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Ilex ‘Wintergreen’ in South Carolina. ~Jenks Farmer

MODERN PUBLIC GARDENS IN SOUTH CAROLINA

Jenks Farmer

Horticulture in South Carolina had grand beginnings but it was generally crushed by a century of poverty. Since the 1980s a gardening renaissance has created jobs and innovative, celebrated green spaces and public gardens.

South Carolina's early horticulture industry bred and shipped plants all over the world. We boast of the oldest public garden, of rose hybrids coveted by Marie Antoinette, and the first American book published using the Linnaean plant classification system. Early accounts of this verdant place include romantic visages of the wild, of agricultural crops, and even of the high caffeine containing *Ilex vomitoria*, used as ritualistic tea by the 'savages' of the Carolina coast.

Two hundred years later, in the late 1980s, Dr. J.C. Raulston, the linchpin of the modern southern horticultural community, described South Carolina as the, "orphan zone of US horticulture." In the 1980s he offered some advice to an aspiring young man who wanted to become a botanical garden curator. "Go away. Move to Seattle and hope things change while you're gone."

I did. I was a 19-year-old farm boy from a poor state. Like many others, I wanted nothing more than to get out and see the world, to find better places and never look back.

While I did just that, things did change. Horticulture in South Carolina rooted in. By 1990, a massive new public garden was planned for the capital, Columbia. It's success inspired others and now arboreta, botanical gardens, pioneering nurseries, and private estates dot the state, offering education and entertainment for residents and visitors.

We hope when you travel our state you'll enjoy some of our horticulture history and our modern gardens. Following is a review of some of these newer gardens. It's not comprehensive. It describes places that the farm boy who bolted from South Carolina, then studied gardens from Seattle to Zambia, got to be a part of once he came back home.

Today young horticulturists come from across the country to work in these gardens. And visitors, plant aficionados as well as novices, enjoy them by the millions. I'm proud to say that South Carolina is home to some progressive public gardens, places that respect the lessons of our past and search for new ways to teach about the role plants in our daily lives.

Enjoy these trendsetting modern gardens as you travel across South Carolina:

Charleston's historic gardens get tons of attention. But the most progressive plantings there surround **Colonial Lake Park**. Newly renovated with sweeping masses of native grasses, crinum lilies, gingers, and a 100 yard (91.4 m) long red border built around yaupon holly trees. Free and open 24 hours, on Broad Street in downtown Charleston.

Florence and the Pee Dee area were built on plants: tobacco, asparagus, and beans. All thrive in our rich soils, endless sun and rain. The **Florence Museum** mixes art and agricultural history. A football-field-sized center garden courtyard features plants connected to objects of the museum collection. Free. Open Tuesday to Sunday, 10 to 5.

Nearby, a private estate of spectacular gardens and sprawling proportions features formal gardens, perennial borders, a pond garden inspired by Indian architecture, and the work of many South Carolina artists. It has 125 taxa of *Ilex*. **Moore Farm Garden**. Open for events or tours by appointment only. \$10 to \$25.

Columbia's **Riverbank Botanical Garden and Zoo** pushed the envelope and have made horticultural history since the 1980s. Consistently ranked as a top 10 US Zoo, the horticulture features incredible plants that do much more than set the stage for animals. Connected to the zoo is the



I. vomitoria hedge pruned by Pearl Fryar. ~ Jenks Farmer

stunning Riverbank Botanical Garden, with one of the country's largest crinum collections and 45 taxa of *Ilex*. Open daily 9 to 5. \$15.

In downtown Columbia intimate, formerly private gardens interconnect in the shady historic **Garden District**. One of Columbia's best kept garden secrets, these gardens are about his-

tory but also about following the tradition of the original planters: to find the newest and best of plants for our climate. Exuberant gardens focus on styles and plant trends of different decades. Don't miss the newly installed Art Nouveau-style steel gazebo. 5 taxa of *Ilex*. Most gardens open daily. Free.



Gazebo in Historic Columbia, SC.

~Jenks Farmer

Spartanburg features the private arboretum of a textile magnet. Now open for visitors, **Milliken Arboretum** is renowned for its tree collections and is one of the largest corporate campuses in the South. Nearby Spartanburg Community College Arboretum features an internationally important collection of magnolias, assembled by professor Kevin Parris, originator of *Magnolia grandiflora* 'Kay Parris'. The college boasts 40 taxa of *Ilex* and 150 of Magnolia. Both open daily and free.

Clemson University is nestled in the Blue Ridge Mountains, foothills of the Appalachian Mountains. Clemson grows the State Botanical Garden of South Carolina. The lovely gardens feature ponds, woodland gardens, an Asian garden, and art. They've also nourished and trained horticulturists like Ted Stephens, the recently deceased international garden designer Ryan Gainey, and, humbly, yours truly, who cut grass in the perennial garden as student worker. Free. Open daily.

A Ton of Ticks in the Yaupon Thicket!

Hunting Island, one of the most beautiful barrier islands on the South Carolina coast, is home to the highest concentration of ticks in the United States. The ticks come on migratory birds who stop and rest in the island's massive groves of *I. vomitoria*. Tick scientists (acarologists) come here from around the country to collect ticks. Seriously.

Recently, South Carolina surveyor Tom Hall, standing in a thicket of yaupon holly, explained to a tick-collecting University of Tennessee acarologist that yaupon has incredibly high caffeine content. Now researchers from the University of Tennessee are looking into the connection between the birds, the ticks and the caffeine in *Ilex vomitoria*, yaupon holly.

A Few Off The Beaten Path Garden Stops:

Pearl Fryar's Topiary Garden, Bishopville
James Henry Hammond home, Beech Island
Kalmia Gardens, Hartsville
The White House, Rock Hill
The Angle Oak, Johns Island
The Point, Beaufort
Furman Japanese Garden, Greenville

NOTE: To see pictures of these and other South Carolina gardens in one place visit the Gallery on Jenks Farmer's web page. www.jenksfarmer.com. Also search for #southcarolinagardens on Facebook. As you travel in our state, please hashtag your Facebook post the same way.

Jenks Farmer, author of Deep Rooted Wisdom; Lessons from Generations of Gardeners, is former director and plantsman of Riverbanks Botanical Garden, Moore Farms Garden, and Historic Columbia Gardens. With a masters degree in public garden management from the University of Washington and a horticulture degree from Clemson University, he has the combination of horticultural science and museum science needed to set strategic vision for growing plants well.

Jenks operates a mail order nursery specializing in organically grown plants of the genus Crinum. He works as a garden designer from New Orleans to Charleston, and is one of the speakers at the HSA 2016 Annual Meeting in Myrtle Beach, SC.



Yaupon thickets and spartina grass on Hunting Island State Park, SC ~ Jenks Farmer

HOLLY AND HONEY

William N. Kuhl

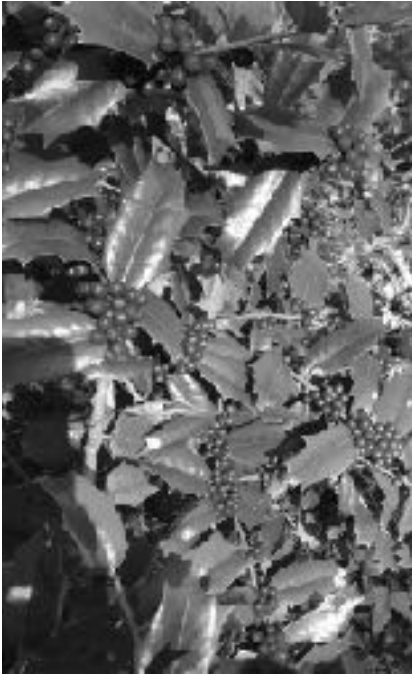
A gentleman stopped by McLean Nurseries a while back saying that he wanted to buy some hollies. He said that he was installing a beehive on his property and, after doing some research, discovered that hollies were recommended as an excellent source of nectar. This got me to thinking about the holly and honey relationship.

It seems we holly growers usually look at honeybees primarily as pollinators helping to set berries on our hollies rather than as honey producers. This connection now suggests a win-win opportunity for both the holly and the honeybees. The holly is pollinated and the bees produce honey with all of its sweet-tasting and medicinal benefits.

Our domestic honeybees are of European origin, introduced into North America by early colonists. These bees evolved with the native European holly species that bloom on old wood. The holly species most likely were *Ilex aquifolium* (English holly) and *I. perado* (Canary Island holly) and their many forms and varieties. In the Mid-Atlantic Region these and many other holly species and hybrids bloom in April after a normal winter. The result is a nectar flow in the early spring just in time to help provide food for hungry bees. A late spring with a late nectar flow could result in weakening the hive, or worse.

Honeybees live in large colonies in hives that over-winter many thousands of bees, which are raring to go in the warming springtime. Other pollinators such as bumblebees, wasps, and a variety of insects over-winter in much smaller colonies and are not available in such large numbers for early spring pollination. I have noticed more honeybee activity on early (April) blooming hollies and fewer on May and June blooming species (such as *I. opaca* and *I. verticillata*). Competition with nectar flow from nearby trees such as tulip poplars, which bloom at the same time as later blooming hollies, has an impact on honeybee activity.

At McLean Nurseries we have about a dozen beehives managed by a beekeeper named Gerard Dolan. He has won many a “Grand Prize” at the Maryland State Fair for his honey and beeswax candles. It appears that honey extracted from early blooming hollies is lighter in color with a delicate sweetness. Honey from *I. opaca* and later-blooming hollies is also sweet but darker in color, as it is mixed with nectar from trees and other vegetation blooming at the same time. The color and taste of holly honey from other site specific locations could vary to reflect local environmental conditions.



I. latifolia hybrid 'Elizabeth Coleman'
~ Jim Resch

Fred Galle in his book, *Hollies – The Genus Ilex*, notes that, “The fragrance of *Ilex* flowers is often overlooked and not recorded... The light fragrance is best observed in early morning and is very attractive to bees. *Ilex latifolia* and *Ilex aquifolium* are noted for their fragrance.” Additional research in this area would be most welcome.

Our honeybees have enough challenges without struggling to find an adequate nectar supply. Hollies generate an abundant and timely nectar flow providing food for the honeybees and providing humans with holly berries and honey – one of nature’s perfect foods.

RESEARCH AND DEVELOPMENT, TAXONOMY COMMITTEES 2016 UPDATE

Jim Resch

Background: In January 2016 we examined the guidelines of several Holly Society committees and agreed to reconstitute the dormant Research and Development Committee, and to include within it the existing Test Holly Program. In addition, the duties of the Taxonomy Committee were clarified to include the “Beyond Galle” compilation of new *Ilex* cultivars, providing support to the Registration Committee, as well as the Society as a whole.

Test Holly 2016: *Ilex dimorphophylla* × *cornuta* ‘Carolina Cone’

This unusual hybrid was a product of Gene Eisenbeiss’ breeding program at the U.S. National Arboretum and was apparently the first example of a cross between these two Asiatic species. As described in Fred Galle’s 1997 work, the plant features very small, sharply spinose leaves on a bush with an irregular, upright habit. At the time of Galle’s writing, the sex of the plant was still unknown, and distribution had been quite

limited so hardiness information was not available. Several Holly Society members have recently observed female flowers and small (6 mm) red fruit on this cultivar. In 2015, we selected this plant for the Test Holly Program, aiming to produce year-old plants for distribution at the 2016 Annual Meeting in Myrtle Beach, South Carolina. Propagation was straightforward, with 95% success on cuttings taken in late August, using Hormodin #3 rooting hormone, 1:1 Peat Moss/Perlite medium, and maintaining high humidity under plastic without mist or bottom heat. Plants are being grown on in quart containers of Pro-Mix Bx (with mycorrhizae) and slow-release fertilizer (15-9-12 plus minors, 6-month formulation). Recent photos of rooted cuttings are included.

Hoping to learn more about ‘Carolina Cone’, we have contacted several of the Holly Society’s arboreta to inquire about their experience with the plant. The National Arboretum in Washington D.C. no longer has living plants of this cultivar, but records there show that Gene Eisenbeiss attempted several *I. dimorphophylla* × *cornuta* crosses, and in 1982 he selected at least two of the resulting hybrids. One of these was designated 6-82, and several dozen cuttings had been propagated from this plant by 1984. The J.C. Raulston Arboretum (JCRA) in North Carolina obtained plants from the National Arboretum beginning in 1986. One of those remains at JCRA today (labeled only *I. dimorphophylla* × *cornuta*), and is apparently one of the oldest living plants of this cultivar. Mark Weathington reports that this plant continues to exhibit only spinose, juvenile-form foliage despite its age of 25+ years. Propagation from the JCRA plant has allowed distribution to others including the arboretum’s members. According to Fred Galle, some were given to North Carolina nurseries for testing and evaluation, and the plant named ‘Carolina Cone’ and introduced in 1992 by L. Edwards of Turtle Creek Nursery in Davidson, NC. One of the JCRA plants also went to Cistus Nursery in Portland, Oregon at least 20 years ago, and Cistus now offers the plant in its online catalog. Sean Hogan at Cistus says that their stock plant produces both red fruit and staminate (!) flowers, confirming reports we had heard of this remarkable behavior. Their plants likewise retain juvenile, spinose-form leaves. According to some of our members, even this seems subject to change over time, and a transition to mature-form leaves with entire margins as in the parent species *I. dimorphophylla* would not be unexpected.

Hardiness information has been more difficult to obtain, but it is clear that established plants survive exposure to 0° F (-17.8 °C) with minimal damage. However, Eric Garris at Berheim Arboretum in Kentucky reports that ‘Carolina Cone’ was lost following several consecutive

winters with unusually cold temperatures lower than -10°F (-23.3°C). Experience in the Test Holly program may provide more information on the plant's hardiness.

We had also hoped to have quantities of *I.* 'Blue Wave', a cross of *I. ciliospinosa* with *I. × meserveae* 'Blue Prince', hybridized by the late Robert Tomayer of Fennville, Michigan. Our attempts at propagation were much less successful, however, and we will not have enough plants of this one for a meaningful Test Holly distribution this year.



I. dimorphophylla × cornuta
'Carolina Cone' showing its
roots. ~Jim Resch

Beyond Galle Project

Since 2011, we have collected information on cultivated *Ilex* not included in Fred Galle's classic book, *Hollies: The Genus Ilex* (Timber Press, 1997). Well over 300 new named varieties have been identified and documented in this project. At the 2015 Annual Meeting in Hunt Valley, Maryland, we distributed then-current paper copies of the database to meeting attendees. We had several leftover handouts spiral bound, and Mark Chaffins has given these to some of the Holly Society's arboreta. In January, a slightly more updated version was provided to Rachel Cobb, with the intention of posting these on the Holly Society's website for members-only access. Meanwhile, the "live" database continues to exist as an Excel workbook, and this continues to be updated as new information arrives. New plants are added as these appear in plant catalogs, nursery websites, and plant patents. We have had an opportunity to contact several growers directly for further information, including Professor Thomas Ranney of North Carolina State University (regarding his new series of tetraploid winterberries) and Barry Diller of Diller Nursery (regarding the new hybrid 'Mrs. Palmer'). We continue to provide periodic database updates to our Registrar, Mike Pontti.

THE SHOEMAKER HOLLY FOREST
AN OLD GROWTH *ILEX OPACA* FOREST IN SEAVILLE,
NEW JERSEY

Richard Stalter, Ph.D.

The objective of this study was to determine the arborescent composition and dominance of tree species at the Shoemaker Holly Rest Area, 39° 13' 44" N, 74° 22' 55" W., Seaville, New Jersey, mile marker 22.8 on the Garden State Parkway. This is the site of New Jersey's Shoemaker Holly, the state's oldest and largest (diameter) Ilex opaca. Trees 4.5' (1.37 m) above the ground with a trunk diameter 3" (7.6 cm) or greater were sampled using the point centered quarter method. Points were selected at the open woodland south of the Shoemaker Holly and again at the woodland north of the Shoemaker Holly. Number, relative number, frequency, relative frequency, basal area, relative dominance, and importance value were calculated for the trees encountered in our sample. Ilex opaca, American Holly, was the most abundant tree at site, composing 79% of the sample, and attained the highest relative dominance (percent basal area) and importance value with values of 55.1 and 189.9 respectively. Ilex opaca will most likely remain dominant here because of its longevity and lack of competition with arborescent species.

Introduction: Few people bother to stop at the Garden State Parkway's John B. Townsend-Shoemaker Holly Rest Area, mile marker 22.8, Seaville, New Jersey. This is the site of the Shoemaker Holly, 39° 13' 44" N, 74° 22' 55" W, New Jersey's oldest (ca 325 years) and most famous *Ilex opaca*.

The tree is named after the Shoemaker family who sold the land where the holly grew to the state of New Jersey when the state was completing the final miles of the parkway in 1953. The original route of the parkway would have removed the tree, and the old growth holly forest associated with the tree if not for the intervention of Dan Fenton, the founder of the Holly Society of America. Fenton worked with the parkway's chief architect to reroute the parkway to preserve the tree and the old growth American Holly Forest at the site (Campbell 2015).

The estimated age of this monarch is 325 years, making it the oldest *I. opaca* in the state and possibly the nation. Yet New Jersey was home of an even older and larger (circumference) American Holly on the west side of Broadway in the town of West Cape May. The circumference of this giant was 8' (2.44 m) on May 30, 1973. This old American Holly was in poor health and was felled by a storm on February 2, 1976. The annual rings of the Cape May *I. opaca* were counted by Fred Louquet, Chief Ranger, Cape May Point State Park. His annual ring count indicated that this tree was over 350 years old at the time of its demise (Anonymous 1976).

In an article celebrating the Shoemaker Holly on Arbor Day, posted April 23, 2015, Campbell (2015) claimed the tree was 60' (18.3 m) tall! Its actual height is approximately half of that, 30' (9.15 m) though it was probably taller in the past. The tree's dbh (diameter at breast height), 4.5' (1.37 m) above the ground measured by the Stalter on May 27, 2016, was an impressive 2.4' (0.74 m), slightly less than the deceased Cape May holly's 2.5' (0.76 m) diameter, but larger than the diameter of a comparable American Holly at the Bayside Holly Forest, Sandy Hook, New Jersey measuring 2' (0.6 m).

The Shoemaker Holly is fenced and mulched (Figure 1). Trees that originally surrounded the tree have been removed as have most trees at the rest area. The site occupied by the Shoemaker Holly may have been more densely populated with trees in the past, possibly similar to the American Holly dominated forest on the rest area's northern border.

Methods: Trees with a trunk diameter at breast height, 4.5' (1.37 m) above the ground, 3" (7.6 cm) or greater were sampled using the point centered quarter method. Twenty points were selected beginning at the south end of the open woodland south of the Shoemaker Holly and again at the woodland bordering the north end of rest area. The points were selected so that no tree would be sampled twice. Number (N), relative number (RN), frequency (F), relative frequency (RF), basal area (BA), relative dominance (RDo), and importance value (IV) were calculated (Table 1). Relative dominance and importance values for the Shoemaker site were compared with the same values at Sandy Hook, New Jersey sampled in 2002 (Table 2) and at Fire Island National Seashore (Table 3). Relative dominance of trees associated with American Holly at the Shoemaker site, Sandy Hook, and Fire Island's Sunken Forest were compared (Table 4), as was importance values at the aforementioned sites (Table 5). Nomenclature for the trees identified at both sites follow Haines (2011).

Results and Discussion: *Ilex opaca* was the most abundant tree at the Shoemaker Holly Rest Area site comprising 79% of the total number of trees sampled. *Ilex opaca* was also the tree with the highest relative dominance and importance with values of 55.1 and 189.9 respectively. The second, third, and fourth ranked trees in dominance were oaks, white oak (*Quercus alba*), southern red oak (*Q. falcata*), and black oak (*Q. velutina*) (Table 1).

While *I. opaca* is the most abundant dominant and important tree at the Shoemaker site, it's number, relative frequency, dominance, and importance are lower than that of *I. opaca* at Sandy Hook, New Jersey (Table 2). Sandy Hook is a narrow spit of land, and when the spit is breached during

severe storms, such as Hurricane Sandy, rendering the hook an island that further isolates the hook from potentially colonizing oak tree species from becoming established there. The seeds of tree species that have become established at Sandy Hook, Black Cherry (*Prunus serotina*), Hackberry (*Celtis occidentalis*), Red cedar (*Juniperus virginiana*), and Shadbush (*Amelanchier canadensis*) have been brought to the site by birds (Stalter 1979b, 1979c). No *I. opaca* or competing tree seedlings were observed in deep shade under *I. opaca* at the Shoemaker site when sampled by Stalter, May 2016, suggesting that *I. opaca* may remain dominant here during the 21st century.

In a third study of coastal maritime forests, Stalter (1979a) found *I. opaca* to be dominant at the Sunken Forest, Fire Island National Seashore, New York. At Fire Island's Sunken Forest, American Holly attained relative dominance value of 57 similar to the relative dominance value of *Ilex opaca* at the Shoemaker site (55). Sassafras (*Sassafras albidum*), Shadbush, and black gum (*Nyssa sylvatica*) were the most common associates of dominant *I. opaca* at Fire Island's Sunken Forest (Table 3). For additional information on Fire Island National Seashore's Sunken Forest see Art et al. (1974).

Oaks, red maple (*Acer rubrum*), black gum, and pitch pine (*Pinus rigida*) at the Shoemaker site are potential competitors of *I. opaca*. Potential competitors at Sandy Hook were black cherry, red cedar, sugar berry (*Celtis occidentalis*), and Shadbush, yet none of these taxa were represented by saplings within the Bayside Holly Forest (Stalter 1979d). American Holly was the dominant tree at the Shoemaker site, Sandy Hook, and Fire Island (Table 4). American Holly was also the most important tree species at the aforementioned sites with importance values of 156 at Fire Island, 190 at the Shoemaker site, and 243 at Sandy Hook (Table 5).

Ilex opaca at Sandy Hook survived a severe nor'easter in 1992 and most recently Hurricane Sandy in 2013 (Stalter and Heuser 2015). Sea level may rise 2.8' (0.84 m) this century (Rachlin et al. 2016). Rising sea level and hurricane driven storm surges may pose a threat to *I. opaca* at all three coastal sites in the future.

Summary: The Shoemaker Holly rest area, site of the Shoemaker Holly and its associated *I. opaca*-dominated forest, is one of two holly dominated forests in New Jersey. Thanks to Dan Fenton's intervention, and the cooperation of the parkway's state architect to reroute the parkway, this magnificent specimen American Holly was saved along with a unique holly-dominated forest. American Holly's longevity and lack of competing arborescent taxa should enable American Holly to maintain its dominance

here this century. Holly Society of America members traveling south on the parkway should visit the Shoemaker Holly site to view the Shoemaker Holly and the associated *I. opaca* dominated forest here. The Shoemaker Holly is unique as few *I. opaca* have been reported to survive over 300 years.

Acknowledgments: We gratefully acknowledge the assistance of Dwight Kincaid for reviewing the paper, and TuLoan Ly, St John's University, who assisted the author on the project.

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Table 1 Number (N), Relative Number (RN), Frequency (F), Relative Frequency (RF), Basal Area (BA), Relative Dominance (RD), and Importance Value (IV) for the Shoemaker Holly Forest, New Jersey. Basal Area units are in cm².

Species	N	RN	F	RF	BA	RD	IV
<i>Ilex opaca</i>	3.15	78.8	100	56	14597	55.1	189.9
<i>Quercus alba</i>	0.30	7.5	30	16.2	4552	17.2	41.4
<i>Q. falcata</i>	0.20	5.0	20	11.1	3162	12	28.1
<i>Q. velutina</i>	0.20	2.5	10	5.6	2019	7.6	15.7
<i>Nyssa sylvatica</i>	0.20	2.5	10	5.6	1031	3.9	12
<i>Acer rubrum</i>	0.10	2.5	5	2.8	678	2.6	7.9
<i>Pinus rigida</i>	0.05	1.3	5	2.8	450	1.7	5.8

Table 2 Number (N), Relative Number (RN), Frequency (F), Relative Frequency (RF), Basal Area (BA), Relative Dominance (RD), and Importance Value (IV) for the trees of the *Ilex* forest, Sandy Hook, New Jersey. Basal Area units are in cm². (Stalter 1979b)

Species	N	RN	F	RF	BA	RD	IV
<i>Ilex opaca</i>	3.28	82	100	67.6	23123	93.1	242.7
<i>Prunus serotina</i>	0.52	13	32	21.6	1197	4.8	39.4
<i>Celtis occidentalis</i>	0.16	4	12	8.1	702	1.4	13.5
<i>Juniperus virginiana</i>	0.04	1	4	2.7	170	0.7	4.4

Table 3 Density (D), Relative density (RD), frequency (F), relative frequency (RF), basal area (BA), relative dominance (RD), and importance value of arborescent species of the Sunken Forest, Fire Island, New York. Basal area units are in cm². (Stalter 1979a)

Species	D	RD	F	RF	BA	RD	IV
<i>Ilex opaca</i>	11	67	100	32	8750	57	156
<i>Sassafras albidum</i>	3	15	80	26	2619	17	58
<i>Amelanchier canadensis</i>	1	8	70	23	1415	9	40
<i>Nyssa sylvatica</i>	1	8	40	13	1740	11	32
<i>Quercus stellata</i>	>1	1	10	3	627	4	8
<i>Quercus velutina</i>	>1	1	10	3	81	1	5

Table 4. Relative dominance of tree species at three coastal sites where *I. opaca* is dominant: Shoemaker Holly Rest Area, Garden State Parkway, NJ, Sandy Hook, NJ, and Fire Island, New York

Species	Shoemaker Holly Rest Area	Sandy Hook	Fire Island
<i>Ilex opaca</i>	55.1	93.1	57
<i>Quercus alba</i>	17.2		
<i>Quercus falcata</i>	12		
<i>Quercus velutina</i>	7.6		1
<i>Nyssa sylvatica</i>	3.9		
<i>Acer rubrum</i>	2.6		
<i>Pinus rigada</i>	1.7		
<i>Prunus serotina</i>		4.8	
<i>Celtis occidentalis</i>		1.4	
<i>Juniperus virginiana</i>		0.7	
<i>Amelanchier canadensis</i>			9
<i>Sassafras albidum</i>			17
<i>Quercus stellata</i>			4

Table 5. Importance value of tree species at three coastal sites where *Ilex*

<i>Ilex opaca</i>	190	242.7	156
<i>Quercus alba</i>	41		
<i>Quercus falcata</i>	28		
<i>Quercus velutina</i>	16		5
<i>Nyssa sylvatica</i>	12		32
<i>Acer rubrum</i>	8		
<i>Pinus rigada</i>	6		
<i>Prunus serotina</i>		39.4	
<i>Celtis occidentalis</i>		13.5	
<i>Juniperus virginiana</i>		4.4	
<i>Amelanchier canadensis</i>			40
<i>Sassafras albidum</i>			58
<i>Quercus stellata</i>			8

opaca is dominant: Shoemaker Holly Rest Stop, Garden State Parkway, NJ, Sandy Hook, NJ, and Fire Island, New York.

CULTIVATING YAUPON HOLLY FOR TEA

Christopher Chemsak

Are you looking for a new drink based on a native North American plant? A new company in Georgia is selling “Ready to Drink” bottles and tea bags made from the roasted leaves of the yaupon holly (*Ilex vomitoria*). Lou Thomann, Chief Leaf at The Yaupon Tea Company, is passionate about yaupon. He calls it an American treasure because of its health benefits, great taste, and fascinating ethnobotanical history. He believes it will have success similar to that of its South American cousins, yerba mate (*I. paraguariensis*) and guayusa (*I. guayusa*).



Lou Thomann foraging for yaupon holly (*Ilex vomitoria*)
Photo courtesy of The Yaupon Tea Company.

Under the name brand “Asi Tea,” the company is celebrating our native food ways, harvesting yaupon sustainably, creating fair wage jobs in rural communities, and lowering the carbon footprint by offering a local source of caffeine. Yaupon is the only native source of caffeine in North America.

Thomann’s vision is ambitious. He believes it is only a matter of time before the world rediscovers this ancient brew. So he is getting ready. Lou is working with several universities to study this plant that native tribes used as tradi-

tional medicine for thousands of years and that was cherished by early settlers. The early research is very promising for this tea that is packed with antioxidants, saponins, theobromine, caffeine, and more.

While expanding the wild picked or foraged operation in the South to meet the growing demand for yaupon, there is also a farming side to his vision. On his Georgia farm he has propagated approximately 10,000 wild yaupon plants. With these plants, he is studying the economics of growing organic yaupon while developing protocols to enhance the beneficial compounds in the plant. Along with university researchers and the new Yaupon Farmers Research Co-op, he hopes to share this information with other growers looking to commercially farm yaupon. The company is waiting to hear about a USDA Phase I grant to support this project.

Christopher Chemsak is Director of Outreach at Asi Tea Company.

WHY ARE HOLLY BERRIES RED?

Jim Resch

The bright red color of holly fruits practically defines the plant in the minds of many gardeners. Each winter, we luxuriate in the festive display of red and green from our many evergreen hollies, and love the heavy wands of bright red fruits on the deciduous winterberries. Of course, the birds seem to love them too, and seem especially attracted to the red color. We tend to take all these things for granted, only seldom asking how our favorite plants go about creating this colorful show in our gardens each year.

To explain the pigmentation of holly fruits, Frank Santamour, Jr., a former holly specialist and geneticist at the US National Arboretum, undertook a systematic exploration of many species across the genus *Ilex*.¹ He found that just four compounds, called anthocyanins, were responsible for the distinctive red colors across multiple kinds of holly. These four anthocyanins consist of a light-absorbing chromophore, either pelargonidin or cyanidin, linked to a sugar molecule, either glucose or xylose. Pelargonidin- and cyanidin-based pigments are common in nature, occurring in flower petals and in such familiar foods as strawberries, raspberries, cherries, red cabbage, and red grape skins. Although they impart little or no flavor, nutritionists value the anthocyanins for their powerful antioxidant and radical-scavenging properties.

It would be difficult to design more efficient red pigments than the anthocyanins in holly fruits. They absorb the entire violet-blue-green end of the visible spectrum, allowing red and orange light to reflect off the surface completely unobstructed. As a result, even a small amount of anthocyanin in the exocarp of a holly fruit renders it bright red. Chlorophyll has practically the opposite effect, absorbing the red and orange light

while reflecting the blues and greens. A more beautiful contrast of leaves and fruits could hardly be imagined by the botanist, artist, or chemist.

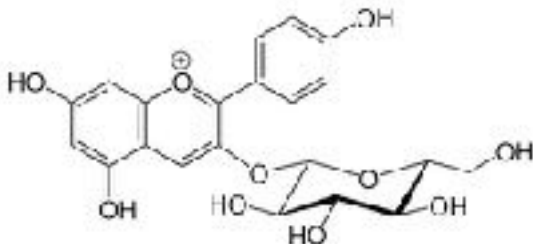
Remarkably, Santamour found that groups of closely related species within the genus *Ilex* could be distinguished based on their anthocyanins. Thus, *I. aquifolium*, *ciliospinosa*, *cornuta*, *integra*, *latifolia*, *perado*, and *pernyi* all employ pelargonidin-based pigments. Taxonomists had already classified these closely related species together as members of Section *Aquifolium*, subgenus *Aquifolium*, all within the genus *Ilex*. On the other hand, Section *Leoprinus* within the same subgenus, which contains such red-fruited species as *I. cassine*, *myrtifolia*, *opaca*, *pedunculosa*, and *sugerokii*, employs exclusively cyanidin-based pigments. The chemical distinctions extend to deciduous hollies as well. Pelargonidin-based pigments are found in the closely related *I. serrata* and *verticillata*, whereas cyanidin-based anthocyanins account for the red colors of *I. amelanchier* and *decidua*.

The story does not end here. Holly lovers might fairly wonder why red-fruited hollies can't be enjoyed on their favorite trees year-round. Why must we wait for the autumn for all this charming red pigmentation to appear on our plants? Again, there are hints from chemistry. Thanks to the same chlorophyll which colors the leaves, holly fruits are an unassuming plain green in color all through the summer and early fall. Perhaps more importantly, while the holly fruits are maturing, they are also rich in other chemicals: soap-like saponins, and bitter-tasting compounds such as tannins and other phenolics.² These serve the very useful purpose of deterring insects and larger animals from feeding on the as-yet underdeveloped fruits. Only as the maturation process is complete in the autumn do the levels of these bitter compounds begin to decline. At the same time, the plant stops the production of chlorophyll in its fruits, and instead begins to make the vivid red anthocyanins. It is possible that the anthocyanins play a useful "rear guard" action as well, protecting the fruit from sun-induced oxidative damage as the last of the chlorophyll is transported back into the stems for nitrogen recovery.³ This choreography of color serves as an advertisement to fruit-eating birds that dinnertime is near. Robins, bluebirds, mockingbirds, and others turn to these bright red fruits for winter sustenance, disseminating non-digestible holly seeds all across the landscape in the process.

Given all the benefits of the anthocyanins, how could a holly survive without them? Quite well, apparently. As it turns out, the yellow-fruited hollies lack anthocyanins and are colored by carotenoids, a widespread and even more important class of pigments. Theirs is a story for another day.

1. Frank S. Santamour, Jr., *Phytochemistry*, 1973, vol. 12, pp. 611–615.
2. Betty Kreuger and Daniel A. Potter, *Holly Society Journal*, 1993, vol. 11, no. 4, pp. 3–9.
3. Taylor S. Feild, David W. Lee, and N. Michele Holbrook, *Plant Physiology*, 2001, vol. 127, pp. 566–574.

Pelargonidin-3-O-glucoside, one of several red pigments found in holly fruits (structure from Yikrazuul (talk) – Own work, Public Domain,



<https://commons.wikimedia.org/w/index.php?curid=29302101>

CHAPTERS TO BECOME REGIONS

Sue Hunter

As the Holly Society works to update several facets of our organization, we are making a transition from Chapters to Regions over the next year. Many of you have been aware that this has been in the works for quite some time.

What does this change mean? It means that Chapters will continue to manage local area events, programs, meetings and more, the way that they have been doing.

The most significant change: all present and future memberships will be kept through HSA Secretary, currently Carole Cossaboon, who can be reached at secretaryhollysociety@gmail.com. Regional Leaders shall send the HSA Secretary a list of members at the beginning of each calendar year and, as always, encourage their members to also become members of the Holly Society of America.

Pursuant to a decision made at the Interim Board Meeting in Milville, New Jersey, on June 4, 2016, the Executive Board has unanimously approved implementation of Bylaw 14.6, which states:

“14.6 The Board of Trustees of The Society shall have the power to establish additional requirements, or amend existing requirements for the

continuance of Chapter status. All such amendments and/or additions shall be applicable to all authorized Chapters.”

We think that this Regional approach to our organization will offer greater cohesion and will contribute to the long-term health of the Society.

IN MEMORIAM

Emily Jernigan

We remember with fondness and extend our sympathies to the families of the following. Hollies, and membership in the Holly Society of America, were important in her life. More extensive remembrances may be published on our website, www.hollysocam.org.

Dorothy Eleanor Anderson June 5, 1930—October 11, 2016

Dorothy Eleanor Anderson (née Blanchard) died on October 11, 2016, after battling breast cancer. She is survived by Charles Anderson, her husband of 64 years, her children David Anderson and wife Karen, Catherine Anderson, Karen Storms, Dean Anderson and wife Amy, Virginia Chandler and husband Bill. She was blessed with 10 grandchildren and 11 great grandchildren. A Mass of Christian Burial was held on Saturday, October 15 at 10 a.m. at Sacred Heart Catholic Church, Glyndon, MD.

A remembrance of Dot from family friend Bill Kuhl

Dorothy (“Dot”) Anderson was lost to this world on October 11, 2016. This wonderful lady was a longtime member of both the Holly Society of America and the Chesapeake Chapter of the Holly Society. The wife of Charles Anderson, former president of both organizations’ she faithfully accompanied him to every meeting, assisting him in ways too numerous to mention. Dot was a familiar sight at these meetings, wearing her Holly Society sweatshirt.

Dot was a loving, kind, and gentle person. She supported Charlie as he developed an excellent collection of *Ilex*. I would visit Charlie's hollies at his home in Baltimore County, Maryland at least once every year to take cuttings. On one visit a certain female holly, *Ilex opaca*, caught my eye, and I asked him which one it was, hoping to propagate it. He said it was just a seedling that grew in the yard. I helped myself to the cuttings and immediately began calling it ‘Charlie's Angel’. The name just seemed to fit because Dot in many, many ways certainly was his angel.

Dot was also responsible for naming a seedling holly growing in Charlie's collection. An upright, hybrid male holly was found growing along and hugging their property line. This holly genetically includes a

lot of *I. cornuta* and *I. pernyi*. It has been registered and introduced as *I. 'Hugger'*.

In memory of Dot and because of her interest and support for the Holly Society, any donations to the Holly Society in her name would be appreciated.



Dorothy "Dot" Anderson ~Mike Pontti

HOLLY ARBORETA 2015 ANNUAL REPORTS

Holly Society Official Holly Arboreta and Experimental Test Centers are public or semipublic institutions that educate plant lovers in the use of holly in the landscape and comply with HSA guidelines. These institutions maintain properly labeled holly collections and accurate accession records that include valid name, source, date and size (or age) when received, location, and other relevant information. Official Arboreta and Test Centers must submit annual reports to the Society to stay active. These reports include pertinent weather data, additions or deletions to the collection, notes on holly performance, and general information on holly collections and projects involving them. Test Centers must also report the status of ongoing research involving holly. Following are the Official Holly Arboreta and Experimental Test Center reports for 2015. Inventory lists for some arboreta may be found on the HSA website, www.hollysocam.org.

ARBORETUM DES PRÉS DES CULANDS CONSERVATOIRE NATIONAL D'ILEX

La Nivelles, 45130 Meung Sur Loire, France USDA Hardiness Zone 8

In 2015 we had a mild spring, a dry and hot summer, and a mild and temperate fall. Rainfall was very low, and the beginning of winter was mild without frost.

We added *Ilex pernyi* × *aquifolium* 'Dragon Slayer' that had a good yield of fruit.

This year, 2016, we will stop our work on the Arboretum in November. We are looking for someone to buy our Arboretum who is passionate about plants.

We spread information about *Ilex* in expositions, conferences, and articles in some horticultural magazines, and radio and television.

My selections for the year for foliage development and disease and pest resistance are *I.* × 'Becky Stevens', *Ilex* 'Hefcup' Buttercup™, *I.* × 'Centennial Girl', and *I.* × 'River Queen'.

Pierre Paris, Conservateur

Editor's Note: Pierre Paris reports that Stéphane Chassine is now the owner of this arboretum. The new contact information is info@lesjardinsderoquelin.com and www.lesjardinsderoquelin.com.

BAYARD CUTTING ARBORETUM
Great River, NY USDA Hardiness Zone 7a

After the winter experienced in 2014 we did not think it could get worse. We were wrong. The winter of 2015 brought below average temperatures and substantial snowfall. The below average temperatures undoubtedly led to winter stress on the collection. Fortunately, a relatively wet fall staved off major desiccation injury. That being said, our prized *Ilex latifolia* was almost completely defoliated by the cold temperatures. Following the long winter, temperatures were slow to increase come spring. However a dry spring lent itself to good pollination and bountiful fruit set.

In the second season after a major renovation to our collection, young plants exhibited good growth and fruit set. Among the best performers in the collection were the winterberries: *I. verticillata* ‘Winter Gold’, ‘Maryland Beauty’, and ‘Red Sprite’ highlighted the group. In addition, *I.* ‘Emily Brunner’, *I. opaca* ‘Steward’s Silver Crown’ and *I. x koehneana* stood out amongst the evergreen varieties. The warm temperatures in the late fall into early winter (2016) led to bright coloration of fruit on *I. cornuta* cultivars, while they typically freeze off to a dull red color.

In 2015 we added 22 new taxa to our collection. Although this is small when compared to the additions of 2014, these plants are most certainly less common.

Plant Additions

- I. aquifolium* ‘Holly Girl’
- I. cornuta* ‘China Doll’
- I. glabra* ‘Ivory Queen’
- I. opaca* ‘Boyce Thompson Xanthocarpa’
- I. opaca* ‘Dan Fenton’
- I. opaca* ‘Freeman’
- I. opaca* ‘Jeanette Adamson’
- I. opaca* ‘Jersey Knight’
- I. opaca* ‘Jersey Princess’
- I. opaca* ‘Long Island’
- I. opaca* ‘Satyr Hill’
- I. opaca* f. *xanthocarpa*
- I. verticillata* ‘Mary Jo’
- I. x wandoensis*

Hybrids

- I.* ‘Apollo’
- I.* ‘Baltimore Blaze’

- I.* 'Hefcup' Buttercup™
- I.* 'Cherry Bomb'
- I.* 'Elizabeth Coleman'
- I.* 'Little Bull' × *I. pernyi*
- I.* 'Depat' Miss Patricia™
- I.* 'Serendipity'

Michael Runkel, Landscape Curator
www.bayardcuttingarboretum.com

BERNHEIM ARBORETUM AND RESEARCH FOREST Clermont, KY USDA Hardiness Zone 6a

The 2015 growing season was atypical when considering the unusually frigid winter and very mild summer we experienced. Our coldest temperature was a numbing $-15.8\text{ }^{\circ}\text{F}$ ($-26.5\text{ }^{\circ}\text{C}$) while summer temps struggled to top $90\text{ }^{\circ}\text{F}$ ($33.4\text{ }^{\circ}\text{C}$). Our warmest day this summer was $92.2\text{ }^{\circ}\text{F}$ ($32.2\text{ }^{\circ}\text{C}$). Precipitation was at $53''$ (135 cm) for the year. Although moisture was about normal and most of the holly collection responded well with new growth, many of our accessions did not survive the record cold temperatures. Losses among all hybrid hollies, *Ilex cornuta*, and *I. × koehneana* were greater than 80%. Most were killed down to the crown and may provide, at least, some material for cuttings. Most have been pruned down severely and we will give them a couple of years to respond before removal.

The *I. opaca* continue to do well. New growth was great as well as fruiting. A much needed pruning and sucker removal drastically improved the aesthetics of the collection. Lower limbs from these hollies had taken root and provided opportunity for profuse suckering among all the American hollies. Most held fruit well into February and were quite picturesque with the 2 large snows we experienced. Our aging *I. crenata* collection will be removed as accessions exceed maturity and begin to fail. Cuttings have been taken from the viable accessions for replanting in later years. There were no new additions to the Holly collection this year.

Many of the *Ilex* that we grow and test have performed tremendously for 10 or more years only to be bested by an erratic winter. We speak to garden groups, master gardeners, nursery professionals, and homeowners seeking advice throughout each season. There are hollies that we would have almost guaranteed to survive winters in Kentucky landscapes that faltered. No doubt, we will have quite a deaccession list next year.

In spring 2016, Bernheim will host *Vanishing Acts: Trees Under Threat* in conjunction with Morton Arboretum and The Global Trees Campaign. This exhibit will feature the plight of 15 rare and threatened species from all over the world. We are fortunate to have found 9 of these species to display here at the Arboretum. For more information, please visit our website: www.bernheim.org.

Eric Garris Horticulturist

CALLAWAY GARDENS

Pine Mountain, GA USDA Hardiness Zone 7b

Temperatures for the year were near the averages for Georgia, but rainfall was well above the norm. Fruit set was abundant, and we have had very colorful fall and winter on all holly species in our Garden.

We added plantings of *I. (cornuta × aquifolium)* ‘Nellie R. Stevens’, and *I. ‘Conin’ Robin*[™]. We removed *I. opaca* ‘Perle LeClair’ from the collection.

Kathy Crye, Garden Services

CHOLLIPO ARBORETUM

Tae-an-Gun, Chung Cheong Nam-Do, Republic of Korea
USDA Hardiness Zone 8

The mean air temperature was 13.9 °C (56 °F) the maximum air temperature was 34.5 °C (94 °F) on 7 August and the minimum was – 8 °C (18 °F) on 18 February. The precipitation was 561.5 mm (22.11”).

The mean humidity was 63.7%, the maximum humidity was 90% on 18 and 31 March, 29 April, 3 May, 12 July, 13, 14, and 18 November. The minimum was 30% on 16 March. The mean direction of the wind was N: 355.8°, the mean velocity of the wind was 36.9m/s (82.5 mph) on 6 November.

We are dredging the Big pond for the first time in 30 years, and remodeling our entrance nicely. Also we are going to build a Rock Garden on the site of southeast Big pond. What's more, we plan to remodel Carl Ferris Miller Memorial Hall.

In 2015, the arboretum recorded the following new seeds & plants:

Ilex × wandoensis (Tae-an Nr./Korea)

I. crenata ‘Convexa’ (The Garden Nr./Jeju Island)

I. × meserveae ‘Blue Eagle’ (SDL) (Novy Dvur A./Czech Republic)

We have relocated 7 hollies. The list of the transplantation follows:

- I. × wandoensis*(f)
- I. crenata* ‘Sky Pencil’ (f)
- I. cornuta* ‘Burfordii’ (f)
- I.* ‘Shin Nien’ (m)
- I. aquifolium* ‘Tremough’ (f)
- I. cornuta* ‘O. Spring’ (m)
- I. crenata* ‘Argentea Marginata’

The following cuttings were taken for propagation:

- I. crenata* ‘Dwarf Pagoda’
- I. (cornuta × aquifolium)* ‘Nellie R. Stevens’ (f) (USA Tingle Nursery)
- I. × wandoensis* (Wando /Korea)
- I.* ‘Dragon Claws’ (Barbara Taylor /USA)
- I. aquifolium* ‘Proud Mary’

We have relocated 7 hollies as they were planted too densely. At this time they are growing very well and looking good. We have taken cuttings of 5 different cultivars for propagation.

The following hollies died:

- I. azorica*
- I. glabra*
- I. rubra*

The following hollies especially looked nice in 2015:

- I. colchica* (f)
- I. cornuta* (f)
- I. cornuta* ‘Dwarf Burford’ (f)
- I. decidua* (f)
- I. decidua* ‘Red Cascade’
- I. × koehneana* ‘Chestnut Leaf’
- I. × wandoensis* (f)
- I. purpurea* (f)
- I. verticillata* ‘Winter Red’ (f)

Many hollies produced superb fruits last year. Of course, numerous birds have enjoyed the fruits in the arboretum too.

Choi Chang-Ho Dept, Education & Research <http://chollipo.org>

CLARK-LANDSBAUM DEMING PARK HOLLY ARBORETUM

Terre Haute, IN USDA Hardiness Zone 5b

Last year there were ten days when the temperature dropped below 0 °F (-17.8 °C). The average is only three to four days. The coldest was -14 °F (-25.6 °C) in February. There were 19 days above 90 °F (32.2 °C) while the average is 33 days, so it was a cool summer. From July through November rainfall was below average, with July through October being very dry. Average rainfall per year is 44" (111.8 cm). Actual rainfall last year was 40" (101.6 cm).

We built a new entryway out of sandstone, and added an informational kiosk. It describes holly varieties and how holly may be used in landscaping. It provides visitors with a brief history of the arboretum. We held an entryway dedication in September and offered tours of the arboretum.

Some hollies were removed this year. *Ilex serrata* × *verticillata* 'Harvest Red' was growing too close to a creek and was undercut by water. *Ilex opaca* 'Weber', *I.* × hybrid 'Libbee', and *I.* × hybrid Oakland™ died and were removed.

In the fall of 2014 ten large hollies, balled and burlapped, 8—10' (2.4—3.1 m) tall, were ordered for the arboretum. However they were not delivered until May, 2015. These new hollies are:

- 2 of *I. opaca* 'Georgianna'
- 2 of *I. opaca* 'Klein #1'
- 1 of *I. opaca* 'Virginia Giant'
- 3 of *I. opaca* 'Longwood Gardens'
- 2 of *I.* × *meserveae* 'Mesgolg' Golden Girl™

Robert Artis, Friends of the Arboretum



New sandstone
entrance to Clark-
Landsbaum Deming
Park Holly Arbore-
tum
~ Robert Artis



Figure 1. The Shoemaker Holly is the largest [30" (76.2 cm) diameter] and oldest (ca 325 years old) American Holly (*I. opaca*) in New Jersey. ~Richard Stalter



I. 'Calina' in the Elmore Holly Collection, University of Tennessee Arboretum, Oak Ridge, TN ~Lynn Carlson



I. cornuta 'Fine Line' in the Elmore Holly Collection, University of Tennessee Arboretum, Oak Ridge, TN
~Jim Resch



I. 'Hefcup' Buttercup™ in the Elmore Holly Collection, University of Tennessee Arboretum, Oak Ridge, TN
~Lynn Carlson



Autumn leaves tower over a perfectly trimmed hedge at Ladew Topiary Gardens in Monkton, Maryland.
~Emily Jernigan



I. opaca 'Uncle Sam'
~Sue Hunter



Jenks Farmer and Tom Hall with one of the many varieties of Crinum lilies they grow. They sell Crinums at <https://jenksfarmer.com>.



I. vomitoria 'Bordeaux' and
I. cassine Dahoon. Two species of *Ilex* with
old roses ~Jenks Farmer



Bill Cannon makes beautiful wreaths from the hollies in his extensive collection. ~Bill Cannon



Test Holly 2016: *I. dimorphophylla* × *cornuta* 'Carolina Cone' ~Jim Resch



Ilex × *meserveae* seedling Ebony Magic™

THE DAWES ARBORETUM

Newark, Ohio (USDA Hardiness Zone 5b)

Central Ohio withstood yet another unseasonably cold winter during 2015. This included below zero temperature readings from early January to early March. Our coldest recorded temperature occurred on February 24, 2016, when it dropped to -16.1°F (-26.7°C). However, temperatures as cold as -30°F (-34.4°C) were unofficially recorded in some Ohio counties. Unseasonably high temperatures were also recorded during January and February as the mercury reached nearly 60°F (15.6°C) on January 4 [59°F (15°C)] and February 8 [56.4°F (13.6°C)]. Strong northwesterly winds predominated at times between January and March, with wind speeds in excess of 30 mph (48.3 kph). Our rainfall total for the year was an above average 35.37" (89.9 cm), with most of our rainfall, 22.37" (56.8 cm), recorded from March through July.

The combination of widely divergent temperatures and strong northwesterly winds proved to be a lethal blow to many broadleaf evergreens including American holly (*Ilex opaca*). Consequently, numerous holly taxa were removed as the result of cold temperature injury in 2015. The list is as follows:

D2011-0528 <i>I. x attenuata</i> 'Sunny Foster'	Dead
D2011-0528 <i>I. x attenuata</i> 'Sunny Foster'	Dead
D2005-0756 <i>I. x meserveae</i> 'Mondo' Little Rascal®	Removed
D2005-0756 <i>I. x meserveae</i> 'Mondo' Little Rascal®	Removed
D2005-0756 <i>I. x meserveae</i> 'Mondo' Little Rascal®	Removed
D2005-0756 <i>I. x meserveae</i> 'Mondo' Little Rascal®	Removed
D2002-0207 <i>I. aquifolium</i> 'Angustifolia'	Removed
D1993-0616 <i>I. colchica</i>	Removed
D2005-0786 <i>I. cornuta</i>	Removed
D2000-1317 <i>I. crenata</i> 'Hatfield'	Removed
D2005-0763 <i>I. crenata</i> 'Lemon Gem'	Removed
D1998-1225 <i>I. opaca</i> 'Autumn Wine'	Removed
D1998-1230 <i>I. opaca</i> 'Dunn No. 2'	Removed
D2002-0755 <i>I. opaca</i> 'Hoagland'	Removed
D2001-1400 <i>I. opaca</i> 'Judy Kay'	Removed
D1999-1841 <i>I. opaca</i> 'Millville'	Removed
D1992-0662 <i>I. opaca</i> 'Nelson West'	Removed
D2008-0220 <i>I. opaca</i> 'Portia Orton'	Removed
D2001-1021 <i>I. verticillata</i> 'Aquinnah'	Removed
D2006-0250 <i>I. verticillata</i> 'Kennebago'	Removed

In addition to those taxa removed from the collections, many other taxa suffered severe cambial damage or top dieback rendering their status problematical. The list of moderate to severely injured hollies is as follows:

I. opaca ‘Angelica’ (D1998-01178.002)

I. opaca ‘Brown #5’ (D1999-01835.001)

I. opaca ‘Cave Hill #3’ (D1998-1219.001)

I. opaca ‘Goldie’ (D1985-0023.001)

I. opaca ‘Mary P. Turner’ (D2005-0748.002)

In some cases, severely injured hollies can be salvaged by removing the top growth allowing basal sprouts to form a new leader. In other cases, we may conserve the taxon through cutting propagation in late fall or early winter.

Root girdling issues have evolved as one of the most limiting factors in the health of American holly, and an increasingly high percentage of specimens at Holly Hill are displaying symptoms of this disorder which can be manifested by excessive basal sprouting, leaning, dieback and asymmetrical growth. Of late we have been growing this species exclusively in containers designed to eliminate this problem, and we hope for better field results in the future.

Five new hollies were added to the collection in 2015. They included one specimen each of *I. opaca* ‘Margaret Moran’ and *I.* ‘HL 10-90’ Christmas Jewel® and three plants of *I. glabra* ‘Tin Mine’.

By 2017 we should be in position to field test additional wild collected accessions of *I. ambigua* (Georgia holly) from Wilcox County, Alabama, and Georgetown County, S. Carolina; *I. amelanchier* (sarvis holly) from Washington County, Alabama; and *Nemopanthus collinus* (Appalachian mountain-holly) from Randolph County, West Virginia.

We currently have two accessions of wild collected seed of *I. laevigata* (smooth winterberry) from Maryland and North Carolina stratifying in our cooler but germination has not been forthcoming on either seed lot. This exceptional winterberry has attractive brightly colored orange-red fruit and superior fall color (golden-yellow) to our native winterberry (*I. verticillata*). If any member of the Holly Society of America has female plants of documented origin that they are willing to donate to the Arboretum, we would certainly be in debt to that individual. We now have just two male plants in the collection.

To conclude on a positive note, I would like to highlight two outstanding cultivars of American holly. Lady Blakeford American holly (*I. opaca*

'Lady Blakeford') was registered by H. G. Mattoon in 1959 from a specimen found near Blakeford, PA. We received our plant as cuttings from the late Theodore Klein in 1998. This plant now stands 18' (5.5 m) high by 6.1' (1.86 m) wide and is a female selection with yellow fruit. However, if this plant never fruited, it would still be a worthy addition for small landscapes because of its beautiful fastigiate form and rock solid hardiness.

Grace Orchard American holly (*I. opaca* 'Grace Orchard') is one of the many seedlings reared by the late Orlando S. Pride who harvested seed from native plants near Buckhannon, WV. Selections from these seedlings have since become known as The Grace Hybrid group. We received our plant from The Orlando S. Pride Nurseries, Butler, PA, as cuttings in 1998. Today, Grace Orchard stands 16.4' (5.0 m) high by 11.8' (3.6 m) wide with a superior branching habit and clean, light-green to yellow-green leaves. Our plant grows well on one of the highest and most exposed portions of the Arboretum's property and has withstood many days of subzero temperatures without a trace of injury. Grace Orchard American holly bears a traditional red drupe.

Respectively submitted, Richard A. Larson, Nursery Manager <http://dawesarb.org>

THE MORRIS ARBORETUM OF THE
UNIVERSITY OF PENNSYLVANIA
Philadelphia, PA USDA Hardiness Zone 6

As of 31 December 2015, we have 177 taxa of *Ilex* planted in our collection.

In 2015, we planted 26 plants of nine taxa, six of which were new (*) to our collection (one plant each unless noted):

I. × altaclerensis 'Hodginsii'*

I. × altaclerensis 'Moorei'*

I. aquifolium 'Green Plane'*

I. cornuta 'Hitchcock'*

I. 'Frantastic'*

I. leucoclada × *cornuta**

I. 'Sparkleberry' (3 plants)

I. verticillata (13 plants)

I. verticillata 'Winter Red' (4 plants)

In 2015, we lost 25 plants of 17 taxa, eight of which lost (**) from our collection during (one plant unless noted):

I. ‘Apollo’**
I. aquifolium
I. aquifolium (Balkan male)**
I. × aquipernyi ‘Meschick’
I. × attenuata ‘Savannah’
I. ‘Conive’**
I. crenata
I. crenata ‘Convexa’
I. crenata ‘Helleri’**
I. decidua ‘Pocahontas’**
I. fargesii
I. glabra ‘Nigra’**
I. integra
I. opaca ‘Goldie’**
I. rotunda (3 plants)**
I. ‘Serendipity’
I. verticillata
I. verticillata (male)

In late October 2015 we noted excellent fruit set on the following deciduous hollies:

I. ‘Autumn Glow’
I. ‘Harvest Red’
I. ‘Sparkleberry’
I. verticillata
I. verticillata ‘Red Sprite’
I. verticillata ‘Scarlett O’ Hara’
I. verticillata ‘Sunset’ (larger fruit than the others)
I. verticillata ‘Winter Gold’
I. verticillata ‘Winter Red’

Other plants of note include:

I. × koehneana ‘Ajax’ 2002-349*A & B – excellent form and leaf quality; strong central leader

I. × koehneana ‘H. Hohman’ 2001-220*B – excellent form and leaf quality

I. × koehneana ‘Lassie’ 2007-010*A – denser branching structure than other cultivars on site

We continue our major project to review and propagate the hollies in the core of our collection, known as the Holly Slope. The main goal of this project is to perform an assessment to determine if any hollies on the

slope are unusual, special, or rarely present in other major holly collections nearby, and to propagate those hollies with the eventual intention of offering specimens to other gardens and arboreta. This was completed through correspondence with the staff at the institutions that house these major holly collections. Furthermore, this project will set the stage for determining what holly plants can be removed to reduce crowding to revitalize the collection. Propagation of these plants by cuttings was undertaken in the winter of 2013-2014, and this spring we will distribute over 200 plants to various botanic gardens and arboreta.

Holly- of- the- Year

We do not have *I. opaca* 'Satyr Hill', *I. attenuata* 'Sunny Foster', *I. aquifolium* 'Lewis', *I. 'Scepter'*, *I. (cornuta × aquifolium)* 'Nellie R. Stevens', *I. aquifolium* 'Proud Mary'.

2004 *I. crenata* 'Sky Pencil' – very leggy and thinning foliage

2005 *I. × koehneana* 'Lassie' – nice form and lovely foliage;
lots of fruit on one plant but not another

2008 *I. verticillata* 'Maryland Beauty' – two healthy masses;
no fruit left at this time

2010 *I. verticillata* 'Red Sprite' – several masses, all healthy,
some fruit better than others

2013 *I. pedunculosa* – one plant looks good, dull green foliage,
leggy shape / another plant looks good but with chlorotic foliage

2014 *I. × meserveae* 'Mesgol' Golden Girl™ – foliage fair,
medium green, looking okay

Anthony S. Aiello, Elinor I. Goff, and Pamela Morris Olshefski aiello@upenn.edu 1- 215- 247-5777 ext. 137

THE POLLY HILL ARBORETUM

West Tisbury, Martha's Vineyard, Massachusetts

(USDA Hardiness Zone 7a)

The lowest temperature recorded was -2°F (-19.2°C) on February 21, and the highest temperature recorded was 90°F (32.7°C) on July 20. The most remarkable feature of the weather experienced in 2015 was the significant amount of snow that Polly Hill Arboretum (PHA) received and the duration of cold weather. This anomalous weather pattern began with a major blizzard January 26–27 that left in excess of 19.6" (50 cm) of snow and buffeted the Arboretum with powerful winds. April and May were

quite dry but precipitation through the summer was near average until late September when precipitation was above average. Beyond the colder than normal temperatures experienced in January, February and March, the remainder of the year was near or above average. The last two months of the year were noticeably warmer than average.

Table 1: Temperature and precipitation summaries for 2015 recorded at PHA

<u>Month</u>	<u>Monthly mean temperature</u>	<u>Monthly precipitation</u>
January	31 °F (−0.7 °C)	3.13" (79.5 mm)
February	24 °F (−4.4 °C)	2.31" (58.7 mm)
March	33 °F (0.8 °C)	4.40" (111.8 mm)
April	47 °F (8.1 °C)	1.08" (27.4 mm)
May	59 °F (15.1 °C)	0.47" (11.9 mm)
June	64 °F (17.6 °C)	2.92" (74.2 mm)
July	71 °F (21.8 °C)	2.58" (65.5 mm)
August	72 °F (22.4 °C)	3.04" (77.2 mm)
September	67 °F (19.2 °C)	3.34" (84.8 mm)
October	54 °F (12.2 °C)	6.27" (159.3 mm)
November	49 °F (9.5 °C)	3.23" (82.0 mm)
<u>December</u>	<u>48 °F (9.1 °C)</u>	<u>4.73" (120.1 mm)</u>
2015 Total		37.5" (952.4 mm)

Two *Ilex* taxa were accessioned in 2015: one, an existing plant of *I. opaca* and the other, *I. montana*, represented by two distinct seed collections made in the mountains of western North Carolina during a collecting trip lead by PHA. Seven individual holly plants, representing three taxa, were deaccessioned and removed from the collection:

I. maximowicziana, *I. integra* and *I. crenata*. However, all three taxa are still represented in the collection. These plants were removed to make way for a new education center and botany lab/herbarium that is currently under construction. None were removed due to lack of winter hardiness or climactic adaptability.

Overall, *Ilex* performed well in 2015. Most clones of *I. opaca* performed very well and were highly rated for fruit production. *I. opaca* cultivars of note for excellent performance and heavy fruit set include ‘Jersey Princess’, ‘Martha’s Vineyard’*, ‘Miss Helen’, ‘St. Mary’, ‘Vilanova’* and f. *xanthocarpa*. Damage to American hollies caused by holly berry midge (*Asphondylia ilicicola*) continues to be a sporadic problem. Interestingly the most severe infestations were primarily confined to two areas of the Arboretum. In these areas American holly plants had 80–

90% of their fruit affected. The clone ‘Barnard Luce’* and ‘Greenhill’* were, in general, the most severely damaged. Other excellent performers in 2014 include *I. × altaclerensis* ‘NYBG No.2’, *I. aquifolium* ‘Evangeline’, ‘Lydia Morris’, ‘Sparkleberry’ and ‘Pernella’*.

(* indicates Polly Hill selections)

2015 HSA Holly of the Year – *I. crenata* ‘Helleri’

The living collection of the Polly Hill Arboretum contains a single plant of this compact cultivar of Japanese Holly. Polly Hill received it in 1961 as a rooted cutting from Mitsch Nursery of Aurora, Oregon. It was moved to its current location along the driveway to the Arboretum’s administrative offices in 1980. It has performed very well despite the periodic “abuse” it inadvertently gets from snowplows and the occasional careless driver! It has suffered some deer browse but overall has retained a fairly full, dense, compact habit. Other than the pruning received from deer, it is not regularly pruned or shaped by Arboretum staff. It is currently 45” tall by 93” wide at its widest point.

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RUTGERS GARDENS

New Brunswick, NJ USDA Hardiness Zone 6B

New Jersey began 2015 with a colder January than usual, but still with only ten days that never made it above freezing. Although the state received above-average precipitation for the month, at Rutgers Gardens we were a little below average, with most being delivered as rain on January 4 and, on January 19, as terrible ice and snow. February—the third coldest on record—marked our yearly low of $-1\text{ }^{\circ}\text{F}$ ($-18.3\text{ }^{\circ}\text{C}$) on the 21st and 24th. The week leading up to February 21 saw the coldest temperatures of the year, reaching a high on the 21st of only of $18\text{ }^{\circ}\text{F}$ ($-7.8\text{ }^{\circ}\text{C}$) with nighttime lows in the single digits. The month was slightly below average for precipitation. March was a little backwards. While most of the state was colder and snowier than average, we were about $5\text{ }^{\circ}\text{F}$ ($2.8\text{ }^{\circ}\text{C}$) above average, with slightly below average precipitation, although we did receive just over 1.5” (3.8 cm) of snow from March 4 to 6. April was dry but extremely warm, with an average temperature $14\text{ }^{\circ}\text{F}$ ($7.8\text{ }^{\circ}\text{C}$) above our normal. Dropping to $30\text{ }^{\circ}\text{F}$ ($-1.1\text{ }^{\circ}\text{C}$), April 25 was our last below-freezing low of the season. May 2 and 3 did drop to about $38\text{ }^{\circ}\text{F}$ ($3.3\text{ }^{\circ}\text{C}$). May was otherwise warm and dry, with precipitation at 2.6” (6.6 cm) below the normal state average for the month. Despite drought concerns, June compensated with 6.13” (15.16 cm) of rain—more than 2” (5 cm) above our normal av-

erage for that month. Significantly above-average temperatures continued not only through June, but for every month through the end of the year at Rutgers Gardens. July was more than one inch (2.5 cm) below average for precipitation, and saw temperatures above 90 °F (32.2 °C), hitting 95 °F (35 °C) on July 20, 21, and 29, and 96 °F (35.6 °C) on the July 30. August 18 brought the yearly high of 98 °F (36.7 °C), and despite flash flooding in some areas of the state, we were among the drought-inflicted areas, with only 1.21" (3.1 cm) of rain — 3" (2.6 cm) below the normal state average. September was the third warmest on record in New Jersey, and we were almost 17.5 °F (9.8 °C) above the normal average temperature for the state. We continued to experience a long dry spell until rains arrived on September 30 and continued into the beginning of October. Despite an average of almost 13 °F (7.3 °C) above normal, October 18 was our first below-freezing night, with a low of 28 °F (−2.2 °C). Unseasonably warm weather continued in November, while the precipitation for both October and November was more than 2" (5 cm) below average each month. We finished out the year with the warmest December on record for the state, and an average temperature of 56.7 °F (13.7 °C)—more than 21 °F (11.8 °C) above the state average dating back to 1895! Fortunately, the dry conditions ended and we got a total of 4.67" (11.9 cm) of precipitation, which is 0.76" (1.9 cm) above the monthly average for the state.

During the year, we moved two *Ilex* × 'Rutzan' Red Beauty® plants from a research area into a prominent position in our Rhododendron Garden. We also rented a lift and removed vines—from top to bottom—from many of the hefty trees in our collection. A couple of large, mature *I. opaca* 'Farage' duplicates, which were badly crowded, were removed from the collection. The year was marvelous for berries, and the trees looked absolutely beautiful, despite all droughty conditions that didn't seem to impact them at all. We supplied quite a quantity of cuttings to local associates for the holiday season. One of the most notable trees that comes to mind was *I. opaca* 'Mrs. Santa', although she rarely disappoints. This is one of several attractive, single-leader trees slated for root pruning in preparation for relocation within Rutgers Gardens in a few years (the 2-year root pruning process will begin in 2016, in preparation to be moved in 2018). The lovely display lasted for many weeks, while flocks of robins ate their fill.

Our holly collection began as an evaluation of varieties in the 1950s, and became the foundation of Dr. Elwin Orton's American Holly (*I. opaca*) breeding program. The original planting, together with some of Dr. Orton's recent selections (including 'Dan Fenton', 'Jersey Princess', 'Jersey De-

light', and 'Jersey Knight'), make up one of the largest American Holly collections in the United States. In addition, our collection includes a wide range of other *Ilex* species and hybrids, including noteworthy specimens of *I. opaca* such as 'Galyean Gold' and 'Boyce Thompson Xanthocarpa'; *I. perado* (Madeira Holly), *Ilex* × *altaclerensis* 'James G. Esson', and other interesting hybrids. Also represented are numerous English Hollies (*I. aquifolium*), Chinese Hollies (*I. purpurea* and *I. cornuta*), Japanese Hollies (*I. crenata*), Inkberry Hollies (*I. glabra*), and well over 50 deciduous hollies including *I. decidua*, *I. montana*, *I. serrata*, *I. verticillata*.

The official botanical garden for Rutgers University, Rutgers Gardens encompasses nearly 180 acres (72.8 hectares) of maintained and natural areas, featuring gardens providing numerous programs for community, faculty, and students to enjoy. We're looking forward to many great events in 2016, celebrating our 100-year anniversary. Among our regular annual features are the Spring Flower Fair on Mother's Day weekend, a summer Open House, a Fall Festival, display and vegetable gardens, undergraduate internships, and youth programs. Among our many gardens and collections that draw tens of thousands of visitors each year, our historical Holly Collection remains a focal point on many walks and tours on the grounds.

Clayton Leadbetter, Ornamental Breeding Coordinator

Rutgers Gardens — *Where the Future of Horticulture Is Grounded in Our Past* <http://rutgersgardens.rutgers.edu>

SANDHILLS COMMUNITY COLLEGE EBERSOLE HOLLY COLLECTION

Pinehurst, NC USDA Hardiness Zone 7b

In the beginning of 2015 we did not receive any substantial amounts of winter weather to negatively impact any plants in our collection. The spring and summer seasons produced normal amounts of rain. The summer season this year was not as hot as some previous years. However, the weather did seem to stay warmer all the way through to the end of the year. The early days of October brought significant amounts of rain but did not harm our collection. This is when the historic flooding occurred in South Carolina. There were a few cold days in late November and mid December. However, that cold weather did not stick around for a long time. December this year had fairly warm temperatures for the majority of the month ranging from about 50 to 70 °F (10 to 21 °C).

This year only three hollies were removed from the collection and, interestingly, they are all Japanese hollies. This area of the collection sits

fairly close to our native wetland area of the garden, at the bottom of the hill, under the canopy of much larger and older trees. I think this location has much to do with the struggle of these hollies in the collection. We lost *Ilex crenata* ‘Green Dragon’, ‘Mariessii’, and ‘Border Gem’.

Holly of the Year: *I. opaca* ‘Maryland Dwarf’ – These are great looking and very strong hollies here in our collection. We have four of them planted in very near each other. They were planted 36 years ago and have really performed well in our garden. The spread on these plants is truly amazing since they cover such a very large area.

I. dimorphophylla × *cornuta* ‘Carolina Cone’ – Even though the overall condition of this holly is not perfect it really is a gem. In the springtime the flowers are thick and fragrant, making this a very special specimen to have in our collection.

I. opaca ‘Clarendon Spreading’ – We have two of these hollies in our gardens and they really perform well and look great. They are fairly large rounded hollies with about a 12’ spread. It definitely lives up to its name.

Our collection here at Sandhills Community College is still doing well. For 2016, we plan to take advantage of propagation to start getting clones of these special plants. We have also started a project to rebuild an old brick walkway in the garden that had been damaged over the years and look forward to completing that in the spring and summer of 2016.

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THE SCOTT ARBORETUM OF SWARTHMORE COLLEGE

Swarthmore, Pennsylvania (USDA Hardiness Zone 6b)

Overall, the winter of 2015–16 was especially mild. December was particularly warm with only a few cold weeks of below freezing temperatures midwinter. As a result, evergreen hollies fared well with little to any leaf burn. The warm temperatures also meant food for birds was plentiful and thus fruits of *Ilex verticillata* were persistent and long lasting. Newer plantings (listed below) show some bleaching as they adjust to permanent planting location: the bright south-facing slope of the holly meadow. Over all, fruit set was bountiful. Holly berry midge (*Asphondylia ilicicola*) is an issue in the James R. Frorer Holly Collection. There are 339 *Ilex* records in BG–Base with 289 accessible through Arboretum Navigator, a searchable database, to locate woody plants, dedicated benches, and trees as well as to create a personalized tour. One accession of *I. opaca* ‘Maryland Dwarf’, Holly Society of America’s 2016 Holly of the Year, can be

seen in the collection. It is a beautiful specimen and very distinct with its short and wide spreading habit.

***Ilex* Evaluation Results:**

New Plantings

I. ‘Conty’ Liberty™ 2014–175*A Minimal sun bleaching on southern side, some foliage dieback, and newer growth is crisp and clean

I. ‘Mary Nell’ 2014–177*A Bright clean foliage, a standout

I. ‘Dragon Slayer’ 2014–178*A Nice conical shape, some bleaching on southern face

I. Oakland™ 2014–191*A Poorly planted, bleached out, chlorotic

I. ‘Conin’ Robin™ 2014–192*A Heavy, persistent fruit, slight southern bleaching

I. × *altaclerensis* ‘James G. Esson’ 2014–176*A Sparse, blemished leaves, lots of dieback

Poor Performers

I. *aquifolium* ‘Peter’s’ 74–427*A Stringy appearance, sparse foliage, what foliage persists is not bad looking, some dieback

I. *pernyi* ‘Sais’ 2009–111*A Recently transplanted, slightly defoliated, variegation appears sickly

Excellent Performers

I. ‘James Swan’ 75–497*A Bright, shiny green leaves

I. ‘Mary Nell’ 92–004UN*A Bright clean leaves not overly abundant, but persistent fruit

I. × *koehneana* ‘Ajax’ 2007–157*A Nice, large leaves, evenly colored

I. *cornuta* × *leucoclada* Prolific fruit bearers

Joshua Coceano Horticulturist

TYLER ARBORETUM

Media, Pennsylvania (USDA Hardiness Zone 6)

The year 2015 started off unusually cold for the Philadelphia region, making it the second harsh winter in a row. Temperatures dropped to single digits in January, when the average low is 24 °F (–4.4 °C). February continued the cold trend, with several days of temperatures setting historic low records, and 0 °F (–17.8 °C) temperatures causing more than a few pipes to freeze. The average temperature for the whole month was 10 °F (5.6 °C) below normal, making it the fifth-coldest February on record. The ground froze down to 18" (45.7 cm). There was not much snow this winter; in-

stead, it was a winter of very cold temperatures and then freezing rain/ice at the end of February and beginning of March, though not heavy enough to break many branches, unlike last year. Spring rainfall was light until June when we had heavy rains, then light rain through the summer until September. The effects of El Nino were felt with a warm fall and little rain up through December, with a Christmas Eve at 71 °F (21.7 °C).

As to be expected, the cold temperatures damaged the leaves of some of the less hardy evergreen holly specimens in our collection. *Ilex aquifolium* cultivars and hybrids such as *I. × koehneana*, and *× altaclerensis* suffered the most severe foliar damage. Overall, the *I. opacas* did well, with the exception of ‘William Hawkins’. It sustained extensive leaf burn and had already been sparsely foliated for several years. We pruned it back hard this year in hopes of improving its habit and getting more of it unusual and attractive foliage.

The fruiting on our *I. verticillata* cultivars was outstanding in 2015. The orange-colored fruit on ‘Winter Gold’ and ‘Golden Verboom’ was heavier than last year and complemented the autumn palate of nearby grasses and deciduous trees. Our stands of ‘Winter Red’ stood out strongly by themselves, with fruit lasting through December.

Two new holly taxa were added to our collection in 2015: *I. × aquipernyi* ‘Meschick’ [Dragon Lady®], and an unregistered *I. opaca* cultivar ‘Fastigiata’, selected for its fastigate habit. We removed 12 holly accessions this year, including the following three taxa no longer represented in the collection: *I. crenata* ‘Convexa’; *I. × meserveae* Blue Stallion® (‘Mesan’); and *I. pedunculosa* ‘Trifructo’. Other hollies removed: *I. opaca* ‘Judge Brown’; *I. × meserveae* ‘Blue Girl’; *I. pernyi*, *I. ciliospinosa*, *I. pedunculosa*, *I. × koehneana* ‘Conayule’ Yule Brite™; *I. verticillata* ‘Winter Gold’, and two *I. verticillata* ‘Jim Dandy’. Most were removed due to declining performance. ‘Convexa’ and ‘Winter Gold’ were removed due to construction in our barn area. Presently our collection totals 556 *Ilex* accessions representing 146 *Ilex* taxa. A large group of our Holly Collection was planted in the mid-1980s behind our maintenance building. Many of these specimens are beginning to grow into each other as they put on size. The group receives little additional maintenance or pruning.

Our collection contains eight of the Holly-of-the-Year cultivars. Many of these are among the best specimens in our collection. Their 2015 evaluations are described below.

2003: *I. opaca* ‘Satyr Hill’ – Overall excellent and attractive specimen. Excellent habit, excellent foliage, good fruiting.

2005: *I. x koehneana* ‘Lassie’ – This specimen is in a protected site, though is starting to get crowded by other nearby hollies. Good habit, though some branches a little leggy, excellent foliage color, excellent fruit set in the fall.

2006: *I. x attenuata* ‘Sunny Foster’ – This specimen continues to improve in its new sunny situation. Excellent habit, excellent yellow-tipped foliage. We heavily pruned a second specimen that had been hidden by *Hydrangea quercifolia* and hope its new sunny exposure will revitalize it.

2007: *I. aquifolium* ‘Lewis’ – Excellent pyramidal form, with dense branching to the ground. Tips of many leaves brown from winter damage.

2010: *I. verticillata* ‘Red Sprite’ – Good fruiting this year.

2011: *I. (cornuta x aquifolium)* ‘Nellie R. Stevens’ – Good foliage. Specimen is shaded and habit is fair.

2013: *I. pedunculosa* – Condition declined on one specimen with yellowing of leaves and sparse fruiting. It was removed. The specimens in shadier situations have performed better, with greener leaves.

2014: *I. x meserveae* ‘Mesgol’ Golden Girl™ – We have three specimens, accessioned in 1993. Two have good compact mounded form. The third, which is in a more exposed area, has sparser foliage and is leggier.

Alison Dame, Plant Recorder www.tylerarboretum.org, 515 Painter Road, Media, Pennsylvania

UNIVERSITY OF TENNESSEE ARBORETUM

Oak Ridge, TN (USDA Hardiness Zone 7a-6b)

The UT Arboretum Society Holly Task Force continues to focus on care and maintenance of the existing Elmore Holly Collection with potential plans for expansion of the footprint in the future.

The winter of 2015 produced several snows and freezing rain events in January and February. The Arboretum was closed to visitors for several days due to official University of Tennessee Administration Closings associated with unsafe driving conditions. Unsafe foot travel and parking conditions contributed to the extended closing of the Arboretum for several days over this time as a result of extremely icy conditions. Although a wet spring supported plant growth at the Arboretum, it hampered construction activity on the new auditorium project. Normal summer rainfall, and above average wet fall conditions were noted for the Arboretum and surrounding geographical area.

The UT Arboretum Auditorium construction project was completed in August despite the winter/spring weather. The auditorium features

nearly 2,000 square feet of open floor space, with a massive stone fireplace, and large Douglas fir roof beams, giving it a rustic park-like lodge ambiance. The building also has a small kitchen, restroom facilities, and an outdoor porch area. Electricity, wireless communications, whiteboard/projection screen, and parking accommodations for approximately 55 cars are available for meetings at the site.

The new building was introduced to the public and community through an Open House on September 22, and an Oak Ridge Chamber of Commerce breakfast networking event on October 6, 2015. The building has since been used for several UT Institute of Agriculture internal meetings, UT Arboretum Society (UTAS) events, and for private rentals. Future programming for the building will be focused on research meetings and training events, UTAS event programming, community outreach, landscape demonstration plantings (which will include Holly specimens), UT Arboretum Society membership development, and revenue generating events for the UT Forest Resources AgResearch and Education Center.

The Holly Task Force met on October, 10, 2015, for its annual Fall Holly Work Day providing opportunity for volunteers to plant 13 new holly cultivars. Hollies that were brought back from the Holly Society of America 2014 Annual Meeting at Rutgers and others donated by Vivian Abney East Fork Nursery were re-potted last fall and overwintered in the arboretum greenhouse.

The work day, usually on the Saturday following the Annual Meeting, was scheduled earlier in the fall since the customary November date has proven to be too uncomfortable for outdoor activities. Although the Friday and Saturday rain was welcome, it dampened the number of volunteers available for the work day. However, thanks to Norm and Lee Ann Dobbs, Lucie Jones, Jim Mee, Fran Scheidt, Dennis and Jan Superczynski, Dr. Will Witte, and Arboretum Director Kevin Hoyt all the designated hollies were planted, mulched, and protected with deer fencing. Before the work day the Holly Task Force met with Director Hoyt to position plant locations where holes were subsequently augured by the arboretum staff before the work day. This helped tremendously to lessen the planting task and meet all objectives for our annual fall planting and maintenance of the Elmore Holly Collection.

Following the work day, a special celebration by the Oak Ridge Garden Club was held in the Elmore Holly Collection to recognize Sarah Aldridge, a longtime member of the Oak Ridge Garden Club. Sarah was recognized for her countless hours of dedication to the Oak Ridge community as four time President of the Oak Ridge Garden Club, a judge in

wildflower competitions, and for decorating the entrance lobby of Oak Ridge Museum of Science and Energy. An *Ilex × attenuata* ‘Blazer’ holly was planted in the Elmore Holly Collection to honor Sarah for her years of service to the community. ‘Blazer’, acquired from Beaver Creek Nursery, is a female holly displaying bright red berries against its glossy dark green leaves. Director Kevin Hoyt, Holly Task Force members, family members, and friends, 36 in all, joined the celebration followed by a reception in the arboretum office.

On November 12, 2015, The Holly Task Force invited The Gardener’s Forum, a Knoxville group of men & women with the interest in gardening, conservation, beautification, and plant life to visit and explore the Elmore Holly Collection. Dr. Witte led the nine participants explaining the history and significance of the collection. The session concluded with planting *I. opaca* (American Holly) ‘Princeton Gold’ a female holly with dark green spiny leaves and vivid golden yellow berries that persist into the winter. This Holly was donated to the Elmore Holly Collection by Pleasant Run Nursery in Allentown, PA at the 2014 Holly Society Meeting at Rutgers University. You can’t miss it driving on the road to the Arboretum shelter on the left just as you pass the entrance to the holly collection.

The Task Force continues to focus on the following long-term goals:

- Replacing, moving and adding holly collection markers and labels to selected specimens, which may include enlarging and combining specimens into expanded mulched perimeter areas
- Securing funding to redesign and reprint the Elmore Holly Collection brochure
- Building a trail extension through the American Holly Collection from the Heath Cove Trail to the main access road with natural mulch materials
- Completing an onsite re-inspection and inventory of the collection, focusing on plant vigor, signage, labeling, spacing requirements, rousing out dead plants, and more
- Securing funding for the completion of the Harold Elmore Holly Collection stone entrance

Members of the Holly Task Force, a support team for the University of Tennessee Arboretum Society: Dennis Superczynski, Leader and Jan Superczynski; Carmen and Josie Gianforte; Fran Scheidt; Mike Stansberry; Dr. Will Witte.

The UT Arboretum Society and the UT Forest Resources AgResearch and Education Center will continue to place an emphasis on out-

reach, programming and membership development during 2016. For more information on our programs and collections please visit the Arboretum webpage (<http://utarboretum.tennessee.edu/index.html>). For more information about the UT Forest Resources AgResearch and Education Center please visit (<http://forestry.tennessee.edu/>).

Dennis Superczynski, UT Holly Task Force Chair

Kevin P. Hoyt, Director, Director, UT Forest Resources AgResearch and Education Center

U.S. NATIONAL ARBORETUM Washington, DC (USDA Hardiness Zone 7b)

The weather during the first three months of 2015 was average with several minor snowfall events and a few days with night temperatures below 10 °F (−12.2 °C). Once April arrived, it started to warm up and the night temperatures didn't drop below freezing for the rest of the spring. Rainfall tapered off as well until June when we received a whopping 12.9" (32.8 cm) of rain. Over half of the rain that fell during the month happened on three days with over 2.5" (6.4 cm) of rainfall during each storm. This caused flooding and other issues. After June, the rest of the summer was warm and rather dry especially during the months of August and September. Above average temperatures continued into the fall and early winter with a high of 73 °F (22.8 °C) on December 25. It seemed as if it was a year of extremes.

Our *Ilex* collection fared well throughout the year. During the months of August and September we did supplement the collection with irrigation. By mid-fall, most of the *Ilex* collection was fruiting heavily.

Not many plants were added to the collection. The arboretum introduced *I.* × 'Cherry Bomb', which has been in the trade since the 1980s. It originated as an open-pollinated cross between *I. (cornuta × aquifolium)* 'Nellie R. Stevens' and most likely *I. integra*. This plant has done well in the southern United States. There are three plants at the arboretum that have done well here for many years. So, it should be hardy to Zone 7B.

The mapping of the *Ilex* collection is still underway. It is available on our web-based Arboretum Botanical Explorer (<http://usna.usda.gov/abe/>). This is a great tool for our staff and visitors in locating plants. Eventually, besides the accession information for each plant, there will be images attached.

The Chesapeake Chapter of the HSA returned in November for their annual workday. Although there were only four volunteers, they worked hard and enjoyed the pruning challenges of the collection.

The status and performance throughout the year of the Holly of the Year:

I. opaca ‘Satyr Hill’ – Two plants on the grounds, both are in good health and performed well throughout the year.

I. crenata ‘Sky Pencil’ – Several plants in various locations. The ones that perform best receive adequate moisture during the growing season.

I. × koehneana ‘Lassie’ – Planted out in spring, 2015 and is doing okay.

I. × attenuata ‘Sunny Foster’ – Several plants, all do well in our area. Tolerant of heat and dry periods.

I. aquifolium ‘Lewis’ – Planted out last spring and died in the fall.

I. verticillata ‘Maryland Beauty’ – Planted out in spring, 2015 and is doing well.

I. ‘Scepter’ – Several plants on the grounds, performed well during the last year.

I. verticillata ‘Red Sprite’ – Several plants on the grounds. Good performer, fruit drop by early February.

I. (cornuta × aquifolium) ‘Nellie R. Stevens’ – Our original ‘Nellie Stevens’ is at least 20’ (6.1 m) tall and is always a good performer.

I. aquifolium ‘Proud Mary’ – New plant, still in greenhouse and will be planted this spring

I. pedunculosa – Several accessions on the grounds, most are wild-collected. Perform fairly well in our area, but need adequate moisture during hot spells.

I. × meserveae ‘Mesgolg’ Golden Girl™ – Currently not represented in our holdings.

I. crenata ‘Helleri’ – Many plants of this are in our Japanese Stroll Garden. Tend to get root rot in our heavy soils.

Carole Bordelon, Supervisory Horticulturist

Carole.Bordelon@ars.usda.gov

UNIVERSITY OF WASHINGTON BOTANIC GARDENS

Seattle, WA USDA Hardiness Zone 8a

For 2015 the *Ilex* collection was the focus of small but continual changes as the collection continued to settle into its new primary location.

It was a warmer year than normal for us in the Seattle area, and the minimum temperature in the city was only 25.9 °F (–3.4 °C). The summer was the warmest and among the driest on record, with drought conditions for most of the spring and summer. The maximum temperature was 95.8 °F (35.4 °C). The average air temperature was approximately 2 °F (1.1 °C) warmer than in 2014.

Rainfall was lower than 2014, with mid to late spring being especially dry, followed by our typical arid summer months. There were a few heavier than normal rain events in August but they did little to alleviate the drought. The end of the year saw heavier precipitation than normal, with drought conditions ending by late October and one of the wettest Decembers on record. However, it seems that no *Ilex* accessions perished due to heat or aridity stress alone.

The third American clade berm, this one containing deciduous species, was installed in late 2014. Several plantings were made from the field nursery in 2015, detailed below.

Seeps and drainage issues persist in portions of the main collection site. It is a natural drainage area from the surrounding neighborhoods as most of the Arboretum is within a valley that drains to the creek running through the middle of the site. We have been using hand-dug channels to drain to the various catch basins and the previously constructed weir system. We are looking into additional permanent drainage remedies such as the physical barriers and additional retention areas where water can be directed. We will be moving some species to drier and better-drained sites. We do have several planting areas within the berms available.

We have also started opening up the adjacent “greenbelt” to remove invasive plants, declining or dead trees, and thick underbrush. We will be planting several dozen deciduous conifers of different species and cultivars in this area adjacent to the main *Ilex* collection. We also expect that this will help with some of the water issues coming from this hillside.

Ongoing manual and chemical weed control for herbaceous weeds in the clade beds and the upper beds continued. Manual removal of English ivy from the adjacent woodland also continued, and this is something that will always be needed, as it is one of our most persistent invasive plants in western Washington. Snails appeared in the north deciduous bed, and seem to be present in a few other beds. We will control them

before they spread. No insect herbivory has been observed on any of the collections.

Several accessions in the deciduous clade beds and the Eurasian clade beds have started showing symptoms of Holly blight (*Phytophthora ilicis*). We will get these plants and/or soil tested for a positive disease ID. Most labs do not identify to the species level, only genus. We have corresponded with Dr. Drew Zwart of the Bartlett Tree Experts research arm and he may be able to do it. There is not much we can do to improve the conditions to discourage *Phytophthora*, but there may be some chemical treatments. We will continue to keep a good layer of mulch on the beds, which may suppress growth and spread.

The *Ilex* collection continues to be a site for volunteer groups and organizations to assist in maintenance efforts. The collection again was a focus of a major Earth Day project in conjunction with the Student Conservation Association (SCA). It is planned that this will expand and continue this year, as SCA will focus on increased efforts within the Arboretum in 2016.

The UW Botanic Gardens provided cuttings and seed to the University of Georgia for research into landscape appropriateness in the southeast of *Ilex yunnanensis* and *I. suaveolens*. We have several *I. yunnanensis* that have done well since they were propagated from mature specimens and have now settled in the collection. We only have one *I. suaveolens* left in the collection, but it has now established itself in its new home a few years after transplanting.

2015 List of *Ilex* Additions:

I. aculeota

I. collina

I. geniculata

2015 List of *Ilex* deaccessions (including nursery, all grounds and gardens)

91-96-B *Ilex geniculata*

X-339-B *I. integra*

134-93-A *I. macropoda*

75-96-B *I. macropoda*

34-08-A *I. perado* spp. *arizonica*

31-05-A *I.* 'Rock Garden'

12-93-A *I. crenata* 'Sky Pencil'

194-94-A *I. suaveolens*

51-91-A,C *I. verticillata* 'Sunset'

David Zuckerman, Manager of Horticulture
Ray Larson, Curator of Living Collections
Ryan Garrison, Horticulturist – *Ilex*

INTERNATIONAL *ILEX* CULTIVAR REGISTRATIONS

Michael R. Pontti

1–16 *Ilex opaca* ‘Weston’ Female

Registered: February 29, 2016

R. Wayne Mezitt

25 Phipps Street

Hopkinton, Massachusetts 01748

The selection originated as a volunteer seedling in the 1980s, growing beneath a planting of several mature holly cultivars. In the 1950s the discoverer’s grandfather, Peter J. Mezitt, planted a windbreak at the edge of his driveway. Included in that group of cultivars was *Ilex opaca* ‘Nelson West’, registered in 1964 through the Holly Society by Mrs. Julian W. Hill (Polly Hill). Mr. Wayne Mezitt considered it one of his all-time favorite hollies, with its unique narrow foliage and superb winter hardiness, but, sadly, without fruit as it is a male clone. This new seedling, later to be officially named ‘Weston’, was nearly 1.5 m (5 ft) tall when first noticed, showed similar leaf characteristics as ‘Nelson West’, but it also bore fruit. Mr. Mezitt went on to root a number of cuttings, but the original plant died. In the 1990s the clone was sufficiently evaluated in containers and open-field plantings. Realizing its uniqueness, Mr. Mezitt felt it was worthy of a name and ‘Weston’ was born, after initially considering the moniker ‘Mae West’.

The evergreen tree, now ten years old from a cutting, is 3 m (10 ft) tall, conical/columnar in shape, with a spread of 1.4 – 1.5 m (4.5 – 5 ft) and a herringbone branching habit. The largest leaves are typically up to 5.1 cm (2 in), but small for the species and significantly narrower, simple, coriaceous, glabrous, by 1.9 – 2.2 cm ($\frac{3}{4}$ – 1 in) wide, elliptical, with an aristate leaf tip and a cuneate base. Leaf margins are spinose and a petiole to 7 mm ($\frac{1}{4}$ in), with average yearly growth 1.5 – 4.5 dm (6 – 18 in). Leaf color is green, Green Group 139A on the Royal Hort. Soc. Colour Chart, 1995. Fruits are small, globose, red, Red Group 45A, 7–8 mm ($\frac{1}{4}$ – $\frac{5}{16}$ in) in diameter, with peduncles to 1 mm ($\frac{1}{32}$ in).

Plants have been grown and sold to the trade at RareFind Nursery, 957 Patterson Road, Jackson, New Jersey since 2010. Selection was based on upright and narrow growth as a young specimen that can be readily trained to a single trunk. The clone is unusually precocious, reliably producing profusions of smaller-than-typical fruit on young trees that are well retained into the winter, often until spring. It grows well in containers, sun or shade, producing flowers and fruit as a two-year-old plant from rooted cuttings. Hardiness is rated at zone 5 on the USDA Plant Hardiness Zone map of 1990.

Voucher specimens are on deposit in the herbarium of the U.S. National Arboretum (NA), Washington, D.C. 20002.

NEW MEMBERS

We welcome the following new Society members:

Beverly Auvil, Landscape Design & Installation, LLC
Quakertown, PA 18951

Mr. Michael J. Baks
Alexandria, VA 22305

Mr. John Griener
Mashpee, MA 02649

Mr. Phil Shaffer
Louisville, KY 40243

Ms. Nell B. Strachan
Towson, MD 21204

PROPOSED SLATE OF TRUSTEES

This is the proposed slate of trustees that will be voted on at the Annual Meeting. Members of this group have a great deal of experience with the HSA and knowledge of holly. Read more about these candidates in the Holly Letter. Former HSA President Mr. John Swintosky chaired the Nominating Committee.

Proposed Trustees:

Margot Gerding Towson, MD

Phil Shaffer Louisville, KY

Bob Hopkins Louisville, KY

DONATIONS TO HSA TRUST FUNDS

Donations were made to the funds listed below in FY 2014—2016.

Research Trust Fund

Mr. & Mrs. Hale Booth, Thornton Burnet, Jr., Ms. Arlene L. Copeland, Mr. Nicholas Day, Mr. & Mrs. Robert R. Emmerich, Robert H. Head, Herman C. Gehrlich, Richard Gettys, Gene P. Lucius, Mr. & Mrs. Michael Pontti, Carl F. Schmid, Mr. & Mrs. George Slankard, Dr. & Mrs. Robert Welch, Mrs. Peyton R. Wise, II

Save the Holly Fund

Ms. Arlene L. Copeland, Nicholas, Day, Irene T. Decker, Robert H. Francois, Mr. & Mrs. Freeman, Herman C. Gehrlich, Samuel Pattison, Mr. & Mrs. Michael Pontti

Wolf-Memorial Fund

Katherine Douglas: Jane Y. Christy

Harold Elmore: Dennis & Jan Superczynski

Dan Fenton: Ms. Katherine E. Fenton

Bon Hartline: Great Rivers Chapter, HSA

Joan Johnson's granddaughter, Claire: Jane Y. Christy

Betty Kassab: Mr. & Mrs. Myo Myint

Charles McComb: Mr. & Mrs. Ken McDonald, Jr., Mrs. Margaret D. McComb, Mr. & Mrs. Michael Pontti

John McDonnell: George M. Mitchell

Albert Neél: Dennis & Jan Superczynski

Betty Welch: Mr. & Mrs. Michael Pontti

Undesignated: Herman Gehrich

The Holly Society thanks all those who donate to our Trust and Memorial Funds.

Financial reports are available to Society members upon written request to the HSA Secretary, secretaryhollysociety@gmail.com.

Dennis Superczynski, Treasurer, HSA

ANNUAL MEETING 2016

The 2016 Annual Meeting will be held at the Landmark Resort in Myrtle Beach, South Carolina from October 27 to 30. Bob and Cathy Shumate are our hosts for the meeting. They say, “The Shumates look forward to seeing you. The wonderful thing about the Myrtle Beach area is that there is something for everyone and the southern hospitality is always free! With 60 miles of beautiful beaches, an endless array of things to do, places to stay, and dining options, Myrtle Beach will keep you coming back time and time again!”

The Early Arrivals tour on Thursday will take us to Pearl Fryar’s Topiary Garden, Moore Farms Botanical Garden, and McKenzie Farm. The Friday tours will be to Brookgreen Gardens and Hobcaw Barony.

Speakers

Mark Weathington, Director of JC Raulston Arboretum at North Carolina State University. He has also served as Director of Horticulture for the Norfolk Botanical Garden and as a horticulturist at the Atlanta Botanical Garden. Mark travels extensively searching for new plants to diversify the American landscape. He is currently writing *Growing the Southeast Garden*, a modern guide to gardening in the Southeast, for Timber Press.

Juang-Horng “JC” Chong, Ph.D., an Associate Professor and Extension Specialist with Clemson University, is based at the Pee Dee Research and Education Center in Florence, South Carolina where he does turf and ornamental research as an Entomologist. His current research and extension projects focus on understanding the biology, ecology, and management of scale insects, wood boring insects, spider mites, erio-

phyid mites and biological control. He received his Bachelor of Science degree from the University of Arizona and his Masters and Ph.D. from the University of Georgia.

Augustus Jenkins (Jenks) Farmer III, led teams to plant and establish the vision for two of South Carolina's major botanical gardens. He is the former director and plantsman of Riverbanks Botanical Garden and of Moore Farms Botanical Garden. With a masters degree in public garden management from the University of Washington and a horticulture degree from Clemson University, he has the combination of horticultural science and museum science needed to set strategic vision for growing plants well. Jenks operates a mail order nursery specializing in organically grown plants of the genus *Crinum*. He also works as a garden designer from New Orleans to Charleston. He is the author of the book, *Deep Rooted Wisdom; Lessons Learned from Generations of Gardeners*.

See the *Holly Letter* or our website, www.hollysocam.org, for more information.



I. opaca planted in Bear, Delaware, in 1935.
~ Jim Resch

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VISIT OUR WEBSITE

Please visit our website, www.hollysocam.org, for more information about the Holly Society and about holly. You will find articles, photos, and information about our Annual and Chapter meetings; learn more about holly and growing holly; and can join or renew your membership in the Society there using PayPal.



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**HSA ANNUAL MEETING
SITES**

69TH MEETING

MYRTLE BEACH, SOUTH CAROLINA

October 27–30, 2016

70TH MEETING

SITE AND DATES TO BE DETERMINED