



**Sweetbay Magnolia (*Magnolia virginiana* var. *virginiana* L.) Collection Report
APGA-USFS Tree Gene Conservation Partnership**

July 6-12, 2015

TABLE OF CONTENTS

Introduction	1
Participants and Contacts	1
Objectives	2
Proposed Target Sites	2
Collection Trip Journal	3
Collection Trip Summary	13
Map of Collection Sites	14
Germplasm and Vouchers Collected	15
References	20
Acknowledgements	21

Introduction

A team of public gardens collaborated for a *Magnolia virginiana* var. *virginiana* L. collection trip in July 2015 sampling across Pennsylvania, New Jersey and New York, where the plant is state listed as threatened in Pennsylvania and state listed as endangered in New York. At each site up to 10 individuals were targeted for softwood cuttings and up to 10 softwood cuttings were collected from each individual. Cuttings were rooted at The Morton Arboretum for distribution in spring 2016. Because *Magnolia* spp. have recalcitrant non-orthodox seed which are unfavorable for traditional seed banking these plants will be used to establish living conservation banks at public gardens. Prior to this collection, these populations were not represented in ex-situ collections. Access to this germplasm will be available for research or conservation work by contacting the North American Plant Collections Consortium (NAPCC) Magnolia Curation Group or by contacting germplasm recipient gardens directly. Funding was provided by the APGA-USFS Tree Gene Conservation Partnership with in kind support from Chicago Botanic Garden, Longwood Gardens, Morris Arboretum, Mt. Cuba Center, and The Morton Arboretum.

Participants:

- **Anthony S. Aiello**, The Gayle E. Maloney Director of Horticulture and Curator, The Morris Arboretum of the University of Pennsylvania, Philadelphia, PA
Email: aiello@upenn.edu
- **Andrew Bunting***, Assistant Director and Director of Plant Collections, Glencoe, IL
Email: abunting@chicagobotanic.org
- **George Coombs**, Research Horticulturalist, Mt. Cuba Center, Hockessin, DE
Email: gcoombs@mtcubacenter.org
- **Joseph J. Rothleitner***, Tree and Shrub Breeder, The Morton Arboretum, Lisle, IL
Email: jrothleitner@mortonarb.org
- **Peter Zale**, Curator and Plant Breeder, Kennett Square, PA
Email: pzale@longwoodgardens.org

*Primary Collectors and Grant Applicants

Objectives

- Locate and GPS populations of *Magnolia virginiana* var. *virginiana* across the three states targeted for collection; Pennsylvania, New Jersey and New York.
- Collect softwood cuttings and herbarium vouchers from located populations.
- Distribute rooted cuttings of plants to public gardens to establish living gene banks for *Magnolia virginiana* var. *virginiana*.

Proposed Target Sites

- Michaux State Forest, Cooke Township - Cumberland Co., PA
- State Game Lands 156, Cornwall - Lebanon Co., PA
- Delhaas Woods, Silver Lake Co. Park, Bristol - Bucks Co., PA
- Frazier's Bog, Huntingdon Valley Country Club, Byrn Anthyn - Montgomery Co., PA
- Belle Plain State Forest, Woodbine Township - Cape May Co., NJ
- Estell Manor Park, Estell Manor Township - Atlantic Co., NJ
- Wharton State Forest, Washington Township - Burlington Co., NJ
- Brendan T. Byrne State Forest, Woodland Township - Burlington Co., NJ
- Double Trouble State Park, Berkely Township - Ocean Co., NJ
- Speonk Hamlet, Railroad Crossing of the East River - Suffolk Co., NY
- Shu Swamp, Mill Neck - Nassau Co., NY
- Fiske Bird Sanctuary, Village of Lloyd Harbor - Suffolk Co., NY
- Staten Island Industrial Park, Sweet Bay Magnolia Preserve - Staten Island, NY
- Hybrid Oak Woods Park, Tottenville - Staten Island, NY

Collection Trip Journal

Monday, 6 July 2015

This was a day primarily for travel to Philadelphia and for the first meeting team members in the afternoon. Andrew Bunting, Joseph Rothleitner, and Peter Zale met at Longwood Gardens to discuss the initial phases of the collection trip and to make sure that all supplies were accounted for. The team also toured the labs, production greenhouses and the trial gardens at Longwood.

Tuesday, 7 July 2015

Collection team for this day included Anthony S. Aiello, Andrew Bunting, Joseph Rothleitner and Peter Zale.

First Stop - Michaux State Forest

This site was reported to us by Botanist John Kunsman of Western Pennsylvania Conservancy. The population is located along Pine Tree Drive and south into Michaux State Forest. This location is south west of Harrisburg in the Blue Ridge Mountains far from the coastal plain where other populations were collected. The habitat was a spring fed fen that supported a strong population of sweetbay magnolia and a diverse mix of other species. Many of the magnolias appeared to be young in age and ranged from less than 2' to over 20' in height with stem diameters from pencil thickness to over 4". Many individuals were developing fruit and regeneration was occurring. In total there were over 100 individuals at this population; cuttings were collected from 10 plants.



Photo 1. Andrew Bunting collecting cuttings from vigorous, young sweetbay magnolia growing near the roadside in Michaux State Forest.

Second Stop – State Game Lands 156

John Kunsman also had noted a population occurring on private property (Hemlock Field Archer's) adjacent to State Game Lands 156. Because the property owners did not respond to our attempts at making contact the bordering State Game Lands 156 were explored for sweetbay, but no magnolias were found.

Wednesday, 8 July 2015

Collection team for this day included Andrew Bunting and Joseph Rothleitner as well as Anthony S. Aiello for the first stop, Andrew and Joseph were accompanied by David J. Robertson Director of Penny Pack Ecological Trust for the second stop.

First Stop – Delhaas Woods

We were informed of this site by Timothy A. Block, John J. Willaman Chair and Director of Botany at the Morris Arboretum of the University of Pennsylvania. Delhaas woods is Bucks county owned and the land is managed in partnership with the Silver Lake County Park. The relatively small track of land is very diverse in habitats and contains northern distributions of some uncommon species in the area such as willow oak (*Quercus phellos* L.) sweet pepperbush (*Clethra alnifolia* L.), and maleberry (*Lyonia* sp.). The swamp on northwest corner of the property is where the sweetbay can be found. The population was large we estimated 50+ individuals, and cuttings were collected from 10 of them. Many of these trees were relatively large in caliper with few fruiting individuals observed. No regeneration appeared to be occurring, waterspouts and low branches appeared to be deer browsed. The team had difficulty returning to the park trails as they got lost in the swamps thickets of button bush (*Cephalanthus occidentalis* L.), swamp rose (*Rosa palustris* Marsh.) and barbwire vine (*Smilax* sp.).



Photo 2. Evidence of deer browse on magnolia waterspouts at Delhaas Woods.



Photo 3. Tony Aiello collects material to make an herbarium specimen from a leaning tree in Delhaas Woods.

Second Stop – Frazier’s Bog

Dr. Block also had informed us of a population located on private property called Frazier’s Bog which is located near the Penny Pack Trust’s preserve. Contact was made with the Penny Pack Ecological Trust and their Director David J. Robertson assisted in obtaining permission to collect from the property of Huntingdon Valley Country Club and David joined Andrew and Joseph to help collect sweetbay. This population is growing in a woodlot on the edge of a golf course and continues over onto the property of a private residence. A spring fed fen supports this habitat with many sweetbay, several mature plants were in fruit and many young seedlings were observed, we estimate a population of 50+ trees. This population seems to be growing; there was no apparent deer browse and the canopy was relatively open allowing for regeneration. David mentioned that Penny Pack has a good relationship with the country club and has been helping them identify and manage some of their rare plants and sensitive communities, including the netted chain fern (*Woodwordia aereolata* L.).



Photo 4. David J. Robertson and Andrew Bunting standing in Frazier's Bog under a *Magnolia virginiana* var. *virginiana*.



Photo 5. State listed netted chain fern growing on country club property.



Photo 6. Signage to keep visitors from entering the protected magnolia habitat.

Thursday, 9 July 2015

Collection team for this day included Andrew Bunting, Joseph Rothleutner, and Peter Zale.

First Stop – Belleplain State Forest

This location was a palustrine forest dominated by mature Atlantic white cedar (*Chamaecyparis thyoides* (L.) Britton, Sterns & Poggenb.) with other tree species occurring near road cuts, along streams, or sprawling through the understory looking for available light; including sweetbay magnolia. Plants varied from young seedlings to mature plants, some with fruit. Approximately 30 individuals were observed, but the woods were thick and continued for a substantial distance so the population is likely much larger. Some species of note that were observed in this location include Virginia sweetspire (*Itea virginica* L.) and woodvamp (*Decumaria Barbara* L.). Cuttings were collected from 10 individuals.



Photo 7. Peter Zale and Andrew Bunting collect cuttings of *Magnolia virginiana* var. *virginiana* with a pole pruner from an Atlantic white cedar dominant forest.

Second Stop – Estell Manor Park

This county park is sited along the bank of the Great Egg Harbor river which meets the

Atlantic Ocean in Egg Harbor Bay a couple of miles downstream, we suspect that the water may have some salinity and that saltwater intrusion may sometimes occur in the marshy areas surrounding the banks, bayberry (*Myrica pennsylvanica* Mirbel) thickets and sweetgum (*Liquidambar styraciflua* L.) made up a majority of the woody material along the edge of the water along with reeds (*Phragmites* sp.). As we walked in the boardwalk we continued botanized and saw some interesting plants including orange milkwort (*Polygala lutea* L.) and swamp lily (*Lilium superbum* L.). A couple of the sweetbay magnolias grew out over boardwalk making them easy to collect, one flowering plant was found and a herbarium voucher was taken. Overall approximately 30 *Magnolia virginiana* var. *virginiana* were observed of mixed ages and



Photo 8. Magnolia grow just off the boardwalk at Estelle Manor Park.

many were fruiting, although this park is large and the total number of magnolia is likely much greater.

Friday, 10 July 2015

Collection team for this day included Andrew Bunting, George Coombs, and Joseph Rothleutner.

First Stop – Wharton State Forest

We found an area of the park along the Mullica River which looked promising for sweetbay magnolia and we hiked up the road until we spotted some in a moist patch of forest where we saw some of the common associated species black gum (*Nyssa sylvatica* Marsh.) Atlantic white cedar (*Chamaecyparis thyoides*), and red maple (*Acer rubrum* L.). We collected a few plants and continued to hike up the road until we found another similar depression of moist sphagnum forest and collected the rest of our 10 individuals. Overall we observed approximately 30 sweetbay magnolias of mixed ages with some fruiting individuals. It is likely that there are many more sweetbay in this forest. When we returned to our vehicle the parking lot was busy with local people preparing for a day of recreation in the Pine Barrens cedar water.



Photo 9. Cedar water beach on the bank of the Mullica River, the color of the water is due to the high iron content in the soil and the low pH of the water.

Second Stop – Brendan T. Byrne State Forest

We explored trails in this area and were unable to locate magnolias, to not waste time we abandoned the location to move east. On the brief visit we did come across some interesting carnivorous plants on the banks of Pamkin Pond.

Third Stop – Double Trouble State Park

Cedar Creek runs through this location and there are what appear to be several human constructed bogs which have been allowed to return to nature with native flora. Sweetbay magnolia is one of the species taking advantage of this habitat and occurs in patches of the banks and along road cuts. Many of the individuals observed were fruiting and one had a flower which was taken for a herbarium specimen. Approximately 30 individuals were observed and cuttings collected from 10 of them. The team observed a large diversity of *Vaccinium* spp. that were in fruit.



Photo 10. Above: The diversity of *Vaccinium* spp. the collectors sampled through the pine barrens.

Photo 11. Left: George Coombs and Andrew Bunting collect cuttings from Double Trouble State Park.

Saturday, 11 July 2015

In the morning Andrew Bunting and Joseph Rothleutner traveled from their “base” in Swarthmore, PA to Long Island.

First Stop – Speonk Hamlet, Rail Road Population

This location was reported to us by Richard B. Figlar Scientific Advisor for the Magnolia Society International, who had visited the population in the 1980’s and was also mentioned in the Long Island Botanical Society Newsletter. On our visit we were unable to locate the magnolias, the site we had access to was adjacent to many parcels of private property and was overrun with invasive species.

Sunday, 12 July 2015

Andrew Bunting and Joseph Rothleutner moved westward to locate other identified populations noted in the Long Island Botanical Society’s newsletter.

First Stop – Shu Swamp



Photo 12. A large *Magnolia virginiana* var. *virginiana* located under a utility line that produced many fruit.

This location (also known as Charles T. Church swamp) is managed by the North Shore Wildlife Sanctuary and is a busy public park settled in an area of large private estates. The park has several seeps and springs which feed into a pond at the north end of the park. It is on the north bank of the pond and up the slope to the train tracks that we found the population of sweetbay. In total there were approximately 25 trees. One large tree was located under power line right of way which allowed it to be free of competition for light. This individual was fruiting heavily and may be the seed source for many of the other nearby plants, as many others observed were much younger. When speaking with the warden Thomas M. Hornosky he had said that he believed that the population was increasing in size. Adjacent to this park is a larger body of water called Beaver Lake which connects to Mill Neck Creek and then Oyster Bay. Following the water on

other properties may lead to more plants.



Photo 13. Shu Swamp and sweetbay magnolia habitat.

Second Stop – Fiske Bird Sanctuary



Photo 14. *Magnolia tripetala* appears to have naturalized in this area.

Nearby in Lloyd Harbor (across the county line) is the Fisk Bird Sanctuary. Again this small public park is bordered by estates and the park itself appears to have once been planted and managed as a part of estate grounds as some groundcovers and lingering plants appeared intentional. We entered the park by the Lloyd Harbor Police Station where we met with one of the village trustees who wrote a note to prevent a parking ticket and wished us luck on our collection. In the woods the canopy was nearly closed with relatively little native understory, but as we approached a man made pond and a wet boggy area of the sanctuary we saw several umbrella magnolia (*Magnolia tripetala* L.) and found only 4 sweet bay all of similar age and size reaching out over the small pond, cuttings were collected from all 4 plants.

Monday, 13 July 2015

Andrew Bunting and Joseph Rothleutner went to Staten Island to explore the SweetBay Magnolia Preserve and another location which had also been reported on in the Long Island Botanical Society Newsletter.

First Stop – Sweetbay Magnolia Preserve



Photo 15. Promising habitat but no magnolias at the preserve.

This location was discovered by looking at maps, the name suggesting an abundance of magnolias. The preserve however is also known as the Staten Island Industrial Park, which may be more appropriate. We found only one sweetbay magnolia and it appeared to be cultivated. Leaving the site empty handed was not for a lack of effort. We searched over a large area at the north end of the park around the pond and wetlands pushing through thickets of exotic invaders and phragmites.

Second Stop – Hybrid Oak Woods Park

The Long Island Botanical Society Newsletter mentioned that there were approximately 10 trees at the intersection of Bedell Ave. and Hyland Blvd. on Staten Island which is where residential areas meet this woodlot. We explored the area thoroughly and did not find any magnolias. We did however find pawpaw (*Asimina triloba* (L.) Dunal). This report may have been generated by a mistaken identity.



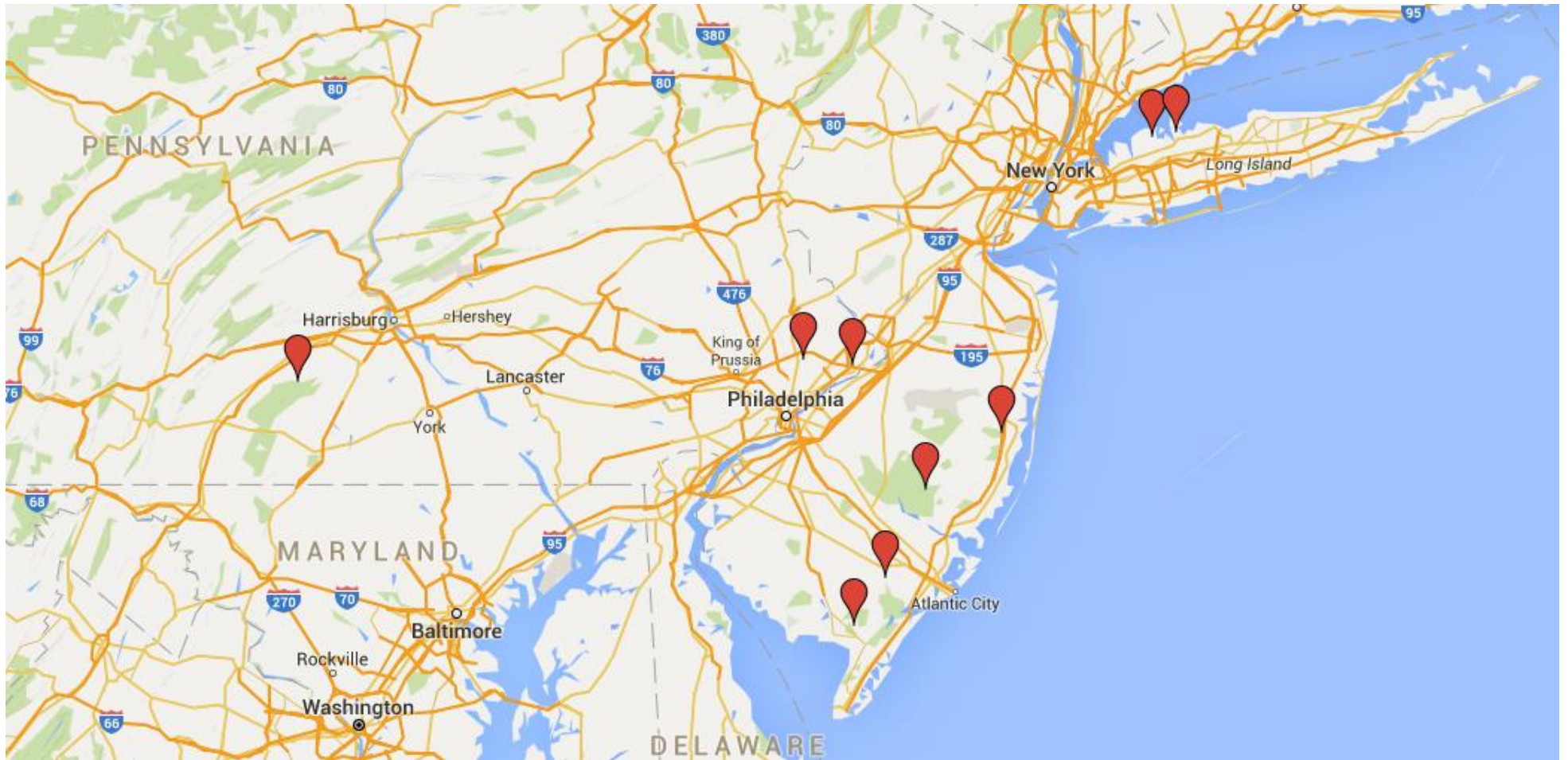
Photo 16. *Asimina triloba* on Staten Island in Hybrid Oak Woods Park

Collection Trip Summary

The collection trip was a success in locating populations of *Magnolia virginiana* var. *virginiana* in all three states visited. Cuttings were collected from 9 individual populations; 3 from Pennsylvania, 4 from New Jersey, and 2 from New York. Collectively this totaled 84 individual genotypes and over 840 cuttings. Rooting of cuttings is being carried out by The Morton Arboretum for distribution to other gardens in 2016. Cuttings were completely submerged in a fungicide, lightly wounded, and then the cut stem dipped in a liquid 5,000 ppm KIBA solution. Rooting media is composed of 1 part screened peat moss to 2 parts perlite and the cuttings were placed in a fog room. Callus and rooting was observed within 4 weeks on some genotypes although there appears to be differences in rooting rate between populations. Plants will be left undisturbed in their flats and repotted before shipping when buds break from dormancy in spring.

It was apparent that *Magnolia virginiana* var. *virginiana* grows in moist forest in association with 3 forest types 1) Hardwood deciduous forest with *Acer rubrum*, *Nyssa sylvatica*, *Liquidambar styraciflua*, *Liriodendron tulipifera* 2) White cedar dominant forest composed of *Chamaecyparis thyoides* and a mixed understory 3) Diverse pine barrens mixed forest including *Quercus* spp., *Pinus rigida*, *Sassafras albidum*, *Nyssa sylvatica*, *Vaccinium* spp.. Populations with the best fruiting and seedling recruitment appeared to be at sites with openings in the canopy, artificial openings near mature specimens may be a way to increase fruit set. Deer browse was evident in some populations, particularly in Delhaas woods. Habitat modification and the creation of manmade ponds appear to be creating a niche for sweet bay at Double Trouble State Park, but may also be limiting the available habitat at the Fiske Bird Sanctuary. We were unable to locate magnolia at 2 New York sites that had previously been reported to have sweetbay.

Map of Collection Sites



Collections; *Magnolia virginiana* var. *virginiana*

Date: July 7th 2015
Collectors: Anthony S. Aiello, Andrew Bunting, Joseph J. Rothleitner, Peter Zale
Number: Mvirg15-001 to 010, Herbarium Specimen 001
State, County: Pennsylvania, Cumberland Co.
Local Area: Michaux State Forest, Cooke Township; Pine Tree Drive on both sides of road
GPS in DMS: 40°03'47.4" N, 077°18'23.1" W
Altitude: 316.758 m
Habitat: Palustrine Forest - Spring Fed Fen, Sandy Loam - Moderate High Organic Component, Peat
Associate Species: *Acer rubrum*, *Nyssa sylvatica*, *Sassafras albidum*, *Betula lenta*, *Quercus alba*, *Quercus rubra*, *Liriodendron tulipifera*, *Pinus strobus*, *Pinus rigida*, *Hamamelis virginiana*, *Rhododendron arborescens*, *Vaccinium* sp., *Smilax* sp., *Symplocarpus foetidus*, *Arisaema triphyllum*, *Platanthera clavellata*, *Osmunda regalis*, *Osmunda cinnamomea*
Notes: Strong population 100+ individuals of mixed ages, patchy but frequent distribution; Softwood cuttings collected from 10 individuals of this population for rooting

Date: July 8th 2015
Collectors: Anthony S. Aiello, Andrew Bunting, Joseph J. Rothleitner
Number: Mvirg15-011 to 020, Herbarium Specimen -011
State, County: Pennsylvania, Bucks Co.
Local Area: Delhaas Woods, , Bristol Township; West of Bath Rd. across from Silver Lake Co. Park
GPS in DMS: 40°07'6.7" N, 074°52'36.5" W
and 40°07'9.5"N 074°52'34.7" W
Altitude: 17.468 m
Habitat: Palustrine Forest - Swamp, Sandy Loam - High Organic Component, Mucky Peat

Associate Species: *Acer rubrum*, *Nyssa sylvatica*, *Liquidambar styraciflua*, *Sassafras albidum*, *Quercus paulustris*, *Liriodendron tulipifera*, *Fraxinus americana*, *Magnolia tripetala*, *Viburnum dentatum*, *Clethra alnifolia*, *Smilax* sp., *Symplocarpus foetidus*, *Onoclea sensibilis*

Notes: Large Population 50+ individuals many appearing old with large diameter stems, low seedling recruitment and evidence of animal browse on suckers of older plants, patchy distribution; Softwood cuttings collected from 10 individuals of this population for rooting

Date: July 8th 2015
Collectors: Andrew Bunting, David Robertson, Joseph J. Rothleitner
Number: Mvirgr15-021 to 030, Herbarium Specimen -021
State, County: Pennsylvania, Montgomery Co.
Local Area: Frazier's Bog, Huntingdon Valley Country Club, Bryn Athyn; ~250 m West of the intersection of Lundy Ln. and Terwood Rd.
GPS in DMS: 40°08'19.9" N, 075°05'32.3" W
Altitude: 75.868 m
Habitat: Palustrine Forest - Spring Fed Fen, Sandy Loam
Associate Species: *Acer rubrum*, *Nyssa sylvatica*, *Liriodendron tulipifera*, *Platanus occidentalis*, *Ilex opaca*, *Magnolia tripetala*, *Viburnum deneatum*, *Lindera benzoin*, *Parthenocissus quinquefolia*, *Vitus* sp., *Symplocarpus foetidus*, *Chelone glabra*, *Sagittaria* sp., *Phragmites* sp., *Osmunda cinnamomea*, *Onoclea sensibilis*
Notes: Large Population 50+ individuals of mixed ages, many young plants present and population appears to be growing; Softwood cuttings collected from 10 individuals of this population for rooting.

Date: July 9th 2015
Collectors: Andrew Bunting, Joseph J. Rothleitner, Peter Zale
Number: Mvirg15-031 to 040, Herbarium Specimen -031
State, County: New Jersey, Cape May Co.
Local Area: Belleplain State Forest, Woodbine Township ; North of Dean's Branch Rd. between New Bridge Rd. and Sunset Rd. along Savages Run Creek, plants also collected at 39°14'58.5"N 074°53'22.1"W where Sunset Rd. and Strattons Rd. merge
GPS in DMS: 39°14'43.8" N, 074°52'10.5" W
Altitude: 5.096 m
Habitat: Palustrine Forest - Pine Barrens Spagnum Fen, Moderate High Organic Component, Peat

Associate Species: Chamaecyparis thyoides, Acer rubrum, Sassafras albidum, Quercus stellata, Quercus prinus, Quercus palustris, Quercus falcata, Juglans nigra, Pinus virginiana, Pinus rigida, Ilex opaca, Ilex glabra, Rhododendron viscosum, Kalmia latifolia, Itea virginica, Clethra alnifolia, Vaccinium sp., Symplocarpus foetidus, Osmunda cinnamomea, Woodwardia areolata

Notes: Stable Population 30+ Individuals observed likely many more, some young plants present, few fruiting individuals observed, patchy distribution; Softwood cuttings collected from 10 individuals of this population for rooting.

Date: July 9th 2015

Collectors: Andrew Bunting, Joseph J. Rothleitner, Peter Zale

Number: Mvirg15-041 to 050, Herbarium Specimen -041 and -045 (flower)

State, County: New Jersey, Atlantic Co.

Local Area: Estell Manor Park, Atlantic Co. Park, Estell Manor Township; Along Frog Pond Rd. off of Swamp Trail, ~800 m East from the intersection of interstate 50 and Kentucky Ave., plants also collected at 39°24'50.8"N 074°53'52.4"W

GPS in DMS: 39°24'23.3" N, 074°43'53.0" W

Altitude: 7.172 m

Habitat: Palustrine Forest - Swamp (potentially with brackish water intrusion), Sandy Loam

Associate Species: Acer rubrum, Nyssa sylvatica, Ilex opaca, Liquidambar styraciflua, Quercus alba, Quercus stellata, Pinus rigida, Myrica pennsylvanica, Clethra alnifolia, Vaccinium sp, Rhododendron viscosum, Lobelia spicata, Pilygala leuta, Lilium superbum, Calystegia sepium, Iris sp., Fragmities sp., Dennstaedtia punctilobula

Notes: Stable Population 30+ Individuals observed likely many more, many young plants present, many plants with fruit, patchy distribution; Softwood cuttings collected from 10 individuals of this population for rooting

Date: July 10th 2015

Collectors: Andrew Bunting, George Coombs, Joseph J. Rothleitner

Number: Mvirg15-051 to 060, Herbarium Specimen -051

State, County: New Jersey, Burlington Co.

Local Area: Wharton State Forest, Washington Township; Just East of Franks Ford Rd Loop off Hawkins Bridge Rd.; plants also collected at 39°41'21.4"N 074°32'55.1"W where Godfrey Bridge Rd. and Godfrey Bridge Campground Rd. Meet.

GPS in DMS: 39°42'08.2" N, 074°33'17.8" W
Altitude: 9.841 m
Habitat: Palustrine Forest - Pine Barrens Sphagnum Fen, Sandy Silt, Moderate High Organic Component, Peat
Associate Species: Acer rubrum, Nyssa sylvatica, Sassafras albidum, Chamaecyparis thyoides, Quercus prinus, Quercus marilandica, Quercus falcata, Quercus stellata, Pinus rigida, Clethra alnifolia, Ilex glabra, Myrica pennsylvanica, Aronia arbutifolia, Rhododendron viscosum, Vaccinium sp. Smilax sp., Symplocarpus foetidus
Notes: Stable Population 30+ Individuals observed likely many more in patchy distribution; Softwood cuttings collected from 10 individuals of this population for rooting

Date: July 10th 2015
Collectors: Andrew Bunting, George Coombs, Joseph J. Rothleitner
Number: Mvirg15-061 to 070, Herbarium Specimen -063 and -065 (flower)
State, County: New Jersey, Ocean Co.
Local Area: Double Trouble State Park, Berkely Township; Just off Double Trouble Rd. Along Cedar Creek
GPS in DMS: 39°53'42.6" N, 074°13'28.1" W
Altitude: 14.985 m
Habitat: Palustrine Forest - Pine Barrens Creek and Pond Bank and Flood Plain, Sandy Loam
Associate Species: Acer rubrum, Nyssa sylvatica, Chamaecyparis thyoides, Sassafras albidum, Quercus marilandica, Prunus serotina, Diospyros virginiana, Clethra alnifolia, Myrica pennsylvanica, Aronia arbutifolia, Cephalanthus occidentalis, Rhus copallina, Vaccinium sp. Smilax sp., Symplocarpus foetidus, Sagittaria latifolia, Pontederia cordata
Notes: Stable Population 30+ Individuals observed likely many more in patchy distribution; Softwood cuttings collected from 10 individuals of this population for rooting

Date: July 12th 2015
Collectors: Andrew Bunting, Joseph J. Rothleitner
Number: Mvirg15-071 to 080, Herbarium Specimen -075
State, County: New York, Nassau Co.
Local Area: Shu Swamp, Mill Neck Township; South of Rail Rd Tracks that run over the South tip of Beaver Lake, ~600 feet west of Frost Mill Rd
GPS in DMS: 40°52'53.2" N, 073°33'55.8" W
Altitude: 7.466 m

Habitat: Palustrine Forest - Spring Fed Fen and Pond Banks, Sandy Silt, Moderate High Organic Component, Peat

Associate Species: *Acer rubrum*, *Nyssa sylvatica*, *Sassafras albidum*, *Quercus alba*, *Quercus rubra*, *Liriodendron tulipifera*, *Pinus strobus*, *Pinus rigida*, *Hamamelis virginiana*, *Rhododendron arborescens*, *Vaccinium* sp., *Smilax* sp., *Symplocarpus foetidus*, *Arisaema triphyllum*, *Platanthera clavellata*, *Osmunda regalis*, *Osmunda cinnamomea*

Notes: Small Population <20 Individuals observed in one patch, most individuals appearing young with small diameter stems and only a couple of larger seed producing plants; Softwood cuttings collected from 10 individuals of this population for rooting

Date: July 12th 2015

Collectors: Andrew Bunting, Joseph J. Rothleitner

Number: Mvirg15-081 to 084, Herbarium Specimen -081

State, County: New York, Suffolk Co.

Local Area: Fiske Bird Sanctuary, Lloyd Harbor Township; North of W Neck Rd. Around the bank of the pond West of the Lloyd Harbor Police Station

GPS in DMS: 40°53'43.3" N, 073°27'18.4" W

Altitude: 15.781 m

Habitat: Palustrine Forest - Spring Fed Fen and Artificial Pond Bank, Sandy Loam, Moderate High Organic Component, Peat

Associate Species: *Acer rubrum*, *Liriodendron tulipifera*, *Fagus grandifolia*, *Magnolia tripetala*, *Ilex opaca*, *Alnus* sp., *Lindera benzoin*, *Vaccinium* sp., *Smilax* sp., *Symplocarpus foetidus*, *Osmunda cinnamomea*

Notes: Very Small Population only 4 individuals observed in one patch, all of similar age and producing few fruit; Softwood cuttings collected from all individuals

References

- Clemants, S. (Ed.). (1999). *New York metropolitan flora: Woody plant workbook* (3rd ed., p. 198). Brooklyn, N.Y.: Brooklyn Botanic Garden.
- Del Tredici, P. (1981). *Magnolia virginiana* in Massachusetts. *Arnoldia*, 41(2), 36-42.
- Karpen, D. (2000). The Status of Sweetbay *Magnolia* on Long Island, New York. *Long Island Botanical Society* 10: 2.
- Magee, D., & Ahles, H. (1999). *Flora of the Northeast a manual of the vascular flora of New England and adjacent New York* (p. 520). Amherst: University of Massachusetts Press. *Magnolia virginiana* var. *virginiana*. (n.d.). Retrieved February 12, 2015, from <http://newyork.plantatlas.usf.edu/Plant.aspx?id=1897>
- Priester, D. (n.d.). *Magnolia virginiana* L. Retrieved February 12, 2015, from http://www.na.fs.fed.us/pubs/silvics_manual/volume_2/magnolia/virginiana.htm
- Primack, P., Hendry, E., & Del Tredici, P. (1986). Current status of *Magnolia virginiana* in Massachusetts. *Rhodora*, 88(855), 357-364.
- Rhoads, A., & Block, T. (2000). *The plants of Pennsylvania: An illustrated manual* (p. 449). Philadelphia: University of Pennsylvania Press.
- Rhoads, A., & Klein, W. (1993). *The vascular flora of Pennsylvania: Annotated checklist and atlas* (p. 43). Philadelphia, PA: American Philosophical Society.
- Stone, W. (1973). *The plants of southern New Jersey* (p. 446). Boston: Quarterman Publications.
- Vilsack, T., & Clark, C. (2010). Census of Horticultural Specialties 2009. *2007 Census of Agriculture, 3. Special Studies Part 3*. Retrieved February 20, 2015, from http://www.agcensus.usda.gov/Publications/2007/Online_Highlights/Census_of_Horticulture_Specialties/HORTIC.pdf
- Wherry, E., & Fogg, J. (1979). *Atlas of the flora of Pennsylvania* (p. 167). Philadelphia: Morris Arboretum, University of Pennsylvania.
- Zale, P. (2009). *Studies on the Optimization of Breeding Potential and Development in Magnolia virginiana* L. (Electronic Thesis or Dissertation). Retrieved from <https://etd.ohiolink.edu/>
- Zhang, X., Wen, J., Dao, Z., Motley, T., & Long, C. (2010). Genetic variation and conservation assessment of Chinese populations of *Magnolia cathcartii* (Magnoliaceae), a rare evergreen tree from the South-Central China hotspot in the Eastern Himalayas. *Journal of Plant Research*, 123(3), 321-331.

Acknowledgements

Thank you to all who participated or helped our collection team in any capacity, special thanks to Timothy A. Block (University of Pennsylvania), Richard Figlar (Magnolia Society International) and John Kunsman (Pennsylvania Natural Heritage Program) who provided locations of known magnolia populations. Additionally thank you to the following institutions who have agreed to accept and maintain germplasm from this collection trip The National Arboretum (Washington, D.C.), Mt. Cuba Center (Hockessin, DE), The Morton Arboretum (Lisle, IL), Chicago Botanic Garden (Glencoe, IL), The Gardens at Cantigny Park (Wheaton, IL), The Arnold Arboretum of Harvard University (Boston, MA), Powell Gardens (Kingsville, MO), Bartlett Tree Research Laboratories and Arboretum (Charlotte, NC), Henry Foundation for Botanical Research (Gladwyne, PA), Longwood Gardens (Kennet Square, PA), The Morris Arboretum of the University of Pennsylvania(Philadelphia, PA) and Green Bay Botanic Garden (Greenbay, WI).

Thanks to the American Public Gardens Association and the USDA United States Forest Service for working in partnership to fund Tree Gene Conservation and this project.