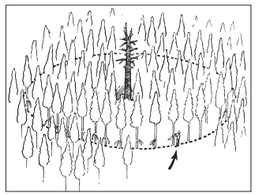
For trees rated as Dangerous (D), consider the following safety procedures:

- Identify tree as Dangerous (may affix tag, paint or flagging),
- Dangerous; tree risk is high, fall tree,
- Dangerous; remove the dangerous part(s) of the tree,
- Dangerous; install a flagged 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), and
- Map the location of no work zones and trees recorded as Dangerous where treatment is planned.

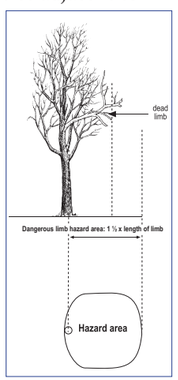
The qualified person (QP) must refer any questionable tree hazard issues to a certified WDT Assessor if there is a desire to retain the tree(s) outside of a NWZ. The WDT Assessor can perform a detailed assessment involving root probing and/or stem sampling where the results of the visual inspection are inconclusive. In the absence of assessment by a WDT Assessor the suspect tree(s) will be defaulted as Dangerous and the appropriate mitigation strategies implemented without delay (i.e., install a No Work Zone or have the tree removed).

Regardless, any trees that the qualified person determines or suspects to be dangerous must be dealt with BEFORE any workers enter that area.

No Work Zones (NWZ)



A NWZ is the flagged hazard area for an identified dangerous tree. No forest worker shall enter a NWZ unless required to remove a specific tree hazard (i.e., only a qualified danger tree faller enters the NWZ to remove a dangerous tree adjacent to the work area). The NWZ must be large enough to protect workers. This zone must include all the area on the ground that could be reached by any dislodged portion of the tree, were it to fail. 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

During a pre-work safety meeting, instruct crews to keep a "heads-up" and stay away from any trees with the three (3) significant tree hazards. Workers must be instructed to notify their supervisor upon discovery of any suspect trees, and to move at least 1 tree length away from suspect trees until such trees are assessed.

Supervisors must provide written safety procedures to workers as part of the pre-work site review. All known site hazards will be reviewed and made known to workers. It is the responsibility of workers to adhere to written safety procedures (i.e., stay out of flagged NWZs, follow wind and weather constraints, know when to evacuate, etc).

Document your pre-work safety discussions and discuss the dangerous tree assessment results with all workers at the work site. Be sure that everyone understands the field marking procedures and can identify the colors of flagging or paint used to mark Dangerous trees and NWZs.

Remember: documents supporting your dangerous tree assessment process (field assessment cards, site map, records of mitigation actions, written safety procedures and pre-work safety meeting minutes) must be available for reference.

For further guidance in preparing for silviculture projects contact your local office of WorkSafeBC or the Wildlife Tree Committee of BC.

Wildlife Tree Committee of BC

Managing Wildlife/Dangerous Trees
– A safety guide for qualified persons –

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 and 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*, which reads as follows:

"A person who, except as provided by regulation, possesses, takes, injures, molests or destroys

(a) a bird or its egg,

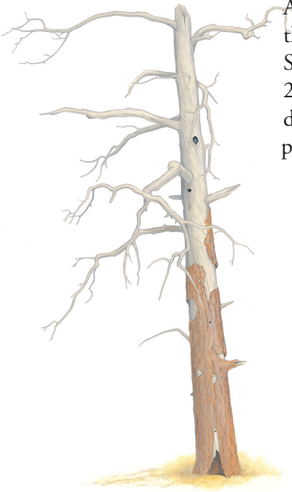
(b) the nest of an eagle, peregrine falcon, gyrfalcon, osprey, heron or burrowing owl, or

(c) the nest of a bird not referred to in paragraph (b) when the nest is occupied by a bird or its egg

commits an offence."

Protect valuable wildlife trees (typically large trees with habitat features) 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 be any tree, live or dead, that is hazardous to people or facilities because of:

- Location,
- Lean,
- Physical damage,
- Overhead hazards,
- Deterioration of limbs or root system, or
- A combination of the above.

For most manual work activities, the dangerous tree will be a tree that has become severely decadent or one that is recently disturbed by wind or other disturbance.

When to conduct a dangerous tree assessment?

To provide optimum time to develop a safety plan and undertake dangerous tree mitigation, site review and dangerous tree detection is needed:

- When trees within or adjacent to the work area appear visually "suspect",
- Prior to any workers entering the worksite to commence treatments,
- If treatments other than LOD-1 are planned,
- If work will be performed when wind speeds exceed 40 km/hour,
- If an intervening winter has passed since the previous assessment, or
- If a severe weather or disturbance event has caused widespread tree failures.

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

BRITISH COLUMBIA Ministry of Environment

WORK SAFE BC WORKING TO MAKE A DIFFERENCE

FOREST SERVICE BRITISH COLUMBIA

Four Steps to Implementing Dangerous Tree Management

significant new disturbance = new assessment

Step 1: Conduct a site assessment

- Confirm the management objectives for the site and identify treatment units.
- Stratify the work site into areas of similar site features (e.g. new block edges, low lying wet areas versus steep dry sites, clear cut areas versus tree retention areas, deciduous versus coniferous forest types, etc).
- Look for site factors that suggest tree decline or potential for tree failure.
- Identify areas of recent tree failure.

Confirm Level of Disturbance is LOD-1

Planned work activities must be of a low to very low ground or tree disturbance nature - otherwise assessments must be made by a certified Wildlife/Dangerous Tree (WDT) Assessor.

Very low disturbance activities which do not require a pre-work site inspection include:

- forest surveys,
- layout, and
- light vehicle traffic (pick-up, ATV).

Activities considered as LOD-1 include:

- tree planting,
- manual brushing,
- tree pruning (stems <20 cm dbh),
- use of light-duty machinery (e.g., weed whips, brush saws),
- road travel with heavy vehicles (>5500 kg GVWR) on ballasted and compacted roads, and
- fire control with hand tools and/or water hoses.

Step 2: Conduct visual tree inspections

Review each strata, looking for trees with significant hazard indicators. These will often be trees with precarious overhead or hang-up hazards, severely damaged or extremely decadent stems, or trees with recent lean and lifting root mat AND the tree is at risk of imminent failure.

Insecurely lodged trees or hang-ups

Look for clues about the stability of any lodged trees. Indicators that the tree is securely lodged, and therefore SAFE, include the following:

- the support tree is stable and is at least as large as the tipped tree,
- the tipped tree is lodged into the stem or bole of the supporting tree,
- the tipped tree is free of stem defects that indicate it is failing (i.e., splits or internal rot indicators such as conks or cavities), or
- the support tree has strong and healthy limbs that show signs of securely bracing the tipped tree (e.g. abrasion marks).

Look for insecure tops or limbs that are partially suspended in a tree. Indicators that the limb/top is secure, and therefore SAFE, include the following:

- the limb/top is partially attached to healthy wood,
- the limb/top is caught and held close to the branch collar of strong limbs,
- the limb/top does not shift during winds,
- the limb/top lacks high decay indicators (e.g. conks, sloughing parts), or
- the support tree shows no signs of shifting (e.g. cracking limbs).

If there is any doubt that a lodged tree or hang-up could shift free of a support tree it must be deemed dangerous.

Highly decadent and unstable tree

The key words are decadent and unstable. A tree may be decadent or unstable because of significant stem damage inflicted to the tree, the tree is deteriorating with signs of advanced stages of decay, the tree has advanced stages of root decay, or a combination of the three factors.

Stem damage

A tree is considered dangerously unstable when there is a wound to the stem that has removed or compromises >50% of the cross-sectional area of the stem.

Advanced stage of decay

Visual indicators can include:

- sloughing stem wood,
- heart rot conks spread along the entire stem of the tree,
- extensive sap-rot fungi on small diameter stems (<30 cm DBH),
- extensive stem splits, or
- the combined presence of heart rot conks and renewed foraging by woodpeckers.

Compromised rooting

For LOD-1 activities, rooting is considered dangerously compromised when greater than half of the major anchoring roots have advanced decay (Advanced root decay is when greater than 50% of the root diameter is decayed) or are severely damaged (e.g. chopped or torn, or lifted out of the ground).

Recent lean and root decay

Trees that exhibit recent lean are suspect. Leaning trees are at high risk of failure if:

- there are signs of advanced root decay affecting >50% of the major support roots, and
- if >50% of the root plate has lifted up and out of the ground.

Step 3: Make the appropriate safety decisions

Document your site assessment overview and tree inspection results. If there is a high risk of wind induced tree failures, it is advisable to lower the acceptable wind speed threshold from 40 km/hour to perhaps 20 km/hr. The Beaufort scale describes the wind speeds that workers can use to determine if winds exceed safe operating conditions.

Wind Speed (km/h)	Description
0 - 40	light breeze (0-20 km/hr; dust and loose paper raised; small branches move) to fresh breeze (20 - 40 km/hr; small trees sway; tops of large trees sway)
40 - 65	strong breeze (small branches fly in the air; whole tree in motion; resistance felt when walking against wind)
65 +	gale (branches broken off trees; walking impeded)

On the dangerous tree assessment field data card, record the tree assessment conclusion – the tree is either "Safe" or it is "Dangerous". Select the safety procedure that you recommend be applied to the tree(s). It is your duty to prescribe the appropriate safety procedure based upon your tree and site assessment. Treatment or implementation is the responsibility of the management team. The following safety options are recommended.

For trees rated as Safe (S), consider the following safety procedures:

- record tree as S: tree is safe for activities and exposure, retain tree – no removal or modification necessary (do not paint "S" on such trees), and
- record tree as M: monitor the tree with low-risk defects (useful for a high value wildlife tree when there is concern about future tree failure and there are multiple or prolonged treatments).