

forestry report

CANADIAN FORESTRY SERVICE

NORTHERN FOREST RESEARCH CENTRE

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SPECIAL REPORT Forest Insects and Diseases

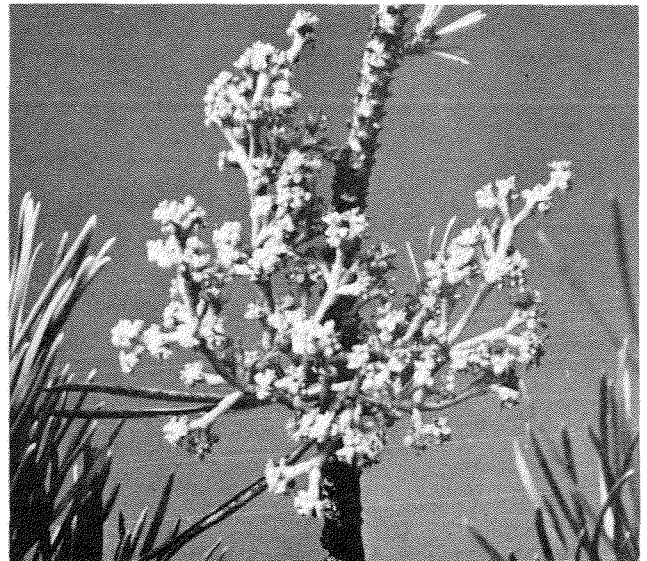
This special issue of the Forestry Report is devoted to brief discussions of some of the common insects and diseases of forest and shade trees. We have selected a few of the more common ones that represent a variety of organisms and damage.

Because of the ever changing regulations governing control measures using pesticides, we have not included control recommendations. We would advise checking with your local agricultural representative or forest ranger, or you can contact the Northern Forest Research Centre, 5320 122nd Street, Edmonton 70, Alberta.

DWARF MISTLETOE

Arceuthobium americanum –

This disease is often called witches broom disease because it causes the foliage to appear as clump-like groups. The disease is caused by a parasitic green plant unlike most other diseases which are caused by fungi, bacteria and virus. The mistletoe plant may be easily recognized by its aerial stems which grow from infected swollen branches. The parasitic plant penetrates into the living tissues of the tree and absorbs food produced by the tree. Trees infected with dwarf mistletoe disease may have an ordinary life span, but their vigor is markedly reduced and gross structural deformities may occur.

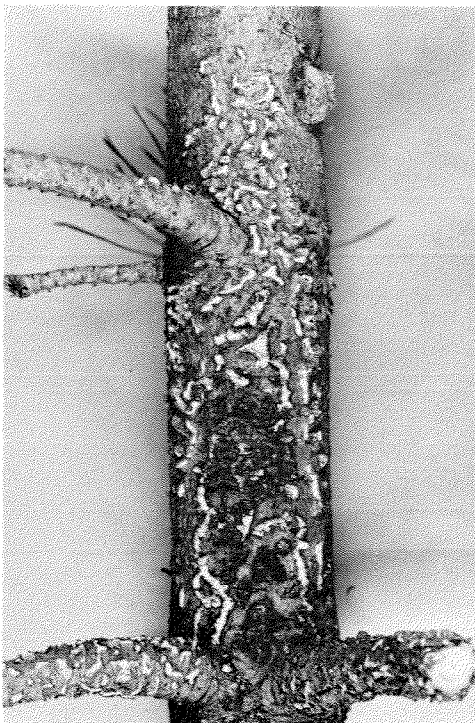




ELYTRODERMA NEEDLE CAST
Elytroderma deformans –

Most forest tree diseases are caused by fungi. Needle casts, such as the one caused by the fungus *Elytroderma*, are recognized by the reddish-brown to grey patches on the needles. This disease is found on lodgepole pine and jack pine, and is especially common in Alberta. The affected needles die and drop prematurely. Severe infestations reduce growth and spoil the tree's appearance.

NEEDLE RUSTS — are caused by a group of highly evolved fungi that are parasitic on specific coniferous hosts. Little white to orange-red spore-producing pustules erupt on infected needles. Most needle rusts cannot infect another coniferous host directly, but must complete their life cycles on non-coniferous hosts such as ferns and deciduous plants. Severe needle rust infections will defoliate trees and result in loss of growth and reduced vigor.



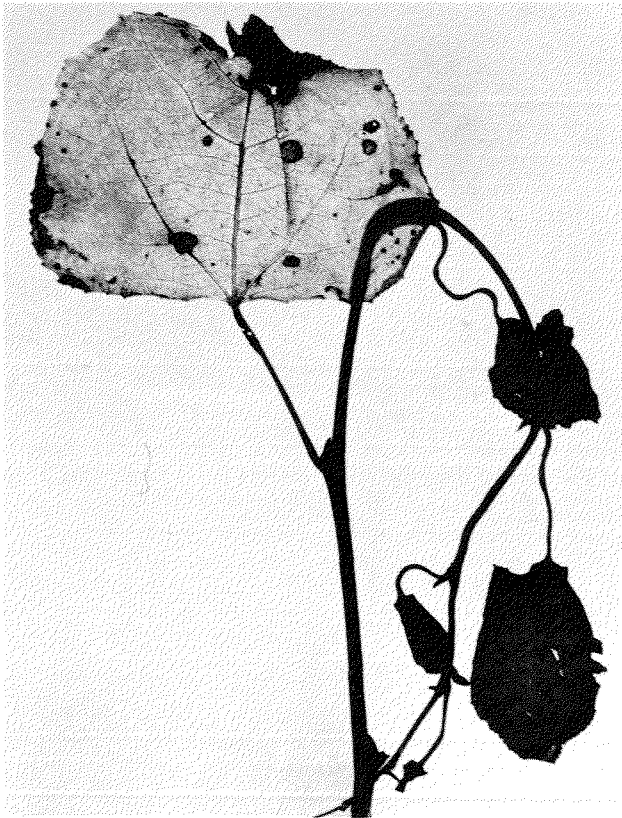
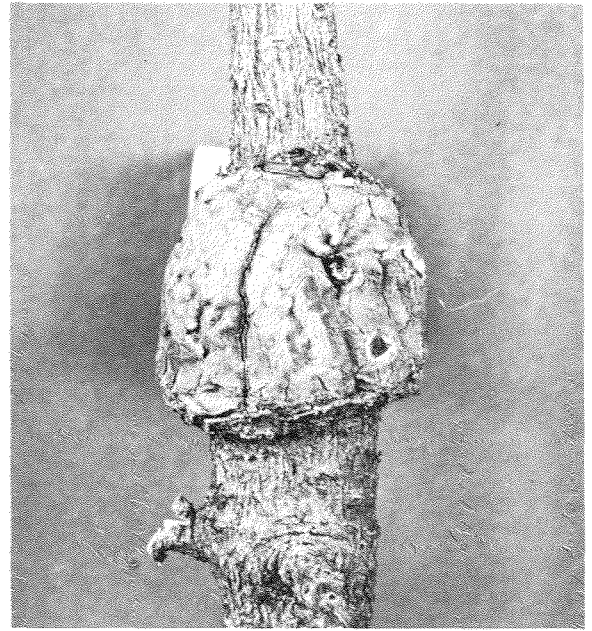
COMMANDRA BLISTER RUST
Cronartium commandrae –

This disease lives up to its name by causing easily-recognized cankers on lodgepole pine and jack pine. The bark around the cankers is often further damaged by squirrels and porcupines eating the sweet exudate oozing from the canker. Blister rusts cannot spread directly from pine to pine, but require an alternate host to produce pine-infecting spores. The alternate host for commandra blister rust is toad flax. The disease can be very destructive, causing mortality and volume loss, especially in young stands.

WESTERN GALL RUST

Endocronartium harknessii –

This rust occurs throughout the region, primarily on jack and lodgepole pines, although it will also attack Scots, ponderosa and mugho pines. The spherical galls form 2–4 years after the tree has been infected, and may occur on the main stem or side branches. This rust is important because it does not require an alternate host and can spread from pine to pine. Damage is severe when the main stems are involved, and the disease has caused heavy mortality in young regeneration. It also reduces vigor and growth in established stands.



POPLAR VENTURIA SHOOT BLIGHT

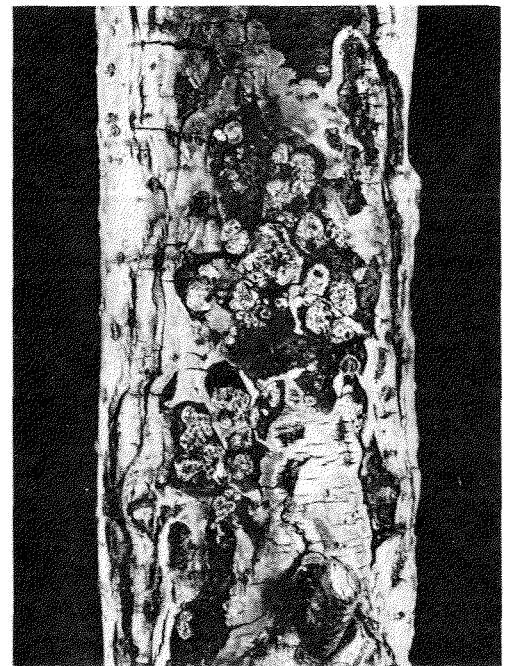
Venturia populina –

Poplars are attacked by this fungus early in the growing season. The characteristic blackening and wilting of young leaves gives the impression the tree is suffering from frost damage. Because the tender young shoots are destroyed, the tree uses its reserves to force new buds and shoots, thus weakening the tree.

HYPOXYLON CANKER

Hypoxylon pruinaum –

Hypoxylon canker is one of the most serious diseases of aspen in this region. The rough appearance of the canker is easily recognized. The fungus that causes this disease grows deep into the growing layers of the tree inhibiting nutrient and water flow. Infections usually result in the eventual girdling and death of the tree. The disease is widespread throughout areas where aspen is grown.





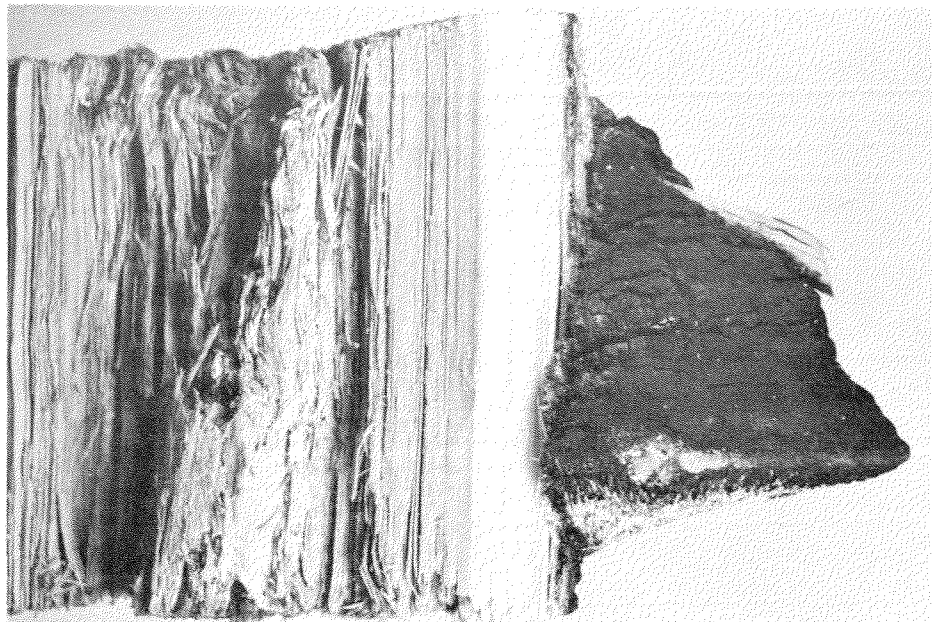
ATROPELLIS STEM CANKER

Atropellis piniphila —

Atropellis stem canker of lodgepole pine causes stem defects, but seldom kills the tree. Trunk deformation, wood fiber loss, blue stained wood and resin oozing are part of the complex symptoms of the disease. This disease is found throughout the Alberta foothills and in the Cypress Hills area of Saskatchewan.

WOOD ROTS —

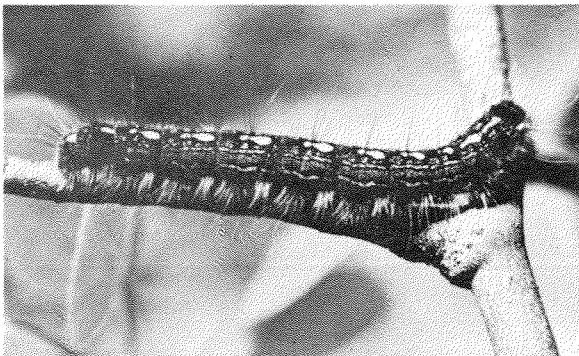
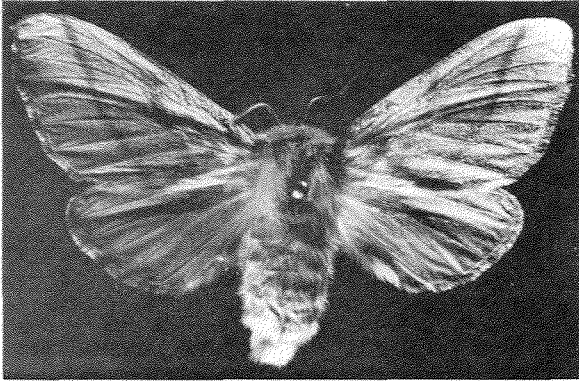
Many fungi cause wood rots, but most are recognizable by the “conk” on the trees. Except for the conks, wood rots are hard to detect until the tree is cut down. These diseases cause losses in wood fiber and structural strength. The infected trees present a potential hazard in recreational areas. Wood rots are universal in our regional forests.



ARMILLARIA ROOT ROT

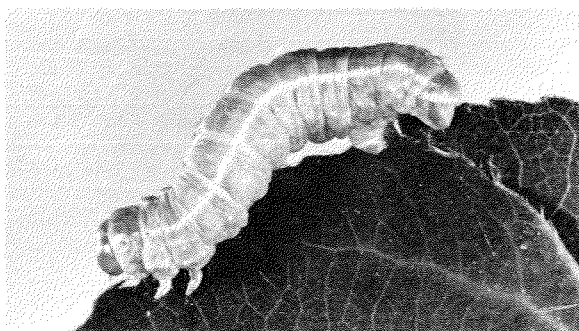
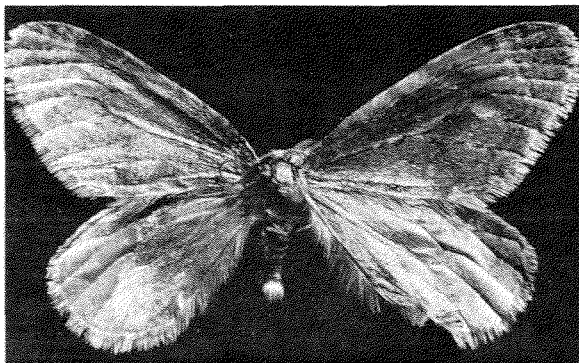
Armillaria mellea —

There are very few trees that this fungus does not attack, and its universal nature makes it almost impossible to control. The fruiting bodies appear at the base of the rotted tree, but only for a short time in late summer. The white fan-shaped growth of the fungus under the bark at the root collar is characteristic. The disease causes loss in vigor, yellowing of foliage, a decrease in growth and eventually death. It occurs throughout the region.



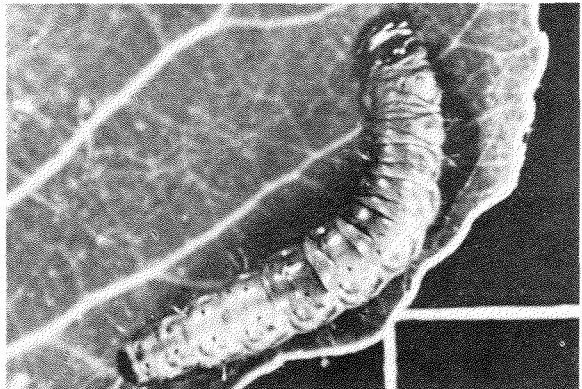
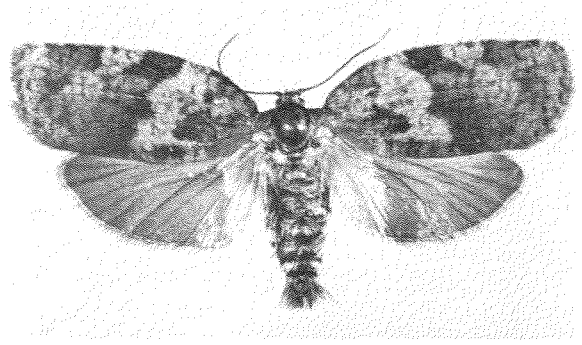
FOREST TENT CATERPILLAR
Malacosoma disstria –

Despite their common name, the larvae do not form a tent. They hatch in the spring and feed in large clusters on the foliage of aspen and on a variety of shade trees and shrubs. Cocoons are spun about mid-June among the leaves of trees, shrubs or other vegetation, and the moths emerge 8 to 10 days later.



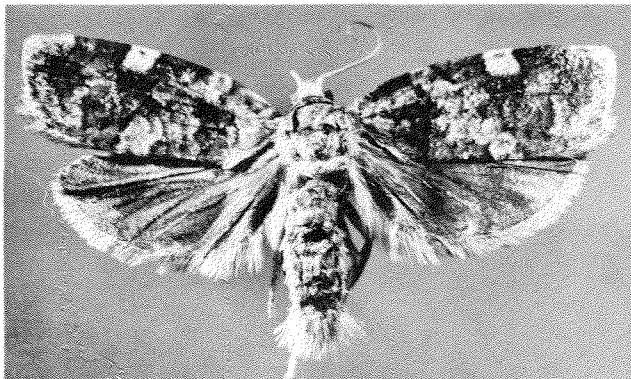
BRUCE SPAN WORM
Operophtera bruceata –

This green-coloured looper or “inch worm” is another important pest of broad-leaved trees. The caterpillars hatch in the spring and complete their feeding a little earlier than the forest tent caterpillar or large aspen tortrix. If trees infested with this insect are jarred, the larvae will drop down on silken threads.



LARGE ASPEN TORTRIX
Choristoneura conflictana –

This insect periodically defoliates poplar. The larvae are green with black heads and roll leaves together with silk. They feed inside the rolled leaves and pupate there. Adults emerge in July and lay egg masses on the underside of the leaves.



JACK PINE BUDWORM

Choristoneura pinus pinus —

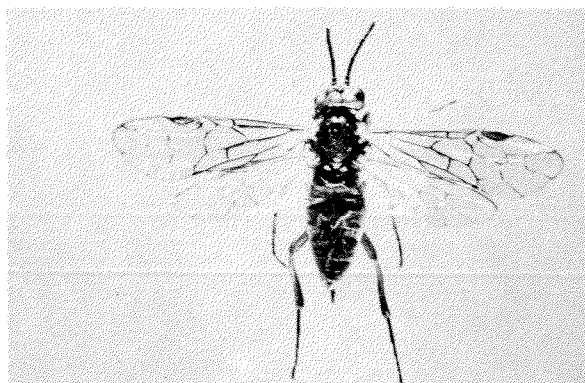
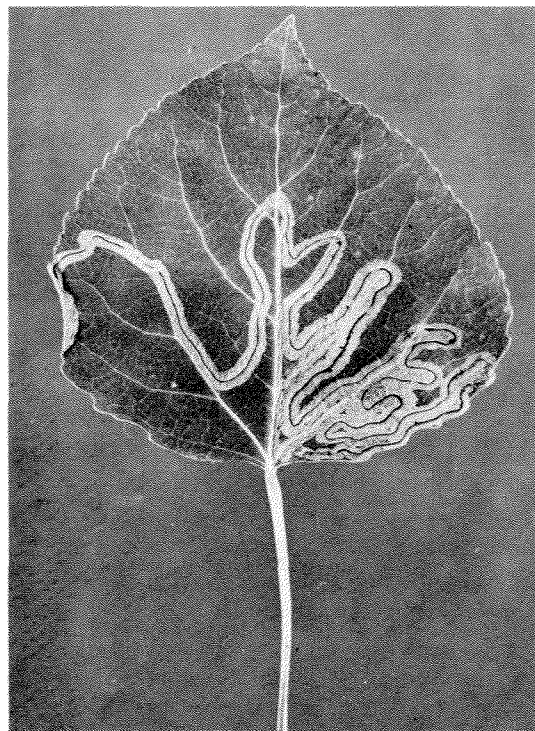
This is probably one of the most important defoliators of jack pine in Manitoba and Saskatchewan. Repeated severe defoliation often causes top-kill. This insect is closely related to another major pest, the spruce budworm and is difficult to distinguish from it, except that spruce budworm larvae usually feed on spruce and balsam fir instead of pine.



POPLAR SERPENTINE LEAF MINER

Phyllocnistis populiella —

The larvae of this insect feed inside the leaves of poplar, forming serpentine mines, hence the common name. The infested trees are not seriously damaged, but the infested leaves are conspicuous and frequently cause concern.



YELLOW-HEADED SPRUCE SAWFLY

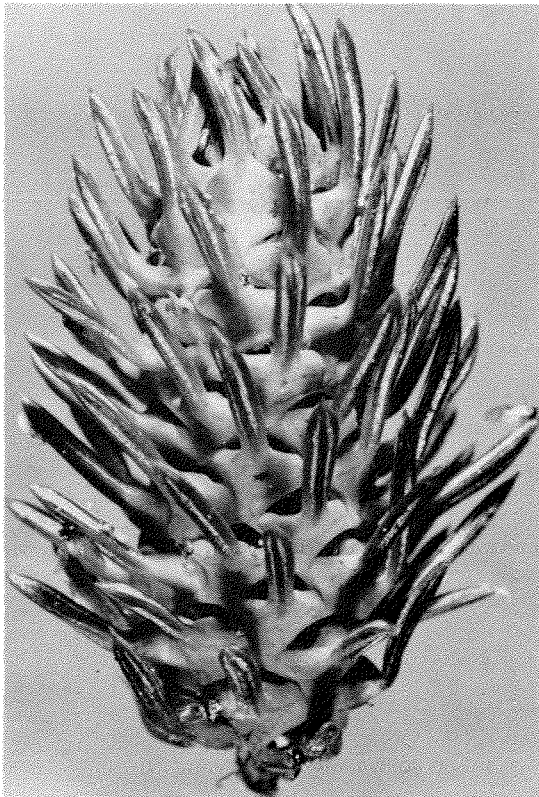
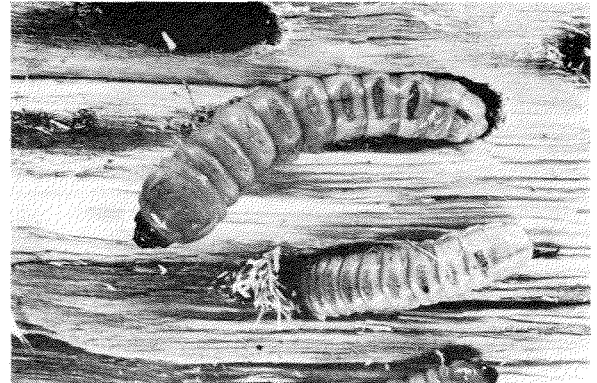
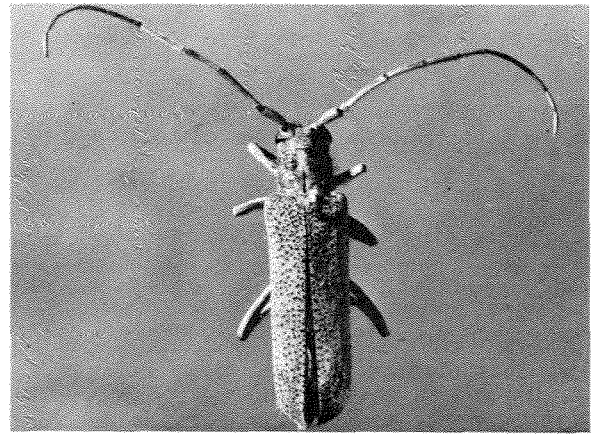
Pikonema alaskensis —

The feeding larvae lie along the needle with its posterior curled around it. When disturbed it whips and arches its abdomen. This insect seldom causes serious damage in the forest but is a major pest of spruces in shelterbelts and ornamental plantings. The feeding period is from early June until the middle of July. Larvae feed on the new foliage until half grown, then they consume the older foliage as well. They are difficult to see when small, but should not be allowed to defoliate ornamentals, as the trees are unable to replace the foliage.



POPLAR BORER
Saperda calcarata —

This insect is probably the most serious insect enemy of aspen and balsam poplar, especially when trees are growing in the open, as is often the case in recreational areas. Attacks are characterized by swollen scars and holes in the trunk and larger branches. Sap exudes profusely from these holes and then darkens, giving a varnished appearance.

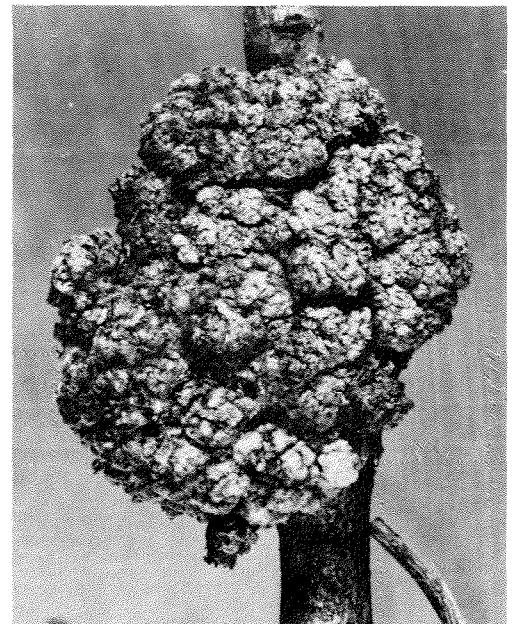


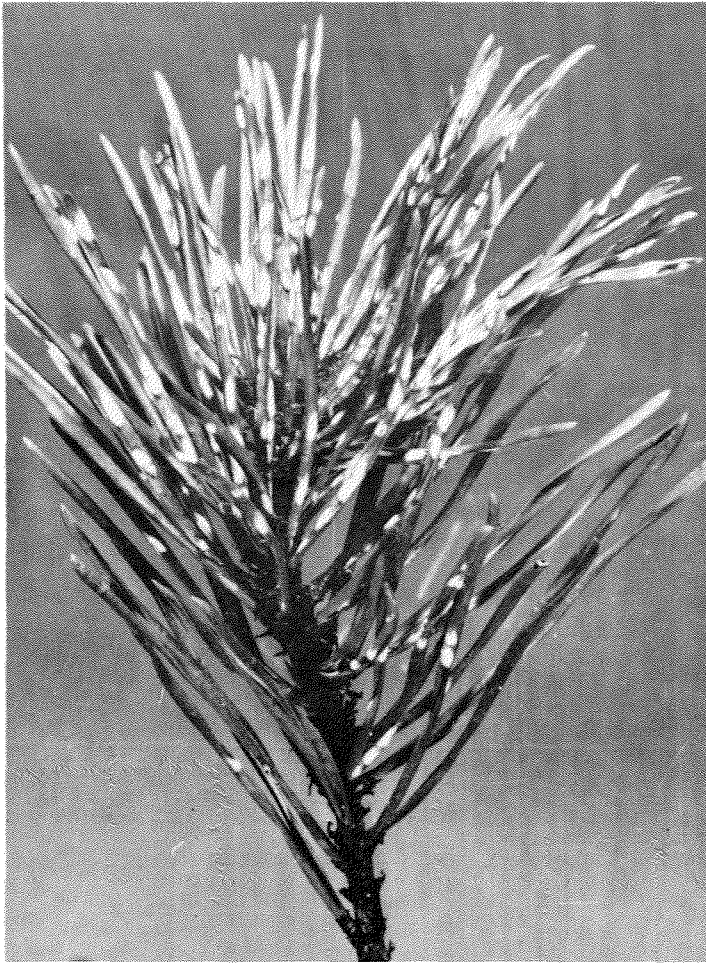
SPRUCE GALL APHIDS
Adelges spp. —

Several species of gall-producing aphids attack conifers. The shapes of the galls are characteristic for each species. The ones on spruce are usually green or purple in color. By late summer, most of the tissues in the galls have died and the galls take on a reddish-brown appearance. The galls do not cause serious injury to the tree unless infestations are very severe.

POPLAR-BUD GALL MITE
Aceria paropopuli —

This mite is easily detected by the unsightly galls which it forms and is a major pest of poplar plantings in the prairie provinces. Branch galls sometimes reach 3–4 cm. in diameter after one season's growth and may contain over 3,000 mites. New galls are formed each year, but the old ones persist for many years. Heavily infested trees therefore become very unsightly.





PINE NEEDLE SCALE

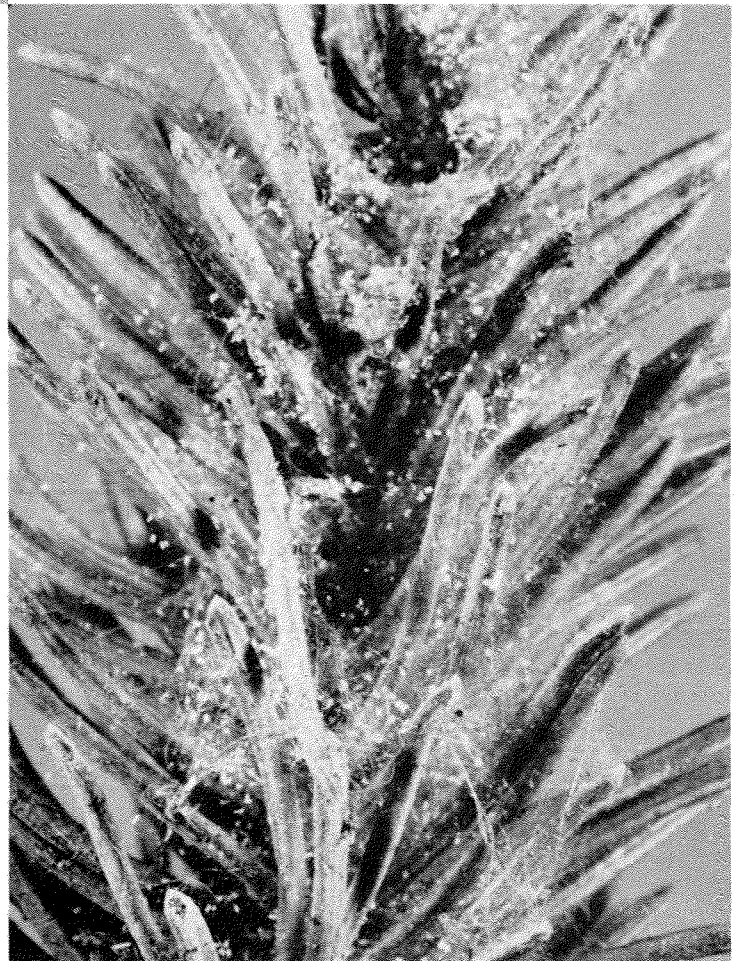
Phenacaspis pinifoliae –

This insect derives its name from the scale-like wax coating secreted over their backs. It is an important pest of spruce and pine in shelterbelts and ornamental plantings in the prairie provinces but is seldom a pest in forested areas. Severe infestations give the trees a whitish appearance and seriously reduce their vigor.

SPRUCE SPIDER MITE

Oligonychus ununguis –

This pest sucks the sap from the needles and tender twigs of spruce and balsam fir. They have an exceptional reproductive capacity and during hot dry summers may produce as many as six generations. The mites are extremely small, but their damage is easily recognized by the fine webbing that they spin between the needles. Dust particles and dead needles adhere to the webbing, giving the tree a shabby appearance.



Forestry Report: Published by the Canadian Forestry Service, Department of the Environment, 5320 122nd Street, Edmonton 70, Alberta. For further details concerning items in this issue address the Insect and Disease Editor, W.G.H. Ives.