

**Failure Impact (Target)**

**3 points = High failure impact:** extensive damage expected if failure occurs. Probability of impacting a target (exposure time) high (e.g., overnight exposure); defective tree or tree parts large enough to cause extensive damage; target of high value. Examples include campsites, lodges, hotels, dormitories, residences and 24-hour visitor service and restroom facilities.

**2 points = Medium failure impact:** moderate damage expected if failure occurs. Exposure time moderate (daytime or intermittent only); defective tree or tree parts of sufficient size to cause moderate damage; target of moderate value. Moderately used paved trails, picnic and other day use areas, interpretive sites, amphitheaters and kiosks, moderate to high-use road networks within campgrounds, roadside attractions, such as vista points or historic stops, information stations, visitor centers, fee collection portals, high use daytime parking areas, designated trailhead parking areas, plazas, staging areas and commercial sites, roads and intersections with moderate to high traffic volume, haul routes during periods of commercial use, active projects along roads where work is stationary.

**1 point =Low failure impact:** Minor damage expected if failure occurs. Exposure time low; defective tree or tree parts is small; target of low value. Highway corridors or improved Forest Service roads with little or sporadic traffic, unimproved roads, turnouts, bicycle paths, or structures with sporadic occupancy, such as storage buildings.

**Failure Potential (Defect)**

3 points = high potential for failure: serious defects.

2 points = medium potential for failure: moderate defects.

1 point = low potential for failure: minor defects.

0 points = no defect observed

**Add 1 point if multiple, interacting defects are present, e.g. leaning tree with other defects.**

**Score 4 points (the maximum score) if tree is dead.**

**Cracks**

**High (3 points):**

- Crack goes completely through stem or branch.
- Stem has two cracks on the same segment with a cavity or extensive decay.
- Crack in contact with another defect or is at the base of a leaning tree.
- Branch (4" or larger) with any crack.
- Conifer stem with a single crack with inrolled bark and a cavity or decay inside.

**Medium (2 points):**

- Hardwood stem with a single crack with a cavity or decay (the decay should also be evaluated based on the "Stem and Branch Decay" criteria below).

**Low (1 point):**

- Trees with a single frost crack and no internal decay.

**Branch Unions/Forked Tops**

**High (3 points):**

- Weak branch union (V-shaped with inrolled bark) that is also cracked, cankered, decayed or streaming pitch. Strong (U-shaped) branch unions with these defects, except as listed below, should be assessed on the basis of the associated defects.
- Heavy U-shaped branches of all species except for pines and incense cedar that form when branches turn up to become leaders. Pine and incense cedar receive a high rating only if an associated defect (cracked, cankered, decayed or streaming pitch) is also present at the branch union.
- Large epicormic branches on decaying stems and branches.

**Medium (2 points):**

- Weak (V-shaped) union with inrolled bark.

**Low (1 point):**

- Heavy U-shaped branches of pines and incense cedar that form when side branches turn up to become leaders (no additional defect in the branch union).

**Stem or Branch Decay**

**High (3 points):**

- Less than 1/3 of the tree's radius (or diameter) is sound. Additional sound wood needed if tree is leaning, decay is off-center or present between four feet above the groundline and the lowest live branch, or is associated with an open cavity.

**Stem or Branch Decay (cont.)**

**High (3 points)**

- Cavity, decay or fruiting body associated with an open crack or weak branch union.
- Decay in a horizontal branch.
- True fir and hardwoods with known, but unmeasured decay, especially if a cavity is open to the outside.

**Medium (2 points):**

- Trees with greater than 1/3 of the tree's radius in sound wood may or may not have medium failure potential, depending on the extent of decay, species of decay fungus and position within the tree. At the very least, trees with identified decay should be closely monitored on a regular schedule and after significant weather events.
- Douglas-fir, incense cedar and pine species with known, but unmeasured decay, especially if a cavity is open to the outside.

Note: All trees with moderate or high failure impact ratings should be thoroughly evaluated for decay with the proper equipment and/or mitigated regardless of the species.

**Fungal Fruiting Bodies**

**High (3 points):**

- *Phaeolus schweinitzii* conks associated with butt swell on Douglas-fir.
- One or more Indian paint fungus (*Echinodontium tinctorium*) conks on true fir or hemlock
- Five or more red ring rot (*Porodaedalia (Phellinus) pini*) conks on Douglas-fir, ponderosa pine, Jeffrey pine, lodgepole pine, or more than one on true fir or hemlock.
- One or more quinine (*Fomitopsis officinalis*) conks on Douglas-fir, pines, western larch, spruce or hemlock.
- One or more sulfur fungus (*Laetiporus sulphureus*) conks on a wide range of conifers and hardwoods, including Douglas-fir, true firs, pines, hemlocks, spruces, larch, western redcedar, oaks, maples, birch and willow.

**Medium (2 points)**

- *P. schweinitzii* conks without associated with butt swell on Douglas-fir.
- Fewer than five red ring rot (*P. pini*) conks on Douglas-fir, ponderosa pine, Jeffrey pine, lodgepole pine, or one on true fir or hemlock.
- Incense cedar pecky rot conks (*Oligoporus amarus*) conks on incense cedar greater than 150 years old.

**Cankers**

**High (3 points):**

- Cankers with associated fruiting bodies of decay fungi.
- Cankers with associated internal decay.
- Canker physically connected to a crack or other defect.
- Single or multiple cankers without decay over more than 1/2 of the tree's circumference, particularly if the cankers are between four feet above the groundline and the lowest live branch.
- Basal cankers in true fir that affect over 1/3 of the bole circumference.

**Cankers (cont.)****High (3 points):**

- Cankers in oak or tanoak caused by *Phytophthora ramorum* (ramorum canker or sudden oak death) that affect more than 1/3 of the bole circumference, or have associated decay fungi, ambrosia beetles or bark beetles.
- Deep charring in true fir over more than 1/3 of the bole circumference when the relationship between deep char and cambial mortality has been confirmed.
- Deep charring in sugar pine, ponderosa pine, Jeffrey pine, incense cedar or Douglas-fir over 1/2 of the bole circumference when the relationship between deep char and cambial mortality has been confirmed.

**Medium (2 points):**

- For all species other than true fir, single or multiple cankers without decay that affect less than 1/2 of the tree's circumference (including fire-caused cankers).
- For true fir, single or multiple cankers without decay that affect less than 1/3 of the bole circumference (including fire-caused cankers).
- For oak or tanoak, cankers caused by *Phytophthora ramorum* (ramorum canker or sudden oak death) without associated decay, ambrosia beetles or bark beetles that affect less than 1/3 of the bole circumference.
- A large old wound or canker with no decay at the base of a leaning tree.

**Low (1 point):**

- True fir with bole swelling from dwarf mistletoe with no bark sloughing or evidence of decay.
- Lodgepole pine or ponderosa pine with basal (hip) cankers from western gall rust with no bark sloughing or evidence of decay.
- Lodgepole pine or ponderosa pine with elongated stalactiform rust cankers covering less than 1/3 of the bole circumference.

**Dead Tree, Top Or Branches****Extremely High (4 points):**

- Dead tree.

**High (3 points):**

- Dead top greater than ten feet long or smaller ones with associated decay or other defect (note that old dead tops of pine, incense cedar, juniper or Douglas-fir may not have high failure potential).
- Dead branches greater than two inches in diameter, branches that are hanging or lodged in the crown, large dead dwarf mistletoe brooms and large live dwarf mistletoe brooms with associated decay or defect.

**Medium (2 points):**

- Dead tops less than ten feet long with no associated decay or other defect (note that old dead tops of pine, incense cedar, juniper or Douglas-fir may have lower than medium failure potential).
- Any branch greater than two inches in diameter and more than 2/3 dead (remove the entire branch).
- Live dwarf mistletoe brooms with no associated decay or other defect (monitor closely).

**Low (1 point):**

- Old spike tops in pine, incense cedar, juniper or Douglas-fir that give evidence of long-term persistence.

**Bark and/or Wood Boring Beetle-Attacked Trees****High (3 points) If any of the following over at least 1/3 of the bole circumference (excluding basal attack by red turpentine beetle):**

- Pitch tubes with pink or reddish (not clear) boring dust.
- Pouch fungus conks and/or current woodpecker (not sapsucker) activity.
- Boring dust or frass in bark crevices, webbing along the bole, or accumulation of boring dust or frass at the base of the tree.

**Bark and/or Wood Boring Beetle-Attacked Trees (cont.)****High (3 points):****If tree has significant bark and/or wood boring beetle activity, as indicated by:**

- 50% or more of the foliage-bearing crown actively fading, as indicated by a uniform change in color over that part of the crown. Dead tops that have no foliage do not count toward this 50%. Also does not include drought-induced needle cast (non-uniform fading restricted to the older needles) or branch mortality ("flagging") caused by dwarf mistletoe/*Cytospora* infections in true fir.

**Root Damage and Root Disease****High (3 points):**

- Recently leaning trees, or with recent root-lifting, soil movement or mounding near the base, or with broken/decayed roots.
- Inadequate root support, with more than half of the root system within the drip line severed, broken, undermined or decayed by erosion or excavation.
- Host tree species visibly infected with root disease fungi, adjacent to visibly infected trees or stumps, or with advanced crown symptoms in the immediate area where Heterobasidion root disease has been identified.

**Medium (2 points):**

- Less than 1/2 of the root system within the drip line severed, broken, undermined or decayed by erosion or excavation.
- Host tree with few or no crown symptoms within 50 feet of a confirmed root disease-infected tree or stump or within 50 feet of a host tree with advanced crown symptoms.

**Leans and Poor Tree Architecture****High (3 points):**

- Leaning with an angle greater than 45° from vertical.
- Leaning with other contributing defects.
- Freshly leaning tree with recent root lifting, soil movement or mounding near the base.
- Lean associated with unstable soils or cracks in the tree.
- Uncorrected lean compounded by unbalanced crown shape weighted in the direction of the lean.
- Uncorrected lean at a location with frequent storm or wind injury.

**Medium (2 points):**

- Uncorrected lean with an angle between 10° and 45° from vertical without other contributing defects. Monitor closely for changes in the lean.
- Branches with a twist, sharp angle or bend.
- Branches that are lopsided or unbalanced with respect to the rest of the crown, especially if nearby trees were pruned or removed within the last ten years.