

## **Factors Influencing the Rate of Deterioration**

Many factors affect the rate of wood deterioration, including:

**Species** - The tree species is the most important factor affecting the rate of deterioration, and bark thickness is the most important species characteristic related to deterioration.

**Bark thickness**— Thin-barked species crack more quickly and extensively within the first year than thick-barked species because the wood of thin barked species dries more quickly within the first year than thick barked species. Thick bark tends to delay cracking by 1 year.

**Proportion of sapwood to heartwood**— Sapwood holds more moisture and contains fewer anti-fungal substances than heartwood, so it decays more rapidly than heartwood. The proportion of sapwood to heartwood, which is a function of species and age, is the second most important characteristic after tree species influencing the rate of deterioration. Tree species with a higher proportion of sapwood deteriorate. Younger trees, with a high proportion of sapwood, generally deteriorate more rapidly than older trees.

**Diameter of trees or logs**— Small-diameter logs usually deteriorate faster than large-diameter logs, and upper logs deteriorate faster than basal logs, again because of the greater proportion of sapwood.

**Rate of growth**— Trees that grow rapidly decay more quickly than trees that grow slowly. The rate of growth, or width of the annual rings, influences the deterioration rate in both the sapwood and heartwood of conifers. Rapidly grown heartwood deteriorates more rapidly in the radial direction than slower grown heartwood.

**Weather**— Dry, hot summers and low humidity result in more drying and wood shrinkage, and thus more weather checking. The faster wood dries, the more cracking occurs.

**Stand history**— Preexisting damage or disease in the stand, stand density, and drought are factors that can affect the rate of deterioration.