

WHITE-BARKED BIRCHES, BORERS AND ALTERNATIVES

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When I worked at a garden center during my undergraduate days at Ohio State, it was a standard joke to bet whether the customer could get his white-barked (usually *Betula pendula*) birch home and in the ground before the borers found it. Sometimes I think the borers found the tree before it ever arrived at the garden center. Whatever the case, little has changed for the old-standard, borer-susceptible white birch. Some nurserymen have started to grow other white-barked birches that supposedly offer bronze-birch borer resistance. Before we progress too far, let's eliminate *B. pendula*, European white birch, and *B. populifolia*, grey birch, from consideration. Although grey birch is somewhat resistant to the borer, it suffers terribly from leaf miner and is short-lived—not exactly endearing traits for a landscape specimen.

Growing up in Cincinnati, Ohio, matriculating at Ohio State and the University of Massachusetts, and serving as a faculty member for seven years at the University of Illinois allowed me the opportunity to view white-barked birches in many states of disrepair. I will never forget a European white birch (dead) in one gentleman's yard that had the branches cut back to within two feet of the main trunk with a morning glory trained on the trunk. Looked great in summer but left a visual blight in winter.

In Champaign-Urbana, IL, virtually every yard had one white-barked birch, sometimes a grove. I had one in my yard that I planned to cut down, much to the dismay of my wife. Unfortunately, the tree was ravaged by the borer before I could afford a chain saw. In fact, I observed trees dying all over the Midwest. I would present the case of the borer-infested birch to my students who soon realized that there was one in their parent's yard.

The question that came up was "What are the alternatives?" I remember Dr. Ed Hasselkus showing me a group of three, white-barked birch trees at the University of Wisconsin Arboretum. He commented that these lived while *Betula pendula* and cultivars were exterminated by the borer. Their name: *B. platphylla* var. *japonica*. More on this later.

Next on the scene was a mystery birch termed *B. maximowicziana*, monarch birch. Articles appeared in popular and trade magazines. Nurseries started to sell it. It was touted as the savior of ornamental white-barked birches. There was one problem with all this: the birch being promoted and sold was not monarch. I had seen plants of so-called monarch at the Holden and Dawes Arboretum in Ohio and they had good white bark and leaves that looked like *B. papyrifera*. Unfortunately, people failed to check the taxonomic descriptions of *B. maximowicziana*. Had this been done I doubt if the confusion would have developed. Drs. Frank Santamour and Frederick Meyer resolved some of the taxonomic confusion concerning the species (see *American Nurseryman* 145(12):7. True monarch birch has large leaves (up to six inches) with deeply cordate bases, large female catkins, and grayish to orangish brown bark.



Birch borers took their toll on *Betula pendula* (insert) but have not succeeded in defoliating a *Betula nigra* 'Heritage'.

At about the same time (1976-78) two additional white-barked, borer-free birches appeared on the scene. *Betula platyphylla* var. *japonica* (formerly *B. mandshurica* var. *japonica*) and *B. p.* var. *szechuanica* (formerly *B. mandshurica* var. *szechuanica*) appeared to have possibilities for general landscape use. Variety *japonica* is more refined and more reminiscent of *B. pendula*. Variety *szechuanica* has stouter stems and more leathery, wavy leaves; their underside densely glandular dotted. Dr. Frank Santamour and Dr. Knud Clausen described the testing with *B. p.* var. *japonica* that is being conducted at the National Arboretum (see *American Nurseryman* 149(1):15).

Tom Pinney, Jr., Evergreen Nursery Co., Sturgeon Bay, Wisconsin has been as close to the subject as anyone in the country and may be the only nurseryman who has the true monarch birch. He noted that reports of borer infestations on both varieties, *japonica* and *szechuanica*, have surfaced. However, there have been no reported borer infestation on plants grown from the University of Wisconsin Arboretum seed source. An interesting aside was his comment relative to the excellent performance of *B. papyrifera*. In Min-

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nesota (Landscape Arboretum) tests, only one tree out of 104 *B. papyrifera* was borer infested. Although this tree has been maligned for years, I wonder if it should not be given a long second look. It is certainly one of the handsomest of all white-barked species. I would also like to raise the question whether all the *B. papyrifera* that were described in the past as borer infested were, in fact, the true species. Birch identification is fraught with difficulty and monarch exemplifies the problem.

The search for the illusive, borer-free, white-barked birch continues but why not back up a step and consider a native species, as a possible alternative. The river birch, *Betula nigra*, has many significant advantages over the white-barked species. One is the resistance to bronze birch borer; the other relates to the excellent heat and cold tolerance. Dr. Harold Pellett, University of Minnesota Landscape Arboretum, and the author have been testing the cold hardiness of plants that have extended North/South distributions. In laboratory test, river birch collected from the wild near Athens, Georgia, proved as cold hardy as plants collected from Minnesota sources. In fact, young stems from both sources were not injured when exposed to temperatures of -50°F. In addition, river birch can withstand flooding for long periods of time.

River birch is native to areas along streams and rivers from southern Minnesota south to Northern Florida and from Delaware west to Kansas. I have seen beautiful stands along the Illinois river and along the banks and flood plain of the Oconee River in the UGA Botanical Garden. It occurs in association with hackberry, American sycamore, boxelder, sweetgum, green ash, tulip-tree, red maple, American hornbeam, water oak, willow and cottonwood in the UGA Botanical Garden floodplain.

It is interesting to note that in upland sites, river birch is seldom found. Apparently it cannot compete with the oak, hickory, maple, and beech. The reason is not related to soil moisture alone because landscape specimens on the Illinois and Georgia campuses are performing well on sites that never witnessed anything but normal rainfall. The most obvious aspect of river birch is the tremendous variation among progeny. I walk along the river trail in the UGA Garden and see barks of different hues and degrees of exfoliation.

River birch, as a landscape tree, forms a graceful pyramidal to oval outline that with maturity becomes rounded. The average landscape size ranges from 40 to 60 feet with the largest living river birch recorded at 80 feet high and 90 feet wide. I prefer the multiple stemmed or low-branched appearance but single-stemmed specimens are also effective. A few of the places I have observed the species being used in landscape situations include planters, court yards, front yards, groupings and screens.

The foliage is lustrous dark green above, gray-green beneath, and triangular to diamond shaped in outline. Leafspot can be a significant problem in wet weather. Fall color is seldom good; in fact, I can never remember, observing excellent fall color on the species. The trees in the UGA Garden dropped green or yellow-green.

The bark of river birch is fantastic, varies from gray-brown to cinnamon-brown, and exfoliates in papery curls and flakes. This exfoliating character develops

on branches above one inch in diameter. The leafless branches of river birch framed against a winter sky are a gorgeous sight. The young branches are a rich red-brown and grade to the exfoliating character that becomes more pronounced toward the center of the tree. Large diameter branches become more ridged-and-furrowed and do not show the exfoliation. I much prefer the more subtle bark characteristics of river birch over the obtrusive white-barked species. As mentioned, there is tremendous variation in bark color and one enterprising nurseryman has selected a superior form that exhibits almost white bark. The first named cultivar of river birch has been called 'Heritage' and may, with time, supersede the white-barked birches in the landscape trades. The bark actually varies from white to a bloomy salmon pink and is striking in the winter landscape. The leaves are about 1½ to 2 times as large as the species and are more resistant to leaf spot. It also displays excellent bronze birch borer resistance. I have seen large plants of 'Heritage' and would label it a "can't miss" landscape plant of the future. Several nursery firms are offering it as rooted cuttings.

River birch sheds its seed in spring which is opposite that of most birches. In late spring, the high water is receding and silty shore lines are exposed which offer the best possible place for the wind-blown or water-borne seeds to germinate. It is best transplanted in spring and prefers a moist, acid soil for best growth. In alkaline soils, chlorosis can be a problem. During the extreme drought of 1980, trees in landscape settings dropped many leaves. Supplemental watering is necessary under these conditions. If properly watered and fertilized, river birch will easily make three feet of growth per year. I see no reason why it could not be handled as a container plant.

Cuttings can successfully be rooted under mist. They should be taken during June and July, treated with a hormone (we have used 1000ppm IBA/alcohol; quick dip), and placed in a suitable medium under mist. Seeds can be sown in the spring as soon as they are collected. Due to the light sensitive nature of birch seed, it should be barely covered or sown uncovered and kept moist. Percent germination is usually low.

River birch is a great tree and many authorities have often raised the question relative to its scarcity in the landscape. As plantsmen, nurserymen, landscape architects and homeowners become more aware of this tree, it will assume a rightful place in the forefront of landscape plants. **WTT**



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