Confirm Level of Disturbance (LOD) for the activity

Felling trees is a high disturbance or LOD-3 activity. The disturbance caused by trees being felled has the potential to dislodge defective parts in nearby trees – tops and limbs, portions of trees or whole trees can collapse. Other activities ranked as LOD-3 include:

- yarding and loading,
- mechanical site preparation,
- road construction with heavy equipment, and
- use of light and intermediate lift helicopters.

Heli-logging with ground crew is LOD-4

Activities that are considered to cause very high levels of disturbance (LOD-4) include:

- corridor and high retention cable yarding,
- logging in structurally-damaged stands (e.g., wildfire or wind throw salvage),
- blasting, and
- helicopter logging with ground crew.

Step 2: Conduct visual tree inspections

see pages 2 - 3

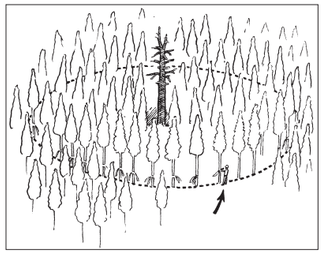
Step 3: Make the appropriate safety decisions

If dangerous trees are identified the following safety options are acceptable:

- tree risk is high, fell tree; or
- remove the dangerous part(s) of the tree; or
- flag a no work zone (NWZ) of appropriate size and shape around the tree(s) and instruct workers to stay out of this area (generally 1.5 defect lengths in size).

Fallers must refer any questionable tree hazard issues to a certified and qualified WDT assessor if there is a desire to retain the tree(s) in question. The WDT assessor is able to perform a detailed assessment involving root probing and/or stem sampling. Otherwise, the suspect tree(s) must be defaulted as dangerous and the appropriate safety strategies implemented (i.e., install a No Work Zone or have the tree removed).

No Work Zones (NWZ)
A NWZ is the flagged hazard area for an identified dangerous tree. The NWZ must be large enough to protect workers and therefore must include all the area on the ground that could be reached by any portion of the tree, were it to fail. Consequently, the NWZ becomes a timber leave area or Wildlife Tree Patch. The following guidelines apply to the use of NWZ:



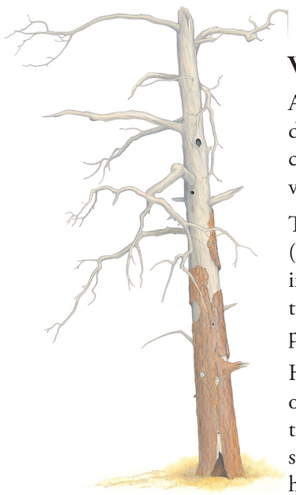
- NWZ will take into account the nature of the hazard and the lean of the tree.
- On steep ground, the NWZ will be extended downhill to protect workers.
- NWZ can be adjusted in size depending on the size of surrounding live timber (e.g., a small dangerous tree surrounded by much larger trees that "shield" the adjacent area have a NWZ radius less than 1.5 defect lengths).
- A kick-back area should be included where there is a risk of the top of the tree buckling backwards.

Step 4: Communication and documentation

At the pre-work site review supervisors must review written safety procedures with all workers and identify all known site hazards. Workers must take responsibility to follow written safety procedures. Where dangerous trees are protected by a NWZ, document the location of the NWZ on a site map. It's advisable to also include a brief description of the dangerous tree and to give these documents to your supervisor for referral to the next crew working on the site.

For further guidance in managing wildlife/dangerous trees, contact your local office of WorkSafeBC or visit the website of the Wildlife Tree Committee of B.C. for additional information. Visit the website to find out more about the Wildlife/Dangerous Tree Assessor's Course – it provides comprehensive instruction about tree hazards.

Wildlife/Dangerous Trees Awareness
– A safety guide for logging operations –



What is a Wildlife Tree?

A wildlife tree is any standing dead or live tree with special characteristics that provide valuable habitat for wildlife.

The special characteristics (known as habitat features) include spike, fork or broken tops, cavities, loose bark, large platform limbs and brooms.

Habitat features provide opportunities for wildlife to use the tree for feeding, nesting, shelter, over wintering or hibernation, and perching.

In British Columbia, more than 80 species of birds, mammals and amphibians depend on wildlife trees for their survival.

Some wildlife trees are protected under Section 34 of the provincial *Wildlife Act*.

Protect valuable wildlife trees by checking for dangerous defects and applying safe work procedures. If unsure about the regulations governing the protection of a wildlife tree or nest site, contact your supervisor.

What is a Dangerous Tree?

A dangerous tree is defined by the Occupational Health and Safety Regulations (section 26.1) to mean a tree that is a hazard to a worker due to:

(a) its location or lean,

(b) its physical damage,

(c) overhead conditions,

(d) deterioration of its limbs, stem or root system, or

(e) any combination of the conditions in (a) to (d) above.

It is NOT correct to assume that ALL dead trees (snags) are dangerous or that ALL live trees are safe. The correct call requires an understanding of how activities might impact the tree, the health factors affecting the stability of the tree, and its state of deterioration.

OHS Regulations require that ALL visually-suspect trees in reach of the work area be reviewed to ensure that there are no dangerous defects that will put workers at risk. There are four steps in order to correctly manage dangerous trees.

Step 1: Conduct a site assessment overview and confirm level of disturbance (LOD)

Look for site features that might create tree stability issues and the potential for tree failure. For example, consider the following features and the risks to you or the crews following you:

- timber type changes, especially along new block edges,
- low lying wet areas versus steep dry sites,
- clear cut areas versus tree retention areas,
- deciduous versus coniferous forest types, and
- pockets of root disease, especially in retention harvesting.

Consider how these factors will affect individual trees at the work site. Look at trees that have recently collapsed to learn why they failed and to identify the visual defects to which workers should pay extra attention.

An initiative of the WFP Snag Team in cooperation with the Wildlife Tree Committee of British Columbia:

WORKING TO MAKE A DIFFERENCE

Step 2: Conduct visual tree inspections

Visually scan your work site for the presence of suspect trees. Be especially alert for hazardous defects on live trees that could be dislodged if the tree is disturbed during the logging activities.

Common Dangerous Tree Defects for LOD-3

Hazard top – dead tops and secondary tops are particularly dangerous where there are visual signs of weakness (e.g., splits, cavities, shrubs growing out of forks, conks, signs of advanced rot). Snags with weak tops are also dangerous where >20% of the tree height is an unstable top (30% for Douglas-fir, spruce, pine or larch).

Dead limbs – consider the size of the dead limbs (e.g., >10 cm for most species) and height above the ground. These are particularly dangerous where there are signs of weakness (e.g., shedding limbs or visual sign of decay, cracking, sloughing or hanging).

Mistletoe stem goiter with heart rot conk

Witches' brooms – consider large brooms (>1 meter in bulk size) on weak, dead limbs. Carefully consider swollen stems (goiter) and look for decay indicators.

Split trunk – deep cracks (extending >25% of tree diameter into stem) with internal decay.

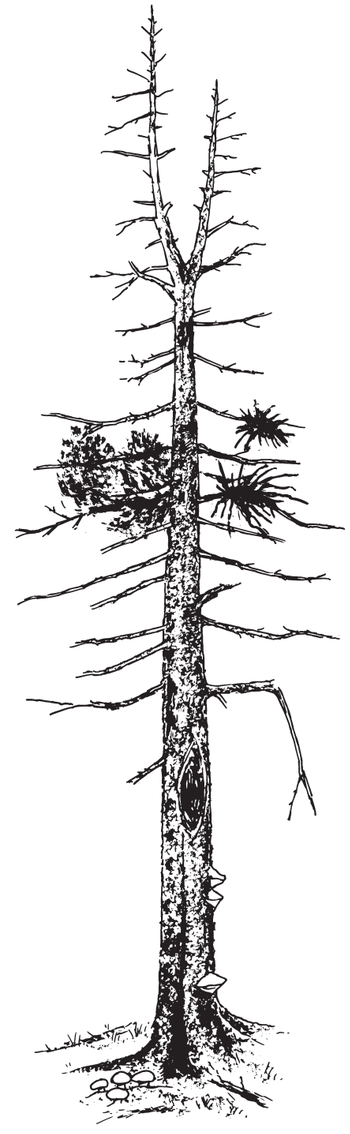
Split trunk with advanced rot

Stem damage – consider large, open wounds affecting >25% of the stem's cross-section (>50% for cedars) to be high risk. Especially dangerous if there is visible evidence of advanced rot (e.g. conks, woodpecker cavities, gaping holes).

Thick sloughing bark – for thick barked species (especially Douglas-fir, Larch, Cottonwood), consider loose slabs shedding from the stem.

Brown stringy trunk rot
a.k.a Indian paint fungus
(Echinodontium tinctorium)
look for them at branch stubbs

Conks or mushrooms – assume that heart rot conks are dangerous indicators of advanced internal decay, unless trained to identify Phellinus pini or Phellinus tremulae conks and you know how to apply safe work procedures for these fungi. Mushrooms on the lower bole or roots of the tree might indicate root disease. Saprot fungi is dangerous when seen on small diameter (<30 cm) stems or tops.



Brown cubical rot
(Laetiporus conifericola) CFS photo

White mottled rot
(Ganoderma applanatum) conk

Butt rot (Phaeolus schweinitzii)
conks can be on the ground or on tree

Armillaria root disease mushrooms,
also found on tree's stem

Tree lean – trees leaning to the work area must be carefully reviewed for rooting problems. Sweeping or pistol-butt stems are not a dangerous indicator if the roots are otherwise intact.

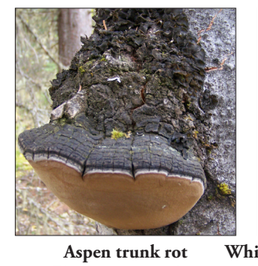
Stem shell thickness – if boring a tree to determine the extent of decay, the tree must have more than 30% tree radius as solid wood to safely support the tree's weight.

Root damage – if more than 25% of the major support roots are torn, rotten or lifted then the tree is dangerously unstable.

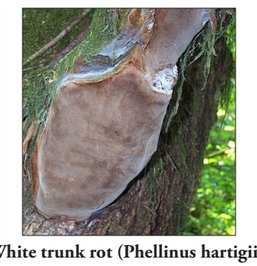
Stem damage with obvious signs
of advanced decay - bore for shell
thickness

Tree Hazards for LOD-4

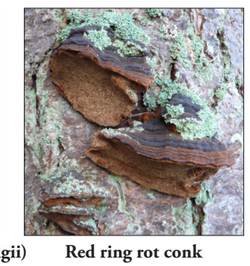
There is a high risk that defect trees will fail under very high levels of disturbance (LOD-4), and for this reason, most trees with structural defects are dangerous for LOD-4. The exceptions are cedars. To be considered safe, however, a defect cedar can only have superficial damage with no evidence of decay in the surrounding stem wood. Roots must have no visual stability problems, and damage can affect no more than 25% of the support roots. Lean must be minimal with no sign of rooting problems (disease, damage, lifting mat, or unstable soils). If these conditions are not met, the cedar tree is dangerous.



Aspen trunk rot
(Phellinus tremulae)

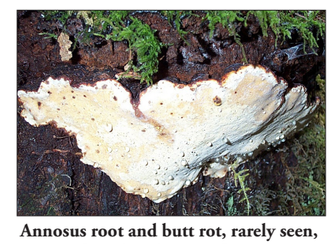


White trunk rot (Phellinus hartigii)
conk, also on stem, wind failure risk



Red ring rot conk
(Phellinus pini)

Brown trunk rot
(Fomitopsis officinalis)



Annosus root and butt rot, rarely seen,
found under root flares
(Heterobasidion annosum)

Brown crumbly rot, serious on
dead trees (Fomitopsis pinicola)

Lacquer fungus
(Ganoderma oregonense) conk