Tapping the Underappreciated Plant Diversity of the Eastern United States©

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INTRODUCTION

The romance and intrigue of plant discovery and acquisition continues to entice plant explorers, most often to remote and exotic places far away from the United States. Though early explorers and botanists including the Bartrams, the Michauxs, Nuttall, Torrey, Gray, and Harper described the vast richness of eastern North America's flora, the range of diversity and adaptability continues to be underappreciated to this day. In efforts to more fully document and explore its potential, we have continued to explore and promote this rich flora.

PLANT EXPLORATION WITH PURPOSE

The forests of eastern North America are replete with a remarkable array of plant communities, habitats, and plant species, particularly, Virginia, the Carolinas, Georgia, Alabama, and western Florida. We sometimes forget that the U.S.A. has some of the richest temperate flora found anywhere and far greater than the diversity found on the European continent (Table 1). Throughout the southeastern U.S.A. we have discovered that there is an enormous reserve of genetic diversity worthy of greater study and appreciation.

Table 1. Plant diversity comparisons.

Plant type	China	United States of America	Europe
Plant families	260	211	152
Pteridophytes	2,600	440	160
Gymnosperms	200	100	40
Angiosperms	28,500	19,000	10,600
Total:	31,300	19,540	10,800

Many fine species and cultivars of plants found in the prairies, forests, and marginal ecotones of the eastern U.S.A. have been introduced during the past century. Both woody and herbaceous plants are a part of the array of excellent plants available in the marketplace. Just a few include *Amsonia tabernaemontana*, *Baptisia* species and hybrids, *Chelone lyonii*, *Cornus florida*, *Ilex verticillata*, *Itea virginica*, *Physocarpus opulifolius*, *Rhus typhina*, and *Spigelia marilandica*. There are many others that have become common garden plants (Fig. 1).

Additionally, despite our fascination with plants and our thorough knowledge of the flora of the eastern U.S., new or previously under-utilized plants occasionally provide opportunities to expand the commercial availability of native plants. Just a few of these include *Acer saccharum* subsp. *floridanum* (syn. *A. barbatum*), *Acer*

Figure 1. Examples of taxa of plants found in the prairies, forests, and marginal ecotones of the eastern U.S. that have been introduced during the past century. Left image: *Itea virginica* 'Henry's Garnet'; *Physocarpus opulifolius* 'Mindia', Coppertina ™ ninebark; *Rhus typhina* 'Bailtiger', Tiger Eyes™ staghorn sumac; *Ilex verticillata* 'Winter Gold'; Right image: *Chelone lyonii* 'Hot Lips'; *Spigelia marilandica*; *Baptisia* 'Carolina Moonlight'; and *Amsonia hubrichtii.*

saccharum subsp. *leucoderme*, *Bigelowia nuttallii*, *Delphinium alabamicum*, *Rhododendron colemanii*, and *Spigelia gentianoides.*

Plant exploration remains an essential component for broadening the availability of plants in addition to large scale nursery production and selection practices. Tapping the diversity of nature offers unique opportunities for broadened adaptability of native plants for horticultural use. In addition to enriching gardens with documented, wild-collected, seed-grown plants from a range of provenances, detailed field data gathered from observing plants in natures provides us with a greater understanding of habitats, distribution, and plant associations. This information has potentially far-reaching implications for horticulture, landscape design, and conservation.

During the past 11 years, I have had the good fortune to conduct nearly 80 field expeditions in the eastern and southeastern United States in 11 states. Over 1,150 documented collections have been made, representing 619 taxa of herbaceous and woody plants. Regular collaboration with numerous partners — including other public gardens, universities, state and federal agencies, industry, conservation organizations, and private individuals — has afforded us the opportunity to observe and sample plant diversity in a wide range of habitats.

In addition to broad-based sampling of herbaceous and woody taxa, my field work in recent years has also focused on sampling specific taxa in order to obtain broader genetic diversity, obtain taxa from the edges of their ranges or from disjunct populations, and assess potential variation of selected plant species for wider landscape use. Some of the highest priority taxa for targeted sampling have included: *Aesculus parviflora*, *Amsonia ciliata* var. *tenuifolia* (Fig. 2), *Clinopodium georgianum*, *Dodecatheon meadia* (Fig. 3), *Fothergilla gardenii*, *F. major*, *Gaylussacia brachycera*, *Halesia carolina*, *H. diptera*, *H. tetraptera* (see *H. carolina*), *Hymenocallis occidentalis* (syn. *H. caroliniana*), *Illicium floridanum*, *Kalmia latifolia*, *Leucothoe axillaris*, *L. fontanesiana*, *Rhododendron arborescens* var. *georgianum*, *R. catawbiense*, *R. colemanii*, *R. minus*, *R. prunifolium*, *Silene regia*, *S. virginica*, *Stewartia*

malacodendron, *S. ovata*, *Styrax americanus*, *Trautvetteria* sp., *Vernonia angustifolia*, *Veronicastrum virginicum*, and *Viburnum acerifolium*.

Figure 2. Dwarf fringed bluestar (*Amsonia ciliata* var. *tenuifolia*).

Figure 3. Shooting-star (*Dodecatheon meadia*).

Figure 4. Florida anise-tree (*Illicium floridanum*).

Figure 5. Catawba rhododendron (*Rhododendron catawbiense*).

ON THE EDGE

Unfortunately, much of our pre-conceived bias about plant adaptability is based upon limited experiences with plants from their core ranges. Assumptions about adaptability become rules regarding how plants perform in the landscape; however, these "rules" are not always correct. In eastern North America, the range of many species is frequently broader than we know and is not fully represented in cultivation.

An excellent example includes *R. catawbiense*, a broadleaved evergreen shrub typically considered native to the high elevations of the Blue Ridge Mountains (Fig. 5); however populations of this species extend well into Alabama at elevations below 1,000 ft. *Halesia diptera* on the other hand is considered a species of the Gulf Coast region, yet, populations of this widely variable species occur well into the Piedmont of central Alabama. *Kalmia latifolia* is another species with a range that quite literally covers most of the eastern part of the U.S.A. Yet, few have grown or assessed the adaptability of populations from the hot, humid climates of the Deep South.

The flora of the eastern United States still has much to offer horticulture. The plants mentioned here are just a few of the many that deserve broader assessment and study. I hope that a broader segment of this flora will be appreciated and used by the gardening public through the efforts of industry and public gardens.

ADDITIONAL READING

Lewandowski, R. 2011. Tapping the under-appreciated diversity of the Eastern United States. Arnoldia. 68(4):2–13. <http://arnoldia.arboretum.harvard.edu/issues/252>.