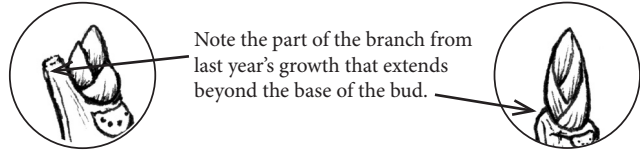


GLOSSARY

Terminal Bud: The bud formed at the tip of the twig

False Terminal Bud: A lateral bud that assumes the function of the terminal bud. When the growing tip withers or falls away, the closest lateral bud to the twig tip substitutes as a terminal bud



Note the part of the branch from last year's growth that extends beyond the base of the bud.

Bud Scales: Small scale-like structures that are modified leaves covering the bud during its winter dormancy

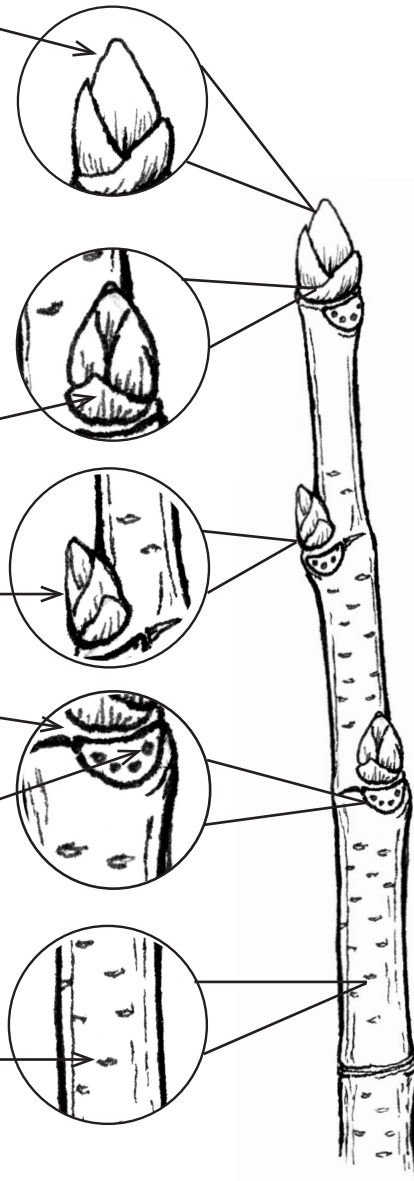
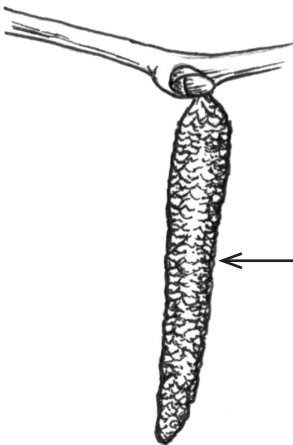
Lateral Bud: The buds formed on the side of a twig, not the bud at the end of the twig

Leaf Scar: A scar left on the twig when the leaf falls

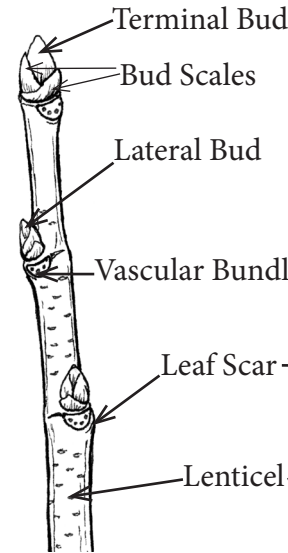
Vascular Bundle Scars: A small mark on a leaf scar indicating a point where a vein from the leaf was once connected with the stem

Lenticel: A small corky area or speck serving as a breathing pore

Catkin: A dense, cylindrical, often drooping cluster of flowers



WINTER TREE IDENTIFICATION KEY



False Terminal Bud

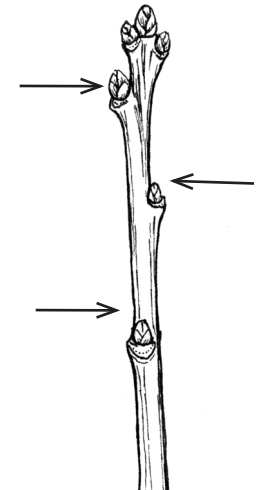
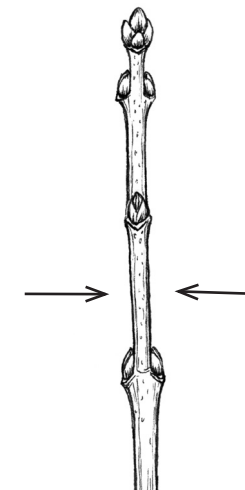
Note the part of the branch from last year's growth that extends beyond the base of the bud. This helps you determine whether a bud is a false terminal bud. It may be very noticeable or may be difficult to see without a hand lens.



KEY TO TERMS

1. Leaf scars opposite...Got to 2 OR 1. Leaf scars alternate...Go to 3

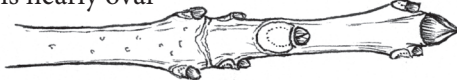


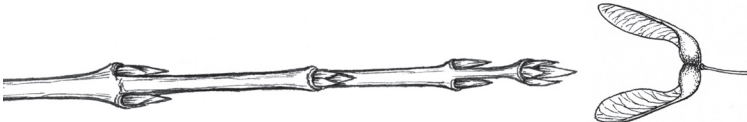
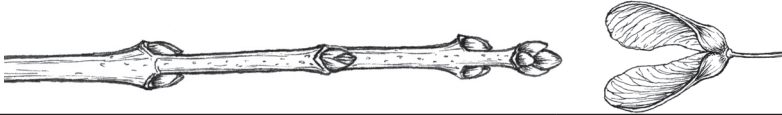
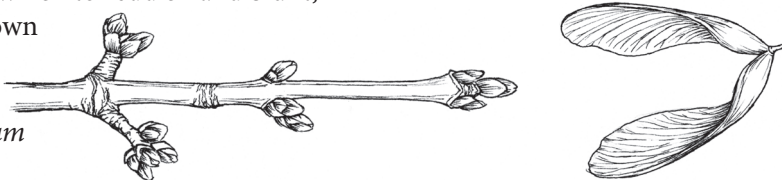
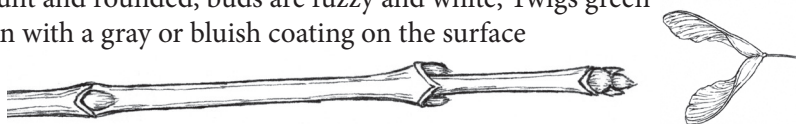
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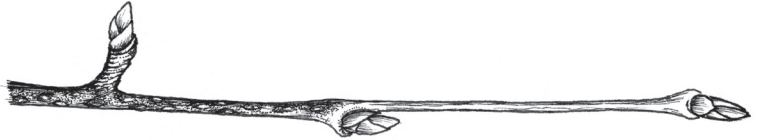
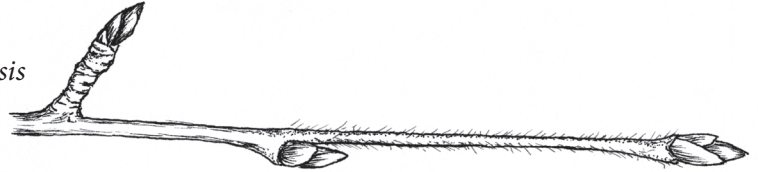







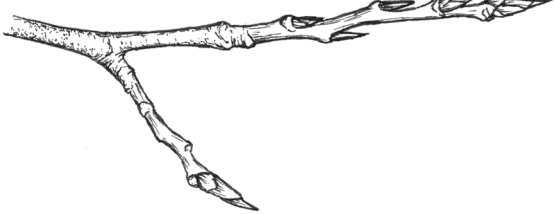




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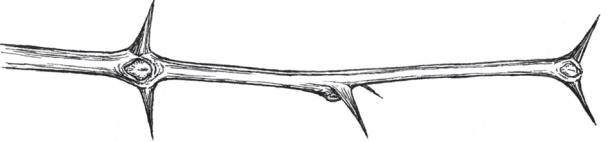
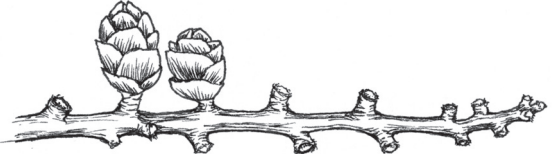
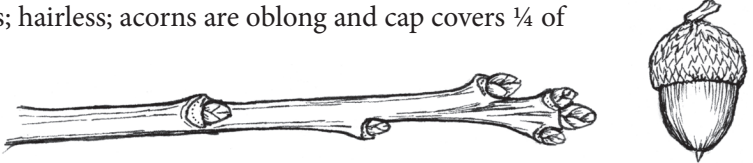
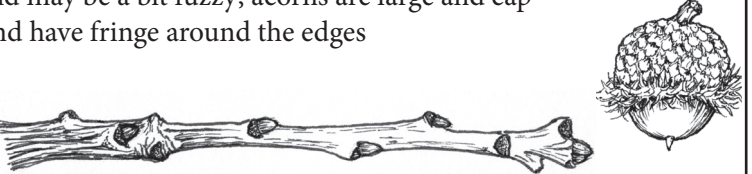
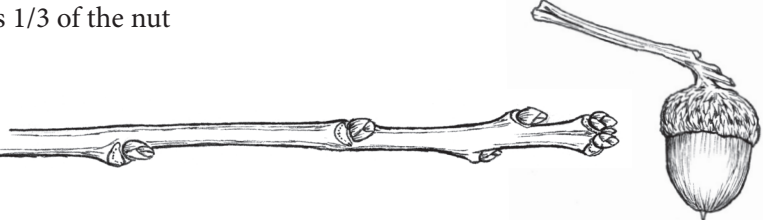


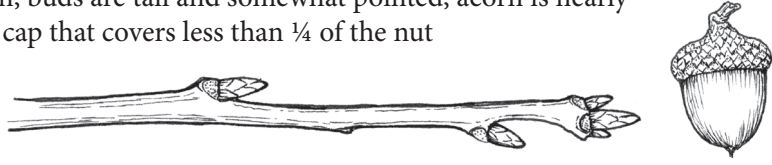

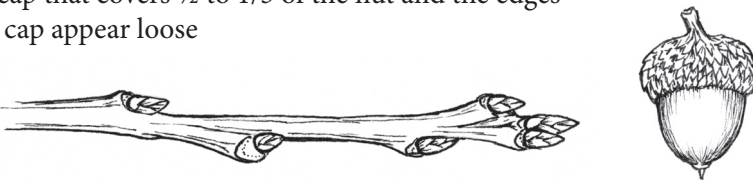


















LEAF-Wisconsin's K-12 Forestry Education Program
Wisconsin Center for Environmental Education
College of Natural Resources
University of Wisconsin-Stevens Point



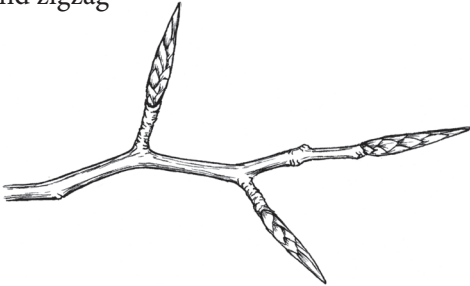


2	Vascular bundle scars are very numerous and joined in a line; buds are broadly rounded; twigs are fairly stout	Fraxinus Ash see 2a-c below
	2a. Terminal bud cone-shaped; first pair of lateral buds below the terminal bud are slightly below it on the branch; leaf scar is nearly oval <i>Fraxinus nigra</i> black ash	
	2b. Terminal bud is slightly cone-shaped; first pair of lateral buds below the terminal bud touch the bottom of the terminal bud; leaf scar is U-shaped and the lateral bud sits in the "notch" of the leaf scar <i>Fraxinus americana</i> white ash	
2c. Terminal bud is rounded; first pair of lateral buds below the terminal bud touch the bottom of the terminal bud; the leaf scar is oval <i>Fraxinus pennsylvanica</i> green ash		
2	Vascular bundle scars 3-7, separate and distinct; Leaf scars narrow and crescent-shaped; twigs fairly slender	Acer Maple see 2d-g below
	2d. Terminal bud quite pointy and brown; twigs gray or brown, slender and shiny with lighter lenticels <i>Acer saccharum</i> sugar maple	
	2e. Terminal bud reddish and blunt; leaf scars V-shaped; Twigs dark red with small lenticels <i>Acer rubrum</i> red maple	
	2f. Terminal bud brownish to reddish and blunt; Twigs reddish brown <i>Acer saccharinum</i> silver maple	
	2g. Terminal bud blunt and rounded; buds are fuzzy and white; Twigs green to purplish, often with a gray or bluish coating on the surface <i>Acer negundo</i> boxelder	

15	3 bud scales	Betula Birch See 15 a-c below
	15a. Not hairy twig, lenticels prominent; Buds brownish, acute; twigs straight; catkins often present; bark is reddish-brown with light lenticels on younger stems, later turning chalky to creamy white peeling in horizontal papery strips <i>Betula papyrifera</i> white birch	
	15b. Young twigs are hairy, older twigs smooth, shiny; catkins often present; bark often with wintergreen smell; bark is shiny bronze on younger stems peeling into thin papery strips <i>Betula alleghaniensis</i> yellow birch	
15c. Twig is slender and orangish-brown; bark is salmon to rust-colored on young stems, developing papery scales peeling with several colors visible <i>Betula nigra</i> river birch		
15	Many bud scales	Go to 16
16	Bud scales in two vertical rows; floral buds distinctly larger and rounder than foliage buds; no catkins <i>Ulmus sp.</i> elm species	
	Bud scales not in two rows; buds fairly uniform in size; bud tips point away from the twig; catkin usually present; seeds hang in clusters from branches and often stay on through winter <i>Ostrya virginiana</i> ironwood (hop hornbeam)	

	<p>11a. Gummy buds that are very pointy; buds about ¾ inch long; lenticels visible; twig is somewhat yellowish <i>Populus deltoides</i> cottonwood</p> 	
	<p>11b. Not gummy buds and they may be somewhat fuzzy; no lenticels noticeable, bud scales are hairy; leaf scars are heart-shaped; twigs are gray-brown <i>Populus grandidentata</i> big-toothed aspen</p> 	
	<p>11c. Buds may or may not be gummy and are reddish-brown; twigs are reddish-brown and may have gray waxy film <i>Populus tremuloides</i> trembling aspen</p> 	
	<p>11d. Gummy buds that are 1 inch long; reddish-brown twigs; lenticels visible and somewhat orange in color; buds have fragrant odor <i>Populus balsamifera</i> balsam poplar</p> 	
12	<p>Bud tips pressed against twig; twig light red-brown, zigzag, and have numerous light lenticels <i>Celtis occidentalis</i> hackberry</p> 	
12	<p>Bud tips not pressed against the twig</p>	Go to 13
13	<p>1 or 2 visible bud scales</p>	Go to 14
13	<p>3 or more visible bud scales</p>	Go to 15
14	<p>2 visible bud scales; buds smooth, rounded, reddish; twigs smooth, reddish or greenish gray, and zigzag <i>Tilia americana</i> American basswood</p> 	
14	<p>One hood-like bud scale; twigs often slender and flexible <i>Salix sp.</i> willow species</p> 	

3	<p>Twigs zigzag, red-brown, and armed with paired spines near the leaf scar <i>Robinia pseudoacacia</i> black locust</p> 	
3	<p>Twigs without spines</p>	Go to 4
4	<p>Leaf scars are densely clustered on very short peg-like spur branches; twigs slender and light brown <i>Larix laricina</i> tamarack</p> 	
4	<p>Leaf scars scattered along more or less elongate twigs</p>	Go to 5
5	<p>Terminal bud present</p>	Go to 6
5	<p>Terminal bud absent (false terminal bud)</p>	Go to 12
6	<p>Buds crowded near tip of twig</p>	Quercus Oak See 6a-f
	<p>6a. Short rounded buds; hairless; acorns are oblong and cap covers ¼ of the nut <i>Quercus alba</i> white oak</p> 	
	<p>6b. Twig is quite stout, yellow-brown and may have corky ridges; buds are small and rounded and may be a bit fuzzy; acorns are large and cap covers ½ of the nut and have fringe around the edges <i>Quercus macrocarpa</i> bur oak</p> 	
	<p>6c. Twig is light brown; buds are short and rounded; acorn is 1 inch long and cap covers 1/3 of the nut <i>Quercus bicolor</i> swamp white oak</p> 	

<p>6d. Twig is red-brown; buds are tall and somewhat pointed; acorn is nearly round with a flat cap that covers less than ¼ of the nut</p> <p><i>Quercus rubra</i> red oak</p> 												
<p>6e. Twigs slender red-brown and shiny; buds are pointed; acorns have caps that enclose 1/3 to ½ of the nut</p> <p><i>Quercus ellipsoidalis</i> northern pin oak</p> 												
<p>6f. Twig is stout and red-brown to grey-green; buds are large, buff-colored, pointed and fuzzy; acorns have cap that covers ½ to 1/3 of the nut and the edges of the scales on the cap appear loose</p> <p><i>Quercus velutina</i> black oak</p> 												
<table border="0"> <tr> <td>6a. </td> <td>6b. </td> <td>6c. </td> <td>6d. </td> <td>6e. </td> <td>6f. </td> </tr> <tr> <td>white oak <i>Quercus alba</i></td> <td>bur oak <i>Quercus macrocarpa</i></td> <td>swamp white oak <i>Quercus bicolor</i></td> <td>red oak <i>Quercus rubra</i></td> <td>n. pin oak <i>Quercus ellipsoidalis</i></td> <td>black oak <i>Quercus velutina</i></td> </tr> </table>	6a. 	6b. 	6c. 	6d. 	6e. 	6f. 	white oak <i>Quercus alba</i>	bur oak <i>Quercus macrocarpa</i>	swamp white oak <i>Quercus bicolor</i>	red oak <i>Quercus rubra</i>	n. pin oak <i>Quercus ellipsoidalis</i>	black oak <i>Quercus velutina</i>
6a. 	6b. 	6c. 	6d. 	6e. 	6f. 							
white oak <i>Quercus alba</i>	bur oak <i>Quercus macrocarpa</i>	swamp white oak <i>Quercus bicolor</i>	red oak <i>Quercus rubra</i>	n. pin oak <i>Quercus ellipsoidalis</i>	black oak <i>Quercus velutina</i>							
<p>6 Buds not crowded near tip of twig</p>	<p>Go to 7</p>											

<p>7 Leaf scars heart shaped</p>	<p>Go to 8</p>
<p>7 Leaf scars other than heart-shaped or are inconspicuous</p>	<p>Go to 9</p>
<p>8 Twigs stout with numerous light lenticels; buds large, conspicuous; large terminal bud slightly hairy; fruit has a tan husk that is distinctly 4-ribbed; bark “shaggy”</p> <p><i>Carya ovata</i> shagbark hickory</p> 	
<p>8 Twigs stout and light brown; Buds gray and fuzzy; leaf scar described as “monkey face”; Pith chambered; fruit has green husk that contains a round, black nut</p> <p><i>Juglans nigra</i> black walnut</p> 	
<p>9 Leaf scar inconspicuous, buds narrow, acute, ¾ to 1 inch long, lance-shaped; Many bud scales and they overlap; twigs slender and zigzag</p> <p><i>Fagus grandifolia</i> beech</p> 	
<p>9 Leaf scars visible although not all large</p>	<p>Go to 10</p>
<p>10 More than 3 vascular bundle scars; Buds dark red and sticky</p> <p><i>Sorbus americana</i> American mountain-ash</p> 	
<p>10 3 vascular bundle scars or scars not distinct</p>	<p>Go to 11</p>
<p>11 Vascular bundle scars often not distinct; leaf scars small and semi-circular; buds are small with glossy scales; twigs reddish brown to gray usually with short spur shoots on older growth; twigs sometimes bitter-almond taste</p> <p><i>Prunus serotina</i> black cherry</p> 	
<p>11 Vascular bundle scars 3 distinct dots; Leaf scars nearly semi-circular; Bud scales finely hairy, buds sometimes sticky; twigs without flavor</p>	<p>Populus see 11a-d Next Page</p>