Basic Tree Risk Assessment: A Process for Evaluating Decay

1 Is decay present?

Potential indicators of decay:

- old wounds and injuries
- response growth swellings
- cracks and seams
- oozing
- dead or loose bark
- sunken areas in the bark

Definite indicators of decay:

- cavity openings
- nesting holes
- bee hives
- fungal fruiting structures
- ants (e.g., Carpenter ants)

2 What is the severity of decay?

Basic assessment tools and techniques:

- sounding
- probing

Evaluate the following:

Load:

- crown area and density
- crown live ratio
- wind
- precipitation (e.g., rain, ice, snow)
- load direction and location
- response growth to load
- length of lever arm

Location of decay:

- location (e.g., heartwood, sapwood, basal, root)
- in relation to cross-section (e.g., center, off-center, cavity opening)
- in relation to defect or condition (e.g., between codominant stems, tension side of lean)

Species profile:

- capability to compartmentalize
- wood density
- failure patterns

Response growth to decay:

- type of response growth (e.g., tension, compression, flexure wood, woundwood)
- amount of response growth (e.g., significant, minor, none)
- vigor of tree (consider tree species and age)
- age of tree wound or condition

Fungal profile:

- type of decay (e.g., white rot, brown rot, soft rot)
- aggressiveness of fungal species
- ability to penetrate Wall 4 of CODIT

Tree health:

- vigor of tree (consider tree species and tree age)
- dieback
- opacity
- live crown ratio

3 How does the severity of the decay impact the likelihood of failure?

Increased likelihood of failure:

- significant load
- poor tree health
- insufficient response growth
- poor ability to compartmentalization
- aggressive fungal species
- critical location of decay to tree defect or condition

Decreased likelihood of failure:

- minor load
- good tree health
- significant response growth
- significant capability to compartmentalize
- slow aggressiveness of fungal species
- location of decay has minor impact on tree defect or condition

Source: Christopher J. Luley, Ph.D., Urban Forestry LLC