

André Michaux and the Discovery of *Magnolia macrophylla* in North Carolina

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ABSTRACT

Magnolia macrophylla has been variously reported in the literature as having been discovered by André Michaux (1746-1802) in either North Carolina in 1789 or Tennessee in 1795 or perhaps by William Bartram (1739-1823) in Alabama in the 1770's. The present study uses a variety of source materials, including primary sources, to sort out the conflicting geographic claims and proposes the location of Michaux's North Carolina sites from new field studies.

INTRODUCTION

André Michaux is honored both as the author of the first flora of North America, Flora Boreali-Americana which was published posthumously (Michaux 1803a), and as the authority for scores of plants (Uttal 1984). He secured his place in botanical history with his work in North America, having been sent to the United States by the French government of Louis XVI in 1785. His principal mission, an economic one, was to find new species of trees which could be used to replant the forests of France, which had been depleted of the best timber for shipbuilding during a century of warfare with Great Britain. He also sought interesting new ornamental garden plants. The French were eager to resume the introduction of new species from North America into Europe, a flow that recently had been interrupted by the American Revolution. Although the French Revolution soon ended his government funding, Michaux remained in America and

continued his search for new plants until 1796 using his own personal resources (Chinard 1957).

Michaux vigorously pursued his vocation, botanizing throughout the eastern half of the continent. He made several extended journeys of exploration in frontier areas, including Florida, the Hudson Bay region, the Mississippi River, and even visited the Bahamas in his search for new species. He was especially active in the Carolinas. For most of his stay in America his base of operations was a garden he established near Charleston, South Carolina. Rembert (1979) called him “perhaps the best field botanist ever to collect in the Carolinas,” remarking at the same time that all the data from his collections in this region had not yet been sifted and analyzed.

Michaux was the first scientifically trained botanist to explore and collect in the southern Appalachian Mountains. In the region where Georgia, North Carolina and South Carolina meet today and where he first collected the plant later to be described as *Shortia galacifolia* (Zahner and Jones 1983), Michaux also encountered a new magnolia tree that was then unknown in France. William Bartram had found and described this species in the same area a decade earlier, but Bartram had not published a name for it. Recording his observations of this tree in his journal in 1787 and 1788, Michaux used four different binomials for the species. The most striking is an entry in December 1788. The French botanist appears to be grasping to remember the name Bartram had used for this new species. In one sentence Michaux suggests three different binomials including “*Magnolia cordata*” (Seaborn 1976).

More than a decade later, Michaux, or more likely his scientific and literary agents, used the binomial *Magnolia cordata* again. In Michaux’s Flora Boreali-

Americana (1803a), this is the binomial used for a yellow-flowered magnolia related to *Magnolia acuminata*. Although Michaux had reported collecting *M. cordata* in 1788 (Seaborn 1976), it was not collected again for use in cultivation until the twentieth century (Coker 1943). Sargent (1886, 1889b) examined the question of whether or not the “*M. cordata*” mentioned in the journal was actually the same species as the yellow-flowered *M. cordata* of Michaux’s Flora. Concluding that it was not, Sargent pointed out that the species identified in the journal as “*M. cordata*” was the tree we recognize today as *Magnolia fraseri* Walter.

In 1789, Michaux made two little-noticed journeys to the North Carolina mountains (Savage and Savage 1986). The botanist followed a new route: after proceeding north across central South Carolina and through the town of Camden, he crossed into North Carolina near the village of Charlotte. From Charlotte he traveled northwest across the Piedmont through the new settlements of Lincolnton and Morganton, to ascend the Blue Ridge a few miles north of what is today the town of Marion in McDowell County, North Carolina. Between Charlotte and Lincolnton, and not far from the Catawba River, Michaux recorded observations of magnolia trees on both of these 1789 journeys. Savage and Savage (1986) relate that he referred to these trees by the names *Magnolia cordata* in June and *Magnolia glauca* in November. Over the next seven years he passed through or near Charlotte again and again, and continued to record observations of magnolias between Charlotte and Lincolnton (Sargent 1889a).

Savage and Savage (1986) believed the “*Magnolia cordata*” Michaux observed in June 1789 to be the yellow-flowered magnolia we recognize as *Magnolia acuminata* var. *subcordata* Sarg. and pointed out that he observed the same species again at the foot

of some high mountains a few days later. They explained that the “*Magnolia glauca*” he observed in November was the mostly coastal plain species known today by the name *Magnolia virginiana* L.

Rembert (1979) reported that Sargent believed *M. macrophylla* was first collected in Tennessee. Savage and Savage (1986) stated that Michaux first observed *M. macrophylla* in Tennessee in 1795. In the Silva of North America (1890-1902), Sargent concluded that Michaux discovered the tree in North Carolina in 1789. Other sources (Coker and Totten 1945, Peattie 1948, Fogg 1961, Little 1980) have also placed the discovery in North Carolina. Mohr (1901) surmised that William Bartram must have encountered this tree in Alabama before Michaux arrived in America. Ewan (personal comm., 1995) described this plant’s discovery as a “swampy” area for scholarly research.

THE ROLES OF BARTRAM AND MICHAUX

William Bartram occupies a special place in American history. Son of John Bartram (1699-1777), the leading collecting botanist of colonial America, William’s influence has reached beyond science into literature, art and philosophy. His Travels, first published in 1791, was America’s first significant book of natural history (Slaughter 1996).

Between 1773 and 1777 William Bartram traveled extensively in what is now the southeastern United States. Analyzing Bartram’s writings and plotting his route, Harper (1958) provides good evidence for the correctness of Mohr’s suggestion that Bartram encountered *Magnolia macrophylla*. Bartram made two references in Travels to “*Magnolia auriculata*” while not far from Mobile, Alabama in July and August 1775 (Harper 1958). The later of the two descriptions is a literary diamond:

“...how gaily flutter the radiated wings of the *Magnolia auriculata*, each branch supporting an expanded umbrella, superbly crested with a silver plume, fragrant blossom, or crimson studded strobile and fruits.”

In addition, Harper (1958) cites a 1788 letter from Bartram to a friend in England that includes the following clarifying statement about this tree:

“I shall just observe that I discovered, in the Creek Nation & Wt. of Georgia a Species of *Magnolia (auriculata)* very different from Mr. Frazers. The leaves of which were very large near 2 feet in length, the Flowers, white, Very large, & Fragrant & the Strobile or Seed Vessel 4.5 inches in length of a fine Crimson Color”

Harper (1958) cited no additional new evidence linking the celebrated author of Travels to *M. macrophylla*. Merrill (1945) had earlier offered the insight that when Bartram used “*M. auriculata*” in the vicinity of Mobile, he referred to the tree we recognize as *M. macrophylla*, while in the southern Appalachians, Bartram used “*M. auriculata*” when he referred to the tree we recognize today as *M. fraseri*.

Bartram not only repeated the name “*M. auriculata*” in both locales, he also repeated the characteristics and distinctive descriptive phrases he penned for the tree we recognize today as *M. fraseri*. The actual characteristics he enumerated in the description in Travels from the vicinity of Mobile and augmented with the 1788 letter are the same ones he reported in Travels for the “*M. auriculata*” he found in the southern Appalachians. The magnolia with long, auriculate leaves “*different from Mr. Frazers*”, which Bartram reported near Mobile, would likely have been *M. macrophylla*. At that time he was within the geographic range of *M. macrophylla* and not *M. fraseri* (Mohr

1901). However, Bartram can not be credited with describing the differences between *M. macrophylla* and *M. fraseri*, nor for describing *M. macrophylla* as a distinct species.

Without Bartram's literary flair, but with scientific thoroughness, André Michaux observed and collected this species, and published the valid and legitimate name *Magnolia macrophylla*, in Flora Boreali-Americana (1803a). Michaux's herbarium has been preserved in the Muséum National d'Histoire Naturelle, Paris (P). Of Michaux's four herbarium specimens at (P), only one contains floral parts (Inter Documentation Company AG 1967). A sheet of paper with Michaux's handwritten Latin description of the species is attached to this particular herbarium sheet. Sargent, J.E. Dandy and others have annotated this herbarium sheet confirming that it represents the type (Tobe 1993, personal comm. 1996). Following Sargent and others, Tobe (1993, personal comm. 1996) affirms that Michaux collected this specimen in Tennessee in 1795.

Michaux introduced the plant into European gardens about 1800 (Sargent 1890-1902). According to Michaux's son François André (1819), the species was so closely identified with his father that it was often referred to in print as *Magnolia michauxii* by both botanists and gardeners. The younger Michaux related that he discouraged the use of this name honoring his father in favor of the one his father had chosen, *Magnolia macrophylla*. The balance of this study addresses where and when André Michaux, author of the species name, first encountered *M. macrophylla*.

METHODOLOGY AND SOURCES

André Michaux had a penchant for recording landmarks, distances, and the names of people he encountered on his travels. Using Michaux's mileage estimates, three of the four early settlers he mentioned from the small area between Charlotte and Lincolnton

were identified and their farms located. His mileage estimates proved to be accurate as observed earlier by both Zahner and Jones (1983) and Seaborn (1976).

The best old maps available (Cumming 1966): those of Price and Strother (1808) and MacRae and Brazier (1833), were used to determine Michaux's routes of travel through the area between Charlotte and Lincolnton, and to plot the geographic location of his magnolia entries. Contemporary and early twentieth century topographic maps published by the U.S. Geological Survey were examined for clues (USGS 1970, USGS 1914). Having determined within a few square miles the locations of Michaux's eighteenth century magnolia stations, the area was field examined for extant magnolia populations in the company of local landowners.

ANDRÉ MICHAUX'S ENCOUNTERS WITH *Magnolia macrophylla*

We begin by examining Michaux's journal entry for June 10, 1789. There are few details because Michaux lost the original notebook in which he had recorded his observations. In the journal Michaux indicates in a footnote that these observations were summarized three weeks later in a replacement notebook (Sargent 1889a).

“On June 10 I passed by Charlotte in Mecklenburg County, about 80 miles from Camden. I saw a Magnolia cordata 18 miles from Charlotte. This Magnolia appears to be different from the one discovered several years previously. The leaves are pale sea green color or bluish in color, very marked on the underside.”

In a journey of over three hundred miles through territory new to him, this magnolia is one of the few plants that he mentioned in his reconstructed journal.

“*Cordata*,” which refers to the shape of the leaf base, is a key characteristic in Magnolia.

Radford et al. (1968) list three species with leaves auriculate or cordate at the base: *M. macrophylla*, *M. fraseri* and *M. pyramidata*. Of these three, only *M. macrophylla* has been found growing in the wild 18 miles west of Charlotte today. Nonetheless, we are fortunate that François André Michaux was also present. In his North American Sylva (1819), the younger Michaux described the discovery of *M. macrophylla* this way:

“In the month of June, 1789, in the first journey made by my father from Charleston to the Mountains of North Carolina, I accompanied him, and discovered this tree, which he immediately judged to be a new species of Magnolia. The spot on which we found this magnificent vegetable is in North Carolina, 10 miles south of Lincolnton and 250 miles from Charleston.”

François André’s corroborating account must have been overlooked by Michaux’s biographers. It provides the irrefutable proof of the place of his father’s discovery. However, it is important to analyze additional new findings about André Michaux’s travels in the Carolina Piedmont which enable us to relocate his magnolia populations.

André Michaux retraced the route of this first journey in the autumn of the same year. This time he wrote a full Latin description of the tree in his journal:

“On the 16th of November 1789, on the Catawba River I came by a place called Tuckasegee Ford 14 miles from Charlotte; two miles before arriving at this ford we found an unknown shrubby tree; it had opposite leaves. We slept at the house of Peter Smith. One or two miles before arriving there, and near the banks of the creek I saw some Ilex

and Kalmia and a Magnolia glauca foliis longissimis et cordatis et fructibus globosis et ramis albicantibus acumine sericeis. This magnolia is much less tall than the known species of magnolia. This journey was 26 miles.

On November 17, 1789 we passed by Lincoln Court House 12 miles”

Two things about this passage are important for our knowledge about Michaux's discovery of *Magnolia macrophylla*. First, the Latin passage is in good accordance with modern descriptions (cf. Radford et al. 1968, Fogg 1961, Callaway 1994). Second, his mention of the house of Peter Smith as a reference point is most helpful. Since he reported finding the magnolia one to two miles east of Peter Smith's, this narrows the search area to a few square miles between the Tuckasegee Ford and Lincolnton.

Peter Smith entertained other notable visitors (Mitchell 1905, Ewan and Ewan 1963), and has descendants living in the area today (Love 1974, Nixon 1906). We have sources with which to locate the site of this pioneer settler's home (Mitchell 1905, Hoffman 1915, Rev. Edward Smith Jr. personal comm. 1995). The house was no longer standing in the early 1900's, but these sources indicate that it was located along the road from Tuckasegee Ford to Lincolnton west of Mauney Creek and within a few hundred feet of the Mauney Cemetery. This small, well-kept cemetery is shown one mile west of the town of Stanley on contemporary topographic maps (USGS 1970).

Elisha Mitchell's account (1905) confirms that Peter Smith lived along the Tuckasegee Road. The old maps indicate that the road ran generally southeast toward Tuckasegee Ford (Price and Strother 1808, MacRae and Brazier 1833). However, the location of the old roadbed for the Tuckasegee Ford to Lincolnton road east of Peter Smith's through the environs of Stanley is not precisely known today.

Before this study began, the North Carolina Natural Heritage Program had two reports of *M. macrophylla* in this part of Gaston County (Amoroso 1995). Neither site seemed to fit the André Michaux story. With a series of field trips, and with the aid of landowner Jack C. Moore or other local residents, *M. macrophylla* has been found growing along the steep banks of small tributary streams of both Mauney Creek and Stanley Creek in the immediate environs of the town of Stanley, as well as along Hoyle Creek to the west of Stanley. Clearly, Michaux could have encountered *M. macrophylla* at any creek or branch he might have crossed one to two miles east of Peter Smith's. Given the nature of the landscape and our uncertainty about his precise path, he could easily have crossed more than one of these streams in an area not much greater than a square mile.

After these two journeys in 1789, Michaux's journal shows that he traveled this road past Peter Smith's three more times: in 1794, 1795 and for the last time in 1796. Here are his 1794 journal entries from Charlotte to Lincolnton translated by Dugger (1934):

“July 23rd passed through Ben. Smith, twenty miles from Charlotte.

Two or three miles before arriving there saw the Magnolia tomentoso-glauca fol. cordatis longiorib: new Stewartia? Slept six miles from B. Smith.

July 24th passed through Lincoln and dined with Reinhart”

This is Michaux's first mention of Ben. or Bennet Smith, who is not as easily traced as Peter Smith. However, both Smiths were neighbors with homes less than a mile apart. With this knowledge, it becomes apparent that the July 1794, and both the June and November 1789 magnolia references are from the same approximate location.

On his 1795 journey through the Piedmont, Michaux chose to bypass Charlotte. This trip he crossed the Catawba River at Land's Ford, south of the present location of the city of Rock Hill, South Carolina, traveled through the future site of this city, and continued traveling north on the west side of the Catawba. On April 27, 1795, he visited Colonel Hill's Iron Works on Allison Creek. On April 28 he followed a road shown in Mills's (1825) Atlas of South Carolina which brought him to the North Carolina state line just south of Belmont at the current location of the Daniel Stowe Botanical Garden. He continued to the northwest, forded the South Fork River at Armstrong's Ford and proceeded along the now-familiar road toward Lincolnton. His journal entry in the translation by Thwaites (Michaux 1793-1796) reads:

"The 28th passed by Armstrong Ford on the south branch of the Catawba, 12 miles from Iron Works.

The same day passed by the dwelling of Bennet Smith where there is a ...Magnolia, 12 miles from the Armstrong Ford.

The 29th passed by Lincoln 12 miles from Bennet Smith's and 36 miles from Iron Works."

Even though Michaux abbreviates the description of the magnolia at Bennet Smith's, this passage has a vital revelation. Now he has found this unnamed magnolia tree at Bennet Smith's farm; his earlier observations are from two or three miles to the east. We can safely assume the magnolia is *M. macrophylla* because he returns to collect *M. macrophylla* at this site, Bennet Smith's farm, the following April 1796.

The April 1795 journey through the Carolinas was the beginning of Michaux's last North American exploration. By the first of September 1795 he was in Illinois along

the banks of the Mississippi River. His route west led through the Cumberland region of Tennessee. In one of those lucky encounters, Michaux passed through another population of *Magnolia macrophylla*. At least one tree was in bloom as the botanist rode past. His journal entry for this event on June 8, 1795 is simply “*Magnolia petalis basi purpureis*” (Sargent 1889a).

At this point Michaux must have realized the garden value of the magnolia with the big leaves that he had described in his journeys through the Carolina Piedmont. The dried fruiting cones seen in North Carolina would have given him no hint of the size or beauty of the flowers. Michaux must have seen glorious possibilities in the gardens of France for the tree with the giant flowers marked with purple at the base of the petals, but all he offers to us in his journal is this brief description. It is evident that he collected specimens for his herbarium here. Of his four sheets of *M. macrophylla* in the Paris herbarium today, one has this geographic note: “bord des creeks, Willderness de l’Etat de Cumberland” (Tobe personal comm., 1996).

Michaux’s real job, however, was to send new live plants back to France. Collecting live plants and keeping them alive until his return to the garden in Charleston was out of the question at this early stage of his western exploration. It would be many months before he even began the return journey. Moreover, he could not collect seeds because they would not have ripened. This really presented no dilemma, because Michaux knew exactly where he could find all the plants he might want of this species on the route of his return journey through North Carolina. He would have to allow himself time to collect living *M. macrophylla* when he returned to Bennet Smith’s farm.

This appears to be exactly what the botanist did. On his return journey in 1796 he stopped at Bennet Smith's and spent half a day collecting "shoots" of the *Magnolia macrophylla*. He still had not chosen a name for the plant, but this time he called it a new species. His journal entry from Bennet Smith's farm on April 3, 1796 in the translation by Thwaites (Michaux 1793-1796):

"Sunday the 3rd of April arrived at Bennet Smith's 12 miles from Lincoln; remained all day to pull shoots of a new Magnolia with very large leaves, auriculate, oblong, glaucous, silky, especially the young leaves; the buds very silky; Flowers white Petals with a base of a purple color. Stamens yellow etc. Along the creek on the bank of which this Magnolia grows I saw the Kalmia latifolia, Viola lutea, foliis hastatis; Ulmus viscosa then in process of fructification; Halesia; Stewartia pentagyna.

The 4th started and crossed Tuckasegee Ford on the Catawba river 10 miles from Bennet Smith's."

Michaux's 1796 collecting site, then, is Bennet Smith's farm. No descendants of this man have been found. The name appears in the first U.S. Census of Lincoln County, North Carolina in 1790 (Department of Commerce and Labor 1908). It does not appear again in the census records in Lincoln County for fifty years.

A PROPOSED LOCATION FOR THE 1796 COLLECTING SITE

A number of clues are helpful in locating Bennet Smith. Michaux makes three references to Bennet Smith in his journal, giving distances from four known points. By using his distances on a map we are able to triangulate Bennet Smith's probable location

to just a few square miles in the vicinity of Stanley. Peter Smith's house, a known location, also falls within this triangle. Since Michaux indicated that Bennet Smith lived a mile or less west of Peter Smith this narrows the search to an arc which includes the confluence of Hoyle Creek and its tributary Little Hoyle Creek.

The old records of land transactions in Lincoln County help to unravel the mystery of Bennet Smith. While there are no deeds for a Bennet Smith until decades later, there are three transactions for a Benjamin Smith between 1790 and 1797. Two of these deeds use Little Hoyle Creek as part of the description of the land. Evidence indicates that Bennet Smith and Benjamin Smith were actually the same person:

1. Benjamin Smith purchased 180 acres on Little Hoyle Creek from John Moore on August 18, 1790, recorded in Book 16, p. 24-25.
2. Benjamin Smith sold 18 acres to Jacob Schetley on January 17, 1795, recorded in Book 17, p. 411.
3. Benjamin Smith sold 320 acres on Little Hoyle Creek, including the land purchased from John Moore in 1790, to Peter Smith on November 13, 1797, recorded in Book 18, p. 427-29.

There is no listing in the 1800 Census for either a Bennet Smith or a Benjamin Smith in Lincoln County (Jackson 1974). The 1790 Census has a Bennet but not a Benjamin, yet we have a land transaction in 1790 for a Benjamin Smith who was increasing the size of his farm. Because in 1795 and 1797 he sold 158 acres more land than he bought in 1790, it is perfectly reasonable to assume that he was already living there in 1790 on a tract of at least 158 acres. Since there is no Benjamin Smith listed in the Census of 1790, the logical explanation is that Bennet and Benjamin are actually the

same person. Bennet was sometimes used as a nickname for Benjamin. Rev. Edward Smith Jr. (personal comm., 1995) tells us that the fifth son of Peter Smith, Benjamin Franklin Smith, who was born about 1798, was known simply as “Bennett” Smith. Genealogist Lorena Shell Eakers (1994) notes that Bennett and Benjamin are used interchangeably for this son of Peter Smith in documents relating to his father’s estate. Bennet Smith vanishes from the Census records after Benjamin Smith sold his land to Peter Smith in 1797 (Jackson 1974), further evidence that one man is involved.

This neatly explains why Michaux would refer to finding the tree at Bennet Smith’s while only eight years later the widely-traveled commercial plant hunter John Lyon (1765?-1814) would collect a quantity of the tree at Peter Smith’s (Ewan and Ewan 1963). The trees were on the same tract of land; the ownership had simply changed.

Peter Smith also owned other tracts of land. His magnolia trees would not necessarily have been on the part of his acreage near the junction of Hoyle Creek and Little Hoyle Creek. However, we have additional evidence linking this particular section of Peter Smith’s extensive landholdings to another very early report of a population of *M. macrophylla*. Again, we confirm Peter Smith’s ownership of the land through an old Lincoln County Deed (Lincoln County 1833, Book 35, Page 134), and we confirm the presence of *M. macrophylla* through the observations of highly respected nineteenth century botanist Moses Ashley Curtis.

Curtis (1808-1872), who lived in Lincolnton for a few months in 1835 (Berkley and Berkley 1986), reported the tree growing near the Moore Mine, described as 10 miles east of Lincolnton on the Tuckasegee Road (Hale 1883). The site of the long-abandoned diggings of the Moore Mine lie just north of Waterlake Road, little more than half a mile

from where Little Hoyle Creek joins Hoyle Creek (Jack C. Moore personal comm., 1995). The site is only a few hundred feet from a large population of *M. macrophylla* which extends over a quarter mile along a small ravine on the east side of Hoyle Creek. It is not mere speculation to suggest that André Michaux, John Lyon and Moses Ashley Curtis all visited this site.

This property was owned by Peter Smith before being sold to the mining company in 1833. The deed reveals that this section of 24 acres was carved out of a larger tract of 180 acres (Lincoln County 1833, Book 35, Page 134). Perhaps this is just a coincidence, but it could be the same 180 acres John Moore sold to Benjamin Smith in 1790. The deed description is not clear, but the location and size of the tract suggests this possibility. Other Peter Smith deeds have been examined, but no better explanation emerges from the trail of old deeds. Further, since the name “Moore Mine” was the name used by Curtis even though the property was most recently owned by Peter Smith, this supports the conclusion that the Moore family was connected with the mine before Peter Smith acquired it. If this is indeed the same 180 acre tract that changed hands from Moore to Smith in 1790, we have a continuous record of *M. macrophylla* on this Hoyle Creek site stretching back to André Michaux.

The species seems to be thriving in this sheltered location. The population of *M. macrophylla* we find today near the confluence of Hoyle and Little Hoyle Creeks winds well over a quarter-mile along steep ravines under a canopy of taller hardwoods.

***Magnolia macrophylla* SITES IN THE ENVIRONS OF STANLEY, NC**

Some idea of the extent of the *M. macrophylla* population Michaux found at Bennet Smith's in 1796 may be gained from John Lyon's account of collecting at the

same location only a few years later. Visiting Peter Smith five times between 1803 and 1809, Lyon recorded collecting and shipping more than four thousand *M. macrophylla* plants from Smith's (Ewan and Ewan 1963).

On his very first visit to Smith's, Lyon described digging and packing for shipment a box containing 190 *M. macrophylla* seedlings and a few other plants in a single day (Ewan and Ewan 1963). Lyon must have found rather extensive population(s) close at hand on Peter Smith's property, because he gathered so many small, easily dug seedlings on his first day of collecting. It is doubtful whether Lyon's deed could be repeated today.

Nonetheless, we are not able to say how present-day populations of *M. macrophylla* we find in the area today compare with those encountered by André Michaux. We can say that the species is still found along the creeks in considerable numbers. Local residents have attached no special significance to the species because they encounter it often. The following general observations can be made after visiting sites which virtually surround the town of Stanley today. *M. macrophylla* usually shares steep, north-facing slopes with a small stream at the bottom with taller hardwoods often including *Fagus grandifolia*. These magnolia trees do not reach great size: a *M. macrophylla* 20 meters tall on Hoyle Creek has been recognized as North Carolina's largest (Russell 1997). Reproduction is evidenced by the presence of many seedlings, and resprouting from fallen (or windthrown) individuals is common. The sites are small, narrow strips of land unsuitable for agriculture. While there is evidence of past logging, this activity has not destroyed the diversity of the sites.

DISCUSSION

André Michaux did not live to see the Flora Boreali-Americana published. He left his son in charge of final work on the Flora. However, the younger Michaux was in North America during the year and a half immediately preceding the work's publication (MacPhail 1981, Savage and Savage 1986). Ewan reported that most scholars have surmised that the botanist Louis Claude Marie Richard (1754-1821) substantially assisted François André in the preparation of the work, but Richard's contributions were not publicly disclosed (Michaux 1803b).

These unreferenced contributions to authorship may illuminate two puzzles in the Flora regarding the Magnoliaceae. First, there is no mention of a Carolina station for *Magnolia macrophylla*. As we have seen, André Michaux repeatedly observed this species in the North Carolina Piedmont and documented his observations. François André Michaux also knew the tree grew in North Carolina. Nonetheless, the specimen in Michaux's herbarium with a geographic notation indicates collection in the Cumberland region of Tennessee (Tobe personal comm., 1996). The failure of the Flora to include a Carolina range for the tree may be explained by the reliance of André Michaux's literary executor(s) on the geographic note attached to this herbarium sheet or may be a simple error (T. L. Mellichamp personal comm., 1996).

The second puzzle concerns the name *M. cordata* which appears in the Flora as a new species with affinity to *M. acuminata* L. André Michaux uses this binomial in his journal in 1788 and 1789, and on his first encounter with *M. macrophylla* he described the tree as a *M. cordata* different from the *M. cordata* discovered several years previously. This reference in André Michaux's journal makes it relevant to this study to offer the following observation on the name *M. cordata*.

It is clear that the binomial *M. cordata* in the Flora and the binomial *M. cordata* in André Michaux's journals refer to different members of the genus. This coincidental naming of two different species with the same binomial continues to cause confusion. The *M. cordata* of the Flora has yellow flowers and is closely allied with *M. acuminata*, while the *M. cordata* in the journal is the tree we know today as *M. fraseri* Walter (Sargent 1886, 1889b, Coker 1943, Hardin 1954, Tobe 1993).

Michaux's biographers indicated that both June 1789 references to *Magnolia cordata* described one species. However, it is clear that the *M. cordata* described on June 10, 1789, was actually *M. macrophylla*, while the June 14 observation of *M. cordata* west of Morganton was likely *M. fraseri*. François André Michaux (1819) was specific that he and his father found *M. macrophylla* only at the site near Lincolnton.

As to the Savages' suggestion (1986) that the November 16, 1789, entry for *Magnolia glauca*, refers to the sweet bay tree known today as *M. virginiana* L., the biographers were again mistaken. They observed that elsewhere in the journals, and in the Flora, Michaux used the name *M. glauca* for plants we recognize now as *M. virginiana*. One might reach the conclusion the Savages did by assuming that the first two words of this long Latin description form the binomial *M. glauca* and the remainder of the Latin words describe *M. glauca*. It is easy to see how this might have happened using Sargent's transcription of the journals. Sargent's footnote mark (*) comes after "glauca," the second word of the description, not at the end of the description. Thus, on Sargent's printed page the name does look like "*Magnolia glauca**" followed by a series of descriptive Latin words. Sargent's (1889a) footnote further clouds the issue, since it suggests that there is doubt as to the species Michaux observed. The description appears

very different in Michaux's handwriting and it is much harder to imagine it as a binomial (Michaux 1787-1796). This entry actually is a diagnostic description in the form preferred by Linnaeus (Stearn 1983). Sargent later correctly interpreted where Michaux discovered *M. macrophylla* in his Silva of North America (1890-1902).

CONCLUSION

While William Bartram has a claim to the earliest discovery, Michaux effectively discovered the plant for science by collecting the type specimen, describing the plant as a species new to science and (posthumously) publishing the new name. This study has shown that *Magnolia macrophylla* is clearly the magnolia Michaux described five times between 1789 and 1796 in the Carolina Piedmont. However, no physical evidence that André Michaux observed or collected a flowering specimen in North Carolina has come to light. Only after observing a flowering specimen in Tennessee did André Michaux write that he had found a new species. Even then, his earliest journal note that this magnolia was a new species comes from his Carolina Piedmont collecting site.

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