict; however, outbreaks often follow mild winters. There is a sharp decline in the aphid population on Sitka spruce between late spring and November. Large colonies develop during the winter and feed during mild periods. Low temperatures, overcrowding, and resultant starvation will reduce their numbers.

In Europe, winged and wingless females produce nymphs all year, even during mild periods in winter. In coastal B.C., only wingless females have been observed reproducing, and these only in late winter and spring. The greatest population increase occurs from late winter to early spring when nymphs develop into wingless females. Winged females appear as temperatures rise in late spring.

## **Damage and Detection**

The spruce aphid prefers old needles and does not usually attack current growth. Most aphids are found on the lower side of needles and are usually concentrated on the lower (shaded) crown, but they often affect the leaders and upper crown. The first signs of feeding in winter or spring are yellow patches on the needles; by late spring the needles turn yellow or brown and then drop with summer's heat. Severe attacks may completely defoliate ornamentals or natural stands and may result in tree mortality; partial defoliation may result in increment loss and dieback of branches. Needle discoloration and needle drop varies according to attack density and weather conditions.

## **Control**

The weather appears to be the major regulating influence on population density in B.C. Mild winter weather often triggers population outbreaks. Conversely, prolonged cool, overcast periods will maintain populations at low innocuous levels.

Many natural enemies such as lady beetles, lace wings and other insect predators, as well as insect parasites and diseases can limit aphid populations to low, non-damaging levels. Starvation, combined with the influences of weather and enemies, usually ensures collapse of an outbreak.

Applied control of this pest is normally considered only when the aphid is particularly abundant and only to protect nursery and ornamental plantings. Most insecticides registered for use against aphids on conifers should be effective. Apply the insecticide when aphids first appear in appreciable numbers, usually in March. Be sure to consult local pesticide management, forestry or agricultural officials for advice and guidance in application

methods.

## References

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-- Reference copies of these reports are available for study at the Library of the Pacific Forestry Centre in Victoria, British Columbia.

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## Figures

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Figure 240-0060. Severe foliar browning caused by spruce aphid.

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Figure 240-0059. Severe foliar browning caused by spruce aphid on Sitka spruce.

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Figure 240-0057. Spruce aphid damage on potted stock.

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Figure 240-0058. Spruce aphids, adults and nymphs.