

LEAF ARRANGEMENT

Alternate – Leaves or stems borne singly at each node (1 per node)



Alternate

Opposite – Leaves or stems borne across from one another at a node (2 per node)



Opposite

Whorled – Three or more leaves or stems arising at a node (3+ per node)



Whorled

Distichous – In two vertical ranks or rows on opposite sides of an axis (2-ranked)



Alternate and Distichous (2-ranked)

Decussate – Arranged along the stem in pairs with each pair at right angles to the pair above or below



Opposite and Decussate (leaves rotated 90° at adjacent nodes)



Opposite and Decussate

Fascicled – Arranged in a tight cluster or bundle



Fascicled

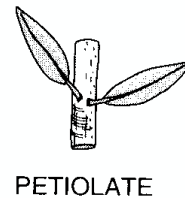
LEAF ATTACHMENT

Sessile – attached directly without a supporting stalk

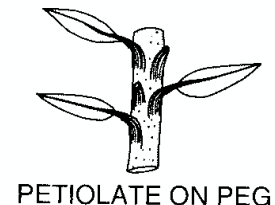
Sessile on a peg (sterigma) – abscission layer between sterigma and leaf blade (sterigmata persist on twig)



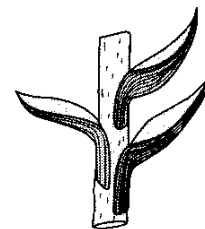
Petiolate – attached to the twig via a thin supporting stalk (petiole)



Petiolate on a peg (sterigma) - abscission layer between sterigma and petiole (sterigmata persist on twig)



Decurrent – extending downward from the point of attachment, as a leaf base that extends down along the stem

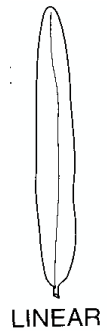


LEAF SHAPE

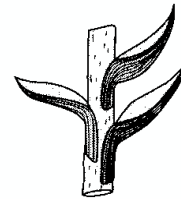
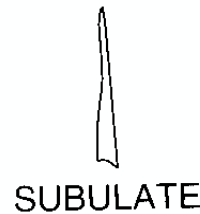
Acicular – needle-shaped, as the leaves of pine or spruce



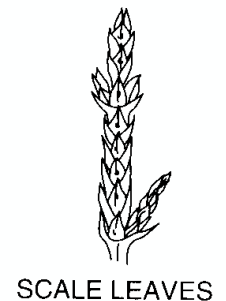
Linear – resembling a line; long and narrow with more or less parallel sides



Subulate – short, narrow, tapered, sharp-pointed; awn or awl shaped



Scale – small and often appressed to stem



BRANCH MORPHOLOGY

Node – point on stem where leaves or branch attached

Internode – the portion of a stem between two nodes

Leaf scar – the scar remaining on a twig after a leaf abscises

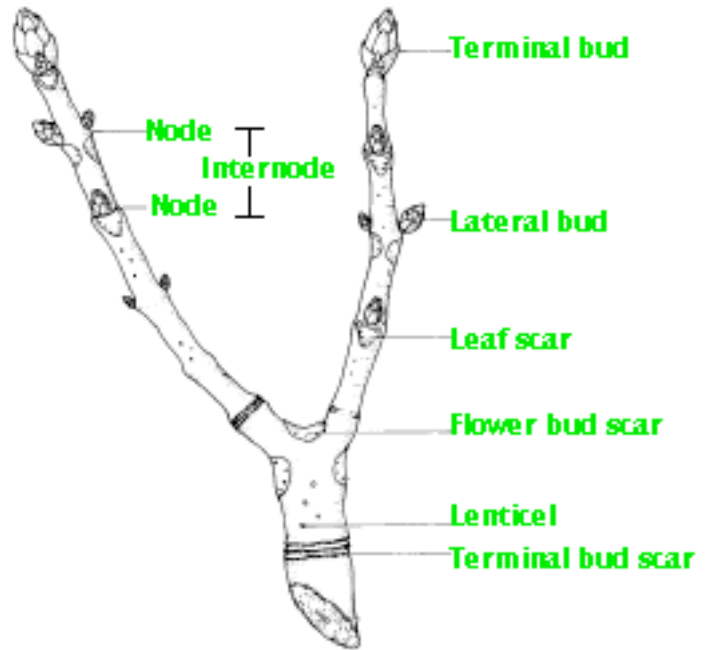
Bud – an undeveloped shoot

Terminal bud – bud that terminates the twig; lacking an associated leaf scar

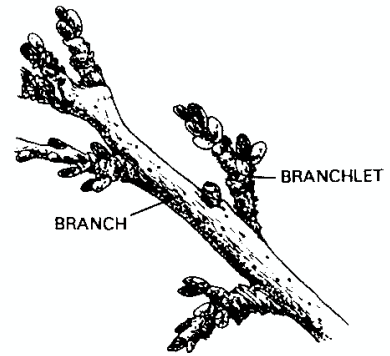
Lateral bud (axillary) – bud in the axil of a leaf

Bud scales – modified scale-like leaves covering a bud

Bud scale scars – the scar remaining on a twig after bud scales abscise following bud break (can be used to determine the age of a branch)

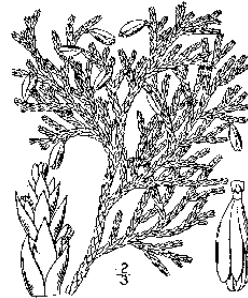


Branch – a major division of the stem or trunk



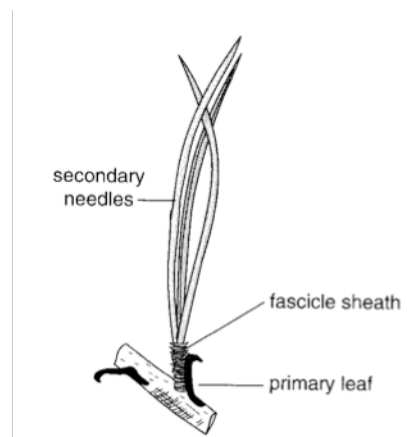
Branchlet – a small branch growing from a larger branch

Spray – flattened, frondlike branchlets as in some Cupressaceae

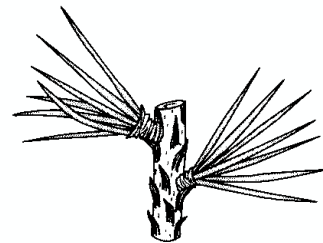


Spur – a short compact branch with no internode elongation; short shoot

Determinate short shoot – spur branch without a functional terminal bud



Indeterminate short shoot – spur branch having a functional terminal bud; may shift between short shoot and long shoot



INDETERMINATE SHORT SHOOT

SURFACE FEATURES

Glabrous – smooth, hairless

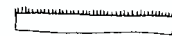
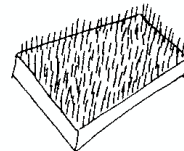
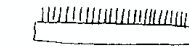
Glabrate (glabrescent) – becoming glabrous; almost glabrous

Glaucous – covered with a whitish (usually) waxy coating (bloom), as on the surface of a plum

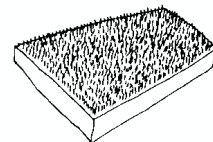
Glaucouscent – somewhat glaucous, becoming glaucous

Resinous – bearing resin and often, therefore, sticky

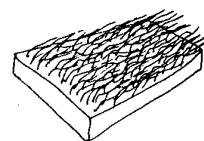
Pubescent – covered with short, soft hairs



Puberulent – minutely pubescent; with fine short hairs



Tomentose – with a covering of short, matted, or tangled, soft, wooly hairs



Unknown	Leaf Arrange- ment	Leaf Attach- ment	Leaf Shape	Surface features	Age of branch?
1					
2					
3					
4					
5					