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Naturalist's Notebook

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American Beech: Thin Skin, Shallow Roots, Long Life

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By R. Kelly Coffey

In a wooded area near my house stands a large, impressive American beech (*Fagus grandifolia*). Curious about its age, I measure the tree's girth and consult a simple table developed to estimate the age of beech trees. This method is not entirely reliable, but useful nevertheless for determining a broad age range.

From the formula, I guess the tree to be over 200 years old. Another clue to its age is a name carved into the trunk with the date "1942." The tree was probably already a significant size 61 years ago, since the engraver would likely be attracted to an old, large tree. I am attracted to this particular beech because it epitomizes all of the species' distinctive traits.

Beech Books

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Unlike most trees whose bark becomes more furrowed and rugged with age, the beech tree's bark remains smooth throughout its life. This characteristic makes the tree a tempting surface for graffiti. Probably the most famous example is a beech found around 1775 in eastern Tennessee, with an inscription stating that Daniel Boone had killed a bear near the tree.

The similarities between the words "beech" and "book" are not coincidental. The two words have a common origin, a testimony to the fact that centuries ago in Europe, books were made from beech bark.

The sleek bark of the beech enhances other features of the tree. Scattered, eye-shaped scars resulting from bark fissures are often vivid on the trunk. In locations where a tree has room to spread, its thick lateral branches appear to have bulging muscles, another effect of the skin-like bark. These features often give aging beech trees a human resemblance from a distance. Sinister-looking trees in a spooky forest are elements in European folk tales, inspired, perhaps, by the European beech species (*Fagus sylvatica*), which has similar characteristics to *F. grandifolia*.

Beech's thin bark makes it especially susceptible to disease. The tree attracts more decay fungi (over 70 different forms) than any other hardwood. One in particular- *Epifagus virginia*, or "beech drops" - is exclusive to the beech species, attacking the root system. In spite of the many fungal infections, surviving trees can live to a very old age. Beech ranks near the top among broad-leaved species for longevity, with some trees approaching 400 years old.

Winter is perhaps the best time of year to appreciate the beech, when the tree's physique and bark features are more visible. Many of its golden brown leaves stubbornly cling to the tree

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throughout the winter in areas sheltered from the wind, and eventually bleach white. Since beech often occurs in pure stands, the prominent winter features — concentrated in one area — can be eye-catching.

The triangular-shaped beechnut, encased in a burr, is perhaps the most distinctive characteristic of the tree. Beech's genus name *Fagus* means "to eat." In the past, the nut has been used for food in a variety of forms. Eaten straight from the shell, the beechnut has a sweet and pleasing taste. Beechnuts can be processed to make a high-quality cooking oil, as well as a coffee substitute. The nut is a staple food for many forms of wildlife: birds, squirrels, and even bears.

Injury Spurs Growth

Despite their prolific nut production, many beech trees reproduce from root sprouts (suckers). The root system of a beech is very shallow (with the exception of a large taproot). Lying close to the surface, these roots are susceptible to injury, which stimulates the growth of suckers.

For example, my "1942" beech is at the edge of a pasture where cattle frequently enter the woods. Consequently, every spring the beech is surrounded by dozens of sprouts, resulting from injuries caused by cattle hooves. Many of these sprouts have matured into sizable trees over the years. At high elevations in early spring, repeated freezing and thawing of the top layer of soil also injures beech roots, with the same effect.

In certain locations, an unusual relationship between American beech and sugar maple (*Acer saccharum*) results in the two species alternatively dominating the forest. Both hardwoods are very shade-tolerant and tend to be located at higher elevations where conditions are not favorable for competing species.

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Beech will occupy the canopy layer, while sugar maple grows below in the filtered sunlight. In a few years, sugar maple trees take over the canopy, with the beech trees satisfied in the shady layer below.

Although graffiti on rocks and trees is deplorable, I confess to a guilty sense of pleasure in finding an old beech with an aged inscription. It helps to tell its life story. Having overcome disease, root injuries, and human-inflicted wounds, an aging beech is perhaps the Appalachian forest's most tenacious survivor.

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