

## Variety in Evergreen Magnolias II

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Some of you might remember the late Joe McDaniel's article, "Variety in Evergreen Magnolias" from the July 1973 journal *Magnolia* (then named *Newsletter of the American Magnolia Society*). In the article, Joe elaborates mainly on the various cultivars of *Magnolia grandiflora* and *M. virginiana* var. *australis*. While also briefly touching on the merits of two Chinese species, *M. delavayi* and *M. nitida*, he mentions the unsuitability of several Mexican and Central American relatives of the American *M. grandiflora* (he was probably referring to *M. guatemalensis*, *M. sharpii*, and *M. schiedeana*). He went on to describe Puerto Rico's two native species, *M. splendens* and *M. portoricensis*, while lamenting their lack of hardiness for use in temperate climates.

I first read Joe's article back in 1976 and I distinctly remember how it elevated my curiosity of magnolias to an even higher level. Just what were these exotic evergreen magnolias like? I wanted to see them, touch them, and grow them myself even if that meant cultivating them inside my house in containers (I lived in New Jersey at that time). Eventually, the knowledge gained from observing and studying exotic evergreen magnolias further intensified my curiosity and appreciation for all magnolias including the deciduous magnolias that I could grow outside.

Quite a bit has changed since Joe wrote that article. Thanks to the efforts of magnolia researchers like Liu Yu-Hu (China spp.), Hans P. Nootboom (SE Asian spp.), J. Antonio Vázquez-G. (Mexican and Central American spp.), and Gustavo Lozano-C. (South American spp.), as well as advances in molecular study of magnolias by Sangtae Kim, Hiroshi Azuma, and others, we know a lot more about magnolias and their relationships. Today, there are far more evergreen magnolia species identified than Joe McDaniel could have ever imagined, probably over 200 evergreen species. But, we are just starting to scratch the surface in determining which ones can grow in warm temperate areas of the planet such as here in southeastern us. That is the objective of this article—to give a preliminary evaluation of exotic evergreen magnolias in southeastern us, based mostly on my experiences here at Magnolian Grove Arboretum in western Pickens County, South Carolina.

## Setting and Climate

Magnolian Grove Arboretum (MGA)—named in honor of William Bartram, the famous 18<sup>th</sup> century plant explorer—is situated on part of 20 acres of mostly north-facing slope here in the foothills of Blue Ridge Mountains. Bartram, who had once written about the lush “Magnolian groves” that he encountered on one of his journeys through nearby Georgia, actually discovered *Magnolia fraseri* in this part of South Carolina, perhaps near our property. Of the 400 plus Magnolias that I’ve planted here since 1992, about half are evergreen representing some 32 species.

Based on the latest (unpublished), USDA Hardiness Zone Map, MGA is considered to be on the zone 7b/8a boundary. Using my own temperature recording observations the past 14 years and through extrapolation of weather records from nearby Greenville, zone 8a probably best describes our hardiness zone. The coldest I’ve recorded during the 14 years is 6°F (−14.4°C), while in most winters the lowest temperature failed to drop below 13°F (−10.6°C). Our 1000 feet elevation promotes good air drainage and keeps us slightly warmer than the surrounding valleys. Most January days are mild averaging in the low 50s F (10s C) during the day and low 30s F (−1C) at night. Durations of below freezing temperatures lasting over 24 consecutive hours are rare and don’t occur every year. However, our summers are very warm with July days averaging near 90°F (32.2°C) during the day and 70°F (21.1°C) at night. Annual precipitation averages 60in (175cm) per year and is more or less evenly distributed over the 12 months. Compared with other parts of southeastern US, our climate is very similar to that of the major cities along or near the Interstate 85 highway corridor: Raleigh NC, Charlotte NC, Spartanburg SC, Greenville SC, Athens GA, and Atlanta GA.

The following is a compilation of preliminary results for all of the evergreen species that I have tried here. Hardiness zone and horticultural merit are also discussed for each species, and reference is given to information or photographs in the book, *Magnolias of China* (Liu, 2004) and other sources where appropriate. The tested species are listed by taxonomic group: section *Michelia*, section *Magnolia*, section *Manglietia*, section *Gwillimia*, and section *Gynopodium*.

### Section *Michelia*

The former genus *Michelia*, now placed in subgenus *Yulania* (Figlar, 2000; Figlar and Nootboom, 2004), is composed of the evergreen counterparts of the famous deciduous section *Yulania* species that include species such as *M. stellata*, *M. denudata*, etc. Important similarities include late-winter/early-spring flowering, usually before new leaves are produced, and stamens that are persistent on the floral axis well past the male phase of the flower. The majority, but not all, michelias bear flowers on abbreviated shoots along main branches, thus appearing pseudo-axillary as is sometimes seen in *Magnolia stellata* and other deciduous section *Yulania* species.

All of the section *Michelia* species are from China or neighboring countries to the south and west, and are mostly warm, temperate, not tropical species as has sometimes been reported. Since they are closely related to the deciduous *Yulania* magnolias, they are easily propagated by grafting on to rootstocks of *M. kobus*, *M. acuminata*, and others in that group. My experience has shown that species endemic to Yunnan province and southwestern China are generally more tender than those native to southeastern China. Perhaps taxa of more eastern provenance acquired hardiness during the Pleistocene since they couldn't migrate south as easily as those in southwestern China. Unlike our native, *M. grandiflora*, which goes into winter with three seasons' worth of leaves, michelias usually enter the winter with only one set—the leaves produced that year.

### ***Magnolia cathcartii***

This magnolia's classification track record is a long one: *Michelia cathcartii* (Hooker and Thomson, 1855), *Sampacca cathcartii* (Kuntze, 1891), *Alcimandra cathcartii* (Dandy, 1927), and finally *Magnolia cathcartii* (Chen and Nootboom, 1985). It is similar to other michelias mentioned here except that its blooms are positioned at the ends of long shoots as in *traditional* magnolias. Its long-stamened flowers are distinctive and ornamental (see Liu, page 19). For its introduction into North America, it went on test at MGA in 2002 and easily survived its first winter (6°F, (-14°C)), but then succumbed the following mild winter. I believe this was caused more by my poor planting job rather than by climate. I have one remaining graft.

### ***Magnolia cavaleriei***

This species is similar in foliage and flower to *M. maudiae* and *M. platy-petala*, but its leaves are longer, and the fragrant, five-inch diameter flowers have 12 tepals instead of nine. Interestingly, the flowers often resemble miniature *M. campbellii* blooms since the four inner tepals remain closed at first (see photo). Its main disadvantage is that it normally blooms here in early February. This year my plant bloomed on January 15. The flowers were frosted the next day. Though it appears to be fully hardy here, *M. maudiae* exceeds it in terms of vigor and flower production. Estimated hardiness: zone 7b.

### ***Magnolia chapensis***

Native to southeast China, this plant has very distinctive bullate leaves (somewhat blistered with veins impressed) that don't appear to be rugged enough to go through the winter, but they are. South Carolina Botanical Garden has a beautiful 20ft (6.1m) specimen, but like our plants at MGA it hasn't flowered as of yet. Similar to *M. ernestii*, there might be limitations for its use in general horticulture. Flowers are said to be yellow and just two to three inches in diameter (six tepals). Plants under the name *Michelia tsoi* are *Magnolia chapensis*. Estimated hardiness: zone 7b.



*Magnolia cavaleriei* bloom. Note similarity of flower form to *M. campbellii*.

### ***Magnolia dianica***

This, the former *Michelia yunnanensis*, quite possibly has the highest potential for ornamental horticulture of all the exotic evergreen magnolias in this list. It was renamed *Magnolia dianica* by Sima Yong-Kang (2001). Endemic to Yunnan province in sw China, it produces delightful, small, pure white flowers in early April at MGA on a shrub-like plant that can become a small tree (see Don King's cover photos and article by Glyn Church in *Magnolia*, Vol. 40, No. 77). Undoubtedly closely related to the similarly hardy *Magnolia figo*, *M. dianica* is far more ornamental than the former species as one can easily see from Glyn Church's photograph on page 28. Selections are currently being made, especially in Australia and NZ. Breeding could eventually

produce possible improvements as well, especially if crossed with larger flowered (and earlier flowering) species. Crossing it with *M. stellata* could also be interesting. Estimated hardiness: zone 7a (6b?)

### ***Magnolia doltsopa***

Undoubtedly, many, including the late John Allen Smith, have tried and failed with this outstanding species here in the Southeast. I have a few plants that have overwintered successfully in containers with only minor leaf damage, so I now have it on test here at MGA. Much has been published regarding this species and its ornamental merit (see Treseder & Blamey, 1981). Pat McCracken theorizes that most *M. doltsopa* propagated in the us are from plants of less cold hardy provenance. He favors testing seedlings from proven hardier cultivars like the NZ cultivar 'Rusty.' Hopefully, there will be more to say about its hardiness in the future.

### ***Magnolia ernestii***

Formerly known as *Michelia wilsonii*, its new name still commemorates Ernest Wilson by using his first name. Native to the Metasequoia region of China,

*M. ernestii* is a fairly cold hardy species that actually withstood one winter outside in Pomona, NY (Zone 6b) with some twig dieback. It produces small pale yellow flowers of 9 to 12 tepals (see Liu, page 324), but my large, eight-year-old plants still haven't flowered. There are other disadvantages: its leaf petioles are weak and the leaves are not very winter durable, so its evergreen leaves are easily damaged or broken away even in mild winters. If that's not enough, it breaks vegetative dormancy very early (mid-March), and thus can be easily damaged by frost. Hopefully, these negatives will be offset when it finally blooms. Some nurseries have offered it under the invalid name, *Michelia sinensis*. Perhaps breeders should consider crossing *M. ernestii* with *M. acuminata* var. *subcordata* with the goal of deeper yellow blooms on a hardy tree. Estimated hardiness: zone 7a.

### ***Magnolia floribunda***

Scions of this species were obtained from Sapa province in northern Vietnam via Tom Hudson (TH1707) and grafted on to *M. × loebneri*. It suffered much damage its first winter here and died shortly thereafter. It's very likely not hardy here. For more information and photos, see Liu, page 254.

### ***Magnolia figo* (and its varieties)**

*Magnolia figo* is an old denizen of southern us gardens. It's camellia-like foliage presentation and "candy banana" fragrance of its small inconspicuous, April-blooming, flowers make it a great foundation plant (nice photos of form and flower in Liu, page 251).

Recently, *Magnolia figo* var. *skinneriana* has become commercially available and seems to be a more robust grower than the original variety. In addition, it tends to re-bloom during the summer months. The only other difference between these two varieties has to do with twig color: tan to tawny in var. *skinneriana*, dark gray-brown in var. *figo*. Another variety, *M. figo* var. *crassipes*, differs little from the other two except for its deep purple to purple-red flowers. All of these are fully hardy here. Interestingly, *M. figo* has been crossed with *M. acuminata* producing an intermediate plant with *acuminata*-like blooms (except there are no sepaloid tepals) sometimes with a slight, barely perceptible, banana scent. Breeders should consider using var. *crassipes* for crossing with larger-flowered species. All varieties are endemic to SE China especially Guangdong province. Estimated hardiness: zone 7b.

### ***Magnolia × foggii***

This hybrid between the tender Yunnan plant, *M. doltsopa*, and the hardy *M. figo* is easily as hardy as its Banana Shrub parent. Its fairly large, fragrant, white flowers are even produced on very young plants. It is perfectly hardy at MGA. Estimated hardiness: zone 7b.

***Magnolia foveolata***

Another very hardy species, *M. foveolata*, has distinctive cup-shaped flowers with the gynoecium extending beyond the reach of the tepals—an interesting sight (see photos and artwork, Liu, pages 256-258). This species is probably the last one to wake from winter dormancy and one of the latest to flower (probably late April), so it may be the most advantageous species of the *Michelia* group to grow in southeastern United States. Flowers are white to cream, 4–5 in (10–12.7 cm) in diameter when open flat. Leaves are thick and semi-glossy, looking somewhat similar to *M. grandiflora* but often larger, to 12 in (30 cm) long by 5 in (12 cm) wide. Its thick, winter-durable, leaves have never been injured by our winters. Stems, buds, and leaves (both sides at first) are lightly to thickly covered with golden-russet or silver pubescence (see photo). Moreover, this indumentum glistens unlike the dull red-brown felt on *M. grandiflora*. Native to wide range of southeast China, as expected, there is much variability from plant to plant. One superior cultivar has already been selected: the “Shibamichi clone” has intense shiny copper indumentum on the buds, twigs, and leaf backs. Undoubtedly,



Rich foliage of *M. foveolata*. Note the glistening, golden indumentum on the top side of the new leaf.

more superior cultivars are likely to be selected. Some botanists place *Michelia aenea* and *M. fulgens* (see Liu, pages 212 and 262) into *Magnolia foveolata*, and I would tend to agree. Estimated hardiness: zone 7a.

***Magnolia foveolata* var. *cinerascens***

This is similar to the previous taxon except that the indumentum is mainly silver-gray, and is not retained on the top (adaxial) sides of leaves. Thus, the foliage appears darker and more glossy. My plants are all grafted on to *M. acuminata* from scions received from Jiangxi province in China by Tom Hudson (TH2285). I just planted this variety in the ground in 2005, but having previously survived 6°F (–14°C) outside in a buried container, it is probably nearly as hardy as the typ-

ical variety. It has handsome foliage and grafts very easily. I think this will be another winner here. Estimated hardiness: zone 7b.

### ***Magnolia fulva***

Another Tom Hudson collection (TH1806) from Sapa, northern Vietnam, *Magnolia fulva* is a spectacular foliage magnolia that is not at all hardy here. It succumbed quickly when temperatures dropped below 20°F (-6.7°C). For more information see Liu, page 264. Estimated hardiness: zone 9b.

### ***Magnolia fulva* var. *calcicola***

Liu classified this as *Michelia calcicola*; Chen and Nooteboom (1993) immersed it into a very similar taxon, *M. ingrata*; and recently Sima (2003) described it as a variety of *M. fulva*, which in my view, is the best placement. This plant has so much fulvous pubescence (blonde or tawny colored) that the buds and twigs look like thick wool. The large bright green leaves are complemented with glaucous white undersides, and the pretty yellow flowers are produced abundantly, even on small plants. Unfortunately, this very ornamental species may only be marginally hardy here. Atlanta Botanical Garden (ABG) has had it in the ground for several years and the plant has been standing still or declining somewhat. I established it in the ground at MGA this summer and already it is covered with bloom buds set for next spring. Regrettably, some photos and descriptions of this taxon have been previously published mistakenly as *Michelia xanthantha* in some literature, including *Magnolias and their Allies* (Hunt, ed., 1998, see page 188). *M. xanthantha* is a very different taxon—the twigs



*Magnolia fulva* var. *calcicola* showing densely woolly buds and glaucous backed leaves.

and buds are glabrous, not woolly. Mistakes like this often persist; for example, ABG still has their plant labeled as *M. xanthantha*. Estimated hardiness: zone 8b.

***Magnolia macclurei***

This magnolia was made famous by the words written in the notebook of its discoverer, Floyd McClure: "The fragrance of the flowers is the most intoxicating I ever breathed" (Dandy, 1928). Even if it weren't a highly ornamental magnolia, McClure's inscription alone would be reason to try to grow it. I was unsuccessful with my first two attempts several years ago. More recently, a plant left out in a container during the entire of winter 2002/2003 suffered no damage, while others were killed or badly damaged. That plant has been planted out at MGA this summer. See nice photos in Liu pages, 284-287. It's a real beauty. Some botanists consider *Magnolia macclurei* to be conspecific with *Magnolia mediocris* (Sima and Chalermglin, 2002). Estimated hardiness: zone 8b/9a.

***Magnolia martinii***

Native to as far north as the Sichuan-Hubei Metasequoia region of China, this mostly glabrous, stemmed magnolia with five-inch pale yellow flowers should be hardy at MGA. Pat McCracken gave me a plant to try several years ago, but I lost it. It grows for Pat in Raleigh, but took some damage this past winter.

***Magnolia maudiae***

This species, which is native to eastern China, has fairly large (6in (15.2cm) diameter) fragrant, abundant, white flowers in the early spring at about the same time as *M. zenii*, which is normally in mid-February here. The fragrance is similar to that of Gardenia but far better, in my opinion. I've had it on test at MGA since 1997 and it's never been significantly cold damaged, only a few burned leaves one or two times. *Magnolia maudiae*, which has buff evergreen leaves, slightly glaucous beneath, is distinctive in that the plant is almost entirely glabrous (Liu (2004) and Chen & Nootboom (1993) report that it is completely glabrous. However, hairs that are visible with a hand lens can be found at the apex of flower buds).

*M. maudiae* is beautiful in both foliage and flower. So far, the main disadvantage is the very early bloom. Unlike *M. zenii* flowers that can remain undamaged after several degrees of frost, *M. maudiae* blooms are easily ruined by light frost. During winter of 2005, this plant was in full bloom at nearby South Carolina Botanical Garden on January 14 after two weeks of no frost and daytime temperatures averaging 68°F (20°C). Two days later all the blooms were browned by frost. Obviously, later blooming selections should be sought out. Breeding opportunities exist between this and later blooming species such as *Magnolia dianica*. Plants often begin blooming at two or three years of age. Estimated hardiness: zone 8a.



***Magnolia maudiae* var. *platypetala***

This taxon has been tossed around a bit taxonomically speaking. Chen and Nootboom (1993) placed it into *M. cavaleriei*, and more recently Sima (2001) repositioned it as a variety of *M. maudiae*. Also native to southeastern China—but slightly north of *M. maudiae*'s range—it is similar to that species, except the flowers have broader tepals, the leaves are more glossy, and fine russet indumentum can be found on the stems, leaves (both surfaces at first), petioles, etc. *M. cavaleriei* is also similar but the leaves are much longer and have silver-gray pubescence. Based on my observations, *M. platypetala* can easily stand by itself as a species.

South Carolina Botanical Garden has a mature sized *M. platypetala* growing alongside *M. maudiae*, and clearly the latter taxon is superior in bloom (more flowers of slightly larger size; see photos Liu, page 306). Despite blooming very early (late February here), *M. platypetala* tends to break vegetative dormancy rather late (mid May) and it lacks the vigor of other species—ten internodes of growth (about 6–8in (15.2cm) inches) per year seem to be the norm even on young plants. Its attractive glossy foliage tends to drop off in spring as the new foliage slowly emerges, so the plant appears wanting for more foliage at that time. In spite of these apparent shortcomings, it has never been damaged at all by our winters; it's a good collector plant; and may be useful as a breeding parent (for hardiness). Estimated hardiness: zone 7b.

***Magnolia odora***

This, the former *Michelia odora* and *Tsoongiodendron odorum*, is a legendary magnolia species because of its elephantine fruits that are reported to be the largest in the genus (see photo). The individual carpels are sometimes over two inches long! I've failed with this taxon twice before, but possibly due to drought. A nice plant has been growing at J.C. Raulston Arboretum for many years, so I will be trying it again on various sites at MGA. Estimated hardiness: zone 8b.

***Magnolia shiluensis***

This handsome magnolia (see photos, Liu, pages 314-315) native to China's Hainan Island, has just been planted out at MGA. Zeng Qing-Wen, of the South China Botanical Garden, once told me that this was his favorite magnolia. Based on its native range in tropical China, I doubt whether it is at all hardy here. Its inclusion in this paper is mainly to document its introduction into North America. I have sent cuttings to the ABG and they've been successfully propagated. A plant will eventually be positioned in their conservatory.



Enormous dehiscent fruit of *Magnolia odora*.

### Section *Magnolia*

Fifteen of the 16 species of this North and Central American group were formerly included in section *Theorhodon*, which includes the familiar *M. grandiflora*. Since DNA data and morphology have since confirmed that *Magnolia virginiana* is part of the same group, the name section *Theorhodon* had to be dropped in favor section *Magnolia* since *M. virginiana* is the type species. Only one exotic species, *Magnolia tamaulipana*, appears to be hardy at MGA. This section resides within subgenus *Magnolia*, which differs from subgenus *Yulania* on many accounts: the most obvious being mid to late season flowering, usually after new leaves have been produced; and stamens which are caducous (meaning they fall off) during the onset of the male stage of the flower.

### *Magnolia tamaulipana*

Native to Tamaulipas province in northwestern Mexico, *M. tamaulipana* (Vázquez-G., 1994) is rock-solid hardy at MGA. It differs from its cousin, *M. grandiflora* by the lack of red-brown indumentum on the leaves, stems, and buds, and by its flowers, which have red-purple pigment on both top and bottom of the stamens. Yucca-Do Nursery is selecting improved varieties—reportedly one with 14-inch diameter flowers. Like *M. grandiflora*, it is hexaploid and therefore quite variable, and according to Pat McCracken some clones are not as hardy as others. I have several clones at MGA in-

cluding 'Bronze Sentinel' and the John Allen Smith form. Estimated hardiness: zone 7a.

### Section *Manglietia*

The former genus *Manglietia* is now more accurately placed within subgenus *Magnolia*. Their closest relatives are probably those of the deciduous section *Rhytidospermum*, which include the familiar *Magnolia tripetala*, and *M. obovata*. Like their deciduous counterparts, species of section *Manglietia* often produce false whorls or leaf flushing when coming out of dormancy in the spring. They differ principally by their evergreen foliage (except for one species) and usually four or more seeds per fruiting carpel. Most of the 29, or so, species of the group are warm temperate to subtropical. All the hardy species are from China and northern Vietnam.

#### *Magnolia chevaleriei*\*

Native to Vietnam and northern Laos, this magnolia was collected by Dan Hinkley and has been listed in Heronswood's catalog as *Magnolia* sp. HWJ99621. It has been planted out at MGA for the past three years and dies back almost to the ground each winter. Although it grows back fairly vigorously, it is clear to me that this species is too tender for us. Estimated hardiness: zone 9a.

#### *Magnolia conifera*\*

Often this taxon is listed as *M. chingii*, but since the synonymous *M. conifera* was published one year earlier, the name *M. conifera* takes priority. One can see from Liu (pages 130–131) that it produces small white blooms with long peduncles that are reminiscent of those of the Oyama magnolias like *M. sieboldii*. The plant is a vigorous grower at MGA and the glossy thick dark green leaves are large (8in (20.3cm) long, 2in (5.1cm) wide) and very ornamental. Estimated hardiness: zone 7b.

#### *Magnolia fordiana*

A very hardy, almost *M. grandiflora*-like plant, but with very narrow evergreen leaves and much smaller, white flowers that appear in May; *M. fordiana* is a proven hardy evergreen magnolia at MGA. It's native to a wide area of south China from Yunnan to Guangdong province. According to Chen and Nooteboom there are several named species that are synonymous with it such as *Manglietia forrestii*, *Manglietia hainanensis*, and *Manglietia yuyuanensis*. The latter form is under cultivation at MGA (and with Pat McCracken) and has never been damaged at either of our locations. Endemic to Yuyuan in Zhejiang province (north of *fordiana*'s range), this form differs from typical *M. fordiana* by its smaller leaves and possibly increased hardiness. Flowers on both forms are Sweetbay-like and slightly fragrant. Fruits are

attractive shiny-red as they ripen. Estimated hardiness: 7a (possibly 6b for Yuyuan form).

### ***Magnolia insignis***

*Magnolia insignis* often produces red or partially red (or pink) flowers, and is similar to the previous species except the leaves are broader and not as coriaceous (see photo). It produces flowers at an earlier age, evidently. Flowers are small and cup-shaped, opening in the early evening as in *M. virginiana*.



*Magnolia insignis*. A red-flowering form at the South Carolina Botanical Garden.

Their fragrance is pleasant, similar to that of candied-watermelon. Native to a very wide area of southern China and west into the Himalayas and bordering countries, plants of *M. insignis* may understandably have varying degrees of cold hardiness. I have plants from two sources (or provenances) and they are both hardy at MGA. As one can see from photos in Liu, pages 156–157, the flower color can be stunningly red. Often, however, individual plants produce only white or slightly pink tinted blooms. Fortunately, this red form type has been distributed to several nurseries in the us (via Piroche Nurseries, Pitt Meadows, BC). The red flowering form has been crossed

with *M. virginiana* producing a pink hybrid Sweetbay. Breeders should consider putting pollen of the red form onto a low ploidy *M. grandiflora*. *M. insignis* breaks dormancy late in the spring like *M. grandiflora*. Since it is such a widespread species, there are undoubtedly many synonyms including *M. patungensis*, *M. maguanica*, and *M. carimina* (the later species even shares the same photo subject as *M. insignis* in Liu, pages 127, 157). Estimated hardiness: zone 7b.

### ***Magnolia megaphylla*\***

A spectacular foliage species, *M. megaphylla* is only mentioned here because plants have been tested at ABC and will soon be tested here. Native to a few groves of individuals in SE Yunnan and neighboring Guangxi, *M. megaphylla* is under China's State Protection Category II. From the distance, the

tree looks like the American *Magnolia tripetala*—same size/shape leaves and positioned in false whorls on the branch tips (see photo, and Liu, pages 168-169). Closer examination reveals the bright russet colored hairs that cover the stems, buds, petioles and veins of leafbacks. This species has declined every year at ABG and is very likely not hardy. I may keep a plant under glass just in case it should become extinct in China. This could aid in its re-establishment there if ever necessary. Estimated hardiness: zone 9a.

### ***Magnolia moto*\***

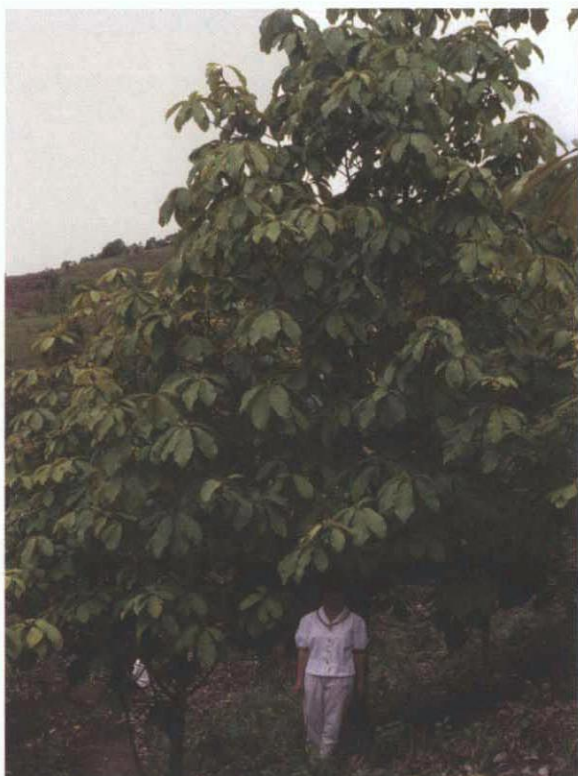
Slightly resembling the previous species but with much smaller leaves is *M. moto*.

Native to Guangdong province in SE China, this magnolia seems at least partially hardy at MGA.

After dying back to the ground (about 6 years ago) the plant is gradually coming back. I've acquired another specimen to plant in a more favorable location. Flowers are small, white with red-purple stamens and resemble those of *M. conifera*. Estimated hardiness: zone 8b.

### ***Magnolia pachyphylla*\***

This magnolia was introduced to North America via seed sent to me from the South China Botanical Garden in 2001. I have two plants and a third was given to McMahan's Nursery, Clermont Georgia, for propagation and backup. Discovered in Guangdong province in 1961, *M. pachyphylla*, as its name suggests, has the most rigid coriaceous leaves of any magnolia discussed here. New growth is a very attractive purple-red (see photo) and since the plant continues to grow into late summer, we are able to enjoy the purple foliage through the entire growing season. According to Liu, flowers are similar to, or perhaps a little larger, than in *M. fordiana*. Since I planted it three years ago, it comes through the winter in pristine condition. I believe it has outstanding horticultural potential for southeastern us and beyond. Estimated hardiness: zone 7b (7a?).



A *Magnolia megaphylla* growing in Yunnan, China resembles an evergreen version of *M. tripetala*.



*Magnolia pachyphylla* produces new, purple-pigmented leaves all season long.

### Section *Gwillimia*

Many of the 16 species in this Asian section of subgenus *Magnolia* roughly resemble the American *M. grandiflora* except for their generally larger leaves and prominent stipule scars on the leaf petioles. They are native to southern China and southward. So far, only one species is considered temperate.

#### *Magnolia delavayi*

Most of us are familiar with this outstanding species that some say has the most spectacular evergreen foliage of any magnolia. Although fine specimens are cultivated in Ireland, parts of UK and western Europe, and along the Pacific Coast of the US; I know of no established plant of *M. delavayi* in southeastern US. I've tried it five times at MGA but all of these declined and died out after three to five years. This year I noticed that seedlings in two-gallon containers lost turgidity (leaves and stems went limp) on hot summer days, even in shade, while other magnolias did not. Perhaps this species requires cool soil like that of its montane habitat in Yunnan China. I have planted out several two-year-old seedlings in cooler situations here at MGA, this year. So far, these are doing better than when in containers. Hopefully, I will be able to get one or two established. Breeders should consider crossing this species with *M. virginiana*—both have leaves with white backs yet one is easy to cultivate the other is not. Perhaps such a cross would give us a delavayi-like magnolia for the southeast.



*Magnolia lotungensis* showing its highly polished, red Spring foliage.

### Section *Gynopodium* (open-leaf magnolias)

With the famous *Magnolia nitida* as its type species, this section is maintained in the new classification but it is now also placed in its own subgenus *Gynopodium* along with a new section *Manglietiastrum* (which contains the former *Manglietiastrum sinicum*, and the two former *Pachylarnax* spp.). They are separated from the other two subgenera by two important characters: all species in this subgenus are completely glabrous (have no hairs on plant parts) and their new leaves emerge from the buds in an open position instead of folded in half. Section *Gynopodium* has sometimes been referred to as genus *Parakmeria*, especially in China (see Liu, page 336). The nine *Magnolias* of subgenus *Gynopodium* are native to parts of South China southwestward to adjacent countries in continental SE Asia. Only one species is likely fully hardy here.

#### ***Magnolia lotungensis***

Also known as *M. nitida* var. *lotungensis*, *Magnolia lotungensis* should stand alone as a species since it is hexaploid, while *M. nitida* is diploid. Also, *M. lotungensis* is androdioecious, meaning that some individual trees produce male flowers only, while *M. nitida* has only bisexual flowering individuals. Having never received any winter damage, this species is fully hardy at MGA as well as at Raleigh (per Pat McCracken). The thick rubbery leaves are bright red when first produced (see photo) and are only 1.5–2in (3.8–5.1cm) long, but these shiny leaves are this species' most ornamental feature. My largest specimen, nearly 20ft (6.1m) tall, is built like an ever-

green column with a spread of only four feet. While mine hasn't yet flowered, blooms are similar to *M. nitida* except stamens are pink-purple instead of white. Estimated hardiness: zone 7a (6b?).

### ***Magnolia yunnanensis***

Native to Yunnan, this species is similar to the previous one except for its consistently larger leaves with thinner, less coreaceous texture. I've seen large specimens in Yunnan China and they resemble *M. grandiflora* from a distance. I've tried two plants at MGA: one was killed to the ground while the other was severely damaged. Estimated hardiness: zone 9a.

### **Concluding Comments**

Except for the *M. figo* group (including *M. dianica*), which can be rather shrub-like, the ultimate height of these magnolias is not certain, since most have been cultivated only a few years or so. My best guess is that one could expect these could grow to about 30 feet (about 9 meters), or so, in height. Hopefully, we will soon learn more.

I am confident that the body of knowledge on the culture of evergreen magnolias will continue to expand rapidly in the years to come. Moreover, many evergreen species still haven't been introduced from China or other places yet. For example, none of the 40 or so species from South America (Lozano-C., 1994) has ever been cultivated outside its native land! Some of these grow in cool high elevation habitats, thus it is possible that a few could be temperate. As you can see, the future looks bright for variety in evergreen magnolias.

Author's note: Asterisked names for some section *Manglietia* taxa indicate that those particular taxa have not been properly published with genus *Magnolia* names as of this writing. *M. pachyphylla* will have to be re-named since the specific epithet had been previously assigned to another taxon in *Magnolia*.

*I would like to dedicate this paper to the memory of Joe McDaniel, whose passion for magnolias was second to none.*

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*All photographs taken by the author.*

