



# European Buckthorn

## Problem for Ecosystems, Opportunity for Woodworkers

BY BARRY GORDON

Imagine a tree species that rapidly produces strong, attractive wood and which is present in such large numbers that harvesting it actually improves ecosystems. This sounds like a woodworker's dream but, of course, there's a catch: the tree is small and yields only limited size clear sections (approximately 2" x 4" x 30" maximum, and rarely). Woodworkers in the Great Lakes region and elsewhere in the central, northern and eastern portions of the United States should be aware of European buckthorn, a tree that's increasingly abundant here and in neighboring regions of Canada.

I have been using European buckthorn for making spoons. With the guidance of faculty members at SUNY- College of Environmental Science and Forestry (in nearby Syracuse, New York), I am conducting an informal research project to investigate its characteristics. A goal of the research is to publicize the species as a source of attractive wood in a (symbolic) effort to increase harvesting and diminish its threat.

*The European buckthorn, increasingly abundant in the northeastern and north central United States, is characterized by leaves that are ovate-elliptical, with minute serrations, arranged alternately or sub-opposite. Berries, abundant on female trees, each contain 3-4 seeds and turn purple/black in late summer.*

European buckthorn (*Rhamnus cathartica* L.) is reported as native to Europe, Eurasia, and North Africa. Historically, it has been used for tool handles and small turned objects, but it has little potential to become a commercial species. Various parts of the tree have been used as dye sources and the inner bark will stain your hands yellow. Although this species is named cathartica and it does contain cathartic substances, it is *Rhamnus purshiana* L. (Cascara buckthorn) from which the medical purgative cascara sagrada is formulated.

One of many buckthorn species, European buckthorn is in the genus *Rhamnus* and the family *Rhamnaceae* which, ironically, is the same family that includes highly-prized pink ivory. European buckthorn grows particularly well on sunny or partially sunny sites in

upland areas with neutral to alkaline soil pH. It also survives in shade. The best places to find the tree are edge locations and open fields.

This buckthorn is a small tree that grows rapidly to a maximum height of about 25 feet and a diameter at the base of about 8 inches. Trees that initially appear larger in diameter are usually multiple stems growing together. It is probably a short-lived species, with larger trees often containing ring shakes or heart rot.

Female trees produce many berries, initially green, turning dark purple to black in late summer and often remaining on the tree into winter. Each berry contains 3 or 4 seeds which are dispersed by falling on nearby soil or being ingested by birds and subsequently expelled. The thorns in its name are actually thin, sharp spines and they vary in intensity from tree to tree,

appearing at the ends of twigs and in the forks of branches when present.

In addition to producing an abundance of seeds, European buckthorn is aggressively competitive because of its shade tolerance, its dense branching, the possible presence of allelopathic effects (the release of substances harmful to other species into the soil), and its ability to maintain green leaves late into the fall, thereby extending its growth period. It is hardy and pest free and there are no easy control measures.

The tree was introduced in North America in the Eighteenth or Nineteenth century in shelterbelt and ornamental roles. Now, this highly invasive species is extending its range at a worrisome rate, crowding out, or inhibiting the regeneration of, many other species including dogwood, sugar maple, and white ash.

For woodworkers who can utilize small pieces of wood, the happy side of this situation is that this tree's wood is highly suitable for small objects and accent pieces, and we can expect European buckthorn to be in good supply for some time.

Much of this species' wood has attractive color and figure. Young trees have a small orange heartwood surrounded by a creamy yellow sapwood. In older trees, most of the cross-section is heartwood with only a thin band of sapwood (much like black cherry). Sometimes the heartwood in mature trees is a vivid pink-orange, other times it is a paler yellow-orange. In some cases, the sapwood stains to a pale purple-grey or even black; the cause (biological or chemical) of this staining has not been determined, although we know that at least some is not of fungal origin.

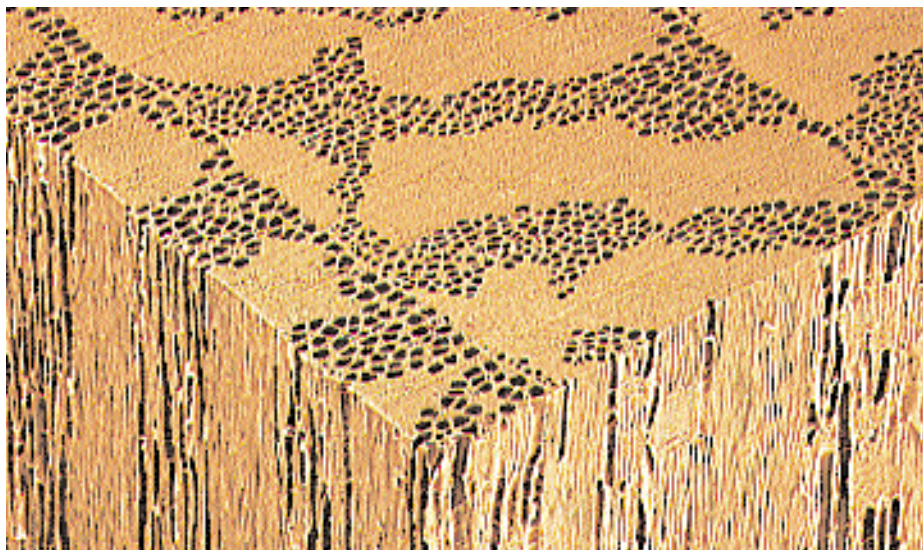
The wood is semi-diffuse porous. Some of the larger pores appear in an unusual reticulate (net-like) diagonal pattern when viewed on a cross-section. These pores produce a very interesting figure on longitudinal, or nearly longitudinal, surfaces. At first glance, it appears similar to the partridge feather figure of elm, but it is not the same.

In 1998, an initial set of standard tests was performed on European buckthorn. The results are tentative because, even though methods for testing small samples were used, it was virtually impossible to obtain clear, straight-grained samples of

sufficient size. In summary, the tests showed European buckthorn to have approximately the same values as hard maple in bending strength, stiffness, and hardness. Specific gravity was also similar to that of hard maple, although additional samples should be tested to confirm this. Volumetric shrinkage low but this, too, needs further testing. Because

of the tree's dense branching, curving growth habits, and its ability to maintain live branches on lower parts of its stem, any usable piece is likely to contain stresses that cause distortion in addition to that of normal shrinkage. The wood is not, however, extremely difficult to dry.

Hard maple is a wood that I have used almost daily during the past twenty-three



PHOTOMICROGRAPH BY DR. SUSAN E. ANAGNOST, SUNY-ESF



ALL PHOTOS BY RUDY HELLMANN EXCEPT AS NOTED

*TOP* Scanning Electron Micrograph of European buckthorn showing transverse (top), radial (right) and tangential (left) surfaces. The original black and white image was converted to color utilizing Adobe Photoshop. Magnification is approximately 60X. *ABOVE* Bark on young trees (left) has many lenticels and can be confused with bark of young black cherry trees. Bark on older trees (right) partially exfoliates (peels) exposing finely-ridged bark.

years. My own observations agree with the tentative test data and I find clear sections of European buckthorn to be at least equally strong, particularly in relatively thin sections such as spoon handles. This strength, coupled with the tree's small size and curving growth habits, makes this species an excellent candidate for increased use in twig furniture.

Because of the presence of large clusters of earlywood pores, the buckthorn seems a bit coarse compared to the small-pored maple, but not nearly as coarse as ring-porous woods such as the oaks and white ash. In comparison with those woods, precise carved edges are much easier to achieve with the buckthorn. When concave surfaces are cut into its tangential plane and subsequently sanded, the buckthorn does behave like a ring-porous wood, with the earlywood eroding noticeably faster than the latewood. Otherwise, sanding is relatively easy for a wood of this density, and it readily accepts the clear oil-based finishes that I use.

European buckthorn is not especially photo-reactive, and the attractive orange heartwood darkens only moderately after prolonged exposure to light. The appearance of powderpost beetles and pecky white rot in wood left unprotected outdoors indicates that European buckthorn is not durable.

Some examples of woodworking uses for buckthorn are shown in the accompanying photographs. If you can utilize relatively small pieces of wood and you live in the region bounded by Missouri, Ontario, and the Atlantic coast south to Virginia, I urge you to start looking (with the landowners' permission) in abandoned fields, along woodland borders, and even in suburban yards. Harvesting European buckthorn will provide a new species for your palette while helping to maintain the natural heritage of your local ecosystem.

*I want to thank Denise McCoskery for doing the 1998 testing and SUNY-ESF faculty members Drs. Susan E. Anagnost, Donald J. Leopold and William B. Smith for their guidance and encouragement.*

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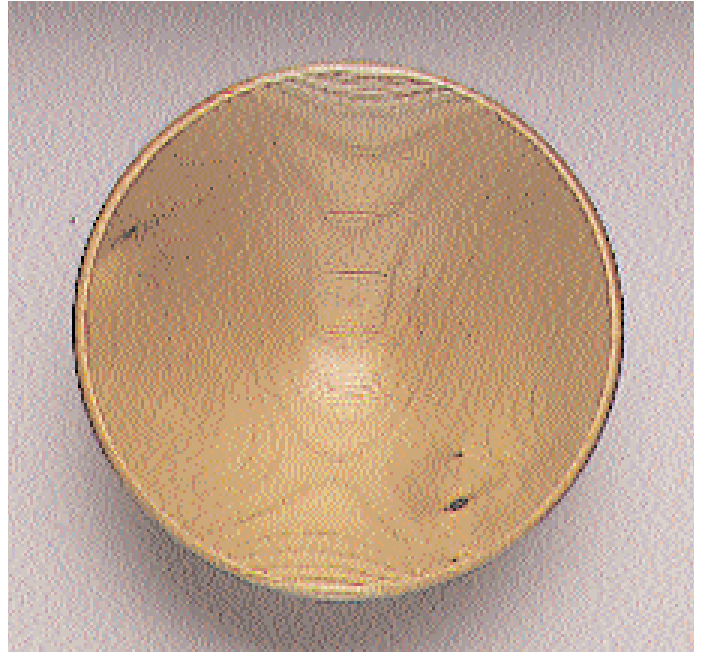
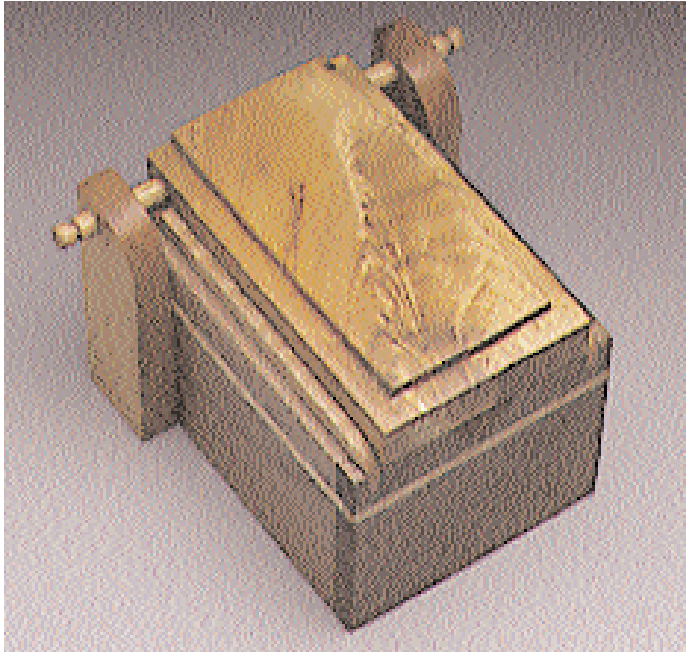
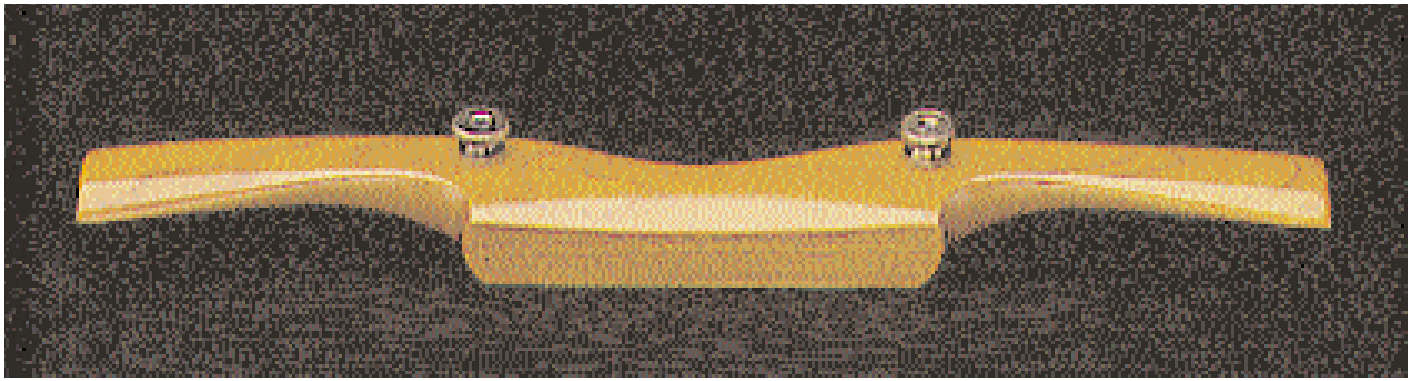


PHOTO BY KOBYLECKY

OPPOSITE PAGE, TOP TO BOTTOM  
*Spreaders* (2000) by author with variation  
 in figure and color; longest 10".  
*Oversize-grip pens* (2000) by Paul  
 Nicholson; 5-1/2".  
*Spoon* (1999) by author showing wood  
 at its most vivid orange; black color of  
 natural edge around bowl is an extreme  
 result of staining mentioned in text;  
 14" x 3-1/4".

THIS PAGE, CLOCKWISE FROM TOP  
*Spokeshave* (1999) by Dave Wachnicki;  
 11" x 1-1/4" x 1".  
*Interior of test bowl* (1998) by Alan Stirt  
 Figure resulting from unusual pore pattern,  
 stained sapwood and photo-reactive  
 darkening are all visible; 3-1/4" x 1".  
*Mosaic Table* (1998) by Tor Faegre;  
 willow top and buckthorn legs;  
 16" x 24" x 18".  
*Buckthorn lid on small jewelry box* (2000)  
 by Bill McDowell. Walnut, European  
 buckthorn, and maple; 4" x 5" x 3".