Identifying External Defects on Logs

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Log Defects

- External log defects provide a map to the interior quality to the tree.
- Defects on most tree species will remain visible for many decades.
- But, the appearance will change over time.
Knot Defects

- Knot defects are the most common defect type.
- There are several varieties.
A sound knot is a branch stub resulting from either a break or pruning or natural sloughing.
Sound Knots

What you see at the surface is a good indicator of the internal defect.
Sound Knots
Sound Knots
Sound Knots
Sound Knots
Overgrown Knots

An overgrown knot is simply the sound knot that has been overgrown or encapsulated within the tree.

Technically, the defect is referred to as an overgrown knot as long as surface rise is present.
Overgrown Knots
Overgrown Knots
Overgrown Knots
Overgrown Knots
Unsound knots

If the tree was unable to overgrown the branch stub before decay started, an unsound knot is formed.
Unsound Knots
Unsound Knots
Unsound Knots
Unsound Knots
Unsound Knots
Unsound Knots
Clustered Knots

- Common to find 2 or more knots of the same or different types clustered tightly together.
Clustered Knots
Clustered Knots
Clustered Knots
Clustered Knots
Clustered Knots
Bumps

90% of bumps contain a branch stub
Bark Distortions

If a knot is overgrown to the point it becomes flush with the surface of a log, it is referred to as a bark distortion.

Can also be caused by wounds and insects.

Three degrees:

- Heavy
- Medium
- Light
Bark Distortions

The shape of the distortion gives a good estimate of the encapsulation depth of the interior defect.
Heavy Distortions

Heavy distortions characterized by unbroken circular texture.
Heavy Distortions
Heavy Distortions
Heavy Distortions
Heavy Distortions
Heavy Distortions
Heavy Distortions
Medium Distortions

Characterized by a break in the circular distortion pattern.
Medium Distortions
Medium Distortions
Medium Distortions
Medium Distortions
Medium Distortions
Medium Distortions
Light Distortions

Characterized by multiple breaks in distortion pattern.
Light Distortions
Light Distortions
Light Distortions
Light Distortions
Adventitious Buds

- Many of the knot defects are caused by adventitious buds and buds clusters.
- Most often found in clusters.
Adventitious Buds
Adventitious Buds
Adventitious Buds
Bird Peck

QuickTime™ and a decompressor are needed to see this picture.
Wounds
Wounds
Wounds
Wounds
Wounds

QuickTime™ and a decompressor are needed to see this picture.
Holes

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Lesions

- A stem lesion is a relatively localized, spindle-shaped necrotic canker consisting primarily of bark and cambium.
- A stem lesion starts as a small area of dead bark resulting from a wound.
Lesions
Galls

A area of greatly modified woody tissue that appears on tree branches or stems in response to irritation by an alien organism—commonly, bacteria, fungi, or insects.

Sometimes called a tumor.
Defect Severity

- Adventitious branches, low bumps, and light distortions, are not considered degrade defects on Factory grade logs.
- Depending on the defect type, severity, and occurrence, it can give products from the tree more character.
Where to go for more…

See Handouts:
- Grade Defects in Hardwood Timber and Logs
- Hardwood Log Defect Photographic Database.
- Michigan Tech: [http://forest.mtu.edu/research/hwbuck/hardwood_defects/photo_gallery.html](http://forest.mtu.edu/research/hwbuck/hardwood_defects/photo_gallery.html)
- Publications by Al Shigo, US Forest Service
Questions