

## Rediscovering the Hazelnut

By: Jerry Hopkins

When European settlers arrived on the shores of the new world and began moving into the forested interior, the landscape must have seemed alien and mysterious. While many of them came from an agrarian setting, the challenges of the new land with its indigenous culture of forest dwellers were daunting. Finding a familiar tree, or at least one that looked familiar, must have seemed comforting and reassuring. The American hazelnut, (*Corylus americana*), looks and grows so like its European cousin, the European hazel – (*Corylus avellana*), that the early settlers already knew many ways to use it and probably recognized it as an old friend.

For centuries the hazelnut was cultivated in England and on the continent. It was coppiced for firewood and charcoal production. The durable stems were used for fencing and wattle-and-daub walls as well as basket making. And then there are those supremely edible hazelnuts. The early settlers were probably not surprised to learn that the Native Americans of the eastern forests were already using hazelnuts as food and in traditional healing treatments.

Creatures from mice to men, and many others in between, eat hazelnuts. Songbirds and upland game fowl favor them. Wild turkeys are especially fond of them and seek them out. And small mammals, particularly squirrels, actually fight over them and, in doing so, become the primary dispersers of the seed. So how do we work this useful native into modern woodland management?

### First, the Botany

The hazelnut is a member of Betulaceae or the birch family along with alders, hornbeams and a few others. It grows in the understory as a shrub often reaching twelve to fifteen feet in height. The simple leaves are broadly oval with a doubly serrated margin and are arranged alternately on the stems. The twigs appear to zigzag, changing direction at each bud.

Hazelnuts are monoecious, and have separate unisexual flowers on the same plant. The flowers are produced in the summer and open the following spring before the leaves emerge. The male flowers are catkins from one to three inches long and usually hang in clusters of two or three near the branch tips. The female flowers are inconspicuous with only the bright red, thread-like stigma and styles, ready to catch pollen, protruding from the otherwise gray to brown buds. Hazelnuts are primarily pollinated by wind. The edible brown nuts are enclosed in a hairy leaf-like husk with ragged edges; they are initially green and ripen to brown in late summer. The nuts are up to one-half inch in diameter and can be produced on seedlings no more than two to three years old. As the plants grow to maturity, good seed crops are produced every two to three years.

With all the attention given to the nuts on hazelnuts, it is easy to forget that its most important means of reproduction is asexual, by underground stems called rhizomes. This point will be important as we discuss management and utilization.

## Silviculture and Management

The American Hazelnut is shade tolerant and can grow under a light intensity of 15% or less. Common understory associates include: shagbark hickory (*Carya ovata*), smooth sumac (*Rhus glabra*), chokecherry (*Prunus virginiana*), raspberry (*Rubus* spp.), arrowwood (*Viburnum dentatum*), eastern hop-hornbeam (*Ostrya virginiana*), and dogwood (*Cornus* spp.). It grows best on rich, moist, well-drained soils and occurs along streams, hedgerows, meadows, woodlands, roadsides and forest margins. Although the hazelnut grows best under these conditions, it can tolerate a wider range of moisture and soil fertility levels; it simply grows less vigorously under less than optimum conditions.

The European hazelnut (*Corylus avellana*) is most commonly used for commercial nut production due to the larger size of the nuts and easier shelling, but there is one significant disease problem that prevents using it through the range of our native hazelnut. Eastern filbert blight is caused by the fungus *Anisogramma anomola*. It is fatal to the European hazelnut but the American hazelnut is resistant to the disease. Management for the disease on the American hazelnut consists of removing and burning branches where the cankers are found. This presents an interesting relationship with prescribed fire in woodland management plans.

If burning is to be used as a management tool, it should be noted that hazelnuts are top-killed by low- to moderate-severity fires. This may not be the end of the game, however. The rhizomes, which are approximately six inches below ground, can survive such a fire if the humus is moist. Typically, shoots are produced on the rhizomes within two feet of the parent plant and their growth results in hazelnut thickets that may recover in one season following a survivable fire. Without the effects of fire the thickets will become dense over time making a significant contribution to wildlife benefits in the management plan.

## Establishing Hazelnuts

Regeneration strategies for hazelnuts can be flexible using one or both of its reproductive mechanisms. As noted above, birds and mammals are the chief natural distributors of seed. The seed ripens from mid-summer to September but if you wait until the nuts are completely brown they will be eaten before they can be collected. It's best to collect the seeds when the edges of the husks begin to turn brown. Spread them in a thin layer for a short time until the husks finish drying to make extraction easier. Excessive drying will reduce germination. The best and most efficient practice is to immediately plant the seeds in a hole that has a depth equal to twice the diameter of the nut. In other words a one-half inch nut will have one-half inch of soil over it. The seeds require two to six months of prechilling before germination and fall planting is the easiest way to accomplish

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it. For those purchasing seed or collecting it for direct sowing in the woodlot, cleaned seeds per pound range from about two hundred to seven hundred with an average of about four hundred fifty. If the seed collection, extraction and planting processes seem daunting, nursery grown seedlings that are one or two years old are readily available. This is an easy way to establish a population of hazelnuts.

Asexual reproduction, as noted, is what causes hazelnuts to grow into thickets. Shoots are produced at intervals along the rhizomes and the density of the thickets likely enhances wind pollination due to the proximity of greater numbers of male and female flowers. Enhanced pollination translates to greater mast production for a given area. Planting several seedlings in a relatively small area will allow the thicket to develop with multiple, genetically distinct inputs that will be useful as the seeds are naturally dispersed. In addition, shoots may be severed from the parent plant by cutting the rhizome and then moved, with roots attached, to a new location. Handling is much like that for seedlings and is best done in early spring before the plants break dormancy.

Development of the hazelnut thickets adds another significant advantage for woodland management in that the expanding structure of root mass and underground stems is a strong soil-holding mechanism. Taking advantage of the hazelnut's shade tolerance, the establishment of thickets will help secure the slopes in woodland drainage features and the inevitable odd areas in the boundaries separating the woodland from agricultural land.

### **Benefits**

Mankind has been using the hazelnut for millennia and it has been an important component of forest ecosystems for an even greater amount of time. Now that we are beginning to understand the real long-term costs of planting exotic species in forest lands, we can look to the American hazelnut to provide a clear alternative for hard mast production in Ohio and most of the eastern United States. Its adaptability to a wide range of soils and its shade tolerance make the hazelnut a good choice for understory and forest boundary plantings. And, the establishment of thickets adds an important soil erosion control aspect while providing food and cover for turkeys, deer, small mammals and songbirds.

What else is being done with the hazelnut? It has been cultivated as an ornamental in the United States since 1798. It has been hybridized extensively with the European hazelnut and allowed the Pacific Northwest region to become the third largest producer of hazelnuts in the world after France and Italy. In North Carolina hazelnuts are being inoculated with the fungus that produces truffles – those mystical mushrooms that add unique character to French and Italian cooking.

That's a lot of utility and a lot of potential for one easy-to-grow native species. Isn't it time to rediscover the American hazelnut?

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