Aspen Damage Codes

Adapted from: Brown, Shauna Rae, Ecologist, Fishlake NF. ***2003 Sanford Fire Aspen Monitoring Report Powell Ranger District, Dixie National Forest***

Note: The only changes made are highlighted in yellow, i.e., Damage Code 3 substitutes a combination of leader(s) browsed and branches stripped for "Basal Stem Wound"

Suckers are tallied based on the damage (if any) that was most likely to affect the future vigor of the tree. For example, if a sucker has an uninfected stem wound (damage code 6) and the terminal leader is browsed (damage code 1), then code the stem as browsed (damage code 1). If the wound is infected, code the stem wound instead (damage code 6).

Damage Code 0 - No Damage

This healthy, undamaged stem was just emerging in early summer (June 2001) following the Oldroyd Fire that burned the area in July and August 2000.

This tall stem is nearly undamaged. There are a few holes and tears in some of the leaves as a result of a recent hailstorm, but otherwise the stem is healthy and undamaged. This stem would have been tallied as undamaged.

Damage Code 1 - Browsing

Stems and or branches lack a terminal bud and end bluntly. Notice also that the bark is frayed at the wound.

Damage Code 2 - Branches Stripped

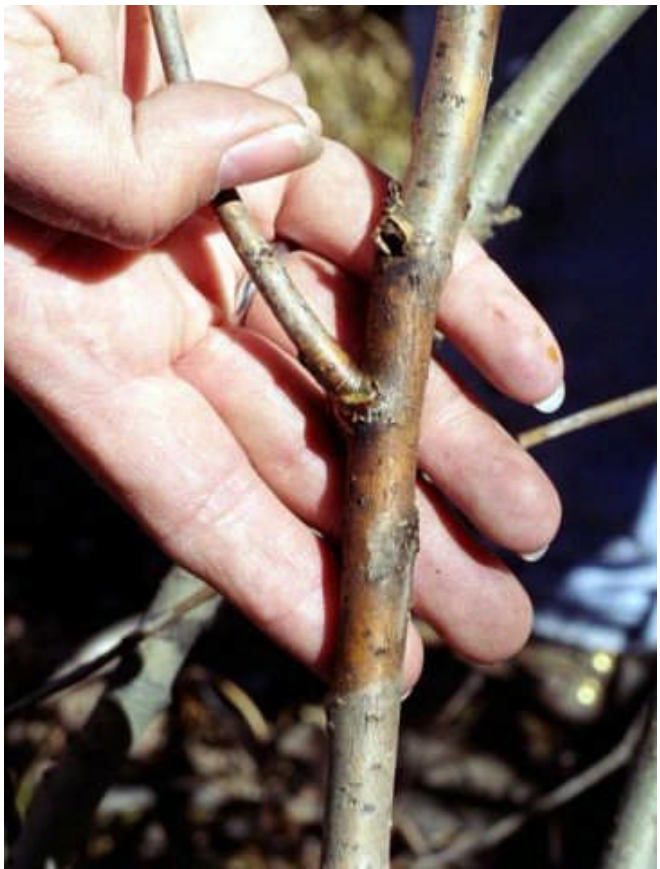
Notice that all of the leaves are missing and that there aren't any leaves on the ground. As animals strip the leaves from the stem, often the petiole (leaf stem) remains attached. If this had been late fall, there would have been many gold, yellow or reddish leaves on the ground. The ruler in the picture shows that most of the stems were nearly 3 feet tall.

Damage Code 3 = Branches browsed and stripped

Damage Code 4 – Frost

Notice how most of the leaves are brown, but the stem is predominately green. This frost damage was due to an unseasonable snowstorm that occurred in early July 2001.

Damage Code 5 - Disease



The orange-ish colored region along the stem is disease. If you look on the tip of the little-finger, you can see a dot of orange, which wiped off the stem as I was trying to handle the stem. Although it is difficult to see, the wound was actively weeping the orange-ish discharge. The disease pictured is Cytospora canker, the most common fungus found on quaking aspen throughout its range (Hinds 1985).

Damage Code 6 - Stem Wound

This stem wound was actually a damage code 6 stem wound. Notice that this wound has scarred over to nearly cover the place where the damage occurred. Basal stem wounds look similar, but usually occur as a result of animals stepping on the stem and scraping the stem's thin bark.

Damage Code 7 - Dead Leader

Notice that the top ends, or leaders, of these stems are brown. All of the dead leaders also showed browsing signs on their tips. This photo was taken in late October 2001 in the middle of the Oldroyd Fire scar. These stems had regenerated from the dead aspens' root system, which is why they are called suckers.

Damage Code 8 - Mortality [Dead stem]

This stem was dead when I found it, and was pulled completely out of the ground by either an elk or bovine. Notice that there aren't any roots, which was due to the sucker breaking free of the parent lateral roots during browsing/grazing. Most stems coded "8" are found standing and usually lack leaves. The only time "mortality" is coded is when one is interested in determining the total number of stems regenerated following a disturbance.

Damage Code 9 - Insects

Notice that some of the leaves have holes in them. There were lots of grasshoppers jumping and flying around this site, so the damage was probably due to them. Insects can also bore into the stems, and following emergence can leave a row of stem wounds on the upper-facing portion of stems. See also *Damage Code 6 - Stem Wound* shown above.

Damage Codes 10 - Snow Break, and 11 - Rodents

I didn't see either of these two damage types. Presumably, snow break would break the main stem, or leader, of the aspen. Rodent damage would probably be partially identifiable by a nearby animal hole, or lifted up/disturbed soil under the stem.

Photo Credits:

Damage codes 0, 1, 3, 4, 8, and 9 were taken by the author. Damage code 2 was taken by Ronald Sanden, Silviculturist, Fishlake National Forest. Damage codes 5 and 7 were taken by Robert B. Campbell, Forest Ecologist, Fishlake National Forest.

Reference:

Hinds, Thomas E. 1985. Diseases. Pages 87-106. *In*: DeByle, Norbert V.; and Winokur, Robert P. (editors). Aspen: ecology and management in the western United States. USDA Forest Service GTR-RM-119. Fort Collins, Colorado. 283 p.