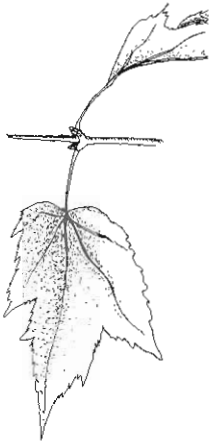




Highstead Log

Autumn News 1999



A. Opposite

Opposite, Alternate or Whorled

One of the most basic keys used to start the identification process for woody plants is the determination of the leaf arrangement. Leaf arrangement refers to the placement of leaves and buds along the branch.

An *opposite* arrangement describes two leaf stems or buds directly across from one another. *Alternate* describes leaf stems and buds as being staggered from side to side along the length of the branch. A third, but less common arrangement, is *whorled*. This refers to plants that have three or more leaves attached at the same point along the stem or branch.

Since most woody plants are alternate, and very few whorled, it is easiest to memorize those that are opposite. A helpful memory jogger created out of necessity by a group of botany students — or their instructor — forms an acronym of our commonly found opposites:

MAD Cap Horse

(*M*=maple, *A*=ash (and other members of the olive family), *D*=dogwood, *Cap*=Caprifoliaceae (the honeysuckle family which includes viburnum), and *Horse*=horsechestnut

The following plants all clearly exhibit one of these arrangements. Try to match each plant with the correct descriptive illustrated in the margin (answers are on the reverse page).

- | | |
|----------------------|--------------------|
| 1. Catalpa | 6. Mountain Laurel |
| 2. Horse Chestnut | 7. Sugar Maple |
| 3. Flowering Dogwood | 8. Common Lilac |
| 4. White Oak | 9. American Beech |
| 5. Buttonbush | 10. Nannyberry |

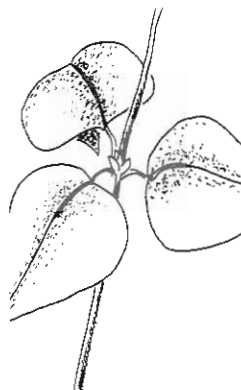
Measuring Up

If you were to measure the height of a branch from the base of a tree, how much higher would you expect to find that branch ten years hence? At the same level you originally had! It is the lack of upward growth from the base that supports the standardized measurement of trees at breast height.

In undertaking the *Woodland Management Demonstration* discussed in our spring newsletter, it was important to record not only the location of each tree, but the size as well, in order to establish a record for future comparison. Two methods of measurement used by the forestry industry are *diameter-at-breast-height* (DBH) and *basal area coverage* (usually expressed in square feet per acre). It is the relative ease with which

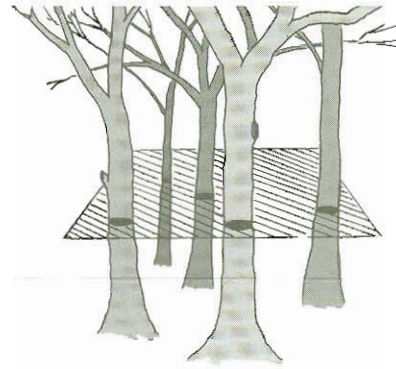


B. Alternate



C. Whorled

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Basal area coverage at 4 1/2 feet.

these measurements are obtained that helps to account for their popularity. It is interesting to note that the number of trees alone do not equate to greater basal area coverage. Using our woodland as an example, Plot C, which represents a thirty year old woodland, has 172 trees with a basal coverage per half acre of 91.81 square feet. Plot A, which represents an eighty year old woodland, has only 70 trees, yet has a basal coverage of 110.44 square feet over the same sized area. There is a point of diminishing return in the woodland, when the basal coverage will begin to decrease again, as age and competition take their toll on the weaker specimens.

Growing Up

Back to that branch that was measured. What many people do not realize, is the fact that although trees grow taller, it is not the trunk of the tree growing in height from the base, but the tips of the tree growing in length.

This area of growth is located at the tip of the twig and referred to as the *apical meristem*. Another area of growth is the *cambium* region located just beneath the bark layer, which adds size in terms of girth. Both of these areas contain *meristematic tissue*. Meristematic tissue is tissue composed of cells capable of division. A similar process occurs underground in the root system.

This annual process can be responsible for additions measured in fractions of an inch to additions measured in feet. A visible attribute of a tree's growth are the rings we count to determine its age. The age of a branch can also be determined by counting annual growth intervals, distinguished by the ring of scars which mark the beginning of the season's new growth (*terminal bud scale scars*).

Once a branch extends from the trunk, it will remain at that height from the ground, with the trunk growing in diameter, and the overall height and breadth of the tree increasing from the ends of branches and leader(s). So rest assured, that swing you hang from the branch of your favorite tree will still be reachable by future generations without a stepladder.

Plant Profiles



Black haw leaf

Black Haw

Viburnum prunifolium

Gardeners treasure exotic viburnums that produce fragrant flowers in early spring, however many native viburnums are prized for their showy fruit and brilliant fall color.

In the wild, viburnums can be recognized by their simple, opposite leaves and their clusters of small white to pinkish flowers with five petals. Generally, they have the form of a shrub, although two species in Connecticut typically grow as small trees.

Black haw, *Viburnum prunifolium*, is one of these tree-form viburnums. This plant derives its Latin name from the shape of its leaf (*pruni-*, meaning plum, and *-folium*, meaning leaf). Black haw has a shiny leaf with a serrate margin that resembles a plum leaf. The common name describes the form

and fruit. Small, stiff, thorn-like branches make the plant resemble a hawthorn with black fruit.

Black haw has showy clusters of white flowers in late May. Throughout the summer, it maintains shiny, dark green foliage, but the real show is in mid-October when the foliage turns a deep burgundy or scarlet. Simultaneously, the fruit turns a blue or black color and hangs from a red stem, putting on a spectacular fall show.

Just because *Viburnum prunifolium* is somewhat rare in the Connecticut wild, does not mean that it should be rare in the garden.

answers to leaf arrangement quiz:

1.C, 2.A, 3.A, 4.B, 5.C, 6.B, 7.A, 8.A, 9.B, 10.A

Highstead Saturday Walk Programs

Highstead Arboretum invites members and guests for walks and talks on the second Saturday of each month. Come dressed to walk and plan to stay 1 to 2 hours. Reservations are suggested; call ahead for weather-related rescheduling.

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An Eye for Detail

Saturday, September 11, 10am

Focus in on the beauty and detail of nature. Prize winning photographer Murth Murthy joins us again to discuss close-up photography. Discover the intricacy of leaf venation and the delicate beauty of a flower in bloom with a photographic record. Learn some tips and tricks to keeping it all in focus, and don't forget to bring your camera and film!

Native Viburnums

Saturday, October 9, 10am

Learn to recognize this wonderful genus outside the garden. George Elkins will lead a walk featuring some of the many native viburnums. Leaf shape, autumn color, fruit, and winter bud can help you differentiate among the native species.

Highstead Leaf Hunt

Saturday, November 13, 10am

Learn to identify some of our native trees while sharing an outdoor adventure with your child. After a brief orientation to leaf shapes and margins, parents and children will search the trails for fallen leaves. The child wins who matches the greatest variety of leaves to the Highstead Leaf Guide. Open to all ages. *Reservation required.*

For further information, call Highstead Arboretum at 203 938 8809, 9am-4pm Monday-Friday. There is a non-member fee of \$5.00 per program.

Highstead Arboretum

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