

## The Fate of *Magnolia grandiflora* Seedlings in Northern Wisconsin

Mike Heim

Living in the north woods of Wisconsin, I had always assumed that attempting to grow the evergreen southern magnolia up here amongst the balsam fir would be comparable to raising pineapples in Alaska—a goofy venture at best. However, several things that I've since learned have caused me to reevaluate this assumption.

Many years ago on our honeymoon trip to Missouri, my wife and I first observed, to our visual and olfactory delight, a southern magnolia in full, gorgeous bloom. Exquisite, to say the least. The tree, though, was growing in Zone 5, which in this case caused it to suffer regular serious winter injury down to the snowline. The profuse flowers and glossy foliage were perfectly fine below this level where the tree had spread out vigorously to a considerable extent. Since northern Wisconsin generally has reliable snow cover, I thought why not try and grow this memorable species back home as a low shrub, protected from winter's temperature extremes and desiccation by an insulating blanket of snow?

The best chance of success with this venture seemed to lie with obtaining the hardiest germplasm available. During this quest, I was amazed to learn that certain *Magnolia grandiflora* trees had withstood  $-30^{\circ}\text{F}$  ( $-34^{\circ}\text{C}$ ) on numerous occasions. Various old trees growing at the Spring Grove Cemetery in Cincinnati, Ohio come to mind, along with a tree that grew about one hundred miles north of Chicago... until it was cut down by the new owners of the estate!

Through the generosity of Bob Lipka, a very knowledgeable *Magnolia grandiflora* researcher in Pennsylvania, I obtained mixed seed of two trees from the Spring Grove Cemetery (#16 and #19), along with seed from a cultivar known as *M.* 'Pocono. (*M.* 'Pocono' has an interesting history. A hunter found it growing wild in the Pocono Mountains of Pennsylvania between 1100 and 1200 feet in elevation. The seed was apparently deposited by a bird many years earlier.)

In the late spring of 2001, I planted out 105 of the Spring Grove seedlings and 22 of *M. 'Pocono'*, which had begun germinating in March. (The reason that there were far fewer of the *M. 'Pocono'* seedlings was that while we were on vacation, fly larvae destroyed most of the seedlings in the flat while they were outdoors hardening off, however they virtually ignored the Spring Grove seedlings in the next flat over.)

All of these first-year seedlings were planted in native mixed conifer-hardwood forest on an acidic, sandy loam, their preferred soil type (see photo). The whole area was previously fenced in to protect the rhododendrons growing there from deer. Otherwise, the seedlings were given no extra protection whatsoever. They were basically growing in the woods as "wild" seedlings. Although to keep the tiny seedlings from being smothered, I did brush the fallen leaves off of them a couple of times.

In mid-April the snow cover melted off of the magnolias. On May 1, 2002, I performed my first evaluation, at which time 29% of the Spring Grove and 44% of the *M. 'Pocono'* seedlings were in perfect shape. As of May 23, 2002, 22% of the Spring Grove seedlings were in perfect condition, 20% evidenced some degree of foliar injury, and 58% were either defoliated or perished. Of the *M. 'Pocono'* seedlings, 18% were perfect, 5% had foliar injury, and 77% were either defoliated or dead. The increase in mortality since the beginning of the

month could be attributed to near record cold, culminating with 26 °F (-3 °C) on May 20th, since seedlings are known to be very susceptible to frost damage. On the other hand, it could simply be the result of residual winter injury. What this gives me are 27 plants which show promise. They are as fresh-looking in May as they were in September.

It is unfortunate that the provenance of the parent trees' ancestors is unknown. However, it has been reported that there is a very wide range of cold toler-



One of the *M. grandiflora* seedlings growing well in leaf litter.

MARK HEIM

ance in seedlings from Florida trees. Thus, it's possible that my seedlings aren't necessarily progeny of trees from the natural northern range limit of the species, which is below five-hundred feet in elevation throughout.

According to the USDA discussion of *M. grandiflora* (L965), "Temperatures below 15 °F (9 °C) are rare in its range. A light freeze for 48 hours will kill seed and seedlings, thus limiting the natural range." I'm not so sure about this generalized statement. The remarkable tolerance of some individuals to extremely low temperatures seems to indicate adaptation to a much wider range during past geological epochs. It is curious that the species has not expanded its distribution more during post-glacial times. Perhaps a combination of forest fires and browsing pressure by deer have served to check its advance. Certainly, birds must regularly be transporting seed to otherwise suitable sites, as evidenced by the *M.* 'Pocono' tree.

It will be quite interesting keeping track of the seedlings' progress, courtesy of natural selection, particularly as they grow tall enough to be exposed to the full brunt of a Zone 3 winter. 🍷

