

PesTopics

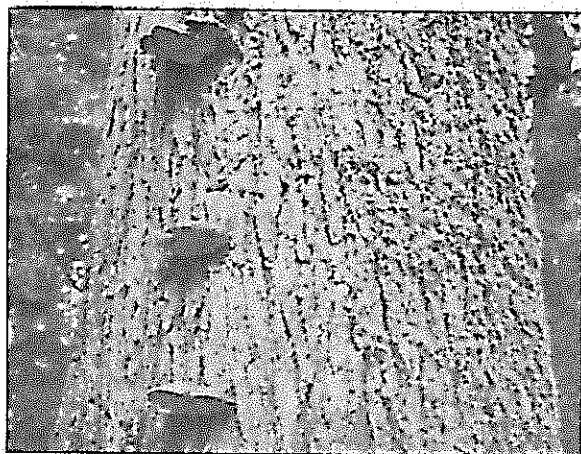
Decay in B.C.'s Forests

Wood decay, like death and taxes, is inevitable – but foresters in B.C. are trying to do something about it.

When trees die, decay plays a vital role in forest ecosystems by making the mineral and organic constituents of dead trees available to living trees. However, the valuable heartwood of living trees is also technically dead and thus susceptible to decay. Decay of older living trees destroys more wood than any disease, insect or fire.

Most decay is caused by fungi. They invade and digest wood by means of microscopic threads called hyphae. Decaying wood is initially stained and then becomes punky or stringy as rot advances.

Fungi disperse by sprouting mushrooms or woody structures called conks on the stems of decayed trees or soil nearby. These produce millions of microscopic, airborne spores which land on other trees and, if conditions are favourable, germinate to form hyphae which start the cycle again.



Conks of a decay fungus. (Photo courtesy of The Canadian Forestry Service)

Some fungi can enter only freshly scarred wood. They attack only dead wood existing prior to the scarring or wounding. Although most wounded trees can arrest decay by a defensive chemical reaction, decay will resume if an infected tree is cut or killed.



Brown, crumbly rot caused by Polyporus schweinitzii in the butt of Douglas-fir. (Photo courtesy of B.C. Ministry of Lands, Parks and Housing)

Other fungi can penetrate only small dead branches 2 to 5 mm diameter and must remain dormant for several decades. When an older living tree suffers some kind of shock, say from a forest fire, these fungi penetrate into the main trunk. Decay spreads slowly in older trees for 200 years or more and eventually consumes almost all the heartwood, leaving a narrow living cylinder of wood. If a decayed tree is killed or cut, these heartrot fungi soon die and are replaced by others which complete the decay cycle.

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Decay greatly limits the value of older forests in B.C. In interior cedar-hemlock forests, trees of 200-400 years age are often extensively decayed and unmerchantable. The rate of decay in an older stand often exceeds current growth.

To estimate volumes of merchantable wood in older forests, foresters have taken samples of trees throughout the province. The results of the survey were used to determine average volume reduction factors for decay. These factors are used to estimate the net volume of wood available from standing trees. However, actual decay losses are erratic and often not revealed until logging commences.

The best means of preventing decay is to utilize young trees. Results of sampling studies indicate very little decay in conifers 150 to 200 years age or younger. Older, decadent trees can be cleared and planted to produce new young forests with more usable timber, relatively free from decay.

Although decay in young managed forests should be minimal, some precautions are still needed. In juvenile spacing or commercial thinning, operators avoid

damaging the trees and cut down any trees with large wounds. Young trees are spaced to minimize the extent of decay.

When young hemlock, *amabilis* fir ("balsam") and spruce are spaced, stumps larger than 10 cm diameter are dusted with borax to prevent decay by the fungus Fomes annosus. The fungus penetrates cut stumps and spreads via roots to nearby trees. In Europe and Scandinavia tree killing and decay by the fungus have dramatically increased in intensively managed stands after several rotations, and now the fungus is a major problem.

Decayed trees are also hazardous in recreation areas. Trees near buildings or campsites are inspected systematically to detect hidden decay, and dangerous trees are selectively cut. In some instances, areas are closed to avoid injury.

As the intensity of forest management increases in B.C. and as younger trees are grown, the amount of timber lost to wood decay should decrease. Young trees must be carefully managed however to reduce the possibility of chronic decay.