

CENTRAL HARDWOOD NOTES

Trunk Decays

Trunk decays are major causes of low quality wood-wood with little or no economic value. As a forest practitioner you should be able to recognize trees at high risk for decay and remove them if timber production is your primary objective. Remember, however, that decayed trees often develop into den trees or nesting sites and provide essential habitat for wildlife.

Wounds and dead branches and roots start the processes that can lead to trunk decays. Even though decay is a natural process, much can be done to prevent, assess, regulate, predict, and detect trunk decays in trees that are not over-mature. Start by preventing wounds, pruning properly, and detecting and assessing internal defects accurately.

Preventing Wounds

You should try to prevent wounds by minimizing logging and fire damage, keeping increment borers out of trees, and developing and managing recreation sites carefully. When you construct roads and trails or manage wildlife and grazing areas, avoid injuring trunks and roots as much as possible.

Prune Properly

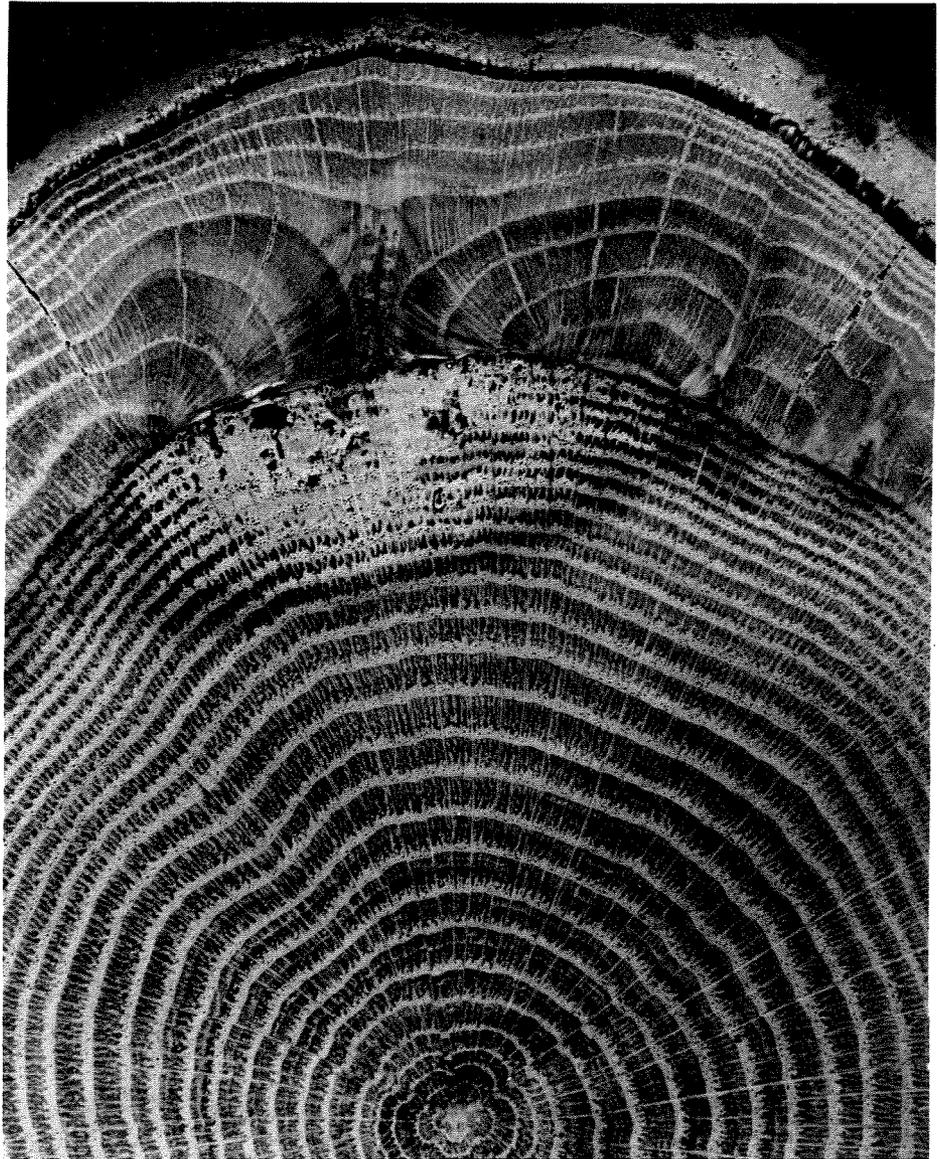
Remove living, dying, and dead branches in such a way that the “collar” at the branch base is not injured or removed. The collars should not be removed to make a cut flush with the trunk or joining stem. Flush cuts are major causes of serious defects: discolored wood, decayed wood, wetwood, resin-soaked wood in conifers, shakes and radial cracks, cankers, and areas of weakened wood above and below the wound that may be easily infested by insects. Also, do not leave stubs! Do not paint the cuts! (See Note 6.09 Pruning Central Hardwoods.)

How Trees Resist the Spread of Pathogens

Unlike animals, which restore injured and infected cells through a process called healing, trees can only “compartmentalize” infected wood by forming new wood cells in new spatial positions. The tree survival system depends upon forming protective boundaries to resist the spread of pathogens. The boundaries also defend the liquid transport, energy storage, and mechanical support systems of the tree. The boundaries are made up of protective chemicals, and in some cases after wounding, the cell arrangements are altered to form protective boundaries.



The root and butt injuries on this black walnut have ruined the most valuable part of the trunk. Logging wounds must be reduced.

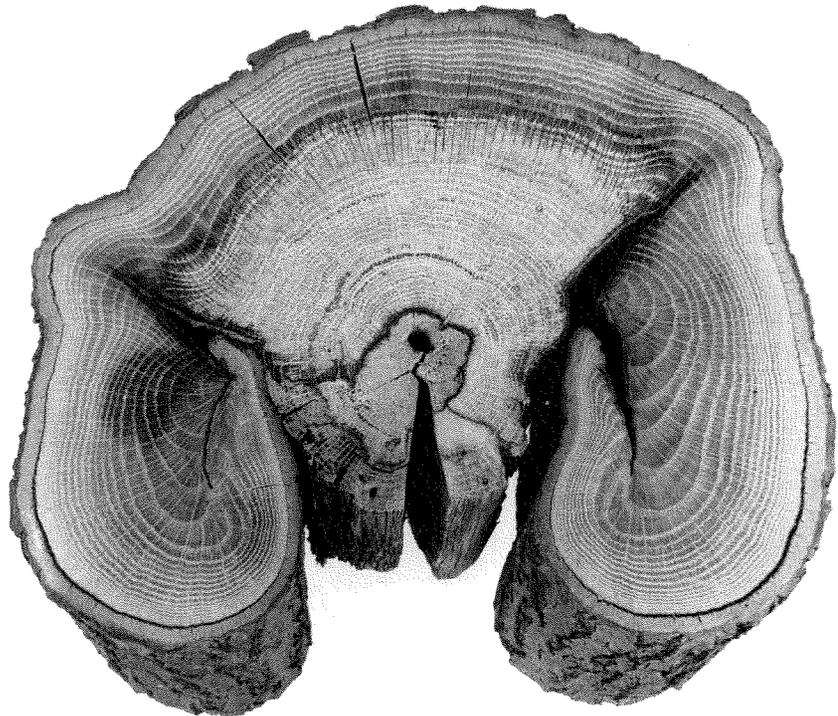


The Q-year-old wound in this northern red oak was well compartmentalized. The decayed wood was surrounded by a protective boundary of discolored wood. The wood that formed after the wound was inflicted was not infected by the wood-inhabiting pathogens.

Which Defective or Decayed Trees Should You Remove?

Here are some general guidelines for detecting and assessing decays and other internal defects in trunks:

1. Wounds at groundline and below living branches are associated with less defect than wounds at 1 to 3 meters above ground.
2. Wounds that are deep or wide, or both, are associated with more defect than wounds that are shallow, or long in a vertical plane.
3. Wounds directly above or below other wounds or old branch stubs are associated with more defect than wounds elsewhere on the trunk.
4. Wounds with hard, bleached surfaces are associated with less defect than wounds with dark, soft surfaces.
5. Wounds inflicted during leaf formation and leaf shedding will lead to more defects than similar type wounds inflicted at other times.
6. Wounds inflicted in the spring during the onset of growth will have larger callus "ribs" than wounds inflicted at other times. But, callus formation is not associated with development of decay. When callus formation is too rapid, the callus ribs turn inward and form a "ram's horn." When this occurs, the wound never closes, creating conditions perfect for wood-inhabiting pathogens.



The wound on this northern red oak not only led to a large column of decayed wood, but the callus turned inward and caused the wood to crack in vertical planes. When such vertical cracks break outward to the bark, frost will be blamed. Frost does not start "frost cracks;" wounds do.

7. Wounds treated with wound dressing often form large callus ribs that turn inward to form "ram's horns." There are no data to show that wound dressings stop decay.
8. Wounds oozing fluids indicate internal wetwood, a disease caused by bacteria. wetwood is difficult to dry for products.
9. Wounds with fungi fruiting bodies-conks or sporophores-are associated with advanced decay. When many conks are present the entire trunk will be decayed. Conks on wounds from 1 to 4 meters above ground are associated with large columns of decay. Conks at groundline indicate decay in roots and in the trunk to at least 2 meters height. Conks on a swollen butt indicate decay to at least 3 meters height. Conks on a swollen butt with cracks indicate decay, wetwood and cracks to at least 4 meters height. Conks near large hollows indicate decay and wetwood to at least 5 meters height. Removing conks will not stop or stall decay. Be alert for conks or sporophores that grow for only a short time on the wound surface. Often the dried remains of the sporophores will be on the wound surface or on the ground near the tree base.
10. Wounds on roots indicate decay in the base of the trunk. Be alert for the fresh or old mushrooms of the shoestring root rot or "honey" mushroom. Other indicators are wet spots or water-soaked areas at the tree base. Basal decay may spread to 2 meters above ground on old trees.
11. Wounds with vertical cracks above and below them indicate internal decay and ring shakes. Ring shakes are circumferential cracks or separations.
12. Vertical cracks on the trunk indicate ring shakes, star shake, heartshake, and wetwood. Trees with many internal cracks cannot be used for valuable wood products.
13. Sapsucker (birds) wounds cause streaks of discolored wood and ring shakes.
14. Cankers with hard, bleached surfaces indicate very little defect above and below. Cankers with sunken surfaces and margins indicate long columns of advanced decay. Such cankers are called canker rots. To check for canker rots, cut into the surface of the canker. If compact fungus material is present, the defect is a canker rot. Often old conks from the canker can be found on the ground. Canker rots may also be centered about old branch stubs. The stubs may be swollen to form a round structure, or the canker may be long vertically to form a spindle-like canker. Trees with canker rots should be cut as soon as possible.
15. Broken tops or trunk leaders leave a stem stub. Decay associated with stem stubs will develop downward, and the diameter of the column of decayed wood will be the diameter of the stem when it died.
16. Trees with many decayed branch stubs will have many internal columns of discolored and decayed wood. wetwood and ring shakes may also be associated with old branch stubs. Stubs between the 2 and 4 meter portion of the trunk are associated with the largest columns of defect.
17. Basal cracks or collar cracks indicate root and butt decay that may spread to 2 meters or more above ground. Trees with many basal cracks should be cut as soon as possible.

18. Old fire wounds are often associated with swollen butts, internal cracks, and advanced decay to 3 or more meters above ground.
19. Increment borer wounds are associated with long streaks of discolored and decayed wood.

References

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