

Identification of Woody Plants in Winter

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CHARACTERISTICS TO OBSERVE

Bark- the outermost layer of a twig or branch composed of dead (phloem) cells. Bark has distinctive characteristics, which can be observed year round, Young twigs are not yet covered by bark though they have their own traits.

Bark Characteristics

- Color
- Fissures
- Texture
- Distinctive patterns
- Peeling bark
- Exfoliating plates
- Thickness
- Organisms that grow on bark include
 1. Lichens
 2. Fungi
 3. Mosses

Twigs- the terminal portion of a branch, the youngest section of a woody plant.

1. Younger twigs are frequently hairy (as a protective substitute for bark)
2. Twigs may redden in winter (due to formation of anthocyanins)
3. The initial color of twigs deepens through the years

Twig Characteristics

- Color
- Odor and taste (especially the smell of wintergreen or sassafras)
- Pubescence, waxy coating or other protective layer
- General appearance- shape and texture

Pith- the central portion of a twig, generally a different color than the surrounding tissue. They come in a variety of shapes such as round or star-shaped as seen in cross-section. The color is easily observed with the twig cut in longitudinal section.

Pith Forms

- Continuous; homogenous- uniform pith
- Continuous; diaphragmed- pith interrupted in intervals by walls
- Spongy- with small regular cavities and a spongy texture
- Chambered- hollow except for transverse walls

Lenticels- are prominences on twigs where there is an exchange of gases with the atmosphere (breathing spaces). They come in an array of shapes and may be distinctive (as with cherry and elder).

Buds- the growing point on a woody plant. They are formed in spring and lay dormant until the following spring when they open. The only time buds are not observable is in spring when the current buds are expanding and the following years are not yet formed.

Bud Characteristics

Color, General shape, Pubescence, Resin or wax, Size

Buds- two main types

1. Terminal and pseudoterminal buds
2. Lateral (or axillary) buds

- **Terminal and pseudoterminal buds**- occur on the apex (tip) of branches.

- 1) **Terminal buds**- after these buds are formed, no more growth will occur beyond this point.
- 2) **Pseudoterminal buds** or false terminal bud- have the appearance of a true terminal bud, though they are often off-center. Growth may occur beyond this bud, but the twig will have died and appear withered. When this branch falls off a branch scar may be visible next to the bud.

- **Lateral (axillary buds)**- occur below the tip of the branch

- 1) These buds occur in the leaf axils
- 2) The lateral buds (along with the leaf scars) will be either alternate, opposite, or whorled along the branch.
- 3) Accessory buds may occur alongside lateral buds. The true lateral bud is directly over the leaf scar

Accessory buds- two types

- **Collateral buds**- are either to right or left of the lateral buds
- **Superposed buds**- are above the accessory bud

Bud scales- are generally modified leaves, which appear scale-like, and surround the embryonic bud for protection. It is usually the bud scales that you are observing when looking at a bud. The bud scales (as well as the bud itself) vary in size, shape, number, arrangement, color, and texture.

Bud scales come in a number of arrangements

1. **Imbricate**- overlapping each other
2. **Valvate**- side by side (usually 2)
3. **Single**- covered by a single bud scale
4. **Naked**- lacking scales but have modified rudimentary leaves

Bud scale scar- when the bud scales fall off during spring growth, they leave a ring(s) around the twig. The intervals between these sets of rings indicate how old the branch is. These scars are more easily seen on younger stems before thicker bark obscures the scar.

Leaf scar- this is the point where a leaf was formerly attached to the stem. It is more observable on younger branches. The size and shape of this scar is indicative of the shape and size of the leaf at the point of its attachment (i.e., a large petiole leaves a large leaf scar). As deciduous trees prepare to drop their leaves, a corky layer develops between the leaf and stem thereby cutting off the flow of nutrients between the two. This is the abscission layer, which leads to the change in leaf color before the leaf drops off.

Bundle scars- are the scars left from where the vascular bundle (xylem and phloem) enters the leaf from the twig or branch. They are within the leaf scar and come in a range of numbers and shapes. Some are more discernable than others and a loupe may be handy here. Look for them in the newest leaf scars.

Branch scars- are the scars left over after a branch has broken off at the base of a pseudoterminal bud. Sometimes the withered branch remains. These will have concentric rings (if detectable) inside the scar rather than bundle scars.

Fruit and seed- many plants hold onto their fruits and seeds through the autumn and winter. These range from Viburnum fruits to maple samaras and conifer cones. Also look on the ground near the plant for the fruit, seed or remnants, realizing that just because it is under the plant doesn't mean it fell from it.

Spur shoot- a short usually stocky branch that grows very slowly and is crowded with leaf scars. Easily seen on apple and pear trees.

Stipule scar- stipules are leaf-like appendages occurring around the twigs and leaves of certain plants. After they fall off they leave a characteristic, generally thin, slit-like scar around the leaf scars, and may encircle the branch.

Thorns and Spines- are the sharp projections protruding from a number of plants. Both are very useful in identification.

1. **Thorns-** are modified branches that are generally stout. They may be branched or unbranched.
2. **Spines (or prickles) -** are modified stipules, leaf blades or outgrowths of the cortical tissue and are generally less stout than thorns.

Galls- are diverse structures found on woody plants, produced by insects and other organisms. They are often obvious and come in a huge range of forms. Some galls are non-specific and can be found on a variety of plants, while others are quite specific to one genus or species. Galls such as the Canadian goldenrod gall and the pine-cone willow galls are hallmarks to these plants.

Overall shape of tree (silhouette) - When trees shed their leaves, their basic shape becomes apparent-this is their silhouette. They are distinctive, from the sturdy form of the oak to the cascading branches of the elms. Once one learns to recognize these shapes, identification becomes much easier from a distance.

Leaves at the base of a tree- look for leaves at the base of the tree in which they may have fallen from. A cautionary note, these leaves are often from other trees.

Ecological niche- plants generally grow in specific locations (i.e., near water, in acidic soils, etc.) and this trait can be used to narrow down the field of potential plants in any specific environment, by construing what plants may and may not grow there. This method speeds along the identification process considerably and helps fine-tune one's skills in deciphering and recognizing different ecosystems.