



# Highstead Log

Spring  
News 2000



A. terminal bud



B. axillary bud,  
leaf scar and  
vascular bundle  
scars



C. terminal bud  
scale scar



cross-section of a  
terminal bud

## Winter's Hidden Treasures

The winter landscape appears barren and lifeless as the trees and shrubs around us go dormant. Yet, to the knowledgeable observer, each of these plants holds next year's flowers and leaves within its display of buds.

These visible buds may hold next year's foliage (**leaf buds**), next year's flowers (**flower buds**), or a combination of foliage and flower (**mixed buds**).

One bud, located at the tip of each twig, may be larger than those found along the length. This bud, representing the end of growth for the previous season, is called the **terminal bud**. Most of the other buds are referred to as **lateral** or **axillary buds**. The axillary buds occur at a **node** or **axil**, which is the upper angle formed by the leaf stem and twig. The area between two nodes is referred to as the **internode**.

Terminal buds are not only larger than most other buds, but also the origin of the greatest outward growth on a plant. This is accomplished with the help of a chemical produced by the plant called **auxin**. It was originally thought that this chemical was a growth inhibitor, slowing the growth of axillary buds. Today's course of study questions the exact purpose of this chemical, but acknowledges its assistance in ensuring that the bulk of the plant's energy is focussed on the terminus or leader.

Although most woody plants have terminal buds, there are a few which lack a true terminal. These plants continue to grow and set axillary buds until their food supply ceases for the season. At that point in time, the newest, most tender growth wilts and dies back to the last well-formed lateral bud.

This bud becomes a **pseudo-terminal bud**, and due to its original formation and location, is often slanted to one side. Mulberry and linden are good examples of trees with pseudo-terminal buds.

## Learning the Scales

Whether they contain leaves or flowers, most buds are encased in scales, protecting the tender inner tissue from physical injury and drought. The **bud scales** do not protect the tissue from temperature extremes as many are led to believe.

Because the scales are modified leaves, they are often found arranged in the same overall bud and leaf arrangement as the plant itself – alternate, opposite, or whorled (*Highstead Log*, autumn 1999). In this way, the scales in number, color, size, and arrangement can

## Highstead Arboretum

serve as a key to identification.

Two native plants easily identified by their buds are witch hazel and pussy willow. Witch hazel (*Hamamelis virginiana*) has no bud scale at all, instead using actual leaves as a cover for the undeveloped leaves. Pussy willow (*Salix discolor*) is easily identified by the single scale that covers the entire bud.

## Scar Tactics

In the spring, the buds are awakened from their dormant period and the scales fall away from the terminal bud, leaving behind a scarring mark. This **terminal bud scale scar** can be used to determine the age of a branch, and the amount of growth within a particular growing season. There are some fascinating examples of this on display in the library at Highstead.

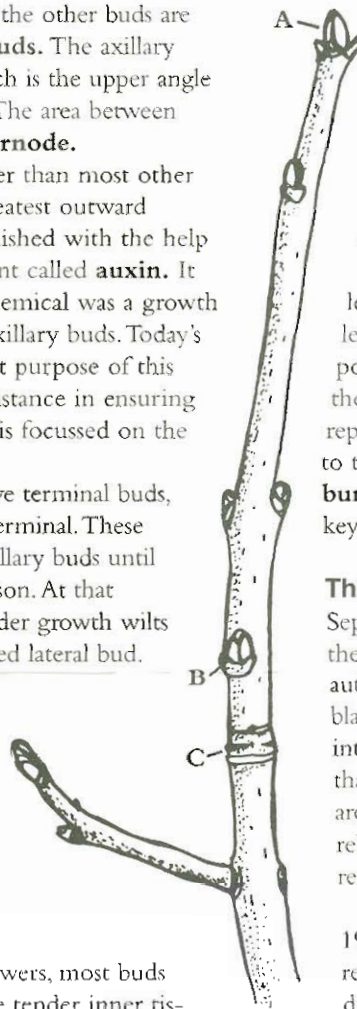
Another type of scarring occurs when the leaf stem (petiole) falls away from the twig, leaving a small corky area that represents the position of the petiole. Within this leaf scar there may be a visible arrangement of dots that represent the vascular system that linked the twig to the leaf. The arrangement of these **vascular bundle scars** and the **leaf scar** shape are also keys to identifying woody plants in winter.

## Thirsty for More

September 1999's rains were a welcome relief to the dry months of the past summer. The colors of autumn, which were expected to be minimal, blazed through the month of October, and even into November. This display led many to believe that the drought had been broken and the plants around us would be spared. Unfortunately, it was relief received too late to prevent stress and the resulting long-term damage.

The dry summers we have experienced since 1995 have placed an undue strain on our natural resources, and therefore a plant's ability to produce food and nourishment. Once weakened, the plant is more susceptible to die-back, disease, and insect damage. If the severity of the drought in 1999 was not physically visible last summer, it will become more apparent this spring, and extend its reach over the next several years.

Much of what many will attribute to winter damage this spring is actually attributable to the dry spell this area has experienced for the past five years.



## Plant Profiles



*Peeled-back winter scales (bracts) of a Cornus florida flower bud, show the immature flowers within this protective cover – the miniature beginnings of this spring's display.*

## Flowering Dogwood

*Cornus florida*

Flowering dogwood is one of North America's most beloved and recognized spring flowering trees. In May, the native landscape lights up as these small trees bloom along the edges of woodlands and hedgerows. Before the leaves are fully-grown, the familiar showy white bracts, which are mistakenly called "flowers," develop into a dramatic floral display. These white, petal-like bracts surround a cluster of true flowers.

In the fall, flowering dogwood puts on an equally spectacular show. Brilliant red fruit clusters complement the foliage, which ranges in color from dusty rose to scarlet and crimson. Few plants in the fall landscape can match the display.

During the winter months, flowering dogwood is as distinctive and easy to identify as when it was in full

bloom. Frosted-burgundy floral buds, the shape and size of small chocolate chips, extend from the tips of the branches on one-quarter to one-half inch stems. Close inspection reveals two scales that clasp the bud. These two scales, and two more underneath them, cover the flowers during the winter. Unlike many bud scales, these do not fall off when the flowers start growing in the spring. Rather, these scales expand, turn white, and develop into the showy white bracts that we identify as the "petals" of a dogwood "flower."

Whether flowering dogwood is in bloom or only showing winter buds, it is one of the easier native plants to identify.

## 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.*

### Spring 2000

#### Through the Looking Glass

*Saturday, March 11, 10am*

Get a closer look at nature while learning how to identify woody plants in the winter landscape. George Elkins will discuss the terminology and methods necessary to successfully use a **twig key** and hand lens, and then lead the group into the field for a demonstration of winter bud identification.

#### Measuring Up

*Saturday, April 8, 10am*

How tall is that tree? Learn several different methods for sizing up your favorite trees. From height to girth, learn the proper methods for measuring trees and how to make some simple tools to help you. Has that tree outgrown its space, or have you found a champion tree? These methods will help you size up the issue.

#### The Swamp Seen

*Saturday, May 13, 10am*

Keep your feet on dry ground for this guided walk through one of Highstead's most interesting habitats. Dan Cappel, a local naturalist, will lead a walk through this wetland, helping all to discover the natural evolution and the unique plants of this overlooked ecosystem.

#### Sunday Walks

*May 7th and June 4th, 10am, noon, 2pm, 4pm*

In conjunction with the Garden Conservancy, Highstead will be offering guided walks this spring. Join us in May for a tour of ericaceous plants or in June for a tour of the Kalmia. The incredible winter bud set is a strong sign of a show-stopping display.

*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

127 Lonetown Road  
P.O. Box 1097  
Redding, CT 06875

