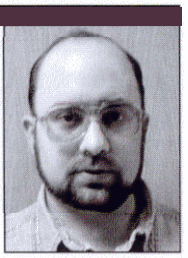

All Species Have Value

Brian Roy Lockhart

One of 10 principles I teach in hardwood silviculture courses and workshops, and one relevant to all forestry, is recognition that all species have value for any management objective whether we realize it or not. Without stepping into the whole biodiversity issue, here is an example from bottomland hardwood ecosystems.

American hornbeam *(Carpinus caroliniana)*—often called ironwood, blue-beech, or muscle-wood—is a shade-tolerant midstory canopy tree commonly found in southern bottomland hardwood forests. This species has long been considered a "weed," especially when managing for quality hardwood sawlogs. But American hornbeam has many functions and values that do not interfere with the objective of growing quality hardwood sawlogs.

Bill Cook, Michigan State University, www.forestryimages.org

American hornbeam *(Carpinus caroliniana).*

Recent research involving stand development of bottomland hardwoods has indicated that stratified stands composed of cherryhark oak *(Quercus pagoda)*, sweetgum *(Liquidambar styraciflua)*, and American hornbeam are usually even-aged although the diameter distribution will depict the reverse-J-shaped curve typical of uneven-aged stands. Early in the life of the stand, following old-field succession or a major disturbance such as a tornado or clearcutting, American hornbeam and sweetgum will usually dominate the canopy. Cherrybark oak will then stratify above these species, first above the American hornbeam (two to three years) then above the sweetgum (20 to 30 years). An assumption associated with this development pattern is that interspecific competition is above ground—soil moisture is adequate throughout the growing season in most years so that competition is primarily for light resources and physical growing space. Such observations have been noted for stratified stands of northern red oak *(Q. rubra)*–black birch *(Betula lenta)*–red maple *(Acer rubrum)* in the northeastern United States.

In the development pattern described above, American hornbeam may be beneficial by providing the pruning effects typically associated with a nurse tree. Although still speculative, cherrybark oak (and possibly other bottomland red oaks) saplings competing with American hornbeam, especially hornbeam stump sprouts, must place emphasis on height growth to get above rhe American hornbeam. A benefit to individual red oak trees may include an increased merchantable height on a more clear bole. This benefit has been demonstrated with cherrybark oak and sweetgum mixture:. and personally observed with artificial mixtures of pedunculate oak *(Q. robur)* and hornbeam *(C. betulus)* in northern Germany. Following stratification, American hornbeam is relegated to a midstory canopy position. Here, it provide, several functions, primarily by increasing the vertical structure of the forest, which is important to various bird species for foraging and nesting. The seed of American hornbeam also provides an important food source for some wildlife species such as gray squirrels *(Sciurus carolinensis)*.

Once relegated to the midstory, American hornbeam is no longer a competitor with the overstory cherrybark oak (remember the above competition assumption). Therefore, given its important role as a midstory species, why spend resources to eliminate it? During thinning operations, American hornbeam can also be beneficial as a tree for skidders to turn on when driving through the stand with a load of logs rather than turning on potential crop trees. Less damage, and subsequent rot, would occur on the butt ends of the potential crop trees.

When management objectives involve growing quality bottomland red oak sawlogs, the only time American hornbeam can be a problem is during attempts to secure natural reproduction prior to or soon after a regeneration harvest. American hornbeam may provide too much shade for satisfactory early development of advance red oak reproduction. At this time silvicultural treatments will be needed to control American hornbeam until an adequate amount of advance oak reproduction of desirable size is obtained.

Because of this principle that all species have value in bottomland hardwood management, I frown on the use of "undesirable species" in discussions with forest resource managers and students. I prefer to call a particular species either "desirable" or "less-desirable" for the management objectives. Even less-desirable species have inherent functions and values that should be considered in respect to management objectives.

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